An Assessment of the Role of Natural Hot and Mineral Springs in Health, Wellness and Recreational Tourism

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I dedicate this thesis to my family who missed out on so much quality time.

ABSTRACT

An Assessment of the Role of Natural Hot and Mineral Springs in Health, Wellness and Recreational Tourism

The aim of this research was to assess the role of natural hot and mineral springs in health, wellness and recreational tourism, based on a model which was developed for this purpose. Natural hot and mineral springs are important resources for the development of health resort and spa destinations and present interesting features for nature-based tourism (ecotourism, geotourism). Hot spring tourism involves visiting destinations with natural hot and mineral springs as key tourist attractions and is underreported in the tourism literature, although visitor numbers for this particular sector are rising. While health and wellness tourism is discussed in recent literature, a paucity of in-depth academic analyses relating to the significant contribution of natural hot and mineral springs to health, wellness and recreational tourism is evident. To close this gap in the literature this thesis focuses on the role of natural hot and mineral springs as an important natural resource in health, wellness and recreational tourism. Elements of the hot spring experience are examined and include the historical use and cultural background, their geology and their contribution to the health, wellness and recreational tourism sector based on facilities available for medical and recreational purposes at hot spring destinations. As with any research project there have been limitations which have affected the scope of the study, in particular the size of the global hot spring tourism industry and the difficulty to obtain reliable data. To assess the role of natural hot and mineral springs in health, wellness and recreational tourism was the specific aim of this research and to examine and evaluate this role five research objectives were employed:

1. To develop a conceptual model to assess the role of natural hot and mineral springs within health, wellness and recreational tourism;
2. Identification of settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism;
3. Explore the historical development of hot springs as destinations for tourism;
4. Analysis of the cultural context of hot springs as a tourism resource;
5. Investigation of the recognition of the medical benefits associated with natural hot and mineral springs.

The research methodology follows the philosophical assumptions of the Interpretive Social Science (ISS) paradigm (constructivist paradigm) and is supplemented by several qualitative research methods. The evaluation of hot spring tourism commenced with a meta-analysis of relevant literature. Results of the literature analysis were used to create a conceptual model that was designed to evaluate and assess the role of natural hot and mineral so springs in health, wellness and recreational tourism. The research frame was built around two case studies as well as participant observation and interviews. The model was then tested through two case studies based on an evaluation of natural hot and mineral springs in Japan and Germany. The case studies provide an in-depth analysis of the role of hot springs in tourism. These case studies present details of socio-cultural settings, treatment methods such as balneology, national health insurance systems, government policies and relevant institutions that determine the course of development of geothermal resources for health, wellness and recreational tourism and identify common elements.

Additional research methods included participant and non-participant observation as well as semi structured interviews with key representatives from the hot spring tourism industry. While carrying out field research, enquiries were made from members of the public, tour guides and/or other visitors about their hot spring experience using a predetermined selection of interview questions. As a validation strategy triangulation was used to reduce the likelihood of misinterpretation of multiple data sources and research methods as well as to assess connections between research variables.

The key findings of the research confirm the significance of hot spring based tourism on a global basis and present a new perspective in the discussion of health, wellness and recreational tourism. Natural hot and mineral springs are found in many countries and make a significant contribution to health, wellness and recreational tourism. As an alternative health source natural hot and mineral springs have the profound benefit of being seasonally independent and therefore attract visitors all year round. A high awareness about the therapeutical value of natural hot springs due to their mineral content is common throughout the related literature and among interview respondents. In many European countries for example medical treatment based on natural hot and mineral springs is integrated into the respective health systems and supported by the medical profession based on clinical studies and success rates. Government policies and regulations in countries such as Japan, Germany or Taiwan indicate strongly that natural hot springs are an important part of the national health system and provide evidence for their role in health wellness and recreational use.

Natural hot and mineral springs are recognised by the tourism industry as a unique natural resource and frequently marketed in combination with other local attractions (e.g. cultural, historical, geological). They not only provide a resource for health and wellness tourism, but also contribute to the demand for recreational aspects of nature-based tourism. Hot springs are considered a significant drawcard for the health, wellness and recreational tourism and are developed for tourism purposes where possible. The research findings further reveal that the historical and cultural use of natural hot and mineral springs has been extensive over time on a global basis. Many spa towns have a history of hundreds or even thousands of years and have upgraded and redeveloped their thermal facilities for current use (e.g. Aachen, Germany; Kusatsu, Japan; Bath, UK; Rotorua, New Zealand; Beitou, Taiwan). Another significant point is the popularity of hot springs with all age groups, genders and socio-cultural backgrounds, especially in countries were natural hot springs can be easily accessed (e.g. Japan, New Zealand, Iceland) and are used on a regular basis. Under responsible management and by avoiding over-exploitation natural hot springs present a renewable resource for sustainable tourism development on a long term basis.

The conceptual model was applied successfully to the case studies of Germany and Japan (Chapters 5 and 6) as well as in the historical review of hot spring use and has been effective in assessing and evaluating the role of natural hot and mineral springs in health, wellness and recreational tourism. This thesis addresses a significant gap in the tourism literature by reviewing in detail the various elements that collectively constitute hot spring tourism with experiences and examples from the health, wellness and recreational tourism perspective. The research findings advance the theoretical knowledge by using the model to identify the individual components of hot spring tourism and present a comprehensive analysis and assessment of the interactions between tourism and the use of natural resources by raising awareness about the current size and the future potential of hot spring use worldwide.

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CHAPTER 1
Natural Hot and Mineral Springs in Tourism

1 INTRODUCTION

> *'Everywhere in many lands gush forth beneficent waters, here cold, there hot, there both . . . in some places tepid and lukewarm, promising relief to the sick . . .' (Pliny, the Elder)*

This thesis examines the role of natural hot and mineral springs in health, wellness and recreational tourism. Hot spring tourism includes visiting destinations where natural hot and mineral springs are a key tourist attraction. This activity is underreported in the literature as yet, although visitor numbers for this particular tourism sector are rising. It was deemed appropriate to present a definition at the beginning of this thesis to inform the reader of the importance of natural hot and mineral springs as a tourism resource. This definition was created by the author based on knowledge gained from the data collected for this thesis;

> *'Hot spring tourism (geothermal tourism) involves a visit to a destination, location, attraction or facility that takes advantage of geothermal resources in the form of natural hot and mineral springs' (Author, 2011).*

Hot spring tourism therefore caters for the demand by visitors who rely on the beneficial mineral content of natural hot springs for the purpose of improving their health, but also for tourists with an interest in the visual effects of geothermal phenomena such as extreme hot springs (e.g. geysers and sinter terraces). Hot spring tourism is an important subsector of nature-based tourism, but also includes links to the historical and the cultural heritage related use of natural hot and mineral springs. The attraction of natural hot springs can be appreciated from the fact that they frequently are protected resources in national parks (NP) such as Yellowstone NP, USA or Pamukkale, Turkey; the latter also officially recognised as a UNESCO World Heritage site. Hot spring tourism generally synergizes well with other forms of tourism such as health and wellness, ecotourism and geotourism (Erfurt-Cooper & Cooper, 2009).

Natural hot springs [with or without spa and resort facilities] are often located in close proximity to volcanic activity, and hot spring tourists frequently take the opportunity to explore the unique geological heritage in the vicinity of their destination. The increase of hot spring tourist numbers is partly caused by the growing ease of access to remote destinations and the affordability for budget travellers, and is partly due to a growing interest in the natural environment (Erfurt-Cooper & Cooper, 2009).

This thesis focuses on the role of natural hot and mineral springs as an important natural resource in health, wellness and recreational tourism with special consideration of the health and wellness sector. Elements of the hot spring experience that are examined include their historical use and cultural background (Chapter 4), their geology (Chapter 2) and their contribution to the health, wellness and recreational tourism sector based on facilities available for medical and recreational purposes at hot spring destinations. The research aim is to assess the role of natural hot and mineral springs in health, wellness and recreational tourism by using a model, which was developed as a framework to evaluate the role of hot springs in tourism. This evaluation has been accomplished through a meta-analysis of background literature combined with two case studies of tourist destinations in Japan and Germany based exclusively on the use of natural hot and mineral springs, as well as personal observation and semi-structured interviews. Discussions with key industry representatives, local tourism associations, information centres and visitors of natural hot and mineral springs were undertaken to provide the data required for the case studies. The case studies illustrate the historical background as well as the impact of the contemporary interest in natural hot and mineral springs in relation to health, wellness and recreational tourism. The data collected for the case studies contributes essential information for the evaluation of the role and importance of natural hot and mineral springs in health, wellness and recreational tourism. The methodology and research methods employed (Chapter 3) are briefly summarised in Section 1.5.

1.1 DEFINITIONS OF KEY TERMINOLOGY

It is important at this point to introduce the main elements which comprise the foundations of the hot spring-based tourism sector and are part of the guiding framework for this research. Some of these key elements can have a range of meanings (e.g. wellness, health tourism) which differ from country to country as well as between destinations and facilities. It is therefore important that each of these key concepts is clearly defined to avoid confusion of terms in this research. The main elements of hot spring tourism are:

- *Natural Hot and Mineral Springs (Geothermal Springs);*
- *Health Resort and Spa Tourism;*
- *Medical Tourism;*
- *Health;*
- *Wellness;*
- *Health Tourism;*
- *Health, Wellness and Recreational Tourism.*

1.1.1 Natural Hot and Mineral Springs

Some authors, including Smith and Kelly (2006) and Smith and Puczkó (2008) mention hot spring based health resorts and spas in their discussions of health and wellness tourism, but fail to make the connection of natural hot and mineral springs and their role in tourism. However, there are some exceptions, as the following examples will demonstrate. The International Union of Tourist Organisations (IUOTO, 1973:7) for instance interprets health tourism as the provision of health facilities utilising the natural resources of a country or region, in particular mineral water and climate, which refers directly to the use of natural hot and mineral springs in tourism. It is evident that geothermal springs fall into the category of natural resources, and are commonly known and defined as hot springs, mineral springs, mineral waters or geothermal waters with the only differences between them the varying temperatures and their mineral content.

With reference to the healing benefits of natural hot and mineral springs Ross (2001) points out that such springs were used during the middle ages and are today characterised by a firmly established belief in the curative powers of geothermal springs in the countries in which they occur. In France for example, health tourism is 'emphatically medicalised' with spa therapy or *'thermalisme'* as the French call it, still a strong sector in prescriptive medicine supported by the State (Weisz, 2001). According to Weisz this is due to the fact that thermalism has established itself firmly in the health structure of France. Weisz gives a valuable insight into the French hot and mineral spring based health resort and spa system which is unique by global standards. In France most medical spa treatments are covered by the national health system, a situation which is partly mirrored in several other European countries (e.g. Germany).

Health related travel or health tourism based on natural hot and mineral springs includes both medical and wellness components. The use of geothermal springs is an option for both components; therefore separation of health and wellness would not necessarily reflect the traditional use or availability of natural hot and mineral spring facilities wherever health and wellness tourism is found. Equally, the overall role of natural hot springs has a place in more than one situation; for example in traditional clinics for 'taking the cure or the waters' and seeking rehabilitation from illness, in hot spring health resorts and spas for medical treatment as well as health and wellness, and in modern recreational aqua parks (Aquatic Entertainment Centres) that use geothermal water to attract families as well as individuals (both domestic and international). Also, due to the visual impact of some related phenomena

in the form of geysers, boiling lakes and bubbling mud ponds, geothermal activity is a major tourist attraction in several countries (e.g. Chile, Iceland, Japan, Kamchatka (Russia), New Zealand, and USA). Such features draw visitors to the remotest or most distant destinations to view the unique features of geothermal activity. The present research is based on the wider category of tourism related to the use of natural hot and mineral springs as an important form of tourist activity; but, with its main focus on the health and wellness sector.

Natural hot and mineral springs can be defined as water that, while circulating underground, undergoes changes in its composition through heat, pressure and time caused by interaction with the surrounding rock (Erfurt-Cooper & Cooper, 2009). During this process minerals are dissolved out of the parent rock into the water, which then returns to the surface enriched with minerals and metallic trace elements deemed beneficial for balneological treatment. Scientific and legal definitions of geothermal springs vary considerably worldwide (Table 1.1), but a representative definition from Allaby and Allaby (2003:267) describes geothermal springs as:

> *'a continuous flow of hot water through a small opening on to the Earth's surface. The water is usually groundwater heated at depth by hot rocks and recycled to the surface by convection'.*

Table 1.1 *Classification and definition of geothermal springs.*

Classification Category	Definition
Geothermal Spring	Includes hot springs and extreme hot springs - heated naturally while circulating through underground voids and pore spaces.
Natural Hot Spring	Generic term for geothermal springs of at least body temperature generally identified as pleasant bathing temperature - used for medicinal purposes & bathing. Naturally discharging from the subsurface.
Thermal Spring	Includes warm and hot springs - generally above 25^{o}C, may be artificially heated - used for medicinal purposes & bathing.
Mineral Spring	Can be cold, warm, hot, extremely hot or artificially heated - used for medicinal purposes & bathing.
Thermo-Mineral Spring	Geothermal mineral spring water and artesian water - used for medicinal purposes & bathing.
Artesian Spring	Naturally discharging from the subsurface - warm to hot water - 25^{o}C to 100^{o}C - used for medicinal purposes.
Saline Spring	Various temperatures - very high mineral salt content – possible sea water used for medicinal purposes & bathing.
Geyser	Extremely hot spring - water reaches boiling point and above – used as visual tourist attraction in geotourism.
Submarine Hot Spring	Submarine vents known as black smokers emitting extreme hot water enriched with mineral and metallic trace elements.

Source: Erfurt-Cooper & Cooper, 2009.

Several other definitions have been collected and are included in Chapter 2, where the literature concerned with the geology of natural hot and mineral springs is reviewed.

1.1.2 Health Resort and Spa Tourism

One of the references to health resort and spa tourism based on natural hot and mineral spring water was made by Jasen (1995:107) who stated that:

> *'The therapeutic holiday…was nothing new, as the sea, the spa and foreign travel in general had long been favoured by doctors as treatments for well-to-do patients. Sea air or the taking of mineral waters restored the body…'*

This is supported by the contemporary view held by Hall (2003:275) that:

> *'Spa tourism is a component of health tourism that relates to the provision of specific health facilities and destinations which traditionally include the provision of mineral waters'.*

Hall suggests a positive prognosis for the future of health resort and spa tourism, confirming that this tourism sector has undergone significant renewal and expansion in recent years, and could well be reclaiming its position after a time of dormancy in the 20th century. Hall further provides some insight into the perception of different countries towards health resort and spa tourism by differentiating between Europe and Asia, where the idea of health resort and spa tourism at geothermal spring destinations has a long tradition, and Anglo American countries where, in his opinion, this type of spa tourism is not widely recognised. Arguably spa tourism is now a major market sector in Australia, New Zealand, America, Canada and Asia (Altman, 2000; Jackson, 2003; Verschuren, 2004; Swarbrick, 2006); possibly more so at developed health resort and spa facilities rather than just at natural hot and mineral springs. It is noted here that this type of spa experience is different from the common hotel spas widely available.

1.1.3 Medical Tourism

Medical tourism, the act of travelling in search of health care (Deloitte, 2008; Paffhausen, Peguero & Roche-Villarreal, 2010) is defined by Connell (2006:1094) as:

> *'…deliberately linked to direct medical intervention with outcomes expected to be substantial and long term. Medical tourism has emerged as a niche from the rapid growth of what has become an industry, where people travel often long distances to overseas countries to obtain medical, dental and surgical care while simultaneously being holidaymakers, in a more conventional sense'.*

Medical tourism (also called medical travel, health tourism or global healthcare) is a term initially coined by travel agencies and the mass media to describe the rapidly growing practice of travelling across international boundaries to obtain health care (Jones & Keith, 2006; Lagace, 2007). Such services typically include elective procedures as well as complex

specialised surgeries such as joint replacement, cardiac surgery, and cosmetic surgery. Virtually every type of health care, including psychiatry, alternative treatments, convalescent and rehabilitation care and even burial services are or can be made available. Over 50 countries have identified medical tourism as a national industry, though accreditation and other measures of quality vary widely across the globe, and there are risks and ethical issues that make this method of accessing medical care controversial (International Medical Travel Journal, 2010). Medical tourism is frequently classed as a large subset of health tourism, with recent studies by Ehrbeck, Guevara and Mango (2008) suggesting a total value of between USD 40 to 100 billion within four years.

Medical or health resort and spa tourism based on the use of hot and mineral springs has historically a strong background in Europe. In the USSR at the end of the Second World War (WWII) Eastern Europe's existing health spas were extended and modernised as part of the public medical treatment system. The same process occurred in both West Germany and France where the medical spa tradition based on geothermal resources still plays an important role in the 21st century (Mackaman, 2007; Weisz, 2001). Compared to the health and beauty therapy-based concept of North America and Australia the integrated health and wellness concept embodied in the European traditions is quite different; although it appears that the two concepts are now converging. Hence medical tourism now encompasses surgery (medical and cosmetic) with wellness centres, doctor's surgeries with spa services (e.g. dental spas), and health resorts and spas with medical examinations and anti-aging treatments (Erfurt-Cooper & Cooper, 2009). In recent years medical treatment has been made available in several Asian countries (e.g. India, Malaysia, and Thailand) at considerably lower cost than for example in the United States, Australia, and Europe, the countries of origin of the majority of medical tourists. Based on a number of sources offering various definitions, medical tourism with the inclusion of natural hot and mineral springs is defined for this thesis as follows:

> '*Travel for the purpose of seeking medical treatment or therapies (including balneology and hydrotherapy based on hot and mineral springs, elective surgery, dental surgery and cosmetic surgery) in combination with recreational activities away from home.'*

This clearly explains the key elements of medical tourism and is based on the analysis of several definitions in the literature.

1.1.4 Definition of Health

Health is defined according to the Merriam Webster Medical Dictionary (2009) as:

- The state of being sound in body or mind;
- Freedom from physical disease and pain.

Further definitions along similar lines are listed at Dictionary.com, but these definitions mainly indicate a condition of optimal well-being combined with vigour, vitality, strength, fitness, and stamina. The most cited definition of health is that by the World Health Organisation (World Health Organization WHO, 2006), found on the first page of this organisation's constitution which came into force on 7 April 1948, with the following definition of health as its preamble:

> *'Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'*

This definition has not been changed or updated in over five decades though in recent years critics have been calling for its reconsideration (e.g. Rodolfo Saracci, 1997). Saracci claims that the original definition of 'a state of complete physical, mental, and social wellbeing' corresponds much more closely to happiness than to health and therefore poses problems at the conceptual level for the understanding of health. He advocates a change in terminology of the original 1948 definition of health, in which he blends the original WHO definition with the following sentence of the WHO preamble:

'The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition'

to form the proposition for a new definition of health:

> *'Health is a condition of well being free of disease or infirmity and a basic and universal human right' (Saracci, 1997:1409.)*

This definition by Saracci adopted in this thesis underpins the quest for health and wellness by the generation of 'baby boomers' at hot spring based health resorts and spas as well as facilities without natural hot springs. It also appears to be the most appropriate definition of health to date.

1.1.5 Definition of Wellness

A number of definitions of wellness have been developed over time; however, there is no universally accepted definition of the word wellness (Global Spa Summit, 2010). The definition of wellness by the German Wellness Association (*Deutscher Wellness Verband*, DWV) and the European Wellness Union (*Europäische Wellness Union*, EWU) are translated from German as follows:

> *Wellness describes an active and self responsible strategy towards complete health that enables the subject to live healthy and productive as a result of scientifically proven actions, methods, and techniques thus being widely immune against chronic illness and disease as well as living in the pursuit of happiness (DWV, 2010).*

> *Wellness…stands for a practical philosophy of life, whose goal is the greatest possible physical and mental/spiritual well-being of the individual. A carefully cultivated environment is one of the major conditions: harmonious personal relations, personal integration in the economic and social life, and careful ecological behaviour (EWU, 2010).*

The Global Spa Summit report contains several survey results (Figure 1.1) which identify what consumers do to enhance or maintain their level of wellness.

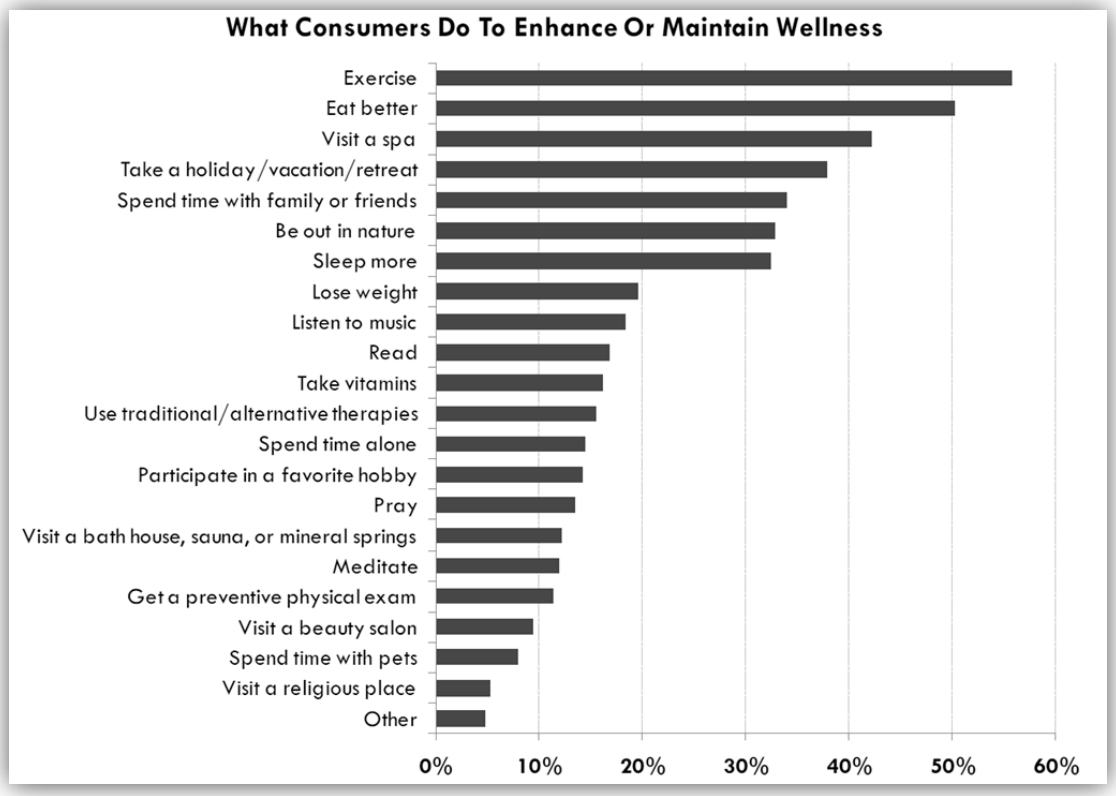

Figure 1.1 *Overview of consumer activities including visits to hot and mineral springs (Global Spa Summit, 2010).*

In general terms ‘wellness’ is defined by a number of sources as:

- The quality or state of being healthy, especially as the result of deliberate effort (Dictionary.com, 2009);
- An approach to health care that emphasizes preventing illness and prolonging life, as opposed to emphasizing the treatment of diseases (Dictionary.com, 2009);
- A condition of good physical and mental health, especially when maintained by proper diet, exercise, and habits (Answers.com, 2009; The American Heritage Dictionary, 2009);
- A healthy state of wellbeing free from disease (Examiner.com, 2009);
- The quality or state of being in good health especially as an actively sought goal, e.g. lifestyles that promote wellness (Merriam Webster Medical Dictionary, 2009);
- A state of mind as well as a physical state. Wellness is the physical state of good health as well as the mental ability to enjoy and appreciate being healthy and fit (Quan, 2009).

These definitions contain similar variables and their meaning does not vary widely. According to the Canadian Tourism Commission (CTC) health tourism and wellness tourism are two different sectors (De la Barre, de la Barre & Taggart, 2005:22), with wellness tourism sometimes regarded as a sub-category of health tourism and proposed to be ‘the sum of all the relationships and phenomena resulting from a journey and residence by people whose main motive is to preserve or promote their health’.

The 2010 report of the Global Spa Summit (2010) recognises that there are regional variations in the concept of wellness with several common threads standing out across the various definitions of wellness:

- Wellness is multi-dimensional;
- Wellness is holistic;
- Wellness changes over time and along a continuum;
- Wellness is individual, but also influenced by the environment;
- Wellness is a self-responsibility.

The Global Spa Summit (2010) [rightly] criticises the spa industry for the increasingly widespread use of the word wellness in a fragmented and meaningless way which has led to a level of confusion among both consumers and professionals in wellness-related fields. This has caused some professionals in the field of health to distance themselves from the term wellness and it would be beneficial for the spa industry to start talking about wellness in a more coherent and harmonized manner (Global Spa Summit, 2010).

For the purpose of this thesis and based on the definitions above, wellness is defined as a combination of four key elements: a) Freedom from illness; b) A positive state of mind; c) Healthy lifestyle choices; and d) Maintenance of good health.

1.1.6 Health Tourism

The term health tourism is also not universally defined (Smith & Puczkó, 2008), however an early definition by the IUTO (1973) states that health tourism is consists of the provision of health facilities which utilise local natural resources, including mineral water and climate. More generally health tourism can defined in a number of ways:

> *Travel undertaken to enjoy a more salutary environment, to seek out alternative therapeutic treatments, or to visit a health spa (Travel Industry Dictionary, 2009);*
>
> *Travel or vacationing for health or fitness purposes; a holiday to take advantage of health-care services (Dictionary.com, 2009).*

A North American definition (Broughtons Magazine Online, 2010) of Health Tourism states:

> *'Health tourism encompasses those products and services that are designed to promote and enable their customers to improve and maintain their health through a combination of leisure, recreation and educational activities in a location removed from the distractions of work and home.'*

According to Tabacchi (2003) health tourism includes all travel that makes yourself or a family member healthier. Quite often health tourism and medical tourism can have the same meaning. In India health and/or medical tourism has emerged as a popular sector as a result of excellent medical treatment at low cost (Indiamarks, 2009), and is growing because people from all over the world now visit countries such as India for their medical and relaxation needs. The most common treatments are heart surgery, knee transplants, cosmetic surgery and dental care (Medical Tourism India, 2009).

The best definition appears to be from Goodrich (1993:37, 1994) who identifies health tourism as:

> *'…the deliberate attempt on the part of a tourist facility or destination to attract tourists by promoting health-care services and facilities in addition to regular tourist amenities. These health-care services may include medical examinations by qualified doctors and nurses at the resort or hotel, special diets, acupuncture, transvital injections, vitamin-complex intakes, special medical treatments for various diseases such as arthritis, and herbal remedies.'*

Health and medical tourism based on the use of natural hot and mineral springs endeavours to assist patients in the recovery and rehabilitation from illness without negative side effects from pharmaceutical products.

1.1.7 Health, Wellness and Recreational Tourism

Mueller and Lanz Kaufmann (2001) explain health and wellness tourism as the sum of all the relationships and phenomena resulting from travel by people whose main motivation is to preserve or promote their health ranging from holistic to strictly medical approaches. They may seek this outcome in specialised hotels and resorts that provide appropriate professional know-how and individual care in relation to health and wellness, or they may individually engage in one of the increasingly popular forms of health-promoting adventure activities such as white water rafting or snowboarding (Buckley, 2007; Mueller & Lanz Kaufmann, 2001). Those based at the treatment end of this continuum generally require a comprehensive and personalised service package comprising elements of medical, physical fitness, beauty care, healthy nutrition/diet, relaxation/meditation and mental activity/education. Recognising this, Smith and Kelly (2006) and Ross (2001) believe that health and wellness tourism is in many ways one of the most ancient forms of tourism, based on the Roman and Greek interest in travel and wellbeing, usually involving some form of thermal bathing. In a review of the use of health tourism, Ross (2001) suggests that there is no single definition for health and wellness tourism as many kinds of travel contain elements that contribute towards making oneself or family members healthier. This review by Ross refers to the concept of health tourism as being as ancient as pre-history, but also as up-to-date as the future, confirming that in recent years there has been an unprecedented increase of interest in the aspects of tourism relating to the pursuit of health and wellness. However, the wellness element also incorporates the recreational element of hot spring tourism which is therefore accepted as a frequent adjunct without requiring an in-depth analysis for this study. The recreational aspect is a third category integrated included in hot spring tourism. Recreation is defined by the Collins English Dictionary (2011) as the '*refreshment of health or spirits by relaxation and enjoyment'* and can refer to a pastime or diversion or even rejuvenation. Consequently the recreational use of natural hot and mineral springs is considered to contribute notably to the wellbeing of visitors of hot spring destinations.

1.2 HOT AND MINERAL SPRING TOURISM

1.2.1 Facts about Natural Hot and Mineral Springs

Geothermal springs are a naturally occurring source of water which has been heated underground and rises to the surface under pressure, usually along fault lines or in the vicinity of active volcanic environments (Allaby & Allaby, 2003) and are used for tourism purposes worldwide (Erfurt-Cooper & Cooper, 2009). The aim of this discussion is to demonstrate the close ties of health resorts and spas based on natural hot and mineral springs with health, wellness and recreational tourism and a large supporting service industry. This is evident at most traditional and newly developed hot spring destinations where transport, accommodation, restaurants and retail opportunities as well as cultural attractions contribute to the overall travel experience of the hot spring tourist. Travel to natural hot spring spas is not new; the first travellers who were seeking health benefits from natural hot and mineral springs can be traced back to the Chinese, Greek and Roman cultures (Historical timeline, Appendix 4.1), where parts of the population with an interest in good physical shape and hygiene as well as in socialising made use of public bathhouses and fitness temples (Altman, 2000; Erfurt-Cooper & Cooper, 2009).

Throughout history bathing facilities were frequently established in the vicinity of natural hot and mineral springs, which supplied water with beneficial qualities to treat a number of health conditions. Geothermal springs at various temperatures are invariably attributed with curative powers and used both for external and internal applications. These springs are preferred for their curative value as well as their therapeutic benefits (Erfurt-Cooper & Cooper, 2009). Hot and mineral springs can range from tepid to very hot. Cold (natural) mineral springs can be artificially heated and are also used for balneology and hydrotherapy (thermalism). The temperature of spring water in general has to be at or above 25^{o}C (Olsen, 2002) to be considered as a hot spring, with classifications varying in different countries (e.g. Japan 25^{o}C, Germany 20^{o}C).

The term ‘thermal’ water is also used by some spas where cold mineral water is heated and then promoted as a natural hot spring or as thermal spring water. In a research paper investigating different definitions of hot, thermal and mineral springs, Pentecost, Jones and Renaut (2003) contribute a valuable analysis, derived from a survey into suitable classifications for the various types of springs. Their findings recognise two major benchmarks for natural hot springs – the human body temperature and the mean annual local air temperature. Pentecost et al (2003) take the position that while no scheme can claim to

provide an objective and unbiased classification, waters emerging with a temperature in excess of the core human body temperature of 36.7°C should be defined as 'hot springs'. It is however the mineral content of geothermal springs which is generally held in high esteem for its curative powers that ultimately determines the attractiveness of these natural resources for health, wellness and recreational tourism together with a pleasant water temperature and attractive natural environments (Erfurt-Cooper & Cooper 2009).

Therapeutic values are directly linked to the variety of minerals and metallic trace elements known for their beneficial effect on the human body and which assist in the healing of various ailments and diseases (Barbanov & Disler, 1968; McGeary, Plummer & Carlson, 2001; Olsen, 2002; Pesce, 2002). Scientists, especially in Europe and Japan, have a long history of research into the connection between minerals and other elements and potential health benefits of natural hot and mineral springs (Barbanov & Disler, 1968; Eyton's Earth, 2004; Ghersetich & Lotti, 1996; Jorden, 1631; McGeary et al, 2001; Parish & Lotti, 1996). Minerals from hot springs have traditionally been used externally in solutions, creams and ointments to cure certain health and skin conditions and the taking of natural mineral spring waters (internally by drinking) is practiced worldwide with a strong revival within the field of *Complementary and Alternative Medicine* (CAM) and as an adjunct to numerous wellness and health therapies. CAM refers to alternative healing practices not generally included in conventional medicine and is a term for medical products and practices that are not part of standard care (MedlinePlus, 2010; National Center for Complementary and Alternative Medicine, 2010). However, the methods of treating illness with balneology or hydrotherapy (also known as thermalism) are covered in the medical literature as well as in some earth science publications (Fabiani, Partsch, Casale & Cerinic, 1996; Lund, 2005; Parish & Witkowski, 1994; Williams, Andestad, Pollock & Dossa, 1996; Witt, 1990).

Parish and Lotti (1996) suggest that bathing in natural hot and mineral spring water could be an effective method in treating skin conditions like atopic dermatitis and psoriasis. Clinical research and controlled studies undertaken and reported on by medical professionals (e.g. Abels, Even-Paz & Efron, 1996; Bernstein, 1996; Boer, 1996; Ghersetich & Lotti, 1996; Karam, 1996; Katsambas & Antoniou, 1996; Ólafsson, 1996; Omulecki, Nowak & Zalevska, 1996; Oumeish, 1996; Tsankov & Kamarashev, 1996; Vassileva, 1996; Wolf, 1996) indicate, that the desired curative effects are directly related to the absorption of mineral ingredients and metallic trace elements through the skin. The beneficial effect for the human body includes the support of the healing process for a variety of health conditions. Some examples of minerals known for their curative benefits are Calcium (Ca), Chloride (Cl),

Fluorine (F), Iron (Fe), Magnesium (Mg), Potassium (K), Silica (SiO_2), Sodium (Na) and Sulphate (SO_4). A more detailed list of the most common elements found in geothermal spring water and their effects are provided in Chapter 2 (Tables 2.1 and 2.2).

1.2.2 Hot and Mineral Springs in Health, Wellness and Recreational Tourism

As previously noted the role of natural hot and mineral springs in tourism has been understudied in the academic tourism literature, despite the fact that particularly health resort and spa tourism are of growing significance in the world tourism industry today (Foster & Keller, 2008). Other tourism sectors such as geotourism have incorporated the use of geothermal springs and visits to associated attractions which are rapidly becoming an important contextual base for development (Dowling & Newsome, 2006). Countries such as the USA, Iceland, Japan and New Zealand have a longstanding reputation for spectacular geothermal activity combined with health resort and spa facilities based on natural hot and mineral springs (e.g. E. Harding, pers. com., 2009; Hotta & Ishiguro, 1986). Other areas currently investigating the development of health, wellness and recreational tourism including natural hot springs are the Philippines, Singapore, Malaysia, China, India, Brazil, and Peru.

One of the major reasons for the renewed growth of tourism based on natural hot and mineral springs has been the growing trend towards fitness and wellbeing (Erfurt-Cooper & Cooper, 2009; Foster & Keller, 2008) during the late 20th Century (starting in the early 1990s), coupled with a desire to understand the geophysical background of the natural hot and mineral springs (Cataldi, Hodgson & Lund, 1999). Within this pattern, a trend towards visiting spa and wellness facilities (Altman, 2000; Leavy & Bergel, 2003; Lee, 2004) developed fast and revived the popularity of health retreats and resorts based on natural hot and mineral springs.

Geothermal resources in the form of natural hot springs have historically been used for their therapeutic benefits (Andreassi & Flori, 1996; Fabiani et al, 1996; Hann, 1996; Ledo, 1996; Omulecki et al, 1996; Picoto, 1996; Routh & Bhowmik, 1996; Vassileva, 1996; Wolf, 1996) due to their various mineral compositions, which are the base for balneology and hydrotherapy or *thermalism* (French *thermalisme* and Spanish *termalismo)*. Thermalism refers to the therapeutic use of natural hot and mineral springs and their products (mud, minerals, and algae) and dates back to the Chinese, Greek, Turks, Etruscans and Romans who created the first public baths that included the use of natural geothermal spring water

with therapeutic properties where these were available (Clews, 2000). The term thermalism is commonly used in Europe and Latin America to refer to medical applications of hot spring water used for the prevention and rehabilitation of chronic diseases (Bar-On, 1989; Nahrstedt, 2004; Pratzel, 2001a); however, thermalism can also include the use of cold mineral spring water, which is artificially heated and used for balneology.

Hot and mineral springs are commonly located in a natural environment and have become popular places for relaxation; a leisurely bath in natural hot spring water generally creates a feeling of rejuvenation and invigoration (Levy, 1995). More than two decades of the wellness movement have encouraged the hot spring spa sector to undergo modernisation and redevelopment of facilities after years of decline (Altman, 2000; Lee, 2004). Until their revival through the wellness boom many hot spring health resorts and spas struggled to survive, especially in countries with warmer climates where other forms of tourism such as beach tourism have dominated travel patterns and motivations (Erfurt-Cooper, 2006; Niv, 1989; Oakley, 2002).

This initial brief discussion establishes natural hot and mineral springs as a prime tourism resource and a key physical element in health, wellness and recreational tourism with a marked preference for geothermal water rich in beneficial minerals. Visitor numbers in Japan to hot springs for example average 150 million people annually with an economic value of USD 5.7 billion. In Germany approximately 6.5 million people visit thermal and mineral spring based health resorts and spas with an economic value of USD 3.8 billion per annum (Erfurt-Cooper & Cooper, 2009:309). Because there is generally no separation between health and wellness destination with or without hot springs, it is difficult to find reliable visitor numbers and references to the economic value of hot spring tourism. In recognition of the growing interest in natural hot and mineral springs, some health resorts and spas without natural hot springs are investigating ways of tapping into geothermal water resources to enhance their business (Erfurt-Cooper, 2006; Erfurt-Cooper & Cooper, 2009; Glacier Hot Pools, 2009). Modern health resort and spa design also makes use of the psychological effect of flowing water and still water to enhance therapies, even if natural hot and mineral springs for bathing and associated treatments are not available (Brown, 2005; Leavy & Bergel, 2003).

Apart from the actual treatment choices based on water, there is a trend towards more natural-looking environments and settings that is evident in health resorts and spas with swimming pools, hot tubs and whirlpools often built to look as natural as possible in an

attempt to imitate a 'natural' hot spring environment (Figure 1.4). In other words, the worldwide consumer focus is on health and wellness as a natural lifestyle choice for tourists, where 'old-fashioned' hot and mineral spring water treatments and bathing are making a comeback at health resorts and spas with access to natural hot and mineral springs (Altman, 2000; Lee, 2004).

Taking advantage of these trends, many countries that are rich in natural hot and mineral springs are exploiting these resources for commercial purposes which at many destinations directly relate to tourism. Utilisation can range from the heating of residential and commercial buildings (e.g. greenhouses, drying plants, and hotels), the generation of electricity in geothermal power stations (which are tourist attractions in Iceland and New Zealand), national parks and hot spring resorts and spas, to their use as visual attractions for people interested in geotourism or ecotourism. Some countries are internationally famous for their natural hot spring culture, such as Japan, Iceland and New Zealand while other countries like China have preserved their natural hot and mineral spring areas for domestic tourism until recently. Depending on their location, accessibility, and individual marketing strategies, natural hot and mineral spring destinations are viable tourism ventures and are successfully exploited in many countries around the world, with a culture of 'taking the waters' that has developed over time (see Chapter 4).

Health resorts and spas are amongst the main stakeholders taking advantage of natural hot and mineral springs where these are available. In European countries many patients of health resorts or medical spas (e.g *Kurkliniks* in Germany*)* return regularly to benefit from thermal bathing cures (balneology and hydrotherapy), which best serve to either rehabilitate people after sickness and injury or to enhance and maintain their health and wellbeing. The 20th - 21st century wellness movement is combining lifestyle, health and medical aspects and represents a more recent development of these markets which are now catering for a much wider range of visitors than ever before (Pilzer, 2002) with natural hot and mineral springs as an integrated part of this growing trend for health and wellness.

1.2.3 International Trends in Hot Spring Tourism

Geothermal springs in the form of geysers, boiling lakes and bubbling mud ponds are an important tourism attraction due to their visual impact and an adjunct to the strong relationship between natural hot and mineral springs and human health (Greenwood, 2007; Hembry, 1990; Kapczynski & Szromek, 2008). In Japan, for example, natural hot and

mineral springs have been used for more than a thousand years as places to heal wounded soldiers, while the European tradition of hot spring use has relied heavily on their endorsement as important medical resources. In the Americas the nexus between natural hot and mineral springs and human health originally developed in much the same way as in the European tradition, but was partially severed when the support of the medical profession for use of geothermal resources was lost in the early 20th century (Bullard, 2004; Lund, 1993). In many regions of North America natural hot and mineral spring water became a minor adjunct to beauty therapy based on spa treatments as a result of this change. In other parts of the world, most impressively in Japan, the health and wellness nexus has been to a high degree implicit in the use of natural hot and mineral springs for simple bathing and therapeutic purposes (Erfurt-Cooper, 2006; Erfurt-Cooper & Cooper, 2009).

The trend of indulging the body in a relaxing natural hot spring environment has turned into a global movement (Andrijasevic & Bartolucci, 2004; Nahrstedt, 2004), but one with a significant difference from the original concept of using geothermal springs for health enhancement purposes, which mainly concentrated on rehabilitation and cure (Strauss-Blasche, Ekmekcioglu, Klammer & Marktl, 2000). The new emphasis lies in the prevention of disease and in the maintenance of good health, not necessarily or exclusively in seeking a cure as such (Mueller & Kaufmann 2001), but with high expectations regarding health improvements, even if there are no specific health problems (Andrijasevic & Bartolucci, 2004; Smith & Kelly, 2006). Medical tourism (seeking a cure) as a subset of the overall category of health tourism (Mueller & Lanz Kaufmann, 2001; Nahrstedt, 2004) now tends to be concentrated in destinations such as Thailand, Malaysia and India as a result of treatment pricing differentials between medical systems, rather than being influenced by the location and use of natural hot and mineral springs to provide complementary therapies.

Mind and soul are also catered for along with the body in many health resorts and spas in the 21st century, using a holistic approach of creating harmony, including new age treatments as well as the more traditional rehabilitative therapies (Smith & Kelly, 2006; Bushell & Sheldon, 2009). The main centre of attention at present appears to be the use of water as a part of natural healing methods incorporating Asian treatments, accompanied by the aesthetic appeal of Eastern lifestyles and culture (Chen, Prebensen & Huan, 2008; Tourism Victoria, 2005). Mind and body therapies of Asian origin are combined in many cases with European balneology and hydrotherapy (thermalism) traditions. Associated resources such as sport and fitness facilities enable health resorts and spas with natural hot and mineral springs to offer a diversity of options to attract as many clients as possible. Health resorts and spas

bases on natural hot springs frequently cater for beauty therapy aspects with special signature treatments, in the quest to attract more visitors and paying customers (Erfurt-Cooper & Cooper, 2009).

In the western world a majority of followers of the modern health and wellness movement come from the baby boomer generation (Pilzer, 2002), who are considered a core market for the health and wellness industry with a growing interest in new age remedies, medical tourism, and alternative treatments (Ernst, 2000; Gesler, 1992; Gilbert & Abdullah, 2003). This particular consumer group is in search for new ways to escape work related stress before they retire, deal with growing health concerns, and/or just wish to enjoy retirement, and is willing to achieve this by spending time at health resorts and hot spring spas of their choice (Carruthers & Hood, 2005). The impact of this larger and more mobile, but health conscious group has led to the development of multi-facility resorts in the 21st Century (e.g. Spa Hawaiians – Yumoto, Japan; Peninsula Hot Springs, Australia; Caldas Novas, Brazil) that include golf courses and other extensive sports facilities as well as dedicated health and beauty facilities and boutique shopping as additional attractions to health and wellness therapies and geothermal waters (Beach, 2000; Bennett, King & Milner, 2004).

1.2.4 The Importance of Natural Hot and Mineral Springs for the Tourism Industry

In support of the development of a conceptual model to assess the role of natural hot and mineral springs in tourism (which will be discussed in the next section) the main uses of such geothermal resources were identified and linked (Figure 1.2). The diagram includes active usage in the form of treatments at health resorts and spas, bathing and swimming in geothermal pools.

Natural hot springs can be stand-alone, usually passive and visual geotourism attractions in a variety of settings, especially unique geothermal landscapes with extreme geophysical activity including geysers, bubbling mud or boiling hot water pools (i.e. Japanese *jigoku* or 'hells'; Yellowstone NP – USA; Þingvellir NP, Iceland; Waiotapu Thermal Wonderland, New Zealand, Valley of the Geysers, Kamchatka). From these extreme hot springs the water may be drawn off to use as a resource for simple bathing, as in the Japanese *onsen*. As part of this extractive process, geothermal power and heating are also made available to tourist accommodation and other facilities.

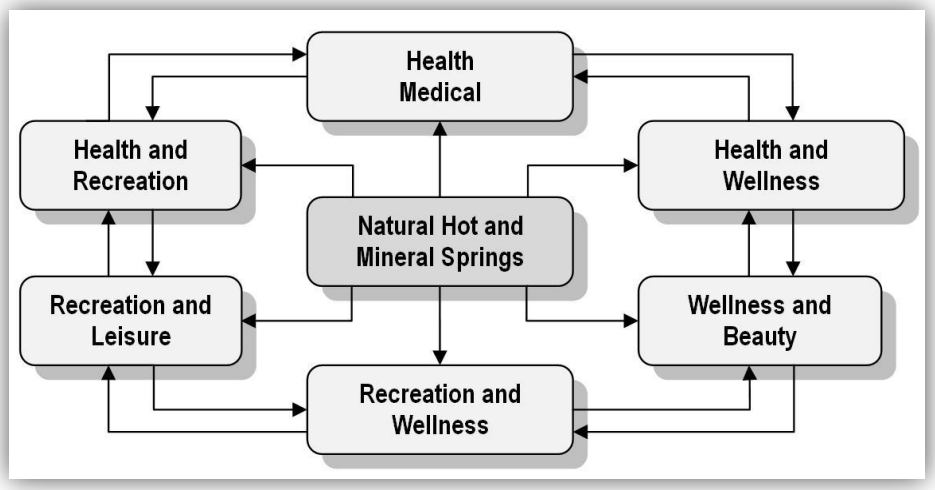

Figure 1.2 *Interconnection model of health, wellness and recreational use of hot springs (Author, 2011).*

However, while the hot spring tourism industry is growing, there has been little research into the elements that collectively make up the hot spring experience. More specifically, while for example the hot spring spa industry makes a significant contribution towards health, wellness and recreational tourism, it receives less attention in the academic and popular literature than the general wellness sector (Erfurt-Cooper and Cooper, 2009). This is all the more surprising given that the physical benefits of treatment with natural hot and mineral spring water have been proven beyond doubt by clinical studies under the control of highly qualified medical professionals and specialised researchers (Deutscher Wellness Verband, 2007; Mitsanobu et al, 2003; Nagasawa et al, 2001; Ohtsuka, Nakaya, Nishikawa & Agishi, 2003; Pratzel & Schnizer, 1991; Vu & Mitsanobu, 2004).

1.3 STATEMENT OF RESEARCH AIM

1.3.1 Research Aim and Research Objectives

The aim of this research is to investigate the role of natural hot and mineral springs in health, wellness and recreational tourism. The outcome of the research will be the development of a model to assess their role and importance. Research objectives were developed from a meta-analysis of literature related to the use of natural hot and mineral springs with a special focus on the health and wellness tourism sector. The resulting research objectives are as follows:

1. To develop a conceptual model to assess the role of natural hot and mineral springs within health, wellness and recreational tourism;

2. To identify settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism;
3. To explore the historical development of hot springs as destinations for tourism;
4. To determine the cultural context of hot springs as a tourism resource; and
5. To investigate the recognition of medical benefits associated with natural hot and mineral springs.

The research aim and objectives are the basis for the following chapters and will be used to assess the role of natural hot and mineral springs in health, wellness and recreational tourism.

1.3.2 A Model to evaluate the Role of Hot Springs in Tourism

The research environment and context of this thesis, relating natural hot and mineral springs to health, wellness and recreational tourism is conceptualised in a model which is used to assess the role of natural hot and mineral springs in the delivery of services and facilities to the tourism industry. The interpretive social research approach is suggesting a series of relationships between aspects of natural hot and mineral springs and health, wellness and recreational tourism, which were established by using inductive reasoning and shown as a model. According to Denzin (2002) this approach includes locating the research settings, giving multiple examples, defininining essential elements of the research topic, highlighting their individual features, as well as contextualising the research phenomenon. This model was developed including an initial SWOT analysis (see Appendix 2.1) to establish the (S)trengths, (W)eaknesses, (O)pportunities and (T)hreats of tourism based on hot spring as an important resource. This SWOT analysis was subsequently transformed into a typology to further assist the establishment of a model that can be used to assess the role of natural hot and mineral springs in health, wellness and recreational tourism. The resulting model (Figure 1.3) is a graphic representation of the initial conceptual framework and is the basis for the research methodology.

The proposed model incorporates three tourism sectors, each of which takes into account the distinctive characteristics of natural hot and mineral spring settings as a tourism resource. These three sectors, health and medical tourism, wellness tourism and recreational tourism, are based on specific visitor expectations and demand for the provision of special facilities and settings. Although the three sectors can be distinguished from each other and frequently do exist as stand-alone destinations, there is however, due to the multi-dimensional structure of geothermal resources, the potential for overlap from one sector to another; generally with

a complementary result. The model establishes the correlations between the various integrated elements of hot spring tourism, which are associated with environmental and social settings, natural resources, medical reputation, recreational attraction, traditions and customs, historical and cultural use of hot springs as well as access and infrastructure. Together this represents the particular attractiveness of natural hot and mineral spring settings as a tourism resource. For example health tourists, who visit hot spring spas and resorts to benefit from balneological treatment, also appreciate the opportunity to partake in sightseeing tours to other geothermal features if these are present and accessible. Patients at the Blue Lagoon Clinic in Iceland for example can undertake daytrips to the geyser fields of Haukadalur or visit a geothermal power station. Visitors of hot spring spas in New Zealand can take tours to nearby geothermal nature parks and in Japan hot spring tourists commonly visit every geothermal feature in the vicinity of their destination.

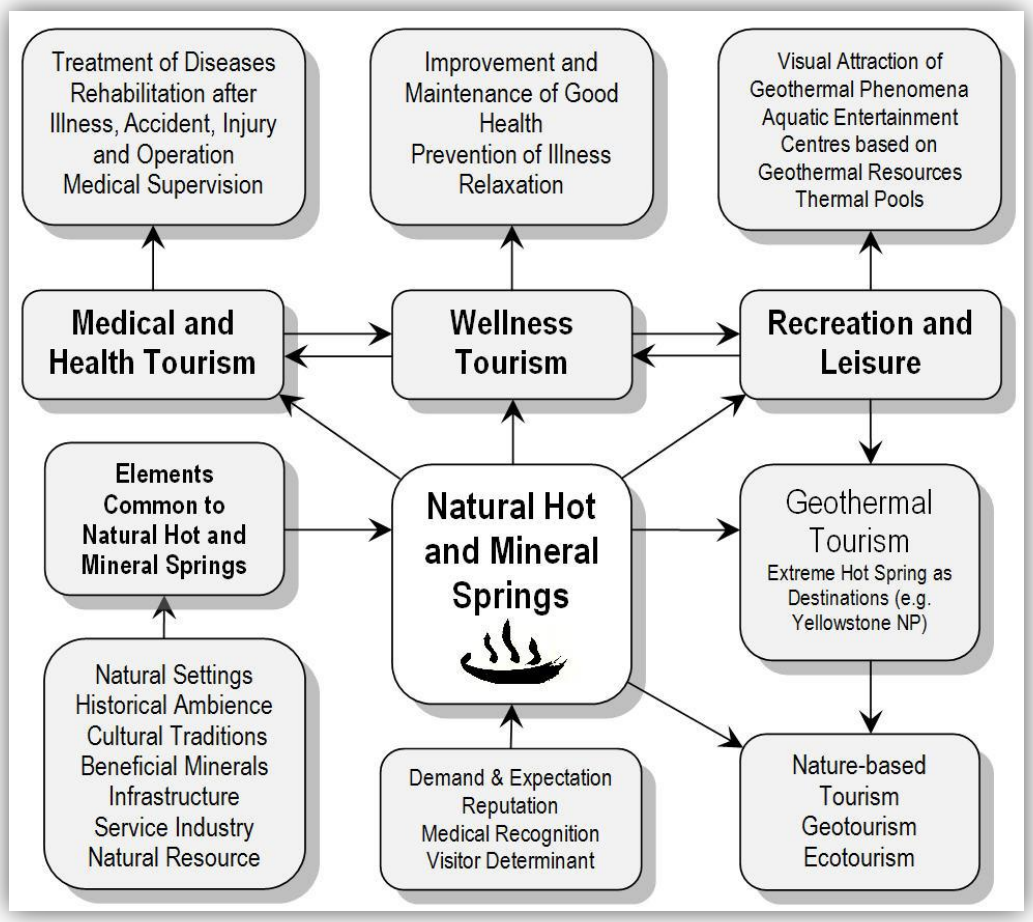

Figure 1.3 *Graphic representation of the conceptual framework as a model which can be used to assess the role of natural hot and mineral springs in tourism (Author, 2011).*

Although the visual attraction of hot springs should be noted as an important feature in recreational tourism with a focus on ecotourism and geo-heritage tourism, this thesis only briefly looks at the values of specific sites, as it is more concerned with the use of the water resource than its visual settings. In a similar vein, consideration is also given to culturally significant locations (e.g. World Heritage Areas) to point out examples of co-branding (culture, health, recreation) in order to allow greater understanding of the role of natural hot and mineral springs in the tourism industry in different countries, but this is not the central concern of the thesis.

1.3.3 Research Rationale

While many articles and books have been written about various tourism sectors and tourist behaviour, and the general literature offers a host of books about hot spring locations for leisure and recreation, the two aspects have only recently been brought together conceptually for the consideration of health and wellness tourism by Erfurt-Cooper and Cooper (2009) in *"Health and Wellness Tourism: Spas and Hot Springs"*. This paucity of academic study is despite the fact that geothermal resources in the form of natural hot springs combined with tourism are an area of important economic activity as well as a significant contribution to the health, wellness and recreation sector in a number of countries (e.g. Japan, Iceland, New Zealand and Germany.

In many countries natural hot and mineral springs are recognised as an important part of local tourism resources (Altman, 2000; Deutscher Heilbäderverband, 1999; Verschuren, 2004). For example in Japan a visit to an *onsen* (Japanese hot spring) is among the three top travel motivations for international visitors according to a survey of overseas visitors to Japan by the Japan National Tourist Organisation (JNTO, 2006). Interviews with 13,891 foreign tourists in Japan during 2007 indicated that 32.1% stated an interest in natural hot springs as a motivation to travel to Japan (Murayama, 2007). Domestic tourism in Japan is also strongly motivated by hot spring destinations: the City of Beppu (on the Island of Kyushu) for example attracts over 11 million visitors annually, whose main purpose is to visit and bathe in as many *onsen* as possible. The analysis of the role of hot and mineral springs in health, wellness and recreation was inhibited by the lack of a model for the assessment of this resource for these tourism sectors.

1.4 JUSTIFICATION OF THE RESEARCH TOPIC

Rising customer expectations concerning health and wellness amongst all groups in society is the foundation on which the modern health resort and spa industry is building an increasing supply of facilities for the health (medical and wellness) and recreational visitor. This form of tourism is estimated to be worth in excess of US $250 billion per year and to attract some 150 million active spa-goers worldwide (International Spa Association ISPA, 2007). Caution is needed in assessing such data though, because these figures are said to include 19.1 million Japanese spa-goers. However, Japanese data (Beppu International Tourist Office, 2007, pers. communication) claims that there are over 150 million annual *onsen* visits alone in that country. This discrepancy would appear to relate to the differences in the definition of health and wellness, where the Japanese tradition is more about simply bathing in natural hot springs than about the American tradition of beauty spa wellness (which often include water treatments, but these may not be from natural geothermal resources), that impacts on the research undertaken by the International Spa Association. As a result of this the majority of Japanese hot spring users would not be counted in a world-wide survey if the data are concentrating on analysing the spa experience rather than the totality of health, wellness and recreational tourism based on the use of natural hot and mineral springs. This reflects the challenge of data collection as there is generally no separation between health resorts and spas with and without natural hot springs. It was only recently discovered by the author that the ISPA 2007 spa report was recalled for a number of statistical and analytical errors.

This recent trend towards health, wellness and indulgence in a relaxing environment, which according to Foster and Keller (2008) began after World War II has turned into a global movement. However, there is a significant departure from the original concept of health resorts and spas that mainly specialized in rehabilitation or recovery from illness and/or injury. In America in the 1950s the pioneering work of Dr Halbert Dunn (1961) started a new ambitious health movement in the United States and the term ‘wellness’ became a catchphrase (Erfurt-Cooper & Cooper, 2009). The new emphasis lies in prevention of disease and maintenance of good health more than the cure of illness, with high expectations regarding health improvements even if there are no particular health problems. Along with the body, the mind and soul are also catered for in many spas in a holistic approach of creating harmony through alternative treatments often including new age elements (holistic and alternative healing therapies including herbal remedies, cleansing and detox[ification], aroma therapy, Ayurveda etc.) as well as the more traditional water-based therapies.

Nevertheless, the key element in many health resorts and spa facilities is water. Be it as a part of the natural landscape surrounding a spa facility (ocean, rivers, lakes and waterfalls), or as part of the background decoration and man-made landscaping (pools, fountains, artificial water features), or an active treatment component (therapies using geothermal waters, drinking mineral water, ionised water etc) water is a very important element in the contemporary world of health, wellness and recreation. In fact, some health resorts and spas that operate without natural hot and mineral springs are investigating the availability of geothermal water resources to enhance their business (Erfurt-Cooper, 2006; Erfurt-Cooper & Cooper, 2009; Glacier Hot Pools, 2009, per email; Smith & Kelly, 2006). A trend towards natural looking environments or settings is also evident in the marketing of many health resorts and spas, where swimming pools and geothermal bathing facilities are designed and built to look as natural as possible, with rock pools (Figure 1.4) the most typical and widespread design (Davidson 2008, 2009, 2010, pers. communication; Erfurt-Cooper & Cooper, 2009). The first justification of the research topic therefore aims to assess the role of natural hot and mineral springs in health, wellness and recreational tourism. This contribution to knowledge about the role of natural hot and mineral springs in tourism will support and add value to the current discussions about health, wellness and medical tourism as an area of increasing importance in international tourism.

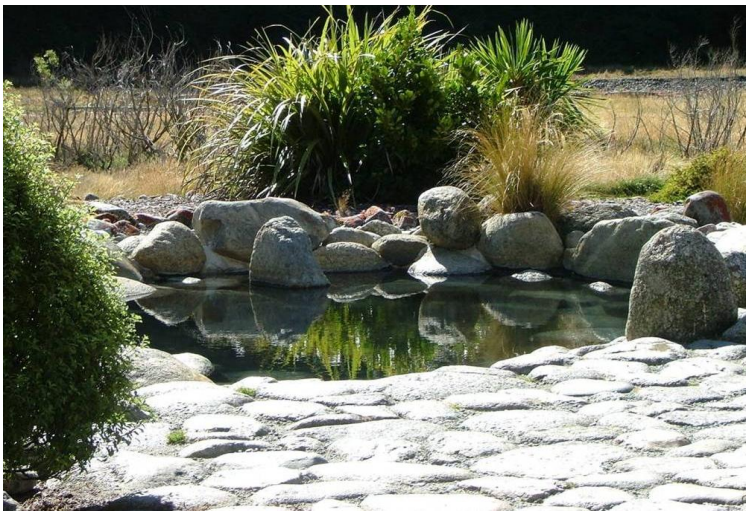

Figure 1.4 *One of the 'natural' outdoor hot pools which were built at Maruia Springs Resort in New Zealand indicates the trend towards copying natural environments to attract visitors (Photo by Author).*

Natural hot and mineral spring resources are important for the development of health resort and spa destinations. While there is popular literature on health and wellness spa tourism available, a paucity of in-depth academic analyses relating to the geophysical origin of the therapeutic waters (other than related to the science of geochemistry or micro bacteriology)

and their significant contribution to traditional healing methods, to the environmental management of geothermal spa tourism, or on the importance of geothermal springs to health, wellness and recreational tourism as a whole is evident (Cohen & Bodeker, 2008; Erfurt-Cooper, 2006; Erfurt-Cooper & Cooper, 2009). This is the second justification for the present research.

The meta-analysis of the literature undertaken as part of this thesis has shown that the majority of publications referring to health and wellness spa tourism are of a 'coffee table' variety, depicting natural hot and mineral springs and other spa resources mainly in terms of their visual characteristics. These publications do not provide detailed assessments of the extent of hot spring use by tourists, customer motivations or the actual effects of the therapeutic and medicinal use of hot springs or of their geological origins. This type of literature is designed primarily for marketing purposes.

Numerous studies and clinical trials have been undertaken to establish the medical significance of geothermal spa treatments (Weisz, 2001). These studies lend support to the common belief that natural hot and mineral springs have curative powers and benefit the healing process of various ailments as reported by the medical professionals (Andreassi & Flori, 1996; Fabiani et al, 1996; Hann, 1996; Ledo, 1996; Omulecki et al, 1996; Picoto, 1996; Routh & Bhowmik 1996; Vassileva, 1996; Wolf, 1996). Studies on the direct health benefits of natural hot and mineral spring have been carried out in Germany, Austria, Russia, France and Switzerland; countries with a long tradition of using geothermal water for medicinal purposes (thermalism) including balneology and hydrotherapy (Högl, 1980; Bar-On, 1989; Nahrstedt, 2004; Pratzel & Schnizer, 1991). The purpose of the present research into the use of natural hot and mineral springs and their role in tourism aims to contribute to the knowledge about the role of natural hot and mineral springs in health, wellness and recreational tourism.

1.4.1 Selection of Case Studies and Countries

Although this thesis addresses the use of natural hot and mineral springs from a global point of view and provides evidence (Chapters 2 and 4) for the worldwide use of natural hot springs in tourism, two separate case studies (Germany and Japan) are included as in-depth studies (Yin, 2003). The use of natural hot and mineral springs in these two countries has been examined through field research carried out over the last decade, either during time of residence or during repeated visits. These case studies are a major component of this thesis.

1.4.2 Contribution of the Research

Research into the use of natural hot and mineral springs and their role in tourism is timely and supports the current discussions about health, wellness and medical tourism as an area of increasing importance in international tourism. This research will therefore close a gap in the academic tourism literature by contributing to the understanding of the role and importance of natural hot and mineral springs in tourism with special consideration of the health and wellness sector. The thesis presents a comprehensive analysis and assessment of the interactions between tourism and the use of geothermal resources such as hot springs and raises awareness about the current size and the future potential of hot spring use worldwide. The research undertaken for this study provides new data to document the magnitude of hot spring based tourism including the health resort and spa sector and offers a new perspective in the discussion of health, wellness and recreational tourism as well as a reference for the historical and cultural use of hot springs worldwide. However, the major contribution is considered to be the model (Figure 1.3), which can be used for the assessment of the role of natural hot and mineral springs in health, wellness and recreational tourism.

1.5 METHODOLOGY

The principal aim of this thesis is to assess the role of natural hot and mineral springs in health, wellness and recreational tourism based on a model developed for this study (Figure 1.3). The generation of new knowledge required a multi-disciplinary approach (Tribe, 2009) drawing from the fields of sociology, history, geology and geography to bring together what is known about natural hot and mineral springs and their role in tourism. To assess the role of natural hot and mineral springs in tourism the research methodology follows the Interpretive Social Science (ISS) paradigm (also known as constructivist paradigm) and includes several qualitative research methods. A multi-method approach as recommended by a number of scholars (e.g. Barton & Lazarsfeld, 1955; Bernard, 1995; Brannen, 2001; Flick, 2006; Greenfield, 2002; Huberman & Miles, 2002; Jennings, 2001, 133-6; Neuman, 1997; Thomas, 2003; Olsen, 2004) gives researchers the option of triangulating the research by using a variety of methods. The research strategy of this thesis consists of a comprehensive review of the academic literature (meta-analysis), two in-depth case studies of hot spring use in Japan and Germany's health and wellness resorts, participant and non-participant observation, and semi-structured interviews with key representatives from the hot spring tourism industry in a number of countries as well as with visitors at hot springs plus a small number of focus groups. This research will contribute to closing a current gap in the tourism

literature, add to the knowledge base in tourism based on natural hot and mineral springs and provide a reference for future research by presenting an assessment of the role and importance of this natural resource in tourism.

1.6 LIMITATIONS

1.6.1 Limitations of Previous Research

A selection of existing academic literature refers to the use of natural hot and mineral springs (Pratzel & Schnizer, 1991; Weisz, 2001) and their medicinal properties (Högl, 1980; Bar-On, 1989; Nahrstedt, 2004; Pratzel & Schnizer, 1991). However, most previous research has neither been global in its approach, nor has it tried to compare and evaluate the different types of natural hot and mineral springs and their applications within different divisions of tourism including health and wellness. While general publications cover health resorts and spa destinations in a stylish magazine context (for example *SpaAsia; Spa Finder; Spa Life*), a lack of academic information relating to the role of natural hot and mineral spring and their therapeutic value especially for health and wellness tourism is apparent. This thesis attempts to redress this imbalance by clarifying the nature and role of geothermal resources in tourism with a special focus on health and wellness tourism, because hot and mineral spring based treatments provide a different experience for the consumer than other forms of spas or wellness therapy (Smith & Puczkó, 2008), although this difference is not well documented in the literature.

1.6.2 Limitations of this Research

Due to the complexity of natural hot and mineral spring tourism the main focus of this research is to assess the role of natural hot and mineral springs in health, wellness and recreational tourism. The recreational element of hot spring tourism is not analysed in-depth in this research. This limitation was necessary to limit the scope of an otherwise too broad a subject.

The research also does not attempt to cover the use of mineral spring water for internal consumption (drinking cures, ‘taking the waters’), nor does it examine the psychological basis for ‘cures’ (Smith & Puczkó, 2008). Instead, the present study concentrates on defining the role of geothermal springs in health, wellness and recreational tourism with data collection a limiting factor due to the lack of academic hot spring tourism literature as well

as current visitor statistics, because to date there is no separation from the general health and spa tourism sector. Moreover, there is no existing framework or model to test and evaluate the role of hot springs in tourism, which presented a further limitation. However, this provided an opportunity for new research as well as the development of a suitable model to assess the role of hot springs. Other limitations were related to the researcher's preference for using secondary sources of data, rather than conducting surveying or extensive in-depth questionnaires, due to the very wide-spread existence of the hot spring resource and consequent perceived difficulties in designing an adequate research instrument.

1.7 OUTLINE OF THE THESIS

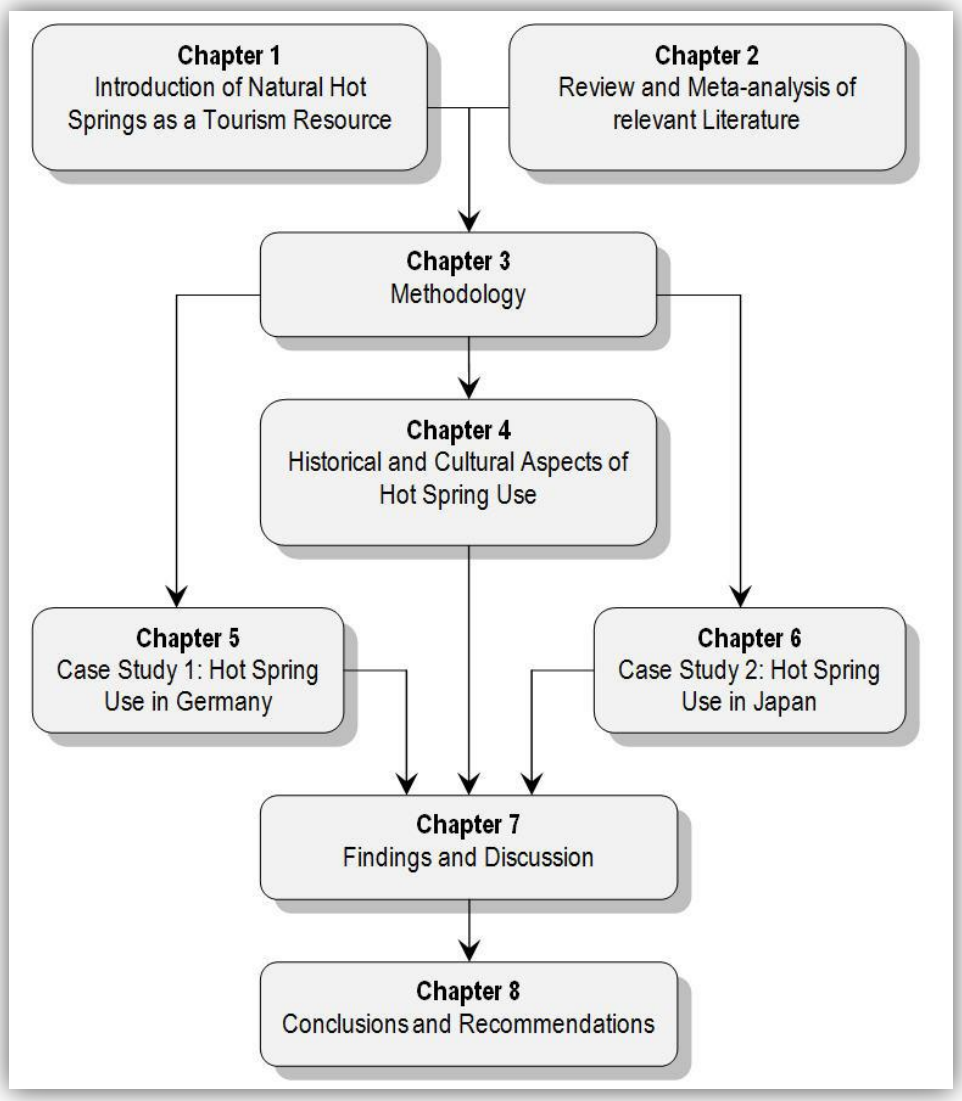

Figure 1.5 *Chapter overview.*

This thesis reviews in detail the various elements that collectively constitute hot spring tourism with experiences and examples from the health, wellness and recreational tourism perspective. Data derived from this analysis was used to create an evaluative model (Figure 1.3) to assess the role of natural hot and mineral springs in tourism with the main focus on health and wellness, including data from case studies of hot spring tourism in two countries (Chapters 5 and 6). The purely recreational side of hot spring tourism was not researched in depth, but is discussed peripherally for comparison. The outline of the thesis (Figure 1.5) is detailed as follows:

Chapter 1 provides a general introduction to the research including definitions of the key terminology, the rationale and purpose of the research, as well as the research aim and the objectives. The chapter notes that this study is using a conceptual model which was developed to evaluate and assess the role of natural hot and mineral springs in health, wellness and recreational tourism. A justification for the topic is provided and the major limitations of previous research are specified, followed by an outline of the thesis;

Chapter 2 reviews the existing literature on hot spring tourism, health, wellness and recreational tourism as well as geothermal tourism and clarifies gaps in the literature, summarises the limitations of previous research, and gives a summary of the methods to close some of these gaps**.** The chapter also provides an introduction to the geophysical background of natural hot and mineral springs used in tourism, as well as an indication of the large number of natural hot spring locations worldwide currently being used or having a potential for future use in tourism especially in the health, wellness and recreational sector. The medical use of natural hot and mineral springs is discussed with a review of the position of medical professionals and government bodies to ascertain the current use of natural hot and mineral springs;

Chapter 3 outlines the methodology in this research, which is based on a meta-analysis of literature including document analyses of previously published and unpublished sources, two major case studies, direct and indirect (personal) observation as well as interviews with key representatives of the hot spring tourism industry. The results of the combined research methods provided the core findings of the thesis about the role of natural hot and mineral springs in health, wellness and recreational tourism;

Chapter 4 analyses the historical and cultural role and importance of natural hot and mineral springs including their connection to religion and mythology. The historical development of

natural hot and mineral spring use worldwide is traced as far as possible with the aim of providing an insight and understanding of the important role of hot springs in a variety of social settings. The different cultural use of water and bathing customs at natural hot and mineral spring destinations provides evidence of the importance of natural hot and mineral springs as a tourism resource;

Chapters 5 and 6 provide two country-based case studies reflecting the historical development and the use of natural hot and mineral springs in the tourism industry. The in-depth case studies from Japan and Germany are representative of the historical, cultural and medical traditions related to the use of natural hot and mineral springs in health, wellness and recreational tourism in these countries. The case study chapters look at bathing customs, health conditions and therapies, the national health insurance systems, government policies and relevant institutions that determine the course of development of natural hot and mineral springs for health, wellness and recreational tourism and identify common elements;

Chapter 7 discusses the findings as they relate to the research aim and objectives and restates the main theoretical and conceptual contributions of this research. The findings presented in this chapter are the summarised results of the assessment of the role of natural hot and mineral springs in health, wellness and recreational tourism using qualitative research methods as well as a conceptual model (Figure 1.3) which was developed for this research;

Chapter 8 presents a conclusion of the research findings, the value of the study, and includes some recommendations and potential directions for future research of the role of natural hot and mineral springs in tourism.

CHAPTER 2
Meta-analysis of Literature associated with the Direct Use of Natural Hot and Mineral Springs

2. 1 INTRODUCTION

Travelling to natural hot and mineral springs for health purposes has world-wide traditions and dates back several thousand years (Erfurt-Cooper & Cooper, 2009). Despite this historical context the academic tourism literature does not offer an exclusive review of past and current use of hot springs in health, wellness and recreational tourism (LaMoreaux, 2005; Lee & King, 2006; Towner, 1996). To date the research on the use of natural hot and mineral springs for health, wellness and recreation has mainly focused on the medical applications of hot and mineral springs in European countries, where thermalism (balneology and hydrotherapy) has been considered as a respected medical treatment method for centuries (Becheri, 1989; Brown, 2011), together with some references on the bathing traditions of Japan (Talmadge, 2006). Even in cases where the health and wellness industry has been studied from a tourism point of view, the academic literature offers few detailed insights into the important role of natural hot and mineral springs in health, wellness and recreational tourism worldwide (e.g. Lee & King, 2006, 2008; Bushell & Sheldon, 2009; Smith & Kelly, 2006; Smith & Puczkó, 2008).

2.1.1 Aim of the Review

The aim of this chapter is to present a review and analysis of literature pertaining to the use of geothermal resources in the form of natural hot and mineral springs in tourism, and to subsequently contribute to the understanding of the role and importance of these natural resources especially within the health and wellness tourism industry. The meta-analysis uses information gained from the existing literature about the tourism industry based on hot and mineral springs, including the historical and cultural background of hot spring use as well as the geological background related to the occurrence of geothermal water sources. To gain a more holistic insight, the chapter also examines relevant literature about health and wellness tourism not based on hot springs for comparison. This research into the use of natural hot and mineral springs and their role in tourism both supports and adds value to the current discussions about health, wellness and medical tourism, which is supported by the work of Bennett, King and Milner (2004); Bushell and Sheldon (2009); Cohen and Bodeker (2008); Smith & Puczkó (2008) and Tabacchi (2010) as an area of increasing importance in international tourism.

The lack of published academic tourism research covering natural hot and mineral spring use in health, wellness and recreational tourism presents a considerable gap in the tourism literature, which became evident during the research for this thesis. The same basic

information regarding the history of natural hot and mineral springs and health, wellness and recreation is referenced or paraphrased time and again, with the same statements on its growth and usage being repeated in a number of texts and websites and therefore not adding any new or useful insights. Despite the interest in health, wellness and recreational tourism the literature has yet to offer a model which can be used as a framework to evaluate hot spring based tourism and separate it from health and wellness tourism in general. The meta-analysis of relevant literature uncovered key aspects of the relationships which need to be incorporated into a model (Figure 1.3), which identifies the role of natural hot and mineral springs in health, wellness and recreational tourism.

This review establishes the current position of research (American Psychological Association [APA], 2001) into hot spring tourism. This review has several purposes: a) to provide the background and theoretical foundation for the discussion of the role of natural hot and mineral springs within the health, wellness and recreational tourism industry worldwide; b) to summarise previous research and identify gaps in the literature (APA, 2001); and c) to identify research objectives based on the research gaps identified in the review of the literature. It should be noted at the outset that most of the literature reviewed examines natural hot and mineral springs and their usage over time from medical, health and wellness, historical and geophysical perspectives rather than from a tourism perspective. This indicates clearly the absence of tourism-based material on natural hot spring use (Erfurt-Cooper & Cooper (2009).

2.2 REVIEW OF HOT SPRING TOURISM WITH SPECIAL CONSIDERATION OF THE HEALTH AND WELLNESS SECTOR

The growing interest in the value of natural hot and mineral springs demonstrates the increasing importance of health (including medical) and wellness tourism. Jackson (1990) comments on this by pointing out that thermal baths were already recommended by Hippocrates in the 3rd century BC for the treatment of particular illnesses such as chest and back pains in pneumonia, respiratory problems, fatigue, aching joints and headaches. A resurgence of interest in recent times in the use of such springs in health resort and spa medicine has been described by Chen, Prebensen and Huan (2008), Parish and Witkowski (1994) and Strauss-Blasche et al (2000) as evident in the combination of medical and surgical treatment of diseases as well as cosmetic surgery with traditional balneology. Moreover, health and medical tourism according to Bennett et al, (2004) and Cohen and

Bodecker (2008) is developing around the separation of home-country medical care systems and treatment destinations.

While natural hot and mineral springs are invariably a subsidiary factor in the decision of individuals to seek medical treatment at an overseas destination as stated by Smith and Puczkó (2008), other scientists and researchers including Andrijasevic and Bartolucci (2004) and Parish and Witkowski (1994) argue that natural hot and mineral springs provide much of the post-treatment wellbeing reported by patients in the health literature. For example in Iceland Ólafsson, Sigurgeirsson and Pálsdóttir (1994) have reported on the therapeutic effects of bathing in geothermal lagoon water for people suffering from psoriasis. Their study included twenty-seven psoriasis patients who bathed in the mineral rich lagoon water for three weeks. The severity of the disease was evaluated before, during and after bathing and the end result showed that bathing in the geothermal lagoon has a favourable effect on psoriasis patients. However, it was suggested by Ólafsson et al (1994) that further research involving longer periods is needed. In a study two years later Ólafsson (1996) highlights the benefits of bathing in the Blue Lagoon, Iceland, which is frequently used as an alternative therapy to treat psoriasis patients from many countries. Since then the Blue Lagoon has become one of the most visited tourist destinations in Iceland and has undergone expansions of their facilities. This included the development of the Blue Lagoon Clinic with a dermatology unit where psoriasis as well as other skin diseases are treated successfully. At the same time multiple research and development activities are carried out at the clinic (Albertsson & Jónsson, 2010; Brynjólfsdóttir, 2010; Guðmundsdóttir, Brynjólfsdóttir & Albertsson, 2010; Gunnlaugsson & Ívarsson, 2010; Kristmannsdóttir, 2010; Ólafsson, 1996; Ragnarsson, 2010).

Geographical descriptions of natural hot and mineral springs and their geological background are further key information sources about their physical aspects as used in health, wellness and recreational tourism (Dowling & Newsome, 2006). The fact that people are attracted to natural geothermal resources for their curative powers and the therapeutic impact of their mineral content is noted by Bernstein (1996) and is supported by Nahrstedt (2004) and Smith and Jenner (2000), who agree that this has always implicitly been one of the main reasons for choosing these destinations over those that do not feature natural hot springs.

The reviewed literature also suggests social, cultural and religious interests have been strong motivations for the use of natural hot springs throughout recorded history (Bishoff, 2001;

Bullard, 2004; Erfurt-Cooper & Cooper, 2009; Havins, 1976; Melillo, 1995) that have gone hand in hand with the need to deal with the health and wellness concerns of human communities. Cataldi and Burgassi (1999) note that religious groups in ancient times considered *all natural springs* as divine gifts and therefore as sacred, and Bullard (2004) refers to springs in his book *'Healing Waters- Missouri's Historical Mineral Springs and Spas'* as spiritually significant and as symbols for purification and renewal. Altman (2002) has published a book titled *'Sacred Water: The Spiritual Source of Life'* to the power of water as a symbol of life and sustenance and as essential to our survival. Altman makes a special reference to hot springs being considered by *shamans* as entrance ways to the underworld. One example is the hot spring inside the *Plutonium* in Hierapolis, Turkey, where thousands of years ago priests claimed miracles to enhance their standing in the community by using the local subterranean geothermal manifestations (Pers. communication with tour guide at this historic site).

Clark (1999) provides details of religious use of water in his book *'Japan, A View From The Bath'* by giving the example of *misogi*, an ancient form of purification with water, which features prominently in *Shintoism* to this day. Arvigo and Epstein (2003) have contributed to knowledge on the religious use of water with the book *'Spiritual Bathing: Healing Rituals and Traditions from Around the World'*, in which they argue that water, combined with prayers, has been used for centuries to find a spiritual connection with the Divine. The most significant use of water in this sense is for baptism by immersion, which is practiced by Christian denominations worldwide and natural hot and mineral springs are frequently utilised for this purpose (Erfurt-Cooper & Cooper, 2009; Lee, 2004). Hjálmarsson (1993) suggests in his book *'History of Iceland'* that when Christianity was introduced in Iceland in the year 1000 AD the new Christians frequently made use of the natural hot springs in preference to immersion in cold water. A research paper presented at a conference in Italy and titled *'Thermalism between Past and Future'* by Monti (2003) describes the ritual immersion in water as facilitating rebirth through purification; important religious and cultural aspects of the use of natural water sources including hot and mineral springs.

In addition to the socio-cultural aspects including the association with religious practices Becheri (1989) and Erfurt-Cooper and Cooper (2009) suggest that there is a great advantage by choosing a pleasant natural environment combined with therapeutical benefits of natural hot and mineral springs. These aspects have been at the core of the role of natural hot and mineral spring use and the health concerns of civilisations over hundreds, if not thousands of years (Hall, 2003) across Europe, Asia and the Americas. A further important point to note is

the practice of joint marketing or co-branding natural of hot springs with cultural or historical settings to attract a wider range of tourists and enhance the visitor experience. This concept of creating a market synergy is well established at many destinations worldwide (e.g. New Zealand, Japan, Iceland, Turkey, USA). In Turkey for example the rich culture surrounding the natural hot and mineral springs is one of the value adding features for visitors, who want to combine health, wellness and recreational activities during their visit.

The remainder of this chapter examines the health and wellness concept, its development in recent times, and the integration of natural hot and mineral springs in this tourism sector. Further, a brief summary of the historical use of hot springs is included as well as an analysis of the geological background relevant to hot spring tourism. Attention is also given to the literature that investigates the recreational and medical use, as well as the position of the medical profession. This chapter provides a statement of the gaps in the literature and points out the limitations of previous research.

2.2.1 The Health and Wellness Concept

By the late 20th century an awareness of the importance of fitness and wellbeing emerged worldwide and was subsequently marketed for all age and income groups (Erfurt-Cooper & Cooper, 2009). The resulting wellness concept as discussed by Bywater (1990); Hall (2003); and Miller (2005) is largely based on people's growing concern for their personal wellbeing in the face of ageing, especially on the part of many baby boomers, but has expanded to include all the following generations. While individuals and communities have become more aware of their personal options for improving their health through lifestyle management and a choice of preventive therapies (Cohen & Bodeker, 2008, pers. communication C. Davidson, 2008, 2009), for many this increased awareness of the need for a healthy life-style began to involve travel to health resorts and spas. According to Becheri (1989); Douglas, Douglas and Derrett (2001); and Erfurt-Cooper and Cooper (2009) access to the beneficial effects of natural hot and mineral springs is frequently sought.

In Chapter 1 it was noted that health tourism frequently refers to travel undertaken to seek medical and surgical treatment as well as to visit health resorts or spas which offer beneficial therapies. This clearly sets health tourism apart from wellness tourism (Verschuren, 2004) where travellers are generally seeking therapies to maintain existing levels of wellbeing as well as improving their health to a point where future illness may be prevented (Erfurt-Cooper & Cooper, 2009). In this discussion the role of natural hot and mineral springs in

health, wellness and recreational tourism and their effect on the physical and mental wellbeing (health and wellness of body, mind and soul) of the tourist are reviewed and analysed. Medical conditions (Table 5.0) and treatment regimes (Table 5.0) are identified in the case studies in Chapter 5 and Chapter 6 to validate the importance of hot and mineral springs as a natural and renewable tourism resource.

2.2.2 Hot and Mineral Springs in Relation to Health, Wellness and Recreation

The increased motivation to seek out health, wellness and recreational benefits from natural hot and mineral spring waters and the consequent revival of many hot spring resorts and spas was noted by some authors from about 1990. At the time Bywater (1990) assumed that health resorts and spas combined the medical and the tourism aspects to maintain their visitor numbers and to meet the demands from an increase in health tourism. Later Cockerell (1996) noticed that in Europe the health resort and spa industry is divided into the medical spa market and the more conventional side of tourism. However, it was not until the period 2004-9 that the first systematic and comprehensive analyses of health and wellness tourism as a whole began to be published, although with few exceptions these studies do not focus on the role of natural hot and mineral springs in health, wellness and recreational tourism. Some of these exceptions include a study by Lee and King (2006) of the Taiwanese hot spring tourism sector, which was carried out with the purpose of identifying the individual aspects of destination competitiveness and their importance, not with a direct focus on hot springs as a tourism resource. In a second study Lee and King (2008) assessed the potential of Taiwan's rapidly growing hot springs tourism sector, and provide decision makers in the tourism industry and in the government with relevant advice about the determinants of destination competitiveness including guidance for future development of hot spring tourism. Hsieh, Lin and Lin (2008) explored the expectations of service quality of hotel guests in Taiwanese hot spring hotels to identify customer preferences. Their research provides hot spring hotel managers with recommendations and guidance for improvement.

Lee, Ou and Huang (2009) have studied the destination attractiveness of Taiwan's Hot Springs Tourism Sector by exploring the demand-side perspective resulting in a number of aspects of destination attractiveness, which include *'safety and security', 'transportation infrastructure', 'leisure and recreation', 'accommodation', 'food', cultural assets' and 'natural resources'*. Although the study was undertaken in a hot spring tourism context, the research does not necessarily reflect the importance of hot springs, but the overall setting in which hot spring tourism occurs. A recent research paper by Lee (2010) reviewed visitors'

experiences at hot spring recreation areas in Taiwan. However, hot springs were not discussed as the actual resource for tourism, but accepted as an aspect of the destination which enhances tourism for health, wellness and recreational purposes.

Taiwanese hot spring tourism has also been investigated by Deng (2007) in an importance–performance analysis (IPA), designed to give business managers a competitive edge and assist in enhancing the quality of service. Morais and Lin (2010) use Taiwan's hot spring tourism sector to test a model for destination attachment and the reasons why visitors patronise a place with repeat visits including their potential future behaviour. This research based on Taiwan's hot spring tourism does not investigate the role of natural hot springs as a tourism resource, although the springs are used as the background setting to carry out research which in fact could be applied to any other tourism sector. The example of Taiwan is included to show the direction that tourism research can take by outlining the research gap, which clearly indicates that even in cases where tourism is analysed in association with the hot spring tourism sector, the actual role of natural hot and mineral springs is not explored.

2.3. NATURAL HOT AND MINERAL SPRINGS AS A TOURISM RESOURCE FOR HEALTH, WELLNESS AND RECREATIONAL TOURISM

Water has been considered for several thousand years as a natural element beyond modification – an element of such vital importance that it is impossible to do without either physically and emotionally (Erfurt-Cooper & Cooper, 2009; Fabiani et al, 1996). As part of this, geothermal water or natural hot spring water was mentioned by Pliny the Elder (n.d.) who referred to the health benefits of their mineral content (Jackson, 1990). In ancient Greece water was known as the *'Corpus Ippocraticus'*, and *Herodotus* described the use of natural hot and mineral springs in the treatment of various diseases in a controlled medical system (Fabiani et al, 1996:571). As a result, Asensio (2002) notes that the idea of water as a curative and beneficial element is not new, and is coming back into fashion in the 21st century. The reviewed texts by Bakht (2000), Danino (1999) and Kenoyer (2005) indicate that the oldest sites discovered to date are thought to have been a) devoted exclusively to bathing for cultural, religious and health purposes, b) are suggested to be in India and Pakistan, and c) are considered to have been built prior to 2000 BC. A more detailed review of the literature in relation to the historical use of natural hot and mineral springs is provided in Chapter 4, where the history and the cultural traditions of hot spring use are discussed in more detail. It is readily apparent though that the use of natural hot and mineral springs goes

back several millennia with an ongoing reputation for their curative value due to the beneficial mineral content of natural hot springs.

2.3.1 Natural Hot and Mineral Springs in the Literature

The discussion of the role of natural hot and mineral springs in both the tourism and other academic literature includes research on the history and heritage of bathing by Altman (2000) and Lund (2005) and aspects of 'healing springs' covered by a number of authors including Asensio (2002) and others (Bullard, 2004; Havins, 1976; Hotta & Ishiguro, 1986; Leavy & Bergel, 2003; McMorran, 2008) and their geophysical background (Cataldi, Hodgson & Lund, 1999). However, the literature rarely refers to the tourist implications of these investigations. This is despite the fact that natural hot and mineral springs are distributed worldwide and are popular in many countries, particularly in regions with volcanic activity (e.g. New Zealand, Iceland, Japan) and in regions with large groundwater aquifers like the Great Artesian Basin (GAB) in Australia and the Guarani Aquifer in South America (Pesce, 2002).

The mineral content of natural hot and mineral springs with their special geochemistry has made them a much sought after commodity in the development of health and leisure destinations (health resorts and spa facilities), depending on their location, temperature, mineral content and flow rates (Hodgson, 2004; Zuniga, Su & Sanchez, 2003). As pointed out by Erfurt-Cooper and Cooper (2009), the role of natural hot and mineral springs is subject to variations which depend on individual cultural traditions and social settings. Within these the use of hot springs for health, wellness and recreation can show much diversity within geothermal spas and treatment facilities.

In countries with a longstanding tradition of hot spring use for medical purposes (e.g. France, Germany, Austria, Russia, Bulgaria and Hungary) there is a focus on a more clinical approach to their use in health treatments. Countries in Asia, Oceania and the Americas (e.g. New Zealand, Australia, China, Japan, Argentina, Uruguay, Brazil, Canada and the USA) however appear to focus more on the leisure and recreational side as well as the beauty therapy-based wellness use of natural hot springs. In recent times many geothermal spas try to achieve a balanced offering of both approaches to attract a broader range of clients. The Blue Lagoon in Iceland is a unique example with a) a large geothermal pool for recreational purposes and b) specialised treatments in the Blue Lagoon dermatologic clinic for people suffering from skin diseases such as Psoriasis (Blue Lagoon, 2008; Brynjólfsdóttir, 2010).

Many visitors to hot spring health resorts and spas are not aware of the geological background of this resource. Lund (2005) is one of the few authors who has researched the combination of balneology and the geology of geothermal springs including their health, wellness and recreational aspects. His research of world practice shows how people have used geothermal and mineral waters for bathing and health for thousands of years by linking the history of balneology back to Roman times, and forward to its current use throughout Europe and Japan, and elsewhere in the World. Lund's research and that of organisations such as Tourism Victoria (2007) confirm the longstanding history of natural hot and mineral spring use for beneficial purposes, although the authors refer to the Romans as the first users, ignoring the ancient traditions of many other countries worldwide.

According to Lund (2005) people in the United States today visit spas to improve their health and appearance, with the emphasis more on stress relief and relaxation than on targeted treatment under strict professional medical supervision as is the custom in many European countries. In his work he provides several examples of spa and treatment facilities in European and Asian countries to demonstrate the current size of the health spa industry based on natural hot and mineral springs:

- Russia - 3,500 spas and 5,000 'reconditioning centres' run by the government;
- Slovakia and Czech Republic - 52 mineral water health spas and more than 1,900 mineral springs with approximately 220,000 people receiving treatment which is fully covered by the national health insurance;
- New Zealand - the Queen Elizabeth Hospital in Rotorua has a long tradition in using geothermal springs and volcanic muds for health treatments;
- Japan – approximately 150 million people per year make use of 25,000+ geothermal springs for a range of uses (Lund, 2005).

For these examples Lund refers to two main sources: *A Guide to Japanese Hot Springs* by Hotta and Ishiguro (1986) and *Stories from a Heated Earth* by Cataldi et al (1999). Hotta and Ishiguro's text is analysed in more detail in Chapter 6 (case study Japan). Cataldi et al (1999) have published an edited text which provides a historical overview of the different types of usage of geothermal springs in a number of countries, including their use in health and wellness treatments, as well as an outline of the social and cultural motivations.

One of the few authors who discuss the benefits of natural hot and mineral springs in a text for the general public is Altman (2000) whose central thesis is that water is a powerful healing tool which rejuvenates the body, mind and soul, while preventing a host of illnesses.

Bathing in natural hot and mineral springs as well as drinking their waters is seen as a part of the holistic approach to health and wellness. Altman's work includes a review of the healing modalities and a discussion of diseases and disorders followed by a brief list of springs around the world where particular disorders are treated. He makes the point that healing waters vary greatly and they can be enjoyed in a variety of environments from an undeveloped natural pool in the countryside, which can accommodate only one bather, to a large swimming pool at a luxury spa resort. In addition, Altman's text contains a directory of several hundred natural hot and mineral springs, ranging from the best-known to the most obscure.

In some countries, to be recognised as beneficial, natural hot spring water must flow from the ground at a minimum temperature. In Japan a natural spring is only considered therapeutic if the spring water flows from the earth at a temperature of at least 25^{o}C and contains at least a minimum amount of certain mineral components as stipulated in the Japanese *Hot Spring Law* of 1948 (Talmadge, 2006). A study by Marques, Aires-Barros and Graça (2000), which analysed natural hot and mineral springs in Portugal, noted that geothermal waters, with discharge temperatures ranging between 25ºC and 45 ºC, are used by local spas for diversified treatments. It is challenging to evaluate the effectiveness of treatment with natural hot and mineral springs because these waters are often used as an adjunct to a holistic approach to medicine, which in some countries (for example the United States) falls outside the medical profession's accepted worldview and as a result their therapeutic value is disputed (Bullard, 2004; Valenza, 2000).

Another contribution to the limited selection of recently published books about the role of natural hot and mineral springs in health, wellness and recreation is *Healing Waters* by Loring Bullard (2004). The main focus of this text is on the American state of Missouri and its mineral springs and resorts, which have in the past played a vital role in the social and economic development of that State. A limiting factor of this book is a timeframe from 1800 to about the 1930s, during which period at least eighty (80) sites with natural hot and mineral springs existed in Missouri. These places would now be described as health resorts or spas, because at that time the public and medical professionals believed in the curative values of mineral waters and people were drawn by the healing properties of the springs. At that time, towns were frequently founded at the source of natural hot springs until medical science and popular opinion in America had begun to discount the immediate medical usefulness of mineral waters as advances were made in microbiology and biochemistry leading to the

promise of drug-based cures for many of the ailments treated until then at natural hot spring spas (Bullard, 2004).

The *Spa Encyclopedia* by Leavy and Bergel (2003) adds information about the therapeutic value of natural hot and mineral springs. A variety of examples of health resorts and spas with and without natural hot and mineral springs provides an overview of the current balneological treatments within the spa industry in Europe, Asia and America. Recently Hall (2003) has contributed to this discussion in a chapter on spa and health tourism although his contribution is oriented more towards the growth of health tourism as an adjunct of leisure, sport and recreation. In this chapter Hall notes that the International Union of Tourist Organizations (IUTO), the predecessor of the UN World Tourism Organization (UNTWO), as far back as 1973 defined health tourism as

> *'…the provision of health facilities utilizing the natural resources of the country, in particular mineral water and climate…'.*

This definition recognises the importance of natural hot and mineral springs in health and wellness spa tourism as acknowledged by Goodrich and Goodrich (1987); Hall and Kearsley (2001); and Towner (1996). Hall (2003) maintains that the spa tourism concept has considerably broadened to include resorts, which are not based on natural hot and mineral springs and instead focus on other natural resource attributes such as climate. It is the contention of this thesis that this pattern has in fact significantly changed yet again since the rise of health and wellness tourism over the last two decades to one where a significant majority of spas and resorts now at least imply that they have an association with natural spring resources, even if it is just through the sale of by-products such as skin treatments based on geothermal resources (mineral powders, mud) and/or bottled mineral water (White, 2009). The most recent text covering natural hot springs and their role in health, wellness and recreational tourism is by Erfurt-Cooper and Cooper (2009) and takes a global approach to the use of geothermal resources for a number of tourism sectors, including health, wellness and recreational tourism as well as ecotourism and geotourism.

Several authors (Douglas et al, 2001; Hall, 2003; Lee & King, 2008; Smith & Jenner, 2000; Stein, Dev & Tabacchi, 1990) have recognised that a 21st century spa is foremost a facility where the primary interest lies in health, wellness and recreation and that the spa industry has shown substantial worldwide growth since the middle of the last century (Tabacchi, 2010). Leavy & Bergel (2003) in their Spa Encyclopaedia make the important point that people frequent spas for many reasons; for example some seek spa treatments because

scientific medicine has failed to give them the relief they crave, while others visit spas for recreational reasons. However, despite the informative side of this text the combination of natural hot and mineral springs and health, wellness and recreational tourism is not addressed.

The literature on the motivations of spa visitors is even sparser with recent work by Mak, Wong and Chang (2009) on Hong Kong spa goers amongst the few examples available at the time of writing this review. Mak et al (2009) confirm in their study *'The Motivations and Characteristics of Spa-goers'* that despite the rapid expansion of the spa sector their review of the literature on the subject revealed a paucity of studies. This paucity is even greater when focusing on geothermal spa destinations. Although their study is based on a survey of Hong Kong spa-goers and does not include natural hot and mineral spring spas, a number of the motivations in their findings are in principle the same as for people who choose a geothermal spa as a destination to improve their health and wellbeing. The motivational factors identified by Mak et al (2009) reveal that 'relaxation and relief', 'escape', 'self-reward and indulgence', and 'health and beauty' are important factors that motivate travellers to visit spas. These factors are considered when using the conceptual model (Figure 1.3) to assess the role of natural hot and mineral springs in health, wellness and recreational tourism.

A number of researchers including Deng (2007); Hsieh, Lin and Lin (2008) and others (Lee & King, 2006, 2008; Lee et al, 2009; Morais & Lin, 2010) have studied the hot spring tourism sector of Taiwan and investigated the frequency of hot spring visits, with Lee and King (2006, 2008) noting that hot spring spa proprietors could extend their appeal into health protection and medical treatments, as the Taiwanese are becoming increasingly concerned with good health and longevity as motivators for travel. Their combined work supports the main contention of this thesis that natural hot and mineral springs are becoming more important in health, wellness and recreational tourism. In Japan on the other hand onsen developments not only use natural hot springs which are abundant near active volcanic areas (Yoshiike, 2003), but these destinations use joint marketing or co-branding of cultural, religious and geological heritage aspects to motivate tourists, although they do not always represent the local cultural past (McMorran, 2008), but instead offer themed entertainment sites with features borrowed from different countries of origin (e.g. Spa Hawaiians - Yumoto, Japan. Analysis of the literature shows therefore, that hot and mineral springs, although widely recognised as a natural resource and part of the health, wellness and recreational tourism sector, have not been discussed in further detail by the literature.

2.3.2 Health and Wellness as Motivation for Travel

The growing phenomenon of travel for the purpose of health, wellness and recreation is presented in recent research by Bushell and Sheldon (2009); Mak et al (2009) as well as by Smith and Puczkó (2008) as being based on lifestyle change, improved quality of life, preventive medicine, holistic tourism, transformational travel, and healthy environments**.** However, this literature does not deal with the role of natural hot and mineral springs as such, except where their existence is ancillary to the main argument or is recognised in a small case study to identify and understand wellness as a motivator for tourism. Bushell and Sheldon (2009) provide a series of discussions and case studies organised around three themes; the conceptual links between wellbeing and tourism, the constructs of wellness tourism and motivations and experiences (of wellness tourists). One of the case studies by White (2009) in Bushell and Sheldon's text recognises the need to harness geothermal spas and wellness opportunities, but this appears to be the only in-depth discussion of the role of natural hot springs in this text.

A recent book by Smith and Puczkó (2008) provides a review of health and wellness tourism, but again the main focus is on a) the range of motivations that drive tourists in this sector, b) the products that are being developed to meet their needs and c) the management implications of these developments. The motivations for visiting natural hot and mineral springs in the health, wellness and recreational tourism industry is underreported and while there are a range of international case studies in the book, most illustrate the mind and spirit benefit side of the discussion, not the physical health benefits derived from natural hot and mineral springs. Although the authors mention and support the importance of natural hot and mineral spring spas in general terms, they do not provide in-depth discussion on geothermal resources and their specific longstanding role in health, wellness or recreational tourism.

2.4 THE GEOPHYSICAL BACKGROUND OF NATURAL HOT AND MINERAL SPRINGS

The literature that examines the geophysical background of natural hot and mineral springs including some discussion about the mineralogy of natural hot and mineral springs and their role in tourism is generally ignored (Erfurt-Cooper & Cooper, 2009). However, while the tourism literature does not cover the geology and mineralogy of natural hot and mineral springs, short paragraphs are included in most geology and mineralogy textbooks (compare texts by Einarsson, 2005; Guðmundsson & Kjartansson, 1996; Högl, 1980; Hróarsson & Jónsson, 1992; McGeary, Plummer & Carlson, 2001; Montgomery, 2006; Mussett & Khan,

2000; Skinner, Porter & Park, 2004; Thompson & Turk, 1999; Thordarson & Hoskuldsson, 2002) and more detailed descriptions in geological research papers (D'el-Rey Silva, Walde, Campos & Cipullo, 2008; Pentecost, Jones & Renaut, 2003) as well as papers in a number of science journals. General publications by authors including Altman (2000), Bullard (2004), Lund (2000), Neff (1995), Talmadge (2006) and Valenza (2000) usually include a section about the basic geology of the region with descriptions of the different types of geothermal resources which are generally associated with varying degrees of therapeutic benefits or even curative value due to their mineral content. These minerals and trace elements (Table 2.1), which are brought to the surface from groundwater reservoirs where the water is heated at depth by various processes such as pressure, friction, time and/or volcanic activity (Stanwell Smith, 2002) are the most sought after elements by visitors to health resorts and spas (Table 2.2).

Table 2.1 *List of the most common elements found in natural hot and mineral springs (Compiled by Author).*

Main elements in spring waters	Other substances present as trace elements	Main gases in solution
Calcium (Ca) Chloride (Cl) Fluorine (F) Iron (Fe) Magnesium (Mg) Potassium (K) Silica (SiO_2) Sodium (Na) Sulphate (SO_4)	Aluminium (Al) Arsenic (As) Boron (B) Bromide (Br) Caesium (Cs) Cobalt (Co) Copper (Cu) Iodine (I) Lithium (Li) Zinc (Zn)	Carbon dioxide (CO_2) Hydrogen sulphide (H_2S) Nitrogen (N) Oxygen (O) Radon (Rn) Argon (Ar) and Helium (He) can occur in some sulphur springs

Table 2.2 *The therapeutic value of the mineral content of natural hot and mineral springs (After Eyton's Earth, 2010).*

Arsenic	While arsenic in larger doses is toxic in the human body, minute amounts may assist the body with plasma and tissue growth. Foot bathing in mineral waters with a high content of arsenic is used to address fungal conditions of the feet
Bicarbonate	Balneotherapists utilis e bicarbonate waters for bathing to address hypertension and mild atherosclerosis
Boron	Boron builds muscle mass, increases brain activity and strengthens bones
Chlorides	Saline hot springs are rich in sodium chloride. Mineral springs naturally rich in chlorides, in amounts between .5 - 3%, are considered by some researchers to be beneficial for rheumatic conditions, arthritis, central nervous system conditions, posttraumatic and postoperative disorders, as well as orthopaedic and gynaecological disease
Magnesium	Magnesium converts blood sugar to energy and promotes healthy skin
Potassium	Potassium assists in the normalization of heart rhythms, assists in reducing high blood pressure, helps to eliminate body toxins and promotes healthy skin
Sodium	Sodium and natural salts assist with the alleviation of arthritic symptoms, and may stimulate the body's lymphatic system when used in baths
Sulphur and Sulphates	Hot Springs rich in Sulphur are used to address a wide variety of conditions, including skin infections, respiratory problems, and skin inflammations

Apart from individual concentrations of minerals and a broad temperature range, natural hot and mineral springs contain additional factors like varying pH levels, low level radioactivity as well as gases in solution. All these variables have been investigated by scientists from a range of disciplines, including geochemistry, biochemistry and microbiology (see Fouke et al, 2000; Kruse, 1997; Renaut & Jones, 2003). Medical specialists (Ghersetich & Lotti, 1996; Jorden, 1631; Parish & Lotti, 1996) have suggested that the curative effect of natural hot springs is linked to the absorption of minerals and metallic trace elements through the skin. In studies by Parish and Lotti (1996) support the claim that skin conditions such as atopic dermatitis and psoriasis can be effectively treated by bathing in mineral spring water.

The geological background of natural hot and mineral springs is rarely given any consideration in the academic tourism literature. However, science and medical journals such as '*Clinics in Dermatology, Bulletin d'Hydrogéologie, Journal of Basic Microbiology, Geological Society of America, Environmental Geology, Geothermal Heat Bulletin* and *Environmental Health and Preventive Medicine*' discuss the benefits of natural resources for health and medical use. A wide range of research papers and academic journal articles were reviewed to obtain references related to the geophysical aspects of natural hot and mineral springs to assess the role of natural hot springs for health, wellness and recreational tourism.

2.4.1 Review of Hot Spring Data covered in the Science Disciplines

As already noted, in other scientific fields such as microbiology, geology, hydrogeology and environmental geology the nature and the role of natural hot and mineral springs have been discussed (Table 2.3) more extensively. However, even the science journals describing natural hot springs as beneficial for health and medical purposes generally do not correlate to this with travel and tourism. Nevertheless, these research articles are further evidence for the important role of natural hot and mineral springs for health, wellness and recreational tourism. The following examples provide a brief analysis of the content of scientific publications discussing geothermal resources. Many scientists take the study of natural hot and mineral springs as a serious topic and have analysed their properties and categorised them according to their mineral content. Lambrakis and Kallergis (2005, *Hydrogeology Journal*) for example discuss their research which looked at the hydrogeological and hydrochemical characteristics of Greek geothermal resources. Their paper takes into account a) the geographical distribution of [mineral and thermal springs] in Greece, b) the chemical analyses of Greek geothermal springs, c) the isotopic composition of geothermal spring waters, d) water–rock interactions, and e) the classification of geothermal springs. Despite

the fact that Lambrakis and Kallergis do not mention hot spring tourism as such, their research contributes valuable information to the destination development process, during which technical and scientific knowledge about the exploitation of geothermal resources is essential.

The journal *Environmental Geology* primarily publishes scientific research associated with the geophysical aspects of natural hot and mineral springs, but occasionally refers to direct use of geothermal resources such as by health resorts and in balneology. For example Vylita and Žák (2009) mention in their paper the protective restrictions which are in place for the hot spring system of the famous spa town *Karlovy Vary* (Karlsbad, Czech Republic), and which have been repeatedly upgraded since 1861. Protection zones extend in all directions from the hot spring system and its source and were established to restrict or exclude activities such as building, mining and the transport of hazardous waste materials. This is a clear indication of the importance of this natural hot spring system for Karlsbad and shows the efforts of the science community to protect natural resources for future use.

Voronov (2004, *Environmental Geology*) examined Radon-rich geothermal waters in Russia, where approximately 30 natural mineral water springs contain high levels of radon and are considered to have proven curative value. Voronov addresses the question whether the use of radon-rich waters is potentially harmful due to elevated levels of radioactivity, which in his opinion deserves consideration although he argues that it may be possible to regulate the therapeutic effects by varying the duration of the treatment with radioactive water. This research looks closely at the safety issues related to certain natural hot and mineral springs.

Kralj, Eichinger and Kralj (2009, *Environmental Geology*) acknowledge the geological settings of the Benedikt Area in Slovenia. Mineralogical and geochemical studies were undertaken and the composition of geothermal water and its origin was analysed to determine whether it is useful for balneology and meets the demands for bottled mineral water for internal use. The water under investigation is noted by Kralj et al (2009) as suitable for drinking and can also be characterised as healing water rich in CO_2, suitable for bottling as well as balneology. Kralj et al point out that for long-term sustainable use, the reinjection of used thermal water is highly recommended to preserve this geothermal source for future generations.

Pentecost et al (2003, *Canadian Journal of Earth Sciences*) investigated definitions of hot, thermal and mineral springs to address the inconsistent usage of the terms *hot, thermal and warm springs.* Pentecost et al used a questionnaire to establish two major benchmarks in the

form of an objective classification of natural springs at different temperatures: a) the human body temperature and b) the mean annual local air temperature. Natural springs which emerge at temperatures above the core human body temperature of 36.7°C should therefore be defined as 'hot springs' as a realistic point of reference (Pentecost et al, 2003).

Table 2.3 *Other journals reviewed from a number of fields including Earth Sciences, Microbiology and Geothermics (Compiled by Author).*

	Journal Title and Topics of Articles	Editions
1	***Parks & Recreation***	Vol 40 (10) pp 30-37 (2005)
2	***Journal of Sedimentary Research*** *- Hot Springs*	Vol 70 (3) pp 565-585 (2000)
3	***Geothermal Heat Bulletin (GHC)*** *- Spa – Thermal Waters, Hot Spring Resorts, Thermal Spas, Bath Spa Project, Thermal Manifestations*	2000, 2002, 2003, 2004
4	***Journal of Basic Microbiology*** *- Hot Springs, Thailand*	Vol 44 (6) pp 430-444 (2004)
5	***GeoJournal*** *- Geothermal Waters of Slovakia*	Vol 35 (4) pp 431-442 (1995)
6	***Geothermics*** *- Direct Uses of Geothermal Energy, Water Chemistry*	Vol 27 (3) pp 331-260 (1998) Vol 30 (1) pp 29-68 (2001) Vol 34 (6) pp 691-727 (2005)
7	***Environmental Geology*** *– Bath Spa, England (Kellaway G.)* *Environmental geology of Bath, UK (Kellaway G.)* *Waters of Hot Springs NP (Sniegocki, R.T.)* *Bath Hot Springs (Kellaway, G.)* *Thermal Springs of Aachen (Herch, A.)* *Pamukkale, Turkey (Dilsiz, C.)* *Xiaotangshan hot spring in Beijing, China (Haiyan, Z. et al)* *Hot springs in Tunisia (Bouri et al)* *Karlovy Vary thermal water system (Vylita & Zak)*	Vol 24 (2) pp 99-111 (1994) Vol 26 (3) pp 189-191 (1995) Vol 27 (2) p 79 (1996) Vol 28 (1) pp 34-39 (1996) Vol 39 (5) pp 437-447 (1999) Vol 41 (7) pp 776-784 (2001) Vol 53 (7) pp 1483-1489 (2007) Vol 54 (7) pp 1473-1484 (2008) Vol 58 (8) pp 1639-1644 (2009)
8	***Canadian Journal of Earth Sciences*** *- Hot Springs, Hot Spring Systems (Pentecost, A.)*	Vol 40 (11) pp 1443-1446 (2003)
9	***Journal of the American Oriental Society*** *– Hot Spring Bathing Customs (Schafer, E.H.)*	Vol 76 (2) pp 57-82 (1956)
10	***The French Review*** *- Thermal Spas (Tilton, E.M.)*	Vol 54 (4) pp 566-572 (1981)
11	***Isis*** *- Spas, Mineral Waters, and Hydrological Science (Weisz, G.)*	Vol 92 (3) pp 451-483 (2001)
12	***Geological Society of America*** *- Classification of Springs*	Vol 37 (7) p 324
13	***Geowissenschaften*** *- Hydrogeothermaler Speicher* *Sonderheft Geothermie (Special Edition – Geothermics)*	Vol 15 (8) pp 244-252 (1997)
14	***Economic Geography*** *- German Tourist Trade*	Vol 12 (2) pp 205-216 (1936)
15	***Die Naturwissenschaften*** *- Heilquellen*	Vol 21 pp 497-499 (1933)
16	***Journal of Hazardous Materials*** *- Thermal Water*	Vol 60 (2) pp 205-210 (1998)
17	***Folklore*** *- Contemporary Bath (Bowman, M.)*	Vol 109 pp 25-31 (1998)
18	***Geochemical Journal -*** *Tamagawa Hot Springs*	Vol 37 pp 649-662 (2003)
19	***Hydrogeology Journal -*** *Greek thermal springs*	Vol 13 pp 506–521 (2005)

The articles in this review of the journals (Table 2.3) have contributed significantly to understanding the scientific basis of natural hot and mineral springs. While this research may not directly refer to tourism, it provides evidence for the importance of natural hot springs in science research, on which the development of hot spring facilities is based. Scientists also

investigate environmental issues arising from visitor pressure on natural hot springs, as frequently over-exploitation has led to a depletion of this natural resource.

In summary, the reviewed literature has explained the key geophysical components of natural hot and mineral springs, and analysed several noteworthy locations as examples. This review notes that the relevance of beneficial minerals to health, wellness and recreational tourism is recognised and supported by hot spring destinations on a global basis. It shows that the role of geophysical and mineralogical factors in the hot spring experience with emphasis on the location, type and mineral constituents of geothermal springs in their physical, social and economic environments is understood, but rarely discussed in the tourism literature. The awareness of geophysical aspects related to natural hot and mineral springs is greater in the fields of ecotourism and geotourism, where extreme hot springs (e.g. geysers) are used as visual attractions within their natural environment. Here they are mainly serving the purpose to showcase the uniqueness of geothermal phenomena to recreational visitors and offer interpretation and education related to unique natural environments.

2.5 MEDICAL USE OF NATURAL HOT AND MINERAL SPRINGS

The following discussion examines the medical use of natural hot and mineral springs and how this has assisted geothermal water sources to become a significant tourism resource. Geothermal springs with high mineral contents are often termed ‘medicinal waters’ not just due to their reputation of curative effects, but as a result of their physical and chemical characteristics, which are applied in therapies to prevent illness and to restore health (Smith & Jenner, 2000; Strauss-Blasche et al, 2002). Fouke et al (2000) as well as Renaut and Jones (2003) are among the scientists, which include geochemists, biochemists and microbiologists, who have undertaken research including clinical trials to assess the effects of different minerals, pH levels and temperatures. The literature indicates that clinical trials have been carried out to prove the value of minerals for balneology, with medical faculties in many countries employing natural hot and mineral spring waters to improve the health of their patients (Williams et al, 1996; Witt, 1990). This is confirmed in the German literature, which offers publications dedicated to balneology and medical thermalism by highly qualified medical professionals such as Amelung and Hildebrand (1985), Gutenbrunner (2005), Pratzel and Schnizer (1992), Schmidt (1989) and Vogt and Amelung (1952). It is noted that it was not possible to separately analyse all of these texts as they are either not available for the general public or only at a great expense, which was one of the limitations encountered frequently during the research for this thesis. However, the *‘Handbook of*

Medicinal Baths' by Pratzel and Schnizer (1992) became available and describes baths from natural sources such as healing waters as designed to cure, alleviate and prevent illness or pathological symptoms. While their modern use is controlled through the German Drug Law *(Deutsches Arzneimittelgesetz),* which determines the additives that can legally be used, Pratzel and Schnizer refer to the ancient tradition of bathing as being one of the oldest health-promoting measures to gain a medical benefit either through prevention or cure. Both authors have spent decades evaluating the benefits of balneology and have acted as advisors to the German Federal Health Office together with other specialised colleagues in this field of medical research.

Clinical research and controlled studies undertaken by medical researchers indicate that the curative effects are directly related to the absorption of mineral ingredients and metallic trace elements through the skin. These medical findings are supported in research published in *Clinics in Dermatology*, Vol 14 (1996) with contributions from the following researchers:

- Abels, Even-Paz & Efron (1996) *Bioclimatology at the Dead Sea in Israel*
- Bernstein (1996) *Dermatologic Aspects of Mineral Water*
- Boer (1996) *The Influence of Mineral Water Solutions in Phototherapy*
- Ghersetich & Lotti (1996) *Immunologic Aspects: Immunology of Mineral Water Spas*
- Karam (1996) *Mineral Water and Spas in France*
- Katsambas & Antoniou (1996) *Mineral Water and Spas in Greece*
- Ólafsson (1996) *The Blue Lagoon in Iceland and Psoriasis*
- Omulecki, Nowak and Zalewska (1996) *Spa Therapy in Poland*
- Oumeish (1996) *Climatotherapy at the Dead Sea in Jordan*
- Tsankov & Kamarashev (1996) *Spa therapy in Bulgaria*
- Vassileva (1996) *Mineral Water and Spas in Bulgaria*
- Wolf (1996) *Mineral Waters and Spas in Israel*

While the results are in favour of natural hot and mineral springs being used to achieve health benefits and highlight the role of geothermal resources, none of these researchers made a connection between the medical use of natural hot and mineral springs and tourism.

This review shows that many scientists, especially in Europe and Japan, have undertaken research into the connection between minerals and other elements and potential health benefits of natural hot and mineral springs. Naturally occurring minerals are considered to have beneficial effects for the human body, because they can assist in the healing process of a variety of health conditions. Japanese medical researchers have investigated the benefits of balneotherapy by looking at the effects of spa therapy on patients with bronchial asthma (Mitsanobu et al, 1995; Vu & Mitsanobu, 2004), long-term spa therapy in cases of pulmonary emphysema (Mitsanobu et al, 2003), the effects of bathing in very hot springs

(Kubota, Kurabayashi, Tamura, Kawada, Tamura & Shirakura, 1992; Kubota, Tamura, Take, Kurabayashi, Mori & Shirakura, 1994; Nagasawa et al, 2001; Shirakura & Sugai, 1986), and balneotherapy for patients with rheumatoid arthritis (Nobunaga, Tatsukawa, Hironobu and Yoshida, 1996). Agishi and Ohtsuka (1998) note that the most fundamental aspects of balneotherapy in Japan are based on hot spring bathing. They suggest that in today's stressful society hot spring bathing should be used for the treatment of chronic diseases as well as for lifestyle related illnesses, which cannot be cured by medication. Agishi and Ohtsuka's recommendation is to use balneotherapy for maintaining and promoting good health to create a balance between body and mind through establishing an overall feeling of wellness. Ohtsuka, Nakaya, Nishikawa and Agishi (2003, *Journal of the Balneological Society of Japan*) have investigated the effects of internal use hot spring water on the blood glucose levels in patients with diabetes. During clinical trials it became evident that the ingestion of natural hot spring water from *Kawayu Onsen* showed favourable results for patients with diabetes.

Parish and Lotti (1996) suggest bathing in mineral spring water is an effective method for treating skin conditions such as atopic dermatitis and psoriasis. Ghersetich and Lotti (1996) have suggested that the curative effect of bathing in hot spring water results from the absorption of minerals and metallic trace elements through the skin. In *'Balneology Today'* Ghersetich, Freedman and Lotti (2000) claim that mineral water prepared artificially lacks the fundamental characteristics as it does not originate as a natural spring and is neither bacteriologically pure nor has therapeutic potential. Because mineral waters are formed naturally and have a specific geophysical origin they lose their properties the further they are removed from their source. Although Ghersetich et al (2000) refer to different sources of geothermal water in their study; their research is strictly on a medical basis without any references to tourism, and their study findings support the significance of natural hot and mineral springs for health treatments, which generally involve travel to a destination of choice. The medical research reviewed in this chapter found considerable support by qualified medical professionals, who have carried out clinical studies over years based on balneological treatments of numerous health conditions (Table 5.3) using natural hot and mineral spring resources. Ghersetich et al (2000) note that various authors have explored the therapeutic effects of natural hot and mineral springs with special consideration of skin diseases such as psoriasis, eczema and atopic dermatitis. They refer in particular to the effects of sulphur rich mineral waters, which have been suggested by Lotti and Ghersetich (1996) as also playing a role in the immune regulation of the skin.

However, the majority of health and medical professionals working with geothermal resources in the form of natural hot and mineral springs conclude that it is essential that more research is undertaken. Titzmann and Balda (1996:613) state for example that the *'paucity of well-established studies…would indicate to what extent baths alone have a special effect besides recreation; the combination of therapies makes it difficult to assess the individual effects. Prospective, randomized studies are missing'*. Andreassi and Flori (1996) and Wolf (1996) also support the need to carry out more research into the therapeutic efficacy of spa treatment, as this may be the only acceptable therapy in many cases of skin complaints and rheumatic diseases due to the negligible side effects. The research reviewed above has predominantly focused on health resort and spa medicine, but generally ignores the implications for tourism. However, ongoing research by medical professionals has highlighted the importance of natural hot and mineral springs from a health point of view and lends support to the role of hot springs in tourism.

Cohen and Bodeker (2008) and other members of the medical profession (Fabiani et al, 1996; Ghersetich & Lotti, 1996; Parish & Lotti, 1996) consider thermalism based on the use of natural hot springs a noteworthy contribution to the improvement of health. The articles listed in Table 2.4 illustrate the findings of the medical literature about the advantages of natural hot spring therapy (Bálint et al, 2007; Bender et al, 2004; Gutenbrunner, Bender, Cantista & Karagülle, 2010; Karagülle, Karagülle, Karagülle, Dönmez & Turan, 2007). Recent research to assess the effectiveness of balneotherapy for rheumatic diseases in Turkey included nearly 4000 patients. This study (Karagülle & Karagülle, 2009) concluded that most forms of balneotherapy are effective in the treatment of rheumatic diseases. The study presents convincing evidence for the role of natural hot and mineral springs for health purposes from a rehabilitation perspective; although the tourism element is not mentioned. In an earlier randomised, controlled pilot study over a 24 week period Karagülle et al (2007) assessed how balneotherapy or spa therapy was beneficial for people with severe knee osteoarthritis. Studies of this nature highlight the significance of natural hot and mineral springs for medicinal purposes although there is no reference to tourism. The following reviews of the medical literature in addition to those above lend more support to the role of natural hot and mineral springs in the health sector and demonstrate their importance in this field.

Table 2.4 *Medical journals reviewed for this thesis.*

	Journal Title and Topics of Articles	Editions
1	***Journal of the European Academy of Dermatology and Venereology -*** *Balneology today* *Balneophototherapy – combined treatment of psoriasis vulgaris and atopic dermatitis* *Balneology and spa treatments in dermatology*	Vol 3 (4) 449-450 (1994) Vol 3 (4) 465-467 (1994) Vol 9 (3) 237-241 (1997) Vol 16 (3) 263-266 (2002) Vol 14 (5) pp 346–348 (2000) Vol 14 (5) pp 425–428 (2000) Vol 21(8) pp1027–1037(2007)
2	***Clinics in Dermatology*** *- Complete edition about balneology / thermalism*	Vol 14 (6) (1996)
3	***Deutsches Ärzteblatt*** *- Rehabilitationskliniken, Deutscher Bädertag, Kuren helfen*	Vol 94 (9) p1 (1997) Vol 96 (48) (1999) Vol 104 (50) (2007)
4	***Medicina nei Secoli*** *– Thermalism in the ancient world (Mellillo)*	Vol 7(3) pp 461-83 (1995)
5	***Dermatologic Therapy*** *- Balneotherapy for chronic plaque psoriasis*	Vol 21 pp S31–S38 (2008)
6	***Environmental Health and Preventive Medicine*** *(Japanese Journal published in English) Balneotherapy (Nasermoaddeli & Kagamimori)*	Vol 10 (4) pp 171-179 (2005)
7	***Clinical Journal of Pain*** *- Spa Therapies*	Vol 18 pp 302-309 (2002)
8	***Rheumatic Disease Clinics of North America*** *- Spa Therapy*	Vol 25 (4) (1999)
9	***Journal of Counselling and Development*** *- Wellness*	Vol 75 pp 26–35 (2000)
10	***Bulletin d'Hydrogéologie*** *- Thermal and Mineral Water for Bathing*	Vol 17 (1999)
11	***Rheumatology International -*** *Hydrotherapy, balneotherapy, and spa treatment in pain management - Therapeutic effect of spa therapy…*	Vol 25 (3) pp 220-224 (2004) Vol 26(12) pp 523-529 (2007)
12	***Clinical Rheumatology -*** *The effect of the thermal mineral water**…*** *A 10-day course of SPA therapy is beneficial…*	Vol 26 (6) pp 890-894 (2007) Vol 26 (12) pp 2063-2071 (2007)
13	***Annals of the Rheumatic Diseases -*** *A brief history of spa therapy*	Vol 61 (3) pp 273-275 (2002)
14	***Medical Anthropology Quarterly*** *- The Kur in West Germany, Spa Treatment*	Vol. 3 (1) pp 22-35 (1989) Vol 17 (5) pp 146-147 (2003)
15	***Physical Therapy*** *- Multiple Sclerosis*	Vol 81 (4) p 1049 (2001)
16	***Alcoholism: Clinical and Experimental Research*** *– Thermal Spas*	Vol 22 (5) (1998)
17	***British Medical Journal -*** *Observations on the effect of immersion in Bath spa water*	Vol 291 pp 1747-51 (1985)
18	***Arthritis Care and Research***	Vol 9 (3) pp 206-15 (1996)
19	***Journal of Musculoskeletal Pain*** *- Balneology*	Vol 6 (1) pp 111-137 (1998)
20	***International Journal of Biometeorology -*** *Re-assessment of spa therapy?* *Crenotherapy: a neglected resource for human health now re-emerging* *A proposal for a worldwide definition of health resort medicine, balneology…*	Vol 52 (3) pp 231-237 (2007) Vol 54 (5) pp 491-493 (2010) Vol 54 (5) pp 495-507 (2010)
21	***Medical History Supplement*** *- Waters and spas in the classical world* *The medical history of waters and spas*	Vol 10 pp 1-13 (1990) Vol 10 pp vii-xii
22	***Journal of Counselling and Development -*** *Spiritual wellness*	Vol 75 pp 26–35 (1996)
23	***Anales de Hidrología Médica -*** *Navarro García, E., Alonso Díaz, S.J. & San Martín Bacaicoa, J. (2007) Neurological and hepatoprotective effects of mineral waters of Firgas (Canary Islands).*	Discontinued in 2007 Vol 2 p 37
24	***Life Sciences -*** *Kusatsu-spa, Japan*	Vol 51 (24) pp 1877-1880
25	***Life Chemistry Reports -*** *Lotti T & Ghersetich I. How spring water works*	Vol 14 pp 347–351 (1996)
26	***Annals of Allergy -*** *Valitutti et al, Effect of sulphurus 'thermal' water*	Vol 65 pp 463–468 (1990)
27	***Journal of the European Academy of Dermatology and Venereology –*** *Ólafsson et al, The effect of bathing in a thermal lagoon in Iceland.* *Ghersetich et al - Balneology today. Tsoureli-Nikita et al, Alternative treatment of psoriasis with balneotherapy using Leopoldine spa water.*	Vol 3 (4) pp 460–464 (1994) Vol 14 (5) pp 346–348 (2000) Vol 16 (3) pp 260–262 (2002)

Bender et al (2004) argue that no analgesic (painkiller) can completely eliminate pain and suggest that reports of life-threatening adverse reactions to the use of pain relieving drugs has led to a renewed interest in spa therapy. Their concern is the lack of available research funding and methodological difficulties despite the long-term cost effectiveness of such treatments proven in their research. Bender et al (2004) therefore recommend to support more research into the encouraging effects of balneotherapy. Research by Coccheri, Gasbarrini, Valenti, Nappi and Di Orio (2006) found a decrease in the need of patients for costly health resources after a series of thermal spa treatment for several disease groups. Coccheri et al (2006) note that recent data supports the value of thermal therapies in addition to standard pharmacological treatment for several health conditions: these include irritable bowel syndrome, chronic back pain, chronic heart problems and ankylosing spondylitis. Part of their conclusion is that the value of spa treatments needs more assessment by carrying out randomised controlled studies. Lange, Müller-Ladner and Schmidt (2006) present an overview of clinical relevance of balneotherapy in the treatment of rheumatic diseases. They claim that the effects of traditional spa treatments including mineral springs are immediate and repeated applications develop long-lasting physiological effects. Lange et al (2006) continue by stating that spa therapy with its preventive, curative and rehabilitative capabilities is irreplaceable as a general treatment strategy for patients with rheumatic diseases.

Spa therapy as a non-pharmacological approach for osteoarthritis was assessed by Cantarini, Leo, Giannitti, Cevenini, Barberini and Fioravanti (2007) in a study that compared conventional therapy with spa therapy in patients with osteoarthritis of the knee using a single blind, randomized controlled trial (RCT). Seventy-four outpatients received treatment over three weeks with only the spa therapy showing persistent benefits over time. As with most other medical researchers in the field of spa medicine Cantarini et al (2007) recommended further studies with different types of mineral waters and long-term follow-ups to determine the therapeutic benefits of spa therapy. Gutenbrunner et al (2010) propose an international discussion of terminology in the field of *Health Resort Medicine* [spa therapy] including balneology, medical hydrology and climatology with a focus on achieving international agreement on distinct and descriptive terms that are commonly accepted and which they argue is essential for the publication of scientific results. Fioravanti, Cantarini, Guidelli and Galeazzi (2011) confirm that spa therapy continues to represent a popular form of treatment for rheumatic diseases, although they say that the mechanisms by which mineral or thermal water provides relief for rheumatic patients are not completely understood.

Fioravanti et al (2011) assume that the resulting pain relief from spa theraphies most likely includes a combination of effects, for example from immersion, buoyancy and the water temperature. Other factors which may also contribute to the beneficial effects of spa therapy in rheumatic diseases include a change in the environment with pleasant surroundings as well as the absence of work duties. However, it is also noted by Fioravanti et al (2011) that there is insufficient knowledge about long-term effects beyond the treatment cycle and that in-depth studies and long-term controlled clinical trials should be conducted to provide more precise therapeutic indications to clarify the effects of thermal treatments. They are also concerned that, what they refer to as *Thermal Medicine*, needs to emerge from *'the restrictive environment of alternative or 'miracle' therapies and free itself of the scepticism of many doctors and patients, gaining the scientific respect that it truly deserves'* (Fioravanti et al, 2011:6). From these reviews it becomes apparent that a number of terms refer to the same subject: a) Spa medicine, b) Health Resort medicine, and c) Thermal medicine. This is the reason why Gutenbrunner et al (2010) propose an international discussion of terminology to reach a common understanding.

2.5.1 Natural Hot Springs in Complementary and Alternative Medicine (CAM)

Complementary and Alternative Medicine (CAM) refers to alternative healing practices not generally included in conventional medicine and is a term for medical products and practices that are not part of standard care (MedlinePlus, 2010). CAM covers diverse medical and health care systems, practices, and products not included in conventional medicine (National Center for Complementary and Alternative Medicine, 2010). The use of natural hot and mineral springs for health improvements may be included under CAM, but is rarely referred to directly in CAM definitions. However, the methods of treating illness with balneology, thermalism, crenotherapy and hydrotherapy are covered extensively in the medical literature with research articles for example by Fabiani et al (1996), who discuss the rheumatologic aspects of mineral water and Parish and Witkowski (1994), who investigate the field of dermatologic balneology.

Natural hot and mineral spring water is the main component in a number of health-related treatment systems such as balneology and hydrotherapy (thermalism) and has been emphasised in research papers by Fabiani et al (1996), Lund (2005) and Parish and Witkowski (1994). In summary, hot and mineral springs may be used in immersion treatments (balneotherapy), as a vehicle for the application of solids (mud therapy), or internally by either drinking or inhaling (hydrotherapy). Fabiani et al (1996: 571) hold the

view that natural hot and mineral springs may have a prophylactic, therapeutic or rehabilitative value, depending on their particular temperature and mineral composition. In their survey of dermatologic balneology from the point of view of the American attitude towards spas and hot springs Parish and Witkowski (1994) comment that spas today are still considered as beneficial, despite their position somewhere between medicine and the 'unknown. They further note a dichotomy between the American tourist's acceptance of the concept of a visit to the Dead Sea hot spring facilities in Jordan or Israel to combat psoriasis and their questioning of the value of a visit to their own Saratoga Hot Springs Resort in New York State. In their research paper *'Dermatologic Balneology: The American view of waters, spas and hot springs'* published in the *Journal of the European Academy of Dermatology and Venereology'* Parish and Witkowski (1994) argue that Americans seem to have forgotten the potential for health benefits gained from natural hot and mineral springs, while the European view is still one of appreciation of spa treatments based on natural hot and mineral springs. Their research also investigates the skin disease psoriasis and the successful treatment with balneological therapies. In Parish and Witkowski's opinion the use of mineral waters is supported by their personal experience of a favourable response of certain chronic skin diseases (psoriasis, atopic dermatitis) to balneological treatment.

A study by Tsoureli-Nikita, Menchini, Ghersetich and Hercogova (2002) investigated the potentially anti-inflammatory effects of the mineral waters at the *Leopoldine Spa* in Montecatini, Italy. The Leopoldine Spa is one of nine geothermal facilities in Montecatini, a historical spa town in the Tuscany region which attracts approximately 1.7 million visitors annually, of which about a quarter are of foreign origin (Italian State Tourist Board, 2011). The data analysed by Tsoureli-Nikita et al (2002) shows significant differences after four weeks of treatment, proving the anti-inflammatory effect of the Leopoldine Spa's mineral waters for patients affected by psoriasis covering at least 40% of their body surface.

Despite the growing evidence of their success in treating numerous diseases Nasermoaddeli and Kagamori (2005) argue that there is still uncertainty relating to the effectiveness of natural hot and mineral spring water components as natural therapeutic agents. Fabiani et al (2005) and others (Hank-Haase, 2006; Röhl, 2005; Tilton, 1981) emphasise that as a result, minimum concentrations are prescribed by law in a number of countries in an effort to counteract scepticism from external medical traditions that do not use such resources in a widespread way. However, according to Freedman and Waugh (1996) their patients may be the very tourists seeking health and wellness benefits from natural hot and mineral springs and geothermal muds as an alternative method.

This review of the medical literature supports the role of natural hot and mineral springs as an essential resource for the health and wellness sector. Ongoing investigation of the health benefits of hot and mineral springs by medical researchers demonstrates their importance in the field of spa medicine (e.g. balneology, thermalism, hydrotherapy), and this needs to beaded to the analysis of their importance in tourism.

2.6 THE CURRENT USE OF NATURAL HOT AND MINERAL SPRINGS IN HEALTH, WELLNESS AND RECREATIONAL TOURISM

Towner (1996) stated that natural hot and mineral springs are an important resource for present day health and wellness tourism, as well as for recreational destinations. According to Hsieh, Lin & Lin (2008) for example in Taiwan hot-spring tourism has recently become one of the most important recreational alternatives with the potential to grow into the most important and profitable sector of Taiwanese tourism. A number of researchers including Deng (2007), Lee (2010), Lee and King (2006, 2008) and Lee et al (2009) have studied the Taiwanese hot spring tourism sector and commented on the considerable resources of natural hot springs; however, the main focus of their research papers is on topics such as quality measurement, destination competitiveness and performance analysis rather than on the role of hot springs itself as a natural resource for tourism. This focus is evident in the research by Morais and Lin (2010) who discuss the choice to visit a hot spring destination in Taiwan and find that this is primarily affected by a certain destination image which is anticipated to affect the visitors' intention to patronise a destination repeatedly by developing destination attachment. The role of natural hot springs is not investigated in detail in their study. Other researchers like Cockerell (1996) and Hall (2003) support the role of natural hot and mineral springs by saying that visitors who choose hot spring destinations do so primarily for the benefit of enhanced physical and mental wellbeing during a period of time away from home as well as treating themselves to some luxury and pampering.

Medical thermalism has a strong tradition in Europe (Mueller & Lanz Kaufmann, 2001) and the Middle East (Saman, 1999) and is rapidly growing in Asia and New Zealand. At the end of the Second World War (WWII) Eastern Europe's existing spas were extended and modernised as part of the former USSR's public medical treatment system. A similar process occurred in Germany and France, where the medical health resort and spa tradition based on natural hot and mineral springs still exists in the 21st century (Erfurt-Cooper & Cooper, 2009; Weisz, 2001). The integrated health and wellness concept typical for Europe's spa tradition is different to the leisure and beauty therapy-based concept of the Americas and

Australia although the two concepts are now converging (Erfurt-Cooper & Cooper, 2009). Mueller and Lanz Kaufmann (2001) summarise the European view of health and wellness with a marked distinction between the two sectors. They argue that wellness tourism is a specific segment of health tourism and is designed for healthy people who want to prevent future illness by maintaining good health, while health is something that is pursued by people with certain medical conditions in need of treatment.

2.6.1 Natural Hot and Mineral Springs as Visual Tourist Attractions

Recreational tourism based on the use of natural hot and mineral springs, although not examined in depth in this thesis, needs to be acknowledged for comparative reasons and as evidence for the important role of hot springs in health, wellness tourism and recreational tourism. Geothermal springs and their related features come in many physical forms; some emerge quietly from the ground to form bathing pools with water at pleasant temperatures, and others arrive at the surface with great noise and visual effect, overwhelming in their unique natural form (Erfurt-Cooper & Cooper, 2009). Geothermal manifestations like geysers, hot-water streams and waterfalls, boiling lakes and bubbling mud ponds are highly sought after must-see destinations for tourists and frequently these landscapes have been declared special cultural or natural (geological) heritage sites to control urban or industrial development in their vicinity. Protected sites with unique geothermal features include national parks and geoparks as well as some UNESCO World Heritage Sites, all covered by special environmental laws and regulations. The United Nations Educational, Scientific and Cultural Organization (UNESCO) describe such sites as

> *'…cultural and natural heritage around the world considered to be of outstanding value to humanity…'* (UNESCO, 2011).

These destinations could not wish for a more important endorsement, with some well known examples being the City of Bath in England, the famous hot spring sinter terraces of Pamukkale in Turkey and the Yellowstone National Park in North America.

Natural hot springs are documented in the geothermal research literature by Cataldi et al (1999) and Lund (various publications from 1993 to 2010) and others (Pesce, 2002; Hodgson, 2004; Lund et al, 2005; Arya & Arya, 2010; Fekraoui, 2010; Kępińska, 2010; Lund, Freeston & Boyd, 2010) as well as in GeoScience Journals (e.g. Kriš, Marton & Skultétyová, 1995; Lambrakis & Kallergis, 2005; Vylita & Zak, 2009). The geothermal literature does not focus on tourism use of natural hot and mineral springs, but mentions

frequently the potential of this natural resource for balneology, bathing, swimming and the development of health resorts and spas. In fact, the geothermal science community appears to be more aware of the role of hot springs for tourism in their literature than the researchers in the tourism sector. This is further evidenced in the frequent inclusion of special sessions about health tourism at conferences with an otherwise strict science focus such as the World Geothermal Congress (WGC) in 2005 and 2010. At the congress in 2010 a number of scientists presented their research, with considerable emphasis placed on the utilisation of natural hot and mineral springs for the health, wellness and recreational tourism industry. The WGC conference proceedings form part of the discussion of the findings in Chapter 7.

Geothermal manifestations such as geysers present a powerful visual display of nature at work and are natural laboratories for studies in geomicrobiology, a recently established discipline which links mineralisation to certain microbes that inhabit geothermal springs as explained by Renaut and Jones (2003). Some types of natural hot and mineral springs contain silica (e.g. Blue Lagoon, Iceland), carbonates or geyserites, which precipitate into mineralised crusts and terraces of travertine or calcite tufas when the fluids evaporate and cool (McGeary et al, 2001; Renaut, 2004). Well known examples are the *Mammoth Hot Springs* in the Yellowstone National Park, USA and the sinter terraces of *Pamukkale* in Turkey as well as the now destroyed *Pink and White Terraces* in Rotorua, New Zealand. Such terraces are unique visual tourist attractions, which are also used as supplementary physical resources in health, wellness and recreational tourism to the geothermal resources themselves (Lee & King, 2008:182) to attract more tourists to increase visitor numbers. Several authors including Towner (1996), Stein et al (1990) and Bennett et al (2004) have noted that ambience as manifested through natural surroundings is a significant attraction factor for particular health resorts and spas and is commonly used in the promotional literature as a unique selling proposition (USP). In conclusion it is noted that natural hot and mineral springs, no matter in which form they emerge from the earth and how they are exploited, are important resources in the tourism industry of many countries.

2.6.2 The Position of Medical Professionals and Government Bodies

The position of the medical profession and government regulatory bodies regarding the use of natural hot and mineral springs for health treatments varies between countries. In Europe and New Zealand the use of hot spring water in medical treatments or as ancillary benefits (massage, bathing) is supported, despite the increased cost of public medical services in recent years. Busse and Riesberg (2004) note that for example in Germany drastic cuts in the

coverage of health care benefits were introduced in the late 1990s with the major objective of cost containment. Bühring (2001) showed that this caused problems for the health industry as a whole by removing the economic base for German spas and health resorts health resorts, and indeed the restrictions were later lifted. In the USA and many other countries health treatments based on natural hot and mineral springs have not generally been covered by the national health system during the 20th and 21st centuries (Lund, 2005). In the USA this is firstly due to the fact that health insurers do not consider the therapeutical use of natural hot and mineral springs worth subsidising and secondly because the pharmaceutical industry has provided medical treatments preferred by many practitioners (Erfurt-Cooper & Cooper, 2009). The UK government has also contributed to the decline of health spas throughout that country by discontinuing the funding for medical treatments using thermal spring water in 1976 (Erfurt-Cooper & Cooper, 2009). However, Japanese health insurance according to Ito (2003) may cover balneotherapy, which is also known as onsen therapy, if prescribed by a doctor who verifies that the patient will benefit from this type of alternative treatment. Agishi and Ohtsuka (1998) provide an overview of health conditions (Table 6.5) including arthritis, rheumatism, neuralgia, problems related to the respiratory system, circulatory and nervous disorders and trauma, which are officially recognised in Japan as being treatable with balneotherapy.

Russia has also traditionally supported the use of natural hot and mineral spring based health treatments (Simkins, 1986) and according to Oddy (1999) state run health facilities could be found throughout Russia during the Soviet era (USSR), although after the collapse of the USSR many of them went into decline. Petroune and Yachina (2009) explain that in the past balneological treatment was provided in Russian health spas under the guidance of the Ministry of Health and local authorities as well as research institutes, with the main focus on rehabilitation, and that this tradition survives today. Most of the central European countries provide spa therapies based on natural hot and mineral springs as part of their national health care services. Middle Eastern countries and regions bordering on the Mediterranean are also recognised for their health treatments using local hot springs as well as resources like the mineral rich Dead Sea water to maintain their health tourism industry and are supported by their governments (Erfurt-Cooper & Cooper, 2009).

This section has provided examples of the position of medical professionals and government bodies towards the use of natural hot and mineral springs in a number of countries and notes a contrast between individual regions (e.g. Europe and North America) especially from the viewpoint of national health insurances.

2.6.3 The Position of the Consumer

In the western world, according to Pilzer (2002), the majority of followers of the health and wellness movement come from the 'baby boomer' generation and therefore represent a core consumer group. Similar statements were made by Ernst (2000), Gesler (1992), Gilbert and Abdullah (2003), who referred to a growing interest in new age remedies or alternative treatments with the recent Global Spa Summit in 2010 confirming this trend. Medical tourism (with a focus on elective surgery) has according to Connell (2006) and McGinley (2008) grown considerably in recent years primarily due to the high treatment costs in western countries (e.g. USA), long waiting lists, the increasing affordability of international air travel and favourable currency exchange rates. This confirms the demand perspective, suggested earlier by Towner (1996), which is associated with the growing patronage of medical spas and the emergence of a 'leisure culture' elite based on shifting consumer values, and generations reaching retirement. Authors including Bushell and Sheldon (2009), Lazarus (2000), Pollock and Williams (2000) and Spicer and Nepgen (2005) have debated rising health-care costs and personal health care, which may be fundamental to the increased attention given to mind and spirit together with a holistic or alternative health care approach to counteract increased stress and aging issues. As a consequence of baby-boomer retirement, a re-evaluation of the use of natural hot and mineral springs for the alternative treatment of illness has taken place in recent years.

Nasermoaddeli and Kagamori (2005) note that health resorts and spas, which have developed due to this re-evaluation, are world-wide and numbered in the thousands. Snoj and Mumel (2002) confirm that the interest in health resorts and spas is growing faster than the demand in other tourist sectors as the ageing population has become increasingly aware of the importance of maintaining good health, which, according to Henderson (2004) has led to growing concerns among older people about personal appearance and longevity.

Health resort and spa tourism facilities can range from hot spring bathing for strictly medical purposes to leisure and recreational purposes and their development requires substantial capital investment. Observations by Erfurt-Cooper and Cooper (2009) have shown that frequently hot spring destinations are associated with resort style accommodation including sports and recreation outlets (e.g. Spa Hawaiians, Yumoto, Japan). Surgical procedures including dental and cosmetic operations as well as beauty treatments are offered by numerous facilities for health and wellness clientele, but also for the recreational tourist. In fact, health and wellness facilities in the form of spas have become a requirement in many 5-star hotel properties, and are according to Singer (2005) considered as an advantage in most

4 and even 3-star properties. The association of natural hot springs with resort and spa facilities is common where such geothermal resources exist, although more importantly, there is a growing trend towards promoting the idea that natural hot and mineral springs are important in health, wellness and recreational tourism. This concept is supported by Bushell and Sheldon (2009), Erfurt-Cooper and Cooper (2009), as well as by Hall (2006), who have examined and discussed health and wellness tourism in their research.

Goeldner and Ritchie (2003) recognised five specific market segments within the health tourism market. Segments 3 to 5 are directly related to health and wellness and may include natural hot and mineral springs:

1. Outdoor (sun and fun) activities;
2. Adventure and sport activities (healthy but health is not central concern);
3. Travel for health (cruise or environment/climate change primarily);
4. Travel to spa resorts and to venues for other health activities; and
5. Travel for medical treatment.

In summary health resort and spa tourism can incorporate the use of natural hot and mineral springs and is aimed at a) rehabilitation after illness (health), b) improvement and/or maintenance of good health (wellness) and c) relaxation for body and mind (recreation).

Natural hot and mineral spring destinations are marketed in a similar fashion as other tourist destinations through either promotional literature in the form of brochures, websites, books, e-newsletters, WOM (Word of Mouth) as well as magazines and journals. For this meta-analysis in addition to many general publications about hot spring destinations a large number of journals were reviewed, including tourism journals, medical journals, spa magazines and a variety of research articles from publications including earth science and environmental disciplines. The individual journals examined for articles about tourism destinations based on natural hot and mineral springs (covering a timeframe of approximately the last three decades) revealed that relatively little active research has been undertaken to assess the role of hot springs in tourism. One special journal issue of *Tourism Recreation Research* (TRR 2006, Vol 31 (1) and a few up-to-date findings in the major tourism journals (Table 2.5) include some of the key topics below:

- Spa tourism;
- Hot spring tourism;
- Wellness tourism;
- Health tourism;
- Thermal tourism; and
- Thermalism.

The journal-based review of wellness tourism by Smith and Kelly (TRR, 2006) is dedicated to understanding the concepts of wellness tourism, and indicates that research into this tourism sector is beginning to be published in the academic tourism literature (Table 2.5). The individual papers of the special TRR edition provide an insight into the debate on the nature of health and wellness tourism. However, the focus is rather on the existential side of wellness than on the physical side that seems to be a greater motivation for the spa and wellness tourist (Steiner & Reisinger, 2006).

Table 2.5 *Tourism journals which engage in the debate on health and wellness and represent the current academic research including some articles on hot spring tourism.*

	Journal Title and Topics of Articles	Editions
1	***Tourism Management*** *- Hot Springs Tourism, Taiwan, Health-care Tourism, Hot Spring Hotels, Reviving Spa Tourism*	Vol 8 (3) pp 217-222 (1982) Vol 28 (5) pp 1274–1284 (2007) Vol 29 (3) pp 429–438 (2008)
2	***Annals of Tourism Research*** *– Radium Hot Springs, Spa and Health Tourism, Case Study of Bath*	Vol 12 (3) pp 393-416 (1985) Vol 17(2) pp 298–299 (1990) Vol 32 (3) pp 647–668 (2005)
3	***Tourism Recreation Research*** *- Wellness Tourism*	Vol 31 (1) pp 1-4 (2006) Vol 31(1) pp 5-14 (2006)
4	***Journal of Travel Research*** *– Tourism Attractions Rotorua, Health Tourism in Cuba, Traditional Spa Tourism, Health Spas*	Vol 28 (3) pp 38-39 (1990) Vol 32 (1) p 36-41 (1993) Vol 44 (3) pp 250-258 (2006)
5	***Journal of Vacation Marketing*** *- Health Resort Sector, Hot Spring Tourism, Spa Marketing, Wellness Tourism, Health Spa Development, Health Spa Travel Markets Mexico (Williams et al)*	Vol 3 (1) pp 10-31 (1996) Vol 4 (1) pp 65 – 77 (1998) Vol 7 (1) pp 5-17 (2001) Vol 10 (2) pp 122-137 (2004) Vol 11 (1) pp 31-39 (2005) Vol 12 (1) pp 71 – 91 (2006)
6	***Tourism Management Research*** *- Polish Spas*	Vol 29 (5) pp1035-1037
7	***International Journal of Tourism Research*** *- Hot Springs Tourism Hot spring recreation areas in Taiwan*	Vol 10 (4) pp 341-352 (2008) Vol 12 (2) pp 193-203 (2010)
8	***Revue de Tourisme (The Tourism Review)*** *– Thermalism, Spa Treatments*	Vol 4 pp 12-15 Vol 4 pp 15-19 Vol 44 (4) pp 30-32
9	***Cornell Hotel and Restaurant Administration Quarterly*** *– Spas (Tabacci, M.)*	Vol 51 (1) pp 102-117 (2010)
10	***Tourism Geographies*** *- Japanese Hot Springs Resort*	Vol 10 (3) pp 334-354 (2008)
11	***Spectrum Freizeit*** *- Wellness*	Vol 1 pp 84- 102
12	***Tourism and Hospitality Planning & Development*** *- Hot Springs Tourism Sector (Lee & King)*	Vol 3 (3) pp 179-197 (2006)
13	***Travel and Tourism Analyst*** *- Spas and health resorts, Health Tourism (e.g. Bywater, M.)*	Vol 1 pp 41–59 Vol 1 pp 53-77 Vol 6 pp 52-67
14	***Leisure Studies*** *- English and German Spas*	Vol 16 (3) pp 173–187 (1997)
15	***Acta Turistica -*** *Wellness*	Vol 16 (2) pp 125-142 (2004)
16	***Anatolia: An International Journal of Tourism and Hospitality Research***	Vol 19 (1) pp 103-115 (2008)
17	***The Journal of Tourism Studies*** *– Romanian Spas*	Vol 6 (2) pp 30-44 (1995)
18	***Tourism Review International*** *- Healthcare Tourism*	Vol 7 (3-4) pp 111-121 (2003)
19	***Asia Pacific Journal of Tourism Research*** *- Taiwan's Hot Springs Tourism Sector (Lee, Ou & Huang)*	Vol 14 (1) pp 17-37 (2009)

Although a number of academic articles in tourism journals have covered health and wellness in recent years, the review of the literature for this thesis revealed that the majority of these publications refer to health and wellness combined with travel and tourism in general and do not discuss the role of natural hot and mineral springs as an important resource for tourism in detail.

2.6.4 Health and Wellness Spa Conferences

Throughout recent years a number of international conferences have started to focus on health, wellness and recreation in part based on the use of hot springs. The result is a multitude of health and wellness tourism related conferences being held in many countries with more planned in the near future (Table 2.6). The majority of these health and wellness conferences have focused exclusively on health resort and spa development and management issues. Natural hot and mineral springs seem to play a secondary role, but are nevertheless mentioned as a key element when available and are included in conference papers about health resort or wellness spas.

In essence, international conferences are excellent indicators for current and developing trends related to health and wellness tourism. For example the last World Geothermal Congress (WGC, 2168 delegates) held in Indonesia in 2010 and hailed by Vaswani (2010) from the BBC News as ‘the world's biggest geothermal energy conference’, included a special session dedicated to Health, Tourism and Balneology, based on the use of geothermal resources in the form of natural hot and mineral springs worldwide. Throughout the congress country updates referred to the commercial utilisation of geothermal springs not just as an important renewable resource to produce clean energy, but also for the direct use in medical treatments (balneology, hydrotherapy) in health resort and spa tourism. The WGC takes place every five years and the resulting conference proceedings from the years 2000, 2005 and 2010 have contributed valuable information for this literature review as a source of international facts related to the role of natural hot and mineral springs and their use. The conference proceedings of the World Geothermal Congress (2010) have revealed a plethora of current planning and development stages for further health, wellness and recreational facilities (balneology, health resorts, spas, thermal aqua parks) on a global basis.

Table 2.6 *Examples of health and wellness spa conferences worldwide (Compiled by Author).*

Health and Wellness Spa Conferences		
Year	**Location**	**Health/Wellness/Medical Spa**
2009		
May 2009	Interlaken, Switzerland	Global Spa Summit
May 2009	Hajdúszoboszló, Hungary	Seventh Hungarian-Turkish Workshop on Balneotherapy
June 2009	Jamaica	Caribbean VeggieFest - Spa and Wellness Conference
August 2009	Brazil	18 ° Brazilian Congress of the Industry of Mineral Waters
October 2009	Ourense, Spain	IV International Meeting on Water and Thermalism
November 2009	Yokohama, Japan	The 62° General Assembly and International Scientific Congress of the World Federation of Hydrotherapy and Climatotherapy (Femtec)
2010		
April 2010	Bali, Indonesia	World Geothermal Congress
May 2010	Istanbul, Turkey	Global Spa Summit
May 2010	Băile Felix, Romania	15th Annual ESPA congress
June 2010	Budapest, Hungary	The 5th Annual Conference of the British International Spa Association (BISA)
June 2010	Paris, France	37th World Congress of the International Society of Medical Hydrology and Climatology - ISMH 2010 - Medical balneology
August 2010	Sao Paolo, Brazil	Medical Travel Meeting Brazil 2010
September 2010	New York, USA	Medical Tourism World Fair
September 2010	South Africa	Pan Africa Health Expo and Conference
September 2010	Gold Coast, Australia	ATEC Health & Wellness Travel Conference
September 2010	Melbourne, Australia	7th Annual Conference & ASpa Awards - spas of excellence 2010 (ASpa = Australasian Spa Association)
September 2010	Singapore, Malaysia	Asian Spa & Wellness Management Conference and Exhibition 2010
September 2010	Mallorca, Spain	Spa World Mallorca 2010
September 2010	Budapest, Hungary	Health, Wellness and Tourism - healthy tourists, healthy business?
October 2010	Ourense, Spain	TERMATALIA Feria Internacional del Turismo Termal
October 2010	Manila, Philippines	IMWell Summit
October 2010	Kuala Lumpur, Malaysia	World Medical Health Tourism Conference 2010
October 2010	Durban, South Africa	World Health Tourism Congress
October 2010	Singapore, Malaysia	Wellness Summit 2010
October 2010	Ljubljana, Slovenia	SPA-CE Spa and Wellness Tourism in Central Europe
November 2010	Hong Kong	Cosmoprof Asia Spa Conference
November 2010	Washington, D.C., USA	ISPA Conference & Expo
November 2010	Cologne, Germany	TEMOS Conference: Healthcare Abroad & Health Tourism
December 2010	Istanbul, Turkey	3rd International Health Tourism Convention
December 2010	Cannes, France	International Luxury Spa Summit 2010
December 2010	Mumbai, India	Medical Tourism Expo 2010
December 2010	Miami, Florida	The Medical Travel Summit of the Americas
2011		
January 2011	Berkeley University, California	Health and Wellness Conference 2011
February 2011	Bali, Indonesia	Bali International Spa & Wellness Expo 2011
February 2011	Las Vegas, USA	Canadian Health and Wellness Innovations Conference 2011
March 2011	Antalya, Turkey	Anfas Hetex: 3rd Health and Medical Tourism Congress
April 2011	Barcelona, Spain	European Medical Travel Conference 2011
May 2011	Bali, Indonesia	Global Spa Summit
May 2011	Turkey	16th Annual ESPA Congress
October 2011	Vidago (Chavez), Portugal	Intern. Conf. 'From Villes Thermales' to Sustainable Spa Resorts
October 2011	Ourense, Spain	TERMATALIA Feria Internacional del Turismo Termal
November 2011	Las Vegas, USA	ISPA Conference & Expo
2012		
June 2012	Aspen, Colorado	Global Spa Summit
June 2012	Granada, Spain	38th World Congress of the ISMH

One of the most important current trends in the direct use of natural hot springs for tourism is that the overall use of geothermal resources in a number of countries is higher than the use for energy generation and other industrial processes, which indicates the important role of

natural hot springs for the tourism industry of these countries. For example China's direct use of geothermal resources for balneology is currently 65.2% (Zheng, Xia, Chen & Du, 2010), and geothermal direct applications in Bulgaria for balneology (prevention, treatment and rehabilitation), bathing and swimming pools amounts to 56% of the overall use of geothermal resources in this country (Hristov, Benderev & Bojadgieva, 2010; Lund et al, 2010). Turkey has used hot springs for bathing and health for centuries (Çelmen & Çelik, 2010; Mertoglu et al, 2010) and more than a quarter of the overall use of geothermal resources (552MWt out of 2084MWt) is going towards balneological facilities and the development of new resorts and spas (Dagistan, Dogdu & Karadaglar, 2010).

This brief overview of the current international development potential of geothermal resources for tourism represents vital evidence for the important role of natural hot and mineral springs in tourism. However, without comparable data from the existing academic tourism literature the difficulty to verify the significance of hot spring use for the health resort and spa tourism sector is a limiting factor.

Another international conference which included a special meeting about natural hot springs and their use for health and recreation was the international Cities on Volcanoes Conference (CoV6, 864 delegates) was held at Tenerife, Spain in May/June 2010. Due to the increasing awareness of the connection between volcanic environments and geothermal resources and their frequently combined use as tourist attractions more attention is starting to focus on natural hot springs in various tourism sectors including health, wellness and recreational tourism as well as ecotourism and geotourism. This clearly indicates that the science disciplines are already recognising the growing global trend towards further development of natural hot and mineral springs for tourism.

2.7 FINDINGS FROM THE PREVIOUS LITERATURE AND ITS LIMITATIONS

The use of natural hot and mineral springs in health, wellness and recreational tourism has so far received limited attention from tourism researchers. The academic research available in health, wellness and recreational tourism also predominantly reflects a Euro-centric or North American view with the remainder of the world rarely recognised. The following comments represent findings from the meta-analysis carried out in this chapter and reveal the knowledge gaps in the previous literature. These findings at the same time also document the major limitations encountered during the research process:

- Although the scientific research identifies the geophysical and mineralogical factors of natural hot and mineral springs and recommends their potential use in balneology, there is only the occasional connection made to the tourism industry based on hot springs;

- Despite the fact that the medical research analysed in this chapter reflects a positive attitude of the medical profession towards the use of natural hot and mineral springs, the connection to tourism is generally missing;

- The historical and cultural literature covering natural hot and mineral spring use commonly focuses on a specific geographical area without acknowledging previous traditions of hot spring use;

- Tourism textbooks do not provide sufficient information about the role of natural hot springs in the health, wellness and recreational tourism sector, nor do they recognise hot spring tourism;
- Academic tourism journals have published very little research directly relating to the role of natural hot and mineral springs in tourism;

- Countries with a longstanding medical acceptance of balneology based on natural hot and mineral springs publish much of their research in English; however, many journal articles and research papers published in other languages;

- An apparent lack in the form of reliable data for the hot spring tourism industry exists because there is no conceptual separation between health, wellness and recreational tourism with and without natural hot springs;

- Access to some relevant texts is limited or restricted and these could not be analysed as this literature was either not available for public use or only at great expense;

- Annual reports of the spa industry and tourist organisations are also only accessible at considerable cost per report and only brief and inconclusive abstracts are made available; and

- No comprehensive model for the assessment of the role of hot and mineral springs in tourism currently exists.

This meta-analysis has confirmed that the use of natural hot and mineral springs in health and wellness tourism has received limited attention from researchers in the field of tourism (Cohen & Bodeker, 2008; Erfurt-Cooper & Cooper, 2009; Goodrich, 1994; Hall, 2003), but a considerable amount of interest from scientists in health, medical and microbiology disciplines. It has also become apparent that academic research in health and wellness tourism predominantly reflects a European or North American perspective while the remainder of the world is rarely acknowledged apart from some published research papers for example from Taiwan. Countries like Japan, New Zealand and Central and South America have a lot to offer in health, wellness and recreational tourism based on natural hot springs and are worth exploring and evaluating to construct an unbiased précis of the role of

hot springs. Taking into account the vast number of natural hot and mineral springs worldwide it is understandable that the studies often focus only on a specific area. However, a number of European and North American tourism texts that do exist actually fail to acknowledge natural hot spring resources from other continents, giving the impression that there are few geothermal resources available outside Europe and/or the west of the United States (e.g. Goeldner & Ritchie, 2003; Nahrstedt, 2004).

Further findings and limitations regarding the academic literature on natural hot and mineral spring use show that this is often historically and culturally specific as well as geographical in nature. Havins (1976), for example refers to English spas, their history and their use of natural springs. A range of methods of the water cure (balneology and hydrotherapy) and the institutional settings of spas where the cure was taken, at times in a regime of bleak austerity are covered (Havins, 1976). Havins' book *The Spas of England* remains an important source of information about the social and cultural origins of English spa towns such as Bath, where the only genuine natural hot springs of England are found and which today has World Heritage status. More recently with the redevelopment of the *Spa Bath Thermae* the hot spring sector has received renewed attention with a review of knowledge relating to the hot springs of Bath, including a summary of the research and investigations commissioned by the Bath Spa Project as part of the Thermal Resources Project by the Bath & North East Somerset Council (White, 2000; 2003; 2006).

Most textbooks that deal with aspects of the tourism industry fail to include significant discussions about health, wellness and recreational tourism based on natural hot and mineral springs. Goeldner and Ritchie's (2003) book *Tourism: Principles, Practices, Philosophies* briefly mentions spa tourism as an interesting aspect in the history of tourism influenced by the *Romans*. They acknowledge the historical use and development of geothermal spring centres in England and the European continent, but not the fact that health and wellness tourism, with or without natural hot and mineral springs, is currently one of the largest and fastest growing segments of the tourism industry. However, while Weaver and Lawton's '*Tourism Management'* (2002) provides two brief sections about spa tourism with a short reference to the continuity aspects of natural hot spring use before and after the Romans, the use of natural hot and mineral spring spas as an increasingly important aspect of the growing health and wellness tourism industry worldwide is not covered.

The discussion on the history and culture of bathing in Fagan's (2002) *'Bathing in Public in the Roman World'* is very informative, but fails to mention the water sources and their

origin. Fagan's book is primarily concerned with the bathing experience as a historical, cultural and social phenomenon with focus on the bathers, not the bath and its resulting benefits as was expected from the title. However, considering the fact that the Romans are nearly always associated with thermal bathing and given the historical significance of their contribution, both culturally and architecturally, this book was useful as a source of additional information.

A review of academic tourism journals found that while there are a number of references to health, wellness and recreational tourism (Table 2.4), relatively few articles have been published which directly relate to the role and use of natural hot and mineral springs in tourism (Erfurt-Cooper & Cooper, 2009). This is an indication of a general neglect of geothermal resources in health, wellness and recreational tourism by not recognising the substantial economic contribution the usage of these resources makes to the tourism industry as a whole (Erfurt-Cooper, 2007). In fact, the direct use of natural hot and mineral springs is more likely to be discussed in medical journals as well as in publication related to the Earth Sciences (e.g. Geothermal Heat Bulletin, Environmental Geology, Canadian Journal of Earth Sciences; see Table 2.5).

There are also language limitations. European countries with a longstanding medical acceptance of the curative effects of geothermal springs are: Bulgaria, France, Germany, Greece, Hungary, Iceland, Israel, Italy, Jordan, Poland, Portugal, Spain, and Turkey (Erfurt-Cooper & Cooper, 2009). Some of the non-European countries with a history of geothermal spring use are: Australia, China, Georgia, Iran, Japan, Korea, New Zealand, Russia, South America and Taiwan; however, not all of these countries publish their research findings in English – which presented an additional limitation for the collection of data.

Another point of weakness is the lack of reliable data on the size of the hot spring tourism industry. Due to the fact that the health and wellness industry generally does not distinguish between facilities with and without hot springs in their reports, it is difficult to obtain accurate data that reflects the size of the hot spring based tourism sector. Finally, with respect to the annual reports of individual spa and tourism associations it is noted that these in-depth reports are very expensive and not made available to the public or the research community apart from the provision of brief and inconclusive abstracts, unless purchased.

2.8 A PROPOSED CONCEPTUAL FRAMEWORK (MODEL) TO ASSESS THE ROLE OF HOT SPRINGS IN TOURISM

The review of previous theoretical contributions has indicated a series of gaps which present limitations to the scope of the research for this thesis and are summarised as follows:

- Lack of a model to assess the role of hot springs in tourism;
- Doubtful historical accuracy;
- Missing connection to tourism in medical literature;
- Missing connection to tourism in science literature;
- Language restrictions; and
- Lack of reliable data.

While the previous tourism literature does not offer a model which can be used to assess the role of natural hot and mineral springs in health, wellness and recreational tourism, the data reviewed in this chapter has identified key aspects which may be incorporated into a model (see Figure 1.3). Based on this analysis of the literature it is apparent that a number of significant relationships exist between the various elements of the hot spring industry and the health, wellness and recreational tourism sectors.

The proposed model incorporates three tourism sectors, each of which takes into account the distinctive characteristics of natural hot and mineral spring settings as a tourism resource. These three sectors, medical and health tourism, wellness tourism and recreational tourism, are based on specific visitor expectations and consumer demand for the provision of special facilities and settings. Although the three sectors can be distinguished from each other and frequently do exist as stand-alone destinations, there is however, due to the multi-dimensional structure of geothermal resources, the potential for overlap from one sector to another; generally with a complementary result. The model establishes the correlations between the various integrated elements of hot spring tourism, which are associated with environmental and social settings, natural resources, medical reputation, recreational attractions, traditions and customs, historical and cultural use of hot springs as well as access and infrastructure.

To assess the role of natural hot and mineral springs in **Medical and Health Tourism** a number of variables may be addressed: a) the treatment options and methods designed for diseases which benefit from therapies based on natural hot and mineral springs, b) rehabilitation and convalescence after illness, accident, injury or surgery using mineral rich hot spring water beneficial for a number of health conditions, and c) the importance of medical supervision by qualified practitioners. The medical literature has provided sufficient evidence of the value of spa medicine (balneology, hydrotherapy, thermalism) using natural

hot and mineral spring water, but does not discuss the connection to tourism, despite the fact that travel to a hot spring destination to seek treatment in the above mentioned cases is generally a requirement.

The model's parameters to assess the role of natural hot and mineral springs in **Wellness Tourism** focus predominantly on the improvement of health (without being ill) and/or the maintenance of already good health. Other important factors in wellness tourism are the prevention of illness as well as relaxation and stress relief, with more recreational than medical tendencies. This frequently takes place at hot spring health resorts and spas, but without the emphasis on strictly regulated and controlled medical spa environment. However, the wellness tourism literature, with few exemptions, does not discuss the role of natural hot and mineral springs in depth, although these are mentioned where they exist and are generally incorporated in the marketing strategies of tourist destinations as a value adding resource.

The role of natural hot and mineral springs in **Recreational Tourism** presents a variety of options: a) visual attractions in natural geothermal environments which are visited for example by ecotourists or geotourists, b) natural hot springs which can be used to supply large aquatic entertainment complexes with some also offering 'spa treatments', although these may refer to beauty spas as well, and c) thermal pools in municipalities where geothermal resources allow for the supply of hot water for public swimming pools or bathhouses.

The following **Common Elements** were also identified and include:

- Natural Settings;
- Historical Ambience;
- Cultural Traditions;
- Beneficial Minerals;
- Infrastructure;
- Service Industry; and
- The Natural Resource.

These elements are important in all three hot spring tourism sectors (health, wellness and recreation) and constitute the foundations for hot spring tourist destinations. Natural hot and mineral springs are a valuable tourism resource and therefore a noteworthy visitor determinant and their particular attractiveness, surrounding infrastructure, reputation and medical recognition dictate the visitor demand and expectation. The lack of an existing model to assess the role of natural hot and mineral springs in tourism provided an opportunity to develop a suitable model which is considered important to effectively address

the research objectives and to acknowledge the connection between natural hot springs and tourism. The model is further discussed in Chapter 7.

2.9 CONCLUSION

The role of natural hot and mineral springs is not well covered in the academic tourism literature. In this chapter prior research associated with the aim of this thesis and essential to establish the research objectives was evaluated and summarised. A comprehensive model to assess the role and importance of natural hot and mineral springs in health, wellness and recreational tourism has been developed and will be used to address the research objectives. To establish the interconnection between natural hot and mineral springs and the tourism industry it was necessary to explore several categories of the scientific literature including medical, cultural, geological as well as environmental books, reports and research papers. The data were obtained from a representative range of publications including research papers, books and articles covering natural hot and mineral spring use. This analysis had several purposes: a) to provide the background and theoretical foundation for the discussion of the role of natural hot and mineral springs within the health, wellness and recreational tourism industry; b) to summarise previous research and point out gaps in the literature; and c) to develop research objectives based on the research gaps identified in the review of the literature. While attempting to establish connections between the role of natural hot springs and the tourism industry it was noted that the majority of the hot spring literature reviewed was unrelated to the tourism sector. Natural hot and mineral springs and their usage are commonly viewed from medical, health and wellness, historical and geophysical perspectives rather than from the tourism standpoint. These scientific publications were analysed to confirm the importance of natural hot and mineral springs for medical treatments and demonstrate the coverage these natural resources receive in other academic disciplines (Table 2.5). The findings have confirmed the absence of tourism-based literature covering the role of natural hot springs in health, wellness and recreational tourism. The aim of this research is to close the gap in the academic tourism literature by investigating and assessing the role of natural hot and mineral springs in health, wellness and recreational tourism. The following research objectives were derived from the gaps identified in the literature:

1) To develop of a conceptual model to assess the role of natural hot and mineral springs within health, wellness and recreational tourism;

2) To identify settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism;

3) To explore the historical development of hot springs as destinations for tourism;

4) To determine the cultural context of hot springs as a tourism resource;

5) To investigate the recognition of medical benefits as a major factor in the demand for natural hot and mineral springs in health, wellness and recreational tourism.

These are used throughout the following chapters to provide a framework for data collection and analysis in order to achieve the overall aims of the research.

The trend towards a healthier lifestyle and the prevention of illness has advanced over the last two decades, with many publications available about choices for lifestyle changes. However, the academic literature covering health and wellness tourism has remained silent on the correlation of the use of natural hot and mineral springs with health resort and spa tourism, although these natural resources have played an important role in health and recreation for many centuries worldwide. Few mainstream tourism texts recognise the role of natural hot and mineral springs for health, wellness and recreational tourism. The existing information is scattered throughout a limited number of tourism journals (Table 2.3) and apart from one text by Erfurt-Cooper and Cooper (2009) there is currently no specialised literature which takes a global approach in providing an overview of the role of natural hot and mineral springs as a tourism resource, although these are available worldwide.

A number of similarities regarding hot spring use were identified in many countries, although there are differences between marketing strategies and destination management practices in hot spring tourism. To date most academic research has focused on health and wellness tourism with the recent increase in medical tourism while hot spring tourism as such is vastly under-researched; despite the fact that longstanding traditions of successful balneological treatments are common knowledge worldwide. Consequently, the subject of natural hot and mineral springs and their use in health, wellness and recreational tourism is underreported in the academic tourism literature, and textbooks for tourism students at university level do not take into account the important role of natural hot and mineral springs in the health, wellness and recreational tourism sector and their considerable economic contribution in many countries.

Sources such as conference proceedings have provided essential information regarding the current and future developments of the direct use of natural hot and mineral springs worldwide. Previous research has not covered the importance of hot spring use in health, wellness and recreational tourism and additional comparative information was gained from the internet, 'coffee table' books and marketing/promotional material rather than from the

academic literature. Reliable and credible scientific sources on the use of geothermal springs are medical journals reporting on clinical trials under medical supervision to evaluate their curative value (Table 2.2) and some earth science journals (Table 2.3), although the research published in those journals is not directly related to tourism.

This chapter has reviewed and analysed collected data to provide a critical evaluation of the existing literature pertaining to the role of natural hot and mineral springs in health, wellness and recreational tourism. The distribution of natural hot and mineral springs was addressed and the basics of the geophysical and mineralogical factors in the hot spring experience were explained. The historical and cultural context of hot spring use on a global base was introduced and government policies and support of the medical profession were discussed. In conclusion this meta-analysis has established that there is limited academic research on the role of natural hot and mineral springs in health, wellness and recreational tourism, with the sparse information found being repetitive and basic with a narrow focus. Despite the growing interest in alternative health treatments and the revival of existing health resorts and spas based on natural hot springs there is no separation of these from the general health and wellness tourism sector, which presents a considerable gap in the available information, especially with regards to visitor statistics. Wellness tourism and health and medical tourism are researched individually and so is the general spa industry; however, the main focus appears to be on the growing phenomenon of travel for the purpose of health and wellness and the motivations that direct tourists to the health and wellness sector. The importance of the natural environment and co-branding with cultural attractions was explored in this chapter, although the academic literature does not currently offer a theory or a suitable model to evaluate hot spring tourism as an independent sector. To contribute further towards the hot spring tourism literature and to close the existing gaps, more focused research into assessing the role of natural hot and mineral springs in health, wellness and recreational tourism is recommended. The next chapter outlines the research methodology used in this study.

CHAPTER 3
Methodology

3.1 INTRODUCTION

The aim of this thesis is to assess the role of natural hot and mineral springs in health, wellness and recreational tourism. To achive this aim, the methodology presented in this chapter takes a wide approach and noteworthy gaps in the academic health and wellness tourism literature are recognised and acknowledged as research objectives. The methods employed to collect and analyse relevant information on natural hot and mineral springs as a resource in health, wellness and recreational tourism to help close this gap in the academic tourism literature are outlined below.

3.1.1 Overview of Research Data Required

Natural hot and mineral spring tourism, although underreported in the academic literature, is a broad field with destinations that attract millions of annual visitors worldwide. In Japan for example over 150 million people visit hot springs every year (Beppu International Tourist Office, 2007; Erfurt-Cooper & Cooper, 2009), which supports the argument that natural hot and mineral springs are an important tourism resource. To address the research aim and objectives of assessing the role of natural hot and mineral springs in health, wellness and recreational tourism the following data were required:

- Information regarding the distribution of natural hot and mineral springs worldwide to determine the degree of their integration in health, wellness and recreational tourism;
- Information about the geophysical background of natural hot and mineral springs to clarify the importance of natural minerals in health and wellness tourism;
- Details about the mineralogical properties of natural hot and mineral springs which are known for their health benefits and their application in balneological therapies/treatments;
- Data containing the particulars of the historical development of natural hot and mineral springs into health, wellness and recreational facilities in different countries;
- Information on the cultural context of natural hot and mineral springs as a tourism resource;
- Information about government policies and legislation which regulate the use of natural hot and mineral springs in different countries;
- Evidence of the extent of support by the medical profession for the use of natural hot and mineral springs in health resort and spa medicine and their recognition of the medical benefits;

- Information about the current state of research regarding the use of natural hot and mineral springs in health, wellness and recreational tourism; and
- An assessment of the academic tourism literature on the use of natural hot and mineral springs in health, wellness and recreational tourism.

The research for this thesis takes a qualitative approach and follows the philosophical assumptions of the interpretive social science or constructivist research paradigm, which suits the complex topic under study. Several strategies of inquiry such as phenomenology, grounded theory, meta-analysis and case study research were brought together and supplemented by additional research methods. The latter included semi-structured interviews and participant observation desgned to assist in gaining increased knowledge of the study topic from a variety of sources, and to assess and describe the unique settings at hot spring destinations and to present this knowledge to the reader as a reference for further research. A summary of the research findings is discussed in Chapter **7.**

3.2 THE QUALITATIVE STUDY

3.2.1 Qualitative versus Quantitative Research

Scientific research involves the gathering of evidence to prove a theory or a hypothesis and for others to draw their own conclusions (Bouma, 2000). In contrast to testing hypotheses, in qualitative research a theory denotes a set of concepts and well-developed categories to explain a phenomenon and provides the impetus for research (Hage, 1972; Silverman & Marvasti, 2008) in contrast to testing a hypothesis. In social science this is undertaken by either using qualitative or quantitative research techniques. This thesis employs a qualitative research methodology following the interpretive social science paradigm. Justifications for this choice are the need to a) investigate an under-researched phenomenon, b) explore the 'where' and 'why', c) search for cultural descriptions, and d) aim to discover relevant variables as yet not identified (Marshall & Rossman, 2006).

Half a century ago qualitative researchers were described by Bateson (1972) as philosophers who were guided by abstract principles. In more recent times this has been clarified by scholars like Denzin and Lincoln (2000, 2003), who interpret qualitative research as a combination of beliefs about the nature of reality (ontology), known facts (epistemology), and how to gain new knowledge (methodology). These premises form the worldview of the researcher and provide an interpretive framework or conceptual model as a guide throughout the research process (Denzin & Lincoln, 2000, 2003; Guba, 1990). As the researcher

becomes increasingly grounded in the data, richer concepts and models of how the phenomenon studied works in reality gradually develop (Denzin & Lincoln, 2000, 2003), which may require the collection of more data. This is referred to as *Grounded Theory*, a term used originally by Glaser and Strauss (1967) to describe a way of inducing generalisations based on theory derived from qualitative data (Silverman & Marvasti, 2008).

The inductive and interpretive methods of qualitative research (Brannen, 2001; Somekh & Lewin, 2005) provide an understanding of the research environment from the perspective of the researcher with a focus on exploring, discovering and describing these environments or [social] settings (Bloomberg & Volpe, 2008; Corbin & Strauss, 2008; Hart, 2005; Sarantakos, 1998). The main data collection methods in qualitative research include observation (participant and non-participant), interviews (in-depth, semi-structured) and the use of textual material (Bouma, 2000).

In line with the qualitative approach the research for this study is justified by the lack of academic tourism analysis of hot spring tourism. A review of the literature indicates that there is generally no separation between health resorts and spas with and without natural hot springs, which represents a challenge for the assessment of the role of natural hot and mineral springs in tourism with special consideration of the health, wellness and recreational tourism sector. As natural hot and mineral spring resources are important for the development of hot spring destinations the research of this thesis will contribute to the knowledge about the role of them in tourism and will support and add value to the current discussions about health, wellness and medical tourism as an area of increasing importance in international tourism.

3.3 RESEARCH PARADIGMS, ONTOLOGY AND EPISTEMOLOGY

Research paradigms together with consideration of ontology and epistemology are emphasised are essential for structuring research (Table 3.1). Goodson and Phillimore (2009) note that the concept of research paradigms is inseparable from ontology and epistemology and together are these increasingly debated in tourism research. Paradigms are defined as a set of philosophical beliefs or world views by Chalmers (1982), Jennings (2001) and Lindlof (1995) and can be used as a conceptual framework or model (Silverman & Marvasti, 2008; Somekh & Lewin, 2005) to indicate the orientation of the research approach (Haralambos, van Krieken, Smith & Holborn, 1997; Jary & Jary, 1995; Kuhn, 1970; Lindlof, 1995; Neuman, 1997). The perspective or analytical strategy of individual paradigms is a tool for

identification of contextual factors and can be applied to data to extract these factors and identify relationships between context and process (Corbin & Strauss, 2008). Social science research recognises a number of different paradigms:

- Chaos theory paradigm;
- Critical theory paradigm;
- Feminist perspectives paradigm;
- Functionalist paradigm;
- Interpretive social science paradigm (aka Constructivist paradigm); and the
- Positivist/anti-positivist paradigm.

Table 3.1 *The research paradigm representing the worldview of this thesis and the ontological and epistemological assumptions are brought together to determine the research approach and methods.*

Research Paradigm	**Ontology**	**Epistemology**
Interpretive Social Science Paradigm (ISS) *also known as* **Constructivist Paradigm**	**Ontological Assumptions**	**Epistemological Assumptions**
Based on the work of Max Weber and the term of 'emphatic understanding' (Jennings, 2001) Diverse possibilities for undertaking tourism research – founded in the real world of social action - knowledge is constructed inductively (Jennings, 2001:40) Research is primarily qualitative (Jennings, 2001:57) Understanding gained from the inside the research setting and findings are a product of interaction between researcher and the research phenomenon (Goodson & Phillimore, 2009)	Assumptions about the world (Corbin & Strauss, 2008) The reality of current knowledge (Hart, 2005) The nature of knowledge in progress (Corbin & Strauss, 2008) Leading to the selection of appropriate research methods (Brannen, 2001) Multiple realities – inductive approach to research – theory building (Jennings, 2001)	How we know what we know (Bloomberg & Volpe, 2008) Status and nature of knowledge (Silverman & Marvasti, 2008) Relationship between researcher and the study phenomenon is subjective (Jennings, 2001) Enquiry into the possibilities of knowledge (Hughes & Sharrock, 1997) Knowledge gained by induction from personal experience in the study setting and combined with existing knowledge

However, some scholars/researchers/authors refer only to four major paradigms (positivist/post-positivist, critical and interpretive) to guide and structure research inquiry (Phillimore & Goodson, 2009). Similarities between research paradigms have been acknowledged in the literature which confirms the complexity of choosing the correct paradigm. According to Jennings (2001) tourism research has been mainly connected with the positivist paradigm, with studies being carried out using a quantitative approach. The research for this thesis follows the *Interpretive Social Science* paradigm (ISS) with additional elements of the *Constructivist* paradigms, both of which are considered by some researchers as interchangeable and match the philosophy which underlies the qualitative research strategy employed in this study as will be explained below.

3.3.1 The Interpretive Social Science Paradigm (ISS)

The interpretive social science (ISS) paradigm can be traced to *Max Weber* and *Wilhelm Dilthey* (Neuman, 1997). This paradigm for social research was considered by Dilthey and *Heinrich Rickert* (1863-1936) as the alternative to the positivist methodology, which they found inadequate to the understanding of human phenomena. Different methods of study were required as a means to gain objective and adequate knowledge of social and cultural settings (Hughes & Sharrock, 1997).

The ISS paradigm promotes research rich in detailed descriptions with references to study experiences and examples of social reality (Hart, 2005; Lindlof, 1995; Neuman, 1997) and is a term given to research that uses various methods, including the hermeneutic tradition, to uncover and understand the deeper implications revealed in data and to achieve an understanding of worldviews (Neuman, 1997; Somekh & Lewin, 2005).

The interpretive research approach is based on common sense as a source of information for the emphatic understanding of people in specific settings, is ideographic and inductive (Neuman, 1997) and in opposition to the positivist approach (Hart, 2005), which is used commonly in quantitative tourism research (Jennings, 2001). Denzin (2002) has divided the interpretive research process into several steps which were adopted for the present study:

- Framing of the research aim and objectives by the researcher;
- Analysis of prior conceptions of the study topic through literature or meta-analysis of data;
- Locating the research settings and give multiple examples;
- Definition of essential elements of the research topic and highlight their individual features; and
- Contextualising the research phenomenon (Denzin, 2002).

Together with the research objectives the above steps provide the foundation for assessing the role of natural hot and mineral springs in health, wellness and recreational tourism and help to understand the phenomenon of the research topic through obtaining personal experience, interpretation of data, and presenting multiple cases from different countries to compare the main aspects and identify any differences.

3.3.2 The Constructivist Paradigm

Constructivism refers to a paradigm or model that encourages researchers to focus on how particular phenomena, concepts and theories are connected through the study of behaviour and experiences (Bloomberg & Volpe, 2008; Corbin & Strauss, 2008; Silverman &

Marvasti, 2008). The term constructivism is used by some researchers in preference to the interpretive social science paradigm to describe a theory of knowledge which emphasises the active process of knowledge-building over the assumption that knowledge is unchanging and merely needs to be understood and memorised (Somekh & Lewin, 2005). ISS research and the constructivist research approach both seek the meanings people have for their actions or situations and can be classed as a realist approach to theory-building (Berg, 2007). The constructivist view as defined by Corbin and Strauss (2008) was supportive in guiding the research of this thesis towards the construction of concepts and theories, resulting in new knowledge gained from the analysis of the collected data as well as from experiences in the field. The present research includes the active process of knowledge building as recommended by Somekh and Lewin (2005) with the focus on the phenomenon (Silverman & Marvasti, 2008) of natural hot and mineral springs in tourism.

3.3.3 Research Ontology and Epistemology

Ontology originates in the Greek language and refers to the philosophical study of the nature of being and of reality, what knowledge is and the purpose of existence (Bloomberg & Volpe, 2008; Hart, 2005; Jennings, 2001; Somekh & Lewin, 2005). These ontological assumptions about the world (Corbin & Strauss, 2008) are relevant for the selection of appropriate research methods (Brannen, 2001).

The term epistemology comes from the Greek word *epistêmê*, the word for knowledge, which means that epistemology is the philosophy of knowledge or how to gain knowledge (Krauss, 2005; Somekh & Lewin, 2005; Tribe, 2009), how we know what we know (Bloomberg & Volpe, 2008), what can be accepted as real (Hart, 2005), and the status and nature of knowledge (Silverman & Marvasti, 2008). Hughes and Sharrock (1997) understand epistemology as the enquiry into the conditions of the possibilities of knowledge and the evaluation of claims about the way in which the world can be known to us, while Jennings (2001) labels epistemology as the relationship between researcher and the study subject. According to Lofland and Lofland (1995) epistemology can involve direct observation or participant observation, face-to-face interaction in the form of interviews and the immersion in the research setting to become familiar with a particular natural environment. Both ontological and epistemological assumptions and theoretical considerations are relevant to the choice of research methods (Brannen, 2001).

The research philosophy of this study is that it is concerned with what is known already and what evidence there is to support this existing knowledge (Aitchison, 2005; Oakley, 2000; Stanley, 1997). The ontological assumptions referring to the nature and construction of reality based on individual interpretation (Goodson & Phillimore, 2009; Mack, 2010) and the current knowledge about the role of natural hot and mineral springs in tourism influenced the choice of research methods such as case studies and a meta-analysis of the literature. The philosophical assumption (epistemology) that knowledge is gained inductively through personal involvement of the researcher in the study setting while gaining personal experience (Goodson & Phillimore, 2009; Jenner, 2001; Mack, 2010) presented the basis for selecting additional research methods including participant observation, semi-structured interviews, and focus groups. The generation of new knowledge from the existing set used a multi-disciplinary approach (Tribe, 2009) drawing from the fields of sociology, history, geology and geography to bring together what is already known about natural hot and mineral springs and their role in health, wellness and recreational tourism so that it could be combined with knowledge acquired during the study.

3.4 METHODOLOGY OR RESEARCH STRATEGY

Research methodologies are generally influenced by personal worldviews, beliefs or attitudes of the researcher about the world we live in (Corbin & Strauss, 2008; Hughes & Sharrock, 1997). A methodology is a set of guidelines for conducting research and the choices we make about data collection methods and analysing techniques as well as for the planning and executing of research (Silverman & Marvasti, 2008; Somekh & Lewin, 2005).

3.4.1 Methods of Data Collection

Methods are tools for data collection and analysis (Jennings, 2001) in the form of specific research techniques (Silverman & Marvasti, 2008), which can include participant observation as a data collection technique (Yin, 2003; Platt, 1992), case studies as empirical enquiry to investigate a contemporary phenomenon within its real-life context (Yin, 2003), as well as semi-structured interviews and literature reviews.

A multi-method approach can be useful and gives the researcher the option of triangulating their research by using a variety of methods (Barton & Lazarsfeld 1955; Bernard, 1995; Brannen, 2001; Flick, 2006; Greenfield, 2002; Huberman & Miles, 2002; Neuman, 1997; Jennings, 2001; Thomas, 2003; Olsen, 2004). The choice of research methods depends on

several factors including a) the research aim (Table 3.2), b) the methods preferred by the researcher; c) the available timeframe, and d) the expected outcome (Jary & Jary, 1995). This thesis is based on a multi-method approach and includes two case studies, a meta-analysis of the literature, semi-structured interviews and focus groups and observation (from observer to participant).

Table 3.2 *Methods of Data Collection used in this Study*

Research Objectives		Data Type	Method of Collection
RO1	Development of a model to assess the role of natural hot and mineral springs in health, wellness and recreational tourism	Descriptive Evaluative Comparative	Meta-analysis of scientific and general literature; case Studies; interviews
RO2	Identification of settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism	Evaluative Explorative Comparative	Meta-analysis of scientific and general literature; observation; expert opinion; interviews; focus groups
RO3	Exploration of the historical development of hot springs as destinations for tourism	Explorative Descriptive, Comparative	Meta-analysis of scientific and general literature; case studies
RO4	Determination of the cultural context of hot springs as a tourism resource	Explorative Descriptive, Comparative	Meta-analysis of scientific and general literature; case studies; interviews
RO5	Recognition of the medical benefits associated with natural hot and mineral springs	Explorative Descriptive Evaluative	Meta-analysis of scientific (medical) literature

3.4.2 Concepts, Framework, Models and Typologies

A concept is a clearly specified idea which derives from a particular model and is used to define a research problem (Silverman, 2008; Silverman & Marvasti, 2008) by way of conceptual ordering of data into categories, typologies or concept maps which describe their properties (Corbin & Strauss, 2008; Hart, 2005). Conceptual frameworks explain the main objectives of a research project, either in narrative form or displayed graphically (Miles & Huberman, 1994) and are perceived by some authors (e.g. Sarantakos, 1998) as being the same as research designs or models. Frameworks explain the key factors of the research project; specify the settings and processes to be studied, help to co-ordinate research methods and act as a guide through the research process (Miles & Huberman, 1994). They raise practical questions about the specific research focus and how the literature connects to real-life observations (Marshall & Rossman, 2006) and are reviewed throughout the research process. Frameworks emerge more clearly with growing experience and their structure varies from case to case (Miles & Huberman, 1994). Models are overall frameworks guiding us how we look at reality (Silverman, 2008; Silverman & Marvasti, 2008) and can represent concepts or sets of relationships either as diagrams or flowcharts to simplify concepts for

analytical purposes and to test and assess theories (Jary & Jary, 1995). To assess the role of natural hot and mineral springs in health, wellness and recreational tourism a model (see Figure 1.3) was created as a graphical representation of the conceptual framework, on which the research of this study is based. This model was developed following the review of previous literature and through personal involvement in the study settings using interviews and observation.

One of the methods for systematic classification is the use of typologies (Berg, 2007; Lindlof, 1995) to organise frameworks in research (Somekh & Lewin, 2005), which allows for the grouping and classifying of similar events, actions, objects, phenomena, and people or places (Berg, 2007) into categories and hierarchies (Somekh & Lewin, 2005). Typologies can be represented either in the form of tables (Table 3.3; Appendix 2.2) or conceptual diagrams (Jennings, 2001), which have been created where required within the context of this thesis.

Table 3.3 *Short typology of natural hot and mineral spring related to their role in tourism (Author, 2011).*

Types of Natural Hot Springs	**Occurrence of Hot Springs**
Undeveloped springs Developed springs For human use For commercial use	Worldwide with few exemptions
Health Benefits of Hot Springs	**Role of Hot Springs in Tourism**
Universal reputation of curative value	Attraction of dynamic environments based on natural resources Catering for a demand

3.4.3 Case Study Research

Case studies, the process of inquiry about the case or research topic, have become one of the most common methods in qualitative inquiry, with case study research neither new nor essentially qualitative (Stake, 2000), as they can be based on any mix of qualitative and quantitative facts, and rely on multiple sources of evidence (Yin, 2003). Case studies do not anymore require justification in tourism research as they are taken as a well established method by most scholars, although some critics still argue that case studies may reflect the bias of the researcher (Beeton, 2005). However, this inherent bias can be overcome by triangulating several research methods and thus neutralising any potential bias (Beeton, 2005; Creswell, 1998).

The case study method involves the systematic gathering of an adequate amount of information about a particular social setting to effectively understand how it works (Berg, 2007), and can be used to accomplish various aims from providing a description, testing a theory to generating theory from case study evidence (Eisenhardt, 2002). Case studies are defined by Creswell (1998:61) as *'an exploration of a bounded system or a case (or multiple cases) over time through detailed, in-depth data collection involving multiple sources of information rich in context'.* The multiple sources Creswell is referring to typically incorporate a number of data-collecting measures (Hamel, Dufour & Fortin, 1993) in a combination of interviews, questionnaires and observation (Eisenhardt, 2002) as well as audio-visual material, documents and reports, which points towards the process of triangulation. Thomas (2003:33) describes case studies as typically consisting of a description of an entity and the entity's actions, which in the case of this thesis refers to the health, wellness and recreational destinations and facilities as entities and the use of natural hot and mineral springs as the actions of the entity. More exactly, the context of the case studies of this thesis refers to the physical settings of natural hot and mineral springs (geological, mineralogical and geographical), the historical settings (providing the time frame), and the socio-cultural settings which refer to the use of natural hot and mineral springs in different countries and contexts.

Case studies and their conceptual structure are typically organised around a number of research objectives and can be simple or complex in their investigation of what is common and what is particular about the case (Stake, 2000). As a research strategy case studies therefore require varying degrees of immersion in the research setting to investigate a contemporary phenomenon within its real-life context (Beeton, 2005; Yin, 2003) and are influenced not just by the overall research paradigm, but by the researcher's and the participant's personal worldviews (Marshall & Rossman, 2006).

One of the strengths of theory building from case studies is that emergent theories can be tested and measured within conceptual frameworks and models (Eisenhardt, 2002), as case study research focuses on understanding the dynamics present within individual social settings with the potential to evolve into single or multiple cases even in the last phases of writing (Eisenhardt, 2002; Stake 2000). Case studies can be explorative, explanatory or descriptive with *how* and *why* as important questions (Hamel, Dufour & Fortin, 1993) which focus on patterns of behaviour (Stake, 2000).

The case study research for this thesis required the collection of data on the following criteria as recommended by Stake (2000):

- The nature of the case;
- The historical background;
- The physical setting;
- Other contents such as the cultural, religious, economic, geological, environmental background; and
- Inclusion of other cases as small examples.

Other research objectives addressed in case studies commonly include the *where* and *when* of the research phenomenon in general and the definition of *what* is the case study about in particular.

Four of the most challenging steps for undertaking case study research are singled out by Yin (2009) as a) the selection and definition of a case for study, b) the use of multiple cases within the same study, c) the strengthening of the evidence used, and d) the analysis of the evidence. Yin also recommends that prior to the selection process of a case study practical considerations should include the investigation of the availability and quality of relevant case study data with Stake (2000) confirming that criteria for selecting case study content are subjective choices, made when the case study is designed. To contribute to the research literature by transferring knowledge from researcher to reader (Stake, 2000) case studies need to be special with a critical focus on distinctive setting within a theoretical framework (Yin, 2009).

The two country case studies undertaken for this research include representative types of natural hot and mineral springs (Table 3.3) and cover the major traditions of the use of such geothermal resources to enhance health and wellbeing (Erfurt-Cooper & Cooper, 2009). Each case study reflects the specific traditions of the country, how the relevant authorities deal with natural geothermal resources in relation to health, wellness and recreational tourism (regulations on usage), the geographical, historical-cultural and geological environments, as well as the level of support from the national health care providers and medical insurance systems. The case studies also touch briefly on the marketing of natural hot and mineral springs; for example how and why their use has been marketed in some countries and not in others, as well as providing useful data on the development of new hot spring destinations. Each case study concludes with a tentative future prognosis for the use of natural hot and mineral springs and presents an important contribution to understand the patterns of health, wellness and recreational tourism in Japan and Germany.

3.4.4 Literature Review and Meta-analysis

The main aim of a literature review is to demonstrate familiarity with the research topic and establish credibility and can vary in scope and depth (Neuman, 1997). During the analytical reading process different levels of detail and information are extracted and information components such as perspectives, concepts and theories are recognised (Hart, 2005). A meta-analysis is a special reviewing technique applied to search the literature extensively to examine findings and look for as many citations related to the research topic as possible. A review of the literature in the form of a meta-analysis has several purposes: a) to provide the background and theoretical foundation for the discussion of the research topic and the research objectives; b) to define and clarify the research aim and objectives; and c) to summarise previous research and identify gaps in the literature (American Psychological Association [APA], 2001). A meta-analysis presents a critical evaluation of existing literature and reviews the progress of current research (APA, 2001). The importance to cross-check data by locating, examining and summarising a wide range of documents such as journal articles, research papers and books and enrich these where possible with interviews and observations is emphasised by a number of authors (e.g. Bouma, 2000; Corbin & Strauss, 2008; Creswell, 2009; Neuman, 1997).

To generate and communicate research knowledge and information (Hart, 2005) a meta-analysis was carried out using a wide range of data including academic journals, research papers, conference proceedings, industry reports, theses, promotional material, e-newsletters, textbooks, newspapers, seminars, general literature, dictionaries and the internet. The results from this analysis of data have generated important research knowledge (Marshall & Rossman, 2006) and are discussed in Chapter 7. The review of studies related to the topic in the form of a meta-analysis is included in Chapter 2 and provides a) a substantial literature orientation at the outset, b) a conceptual model, and c) a useful contribution to the understanding of the literature (Creswell, 2009). As part of this analysis the research direction was outlined, the research objectives defined and the gaps in previous research identified (Marshall & Rossman, 2006; Neuman, 1997).

The sources of secondary data for this thesis included published and unpublished academic literature related to natural hot and mineral springs (Table 3.4) in the form of government reports and statistical digests of related tourism data. To address the research objectives both, the general and academic literature, as well as special scientific studies and reports were consulted to collect evidence for the role of natural hot and mineral springs within the health,

wellness and recreational tourism sector. While the sources of these data were analysed in Chapter 2, the findings are discussed in Chapter 7.

Table 3.4 *Literature Sources used.*

Source Material	Content
Books - academic	History, culture, geology, geography and tourism related to hot springs
Books - general	Publications for public interest, primarily for visual effect
Research papers	Internet sourced pdf files containing updated research findings
Journals	Academic publications – medical, tourism, earth science and environment
Conference Proceedings	World Geothermal Congress 2000, 2005, 2010; others
Industry Reports	Spa Summit 2010; World Tourist Organisation; others
Travel Guides	Frommers, Lonely Planet, others
Magazines	Travel magazines, spa magazines, geography
Brochures, Pamphlets	Marketing and promotional material from individual destinations
Internet based websites	Marketing and promotional material from individual destinations
e-Newsletters	Subscribed from a number of hot spring destinations

3.4.5 Field Studies and Data Collection

Field research or field studies can be explorative, descriptive or hypothesis testing and take place in a 'natural' setting as the research environment and not in a specifically established area, because the aim is to explore real life situations and to investigate behavioural patterns to accumulate data (Sarantakos, 1998). The research methods of this thesis include a combination of explorative and descriptive field research in a qualitative context using observation and interviews to explain aspects of the research topic in a descriptive form. While the research on natural hot and mineral springs was conducted over more than a decade with data generated throughout, at times it was not possible to take notes and events were written down afterwards from memory. Interpretation of data took place frequently while collecting information, although generally data were analysed at a later date.

3.4.6 Description of Natural Research Settings

The field work (observation, interviews) took place in natural research settings at hot and mineral spring destinations and facilities in a number of countries including Australia, Japan, Germany, Hungary, Iceland, Indonesia, Iran, Italy, Malaysia, New Zealand, Portugal, Turkey and the United Kingdom. The settings ranged from natural, undeveloped hot springs in remote settings (e.g. Iceland, Japan, and New Zealand) to highly developed facilities for Health (medical) and wellness treatment (e.g. Germany, Hungary, Iceland, UK).

3.4.7 Semi-structured Interviews

Interviews are one of the research methods used in the qualitative research approach. This form of inquiry can range from informal unstructured to semi-structured interviews with varying levels of depth and typically take place in a conversational manner (Denzin & Lincoln, 2000, 2003; Marshall & Rossman, 2006). While carrying out interviews the researcher initially explores more general topics to uncover the views of participants to achieve a degree of systematisation in questioning (Marshall & Rossman, 2006).

During the research for this thesis semi-structured interviews were used, either in informal discussions to talk about specific local issues or in the form of open-ended questions. Interviews were usually combined with varying degrees of observation with respondents generally selected at the research site. While talking to key representatives of the hot spring tourism sector such as spa managers, spa association representatives and local tourist organisations questions mainly covered the operation, role, history, marketing, visitor numbers, environmental and community constraints, and any other pertinent data that could be used to describe the impact of natural hot springs within the health, wellness and recreational tourism industry that these respondents had knowledge of or had direct control over. The questions used are listed in Chapter 7 together with the findings from the semi-structured interviews. Visitors met at hot spring destinations were also interviewed with questions different from the ones used for managers and staff members.

Some meetings were arranged prior to visiting and repeat visits were made when possible (e.g. Peninsula Hot Springs, VIC; Blue Lagoon, Iceland; Bad Bevensen, Germany). Interview questions were selected according to the individual situation and the person interviewed. If the hot spring was located in a natural environment the questions differed from the ones asked in a resort or health facility setting. A total of 119 interviews with representatives from the hot spring industry was conducted over time and in some cases was supplemented by follow-up e-mail correspondence to obtain relevant missing or updated information. Interviews with visitors of hot springs amounted to a total of 478 with an additional 200+ from Japan due to the long time spent researching hot spring tourism in that country. Field notes were taken during and after interviews and form part of the discussion of findings in Chapter 7.

3.4.8 Focus Groups

The term *Focus Group* was originally introduced by Merton, Fiske and Kendall (1956) for group interviews associated with qualitative research strategies (Jennings, 2005). Focus groups can be employed to define topics and research objectives (Fowler & Cosenza, 2009) and are particularly suited for exploratory research in cases of little knowledge about the study phenomenon (Stewart & Shamdasani, 1990; Stewart, Shamdasani & Rook, 2009), because they offer a diversity of perception, judgement and experience about a study phenomenon, which surface when members of a focus groups are stimulated by experiences of other group members (Lindlof, 1995). Focus groups are widely accepted as a source of qualitative data in social science research as well as a qualitative research tool which relies on the interaction of group members to produce data (Morgan, 1988; Oates, 2000; Weeden, 2005), and are regarded as effective in summarising the motivation complexities (Carey, 1994; Krueger, 1994). The synergetic effect of focus groups is created by participants who share and compare ideas, experiences and perception and by reactions to the responses of other members in the group (Berg, 2007; Gaskell, 2000; Stewart & Shamdasani, 1998; Thomas, 2009) which in combination provides mental cues to encourage the exploration of a wider range of observation and awareness (Krueger, 1994).

Focus groups are recognised as having several advantages, one of which is the synergetic effect through group interaction, which stimulates knowledge production. Secondly focus groups can greatly assist in the definition of key concepts and by rationalising different views and perceptions. A third advantage is that they are a flexible and time efficient method of data collection and finally focus groups allow for time to reflect or recall past experiences (Lofland & Lofland, 1995) during the group discussion with the opportunity to contribute these in an informal way.

Several focus groups were organised during the research for this study, though they were used mainly during the initial stages of this study by raising issues for later phases of the research process (Cole, 2009). Although some of them were spontaneous, not planned and did not follow a preconceived framework (at the time they were considered to be informal ‘discussion groups’ or seminars and not classed officially as ‘focus groups’), they followed essentially a similar organisational structure and contributed considerably toward the development of the research objectives and the overall research approach for this thesis. A number of focus group meetings took place at conferences (workshops, seminars, special interest groups) with the main focus on hot springs and health, wellness and recreational tourism. Others were held as regular seminars organised by a group of postgraduate students

in Japan, where the emphasis was predominantly on research strategies and methods, but in retrospect were of great value in defining key concepts and exploring a range of perceptions and ideas.

3.4.9 Participant Observation

Participant observation is an additional qualitative research method and data collection technique (Platt, 1992; Yin, 2003) which is used by combining varying degrees of observation with informal interviews (Delamont, 2004). This method, promoted by early anthropologists and shared by some ethnographers, assumes that in order to understand a research setting and become familiar with a specific environment, the researcher must participate in the process rather than just observe from a distance (Marshall & Rossman, 2006; Silverman & Marvasti, 2008). This method can range from being a complete participant to being a complete observer (Williams, 2003) and is based on watching, listening and learning to understand the dynamics of specific settings (Berg, 2007). Observation within a research environment is considered an important fundamental method of systematic recording of events, behaviours and objects in a specific social setting, which is used to discover complex interaction in natural social settings (Marshall & Rossman, 2006). Observational records in the form of field notes are supposed to be detailed, non-judgemental descriptions of what has been observed (Marshall & Rossman, 2006) with emerging analytical insights resulting from data collected in the field.

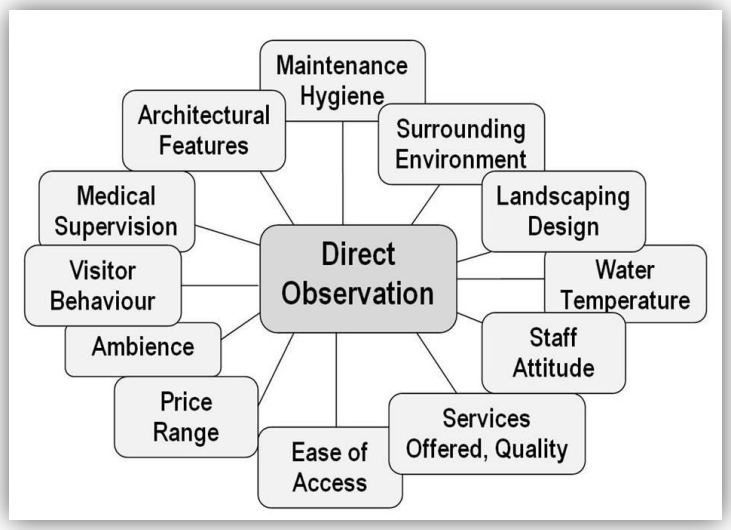

Figure 3.1 *Some of the main aspects observed and noted at individual hot spring facilities (Author, 2011).*

Observation in the field for this thesis ranged from being just an observer to being a complete participant in the hot springs experience depending on the conditions such as location, facilities, language, time and weather. Participant observation was frequently combined with interviews, either as informal discussions or in the form of questions to establish specific local facts. During observational work any available promotional literature was collected for further reference. In addition photographic data of signs, facilities, special features and any relevant text not otherwise replicable was obtained, which proved valuable for later additional evaluation and analysis of individual aspects of the natural research setting (Figure 3.1).

Data Collection at Conferences

Throughout the duration of this study international conferences were attended whenever possible to obtain the latest updates and research findings in the field of natural hot and mineral spring use (Table 3.5). During congress meetings discussions (focus groups) with other scientists and researchers provided a wealth of information about the current state and future trends related to the use of geothermal resources in the form of natural hot and mineral springs.

Table 3.5 *Conferences attended related to the use of natural hot and mineral springs. Papers and posters were presented each time.*

Conference	Location	Title of Paper presented
III. Innovation and Tourism International Seminar (INTO 2006)	Palma de Mallorca, Spain	Hot Springs – An Important Component of Wellness, Health and Leisure for Today's Tourists
Global Movements in the Asia Pacific RCAPS Conference 2006	Beppu, Japan	Hot Springs – A natural resource as Tourist Attraction
ATLAS Annual Conference 2007	Viana de Castelo, Portugal	The Importance of Hot Spring Spas in Health & Welfare Tourism
Japan Tourism Association Symposium on Sustainable Tourism Development 2008	Hiroshima, Japan	Beppu Reconstruction: A Domestic Hot Springs Destination in Search of a 21st Century Global Role (with M. Cooper)
World Geothermal Congress (WGC) 2010	Bali, Indonesia	The Importance of Natural Geothermal Resources in Tourism
Cities on Volcanoes (CoV6) 2010	Tenerife, Spain	Volcanic Hot Springs – Health Benefits and Visual Attraction

One of the most important conferences related to geothermal resources in the form of natural hot and mineral springs is the World Geothermal Congress (WGC), which takes place every 5 years and in 2010 was held in Bali, Indonesia. The resulting conference proceedings contained **3913** peer reviewed research papers, which were electronically analysed by using keywords to identify the most recent trends in hot spring development worldwide and to gain a clear overview of the current status. The conference proceedings of the WGC from the

years 2000 and 2005 were considered at an earlier research stage and suitable data has been used in individual chapters throughout this thesis.

3.5 DATA ANALYSIS

Data analysis aims to identify patterns and common elements (Merriam, 1998) which can be interpreted and described. While the recognition of common threads requires an open mind, the tools for organising data include a number of steps (Figure 3.2) such as reviewing, examining, sorting, categorising, evaluating, comparing and synthesising of raw data (Neuman, 1997) to gradually eliminate any excess data to be able to interpret the emerging patterns and meanings. Bloomberg and Volpe (2008) suggest the use of summary forms, both for documents/literature as well as for interviews and focus groups.

Qualitative data analysis is a process of examining and interpreting data to obtain meaning, understanding the research findings and develop empirical knowledge (Corbin & Strauss, 2008) as well as relating data to the research objectives, assessing the limitations of the study project and make suggestions for further research (Bouma, 2000). Relevant literature is evaluated in a review or meta-analysis to extract key ideas, theories, concepts and methodological assumptions from prior research (Hart, 2005). A comparative analysis of research data evaluates contrasting incidents for similarities and differences (Corbin & Strauss, 2008). In many research situations data reduction is essential and can be achieved by grouping or classification of raw data into different categories to organise it into manageable segments (Bloomberg & Volpe, 2008). Typologies can be used as an additional method to advance the analysis and presentation of data (Jennings, 2001) by combining several concepts to express correlations (Neuman, 1997) and bring order out of chaos (Bailey, 1992). The following sections detail how these considerations were applied to data analysis for this thesis.

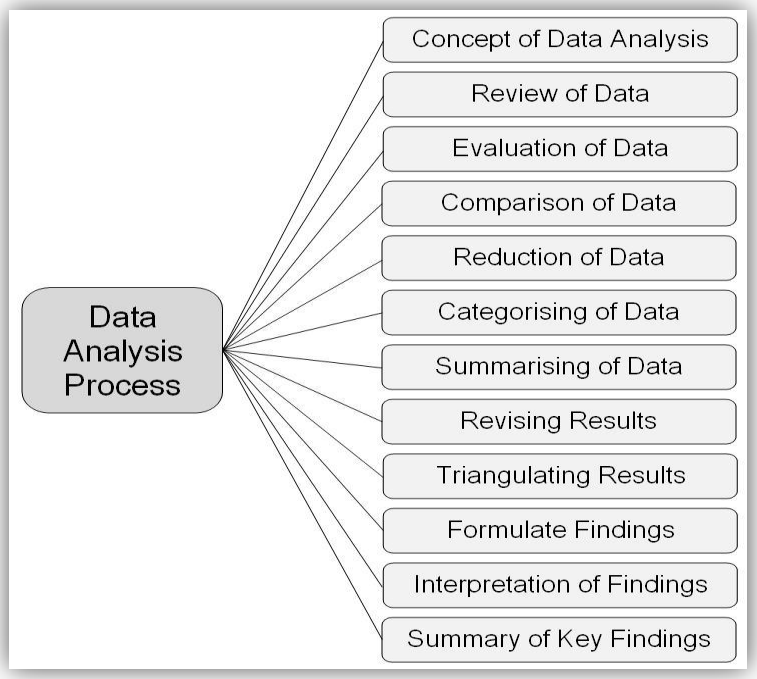

Figure 3.2 *General concept of qualitative data analysis (Based on Bloomberg & Volpe, 2008).*

3.5.1 Triangulation

Triangulation is recommended as a validation strategy to reduce the likelihood of misinterpretation (Denzin & Lincoln, 2000; Flick et al, 2004; Stake, 2000) and to make sure that research is interdisciplinary and holistic (Olsen, 2004) by using multiple sources of evidence (Yin, 2003) to cut across the qualitative-quantitative divide (Olsen, 2004). To combine data from a number of sources or research methods with data from different places or research settings researchers employ the process of triangulation to use multiple perceptions to clarify meaning by identifying different ways in which the phenomenon is being viewed and to achieve a higher degree of validity (Flick, 1998; Sarantakos, 1998; Silverman, 1993; Stake, 2000). To obtain as much information on the research topic as possible social science research ought to be triangulated by using different research approaches to achieve valid results (Denzin, 1970; Hammersley, 1996; Jary & Jary, 1995; Neuman, 1997; Sarantakos, 1998). Data should be triangulated from at least three different perspectives on the same research topic (Somekh & Lewin, 2005) to see whether they corroborate one another (Silverman & Marvasti, 2008). Yin (2003) recommends the use of triangulation to support the facts of case studies by several sources of evidence and warns about using individual sources of evidence like surveys, histories or experiments as isolated data sources. This approach is supported by Flick (2006), who draws attention to the fact that triangulation can also mean joining qualitative and quantitative methods for a single focus

study. The use of different research methods complementing each other can also be seen as compensating for the weaknesses of each single method.

Several types of triangulation have been identified by Denzin (1978), including which include *data triangulation* - using a variety of data sources in a study, *theory triangulation* - using multiple perspectives to interpret a single set of data, *methodological triangulation* - using multiple methods to study a single problem, and *investigator triangulation,* which includes the use of several different researchers or evaluators. Visual data such as photos or electronic data can be triangulated with verbal data and the traditional data types to create greater potential of verification (Flick, 2004). Yin's (2003:99) advice *is 'to collect information from multiple sources, but aimed at corroborating the same fact or phenomenon'.*

The research for this thesis employed several data collection methods which allowed for triangulation of the research results, which is the preferred technique for bringing the collected information and methods of analysis together to present a range of perspectives (Jennings, 2001). Although it is true that historical analysis may provide limited reliable evidence from past events, in the case of the research aim and the objectives addressed in this thesis the past use of natural hot and mineral springs for health, wellness and recreation is confirmed and supported by historical and contemporary sources of evidence, namely the phenomena of the hot spring environments in many countries and their direct use in this way today. The triangulation process in this thesis was based on the meta-analysis of the literature, two case studies (which established patterns of natural hot spring use) as the main methods supported by semi-structured interviews and discussions with key representatives from the hot spring based health, wellness and recreational tourism industry (as well as visitors) (Figure 3.3) and was designed to provide the maximum integration of data from the different research techniques outlined above. Data from all information sources were combined in this way to develop and enhance the overall understanding of the research objectives as outlined in Chapter 1.

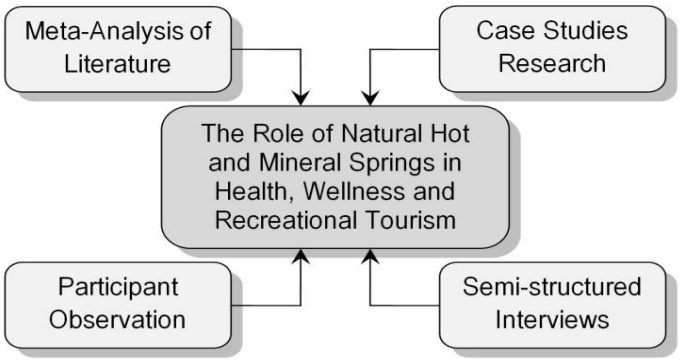

Figure 3.3 *Triangulation model proposed for this thesis (Source: The Author).*

The collected data sources were reviewed and analysed together with reference to the research objectives (Chapter 1) to base the findings on the convergence of information from different sources (Jennings, 2001; Yin, 2003). This form of data triangulation allowed for a comprehensive analysis of the role of natural hot and mineral springs in health, wellness and recreational tourism.

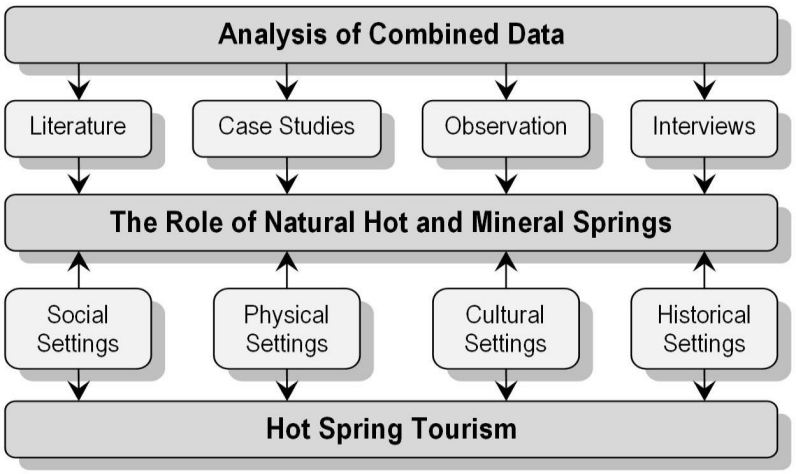

Figure 3.4 *Data analysis concept for this thesis (Source: Author).*

The diverse data sources enhanced the evaluation of the research phenomenon of natural hot and mineral springs through triangulation (Neuman, 1997; Huberman & Miles (2002). Due to the wide range of variables the analysis of the data collected for this thesis included the following tasks (Figure 3.4) to address the research aim and objectives of this study:

1. Categorising of collected information according to parameters of the use of natural hot and mineral springs (history, geology, impact on health, tourism etc) for use in the case studies;

2. Identifying reasons for visiting health and leisure facilities;

3. Collection and tabulation of information on operation, visitor flows and policies regulating this form of tourism arising from informal discussions with key representatives of the health, wellness and recreational tourism industry and with personnel from spa and tourism associations at hot spring destinations (Chapter 6 and 7);

4. Collection and tabulation of scientific data on geothermal springs (distribution, mineral content, temperature, use in medical and wellness treatments);

5. Collection and analysis of marketing and promotional data on the use of geothermal springs in health, wellness and recreational tourism.

3.6 LIMITATIONS

3.6.1 Limitations of this Research

Research limitations can include negative evidence. This refers to absent or omitted data resulting from either unconscious or conscious non-reporting leading to limitation by omission (Neuman, 1997). In the present study negative evidence though refers to the apparent lack of tourism literature covering the role of natural hot and mineral springs as a valuable tourism resource, as well as to the lack of reliable visitor statistics due to the combination of hot spring based health, wellness and recreational tourism with health, wellness and recreational tourism in general.

The complexity of the research topic made it difficult to limit the scope without an existing model to assess the role of hot springs as a tourism resource due to the gap in the academic hot spring tourism literature. Generally acknowledged are wellness tourism (Andrijasevic & Bartolucci, 2004; Bennett et al, 2004; Bushell & Sheldon, 2009; Chen et al, 2008; De la Barre et al, 2005; Dunn, 1961; Marktl, 2000; Mueller & Lanz Kaufmann, 2001; Nahrstedt, 2004; Ross, 2001; Smith & Kelly, 2006; Steiner & Reisinger, 2006; Smith & Jenner, 2000; Smith & Puczkó, 2008), health and medical tourism (Goodrich, 1993, 1994; Hall, 2003; Mak et al, 2009; Miranda, 2005; Pollock & Williams, 2000; Robinson, 2005; Spivack, 1998; Strauss-Blasche & Marktl, 2004) and the spa industry (Cohen & Bodeker, 2008; Stein et al, 1990; Tabacchi, 2003, 2010), but not of the role of hot springs, which is a major shortcoming. The limited information about health, wellness and recreational tourism in conjunction with natural hot and mineral springs from a tourism point of view is generally repetitive, with basic information regarding hot and mineral springs within different tourism sectors paraphrased time and again and therefore not offering any new insights.

Despite an increased interest in alternative and holistic health and wellness spa treatments, and the documented (though rarely in the tourism literature) revival of existing hot spring spa facilities as well as new developments at hot spring destinations worldwide (e.g. Argentina, Australia, Brazil, Iceland, Portugal, Turkey, Uruguay) since the onset of the global wellness movement, there is no separation of hot spring facilities from health resorts and spas without these natural resources, and this results in a limiting factor in relation to reliable visitor numbers.

The present study concentrates on defining the role of natural hot and mineral springs in health, wellness and recreational tourism (e.g. thermalism, balneology, hydrotherapy, swimming and bathing for leisure and relaxation). It was beyond the scope of the study to cover in detail the use of mineral spring water for internal consumption (drinking cures, 'taking the waters'), or to provide an in-depth analysis of leisure and recreational use of natural hot and mineral springs. Further, one of the major limiting factors in tourism research is a lack of visitor statistics (Beeton, 2005), because at present there is no separation of hot spring tourism from the overall health and spa tourism sector.

3.6.2 Language Limitations

Journal articles in several languages (English, German, Spanish, and French) were included in the research where accessible. The main languages for research publications about natural hot and mineral springs are in English, German, Spanish and French and reading these presented no problem, especially with the Internet now offering direct translation assistance for most languages. Moreover, research data on natural hot and mineral springs in Japan is increasingly made available in English, as are Icelandic and Chinese publications. Japanese promotional material aimed at international visitors is frequently translated into English, Korean, Chinese, and Russian. Given that German is the author's first language, interviews for the case studies as well as focus groups and discussions were mainly conducted in English and German.

3.7 CHAPTER SUMMARY

The previous discussion indicates that this research study consulted a wide range of data sources to investigate the role and importance of natural hot and mineral springs in health, wellness and recreational tourism, clarified the overall research approach and stated reasons for the selection of individual research methods, which influence the outcome of the research project. A research approach using several qualitative methods to collect a wide range of

data was used to achieve more reliable results. Variables considered in this research relate to the socio-cultural and geological nature of natural hot and mineral springs and the history of their use, as well as to the contemporary use of hot springs in health, wellness and recreational tourism (Figure 3.6). In this study health, wellness and recreational tourism based on natural hot and mineral springs has been assessed using several qualitative research methods following the ISS paradigm (also known as the constructivist paradigm). The qualitative research methods consist of a comprehensive review of the academic literature (meta-analysis) including the collection of secondary data on visitor numbers and their preferences. Apart from identifying a gap in the tourism literature it also became evident that there was no existing analytical model available, which could have been applied in evaluating the role of natural hot and mineral springs in health, wellness and recreational tourism in this study. This had to be developed.

Two in-depth case studies of hot spring use in health, wellness and recreational resorts (representative sites in Japan and Germany) were carried out. To collect data primarily for the case studies natural hot and mineral spring destinations were visited for personal observation (participant and non-participant) to collect data about individual facilities, customs, infrastructure etc. Information from a number of semi-structured interviews with managers and staff of health resorts and spas at hot spring destinations, as well as with other visitors was also collected. Focus groups and workshops at conferences, student seminars and special interest groups were included in the research methods.

Despite an increased interest in alternative and holistic health and wellness spa treatments, the documented (though rarely in the tourism literature) revival of existing hot spring spa facilities as well as new developments at hot spring destinations worldwide (e.g. Argentina, Australia, Brazil, Iceland, Portugal, Turkey, Uruguay) since the onset of the global wellness movement, there is no separation of hot spring facilities from health resorts and spas without these natural resources, resulting in a limiting factor of reliable visitor numbers.

The research approach outlined in this chapter is an important contribution to closing the above mentioned gap in the literature and addresses the limitations related to visitor statistics by contributing essential references collected during the research process. In addition, the research results present an original assessment of the role and importance of natural hot and mineral springs for health, wellness and recreation that adds to the knowledge base in this particular field of tourism.

CHAPTER 4
The History of Hot Spring Use

4.1 INTRODUCTION

This chapter investigates the historical and cultural background of natural hot and mineral spring tourism and presents an assessment of the role of natural hot and mineral spring use in 37 countries. The material discussed in this chapter investigates the worldwide origins, some of which date back to the earliest civilisations (LaMoreaux, 2005). The research objectives addressed in this chapter are to *'identify settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism'*; to *'explore the historical development of hot springs as destinations for tourism'* and to *'determine the cultural context of hot springs as a tourism resource'.*

Ancient health resorts and spas were frequently linked to geothermal resources in the form of natural hot and mineral springs and commonly based on the belief in divine healing powers (Arvigo & Epstein, 2003; Bischoff, 2001; Bullard, 2004; Frazier, 2000; Havins, 1976; King, 1966; Lind, 2005; Ryrie, 1999). Although the first human interactions with natural hot and mineral springs cannot reliably be documented due to a lack of written records and the fact that any knowledge about their use from prehistoric times was passed on from one generation to the next in oral tradition, the identification of many ancient customs and traditions related to the use of natural hot and mineral springs is possible through the medium of mythology and legends about particular places that were subsequently written down. The maximum timeframe which can be documented and backed up by reliable records (Appendix4.1 - Historical Timeline) appears to reach back to approximately 3000 BC, although substantiating this has proven difficult at some locations due to conflicting dating systems and unreliable textual sources. The evaluation of existing records however indicates that the use of natural hot and mineral springs has global roots and a long time-frame. The analysis of the historical and cultural background of natural hot and mineral spring destinations includes noteworthy examples from a number of countries (37), which were selected, compared and described on the basis of their a) reputation and fame (curative value), b) accessible historical records, c) traditional ambience (culture, architecture), and d) noteworthy customs (religious). Due to the worldwide occurrence of natural hot and mineral springs, only some of the more important destinations were selected for this thesis.

4.2 THE ORIGINS OF EUROPEAN HOT SPRING DESTINATIONS

As noted earlier one of the main objectives of this thesis is to investigate the historical background of the worldwide use of natural hot and mineral springs to assess their role in

tourism and provide a reference of their use in past and present health, wellness and recreational tourism. Where applicable, the contemporary use will be briefly mentioned together with a particular country's hot spring history.

In Europe, before the Romans, other ancient civilisations used natural hot and mineral springs for health, wellness and recreation as well as for hygienic reasons. The Greeks and the peoples of Anatolia (now Turkey) made use of their geothermal resources as did the peoples of Jordan, Israel and Iraq. According to Jaffé et al (1999) a range of writers including *Strabo, Pliny the Elder, Josephus Flavius, Origen, Ptolemaeus, Jerome, Epiphanius, Eusebius,* and *Antoninus of Placentia* discussed in detail the Jordanian hot springs for their curative powers and their reputation for successful treatment of various illnesses from the 1st century BC to the 6th century AD (Erfurt-Cooper & Cooper, 2009). However, the advancement of the European thermal bathing culture and the use of natural hot and mineral springs is frequently attributed to the Romans; largely as a result of their systematic development of geothermal resources for thermal bathing as they discovered these in newly-conquered lands (O'Hare, Heywood, Summerhayes, Corrall & Dieppe, 1985), but also due to their effective record keeping and marketing in the various countries they occupied (Figure 4.1). Throughout the former Roman Empire the ruins of thermal bath complexes indicate the great number of these establishments, and demonstrate the dominance of the Roman bathing tradition. In fact, the Romans' desire for natural hot and mineral springs was so great that wealthy people had authentic hot spring water 'home delivered' to their private residences from distant hot springs (Talmadge, 2006). This was also practiced in China and Japan, where the demand for hot spring water rich in minerals was associated with the curative powers of thermal springs (Talmadge, 2006). Nevertheless, the Romans as well as the Japanese originally reserved their hot spring bathing facilities primarily for members of their armies to rehabilitate or even heal injuries sustained during battles, and only later were they used for recreation and health treatments by the civilian population (Erfurt-Cooper & Cooper, 2009).

Figure 4.1 *The extent of the Roman Empire (Source: AskRickToday.Com, 2011).*

The literature however indicates that the Romans were not the first to develop natural hot and mineral springs for health, wellness and recreational purposes in Europe as is commonly asserted. The Romans obtained their knowledge from the Etruscans (Melillo, 1995) and from the Greeks, with the custom of thermal bathing progressively taking hold in the Roman Empire from around the 2nd century BC. Cataldi and Burgassi (1999) outline the rise and decline of thermal bathing and the use of other geothermal resources in the Mediterranean Area, suggesting that the Etruscans were using hydrothermal products and practicing thermal bathing well before the Romans extended their control over the whole of Italy as well as neighbouring countries around the Mediterranean. Thermal balneology or thermalism was then developed systematically by the Romans, often determined by the location of existing hot springs (Erfurt-Cooper & Cooper, 2009).

Many of the historical Roman 'spa towns' still exist, making use of the same natural hot and mineral springs, which are still flowing nearly 2000 years later. Examples of these historic spa towns (Table 4.1) include Bath (UK), Trier, Aachen and Baden Baden (Germany), Aix les Bains and Rennes les Bains (France), Teplice and Karlovy Vary (Karlsbad, Czech Republic), Bagno di Romagna (Italy), Kyustendil (Bulgaria), Budapest (Hungary), Archena (Spain), and Chavez (Portugal). The use of natural hot and mineral springs spread

subsequently to the civilian population and in many regions, formerly occupied by the Romans (Figure 4.1), historical spa towns and health resorts based on natural hot and mineral springs are still thriving today for one or more of the following reasons:

1. Continued sponsorship and support from local and state governments;
2. Continued sponsorship from medical and/or health associations (varies by country);
3. Continued sponsorship through the local travel industry as attractive destination packages including nature, hot springs, climate and landscape;
4. Continued support from the host communities to protect community identity and employment;
5. Historical value, magnificent and/or traditional architecture and/or official heritage listing;
6. Reputation of curative value in the treatment of certain diseases due to the mineral content of local hot and mineral springs;
7. Located in a country that has always been a trendy destination;
8. Located in a country that has always been a safe destination; or
9. The natural hot and mineral springs are easy to access (After (Erfurt-Cooper, 2009:30).

Table 4.1 *Historic European hot spring spa towns and their original names during Roman occupation (Compiled by Author).*

Historic Roman Spa Towns in Europe	
Current Name	Roman Name
Aachen (Germany)	*Aquae Grannii or Aquis Granum*
Aix les Bains (France)	*Aquae Gratianae (Aquae Allobrogum)*
Aix en Provence (France)	*Aquae Sextiae*
Baden (Austria)	*Aquae*
Baden (Switzerland)	*Aquae Helveticae*
Baden Baden (Germany)	*Aurelia Aquensis (Aquae Aurelia)*
Badenweiler (Germany)	*Aquae Villae*
Baile Herculane *(Romania)*	*Aquae Hercules*
Bath (England)	*Aquae Sulis*
Budapest (Hungary)	*Aquincum*
Caldes de Malavella (Spain)	*Aquae Voconis*
Caldes de Montbui (Spain)	*Aquis Calidae*
Chavez (Portugal)	*Aquae Fluviae*
Chaudfontaine (Belgium)	*De Calida Fontana*
Chaudes-Aigues (France)	*Calentes Aquae*
Cutilia (Italy)	*Aquae Cutiliae*
Felix Spa or Baile Felix (Romania)	*Termae Varadiensis*
Hammam R'Irha (Algeria)	*Aquae Calidae*
La Chaud (France)	*Calidum*
Trier (Germany)	*Augusta Treverorum*
Varazdinske Toplice (Croatia)	*Aquae Iasae (Aquae Viva)*
Vichy (France)	*Aquae Solis*
Villa Fasila (Spain)	*Aquarius Vicus*
Wiesbaden (Germany)	*Aquae Matticae*

4.2.1 Italy after the Romans

As a country with one of the longest recorded histories in the use of natural hot and mineral springs dating back to the Etruscans (Monti, 2003) and Romans, Italy has also many later developments of hot spring destinations for health, wellness and recreation. Notable historical spa towns are Montecatini and Salsomaggiore with the thermal baths of Montecatini known from the 14th century. In the year 1417 AD Ugolino de Montecatini (1348-1425), the founder of balneology in Italy, recommended the hot springs of Montecatini for medicinal purposes (Altman, 2000). From 1773 the Montecatini hot spring waters were famous for their therapeutical effects, but they did not achieve international recognition until the last years of the 19th Century. Recent studies have confirmed the therapeutic qualities of these waters (Montecatini, 2010).

The Italian islands Ischia and Sicily have their individual hot spring history. On the island of Ischia some hot springs date back to the Romans and were later, during the 16th century, exploited by the Calabrian doctor Giulio Iasolino, making Ischia one of the richest thermal areas in the world (Rando, 2003). In Lipari on Sicily stone-lined ponds were discovered, and are thought to have been used for therapeutic thermal bathing as far back as 1430 BC (Cataldi et al., 1999). Hot sulphur springs between Messina and Taormina are still in use for thermalism as well as for rest and recreation (Hotel Terme Acqua Grazia, 2011). The spa town Abano in north-eastern Italy is one of Italy's best known health resort destinations based on the local natural hot springs. Traces of history indicate that the hot springs of this area were already used around the 9th century BC, when they were considered to have been of religious and cultural importance. However, official written records only date back as far as the 12th century AD, although from that time Abano became a prominent health, wellness and recreational centre based on the local geothermal resources, and has been redeveloped and modernised several times. Today Abano caters for an ever increasing demand by visitors who seek recovery, relaxation and the prevention of illness (Abano.it, 2011; Royal Spas of Europe – Abano, 2001).

4.2.2 Greece

The Greek origins of thermal bathing are documented by several authors including Altman (2000), Katsambas and Antoniou (1996) and Melillo (1995). The Greek mythology is rich in legends where natural hot and mineral springs are connected with Greek deities like Artemis Thermia (Diana), who was the patron saint of all springs, along with the Nymphs (Naiades),

who were in charge of the spas. Apollo was also known as Thermios Apollo and according to legend he used natural hot and mineral springs for their curative properties to heal the sick (Katsambas & Antoniou, 1996). Altman (2000) notes that the importance of drinking mineral water and bathing in hot springs for health and wellbeing was emphasised by early Greeks like Homer, Hippocrates (460-377 BC) and Asclepios (Aesculapius). Sources of water were in Greece usually linked to the divinities of the earth, and temples dedicated to Asklepios were also offering thermal baths (Melillo, 1995).

Poems from the Homeric period (7^{th} century BC) describe various types of baths at different temperatures and provide evidence for their use in ancient Greek civilization (Katsambas & Antoniou, 1996). During the pre-Hippocratic period (5^{th} – 6^{th} centuries BC) medicine was practiced at Asclepeia, the temples of Aesculapius, the god of medicine. The treatment was carried out by the priests who were in charge of the temples, which were purpose-built near hot and mineral springs (Katsambas & Antoniou, 1996). Classical authors such as like Plato (427-347 BC), Aristotle (384-322 BC), and Pliny the Elder (23-79AD) have also commented on the beneficial use of geothermal water (Cataldi et al, 1999). During the 5^{th} century BC, on the Greek island of Kos, Hippocrates [of Kos] treated patients from the Mediterranean region with thermal balneology in his famous Asclepian Centre (Cataldi et al, 1999; Monti, 2003). Hippocrates also wrote an encyclopaedia on all aspects of medicine including a classification of natural hot and mineral springs and their distinctive properties (Fytikas, Leonidopoulou & Cataldi, 1999; Katsambas & Antoniou, 1996). According to Plutarch (Ploutarchos) thermal health resorts and spas were also visited by healthy people. One of these destinations was Edipsus (Edypsos), where efficient spa facilities were offered. At the same time Edipsus was a popular recreational vacation centre (Katsambas & Antoniou, 1996) and still is to this day.

4.2.3 Turkey

The region today known as Turkey has a long tradition of hot spring use for health, wellness and recreation, dating back to the Hittite Empire (1680 and 1193 BC). The region of Anatolia for example has over 700 natural hot and mineral spring areas alone and for a long time has used these destinations for recreation and to offer therapeutic treatments. It follows that thermal bathing is therefore an ancient and important Turkish tradition and today most cities and towns in Turkey have several public baths [hammams], warmed either by natural hot and mineral springs or by artificial means (Özgüler & Kasap, 1999). After the Romans had left Turkey, large numbers of their thermal baths were destroyed either through war,

earthquakes or negligence over time. However, many of them were gradually restored and redeveloped with typical Turkish architecture (Özgüler & Kasap, 1999).

At the end of the 2nd century BC the kings of Pergamon developed the natural hot springs of Hierapolis (UNESCO, 2011), which attracted people to bathe in the mineral-rich springs to cure their illnesses and to consult the on-site priests for spiritual wellness. At the *Plutonium*, a historic hot spring site within the boundaries of ancient Hierapolis, priests claimed miracles to enhance their standing in the community by using the local geothermal manifestations. The city of Hierapolis was destroyed several times by earthquakes and was finally abandoned after the 1354 AD earthquake. Today the remnants of ancient Hierapolis, including the large 2nd century AD Roman bath (Figure 4.2), can be viewed in the vast open-air museum (pers. observation)**.** Hierapolis is now more commonly known as Pamukkale and still serves as a centre for health and wellness treatments based on natural hot and mineral springs (Özgüler & Kasap, 1999).

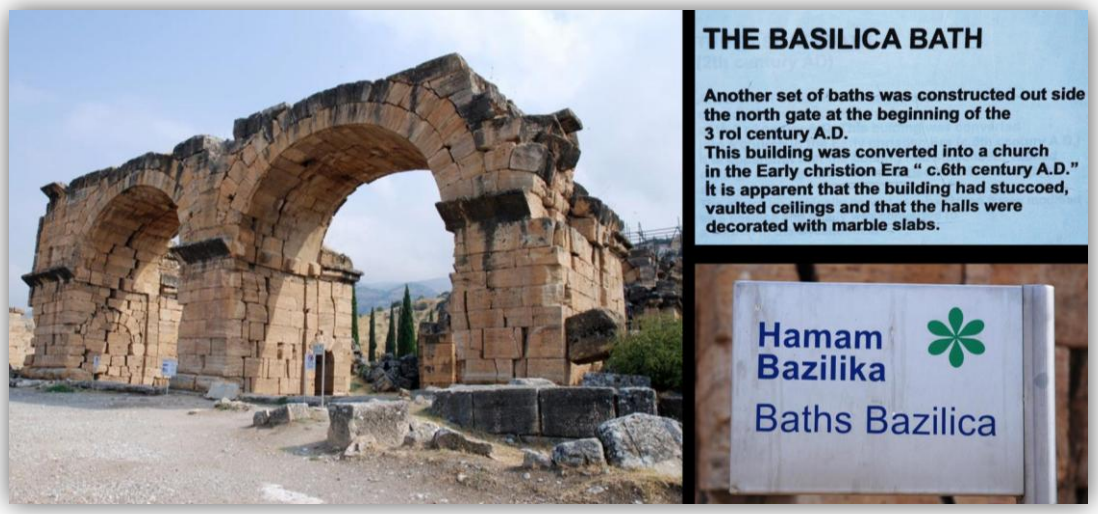

Figure 4.2 *Remains of the Roman Bath in Hierapolis (Photo by Author).*

The famous white travertine terraces of Pamukkale (World Heritage listed since 1988) draw vast numbers of visitors (Figure 4.3) due to their unique visual attraction. Hierapolis-Pamukkale is an outstanding example of the close connection of cultural and natural heritage. The combination of natural hot springs and ancient architecture attracts approximately 2.5 million people every year. Apart from the spectacular sinter terraces Hierapolis has a second attraction; the 'sacred' thermal pool, which is constantly fed from natural hot springs near the Plutonium. The water has a very pleasant temperature and beneath the surface is littered with fragments of ancient marble columns (Figure 4.4, pers. observation).

Figure 4.3 *Pamukkale's World Heritage listed travertine terraces were created by mineral rich hot spring water and are a popular tourist attraction. According to tour guides the majority of visitors are Russian cruise ship tourists who visit the area by bus as part of their trip agenda (Photo by Author).*

Figure 4.4 *The 'sacred' pool at Hierapolis, also known as 'Cleopatra's Pool', who is said to have visited this site. (Photo by Author).*

4.3 THE ORIGINS OF ASIAN HOT SPRING DESTINATIONS

Throughout the Asian region traditions of hot spring bathing developed around natural geothermal resources. The Indus Valley civilizations and the Chinese people used the abundant supplies of natural hot water in their territories at least from 3000 BC, which makes their exploitation of this natural resource perhaps the earliest in recorded history. Likewise, the abundant volcanic hot springs of Japan denote an indigenous bathing culture which developed very early in human settlement.

4.3.1 Pakistan

According to data revealed by excavations the Indus Valley in Pakistan is thought of as one of the cradles of ancient civilisation. The settlement of the cities Mohenjo-Daro and Harappa for example is placed at approximately 5000 years ago in the Indus Valley region (Kenoyer, 2005). Buildings in these cities frequently included bathrooms, lavatories, drainage, freshwater wells and storage tanks, indicating that adequate water supplies must have been available. At Mohenjo Daro archaeologists also unearthed what they believe to be the remains of a large public bath or possibly a water storage basin (Danino, 1999; Kenoyer, 2005). Based on the assessment of hydrogeologic records (Bakht, 2000) for this thesis, it became obvious that natural hot and mineral springs are abundant along the Indus Basin and most probably always have been. Such springs would in all likelihood have supplied the cities of Mohenjo Daro, Harappa and other Indus Valley settlements with sufficient natural hot and mineral spring water for bathing and other purposes. Over time earthquakes common in the Indus Valley and other natural catastrophes may have changed or restricted the access to such water sources and thus contributed to their abandonment (Erfurt-Cooper & Cooper, 2009). Due to political instability hot spring tourism is currently not a priority in this country at present (Pers. communication with a scientist from Lahore).

4.3.2 China (People's Republic of China) and Taiwan (Republic of China)

Natural hot and mineral springs are widely distributed throughout China including offshore islands such as Hainan and Taiwan (Figure 4.5) and they are highly appreciated by the local population as well as by visitors including international tourists. According to Schafer (1956) and Clark (1999) the Chinese provide written records which prove that for several thousand years China has been on the forefront in the use of natural hot and mineral springs (Table 4.2). The culture of thermal bathing is assumed to have found its way from China through Korea to Japan, where its history was only recorded after the Chinese and Koreans had

migratory ties with Japan (Clark, 1999). One of the oldest developed hot spring destinations in China are the Huaqing Hot Springs, which date back to the Western Zhou Dynasty (1050 – 771 BC). At this time Huaqing was the preferred destination of the Chinese emperors and their entourage, who spent long time periods at Huaqing, while attending to the government business from the palaces built near the hot springs (Huaqing, 2010). In 1982 the ruins of five royal pools at the Huaqing hot springs were re-discovered and excavated (Shaanxi Huaqingchi Tourism, 2010).

Table 4.2 *Examples of popular hot spring destinations throughout China (Compiled from various internet sites)*

Hot Spring	Location (approximate)	Purpose
Huangshan Hot Springs	Yellow Mountains, Anhui Province Used since >1000 years	Health Spa – bathing and drinking cures
Huaqing Hot Springs	Shaanxi Province Used since 1050 – 771 BC	preferred destination of the emperors of China (Virtual Tourist, 2010)
Tangshan Hot Springs	One natural hot spring about 30km north of Beijing (MyBeijingChina.com, 2009), and hot spring one near Nanjing Used since 1644 – 1911 AD	Beijing: two hot springs, one extremely hot Nanjing: healing vapours and waters, 50 to 60°C (China Travel, 2010a)
Longsheng Hot Springs (China Highlights, 2010)	Guanxi Province 16 Hot Springs	Known as a heaven of peace and happiness, summer resort and health centre for convalescence. Hot springs temperature 45°C-58°C. Bathing in the springs can reputedly alleviate rheumatism as well as certain skin conditions (TravelChinaGuide.com, 2010)
Conghua Hot Springs	75km from Guanhzhou	The hot springs are known for their curative effect and are a pleasant place to visit (Tibet, 2010)
Seven-Fairy-Maiden Hot Springs	Baoting County, Hainan	The Seven-Fairy-Maiden Range has the 'hottest and the most' hot springs (Visit China, 2010)
Xinglong Hot Springs	Wanning-Hainan	Famed for the healing effects of its rich natural mineral waters (Hainan Discovery, 2010)
Wendeng, Capital of Hot Spring (China Daily, 2008)	Shandong Province Jiaodong Peninsula 13 hot springs	International Hot Spring Festival, world-class hot spring resorts
Tengchong Hot Springs (China Culture Center, 2010)	Baoshan, Yunnan Province Used since c100BC	Extreme hot springs (97°) for visual effect and cooler springs for bathing
Badaling Great Wall Hot Spring,	Sanlihe District	Jiuhua - 40°C, Jiuhua Spa Bathing Day Trip
Beijing Badaling Hot Spring Resort	15km northwest of the famous Badaling Great Wall	Hot Spring swimming paradise (Hotels Combined, 2010)
Beijing Badaling Huafeng Hot Spring Castle	Yanqing County, about a one-hour drive from downtown Beijing	Recreational hot spring facilities (China Travel, 2010b)

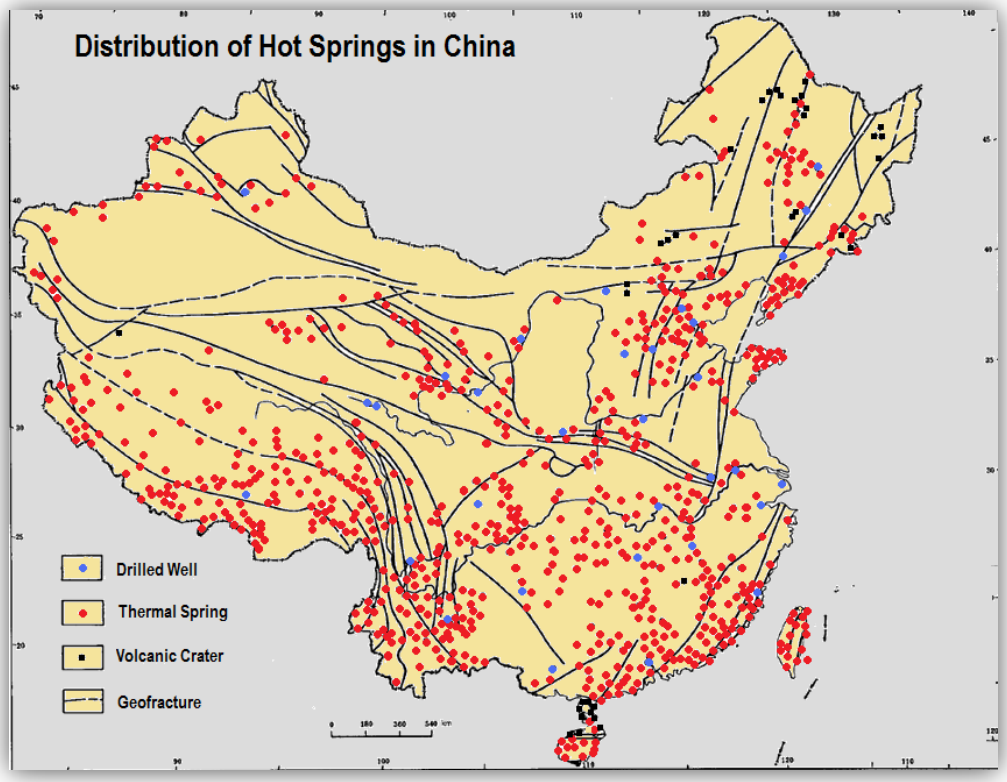

Figure 4.5 *Distribution of major hot spring areas in China, including the islands of Taiwan and Hainan (An, 1980 – Map modified by Author).*

Taiwan (Republic of China)

According to official data the island of Taiwan has currently 128 natural hot spring areas with the highest concentration found in the volcanic north (Taiwan, 2010). Hot springs were first mentioned in a manuscript, the Beihai Jiyou from 1697 AD, but development in the Beitou area did not start until the hot springs were [re]discovered in 1893-94. The following information was obtained during a visit of the Hot Spring Museum in Beitou (Figure 4.6).

Taiwan's hot springs originate from the heat that still emits from presently dormant volcanoes, as the island is located along the tectonic boundaries known as the 'Ring of Fire'. Seismic activity is frequent and can change the location of hot springs along major fault lines. The hot springs of Beitou in Taiwan's north were accidently discovered in 1893 by a German businessman, who founded the first hot spring club house in the district and a park was established next to the public hot spring bathhouse (now museum), which is still today a popular area for recreation used by hot spring visitors. The natural environment was kept in a good condition because of the protection enforced by law, which allowed Beitou to keep its leading role in the Taiwanese tourist industry as one of the most popular hot spring destinations (Taipei Hot Springs Association, 2011). The public bathhouse no longer

provides bathing services to the public (Figure 4.7) as it has been transformed into a cultural landmark in Beitou to *'accommodate the need for historical remembrance'* (Information obtained at Beitou Hot Spring Museum, 2010). To make up for the lack of bathing at the Hot Spring [bathhouse] Museum a large open-air bathing pool was built adjacent to the museum.

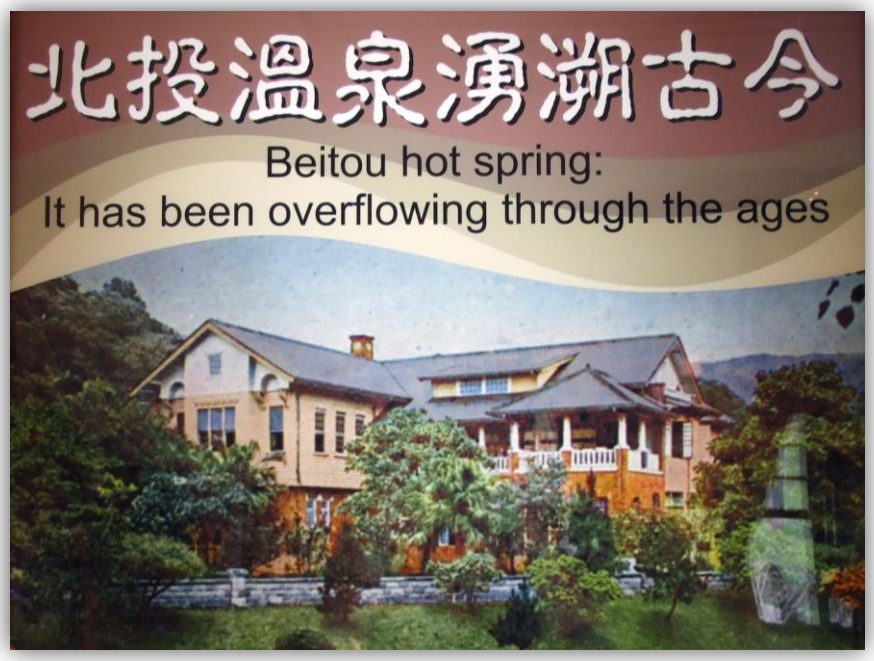

Figure 4.6 *Poster on exhibition inside the Hot Spring Museum in Beitou (Photo by Author).*

In 1895 Taiwan came under Japanese rule and during the occupation (until 1945) many hot spring resources throughout Taiwan were actively developed, because the Japanese brought with them their own hot spring (onsen) culture and established many hot spring spas, which greatly influenced the local development of geothermal resources (Taiwan, 2010). Numerous hot spring sanatoria and guesthouses were built across Taiwan, which included the development of twenty hot springs. After the Japanese occupation these facilities were taken over by the Taiwanese authorities (Information obtained at Beitou Hot Spring Museum, 2010). However, according to the Taipei Hot Springs Association the Japanese failed to realise the full potential of Taiwan's hot spring resources, which were not fully utilised until after the Second World War (WWII).

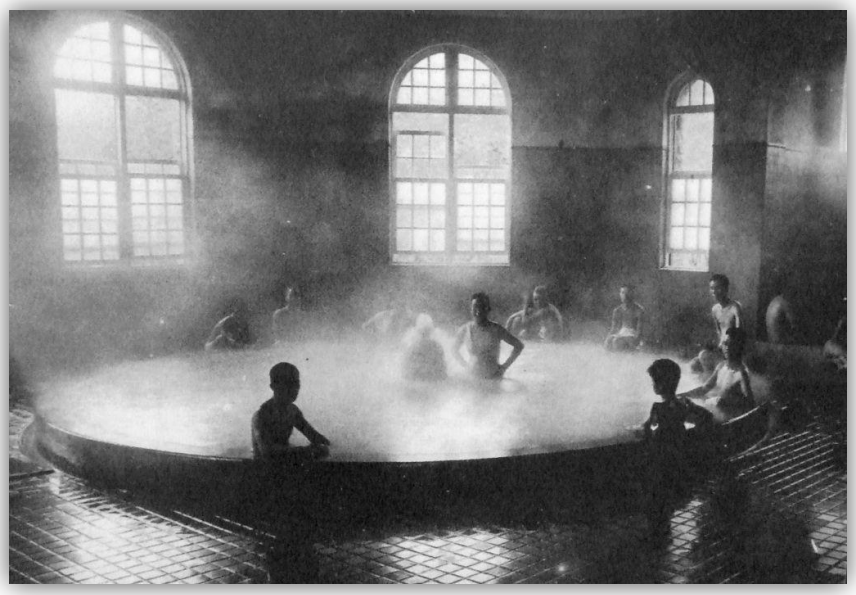

Figure 4.7 *Hot spring bathhouse in Beitou at the turn of the previous century. The building is now the Hot Spring Museum (Photo of a poster in the museum by the Author).*

The potential of Taiwan's rapidly growing hot springs tourism sector has been assessed by Deng (2007), Hsieh, Lin and Lin (2008), Lee (2010), Lee and King (2006, 2008), Lee, Ou and Huang (2009), and Morais and Lin (2010); however, their main aims were to identify the individual aspects of destination competitiveness, the expectations of service quality to identify customer preferences and provide guidance for future development of hot spring tourism, not the history of hot spring development or role of natural hot springs as a tourism resource.

4.3.3 Japan

Hot spring destinations in Japan include many areas which date back several centuries or even millennia. The culture of hot spring or *onsen* bathing is maintained by the majority of the population in all areas of Japan which are rich in these geothermal resources (Clark, 1999). The Japanese tradition of using natural hot springs dates back at least to the Heian period (794–1185 AD), but is probably much older. Clark (1999) indicates that the Japanese had a tradition of ritual bathing at the end of the Yayoi Period around 297 AD, which was mentioned in the chronicle '*History of the Kingdom of Wei'*. However, it remains unclear whether this refers to the use of natural hot and mineral springs or the general use of water for religious purification purposes, although Sekioka and Yoshi (2000) argue that there may be evidence indicating that bathing in natural hot and mineral springs was practiced as early as 6000 years ago at Lake Suwa (Nagano prefecture) where ruins of ancient settlements have been excavated (Sekioka & Yoshi, 2000). Natural hot and mineral springs in Japan were

sometimes discovered with the help of animals, regarded by the Japanese as messengers of the gods. Altman (2000) describes the discovery of the healing springs at Takeo on Kyushu Island as being credited to the Empress Jingu (reigned during the 3rd century AD), who found a white heron in the warm waters of a natural spring. This has several parallels with discoveries of hot springs in other countries (e.g. goats in Baden, Switzerland; pigs in Bath, UK; deer in Cieplice, Poland). Japanese warlords (similar to the Roman military) used hot springs to heal their war injuries and to recover from battle (Talmadge, 2006). During the *Edo* period (160–1867 AD) the use of hot springs became widespread and reached all levels of the population as a method of unwinding after work and of socialising with friends and neighbours (The Japan Forum, 2010). This has remained a tradition to this day.

One of the oldest and most famous hot springs in Japan is the Dōgo Onsen (Matsuyama, Ehime prefecture) on Shikoku Island. Some sources, including the official Japanese Tourist Organisation (JNTO, 2010), are convinced that the history of the Dōgo Onsen dates back approximately 3000 years, based on the fact that Matsuyama has been a favourite destination of the Imperial family and other celebrities who visited the Dōgo hot springs for health and recreational purposes. Arima on the island of Honshu also claims to be the oldest onsen destination and was among the favourites of the Imperial family. But so do Shirahama and many other hot spring areas throughout Japan (Talmadge, 2006). The custom of hot spring bathing has a special place in the Japanese culture and more detailed information about Japanese hot spring culture and history is discussed in Chapter 6 in a case study of Japan.

4.4 HISTORICAL SPAS: NORTHERN AND WESTERN EUROPE

Existing European spa towns based on natural hot and mineral springs have experienced centuries of use, sometimes sporadic, at other times heavy. They have had their share of ups and downs, including being fashionable for the rich and famous, but also unfashionable due to war, plagues, fires and floods. The first decline in hot spring use in Europe came with the fall of the Roman Empire when many hot spring destinations fell in disrepair. Altman (2000:41) suggests that the locals were not always in favour of the *'widespread and notorious revelry that often took place at Roman springs'* and as a result they saw no reason to maintain them after the 'occupiers' had left. This decline of thermal bathing lasted nearly a thousand years in some parts of Europe; to a large degree encouraged and maintained by the attitude of the Christian church towards hot spring facilities as centres of loose moral and a breeding ground for venereal diseases (Altman, 2000). Despite the fact that the main

function of hot spring use was for healing and hygiene, the use of water was generally frowned upon and regarded as immoral and dangerous (Maier & Fiedler, 2004). Nevertheless, during the 15th century hot springs in Germany were patronised by clerics and aristocracy despite the possible risk (Rumpf & Sollner, 2006). During the 18th and 19th centuries the hygienic aspects of bathing were reconsidered and endorsed as an important element for health and wellness and the culture of hot spring bathing was re-introduced with hot spring destinations the places to go to and to be seen at (Ascensio, 2002). Since this time hot spring based treatments (balneology, thermalism) have been prescribed by physicians for their therapeutical benefits, causing a new type of science to develop, which has been taught for centuries at most medical schools in Europe (Leavy & Bergel, 2003).

4.4.1 Germany, Austria and Switzerland

The recorded history of hot spring based health resorts and spas in Germany, Austria and Switzerland spans nearly two thousand years. While travelling through Western Europe in 77 AD Pliny wrote about hot spring areas he visited in Germany**,** including Aachen, Wiesbaden and Baden Baden (Freedman & Waugh, 1996). Aachen (Aix-la-Chapelle - city of the waters) was one of the places chosen by the Romans for settlement and they called the city Aquae Granni, after the Celtic god of water and healing Grannus (Mielke, 2010a, b). Before the Romans arrived in the first century AD and established geothermal baths for their military troops Aachen was settled by Celts, who, although this is not reliably documented, most likely used the natural hot springs. When centuries later the spread of Christianity discredited the benefits of thermal bathing, Charlemagne, King of the Franks (742 – 814), kept bathing culture alive during the early Middle Ages (Mielke, 2010a). As time passed bathrooms were re-introduced as a feature in some monasteries and castles, whereby monasteries were preferably built near natural hot and mineral springs, which significantly reduced the efforts of producing hot water (Die Welt des Bades, 2010). During the 15th century annual visits to hot and mineral spring destinations became popular again among wealthy citizens throughout Germany, where the great thermal bathing tradition and the reputation for health benefits is kept up in historical spa towns like Aachen, Baden Baden and Wiesbaden as well as many other spa towns (Größchen, 1998) to this day.

Austria and Switzerland have several natural hot spring locations which have historically been used for health benefits and recreation. The spa towns of Baden (one in both countries) have been well-known health resorts for nearly 2000 years and go back to the times of the Roman occupation, when the towns of Baden were named Aquae (in Austria) and Aquae

Helveticae (in Switzerland) in honour of the natural sulphur springs and their beneficial mineral content. Baden (Austria) was primarily set up as a geothermal bathing facility for the Roman military with altars built near the springs (Baden Austria, 2010), which were dedicated to various divinities. The sulphuric springs were attributed with curative powers and visitors showed their gratitude for successful treatments through devotion to individual gods and goddesses. The discovery of the natural hot springs of Baden (Switzerland) is thought to go back as far as 58 BC when the Romans, aware of the healing properties of such springs, built an impressive geothermal spa centre (Lüscher, 1946).

4.4.2 Belgium and France

The town of Spa in Belgium takes a special place in the more recent spa history. It was here that in the 14th century a natural hot spring with curative properties was discovered, connecting the name *Spa* to hot spring facilities worldwide (Altman, 2000). During the 17th century the city of Spa developed further, building on its reputation for hot springs with medicinal benefits. The popularity of thermalism with health, wellness and recreational tourists gradually increased in Belgium over the following centuries and became accessible to a larger market. In the year 2004 a new 'Thermes de Spa' opened, offering large scale geothermal bathing and 'aquatic entertainment' to the public (Cordes, 2004).

In France the geothermal spa industry has historically been supported by the medical elite, who have continued to back the survival and further the development of thermal facilities (Weisz, 2001). Some well recognised examples of French traditional health resorts and hot spring spas are La Bourboule and Vichy, originally established in response to a growing demand for thermal treatments in a stylish environment, and which offered sophisticated entertainment and five star accommodation. The construction of palaces, casinos, and opera houses in the vicinity of thermal spa towns was common in France at the beginning of the 20th century. In the year 1913 Vichy for example had 108,963 visitors and by the year 1921 the town offered twenty six (26) first class hotels and forty eight (48) second class hotels (Office National du Tourisme, 1921). This strongly indicates the magnitude of natural hot spring use backed by the positive attitude of the medical profession as well as by supporting government policies and regulations during this era in France.

4.4.3 England

The city of Bath in southern England has a long tradition of natural hot spring use and for centuries has been a centre of religion, healing and pilgrimage (Bowman, 1998; Haley, Snaith & Miller, 2005, UNESCO, 2011). This was based on the belief of the native Britons that water was attributed to divinity and included not just rivers and streams, but natural springs as well (Ottaway & Cyprien, 1987). Bath's history is also closely linked to the Roman occupation during which time the springs were developed to cater essentially for the military. However, the use of the natural hot springs of Bath most likely goes back to the Celtic tribes. The legend of King Bladud, who suffered from leprosy and was cured using the hot spring water, laid the foundation to Bath's reputation for healing hot springs (Bowman, 1998; Bullard, 2004; Havins, 1976; White, 2000). The site of the original hot springs of Bath was considered a sacred site by the Celts who had built a shrine dedicated to the goddess Sul before the Romans arrived (White, 2000).

The establishment of a more sophisticated bathing complex including temples did not happen until 70 AD (White, 2000). After the Romans left Britain the baths of Aquae Sulis were deserted, as the Saxons did not show much interest in hygienic pleasures, possibly because they disliked and distrusted anything Roman (Havins, 1976). During the Elizabethan era from 1558 to 1603 (Ros, 2006) Bath was revived as a spa with the improvement of the geothermal pools and the urban infrastructure and began to attract members of the aristocracy who spent the fashionable 'Saison' in Bath and nearby areas. However, declines and revivals alternated until the spa baths were redeveloped during the 18th century and presented once again the city of Bath as a main attraction for health, wellness and recreational tourism. In 1978 the thermal baths were closed down and bathing was prohibited due to public health concerns over the purity of the spring water. Subsequently new wells were drilled beneath the *King's Spring* and the *Cross Spring* to establish a supply of uncontaminated spring water for re development under the 'Bath Spa Project', which made it possible to reopen the hot springs once more for public use in 2006 after 28 years of closure (Thermae Bath Spa, 2010; White, 2000).

4.4.4 Iceland

Iceland is a country rich in geothermal resources and natural hot and mineral springs are used widely since the beginning of the 20th century. Reference to bathing in natural hot springs is frequently made in the Icelandic sagas, which were written in the 12th and 13th

centuries (Fridleifsson, 1995; Kristmannsdóttir, 2010). Although no reliable records about their common use exist before then, it is assumed that wherever natural hot springs were available close to settlements and at acceptable temperatures, people would have utilised them for washing and bathing (Erfurt-Cooper & Cooper, 2009). At the time of the conversion to Christianity in the year 1000 AD many people were baptised using the natural hot springs, (Hjálmarsson, 1993), which is supported by Frazier (2000) who states that early Christians preferred warm springs for baptism by immersion.

4.5 THE MEDITERRANEAN INCLUDING PORTUGAL AND AFRICA

Spain

Natural hot and mineral springs with therapeutic properties have been used in Spain as religious centres and sites for pilgrimages since ancient times with different cultures including the Romans and the Arabs, leaving a legacy of thermal developments (Ledo, 1996). In many of its hot spring provinces Spain's history of natural hot spring use goes back several thousand years. Thermal facilities were built by the Moors as well as by the Romans, whose presence began during the 2nd century BC. Attracted by the natural hot and mineral springs the Romans are said to have established municipalities, one of which they called Aquae Calidae, now known as the spa town Caldes de Montbui (Wikipedia Caldes de Montbui, 2010).

A second example is Archena, where the historical use of the natural hot springs is considered to reach back to the 5th century BC; a time, when the area was settled by Iberian tribes. When the Romans arrived, they soon recognised the potential of these natural resources and developed thermal bathhouses for their own use. In 1785 King Carlos III. of Spain ordered the redevelopment of Archena, which led to the increasing importance of this town as a geothermal spa centre, which still today is continuously extending its facilities due to the popularity of hot spring health resorts and spas (Balneario de Archena, 2010; Royal Spas of Europe, 2001).

Portugal

Portugal's thermal past, like many other European countries, is closely connected to the Roman bathing culture established during their occupation of the area, but has other historical connections. The city Caldas da Rainha for example, named after Queen Leonore, who discovered natural steaming ponds in the year 1484 while travelling. The Queen

realised the curative value of the natural hot springs for treating rheumatism and other health conditions and a year later established a hospital using her private funds and under her personal management. Today Caldas da Rainha still is a popular hot spring spa destination for health, wellness and recreational tourists (Michelin, 2002). However, despite the fact that the therapeutic benefits of natural hot and mineral springs have been known in Portugal for a long time, it was only during the 18th century under King João V. that the therapeutic effects of natural hot and mineral springs were officially recognised (Caldas da Rainha, 2011).

4.4.1 Mediterranean Africa - Tunisia, Egypt and Algeria

The majority of the countries bordering on the Mediterranean Sea were under control of the Roman Empire at some stage (see Figure 4.1). This includes those in North Africa as well as Middle Eastern countries where the bathing culture of the *hammams* was similar to that of the Roman bathhouses or thermae. Prior to this the Greek reputation for medical expertise also reached far into the North African countries and affected the ways of achieving health, wellness and recreation through the use of natural hot and mineral springs with curative properties (Termatalia, 2006).

Tunisia

In Tunisia the history of natural hot and mineral spring use has been recorded for two thousand years. The thermal waters supplying the health resort Hammam Bourgida in Ain Drahim are sourced from natural hot springs and were already used for Arab baths in antiquity (Termatalia, 2006). Under Roman occupation thermal bathhouses were established which influenced the traditional way of using natural hot springs in Tunisia. The most imposing thermal baths were the famous Antonine Baths in Carthage, which were completed in 120 AD after twelve years of construction work including thousands of slave labourers and covered 3.5 hectares (Salloum, 2010). Some natural hot springs, although known for a long time, were not exploited by the Romans, but where noted by Arab authors later in the 11^{th} and 12^{th} centuries (e.g. El Hamma Gabes), who included references of their therapeutic benefits (Office du Thermalisme, 2010). The hot spring sector today is privatised with over eighty (80) geothermal spring locations in Tunisia and is attracting approximately 2.5 million visitors annually seeking thermal treatment. The Hammam Sidi Abdelkader alone is said to receive over one million visitors each year (Office du Thermalisme, 2010).

Egypt and Algeria

Therapeutic tourism was already known in Egypt during the Greek era, when Socrates recommended the climate and the natural hot springs of Egypt to be used for health and wellbeing. The *Helwan* bath for example, located south of Cairo and east of the river Nile, is fed by a hot sulphur spring (31.6^{o}C) and has been used for curing skin disorders since the 7th century (Lund & Freeston, 2001). Ancient Roman pools and modern hot spring health resorts and spas are close together in Egypt's north, with eight hot springs used for the treatment of rheumatism and skin disease (Fekraoui & Kedaid, 2005), although Lund and Freeston, (2001) note that there has been no update of the facilities since 1995**.** Similarly, in Algeria the principal use of natural hot and mineral springs is for bathing and balneology.

4.6 CENTRAL AND EASTERN EUROPE

Thermal spas in central-eastern Europe historically date back to Greek and Roman times, when pilgrimage was equivalent to modern tourism and the healing powers of natural hot and mineral springs were sought to improve health by travellers who were able to cope with the type of travel available at the time. While more recently (after World War II) in many western European countries the spa industry stagnated, in central and eastern Europe health resorts and spas based on natural hot and mineral springs developed under the sponsorship of the state and supported by the trade unions (Bacharov, 2004).

Hungary

The popular hot spring spa and health resort destinations of Hungary were established mainly during the 18th century and gained their popularity from visiting kings and emperors, who proclaimed the natural hot and mineral spring waters as beneficial and established their summer residences nearby. European spa towns like Budapest, known for their therapeutical benefits for health and wellbeing, are still increasing in popularity (Deutsches Medizinisches Zentrum, 2007). However, evidence from the Neolithic era indicates that Celtic and Dacian peoples had settled near Hungary's geothermal springs and practiced basic forms of balneology long before the Romans appeared (Cohut & Árpási 1995).

Poland

In Poland the use of natural hot and mineral springs was first recorded in the 12th century with several spa towns situated around natural hot springs which slowly developed over time (Kępińska, 2002; Omulecki, Nowak & Zalewska, 1996). Although the number of Poland's

health resorts and spas based on the use of natural hot springs declined in the 1990s, when according to Bachvarov (2004) visitor numbers decreased by 50%**,** many of the traditional thermal centres have continued to attract visitors.

The Czech Republic

One of the leading hot spring spa towns in the Czech Republic is Karlsbad or Karlovy Vary, named after its founder Karl IV, Holy Roman Emperor and King of Bohemia (Lund, 2000a). According to Burachovič (2010) the first settlements in the area of Karlsbad go back to the middle of the 14th century, although archaeologists believe that people have lived near the thermal springs much earlier. Over the following centuries Karlsbad developed into a health resort and spa centre popular with health, wellness and recreation seeking tourists who appreciate the traditional atmosphere (Burachovič, 2010; Karlovy Vary, 2011).

Slovakia and Slovenia

In Slovakia natural hot and mineral springs (over 1,100) have been documented for their healing qualities from 1147 AC (Slovenian Spas, 2006), but were used already by the Romans. Many original therapeutic centres which offered thermalism and balneology are still in use today and cater for the demand by health and wellness seeking tourists. One of the leading Slovakian spas with a history of thermal spring use is Piestany, which possibly dates back before the Romans to the Celtic, Germanic and old Slav civilisations (Lund, 2000a). Slovenia, a neighbouring country, has a centuries-long tradition of health resort medicine with archaeological evidence dating back to the Roman occupation (Slovenija, 2006). Figure 4.8 shows the distribution of thermal health resorts and spas in Slovenia.

Figure 4.8 *Health resorts and spas in Slovenia are based mainly on natural hot and mineral springs combined with a pleasant climate.* ***Source:*** *http://en.slovenia-terme.si/spas/*

Romania

The name Romania is closely linked to the Romans who occupied the country after they conquered Dacia in 106 AD and started to use the local hot and mineral springs for their bathhouses. However, traces of settlements near the hot springs suggest that they were used by the Dacians long before the Romans arrived (Cohut and Árpási, 1995). The natural hot springs of the Herculane Spa (Aqua Herculis Spa) were developed by the Romans to suit their needs for the duration of their occupancy. After the Romans left, the area was invaded by barbaric peoples, which caused the decay of the complex (Cohut and Árpási, 1995). But over time the spa recovered and was visited by royalty, which made it an attractive destination for the general public in later times. Today Baile Herculane Spa is still a popular hot spring destination for health and wellness treatments (Cohut and Árpási, 1995).

Bulgaria

Like many other European countries Bulgaria's geothermal spa history is linked to Roman occupancy. A number of spa centres were developed during Roman times with several health resorts and spas currently still following the tradition of natural hot spring use for health, wellness and recreational purposes. Despite the fact that Bulgaria is a relatively small country, there are several hundred natural hot springs with various physical and chemical characteristics, as well as a reputation for curative value (Tsankov & Kamarashev, 1996). The ancient hot spring areas of Pautalia (Kyustendil) and Serdika (Sofia) are thought to have been used by the Thracian tribes since Neolithic times (4000 BC) with traces of Thracian settlements found near natural hot springs (VisitBulgaria.net, 2010; Tsankov & Kamarashev, 1996). Health resorts and spas in Bulgaria today are active treatment centres for health, wellness and recreation. Of the approximately 230 hot spring spa resorts a quarter are promoted as balneological resorts (Vassileva, 1996). This strongly supports the longstanding significance of hot springs for human use.

4.7 RUSSIA AND THE FORMER SOVIET UNION

Spas still play a very important role in the Russian medical system (Simkins, 1986). Many areas in Russia and the former Soviet Union are known for their natural hot springs which have been used for thermal bathing, cooking and washing for centuries. At the end of the Soviet era approximately 2500 state-run health spas had the capacity to cater for up to 500,000 visitors at a time (Oddy, 1999). After the collapse of the USSR in 1991 many of these health spas went into decline.

The Crimea in the south of Russia, like its Mediterranean neighbour countries, was under the influence of the Roman Empire since the first century AD (Svalova, 2000). Other areas in the Russian south were also popular, with [archaeological] remains of bathhouses, water pipes and other infrastructure left behind. Tbilisi, the capital of Georgia, was named after around 30 natural hot springs for which the city is still famous after more than 1500 years (tbil-i means warm in Georgian). The natural hot springs of Tbilisi played an important part in the legend surrounding the city's origin, and they still attract tourists today. The curative qualities of hot mineral waters have been used by the *Tbilisi Balneological Health Resort* since the 1940s **(**Georgian Asian Chamber of Commerce, 2010). However, unsettled political conflicts and the resulting instability and security issues do not encourage international tourism on a large scale (Erfurt-Cooper & Cooper, 2009).

4.8 INDIA, KOREA AND OCEANIA

India

In the ancient Indian medical science of Ayurveda water was described as the main element to cure many illnesses. A Greek ambassador travelling in India in the 3rd century BC described Indian spring water as 'rarified water' to indicate the extraordinary powers of the water (Chandrasekharam, 1995). Although there are over three hundred natural hot and mineral springs in India (Chandrasekharam, 1995; Chaterji & Guha, 1968) only a few reports (in English) could be obtained to assess the historical use of natural hot springs for health, wellness and recreation. It is therefore difficult to assign reliable dates related to the historical use of hot springs in India, although in many areas natural hot springs are associated with deities, which indicates that people have known about these natural resources for a long time. Legends disseminated by pilgrims refer to natural hot springs and temples located close together (Chandrasekharam, 1995), which corresponds with similar discoveries in Greece, Germany, Japan and UK.

Korea

Koreans have used natural hot and mineral springs for medical treatment and recreation from the early' Three Kingdom' period between 18 BC and 668 AD with records referring to the royal family, who enjoyed hot spring bathing. The history of the Suanbo hot springs for example suggests that they existed in the year 1018 under King Hyongjong (Koryo Empire) and attracted scholars, politicians and aristocracy as well as the public to 'take the waters' (Life in Korea, 2010). The importance of access to natural hot springs is demonstrated by

King Sonjong (reign 1083 – 1094), who ordered an exploration to discover hot springs closer to the capital city in return for social benefits, money and exemption from labour and duty (Yum, 1999). One of the oldest natural hot springs in Korea, Onyang (Chungcheong Province) has been used for more than 600 years. According to Korean history these particular springs were visited by King Sejong the Great (born 1397) and the royal family during the Joseon period (1392-1910) to cure their illnesses (Garcia, 2007; Hann, 1996; Korea, 2010). Management and maintenance of hot spring bathing facilities was controlled by the governors of individual territories, who generated records about hot spring use and who were in charge of the necessary legislation.

Until the Japanese occupation of Korea in 1910 natural hot springs were primarily used by the king, his family and the nobility. This changed after the arrival of the Japanese, who developed the hot springs into typical onsen style public bathing facilities (Yum, 1999). Although Korean hot spring areas have been used for centuries they are only now developed into state-of-the-art geothermal health resorts and spas to increase the number of international visitors (Pers. com., 2009).

New Zealand

In New Zealand natural hot and mineral springs were traditionally used by the Māori (c1100 AD) from the beginning of their settlement. They thought that certain geothermal pools had spiritual guardians, which made the hot springs central to important rituals (Swarbrick, 2006). The Māori commonly used the natural hot springs for cooking, bathing, washing and treating diseases. When the white settlers arrived, public bathhouses were built, but the Māori were expected to use separate pools, which led to occasional conflict. In 1880 the New Zealand Government began building large geothermal spas at Rotorua, Te Aroha and Hanmer Springs to treat medical conditions, but also to attract tourists (Swarbrick, 2006). Over time a thriving health tourism trade developed around the geothermal facilities of Rotorua including the Polynesian Spa (New Zealand Travel Planner, 2010) and the Queen Elisabeth Hospital, where military personnel and others underwent treatments based on the mineral rich springs (QE Health, 2010).

Australia

The Australian continent is known as a dry country, but has vast geothermal water reserves stored in deep artesian basins which underlie central and eastern inland Australia. These geothermal resources were discovered around 1880, although only a few geothermal springs have been used directly for thermalism and hot spring bathing (Habermehl & Pestov, 2002).

The town of Moree in northern New South Wales is one of the few examples of developed natural hot spring facilities in Australia. When the artesian groundwater there was initially accessed by drilling for irrigation purposes in 1895 AD, the geothermal resources were so plentiful that a large pool was dug and the Moree residents were able to enjoy 'taking the waters'. The first Moree Baths complex was completed by 1898 with further extensions in 1913 to provide more comfort in the open air bathing environment (Moree History, 1995). Today Moree is a well-known hot spring destination, attracting predominantly people of European background, who are aware of the health benefits of mineral rich hot spring water (pers. com. with staff at Moree Hot Mineral Baths, 2009).

In southern Queensland the Helidon Hot Springs were originally discovered and mapped by the explorer Alan Cunningham (Unique Helidon Places, 2010; Pearn & Little, 1998). The Helidon Spa was established in 1879 and promoted as 'Australia's Wonderful Mineral Water' equivalent to the finest hot springs in Europe. The natural spring water was described as a supreme health-bringer and health-preserver, but also as 'invaluable hygienically' (Anon, 1910). The local Aborigines knew about the Helidon springs for thousands of years and the local tribes regarded them as sacred (Anon, 1910; Pearn & Little, 1998) and although no written records exist, the natural hot springs are mentioned in the Indigenous dreamtime legends. The Helidon Spa claimed in 1966 to have the biggest manmade swimming pool in Australia: however, in the 1980s concerns about bacterial contamination arose. The hot spring water required chemical treatment to counteract the potential risk to human health, which was seen as contradicting the ethos of natural waters and the spa went into decline (Pearn & Little, 1998).

In the southern States of Australia the hot spring spa industry, apart from some early developments of mineral springs in Victoria never really took off, mainly because most natural springs were not warm enough to attract visitors and had to be heated. Some of the springs were known to the local Aborigines before the white settlers arrived, but without written records this is only speculation (Menadue, 1972). In more recent years (since 1992) the Peninsula Hot Springs Centre (Mornington Peninsula near Melbourne), was developed by Charles Davidson, who was inspired by the pleasures of onsen bathing in Japan. Together with his brother he was determined to open something similar in Australia (Svart, 2008; Richards, 2008) and after eight stressful years of drilling for natural hot water and developing a hot spring spa facility, the centre finally opened in June 2005. This geothermal spa is the only one in Victoria with natural hot water that does not require heating (Webb, 2005) and has become a popular destination for hot spring connoisseurs (pers. observation).

4.9 CANADA AND THE AMERICAS

In the United States, Canada and Latin American countries the local native tribes used natural hot springs for health and ceremonial purposes (Table 4.3). There was a widespread belief in the benefits of medicinal waters, and later the early European settlers started 'going to the springs' annually, similar to today's annual holidays at a spa resort with thermal facilities (Bullard, 2004).

Canada

In Canada there are approximately one hundred and ten (110) natural hot and mineral springs recorded (Woodsworth, 1997), each spring having its own unique blend of minerals, gases and temperature (Parks Canada, 2010). Most of the hot spring spas and resorts are located in British Columbia, Alberta and Saskatchewan, and are characterised by hot spring based health and wellness treatments (de la Barre, de la Barre & Taggart, 2005). Planning for the development of hot spring facilities in Canada started around 1883 following the first visits of Europeans in the year 1859. In 1885 the area around Cave and Basin Hot Springs (Banff, Canada) was set aside for development as a national park including a European style hot spring spa **(**Kurillowicz, 1995). At the Banff Upper Hot Springs the original Grand View Villa including a hot spring bathhouse was built in 1886 and, although initially privately owned was later managed by the Canadian Government. The recently renovated bathhouse is currently used by over 500,000 visitors annually, not counting other bathing facilities also receiving geothermal water from the Upper Springs, which include a sanatorium and a hotel with geothermal pools (Lund, 2003).

Centuries before the first Europeans arrived in Canada the Radium Hot Springs (British Columbia) were used by the local Kootenai Indians (Zieroth, 1978). After initial private ownership the Radium Hot Springs were included in the Kootenay National Park and managed by Parks Canada (Lund, 2003; Parks Canada, 2010). The Miette Hot Springs in the Jasper National Park (Alberta) and several other hot springs were also used by local Indian tribes before the European settlers arrived. The area around the hot springs which supply the Fairmont Hot Springs Resort in British Columbia was originally settled by the tribes Nez Perce, the Shoshones and the Flathead, who in the past set up their small communities in the area which was then called 'Medicine Waters' (Lienau, 1993).

North America

The native Indians of North America considered natural hot and mineral springs as sacred places and they believed in the healing powers of the minerals contained in the springs. Most major hot springs in the United States have historical records of local Indians tribes using natural hot springs for rituals and ceremonies (Frazier, 2000). 8,843 hot springs were recorded by 1888 in the United States alone, of which 634 were used as spas (Bischoff, 2001). However, due to a lack of ongoing governmental support the majority of hot health spring resorts and spas closed down during the middle of the following century (Bischoff, 2001).

Table 4.3 *Native tribes of American Indians who used local hot springs for health and ceremonial purposes. (Table compiled by Author from various sources).*

Natural Hot Spring	Country, State	Native Tribes
Kruzgamepa Hot Springs, Kilo Hot Springs, Chief Shakes Hot Springs	Alaska	Eskimos, Tlingit Indians
Valley of the Vapours (*City of Hot Springs)*	Arkansas	Tunicas and Natchitoches Indians, later Cherokees and Quapaws
Agua Caliente	California	Cahuilla Indians
Calistoga in the Napa Valley	California	Wappa, Pomos and Mayacmas Indians
Miette *(Fairmont)* Hot Springs *(Medicine Waters)*	Canada	Nez Perce, Shoshones and Flathead Indians
Radium Hot Springs	Canada	Kootenai and Apache Indians
Glenwood Hot Springs *(Big Medicine Spring - Yampah)*	Colorado	Ute, Comanche and Arapaho Indians
Warm Springs	Georgia	Creek Indians and Iroquois Indians
Lake Amatitlan Thermal Springs	Guatemala	Maya
Agua (Aqua) **Hedionda**	Mexico	Aztecs
Tequesquiatlapan *(River with carbonated water)*	Mexico	Nahua and Chichimeca Indians
Sleeping Child Hot Springs	Montana	Nez Perce Indians
Saratoga Springs, High Rock Spring	New York	Mohawks (Iroquois) and Tuscarora Indians
Crater Lake, *(Mt. Mazama Caldera)*	Oregon	Klamath Indians
Warm Springs	Oregon	Paiute Indians, Wasco Indians
Cajamarca *(Inca Baths)*	Peru	Inca
Minnekahta Springs	South Dakota	Sioux Indians
Pah Tempe Hot Springs	Utah	Paiute Indians and Navajo
White Sulphur Springs	West Virginia	Shawnee Indians
Yellowstone National Park, Smoking Waters (*Bahguewana),* Thermopolis	Wyoming	Arapaho and Shoshone Indians

Ojo Caliente and Faywood Hot Springs represent two examples from New Mexico, with the first thermal health spa at Ojo Caliente established in 1880. Local history however claims that the hot springs were used long before by ancient native tribes, who built pueblos with terraced gardens overlooking the springs (Witcher, 2002a). In 1525, while searching for gold and the 'fountain of youth', the Spanish conquerors rediscovered the hot springs and named them Ojo Caliente (Witcher, 2002a). At present Ojo Caliente is promoted as a Mineral Springs Resort and Spa. The Faywood Hot Springs are also said to have attracted Native

American peoples as well as Spanish explorers, buffalo hunters, and miners, and in more recent times health seekers of various cultural backgrounds. However, no reliable dates are available beyond the arrival of the Spanish explorers in North America during the first half of the 16th century. Today the Faywood hot springs are commercially developed as a geothermal spring resort which offers a wide range of activities (Witcher, 2002b).

The Hot Springs National Park (HSNP) in the State of Arkansas has 43 natural hot and mineral springs, whose importance was originally recognised in 1832, when the first Federal reservation was established to protect natural resources for public enjoyment. The natural hot springs of HSNP have been valued for their therapeutic and recreational benefits since their discovery and have attracted people and businesses, leading to the development of the city 'Hot Springs' (Yeatts, 2006). Some accounts of natural hot and mineral spring use in this area date back before 1877 and report that several springs were walled in and covered by masonry arches to protect them from contamination (Scully, 1966). Today Hot Springs is advertised as 'America's First Resort' with a rich history and as a location for relaxing spa vacations (Hot Springs Arkansas, 2011).

Mexico

An analysis of the history of natural hot spring use in Latin America and the Antilles is difficult as the sources are fragmentary and incomplete as well as quite often distorted (Hernández-Galán, Lámbarri and Suárez Arriaga, 1999). Even so, 576 hot springs are recorded in Mexico; many of them were known in the past and used for their therapeutic benefits (Brooke, 2010). Some natural hot and mineral springs were reportedly used by the early Aztecs for health purposes (Lund & Freeston, 2001). The Aztec leaders, including Montezuma I and II and their warriors, used natural hot spring spas to recuperate from royal duties and war, with one of the springs, Aqua Hedionda, later developed into a fashionable spa by the Spaniards (Suárez Arriaga, Cataldi & Hodgson, 1999; Brooke, 2010; Lund, 2002; Salgado-Pareja, 1988). Other hot spring spas were built at the end of the 1700s in San Bartolo Agua Caliente, but it is commonly suggested that the use of the thermal waters goes back before the dates which are officially recognised today (Hodgson, 2004). It is historically accepted that the Aztec ruling class believed in the curing properties of geothermal springs and used them to treat various health conditions (Brooke, 2010).

Guatemala

Anthropological evidence uncovered at Lake Amatitlan in Guatemala near Guatemala City indicates that the Maya used geothermal springs as early as 500 BC (Altman, 2000). Today

these natural hot springs are used for various purposes, including hot spring health resorts and spas, but also for industrial developments such as heating and plants for fruit drying (Marini, Cioni and Guidi, 1998; Merida, 1999).

4.9.1 South America

South America offers an abundance of natural hot and mineral spring destinations. Due to the volcanic activity in large parts of the continent many areas have a history of hot spring use which dates back before European explorers and conquerors arrived. The largest empire south of the equator was the Inca Empire, which ruled over Northern Chile, upland Argentina, Bolivia, Peru, Ecuador, and Southern Colombia (Calderón, 1999). Although natural hot springs and other geothermal manifestations were known to the local population before the Europeans arrived, written records date back only to the Spaniards when they were exploiting the country's natural resources and as a result 'discovered' the hot springs and used them for health treatments and recreational purposes (Erfurt-Cooper & Cooper, 2009).

Perú

In Perú the Incas enjoyed their natural hot and mineral springs for medicinal purposes; the most famous being the Inca Baths in Cajamarca. **A**ccording to historical sources the Inca ruler Atahualpa (1502–1533) and his court were found in the baths of Cajamarca when the Spanish conquerors arrived. Today these are known as Baños del Inca (Peru.info, 2010) or Inca baths. Cajamarca and the hot spring village of the Incas is one of the most important tourist destinations in Peru (Calderon, 1999; Termasworld, 2010). The redeveloped geothermal springs of Aguas Calientes (Machu Picchu Pueblo) are also believed to have curative value and several pools of varying size and temperature are offered to the health, wellness and recreational tourist (Aguas Calientes, 2010).

Brazil

Natural hot and mineral springs in Brazil were used before the European invasion of South America, but the first written records of hot spring use in the Caldas Novas region (State of Goiás) were made in Spain in 1545 AD (Caldas Novas, 2010). Nearly two hundred years later in 1722 Bartolomeu Bueno da Silva discovered natural hot springs while he was searching for gold. Later on settlers made use of the natural hot springs when they moved further inland away from the coast. Today, the natural hot springs of Caldas Novas are one

of the most important tourist attractions of the region and the number of international visitors is increasing with more than eighty hot spring hotels (Wikipedia Caldas Novas, 2010).

4.10 FINDINGS AND CONCLUSION

4.10.1 Findings in Relation to the Research Aim and Objectives

This chapter has investigated the historical and cultural background of hot spring use and presents an assessment of the role of natural hot and mineral springs as destinations for health, wellness and recreational tourism throughout history. In addition to the historical aspects this chapter documents the magnitude of hot spring use worldwide and provides references for the origin and the cultural use of hot springs. The analysis of the historical and cultural background of natural hot and mineral spring destinations has included representative examples from a number of countries (37), which were described on the basis of their reputation for medical benefits, accessible historical records, their traditional ambience, as well as their cultural associations. The findings of this historical review highlight the different settings of hot spring destinations and provide a reference for the history and the cultural use of natural hot and mineral springs in 37 countries. The continuing traditional and cultural aspects of hot and mineral spring use have been documented and the research objectives were addressed as detailed below.

Research Objective 1: 'Development of a conceptual model to assess the role of natural hot and mineral springs in health, wellness and recreational tourism'

This historical review has demonstrated the validity of the conceptual model which takes into account the distinctive characteristics of hot spring environments as a natural resource for health, wellness and recreation in many countries. The correlations between the individual components of the model, such as hot spring settings (socio-cultural and environmental), historical and cultural use, customs and traditions as well as medical recognition, were examined and confirm the important role of natural hot and mineral springs in the development of health, wellness and recreational tourism over time.

Research Objective 2: 'To identify settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism'

Hot spring destinations were described in this review in the context of their historical and socio-cultural backgrounds. Representative hot spring locations and the major traditions of natural hot and mineral spring use to enhance health and wellness as well as for recreational

pursuits were explored and summarised. The findings of the review confirm that natural hot and mineral springs have been integrated into health, wellness and recreational tourism on a worldwide basis, in some countries for several thousands of years.

Research Objective 3: 'To explore the historical development of hot springs as destinations for tourism'

Although the first human interactions with natural hot and mineral springs cannot be reliably documented due to the lack of written records, it is understood from the myths and legends referring to the healing powers of natural hot springs and their assumed sacred nature, that any knowledge about their use started in prehistoric times and was passed on from one generation to the next. Their reputation for health, wellness and recreational benefits can be traced back several thousand years in a number of countries mainly through written records kept by Chinese, Greek and Roman scholars. Throughout history the most popular places for rest and recreation were those with access to natural hot and mineral springs and where health resorts with treatment facilities were available. For example during the pre-Hippocratic period (5^{th} – 6^{th} centuries BC) medicine was practiced at Asclepeia in the temples of Aesculapius, which were purpose-built near hot and mineral springs (Katsambas & Antoniou, 1996). This confirms the key finding that the Romans were NOT the first users of natural hot and mineral springs in Europe, although hot spring use is frequently attributed to them. The maximum documented timeframe backed up either by written records or oral communication (Appendix 4.1) on a worldwide basis can be dated back to approximately 3000 BC, although substantiating this is difficult at many locations due to conflicting dating systems and unreliable textual sources. The historical timeline provides a detailed reference of the different origins of the hot spring culture.

Research Objective 4: 'To determine the cultural context of hot springs as a tourism resource'

Ancient health spas, which used hot and mineral springs, were commonly based on the belief in the divine healing powers bestowed upon the natural springs and were frequently linked to patron saints and deities relevant to individual peoples and regions. The findings of this review within the cultural context indicate with certainty, that the use of natural hot and mineral springs has global roots and dates back to the earliest civilisations. Individual peoples developed and used their hot springs in ways most suitable to their socio-cultural needs. Ancient customs and cultural traditions related to the use of natural hot springs are still important at many destinations (e.g. Japan).

Research Objective 5: 'To investigate the recognition of medical benefits associated with natural hot and mineral spring therapy'

The history of hot spring use shows that natural hot springs have been used to treat a wide range of illnesses. The current use of hot and mineral springs for medical treatment is frequently based on their reputation for curative power, and been supported by the medical profession in many countries throughout history. As a result, many original hot spring towns and spas are still in existence today; often with new facilities developed around the antique remains of the original hot springs.

The history chapter has contributed relevant information that confirms the role of natural hot and mineral springs in health, wellness and recreational tourism and their importance for destination development over time. The extent of the historical use of natural hot and mineral springs was explored and who they were used by was explored. The cultural environment, which determines individual traditions at hot spring destinations, was considered and different settings were used as examples. The material discussed in this chapter has taken a global approach to provide an in-depth assessment of the history of natural hot spring use, which has worldwide origins and dates back to the earliest civilisations. The findings resulting from this chapter are discussed in Chapter 7.

CHAPTER 5
Health Resort and Spa Tourism based on Natural Hot and Mineral Springs in Germany

5.1 INTRODUCTION

Case studies have become one of the most common methods in qualitative inquiry, as they can be based on any mix of qualitative and quantitative data, and rely on multiple sources of evidence (Yin, 2003). The research methods for this case study involved the systematic gathering of information about the social and physical settings of natural hot spring destinations to effectively understand how they work (Berg, 2001). Multiple sources of information incorporated data-collecting methods (Hamel, Dufour & Fortin, 1993) such as interviews and observation (Eisenhardt, 2002) as well as documents and reports. Case studies are described by Thomas (2003:33) as typically consisting of a description of an entity and the entity's actions, which in the case of this study refers to the health, wellness and recreational destinations and facilities as entities and the use of natural hot and mineral springs as the actions of the entity. More exactly, the context of this case study of German hot and mineral spring destinations refers to the physical settings (geological, mineralogical and geographical), the historical settings (providing the time frame), and the socio-cultural settings of their environment.

Theories emerging from case studies can be tested and measured within conceptual frameworks and models (Eisenhardt, 2002), and can be explorative, explanatory or descriptive with *how* and *why* as important questions focusing on patterns of behaviour (Hamel, Dufour & Fortin, 1993; Stake, 2000). The case study research for this thesis required the collection of data on the following criteria (as recommended by Stake, 2000):

- The nature of the case (role of natural hot springs in health, wellness and recreational tourism in Germany);
- The historical background (development of health resorts and spas over time);
- The physical setting (geographical location, destination infrastructure, geology and natural environment of German hot springs);
- Other contents such as the cultural and economic background; and
- Inclusion of other cases as small [historical] examples.

The research objectives addressed in this case study included the *where* and *when* of the research phenomenon in general and the definition of *what* is the case study about in particular. Some of the more challenging steps for undertaking case study research were singled out by Yin (2009) as the selection of a case for study, the strengthening of the evidence used, and the analysis of the evidence. As recommended by Yin, prior to the selection process practical considerations included the investigation of the availability and quality of relevant case study data. The criteria for selecting the case study content were subjective choices and made when the case study was designed (Stake, 2000).

To contribute to the research literature by transferring knowledge from researcher to reader (Stake, 2000) case studies need to have a critical focus on distinctive settings within a theoretical framework (Yin, 2009). The case study of Germany includes representative locations and covers the major traditions of the use of natural hot and mineral springs to enhance health and wellness as well as for recreational pursuits. The selection of Germany benefits from the accurate visitor numbers provided by the German Spa Association *(Deutscher Heilbäderverband e.v.),* which are separated into four individual health resort and spa categories. This was considered to be an important benefit. In addition this chapter reflects the specific hot spring traditions of Germany, how the relevant authorities deal with natural geothermal resources in relation to health, wellness and recreational tourism, the geographical and geological environments, as well as the level of support from the national health care providers and medical insurance systems. The case study also touches on the historical-cultural development of hot spring destinations and presents an important contribution to the understanding of the patterns of health, wellness and recreational tourism in Germany.

5.2 CASE STUDY OBJECTIVES

The case study of Germany is designed to provide information related to the interactions between tourism and the role of natural hot and mineral springs, raise awareness about the potential and the magnitude of hot spring use in health, wellness and recreational tourism, document the size of the hot and mineral spring tourism industry in Germany; and outline the historical and cultural use of natural hot springs. The research objectives addressed in this case study focus on the *'identification of settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism'*; the *'exploration of the historical development of hot springs as destinations for tourism';* the *'cultural context of hot springs as a tourism resource'* and the *'recognition of the medical benefits of natural hot and mineral springs'.* To assess the role of hot springs in Germany's health, wellness and recreational tourism sectors a model (Figure 5.5) was developed and tested as part of the research objectives. Following the model the role of natural hot and mineral springs in Germany was assessed by exploring their distinctive characteristics as a tourism resource with all variables of the model used to assess and evaluate their role in health, wellness and recreational tourism.

The intention of Chapter 5 is to present an assessment of health, wellness and recreational tourism in Germany based on the use of natural hot and mineral springs. The findings of this

case study highlight the size of the German health resort and spa sector and provide a reference of the historical and cultural use of natural hot and mineral springs in Germany. The long standing tradition of thermalism and balneotherapy based on natural hot and mineral springs medical and wellness treatment is documented as well as the government's involvement in this facet of public health.

5.3 GEOGRAPHIC AND DEMOGRAPHIC CHARACTERISTICS

The Federal Republic of Germany is located in central Europe and covers an area of approximately 357,000 km^2 (Figure 5.1). The longest distance from north to south is 876 km, from west to east 640 km with an estimated population of over 82 million (Busse & Riesberg, 2004; Germany-tourism.de, 2010; Wikipedia, 2010). Germany comprises of 16 States (Bundesländer), the climate is temperate-seasonal and the country has the largest national economy in Europe. The life expectancy currently is an average of 77 years for men and 82 for women. Almost the entire population of Germany has health insurance; 88% are covered by the national health insurance and just under12 % has private health cover (Germany-tourism.de, 2010).

Figure 5.1 *Location of Germany in Europe (Central Intelligence Agency CIA, 2010)*

The German health resort and spa industry has long recognised that for many people nature and wellness belong together and offers prevention and rehabilitation options to balance or restore health and wellbeing by using holistic and alternative therapies (Größchen, 1998). Patients with chronic illnesses are dependent on rehabilitative options offered at health resorts and spas with advanced spa medicine and modern balneology treatments (Pratzel,

2001b). Consequently spas and health resorts in Germany play a key role in the health, wellness and recreational tourism industry with 393 (1998) officially recognised spas, a large percentage of them publicly owned and managed (Bacon, 1997; Größchen, 1998). A contributing factor to the ongoing popularity of German health resorts and spas is the promotion of collective welfare, the extensive regulation of the health system as well as public health education (Bacon, 1997).

Guidebooks for the German spa industry describe in great detail the variety of health resort and spa destinations and are an important contribution towards an informed decision about where to spend time to either maintain or reclaim one's health. The regularly updated *'Conradi-Bäder-Lexikon'* edited by Größchen (1998) contains every destination that is officially recognised by the German government as *'Kurort'* (spa town), as well as classifications according to their medical profile, the surrounding natural environment and climate, and the present socio-cultural infrastructure. Guides such as this inform the reader by relating systematically all details important for a sustainable health concept (Größchen, 1998: Foreword), including introductions to healing water applications with differentiation between water, thermal water and mineral water. Also mentioned in some German guidebooks is the price index, as well as cultural and geographical features of individual spa destinations. The criteria for inclusion into guidebooks stipulate that only spa towns, where the healing waters are accessible for everybody, can be admitted. Furthermore, the spa town must offer therapeutic treatment as well as a reasonable tourism infrastructure with suitable accommodation (Jahns 2004).

Health, wellness and recreational tourism is a very important tourism sector in Germany, with the inclusion of natural hot and mineral spring spas as significant contribution to the rehabilitation process of patients or wellness seeking visitors who want to maintain or reclaim their health. To appreciate the significance of health resorts and spas based on natural hot and mineral springs in Germany, it is necessary to review the national health care system in this country, as this has for many years promoted the use of health resorts and spas as an important adjunct to the medical side of health care. This case study introduces the major factors involved in the German health resort and spa system (*Kursystem)* as it has developed since first being introduced in the year 1883. Several reforms have taken place over time and will be discussed in this chapter.

5.4 HISTORY OF HEALTH RESORT AND SPA DEVELOPMENT

The Romans are commonly credited for having cultivated bathing to a fine art in the countries they occupied. Their bathhouses were the centre of activities; drinking and eating took place at the facilities, business deals were closed and intrigues were spun (*Der Spiegel*, Vol 24, 1987). During later centuries many spas and health resorts originally used by the Romans played an important part in the social and cultural life of the leading classes in Europe, which gave these spas their unique character. 'High society' members felt the need to relax and to take care of their health, therefore at first the visitors came from aristocratic circles; including counts, kings and emperors. However, the wealthy bourgeoisie soon followed, not wanting to miss the opportunity to mix with royalty. Later artists, writers and thinkers were attracted as well. For parents it was also an excellent opportunity to present their marriageable sons and daughters at balls, concerts, in the theatre, and in parks. From a marketing point of view it was priceless publicity for a spa or health resort when for example the Russian *Czar* and *Czarina* with their entire court entourage came for a visit (Knoblich, 2002) to find relief for their physical and mental ailments or even healing them through the curative properties of the mineral rich hot spring water (Sieveking, 1913). Legends and mythology added interest to hot spring locations (Sieveking, 1913), not just in Germany, but worldwide. And over seventy years ago observers like Selke (1936) were suggesting that although spas and resorts offered many other attractions for visitors, bathing in natural hot and mineral springs was the main point of interest.

The German use of *Bäderheilkunde* (spa medicine, thermalism, balneology) is historically well grounded and documented, in fact going back even before the Roman occupation 2000 years ago (Erfurt-Cooper, 2009). Traditionally, spa medicine in Germany is carried out by qualified medical staff under the strict supervision of doctors who are highly specialised in the field of medical balneology (Bäderheilkunde). In contrast to other countries such as England the German political and economic system of state patronage has greatly supported the development of the spa, leading to a substantial public commitment to develop and manage a new leisure industry (Bacon, 1997).

The spa industry generally offers its customers a mixture of medical and recreational services, with special concern for its continuing good reputation, which depends on quality and a realistic success rate. By the 19th century spa practitioners in Germany had to be licensed and were controlled by the state. Spa medicine was considered a subject worthy of academic study and research at the universities of the time. This recognition by the State and the educational system enhanced the image and desirability of the developing German spa

industry amongst substantial numbers of visitors from countries, including England and America (Bacon, 1997).

Key physical elements in the design of German spas have always included the natural environment in the form of parks and walkways, while the spa buildings were publicly funded and planned by officially trained and appointed architects and planners (Bacon, 1997). Granville (1839) describes the public [Kur]promenade as the centre of (visitor) attractions where magnificent buildings were commanding attention due to their architecture with *Corinthian* colonnades, encouraging people to devote time to their health combined with pleasure. *Kur* towns traditionally have a *Kurzentrum* (cure or healing centre) which originally was the official medical facility (Leavy & Bergel, 2003).

Today therapy and treatment are not tied to one specific location; apart from facilities for medical treatment, spa hospitals and aquatic centres also offer therapy pools to attract health and wellness tourists on a more casual basis. The attractions of these more recent German bathhouses usually include architectural features and interior decor - from grandiose post-modernism (marble) or rustic practicality (wood), to excessively kitsch facilities, with real and artificial greenery and fancy illuminations (*Der Spiegel,* Vol 24, 1987).

Two representative hot spring destinations were selected as examples for the development of health resorts and spas based on natural hot and mineral springs in Germany and to provide evidence for their important role in health, wellness and recreational tourism.

5.4.1 Socio-Cultural Settings: Spa Town Baden-Baden

During the 18th century the European bathing culture underwent a change, which prompted a new understanding in terms of personal hygiene, which originated in France (Heilbad Baden Baden, 2010). In more recent times, according to an article from 1987 about spas and thermal bathing, bathhouses and swimming pools were considered to be a thing of the past. The German magazine *Der Spiegel* declared that bathing temples and palaces were now *in vogue* and spas and health resorts were out. With names like *'Badylon', 'Aquadrom'* and *'Aquarena'* German spas advertised in brochures with slogans and headlines to convey a 'new' idea. 'Bathing like the Romans' was one of the catchphrases and the traditional spa town of Baden-Baden was praising one of its new spas as an 'oasis of happiness' and as a 'bathing paradise'. In this respect the *Friedrichsbad* in Baden Baden claims to be unique in the world because, while it is a nude bathing facility where bathing is traditionally strictly

separated, on certain days and public holidays however, men and women can share all the seventeen (17) bathing locations (Baden Baden – der ultimative Stadtführer, 2010).

Baden Baden remains one of Europe's most prestigious and fashionable spas even today (Columbia Encyclopedia, 2008; Sanner, 2000) and is nationally recognised as No. 1 of about sixty (60) health resorts and spas in the State of *Baden-Württemberg* (Sanner, 2000; Heilbad Baden Baden, 2010). Other well-known geothermal spa destinations are Wiesbaden, Aachen, Bad Pyrmont, Bad Oeynhausen, Bad Dürkheim, Bad Füssing, Bad Mergentheim, Bad Kissingen, and Bad Reichenhall.

Over two millennia the city of Baden Baden developed from a luxurious thermal spa centre under Roman occupation to an international holiday and health resort based on the use of geothermal spring water (Wettstein, 2010). The original Roman bath ruins are located under what is presently the Friedrichsbad. The imperial baths, which were built after 213 AD by order of the Roman Emperor Caracalla, were discovered accidentally during construction work on the Friedrichsbad. The original complex included two pools for the cooling of geothermal water, two bathing pools and a sauna room. At some distance to the imperial baths, the more basic soldiers' baths were established, equipped with a hot bath, a hot air bath, a sauna, and several pools (Wettstein, 2010). These masterworks can now be admired in the 'Museum of Ancient Bathing Culture', where the 2000 year old bath ruins, one of Germany's oldest and best kept examples, are on display for the public (Badruinen.de, 2010).

Under the Romans, who made use of the local hot springs (average temperature 60^{o}C) the city was founded as *Aquae Aureliae*. The initial development peaked in the 2nd century AD with stately buildings and the thermae, which coined the image of the city (Sanner, 2000). From many parts of the Roman Empire people came in search of relief for their illnesses, including the Emperor Caracalla, who visited Baden Baden in 213 AD to cure his rheumatism (Baden Baden Geschichte, 2010; Selke, 1936). However, after 260 AD, the German tribe of the *Alemans* invaded the area and destroyed most of the city, causing geothermal bathing to cease for several centuries (Sanner, 2000). The architectural remains of the large thermae known as the Baths of *Caracalla* can still be seen today (Wikipedia, 2010).

In the 6th century, the Merovingian king *Dagobert III* handed the area of Baden Baden, including the hot springs, to the *Weissenbur*g monastery. The name '*Stadt Baden'* (Baden city) was used for the first time in a document from 1256 AD by the *Markgraf* (Earl) *Rudolf*

von Baden and in 1306 AD Markgraf *Rudolf III* offered a part of the thermal baths to his knights. The geothermal waters became increasingly important over the years and in the 15th century the bathing activities in Baden Baden flourished, following a visit by the German Emperor *Friedrich III* for health purposes in 1473 AD.

Markgraf *Christoph I* controlled the bathing activities in 1488 AD by legal decrees and in 1507 AD he introduced a tax on bathing *(Kurtaxe,* which still exists today in most spa towns). A book about the springs was published in 1625 AD by *Johann Küffer*, mentioning twelve (12) springs (Sanner, 2000), in which the inhabitants of Baden Baden traditionally had such great confidence, that, as a defensive measure against the raging plague in the city in 1349 AD, they had flooded the streets with hot spring water (Heilbad Baden Baden, 2010).

Baden-Baden became a well-attended spa destination when during the 15th and16th century AD the city was able to offer accommodation for 3000 spa visitors *(Badegäste)* in twelve (12) hostels. In the 19th century the ruling Margraves continued to play a leading role in spa development which included the appointment of a director who was also required to be a state registered doctor to prevent possible charges of charlatanism, which could seriously damage the reputation and commercial viability of the spa town and its health resorts (Bacon, 1997; Granville, 1841; Rolls, 1988; Turner, 1967). As an increasingly international tourist destination during this period, with newly developed spa facilities no luxury was spared. A casino was also included, which was designed to attract customers from countries such as England and France, where gambling was banned. This type of public investment in the core spa facilities acted as an economic multiplier attracting substantial private sector investment (Bacon, 1997).

In 1846-1848 AD an additional steam bath (*Altes Dampfbad*) was constructed, using a hot spring (*Ursprungsquelle*) with a flow rate of approximately 118 m^3 (118,000 litres) per day of geothermal water at almost 60^oC. In 1850 AD Queen *Augusta* of Prussia, who later became Empress, stayed in Baden-Baden for the first time. Chancellor *Bismarck* paid a visit to Baden-Baden in 1858 AD, and the first international horse race was conducted in the neighbourhood as an additional attraction. This was followed by a theatre in 1860-62 AD, which was modelled on the opera in Paris (Sanner, 2000). From 1863 to 1875 AD many other famous personalities are named in the annals of Baden-Baden. Visitors included Dostojewski, Clara Schumann, Johannes Brahms, Victor Hugo, Richard Wagner, Friedrich Nietzsche, Queen Victoria of England and British Prime Minister Disraeli.

The facilities were upgraded in 1877 AD to the basic system still in current use when the Friedrichsbad was inaugurated in the traditional hot springs district and in 1893AD followed by the *'Augustabad'*. The infrastructure of the spa resort has been continuously improved since then, with a conference centre in 1968, the *Caracalla Spa* in 1985 and a festival hall for 2650 visitors in 1998. The growing geothermal spa business has fuelled the local economy and resulted in a steady increase in population since the end of the 19th century (Sanner, 2000). As a result the bathing tradition of Baden-Baden has continued to attract visitors throughout the 20th and 21st centuries.

Today two major bathing facilities dominate the 'Kur' activities; one is the traditional Friedrichsbad, which has provided relaxation and healing for over a century, and the relatively new 'Caracalla Spa', located in the city centre. Both spas are supplied with geothermal water directly from the original hot springs as well as from two wells which were drilled in the 1960s. Geothermal water is also delivered to three public drinking fountains and several private users (hotels, hospitals) (Sanner, 2000:20).

5.4.2 Socio-Cultural Settings: Spa Town Wiesbaden

The Romans were aware of the healing and beneficial impact of the mineral-laden waters of the twenty six (26) natural hot springs of *Wiesbaden* (Wiesbaden, 2010), although these springs were already used as a spa destination by the Celts (Selke, 1936) before the Romans arrived. The Roman settlements are first mentioned in 121 AD under the name *Aquae Mattiacorum*, which is Latin for 'Waters of the *Mattiaci*', a Germanic (Celtic) tribe who lived near the natural hot springs before the Romans arrived. After a long hiatus towards the end of the Middle Ages hot spring bathing once again became important for Wiesbaden and in 1370 AD sixteen bath houses were in operation. By 1800 AD, twenty-three (23) bath houses were constructed and while Wiesbaden continued to grow, other attractions were developed including gambling, a favourite pastime for spa visitors. In the 19th century Wiesbaden was famous for its natural hot springs and a casino, which rivalled those of Baden-Baden and Monaco (All Experts, 2010; Wiesbaden, 2010).

In the past, dignitaries and famous people like *Johann Wolfgang von Goethe*, *Fjodor Dostojewski*, *Richard Wagner*, and *Johannes Brahms* visited Wiesbaden, but not just for the hot springs; the casino attracted large numbers of health and wellness seeking tourists (Wiesbaden, 2010). Wiesbaden's considerable developments during the 1850s and 1860s owed much to the initiatives of the Dukes of *Nassau* (Soane, 1993). After the First World

War (WWI) Wiesbaden lost its reputation as a world health spa and began to focus on strictly clinical treatments with several highly specialised facilities. Currently eighteen (18) different hospitals are catering for general medicine as well as for cosmetic enhancements. The largest *Kurkliniken* (health facilities, hospitals) are grouped around the thermal bath in *Aukammtal* which is supplied with geothermal water via a pipeline (Wiesbaden, 2010).

The natural hot springs are one of the reasons why, even before preventative health measures were discussed, Wiesbaden developed into a 'classic spa city'. Bathhouses have existed in Wiesbaden since Roman times and some springs are still accessible to the public. However, apart from the large public geothermal baths mainly the big hotels have access to the geothermal water sources and can offer thermal baths to their guests (Wiesbaden, 2010). In addition to these facilities for the recreational tourist Wiesbaden enjoys the reputation of being a recognised centre for the treatment of rheumatic and orthopaedic disorders, with many specialist and rehabilitation clinics as well as healthcare centres based in the city (Wiesbaden, 2010). The temperature of the hot springs ranges between 46°C and 66°C with a flow rate of approximately 2 million litres per day, which makes Wiesbaden the second highest hot water producing German health resort after Aachen with 3.5 million litres per day (Wiesbaden, 2010).

5.5 DEFINITION OF TERMS RELATED TO THE GERMAN 'KUR'

The German term *'Kurort'* is defined by Leavy and Bergel (2003) as a 'place of cure' with a broader implication of a health resort or spa and is based primarily on natural hot and mineral water resources, although climatotherapy (the use of favourable climate) is commonly included. The word *Kur* (cure, treatment – see also Appendix 5.1) means a special type of medical therapy which takes place in health resorts and spas using nature based remedies during a period of between 3 to 6 weeks. The *Kur* mainly promotes the reactivation of self-healing powers through stimulation and training by minimising the use of drugs. The main aims of treatment are prevention or rehabilitation (Pratzel, 2001b). The terminology of various elements of health resort and spa medicine is defined by Pratzel (n.d.) in German as follows:

- **Balneology:** the science of using the curative and therapeutic agents of earth and water. Balneology includes the use of natural resources such as hot and cold mineral water, but also mud baths, sand baths and 'artificial' baths where minerals and other components are added to the water. Gutenbrunner and Hildebrandt (1998) define balneology as the study of the use of natural remedies based on local natural resources (medicinal waters, gases, peloids), with the addition of balneotherapy

(therapeutic application), balneotechnology, chemistry and physics (analytical) and the principle of geological conditions of hydrogeology related to balneology;

- **Medical balneology:** the science of the medical application of the therapeutic and curative agents of water;

- **Hydrotherapy:** part of physiotherapy whereby water (natural hot and cold mineral water as well as tap water) is used for applications such as baths, showers, swalls, dressings or partial baths. Hydrotherapy uses mainly the physical characteristics of water for bathing;

- **Balneotherapy:** complex treatment programme in combination with other holistic [oriented] therapies such as 'taking the waters' internally (drinking cure) or inhalation as well as under the influence of climatic factors (climatotherapy). Balneotherapy uses predominantly the effects of the contents of water such as minerals and trace elements;

- **Crenotherapy:** commonly known as drinking cure, also synonymous with balneotherapy.

- **Thermalism:** natural spa treatment (Germ. *Kur*); and

- **Thermal baths**: treatment facilities which are fed by natural subterranean springs, which are required to have a temperature above 20^{o}C (Pratzel, n.d.).

In Germany 'spa medicine' follows several characteristic concepts:

- Therapies based on a certain health theory;

- A holistic therapy created for patient specific health problems/conditions;

- Support and strengthening of healthy lifestyle choices and personal responsibility;

- A culturally and psychologically enhanced relaxing and stress free atmosphere to further increase the therapeutic effects (Pratzel, n.d.).

Medical spa types include a) balneo-therapeutical centres with natural mineral waters and peloids useable for medicinal treatments and therapy, and b) thermal spas where geothermal resources are used for medicinal treatments and therapy. The difference between natural mineral water of geothermal origin and thermal water is usually in the temperature, but it is not uncommon to define heated tap water as thermal water, which is definitely giving the wrong impression.

5.6 GEOTHERMAL RESOURCES IN GERMANY

All aquifers of interest for the German hot spring spa industry are located in the *North German Sedimentary Basin*, the *Molasse Basin* in southern Germany, and along the *Upper*

Rhine Graben. The North German Basin is the central part of the Central European Basin and is made up of sandstones, clay and carbonates (Schellschmidt, Sanner, Pester & Schulz, 2010). The utilisation of geothermal resources is based on natural reservoirs with adequate geothermal deposits accessible via porous rocks and fractured or cavernous rocks. Such productive horizons, bearing 40°C to 120°C hot formation waters in depths ranging from 1,000 to 3,000 m, exist throughout Germany (Rockel, Hoth & Seibt, 1997), with Northern Germany offering the most favourable geological conditions in the Basin (Seibt, Kabus & Hoth, 2005). The flow rates and temperatures at source of some of the more important sites are given in Table 5.1.

The geological conditions in Germany have created a variety of combinations in the concentration of dissolved minerals and trace elements which are responsible for the difference in individual compositions of geothermal springs (Spa-dich-fit.de, 2010). The geothermal water of the north rim of the *Rheinische Schiefergebirge* (Rhenish Slate Mountains) and the south rim of the *Taunus* get their salt content from Permian *Zechstein* and some of these waters travel long distances from the area of recharge and salt dissolution to the area of ascent and discharge. It is not unusual for geothermal water of different compositions to occur within the same region or even at the same spa (Knoblich, 2002). The spa and resort towns *Bad Kreuznach, Bad Münster am Stein-Ebernberg* and *Bad Dürkheim* are supplied with saline (brine) spring water sourced from the local salt mines (Landesamt für Geologie und Bergbau Rheinland Pfalz, 2005).

For example in the city of *Straubing* in Bavaria (44,000 population, located between *Regensburg* and *Passau*) warm water (36^{o}C) from the southern German *Malm Karst* (top ca. 800 m deep) is accessed and a small amount of the extracted water is of therapeutic quality and used for bathing (Jähn, 1999:245). The proximity to the Danube rim fault *(Donaurandbruch)* offers favourable conditions for sourcing geothermal water from the *Malm* aquifer, which consists of karstic lime stone and dolomite layers. Since 1992 the geothermal mineral water underneath Straubing has been used for bathing purposes by feeding it into the indoor and outdoor swimming pools of a facility called *AQUAtherm*, whereby 72,750 m^3 of natural gas (for heating) can be saved annually. Another positive effect resulting from the direct use of geothermal mineral water in all eleven pools at *AQUAtherm* is the saving of 44,150 m^3 of quality drinking water annually (Jähn, 1999:248).

Twelve (12) natural sodium chloride springs (68^{o}C) exist in the city of *Baden Baden* with a combined flow rate (total discharge) of approximately 285 million litres per year; or nearly

800,000 litres per day. Exceptional quality of the geothermal mineral water, public access, an extremely mild climate and pleasant landscapes are some of the important criteria for such geothermal facilities to make them acceptable to users (Spa-dich-fit.de, 2010; Wohnlich, 1996).

Table 5.1 *Examples of German geothermal springs for direct use in health resorts and spas (Modified by Author after Schellschmidt, et al, 2010).*

Location	Spring	Facilities - Use	Temperature at source	Flow rate	Depth
Aachen	Kaiserquelle	Thermal Bath, Balneology	53°C	9.7 l/s	-
Aachen	Landesbadquelle	Thermal Bath, Balneology	72°C	22 l/s	-
Aachen	Rosenquelle	Thermal Bath, Balneology	47°C	15 l/s	-
Aachen	Schwertbachquelle	Thermal Bath, Balneology	70°C	1.67 l/s	-
Aachen-Burtscheidt	Rosenquelle	Thermal Bath, Balneology	61°C	10 l/s	-
Bad Füssing 1	-	Thermal Bath, Balneology	58.6°C	16 l/s	1142.3m
Bad Füssing 2	-	Thermal Bath, Balneology	53.8°C	13.5 l/s	978.8m
Bad Füssing 3	-	Thermal Bath, Balneology	49.9°C	13.4 l/s	1060.6m
Baden Baden	Total	Thermal Bath, Balneology	60°C	9 l/s	552m
Wiesbaden	Gr. Adlerquelle	Thermal Bath, Balneology	65.1°C	6 l/s	60m
Wiesbaden	Kl. Adlerquelle	Thermal Bath, Balneology	62°C	6 l/s	55m
Wiesbaden	Kochbrunnen	Thermal Bath, Balneology	67.5°C	10 l/s	40m
Wiesbaden	Salmquelle	Thermal Bath, Balneology	64.2°C	6 l/s	47m
Wiesbaden	Schützenhofquelle	Thermal Bath, Balneology	49.3°C	6 l/s	65m
Bad Bevensen	Thermal-Jod-Sole	Thermal Bath, Balneology	24°C	-	629m

5.7 THE 'KUR' IN GERMANY – DEMAND FOR QUALITY

Almost every region in Germany offers health resorts and spas based on natural hot and mineral springs. Quality standards, for example the characteristics of the water, are defined by the German government with specific standards designed as guidelines to regulate and legislate not just for hot and mineral spring spas and thermal mud spas, but also medical climate spas, seaside resorts, and *Kneipp* spas. All spa towns in Germany are covered by these guidelines and must be officially recognised to be able to use the prefix *'Bad'* (bath). The term *'Bad'* is used as part of a geographical location referring to 'bath' with the French equivalent being *'les bains'*, the Italian word *'terme'* and the Spanish term *'baños'* (Leavy & Bergel 2003). Cities like Bad Kissingen, Bad Füssing or Bad Bevensen are instantly recognised by this prefix as a health resort and spa destination where the 'cure' *(Kur)* can be taken under medical supervision.

5.7.1 The Purpose of Health Resorts and Spas

Health resorts and spas are defined in text books as places or districts which offer natural remedies, special facilities and a typical local ambience combined with spa treatments (the cure), which give relief from a number of health conditions or which may prevent further health problems. The character of a spa or health resort serves as a general concept for the use of localised natural remedies while the nature of the actual spa town and its residents cooperate to provide health, wellness and recreation, thereby supporting the factors of recovery in all areas (Deutscher Heilbäderverband, 2008). Health resorts or spas are therapy centres (*Kurzentren*) providing treatment for chronic diseases, rehabilitative therapies after accidents, injuries or operations and offer preventive measures including health education. Health resorts and spas also present the opportunity to spend time in a health oriented environment and combine medical treatment with a vacation while the therapeutic use of classical forms of prevention and rehabilitation further provides economic incentives for regional health care industries and tourist markets (Pratzel, 2001b).

5.7.2 The Position of Health Resort and Spa Medicine

In the German health care system, health resort and spa medicine has its own vital role (Kleinschmidt 2002) and its effects as well as effectiveness have been scientifically investigated for 125 years (175 years in France; Hartmann 2002a). In Germany the *Kur* or spa treatments [balneology] are part of rehabilitation medicine, and are associated with various forms of hydrotherapy and physiotherapy as an aspect of medical care to reflect a distinct cultural style (Maretzki, 1989:22). As a contrasting example, in the United States spa-based cures are disparaged as ‘unscientific’ and only fit for the realm of ‘beauty therapy’, with ‘alternative medicine’ mainly found outside of academic medicine and professional practice. In Germany spa cures and spa medicine are generally acknowledged and have been integrated into professional practice (Maretzki, 1989:22). However, while natural hot and mineral springs play a significant role in health, wellness and recreation in Germany, only a minority of research papers and academic texts and authors relate their use to tourism, although to benefit from natural hot and mineral spring therapies visitors and patients are required to travel to spa destinations and therefore clearly fit into the health, wellness and recreational tourism sector.

5.7.3 Spas, Health Resorts and Treatment Facilities (Kurmittel)

Health resort or spa therapy in Germany including thermal bathing has a long tradition and has been developed according to medical knowledge and is a contemporary form of treatment (Deutscher Heilbäderverband, 2008). The current boom in health resort and spa medicine and its therapies is based on a scientific core foundation which has been subsequently transformed into economic success (Hartman, 2002a). The traditional specialisation of health resorts and spas on certain diseases and relevant medical fields is today based on the individual features of available local natural remedies and cures which offer therapeutic benefits through their treatment. The implementation of particular local remedies such as 'mud' or 'brine' spa-specific therapies add further value to the treatment range of individual health resorts (Deutscher Heilbäderverband, 2008). Spa centres use specific methods to either activate or re-activate self-healing potential by encouraging the patient to take responsibility for his/her health, augmented by a pleasant natural and cultural environment to enhance the therapeutic benefits of spa treatments (Pratzel, 2001a).

The treatment at health resorts and spas based on natural hot and mineral springs as well as geothermal mud (peloids) can also include natural gas emissions derived from geothermal sources and which can be used for medical purposes such as inhalation. The combination of natural are incorporated into the complex spa medicine including balneotherapy and thermalism and can take the form of exercise through thermal bathing, drinking cures and inhalation (Deutscher Heilbäderverband, 2008) with supplementary treatments such as massages and supervised water exercise and steam baths (Bad Meinberg, 2010). As a result, people who visit health resorts and spas, generally achieve a natural balance of body, mind and soul, due to a successful combination of the spa treatment with other activities including various types of entertainment offered to the *Kurgast* (patient, out-patient) (Deutscher Heilbäderverband, 2008). The infrastructure of health resorts and spas in Germany is therefore generally based on a number of basic elements as follows (after Größchen, 1998):

- Natural resources and remedies certified for treatment;
- High quality standards;
- Resorts with special equipment (depending on medical indications) for bathing, drinking, inhaling, gymnastics and physical therapy;
- Favourable therapeutic environments with parks and walking areas;
- Areas for fitness, sports, and relaxation;
- Specialized physicians and medical teams;
- Special accommodation catering for dietetic measures for patients;
- Cultural events;
- Health education centres.

Visitor numbers to German health resorts and spas based on the use of natural hot and mineral springs have maintained an increase since 1999 (Table 5.2). The graphic representations (Figures 5.2 and 5.3) indicate a slow, but steady upwards trend and do not appear to be affected overly by any global financial crises.

Table 5.2 *Visitor numbers to German health resorts and spas based on natural hot and mineral springs. The figures include facilities offering geothermal mud therapies as well (Deutscher Heilbäderverband e.V., 2011).*

Arrivals	Hot and Mineral Spring Spas and Health Resorts	All Health Resorts and Spas
1999	5,700,857	15.639.356
2000	6,099,605	16.668.792
2001	6,234,372	16.884.151
2002	6,129,399	16.724.855
2003	6,109,789	17.129.690
2004	6,203,661	17.214.515
2005	6,240,972	17.623.743
2006	6,476,794	18.064.628
2007	7.074.296	18.953.686
2008	7.197.065	19.330.878
2009	7.199.068	19.523.008
2010	**7.667.580**	**20.105.253**
Total increase 1999-2010	+1.966.723	+4.465.897
Increase 1999-2010 in %	+34,49	+28,56

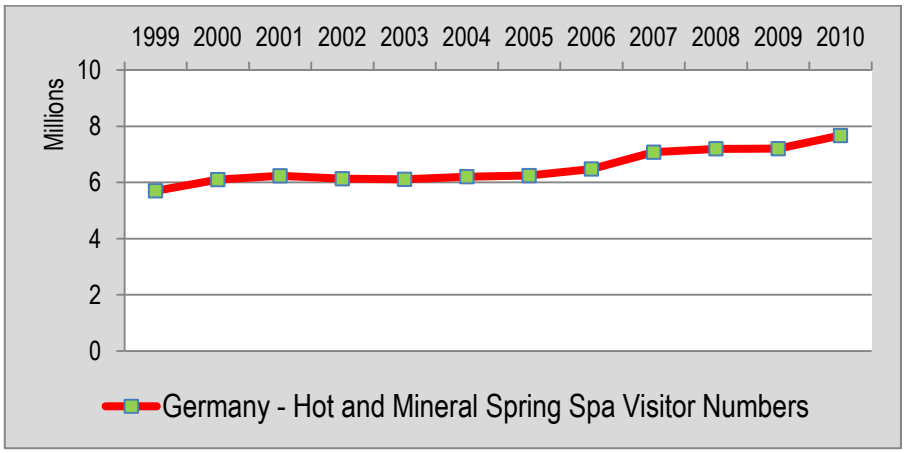

Figure 5.2 *Graphic representation of Table 5.2 - visitor numbers to German health resorts and spas based on natural hot and mineral springs (Deutscher Heilbäderverband, 2010).*

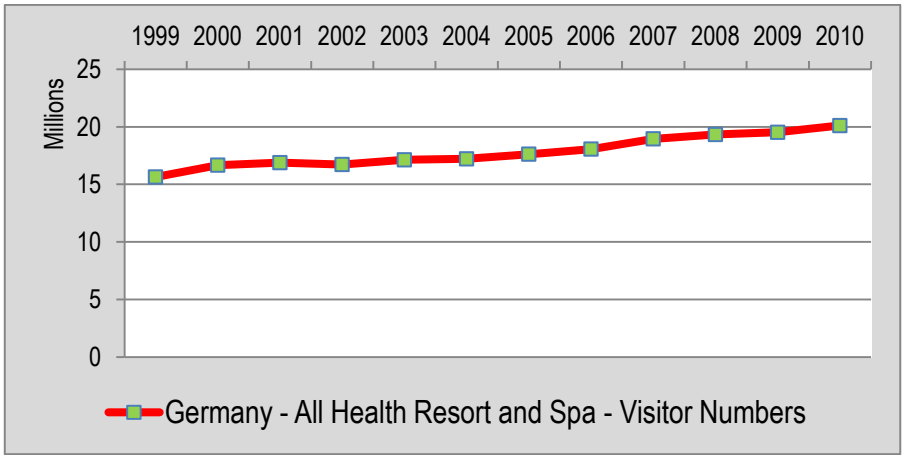

Figure 5.3 *Visitor numbers to German health resorts and spas combined (Deutscher Heilbäderverband, 2010).*

5.8 HEALTH CONDITIONS – WHAT CAN BE TREATED?

The state of health of each individual spa patient (health or wellness tourist) is evaluated by a local spa doctor. Following this examination a corresponding treatment program based on the success of site-specific treatments is developed (Deutscher Heilbäderverband, 2008). A major application included in the course of the treatment is bathing in geothermal spring water, which, depending on the different mineral contents, supports the physical mobility of the extremities, reduces inflammation, has antibiotic qualities, promotes shedding or peeling of the skin and improves the penetration of UV radiation (Titzmann & Balda, 1996). Table 5.3 provides an overview of health conditions which are treated in Germany with balneology based on natural hot and mineral springs.

Table 5.3 *Health Conditions that are treated in Germany with balneology based on the use of natural hot and mineral springs (After Pratzel, 2001a).*

Health Conditions treatable with Balneology	
Allergies	Neurological diseases (*including chronic pain)*
Ankylosing Spondylitis *(chronic, inflammatory arthritis, can cause fusion of the spine)*	Neurological rehabilitation
Blood circulation, blood pressure	Oncological diseases *(tumours, cancer)*
Cardio vascular diseases	Osteoporosis *(loss of bone density)*
Childhood diseases	Postoperative therapies
Chronic pain	Postural and locomotor diseases *(e.g. Parkinson's Disease)*
Convalescence	Prevention of illness
Degenerative joint disease	Psoriasis vulgaris *(chronic, non- contagious disease characterized by inflamed lesions)*
Depression	Psychosomatic disorders *(physical symptom caused by mental or emotional disturbance)*
Diseases of the digestive tract	Rehabilitation after accident or injury
Eye disorders	Rehabilitation after operations
Fibromyalgia *(pain in muscles and connective tissue)*	Renal and urinary tract diseases
General exhaustion	Respiratory diseases, Asthma
Gynaecological diseases	Rheumatoid Arthritis, rheumatism
Metabolic symptoms and disorders	Skin diseases
Musculo-skeletal system *(motion impairment, muscle malfunction))*	Stress management
Nervous system disorders (*from headaches to Alzheimer's)*	Tinnitus *(hearing noises which do not exist)*
Neuro endocrine diseases *(immune system and rheumatic diseases)*	Weakness, fatigue and convalescence

5.8.1 Treatment Methods

Treatment and therapies including natural remedies derived from the local environment (geothermal groundwater, soil, air) in the form of healing springs, peloids (mud) and fresh air (*Heilklima* = healthy or healing climate) constitute the ancient empirical healing methods (Hartmann, 2002a). An intensive *'Kur'* (healing program, treatment plan) of three weeks duration is considered to heal or cure; two weeks alleviate, one week assists in prevention of illness and one to several days are the minimum interventions for regeneration and recovery (Hartmann, 2002a). The most important application forms of balneological treatments or cures are baths, drinking cures and inhalations (Gutenbrunner & Hildebrandt, 1998). Medical cures *(Medizinische Kur*) on the other hand consist of treatment programs conducted under strict medical supervision within a set time frame, with medically directed therapies, which are usually carried out away from home at designated health resorts and spas including the following treatment components:

- Change of location (climate and environment change);
- Balneotherapy in various forms (baths and drinking cure treatments);
- Targeted climate therapy (phototherapy [light or heliotherapy] and outdoor treatments, alternating exercise and rest);
- Additional forms of physical therapy;
- Psychological counselling; and
- Diet and Health Education (Gutenbrunner & Hildebrandt, 1998).

5.8.2 Exercise Therapy and Physical Training in Water

Exercise in thermal water presents significant advantages for the treatment of a number of health conditions and diseases (Table 5.4). As a result of the buoyancy of the water relief for the support and movement system is provided, which refers mainly to patients with muscle weakness, movement pain, restriction of joint movement and poor coordination (Schnizer, 2002). Functional mobility for movement impaired patients can improve following aquatic exercises including buoyancy assisted exercise in warm water (34^{o}C) combined with land-based activities (Peterson, 2001) to increase the range of motion and muscle force.

Table 5.4 *Exercise Therapy in thermal water (After Schnizer, 2002)*

Therapy in Thermal Water – Aims and Applications
Weight support, joint relief, facilitation of movement, muscle relaxation and pain relief; Increase in the peripheral circulation, draining and stimulating effect of sensorimotor functions; Exercise and training of muscular strength, muscular endurance, general aerobic endurance, motor coordination and agility; Improvement of muscle-joint function in orthopaedic, rheumatological and neurological disease and damage patterns; Promotion of rehabilitation after surgery and trauma of the musculoskeletal system; Support of care in cardiovascular disease, metabolic and psychosomatic illnesses and immobilisation syndromes; Promotion of physical fitness and wellbeing (wellness).

These therapies can be supplemented with complementary methods of balneological treatments (Table 5.5) or other therapies including physiotherapy and massages, climatology, diet and exercise.

Table 5.5 *Complementary methods of physical therapy in thermalism and balneology (Deutscher Heilbäderverband, 2008).*

Complementary Methods of Physical Therapy
Active and passive movement and exercise therapy (treatments including physiotherapy, sports therapy); Exercise and movement therapy in the water; Thermal therapy (hot and cold dressings); Electro-therapy; UV light treatments; Massages in various forms; Therapies according to *Kneipp, Priessnitz, Hauffe, Felke, Schroth*; Diet treatment; Relaxation treatments (autogenic training, progressive muscle relaxation, respiratory therapy, etc.) and Health education seminars.

5.8.3 Effects of Thermal Bathing

During a bath in geothermal spring water valuable minerals and trace elements are absorbed through the skin and develop their beneficial effects (Spa-dich-fit.de, 2010). For example the healing effects of Baden Baden's Roman-Irish baths in the Friedrichsbad are used to treat chronic disorders such as arthritis or rheumatism, vegetative circulatory disorders, chronic

bronchitis, paranasal sinus problems and obesity (Sanner, 2000). Various glandular disorders can also be beneficially influenced (Carasana Bäderbetriebe, 2010). Selke (1936) mentions the benefits of springs containing iodine, which have helped many thyroid sufferers, who found relief by drinking and bathing in iodine spring water. Salt or brine baths *(Solebäder)* and sulphur baths were also listed by Selke for their curative value due to their high salt content. The sustainability of a correctly dosed and applied treatment (Kur) carries a measurable effect over a term of nine months, which can be slightly extended with follow-up therapies (Hartmann, 2002b).

5.8.4 Timeframe for Applications and Treatments

Individual therapies or applications are usually 60 minutes long, with a minimum of 30 minutes. A treatment series should include at least 15 applications over three weeks; and for a successful healing (*Kur*) at least three, preferably four weeks are required, with some alleviation within two weeks, and recreation or regeneration can be reached after only one week. This applies to remote location-intensive interval treatment as well as the option of outpatient therapies whereby the treatment sessions are attended at spa centres in the home town (Hartmann, 2002b) if this option is available.

The specific therapies or treatment programs (*Kur)* are developed by medical professionals qualified in balneology and spa medicine *(Kurmedizin)*, based on diagnosis of either a specific illness or a combination of several health complaints. The treatment of every individual patient is documented step by step and evaluated for its effectiveness (Hartmann, 2002a). Treatment programs including water based therapies are generally part of an overall treatment plan which is combined with physical exercise outside the water environment. This is especially the case when restrictions of movement can only be overcome underwater and to prepare for other activities necessary for the rehabilitation process (Schnizer, 2002). Physical exercise increases body heat which affects the ability of movement at different water temperatures. Minimal physical activity allows for higher water temperatures around 35-36^{o}C (compare with *Kusatsu*, Japan in Chapter 6), while more intense activities require a lower temperature with swimming best below 30^{o}C. Temperatures above 36^{o}C are considered too high for therapies based on physical activity (Schnizer, 2002).

5.8.5 The Compact 'Cure' (Kompaktkur)

Currently there are about 30 health conditions for which holistic 'compact cure' offers are available. The compact 'cure' is a highly effective medical variant of classic spa treatments. It combines the high quality of a traditional rehabilitation therapy with the freedom of an out-patient. The treatment concept is designed for maximum results in a manageable time frame of 21 days. Compact cures can only take place in selected spas recognized by the national health insurance system in Germany.

5.8.6 The Concept of Prevention

The concept of prevention is a term used to summarise measures for the prevention or early detection of diseases. Politically, the concept of prevention includes all measures and activities at individual and societal level which aim for the preservation of health and the prevention of diseases and injuries. In a more general sense this means that each patient is treated with the aim of preventing or delaying the deterioration of their health condition (Politikerscreen.de Ag, 2002). The aim of the concept is to gain new strength and energy through lifestyle changes and consequently maintain or acquire good health and prevent disease. A healthy lifestyle is important to assist in the relief of illnesses which can be controlled through thermal bathing, relaxation, hydrotherapy and physical exercise. Moreover, by using only the lowest possible amount of medication this proves to be cost effective and prevents adverse side effects caused by medication for the patients (Hecht, 2007).

5.9 SPA ASSOCIATIONS AND GOVERNMENT REGULATIONS

5.9.1 Hot Spring Locations - Laws and Guidelines

Specific guidelines and foundations of spa medicine stipulate that a) the quality of remedies is tied to a certain location, and b) should be based on quality standards set by the German Spa Association *(Deutscher Heilbäderverband)* and the German Tourism Association *(Deutscher Fremdenverkehrsverband*) (Hartmann, 2002a). Spas and health resorts *(Heilbäder, Kurorte)* in Germany therefore have to be officially recognised by the government. This is based on laws, legal decrees of individual states and implementing regulations. Official recognition is based on the *'definition of terms for spa towns, recreational centres and healing springs'* issued by the German Spa Association and the German Tourism Association, which is the norm for the process of acknowledgement in the

individual states of Germany. To obtain such a title an application has to be lodged with the authorities relevant for the State.

Upon application experts draft a report which is evaluated by a special commission. If satisfactory, the State grants the town the approval (licence) to use the title of *'Kurort'* or *'Heilbad'* (spa, health resort) which can refer to *Mineralheilbad, Moorheilbad, Soleheilbad* or *Thermalheilbad* (Table 5.6 translation), depending on the individual local resources or remedies available for health improvements (Größchen, 1998). Included in under the umbrella of Heilbad can be a 'spa with beneficial climate' *(Heilklimatischer Kurort),* which makes use of exceptional environmental conditions combined with pure air, often supplemented with the addition of a number of other beneficial treatments. Further sub categories are 'spa towns used for recreational purposes' without specialised health treatment facilities, but which focus on the restorative properties of a recreational destination with access to health and wellness centres (with and without natural hot springs) in the vicinity and on demand. Other spa towns are located in coastal regions along the North Sea and the Baltic Sea and make use of the special sea climate and seawater treatments *(Thalassotherapy).* Offshore islands, which have been destinations for health seeking patients and tourists alike for many decades also offer spa treatments based on their local resources. However, these destinations are not related to hot spring tourism and therefore are not included. Likewise *Kneipp* spas are not part of the discussion of hot spring spa destinations, as they are based on traditional cold water treatments.

Table 5.6 *German health resort and spa categories and their translation into English (Compiled by Author).*

German Health Resorts and Spas	
Mineralheilbad	Mineral spring spa – hot or cold water
Moorheilbad	Mud spa, peloids
Soleheilbad	Brine spa, saline chloride water
Thermalheilbad	Geothermal or hot spring spa
Seeheilbad (Thalasso), Meeresheilbad	Sea spa, seawater spa
Kneippheilbad	Kneipp spa based mainly on cold water

German health resorts and spas have been officially certified since 1892 and were pioneers of quality management related to the use of natural hot and mineral spring water in health and wellness treatments, which has to be formally recognised for its healing, relieving and preventive properties (Hartmann, 2002b). As noted above, Government regulations define quality standards, such as the characteristics of the water, soil, and atmospheric conditions of the spa or health resort location (Titzmann & Balda, 1996). In 1878 AD the *Academy of*

Balneology and Climatology (ABC) was established in Berlin as the balneological division of the *Association for Medical Science* (Hartmann, 2002a).

Other organisations include the '*German Association for Spas and Health Resorts'* or 'German Spa Association' (Deutscher Heilbäderverband e.V.) who is responsible for the public representation of the mutual interests of its members at national, European and international level. The Association exercises the communication with the Federal Parliament and the EU, relevant ministries and authorities such as social security and health insurers, as well as associations and organisations at the federal level (Table 5.7). This Association advises and supports its members in all aspects related to the medical spa industry and health tourism as well as promoting science and research, education and training. Other areas of responsibility are the maintenance and development of nationwide quality standards (Deutscher Heilbäderverband, 2010).

Table 5.7 *Spa and health resort associations in Germany (Compiled by Author).*

German Health Resort and Spa Associations
Academy of Balneology and Climatology (Vereinigung für Bäder- und Klimakunde); Institut für Medizinische Balneologie und Klimatologie der Universität München (Institute for Medical balneology and Climatology – University of Munich); Gesetzliche Krankenversicherung (Public Health Insurance); Verband Deutscher Badeärzte e. V. (Association of German Spa and Health resort Medical Practitioners); Vereinigung für Bäder- und Klimakunde e. V. (Association for Medical Balneology and Climatology); Deutscher Heilbäderverband e.V. (German Association for Spas and Health Resorts).

5.9.2 The Health Insurance System and Welfare Law

In Germany health insurance is strictly regulated by law:

> *Public health insurance in Germany aims to provide primary prevention services to meet predetermined requirements. Primary prevention benefits are supposed to improve the general health and contribute particularly towards reducing social inequality by increasing health opportunities (Sozialgesetzbuch.de, 2010).*

Germany's modern health care system dates back to 1883 AD, when the Federal Parliament passed a law that made nationwide health insurance mandatory for employees of certain professions. This statutory health insurance was to be based on social solidarity and pay-as you go principles; in addition it was built upon existing voluntary or mandatory local schemes of social insurance. Germany is therefore recognised as the first country to have introduced a national social security system (Busse & Riesberg, 2004). In the following decades the principle of statutory social insurance, called the 'Bismarck system', was also

applied to alleviate the risks of work-related accidents and disability (1884), old age and disability (1889), unemployment (1927) and the need for long-term care (1994). The prominence and structural continuity of social insurance is one of the key features of the historical development of Germany's health care system to the present day (Busse & Riesberg, 2004:13). The current state of health coverage for prevention and rehabilitation requires a medically documented need for treatment in which case the statutory health insurance will cover the cost during a spa treatment either completely or partially. For full coverage the insured are required to contribute to the cost through co-payment (Förderland, 2010).

5.9.3 Health Reform – Effects on the 'Kur'

More than a decade ago German health resorts and spas were struggling to overcome a crisis known as the '*Kurkrise'* caused by health system reform from 1997 **(Table 5.8)**. The major objective of this reform was cost containment (Busse & Riesberg, 2004) and it was one of the more rigorous health reforms in Germany, coming into force on 1 January 1997. However, Falkenbach, Karagülle, Bender, Agishi and Hartman (2005) make the critical point that the share of the cost to maintain health resort and spa medicine only represents 2% of the overall health budget and cancelling the 'Kur' is not at all assisting the reorganisation of the health system, let alone generate significant savings. Subsequently the main focus of spa centres and health resorts shifted towards self funded health and wellness tourists and visitor numbers rose again slightly (Bühring, 2001).

Table 5.8 *Chronology of German health reforms 1988–2004 (Busse & Riesberg 2004:190).*

Year	Name of the Act
1988	Health Care Reform Act of 1989
1992	Health Care Structure Act of 1993
1994	Social Code Book XI (Statutory Long-Term Care Insurance)
1996	Health Insurance Contribution Rate Exoneration Act
1997	First and Second Statutory Health Insurance Restructuring Acts
1998	Act to Strengthen Solidarity in Statutory Health Insurance
1999	Statutory Health Insurance Reform Act of 2000
	Act to Equalize Statutory Provisions in Statutory Health Insurance 2001
2000	Infection Protection Act
2001	Social Code Book IX (Rehabilitation and Participation of Disabled People)
	Reference Price Adjustment Act
	Pharmaceutical Budget Redemption Act
	Act to Reform the Risk Structure Compensation Scheme in Statutory Health Insurance
	Act to Newly Regulate Choice of Sickness Funds
	Pharmaceutical Expenditure Limitation Act
2002	Case Fees Act
	Contribution Rate Stabilization Act
2003	First Case Fees Amendment Act
2004	Second Case Fees Amendment Act

5.9.4 The Health Reform 1996 –1997

The Health Insurance Contribution Rate Exoneration Act (the majority of which came into force on 1 January 1997) contained the following measures:

- Reduction of benefits for rehabilitative care;
- Increased co-payments for pharmaceuticals and rehabilitative care (partly lowered again in 1999 and 2000);
- Reduction of health promotion benefits (partly reintroduced in 2000) (Source: Translated from Busse & Riesberg, 2004:192).

In effect, the 1996/1997 Acts broke several traditional rules of the system:

- Uniform availability of benefits;
- Contributions shared equally between employers and employees;
- Financing depending only on income and not on risk or service utilization;
- Provision of services as benefits-in-kind (Busse & Riesberg, 2004:193).

Initial main concerns were the higher contributions patients had to pay in the future, the reduction of the usual four weeks at a health resort or spa down to three weeks with the interval between entitlements for repeat treatment programs changed from three to four years. Nine thousand jobs in the field of rehabilitation clinics were lost in 1996 (Clade, 1997). However, in early 1999 the increases in co-payment were partially reduced again as there were calls from medical practitioners that the necessary rehabilitative care of the population was no longer guaranteed. According to Bühring (2001) the health care reform from 1997 removed the economic base for German health resorts and spas and, as stated by the German Spa Association, as a consequence caused a decrease in visitor numbers of up to 50 percent. Over 100 [Kur] clinics had to close and around 40 000 jobs in spas, health resorts and the related service industry were lost (Bühring, 2001).

The dramatic cuts the spa and health resort industry suffered at the time of the health care reform in 1997 gave rise to many concerns as to which roads could lead out of this crisis. It was considered as unacceptable to limit outpatient rehabilitation measures in health resorts and spas to save money, as this would have caused a disadvantage for patients (Driesen, 1999). However, in an effort by the relevant authorities to break away from the ‘Kur’ the term ‘Kur’ was to be excluded from the German Social Law in the future, with this form of preventive, curative and rehabilitative treatment now included as ‘prevention therapy for outpatients’ and as a ‘rehabilitation measure’ (Falkenbach et al, 2005), although in Bavaria the tried and tested cure was going to continue to be called *Kur* (Driesen, 1999).

Despite the fact that the health system in Germany has received drastic cuts as well as significant changes, the actual health care retained its high standard even though patients and health insurances providers have to cope with higher contributions (Größchen, 1998: Foreword). Legal action by the incumbent government (CDU/CSU-FDP) of the mid-nineties to force these changes caused a severe crisis for German health resorts and spas, although the change of government in 1998 seemed to improve the situation again, when elements of the prior health care reform were revoked and amended in favour of cure and rehabilitation care (Politikerscreen.de Ag, 2002).

5.10 CURRENT DEVELOPMENTS

Following the health reform crisis *(Kurkrise)* in the late 1990s German health resorts and spas started to focus on attracting self funded visitors with new varieties of health and wellness treatment facilities (Tuch, 2000) as well as the lowering of taxes for the hospitality sector from 19% to 7% (VAT) to strengthen the German health resort and spa industry. Spa facilities and accommodation establishments received as a result much needed relief and a quality initiative for new investments as health resorts and spas are a major part of the tourism industry in Germany. For example during the year 2010 the arrival of more than 20.1 million spa and health resort visitors (Figure 5.3) was reported, resulting in nearly 103 million overnight stays. The annual turnover was around 30 billion Euros on a slightly increasing trend. Around 350,000 workers are directly and indirectly employed in the health resort and spa industry (Deutscher Heilbäderverband, 2010) at time of writing.

Despite the recent worldwide financial and economic crisis which caused a massive slump in sales in other industries, the situation of health resorts and spas appears to be almost stable (Deutscher Heilbäderverband, 2010). In Germany the future of spa and health resort centres relies on health, wellness and recreational tourism with the ongoing wellness movement considered as a great advantage (Bühring, 2001) especially for spas and resorts suffering from the downturn caused by the health reform (Erfurt-Cooper & Cooper, 2009). The significance of German health resorts and spas as '*Centres of Health'* has a very competitive edge, which is clearly stated in marketing strategies for health, wellness and recreational tourism (Bühring, 2001). The successful emergence of the German health and wellness industry from the health reform crisis is a convincing basis for the future development of health resort and spa facilities, including the use of natural resources in the form of hot and mineral springs where these can be sustainably exploited.

5.11 FINDINGS

The findings of this case study are based predominantly on the analysis of relevant literature, observation and approximately 120 informal interviews. One of the reasons why Germany was selected is the German Spa Association's (Deutscher Heilbäderverband) custom of providing accurate visitor numbers, which are separated into four individual health resort and spa categories:

- Hot and mineral spring and mud spas,
- Spas with beneficial climate conditions,
- Seaside health resorts and spas and
- Kneipp health resorts and spas.

Of these four categories the hot and mineral spring spas constitute the largest group. The size of the German health resort and spa industry is highlighted with overall visitor numbers in 2010 of 20,105,253 people (Figure 5.3; Table 5.2). Included in this figure were 7,667,580 visitors of hot and mineral spring based health resorts and spas, which translates into an average market share of 37% (Figure 5.4) based on annual figures from 1999 to 2010.

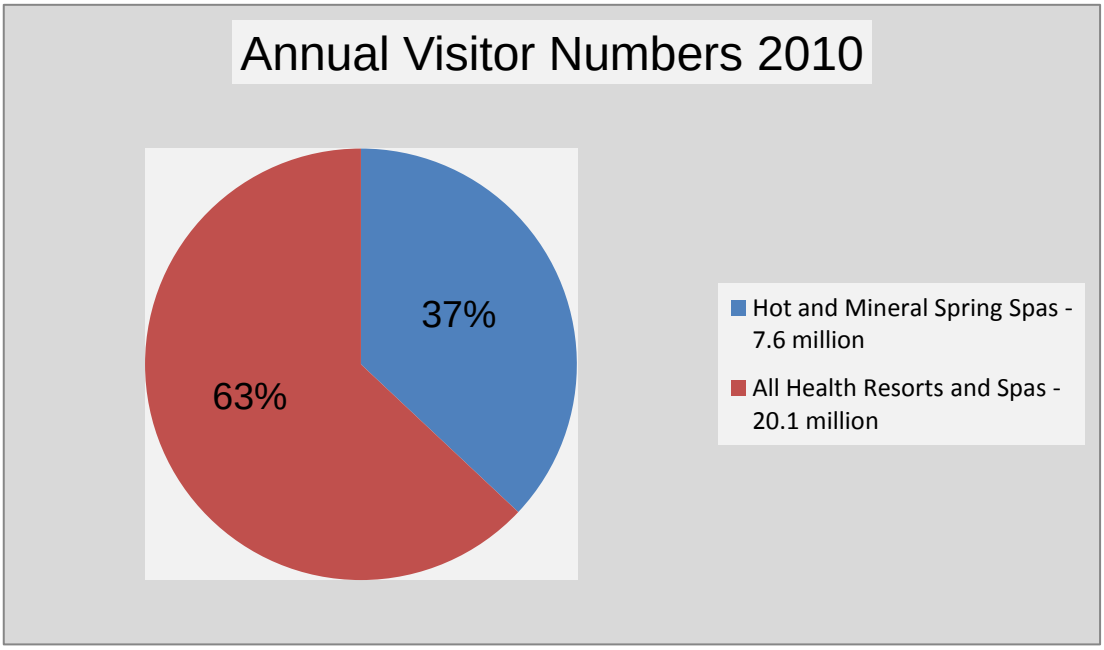

Figure 5.4 *Visitor numbers for the year 2010 (Deutscher Heilbäderverband, 2011).*

The German Spa Association (Deutscher Heilbäderverband, 2011) reports that 350,000 people are either directly or indirectly employed in the [overall] health resort and spa industry, which has an annual turnover of currently 26 billion Euros. Even considering that the hot spring based health, wellness and recreational tourism sector represents only about 37% of the overall health resort and spa industry, this share makes a substantial economic

contribution and proves that natural hot and mineral springs are undeniably integrated into health, wellness and recreational tourism in Germany. The following table (Table 5.9) shows some of the characteristics and advantages of natural hot and mineral springs for health, wellness and recreational tourism destinations.

Table 5.9 *Compiled by Author.*

Characteristics of natural Hot and Mineral Springs	
1. Direct relationship between tourism and hot springs 2. Seasonally independent 3. Provide a unique venue in which tourism can take place 4. Suitable to complement every spa type 5. Hot and mineral spring use goes back before Roman to times 6. Alternative health resource – contributing actively to maintaining health and wellness	7. Substantial economic contribution to local communities – development potential 8. Expectations of curative value from beneficial minerals 9. High awareness of the therapeutical value of hot springs 10. Treatment of health conditions under medical supervision

Research Objective 1: *'Development of a conceptual model to assess the role of natural hot and mineral springs in health, wellness and recreational tourism'*

Following the model the role of natural hot and mineral springs in health, wellness and recreational tourism was assessed by exploring the aspects of the three sectors: health, wellness and recreational tourism and taking into account the distinctive characteristics of natural hot and mineral spring settings as a tourism resource. The **medical and health** aspects are catered for by the provision of facilities for rehabilitative care; especially for patients recovering from accidents, injuries or operations as well as from a large number of other health conditions (Table 5.3). The **wellness** aspect is serviced by preventive care (prevention instead of cure) to improve or maintain good health with frequent overlap into either recreational tourism or health tourism, depending on individual destinations and customer demand. The **recreation** and leisure side is generally catered for at every health resort and spa destination, with or without natural hot springs. This can include thermal water parks with aquatic entertainment as well as [Kur]parks, theatres, casinos and retail opportunities. The findings present evidence that the combined health resort and spa sectors share a number of common elements as identified in the proposed model (Figure 1.3, 5.6), including cultural traditions, historical ambience and architecture, service infrastructure as well as the natural environment. All variables of the model have been used to assess the role of natural hot and mineral springs in health, wellness and recreational tourism in Germany and support the results for the individual research objectives.

Research Objective 2: *'To identify settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism'*

The research findings indicate the size of the German health resort and spa industry as a whole with a clearly defined separation of destinations based on natural hot and mineral springs and those without access to this natural resource (Figures 5.2, 5.3, 5.4; Table 5.2). More than 350 health resort and spa towns in Germany offer health and wellness with guaranteed medical competence under the quality standards required by the German Spa Association (Deutscher Heilbäderverband, 2011). A third of these destinations in various parts of Germany are based on natural hot and mineral springs and focus on rehabilitation and the prevention of illness using balneology and hydrotherapy. Examples of hot spring destinations are Wiesbaden and Baden Baden, which have been described under sub headings 5.4.1 and 5.4.2. Generally hot spring destinations offer a range of different health and wellness options to their visitors by combining balneology with additions from the field of complementary and alternative medicine (CAM). The reviewed data and observations have revealed that the majority of German health resorts and spas are located in areas with access to natural settings of scenic beauty and with opportunities to engage in cultural and sports activities. The design of German spas has always included the natural environment in the form of parks and walkways as key physical elements, while the spa buildings were publicly funded and planned by officially appointed architects (Bacon, 1997). Traditionally *Kur* towns have a *Kurzentrum* (cure or healing centre) which originally was the official medical facility (Leavy & Bergel, 2003). Today therapy and treatment are not tied to one specific location; apart from facilities for medical treatment, spa hospitals and aquatic centres also offer therapy pools to attract health and wellness tourists on a more casual basis (Pers. observation).

Research Objective 3 and 4: *'To explore the historical development of hot springs as destinations for tourism' and 'To determine the cultural context of hot springs as a tourism resource'*

Both these research objectives have been explored in two smaller case studies by discussing the spa towns Baden Baden and Wiesbaden, which have provided a representative reference of the historical and cultural use of natural hot and mineral springs and their development. The recorded history of hot spring based health resorts and spas in Germany spans more than two thousand years and the tradition of thermal bathing is maintained in historical spa towns like Aachen, Baden Baden and Wiesbaden as well as many other spa towns to this day (Größchen, 1998). The German use of *Bäderheilkunde* (spa medicine, thermalism,

balneology) is historically well grounded and documented and goes back even before the Roman occupation 2000 years ago (Erfurt-Cooper & Cooper, 2009). The city of Baden Baden for example developed from a luxurious thermal spa centre under Roman occupation to an international holiday and health resort based on the use of natural hot spring water (Wettstein, 2010) with two major bathing facilities dominating the 'Kur' activities; the traditional Friedrichsbad, which has provided relaxation and healing for over a century, and the relatively new 'Caracalla Spa'.

The findings to support the cultural context of hot springs as a tourism resource are that history and culture at hot spring destinations are frequently linked with the cultural traditions relating to health treatments (e.g. *Kurveranstaltungen* or Cure Entertainment) and the requisite historical ambience being essential components of the overall hot spring 'Kur' experience. In Germany spa treatments are part of rehabilitation medicine, and as an aspect of medical care reflect a distinct cultural style (Maretzki, 1989). Patients are encouraged to take responsibility for their health which can be augmented by a pleasant natural and cultural environment to enhance the therapeutic benefits of spa treatments (Pratzel, 2001a). As part of the German cultural traditions the use of natural hot and mineral springs emphasises hygienic aspects on a personal basis, although, depending on the type of hot spring facility, socialising is another important cultural element. Similar to Japan a common preference is to combine the hot spring experience with other local attractions, such as cultural activities, shopping as well as sampling the regional cuisine of the surrounding area, has been observed.

Research Objective 5: *'To investigate the recognition of medical benefits associated with natural hot and mineral spring therapy'*

The final research objective is concerned with the use of medical treatments based on natural hot and mineral springs and their proven benefits for a number of health conditions (Table 5.3). In German health resorts and spas the tradition of medical balneology based on natural hot and mineral springs is still considered a respected medical treatment method. The physical benefits of various types of treatment (Table 5.4) with hot and mineral spring water have been proven in clinical studies under the control of highly qualified medical professionals and specialised researchers (Deutscher Wellness Verband, 2007). The health resort and spa industry in Germany is strictly controlled by relevant health resort and spa associations and health insurers (Table 5.7). Medical and balneological treatment is carried out under supervision by qualified medical specialists. Treatment is available for people

suffering from chronic health conditions such as back pain, rheumatism and arthritis, but a large number of patients also seek rehabilitation after accidents, injury or surgery. Medical reports and research papers support the role of natural hot and mineral springs in complementary and alternative medicine (CAM) as a valuable treatment option that has virtually no side effects and provides mental wellbeing along with physical health improvements (Pers. observation; pers. com.).

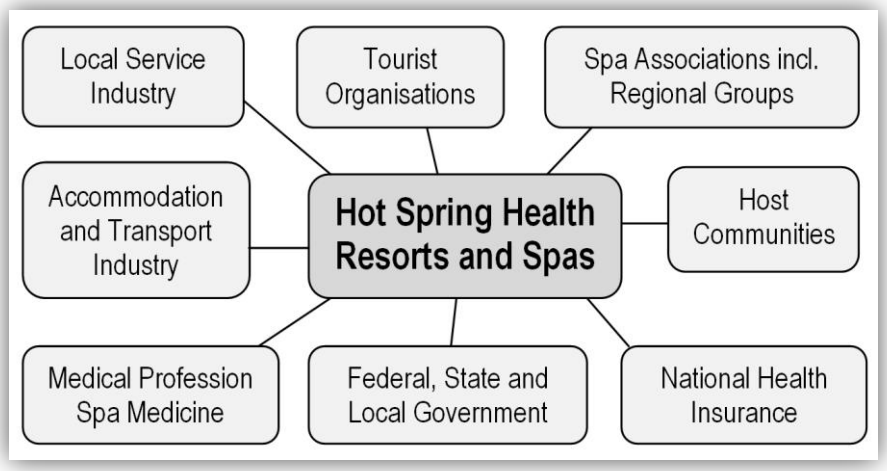

Figure 5.5 *Stakeholders supporting the use of hot springs in Germany's health and wellness system (Compiled by Author).*

Spa medicine or balneology is generally covered by health insurance up to a certain percentage of the treatment cost if prescribed by a physician, who verifies that the patient will benefit from this type of alternative treatment and who refers the patient to the most suitable health resort or spa destination. Subsequently the position of health resorts and spas based on natural hot and mineral springs is supported by a wide range of stakeholders (Figure 5.5) with an interest in sustaining and further developing this particular tourism sector.

5.12 CONCLUSION

The purpose of this case study was to assess the role of natural hot and mineral springs in the German health, wellness and recreational tourism sectors. The research objectives were addressed in this chapter by using multiple sources of information including relevant documents and reports, interviews with key representatives and observation. Health, wellness and recreational destinations and facilities and their use of natural hot and mineral springs were described in the context of their geological, geographical, historical and socio-

cultural backgrounds. The case study of Germany includes representative locations and covers the major traditions of the use of natural hot and mineral springs to enhance health and wellness as well as for recreational pursuits.

The history of hot spring use in Germany goes back more than 2000 years. The early use is reported by Roman scholars, who kept records about all aspects of the Roman occupation. However, the original use dates back beyond the Roman time of arrival 2000 years ago and remains of early settlements found near natural hot springs indicate the use by local Germanic and Celtic tribes.

The use of natural hot and mineral springs is practiced mainly to achieve health improvements such as rehabilitation from accident, injury or surgery and to prevent illness by maintaining good health. As part of the German cultural traditions the use of natural hot and mineral springs emphasises hygienic aspects on a personal basis, although, depending on the type of hot spring facility, socialising is another important cultural element. People in Germany generally travel to a certain hot spring destination to seek health improvements based on a referral by their general practitioner, medical specialist or surgeon. Even so many people in Germany (domestic and international visitors) visit hot spring facilities for public use (e.g. thermal swimming pools) purely for recreational purposes. Similar to Japan a common preference to combine the hot spring experience with other local attractions, such as cultural activities, shopping as well as sampling the regional cuisine of the surrounding area, has been observed.

This case study used the proposed conceptual model of the role of natural hot and mineral springs in health, wellness and recreational tourism (Figure 1.3, 5.6) and has demonstrated the validity of this model by taking into account the distinctive characteristics of the German hot spring environment as a tourism resource and detailing the specific expectations and customer demand of hot spring visitors.

The correlations between the individual components of the model, such as hot spring settings (socio-cultural and environmental), historical and cultural use, customs and traditions, medical recognition as well as access and infrastructure, have been established. Treatment methods are acknowledged (Table 5.4) as well as health conditions, which benefit from balneology based on natural hot and mineral springs. The common elements identified for all three hot spring tourism sectors (health, wellness and recreation) constitute the foundation for German hot spring tourism destinations. These elements include not just natural hot

springs with their beneficial mineral content, but also a generally well established infrastructure and service industry. The natural settings surrounding the hot and mineral spring facilities (*Kurpark*, a park surrounding the health facilities), the cultural traditions (e.g. *Kurveranstaltungen* or Cure Entertainment) and the requisite historical ambience (e.g. *Kurhaus* and other historical architecture) are essential components of the overall hot spring 'Kur' experience. Information on the interactions between tourism and the use of natural hot springs in Germany was analysed and raises greater awareness about the potential and the magnitude of hot spring use for health, wellness and recreational tourism in the German context. Today hot spring destinations in Germany enjoy ongoing popularity; especially in spa towns originally established by the Romans. Thermal or hot spring bathing is recognised by most Germans as well as by visitors to Germany from other countries for its curative properties derived from minerals and trace elements beneficial to many health conditions.

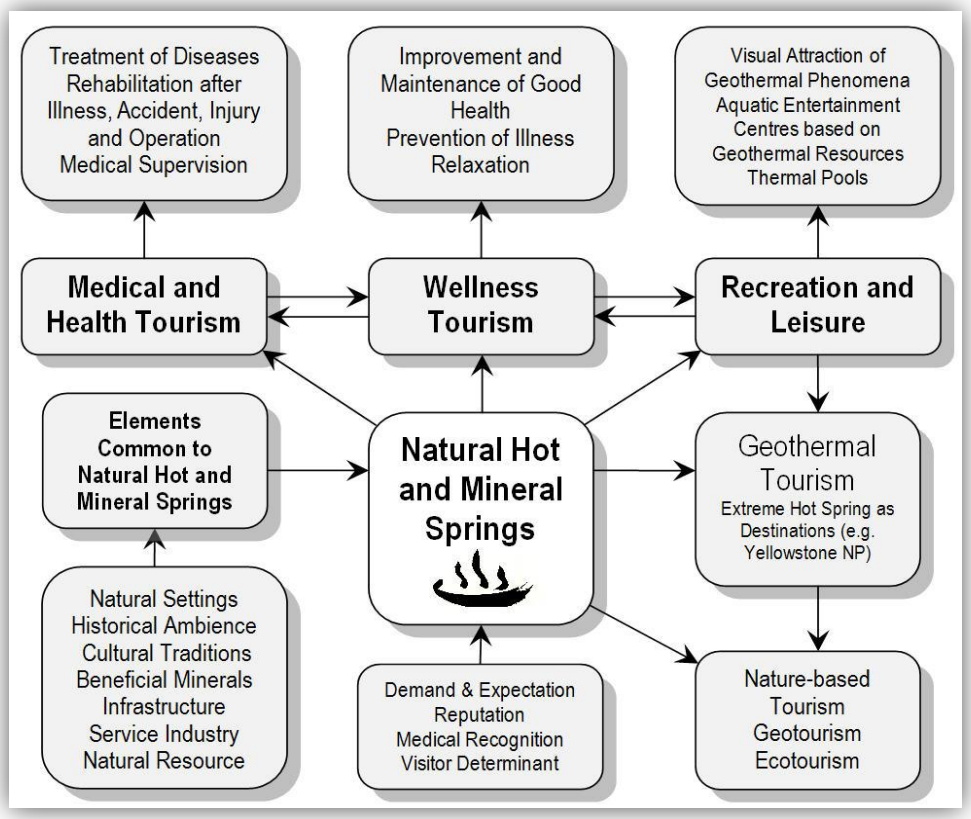

Figure 5.6 *The conceptual model which was introduced in Chapter 1 as Figure 1.3. This model was used to assess the role of natural hot and mineral springs in German health, wellness and recreational tourism.*

The data reviewed for this case study has revealed that health, wellness and recreational tourism based on natural hot springs is an essential part of the German tourism industry. The size of the overall hot spring tourism sector was explored in conjunction with the historical

and cultural use of German hot springs, which frequently were considered as sacred sites by their original users. Annual visitor numbers, which reach on average 7 to 8 million people (7.7 million in 2010 with a 34.5% increase since 1999), demonstrate the popularity of hot spring tourism and support the premise that the inclusion of natural hot spring and mineral springs is a significant contribution to the wellbeing of visitors who seek relaxation, want to regain or maintain their health and/or wish to prevent illness. The findings of this case study have provided a practical reference for the historical, cultural and contemporary use of natural hot springs in Germany. The findings have also documented the role of natural hot springs within German health, wellness and recreational tourism and are an essential contribution to the knowledge about hot spring tourism in Germany.

CHAPTER 6
Hot Spring (Onsen) Tourism in Japan

6.1 INTRODUCTION TO JAPANESE HOT SPRINGS (ONSEN)

As an essential part of assessing the role of natural hot and mineral springs in health, wellness and recreational tourism, Chapter 6 explores the hot spring tourism sector in Japan. In line with the previous chapter on Germany's hot spring tourism the context of this case study documents the natural and physical environment, the historical background, and the socio-cultural settings within which natural hot spring destinations occur and facilities operate. This overview of the Japanese hot spring or onsen tourism sector contributes to knowledge about the role of natural hot and mineral springs in health, wellness and recreational tourism, and provides a reference for comparison with the use of hot spring based health resorts and spas in other countries. To advance the understanding of typical aspects of Japanese onsen tourism, illustrations are provided throughout this chapter and, as a number of terms used in this chapter refer to specific Japanese spa traditions, to assist the reader a comprehensive glossary is attached as Appendix 6.1.

This case study of hot spring tourism in Japan was considered important because, like Germany, this country has a long standing tradition of hot spring use for health, wellness and recreational purposes and this is backed by governmental regulations, which protect and support onsen tourism in Japan (Erfurt-Cooper & Cooper, 2009). Direct observation of the Japanese hot spring tourism industry and using hot spring facilities for a number of years has lead to a sound understanding of the key attributes of onsen tourism in this country and how these can be compared to the world-wide pattern of hot spring tourism.

A number of Japanese textual sources (e.g. *The Hot Spring Law 1948, as amended*), which closely reflect the actual situation in the Japanese onsen tourism sector, have been translated for this research. For further illustration three well-known contemporary onsen destinations were selected as in-depth examples to demonstrate the contrasts between the traditional and hot spring use in Japan:

1. The city of Beppu including nearby Yufuin, Oita Prefecture, Kyushu Island;
2. Kusatsu Onsen, Shirane, Gunma Prefecture, northwest of Tokyo, Honshu Island;
3. Spa Resort Hawaiians in the Iwaki-Yumoto hot spring area, Fukushima Prefecture north-east of Tokyo.

The data for this case study was collected from a range of secondary sources, including promotional material and other contemporary advertising media and was supplemented by personal observation and semi-structured interviews. Due to the language barrier interviews were mostly conducted with English speaking local residents and international visitors, as well as with foreigners living in Japan who shared information and experiences on their onsen use.

6.2 RESEARCH OBJECTIVES

The case study of Japan reinforces the close relationship between tourism and the role of natural hot springs, raises awareness about their use in health, wellness and recreational tourism, demonstrates the size of the Japanese hot spring tourism industry and outlines their historical and cultural use. It is designed to provide information to achieve the research objectives 2 to 5:

- *Identify settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism;*
- *Explore the historical development of hot springs as destinations for tourism;*
- *Determine the cultural context of hot springs as a tourism resource; and*
- *Investigate the recognition of the medical benefits of natural hot and mineral springs.*

To further assess the role of hot springs in Japan's health, wellness and recreational tourism sectors this chapter also demonstrates the validity of the conceptual model proposed as Research Objective 1 in Chapter 1. This model takes into account the distinctive characteristics of the Japanese hot spring environment as a tourism resource and details the specific expectations and customer demand of onsen visitors. Correlations between the individual components of the model, such as hot spring settings (socio-cultural and environmental), historical and cultural use, customs and traditions, medical recognition as well as access and infrastructure, will be established in the Japanese context. Treatment methods will be acknowledged as well as health conditions, which benefit from balneology based on natural hot and mineral springs. The common elements of all three hot spring tourism sectors (health, wellness and recreation) constitute the foundation for Japanese hot spring tourism destinations and include not just natural hot springs with their beneficial mineral content, but also the infrastructure and service industry, the natural settings surrounding the onsen facilities along with cultural traditions and the requisite historical ambience. Information on the interactions between tourism and the use of natural hot springs

(onsen) in Japan will raise greater awareness about the potential and the magnitude of hot spring use for health, wellness and recreational tourism in that country.

The findings of this case study highlight the popularity of Japanese onsen tourism and provide a reference of the historical and cultural use of natural hot and mineral springs in Japan. The long standing tradition of hot spring bathing and their application in medical and wellness treatment facilities is documented, as well as the government's involvement which focuses on the legal protection of natural hot springs. Central to this case study are three selected onsen destinations in Japan. A number of guidebooks available in English (Hotta & Ishiguro, 1986; Neff, 1995; Seki & Brooke, 2005; Smith & Yamamoto, 2001) were reviewed in detail, as were Japanese onsen brochures (Appendix 6.2) and catalogues, which list and describe most onsen destinations in Japan, to provide the information presented.

6.2.1 Limitations of the Case Study

The majority of the information on Japanese hot spring destinations is designed for the domestic tourism market and is therefore predominantly in the Japanese language. This is a limiting factor for accessing a wider range of data by outside observers, although a review of the translated literature content contributed sufficient information about the dimensions of hot spring based tourism in Japan.

6.3 GEOGRAPHIC AND DEMOGRAPHIC ASPECTS OF JAPAN

Figure 6.1 *Hot Spring Map of Japan by Region (Source: Japanese Guesthouses, 2010).*

The island nation of Japan is situated in the northern Pacific (Figure 6.1 and 6.2) and covers an area of approximately 377,944 km^2, which makes it similar in size to Germany (357,000 km^2). Japan however is made up of 6,852 islands with Honshu, Kyushu, Hokkaido and Shikoku the four largest, and has an estimated population of nearly 128 million (approximately 50 million more than Germany). Administratively the country is divided into forty-seven (47) *Prefectures* (Japan Guide, 2011), and life expectancy currently is an average of 79 years for men and 86 years for women; the highest in the world.

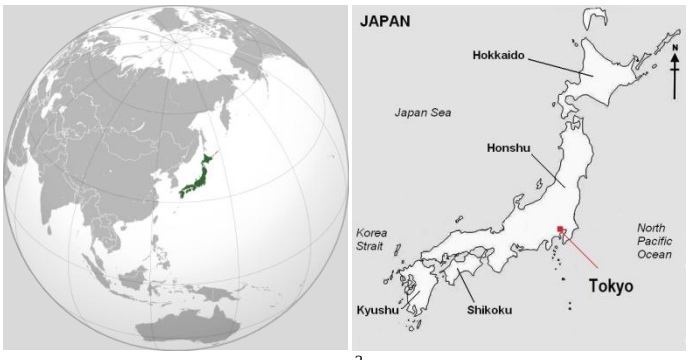

Figure 6.2 *Location of Japan (WikiCommons[2], 2011; Facts about Japan, 2011- Maps modified by Author).*

The climate is predominantly temperate, but varies greatly from north to south. As of 2009 Japan was the second largest national economy in the world. Japan has a highly regulated universal public healthcare insurance system provided by national and local governments, which covers a comprehensive range of services and is free to Japanese citizens and for foreigners residing in Japan (Castro, 2009; Jeong & Hurst, 2001; Ward & Piccolo, 2010). People not insured through their employers can participate in a national health insurance program administered by local governments. Since 1983, all elderly people are covered by government-sponsored insurance (Fukawa, 2002), which is vital for the provision of health and wellness facilities given the rapid aging of the population (Cooper et al, 2008).

The Japanese use of hot and mineral springs is based on a combination of the natural environment, traditional architecture and socio-cultural settings. In addition to a desire for health, wellness and recreation this combination has resulted in a large, mainly domestic tourism industry. Consequently onsen based health resorts and spas in Japan play a key role in the health, wellness and leisure tourism industry today, with more than 26,000 hot springs (26,796 officially registered in 2001) in over 5,500 hot spring areas all over the country (Erfurt-Cooper & Cooper, 2009). Major contributions to the ongoing popularity of Japanese onsen spas and resorts are: a) the promotion of collective wellbeing, b) the abundance of natural hot and mineral springs, c) a well-structured service industry including

accommodation, retail opportunities, transport and restaurants and d) the accessibility of these destinations. To support future development, the Japan Health and Research Institute is working towards the growth and spread of onsen facilities linked to physical examination centres based on the concept of improvement and maintenance of good health (Japan Health & Research Institute, 2010).

6.4 HISTORY OF JAPANESE ONSEN DEVELOPMENT

Japan has an abundance of natural hot and mineral springs of volcanic origin. Their use in popular hot spring health resorts and spas (onsen) is deeply entrenched in cultural traditions with onsen bathing as one of the favourite pastimes for the majority of Japanese people (Clark, 1999; Hotta & Ishiguro, 1986; Seki & Brooke, 2005; Smith & Yamamoto, 2001; Talmadge, 2006). Traditional public bathhouses (*Sento, Furo*), which are located in most urban and rural neighbourhoods within walking distance, are frequented regularly as a means of socialising with friends, family and neighbours. While not all traditional public bathhouses offer genuine hot spring water and may use artificially heated tap water instead, these facilities are still frequented by many Japanese on a daily basis. People can be seen walking between their homes and their local bathhouse in the early evenings with their bathing paraphernalia in a small basket (Erfurt-Cooper & Cooper, 2009; pers. observation).

A number of scholars have suggested that the culture of hot spring use found its way from China through Korea to Japan, because the promotion of onsen bathing was recorded only after the Chinese and Koreans had established migratory ties with Japan just prior to 297 AD. Although this assumption may not be accurate, it is based on the first documented use of natural hot springs in Japan as recorded in the book *The History of the Kingdom of Wei* written in China in 297 AD and supported by remains of early settlements found near natural hot springs (Clark, 1999; Talmadge, 2006). Whatever its true antecedents might be, onsen bathing has been popular in Japan since the *Heian* Period more than 1,000 years ago. While limited mainly to the aristocracy in the beginning, it spread to the warlords and their armies during the *Warring States Period* (1477-1568), when it was discovered how effective hot springs were in healing battle wounds. With the establishment of peace and stability during the *Edo* period (1603-1867), the custom of bathing in hot springs for therapeutical purposes was adopted by the working class, especially by the farming communities, for whom it was the only economic way to relax and recover from the rigours of their lives (Ito, 2003). As in Europe, remote natural hot springs were frequently discovered in the past by hunters, who

were tracking wounded game, which had sought refuge at warm natural pools to soothe their injuries (Erfurt-Cooper & Cooper, 2009; Travel in Style, 2010).

Because soaking in hot water is very relaxing, it is not uncommon for whole families to share an onsen bath; from the very young to the very old family members (Talmadge, 2006). During the cooler seasons, especially in the northern parts of Japan, a long soak in a hot bath helps people to keep warm, as many homes do not have central heating. Houses and apartments with connections to local hot spring water are highly sought after, even though the extra cost can be considerable (Erfurt-Cooper & Cooper, 2009; pers. experience & observation).

Perhaps the oldest and certainly one of Japan's most famous hot springs is the *Dōgo Onsen*, located on the west coast of Shikoku Island. The Dōgo Onsen has been a favourite destination of the Japanese Imperial family and other celebrities for centuries and the hot springs are mentioned in the *Man'yoshu*, a collection of poems written between the fifth and eighth centuries AD (JNTO[1], 2010). Similarly, in the *Kojiki* ('Records of Ancient matters') published in 712 AD, the more important onsen of Japan such as Dōgo are given prominence due to their association with the Imperial family, wars or religious events (Asian Info, 2000). Later, during the Edo period (1603 to 1867 AD) while travel for pleasure was restricted, permission was given for special purposes such as merchant travel and official duties on the agreement of each Feudal Clan office, including visits to onsen (Cooper et al, 2008; Erfurt-Cooper & Cooper, 2009). The attendance at shrines, temples and their associated onsen was commonplace in the past (Ashkenazi, 1993; Plutschow, 1996) and onsen tourism in the form of religious pilgrimage has flourished in Japan for centuries (Cooper et al, 2008).

6.5 SOCIO-CULTURAL SETTINGS OF JAPANESE HOT SPRING DESTINATIONS

Anthropological studies show how seemingly everyday acts like Japanese onsen bathing are embedded in historically grounded, culturally specific complexity. Clark (1999) describes bathing as an activity both private and ordinary, but at the same time social and laden with meaning and significance. To provide more detailed information about individual Japanese onsen destinations three (3) contrasting Japanese hot spring areas were selected as examples for this case study.

6.5.1 Case Study 1: Beppu and Yufuin

Beppu City (pop.125,664, January 2011), also known throughout Japan as the *'Onsen Capital'* (Figure 6.3), is located on the east coast of Kyushu Island in the Oita Prefecture and attracts an annual average of between eleven (11) and twelve (12) million tourists (Figure 6.4). These are mainly domestic, with only around 200,000 foreign visitors, which are mostly of Korean and Chinese origin (Beppu City Council, 2009 – pers. communication). The core attraction is the large number of volcanic hot springs (more than 2600) in and around Beppu, which deliver a volume of hot spring water second only to Yellowstone National Park in the USA (Kudo, 1996; Lund, 2002).

Figure 6.3 *Beppu and Yufuin's location on the southern island of Kyushu, Japan.*

Traditional bathhouses such as the *Takegawara Onsen* (Figure 6.5) offer regular onsen baths with nostalgic ambience as well as unique 'sand baths', which involves being buried in sand soaked with hot spring water. Facilities like this are a must-see tourist attraction due to their time honoured Japanese architecture inside as well as outside (Pers. observation). On the other side of the scale Beppu's mountain sides 'hide' a number of 'rural onsen', which attract many nature lovers (Pers. observation; Figure 6.6; Appendix 6.3). Natural hot springs like the *Hebinyu* Onsen in the forested hills of Beppu are only accessible via a narrow former supply road which leads to the hot spring pools. These hot springs are popular despite the remote location and are frequented by people at all seasons (Pers. observation, 2008, 2009).

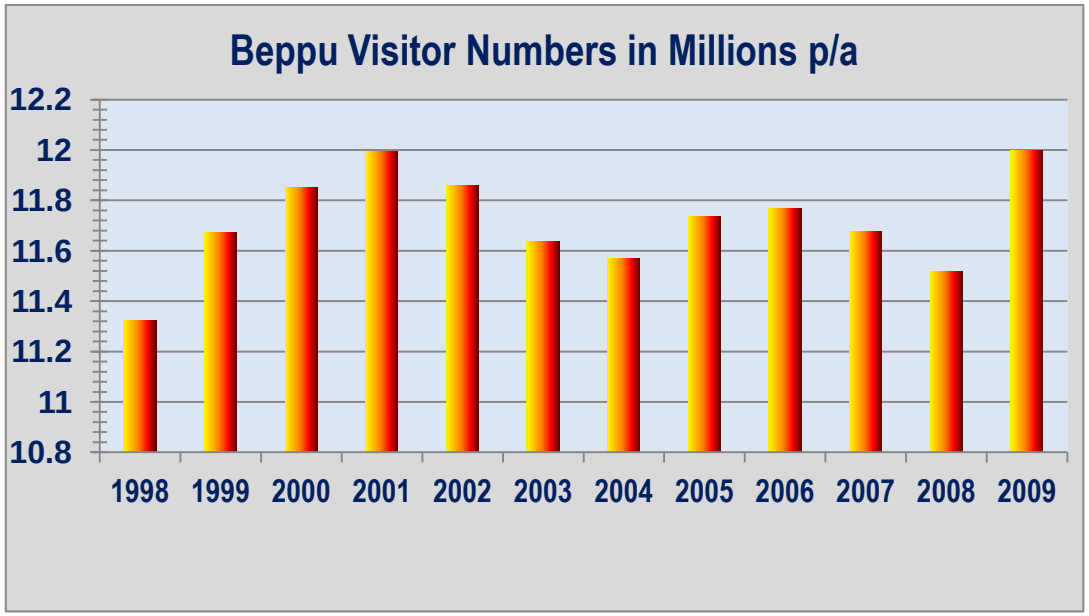

Figure 6.4 *Annual visitor numbers of the hot spring destination Beppu, Japan. Figures include both overnight and day visitors (Compiled by Author).*

Figure 6.5 *The Takegawara Onsen in Beppu is an example of traditional architecture in Japan (Photo by Author).*

Figure 6.6 *Rural onsen in Kyushu, Japan. This onsen or rotenburo is located in a natural environment with some facilities in the form of shelter, storage room, cleaning equipment and paved areas. As vandalism and theft are rare in Japan it is not necessary to lock everything. The onsen bathers in the picture where aware of being photographed and gave a friendly wave (Photo by Author).*

Another tourist attraction are the sand baths at *Kitahama Beach* along Beppu's foreshore (Figure 6.7), which have been used by local residents for centuries. Health benefits are sought especially by people suffering from rheumatic diseases, arthritis and gout and the common and effective way to treat aches and pains means to be buried up to the neck in hot volcanic sand soaked in hot spring water (Pers. observation; pers.com.).

Figure 6.7 *Unique way of using hot springs – volcanic sand saturated with hot spring water next to the beach (Photo by Author).*

The greater part of Beppu's geothermal resources however are utilised for onsen facilities within the hotel industry. The *Suginoi* Hotel (Appendix 6.4) takes advantage of the abundance of hot spring water to operate their own geothermal power plant to supply a large variety of themed hot spring baths as well as an aquatic entertainment centre *Acquabeat* (Erfurt-Cooper & Cooper, 2009). The Suginoi complex includes water slides, a jacuzzi

dream bath (*Ume-no Onsen*), flower bath (*Hana-no Onsen*), outdoor hot spring baths, a wave pool and a geothermally heated bowling alley (Kudo, 1996). The hot springs which supply the Suginoi Hotel emerge at boiling point are colourless and have a slight sulphur odour (Pers. observation). The geothermal power plant of the Suginoi complex is sufficient to power the hotel (capacity for 2100 guests) during normal periods of operation. The geothermal energy derived from this plant is used for several purposes such as hot water pools and baths, hot water supply for the hotel rooms, space heating and air conditioning. Any excess hot water from the Suginoi plant is utilised for several public onsen in Beppu (Kudo, 1996).

Beppu's onsen districts include eight typical hot spring areas which are collectively known as *'Beppu Hatto'* (Beppu City Oita, 2010; pers. communication with residents). In addition, there are many modern health resorts and spas, which also draw their supplies from the rich local geothermal resources (JNTO[2], 2010). Each of the eight areas has previously flourished as an individual hot spring resort district, and some of them have a history going back to the beginning of the 8th century. During the *Kamakura* era (1192–1333 AD), sanatoria were built in the city to treat wounded soldiers from the battles against the Mongolians (Yoneie, 2005) and henceforth Beppu's healing hot springs have been referenced throughout history. Various types of water with a diverse quality range can be experienced in the eight hot spring-areas *Hamawaki, Beppu, Kankaiji, Kannawa, Kamegawa, Myōban, Horita and Shibaseki,* which are located in different parts of town (Beppu City Oita, 2010). The city of Beppu even has special viewing areas, where the rising steam from many hot springs can be observed (Figure 6.8).

Of particular interest are the visual hot spring attractions called *jigoku* (Japanese for hell) in the centre of Beppu City. These jigoku have been developed into a group of ten (10) small geothermal parks with attractions such as bubbling mud pools, boiling crater lakes in different colours, hissing steam vents and gushing geysers. They attract millions of hot spring tourists every year who enjoy the unique sights together with hot spring foot spas and steam boiled eggs (*onsen tamago*), vegetables and dumplings. The tour of the Beppu hells (*jigoku meguri*) is one of the most popular tourist attractions of the city and repeat visits during different seasons are promoted (Erfurt-Cooper & Cooper, 2009).

Figure 6.8 *The city of Beppu offers special view points from where the steam rising from many vents can be observed (Photo by Author).*

Although the main use of hot spring water is for recreational bathing, medical treatments (balneology or spa medicine) are also available in Beppu. Virtually all of the main onsen recognise the medical benefits of natural hot and mineral springs and are focussing on treatments for rheumatism and neuralgia, diabetes, female health disorders and various skin diseases (Beppu City Office, 2007 – pers. communication; Hotta & Ishiguro, 1986). It is likely that the potential for medical therapies will be more fully realised in the future as the City Council has asked and encouraged onsen owners to explore this avenue (Beppu City Office, 2007 – pers. communication). The popularity of geothermal spas for both bathing and balneotherapy has made Beppu City one of the most established hot spring tourist destinations of Japan (Erfurt-Cooper & Cooper, 2009).

The fame of Beppu reached international levels in the early 20th century with more frequent visitors from abroad (Beppu City Council, 2007 – pers. communication), facilitated through the marketing of onsen by the Japanese Government (de Garis, 1922). Since then Beppu's economy developed rapidly, attracting health, wellness and recreational hot spring tourists from across the nation as well as overseas. However, some of the larger onsen hotels in Beppu (Figure 6.9) are known for not blending in too well with the environment and trends indicate that visitors prefer smaller establishments, if they can afford the price difference between traditional and contemporary architecture (Pers. communication).

Figure 6.9 *The Suginoi Hotel Complex in Beppu. This hotel has its own geothermal power plant and supplies several themed onsen pools, a roof top onsen overlooking Beppu Bay as well as a large aquatic entertainment centre with hot spring water (Photo by Author).*

Hot Spring Town Yufuin

Yufuin is a small spa town (population 11,000+) located 30km from Beppu in the central part of Oita Prefecture. Approximately 3 million visitors each year are attracted by Yufuin's unique ambience which consists of traditional *ryokan* (inns), small inns known as '*pension*' (family type inns, based on the German model of holiday pension), unique art museums, small galleries, sophisticated restaurants and coffee shops (JNTO[3], 2010; pers. observation). The natural hot spring water is said to be of 'gentle nature' without negative side effects and, like in Beppu, is recognised for its medical benefits and used to alleviate rheumatism and neuralgia as well as a number of other illnesses (Pers. com.).

Yufuin has numerous public bathhouses, which are highly convenient for tourists (JNTO[3], 2010). Several of these bathhouses or onsen are located in the centre of town on the shore of Lake *Kinrin*, a lake fed by hot springs. The lake is named after the 'shining scales of fish in the setting sun' and is one of the important local tourist attractions with cafés, restaurants and art galleries along the water's edge (Pers. observation, 2003-2010). The hot water flows from springs at the bottom of the lake, and steam rises from the surface on cooler days (JNTO[3], 2010; pers. observation, 2003-2010). Yufuin provides a strong contrast to the bleak concrete architecture of Beppu's hotels through specialising in small traditional onsen resorts for connoisseurs of quiet rural settings. Most of Yufuin's onsen resorts are concealed by lush mountain vegetation and their reputation as pleasant, peaceful and healthy getaways is

closely guarded by the local inn keepers (Pers. communication, 2009). This way of thinking presumably goes back to the initial development of Yufuin as a health resort and spa town during the 1970s. In 1971 three local community development leaders travelled to Germany's spa town *Badenweiler* for a 50 day long study tour, where they underwent 'progressive area training' (Asia Seed, 2007) and found the inspiration needed for the future development of Yufuin. The main aim was to prevent Yufuin from becoming a smaller version of neighbouring Beppu (Pers. com., 2009).

Most hot spring spas in Japan offer their visitors the option to buy bath powders in tastefully presented gift packages which contain the local minerals, harvested and dried, and can be used at home. Figure 6.10 shows a mineral powder sachet with the picture of an onsen building in Yufuin. This onsen is located directly next to Lake Kinrin and looks more picturesque on the bath powder packaging. The volcanic mountain in the background, Mt Yufu, is not located where shown in the picture, but is obviously used in marketing because the distinctive shape of Mt Yufu makes it easy to recognise this destination and is commonly used as a unique selling point (Pers. observation, 2003-2010).

Figure 6.10 *Bath powder sachet with a picture of a lakeside onsen in Yufuin (Photos by Author). Minerals and bath powders (yu-no-hana) are sold in most souvenir shop in Japan and are popular as gifts or for personal use. By-products such as this constitute a significant part of the hot spring industry in Japan (Pers. observation).*

The above mentioned example of hot spring merchandise is not just evidence for the economic opportunities in the form of geothermal by-products at Japanese hot spring destinations, but also an important part of the cultural traditions of a) gift giving (omiyage) or in other words bringing back souvenirs from places visited, and b) the custom of using hot spring bath minerals at home when there is no opportunity to use natural hot springs. Other standard souvenirs from hot spring resorts are small towels with the name of the facility printed on it and few visitors return home without souvenirs for friends, family, neighbours

and colleagues. These represent some of the common elements included in the conceptual model, namely the cultural traditions, beneficial minerals from natural resources and the service industry at hot spring destinations.

6.5.2 Case Study 2: Kusatsu

Figure 6.11 *Location of Kusatsu Onsen on the main island Honshu, Japan (Map modified by Author).*

Kusatsu is a small onsen town with a population of less than 7,500 people and is located in the centre of the main island Honshu in the *Gunma* Prefecture (Figure 6.11). People have been attracted to this historical onsen town with its cultural sites for centuries. A wealth of information on the history related to the town, its hot springs and their health benefits is made available to visitors at the local *'Onsen Museum'* (Kusatsu Onsen Tourism Association, 2003). The historical background of Kusatsu Onsen includes several theories about its origin. Some suggestions are that the hot springs were either discovered by a legendary hero circa 1800 years ago or by high priests in the *Nara* period (710 AD to 794 AD). Historical records show that the *Shoguns* of different periods visited Kusatsu for hot spring bathing. The 8th Shogun of the Edo era had Kusatsu's hot spring water delivered to his residence in Edo (now Tokyo) because of the superior quality of the water. To this day, Kusatsu Onsen is very popular with people from all over Japan (Onsen ISM Kusatsu, 2010). The natural environment is another important aspect for the onsen town Kusatsu and its

hotels. Traditional Japanese inns and European-style accommodation both benefit from the unique natural beauty of the quiet forest surroundings (Kusatsu Now Resort Hotel, 2010).

Kusatsu Onsen was first introduced to the world in the *Meiji* era (1868 to 1912) by *Erwin Bälz*, a medical doctor from Germany. Dr Bälz arrived in Japan in 1878 and quickly recognised the health benefits of onsen bathing. He was actively involved in the development of Kusatsu as a health resort and spa and helped to spread the word of the hot springs' excellence worldwide. A museum *(Bälz Memorial Hall)* illustrates the life of Dr Bälz and displays numerous articles associated with his work (Kusatsu Onsen Tourism Association, 2003). The unique composition of Kusatsu's strong acidic hot spring water was studied by Dr Bälz with special emphasis on the therapeutic bathing method called *Jikan-yu*, which is different to applications used in other countries (OnsenISM Kusatsu, 2010). One of the main springs, *Sai-no-kawara*, emerges at 79°C with a pH level as low as 1.6 and another hot spring, *Shirahata-no-yu*, emerges at 55°C and a pH of 2.2 (Secret Japan.com, 2010). These highly acidic baths are favoured for their strong sterilising power, which destroys germs and bacteria and which is hailed as the secret of its superior therapeutic benefits (OnsenISM Kusatsu, 2010).

Kusatsu is also known for *Yumomi*, the traditional method of decreasing the temperature of hot spring water for bathing purposes. By stirring the hot water with large wooden paddles while singing local folk songs the water is slowly cooled down. A special 'yumomi performance' for tourists (Figure 6.12) has been a daily attraction since 1960 (Kirishimaya Ryokan, 2010) and includes singing and dancing with the opportunity for several people from the audience to partake in the traditional yumomi (Japan-Guide-com, 2010).

Kusatsu is promoted as one of Japan's top three locations for hot spring bathing with the therapeutic benefits of the local hot spring water widely recognised and used to treat a number of health conditions under strict medical supervision (OnsenISM Kusatsu, 2010). The earlier mentioned 'Jikan-yu' (timed bathing) is a traditional way of hot spring bathing established during the Meiji period to help cure illness, but is a system recognised for its severity (OnsenISM Kusatsu, 2010). The temperature of the hot spring water at around 65^{o}C is too hot for immersion. It is cooled down by the traditional yumomi without dilution until the water reaches 48^{o}C, a temperature, at which bathing is possible. Yumomi is an essential preparation for bathing at high temperatures with repeated immersions timed at maximal 3 minutes. The action of cooling the water down has the additional therapeutic effect on the respiratory system through inhalation of steam (Kirishimaya Ryokan, 2010).

Figure 6.12 *Yumomi, the traditional cooling of hot spring water in Kusatsu (WikiCommons[3], 2011).*

The jikan-yu treatment involves the pouring of the very hot and acidic spring water over one's head dozens of times to improve blood circulation first, and then followed by soaking in a tub at a water temperature of 46°C - 48°C for 3 min. This procedure is repeated four times a day (OnsenISM Kusatsu, 2010). There is however the possibility of feeling intoxicated after a traditional jikan-yu bath as the water temperature at up to 48^{o}C is significantly warmer than normal bath water (Kirishimaya Ryokan, 2010; Kubota et al, 1992).

The three main qualities of Kusatsu Onsen used for marketing purposes are:

1. The 'highest flow rate' of hot spring water in Japan with a total volume of natural discharge at over 100 discharge points reaching approximately 32,000 litres per minute or over 46 million litres per day;

2. Constant replenishing of hot spring water *(kakenagashi)* in the onsen pools – no heating, diluting or circulation systems are necessary (OnsenISM Kusatsu, 2010). The 100% natural hot spring water is cooled naturally in the traditional way of *Yumomi*; and

3. Very strong sterilising powers of highly acidic hot spring water, which destroys germs and bacteria and is hailed for its superior therapeutic benefits. In fact, the acidity is said to be so high that a coin made of aluminium completely dissolves in one week (OnsenISM Kusatsu, 2010).

Kusatsu's hot springs are generally used for relieving and treating neuralgia, muscle pain, skin problems, bruises, sprains, female disorders, diabetes, hypertension, arteriosclerosis, convalescence, fatigue and overall health improvement. The therapeutic benefits are directly

linked to the mineral content in the natural hot spring water of Kusatsu, which contains primarily sulphur, aluminium, sulphate and chloride (OnsenISM Kusatsu, 2010).

The town of Kusatsu maintains sister city relationships with six cities within and outside of Japan including *Bietigheim-Bissingen* (Baden-Württemberg, Germany), the birthplace of Dr. Bälz, who contributed to the fame of Kusatsu. To maintain and improve its attractiveness to visitors Kusatsu constantly compares and evaluates its standards, supported by the local authorities (OnsenISM Kusatsu, 2010). Seasonal changes are taken advantage of and are promoted as attractions for repeat visitors (Figure 6.13).

Figure 6.13 *Other attractions for visitors of Kusatsu are the annual seasons in combination with natural hot springs (OnsenISM Kusatsu, 2011). Looking at the marketing strategies of hot springs in Japan, although not within the scope of the overall study, was considered essential to provide a further insight into the hot spring tourism industry of this country and what is of relevance for the health, wellness and recreational tourist.*

According to surveys conducted by the Japan Spa Association (*Nihon Onsen Kyokai*) and published on the Kusatsu website *OnsenISM* (a term coined by the local authorities to promote onsen culture) Kusatsu is leading the top five most popular hot spring resort towns in Japan followed by *Gero*, Beppu, *Hakone* and Yufuin. A distinction is made between a) the most desirable aspects and b) the most memorable features of onsen destinations (Table 6.1 and Table 6.2).

Table 6.1 *Most desirable aspects of Onsen destinations (OnsenISM Kusatsu, 2011).*

Most desirable aspects (in order of importance)
Natural environment
Atmosphere of the traditional hot spring resort
Hot spring water of Kusatsu
Other interesting attractions and activities in the vicinity
Price of accommodation [reasonable, affordable]
Therapeutic benefits
Ease of access
Special local cuisine
Relaxation effect

The first three criteria are identical for a desirable as well as a memorable destination. This indicates that Kusatsu as a hot spring location has clearly recognised the most important visitor priorities. The results of the surveys conducted by the *Nihon Onsen Association* are consistent with the findings from the literature covering Japanese hot spring destinations. The main attractions verify the Japanese preference for the natural environment, traditional atmosphere combined with hot springs.

Table 6.2 *Most memorable aspects of Onsen destinations (OnsenISM, 2011).*

Most memorable features (in order of importance, determined during and after stay)
Natural environment
Atmosphere of the traditional hot spring resort
Hot spring water of Kusatsu
Facilities of the hot spring resort area
Relaxation environment
Facilities of the hotel
Good service and hospitality
Delicious food
Price of accommodation [reasonable, affordable]
Bathing area facilities

Not far from the town centre of Kusatsu an area called *Sai-no-kawara Park* is located in a valley with several hot springs and a large outdoor bath (Figure 6.14). Walking trails allow for access to the natural surroundings dotted with hot springs and a small hot spring fed waterfall (Japan-Guide.com, 2010). A visitor centre is part of the park facilities and provides information about Kusatsu's unique environment which, apart from numerous hot springs also includes a volcano and unusual fauna and flora (Kusatsu Onsen Tourism Association, 2003).

Figure 6.14 *Autumn colours at Sai-no-kawara rotenburo (Photo source: Japan-guide.com, 2010).*

The combination of the changing seasons and a hot spring pool for relaxation is one of the most enjoyable experiences in Japan. The trend towards nature is catered for by onsen operators with facilities surrounded by lush forests and unspoilt views of rivers and valleys.

6.5.3 Case Study 3: Spa Hawaiians

Figure 6.15 *Location of Spa Resort Hawaiians on the Main Island Honshu, Japan (Map modified by Author).*

The hot spring facilities at *Spa Resort Hawaiians* are in strong contrast to destinations such as Kusatsu or Beppu and Yufuin. Spa Resort Hawaiians is a themed entertainment centre based on the rich geothermal resources of the *Iwaki-Yumoto* hot spring area (regarded as one of the three most famous hot springs in Japan) in the *Fukushima* Prefecture (Figure 6.15) less than 200 kilometres north of Tokyo (Spa Resort Hawaiians, 2011). The name indicates a theme revolving around Hawaiian and Polynesian culture, which has very little to do with hot springs, but more with daily Hawaiian dance performances in an artificially created tropical indoor environment to attract visitors. Spa Resort Hawaiians caters for mass tourism, to a large percentage made up of young families, couples and groups of friends and colleagues, who do not mind noise and large crowds (Pers. observation, 2008).

The history of the Spa Resort Hawaiians complex goes back to its opening in 1965 as the first resort facility and theme park in Japan, using the image of Hawaii as a dream island. By utilising the vast supply of local hot spring water, the former *Joban* coal mining area was able to create an undercover paradise of everlasting summer (JNTO[4], 2010). The all-weather dome of the water park has been a major feature of Spa Resort Hawaiians since opening more than 45 years ago (Spa Resort Hawaiians, 2011). Abundant geothermal resources allowed for a large scale tropical environment, including the cultivation of banana trees and orchids all year round (Pers. observation, 2008). Visitor numbers during the first year reached nearly 1.2 million people (approximately 1% of Japan's entire population). At this time the complex was still known as the 'Joban Hawaiian Center', which was changed to the current name in 1998; at the same time when the new 'Spring Park' was opened (Spa Resort Hawaiians, 2011). Hotels were progressively built to provide accommodation for the increasing visitor numbers, especially since a 27 hole golf course was added to the resort complex.

Large scale open air baths, all fed by geothermal spring water were built to enhance the facilities while at the same time older theme park facilities underwent renovations and modernisation to counteract the wear and tear imposed by millions of visitors. In the year 2002 the cumulative visitor numbers had reached 45 million people (Spa Resort Hawaiians, 2011); an average of over 1.2 million visitors per year or over 3,200 people per day. The unique theme park attracts visitors with tropical temperatures of constant 28^{o}C combined with numerous entertaining water features. The natural hot springs not only supply the pools of the theme park with water, but also the guest rooms of the surrounding hotels. In addition to the hot spring pools and the tropical scenery, cultural dance shows featuring Polynesian and Hawaiian dancing keep visitors interested. The combination of different themed

environments (e.g. Spa Garden, Spring Park, Edo period rotenburo) for all types of visitors and age groups includes a number of restaurants and fast food outlets, retail opportunities, gaming areas and banquet halls. In addition to the daily stage performances including fire dancers and magicians, beauty salons offer facials and massages along with aquatic exercise to enhance wellbeing and relieve stress through relaxation and exercise. The developers of the resort complex have taken into account everything that would enhance the facilities to draw large crowds and make the hot spring business economically viable in the long term (Pers. observation, 2008; Appendix 6.5a and b).

The nearby town of *Yumoto* is an onsen town in its own right with access to geothermal water which rises to the surface at 59.5^{o}C. A flow rate of 3 tons per minute, which equals the quantity consumed at Spa Resort Hawaiians, can be increased if required (Pers. communication with staff, 2008). The water quality is considered beneficial for many health conditions including neuralgia, arthritis, chronic skin diseases, cuts and burns and most importantly the three common lifestyle diseases arteriosclerosis, diabetes and high blood pressure. Sulphur and chloride springs offer a choice of water treatments for a variety of illnesses with applications differing due to their individual mineral content (Spa Resort Hawaiians, 2011; Pers. communication, 2008).

To cater for all visitor budgets the 'onsite' hotels offer accommodation from luxury to budget; however, the majority of onsen tourists are day visitors who either live within travelling distance or stay in the surrounding onsen towns such as Yumoto or Iwaki (Pers. observation, 2008) as advance bookings are essential for the Spa Resort Hawaiians. To market the theme park the spa resort has an impressive internet presence; 32 pages of information (in English language) were assessed after visiting Spa Resort Hawaiians. Numerous links to more in-depth information about the individually themed areas, their opening times and entry requirements, online booking websites, voucher access websites and shopping related websites are offered to the potential visitor.

In summary the Spa Resort Hawaiians is a unique oversized theme park based on geothermal resources, which supply the water for all bathing facilities, spa treatment facilities and provide a tropical indoor environment all year round. Visitor numbers are high (approximately 3,200 people per day, up to 10,000 on weekends) and people need to be comfortable with large crowds in a noisy environment. The Spa Resort Hawaiians is in direct contrast to the previous examples in this chapter (Kusatsu Onsen, Beppu and Yufuin) and was selected to illustrate the diversity of hot spring use in Japan. This destination is evidently

catering for a demand, which has been unabated for over 45 years. The concept of this theme park deliberately includes all popular aspects of hot spring bathing from traditional Edo period style onsen in the form of outdoor rock pools (rotenburo) to mass bathing in Olympic-size swimming pools; all courtesy to vast geothermal resources. The Spa Resort Hawaiians became even more popular since featuring in the movie hit 'Hula Girl' in 2006 (Figure 6.16) and attracts many people looking for health benefits combined with aquatic entertainment (JNTO[4], 2010).

Figure 6.16 *The movie 'Hula Girl' is based on the development of the Spa Resort Hawaiians (Spa Resort Hawaiians, 2011).*

Update from October 2011: As reported by Mishima (2011) and the Japanese Tourist Organisation (JNTO[5], 2011) the Spa Resort Hawaiians was closed due to the *Great East Japan Earthquake* in March 2011. The facilities have been partially reopened on 1 October 2011, but the damage caused by the earthquake still requires further repairs. Despite the close vicinity (50 km) to the defunct Fukushima nuclear power station a grand opening is scheduled for next January.

6.5.4 Marketing Aspects of Hot Spring Spa Tourism in Japan

In the case of Japan it is essential to share as much information as possible to provide reliable evidence related to the hot spring tourism sector. This includes aspects of destination marketing and methods of promoting hot spring use. The following assessment will further highlight the important role of natural hot springs in the health, wellness and recreational tourism industry in Japan as the marketing of onsen destinations is focusing closely on customer expectations (Table 6.3). The differentiation is made between the strictly medical sector, the health resort sector, the wellness spa environment and the recreational facilities. The table shows (in alphabetical order, not in order of relevance) that the expectations vary according to the main reasons for visiting hot spring facilities, although there is some overlap in a number of categories. The table was derived from extensive literature reviews with the aim to assess hot spring tourism in Japan. Supporting data was also collected during interviews over several years with more than 200 hot spring visitors to evaluate their experiences and to determine customer expectations (Table 7.9). The table presents an approximate scale of the degrees of importance of specific consumer expectations.

Table 6.3 *The customer expectations at Japanese onsen destination were identified in the literature review and during interviews. They are listed in alphabetical order, not in order of importance (Compiled by Author).*

Customer Expectations	**Medical**				**Health**				**Wellness**				**Recreation**			
Very important = VI	Important = I				Less Important = LI				Not Important = NI							
	VI	**I**	**LI**	**NI**	**VI**	**I**	**LI**	**NI**	**VI**	**I**	**LI**	**NI**	**VI**	**I**	**LI**	**NI**
Affordable prices				●			●			●			●			
Ambience		●				●			●				●			
Aquatic entertainment				●			●			●			●			
Architectural features	●				●				●					●		
Authentic hot springs	●				●				●				●			
Benefits from mineral content	●				●				●					●		
Comfort and quality	●				●				●					●		
Cultural environment		●				●			●					●		
Ease of access		●				●				●			●			
Feeling safe	●				●				●				●			
Friendly staff	●				●				●				●			
Good reputation	●				●					●					●	
Healing waters	●				●				●					●		
Health treatments	●				●				●						●	
High quality standards	●				●				●					●		
Hot spring bathing	●				●				●				●			
Hygiene	●				●				●					●		
Idyllic scenery			●				●		●				●			
Infrastructure		●				●			●				●			
Landscaping design			●			●			●				●			
Medical therapies	●				●					●						●
Medical supervision	●				●						●					●
Natural setting		●				●			●				●			
Peaceful environment		●				●			●				●			
Prevention of Illness		●				●			●				●			
Qualified medical staff	●				●						●					●
Quality accommodation	●				●					●					●	
Recreational activities				●			●			●			●			
Rehabilitation	●				●						●					●
Relaxation		●				●			●				●			
Resort setting			●				●		●							●
Sports activities				●			●			●			●			
Socialising			●		●					●				●		
Tasteful decor		●				●			●					●		
Time out, holiday			●			●			●				●			
Trained attendants/care givers	●				●				●							●
Treatment facilities	●				●				●							●
	VI	**I**	**LI**	**NI**	**VI**	**I**	**LI**	**NI**	**VI**	**I**	**LI**	**NI**	**VI**	**I**	**LI**	**NI**

While onsen bathing for health reasons was considered in the past as the provenance of the elderly, in recent decades this has gained a certain attraction for younger generations, with most hot spring spas and health resorts now being well attended all year round (Travel in Style, 2010). It is common for health resort and spa destinations to provide promotional literature, which in recent years has increasingly been translated in several languages to cater for the growing number of foreign visitors (Figure 6.17). The amount of onsen related internet sites has also risen rapidly over the last five years with the main aim to promote the individual healing effects of specific onsen destinations (Tottori Sightseeing Information, 2010).

Figure 6.17 *Promotional material has been made available in different languages in recent years (Photo of a page from a promotional brochure by Author).*

A Japanese magazine (Outdoor Japan Magazine, 2010) published a promotional article about Kusatsu Onsen featuring the traditional ryokan accommodation and the unique healing methods of *Jikan-yu* (described earlier in this chapter) to strengthen the body's natural ability to fight toxins rather than adding unnatural substances to it. Not to be underestimated is the joint marketing of natural hot springs together with World Heritage sites such as *Miyajima Island*, where the abundance of natural hot spring water is promoted explicitly as *kakenagashi*, which means the water is naturally flowing on a constant basis and is not recycled or treated with chemicals (Kinsuikan Inn, 2010). This is a very strong drawcard in Japanese onsen tourism. Other locations develop initiatives like the 'spa port' of the city of Beppu (Figure 6.18) to market onsen tourism. To encourage tourists to visit as many onsen

as possible, Beppu's 'passport' for spa visits, the 'spa port' is used to collect stamps and seals from different onsen districts and facilities.

Figure 6.18 *Marketing initiative in the form of a 'Spa Port' (Photo of original by Author).*

Promotional literature such as brochures or websites generally describes the most important aspects of the onsen water source: a) uncontaminated, b) beneficial for health, c) temperature range, and c) the mineral content. Japanese brochures frequently show illustrations of onsen baths without people and use the traditional ambience of the surrounding features to attract visitors (Figure 6.19). Other destinations use pictures with a small group of people suitably placed in an outdoor pool to give a demonstration of relaxation and contentment in a quiet natural atmosphere (Figures 6.15; Appendix 6.6).

Figure 6.19 *Traditional onsen in Kusatsu (WikiCommons[1], 2011).*

Yet, the Japanese do not shy away from showing their outdoor onsen against a background of concrete high-rise buildings (Figure 6.20) or nearby highways. The contrast only accentuates this particular type of open-air onsen. Despite urban encroachment, natural settings important for open air baths have been preserved. They do not take up much room and still offer a sense of continuity and permanence which are significant elements of the Japanese culture.

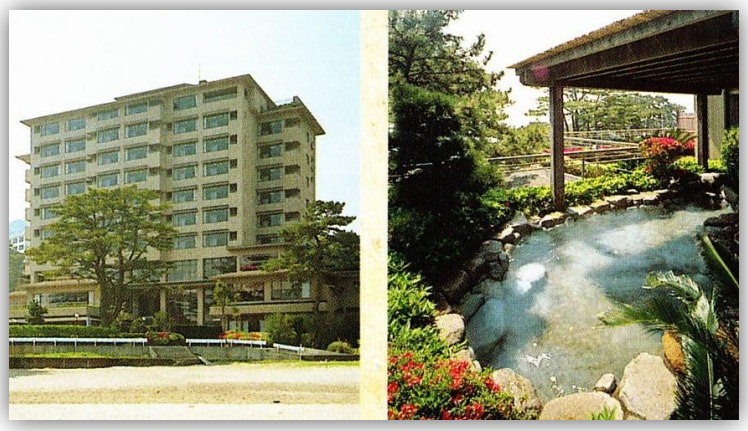

Figure 6.20 *Modern hotels still offer traditional rotenburo in secluded gardens (Photo of a page from a promotional brochure by Author).*

Water, rocks and timber form a natural symbiosis in the promotional literature, inviting the bather to relax and unwind, usually with equal minded companions (Pers. observation). Every age group is depicted from young to old (Figure 6.21). The water of Japanese onsen can occur in a range of colours with no particular emphasis on pristine blue and clear as is the case in many 'western' style hot spring pools. On the contrary; the milky and turbid appearance is considered proof of authentic hot spring water (Figure 6.21).

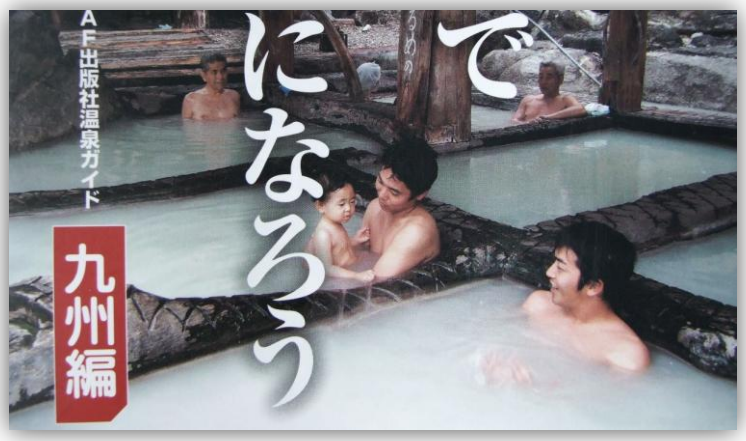

Figure 6.21 *Onsen bathing for young and old (Photo of a Japanese book cover by Author).*

Steam is another very important feature in onsen marketing and is used as a trademark, symbol or logo (Figure 6.22). Photos often show outdoor pools with rising steam clouds to represent natural hot water fresh from the spring (Compare Figure 6.14). Regional onsen guides are like catalogues and feature every hot spring health resort and spa of a particular area. Pictures of the hot springs are accompanied by photos of accommodation and as a special attraction pictures of the regional cuisine are also included to entice visitors (Appendix 6.7).

Figure 6.22 *Hot spring symbol – universally understood (Modified by Author from a photo).*

Many of the hot springs were developed as indoor as well as outdoor facilities with a preference for a natural rock pool look and are tastefully designed with the additional use of timber and bamboo (Pers. observation). Alongside manmade features used as special backdrops for promotional purposes, in many areas of Japan active volcanoes are preferred backgrounds to indicate authentic volcanic hot springs. In *Kagoshima* for example the view of the frequently erupting Mount *Sakurajima* creates a fascinating backdrop while bathers enjoy an outdoor onsen with water heated by volcanic activity (Pers. observation). This reflects the ease of the Japanese people with nature's forces; the bather knows that the hot springs with their treasured mineral laden waters are directly related to volcanic activity, which is a constant hazard and opportunity throughout Japan.

6.6 THE ROLE OF HOT SPRINGS IN HEALTH, WELLNESS AND RECREATION IN JAPAN

Bathing in natural hot springs is one of the greatest pleasures of the Japanese people (Hotta & Ishiguro, 1986) and the vast amount of geothermal resources based on volcanic activity has supported the development of onsen resorts throughout the country (Travel in Style, 2010). Nearly all regions of Japan cater for the demand for hot spring based health resorts and spas including 5star onsen resorts as well as rock-lined river pools and mountain-top hot tubs (Hotta & Ishiguro, 1986). Many of the traditional onsen in Japan offer a special

ambience and bear little resemblance to the sterile, clinic like spas of the West or to the concrete blocks of Japan's better known onsen towns (Neff, 1995).

In 2006 the Ministry of Environment Japan recorded 3157 onsen resorts and approximately 6400 public bathhouses, which are frequented by over 150 million visitors per year, mainly domestic tourists (Beppu International Tourist Office, 2007 – pers. communication; Erfurt-Cooper & Cooper, 2009). The Japanese domestic travel pattern includes the experience or 'collection' of as many different hot springs or onsen as possible, which emphasises the nation's passion for onsen bathing. Each year tour buses are carrying approximately 150 million visitors to popular onsen destinations. The preferred accommodation is in the traditional Japanese inns or ryokan, which frequently have a direct connection to a natural hot spring.

The combination of onsen facilities with the natural environment, traditional architecture in historical and cultural settings is given special attention wherever possible. Hot spring based health resorts and spas are also combined with sports clubs, day spas, as well as venues for weddings or corporate events and draw visitors from a wide range of socio-cultural backgrounds. Onsen facilities use their unique features in combination with traditional Japanese garden settings, regional cuisine and other local cultural aspects (Appendix 6.6, 6.7) and this blend of different environments is generally carried out to perfection. Adventure tours to undeveloped hot springs in natural environments further expand the opportunities for recreational tourism significantly (Erfurt-Cooper & Cooper, 2009).

6.6.1 Types of Japanese Onsen

Japan's hot spring centred health resorts and spas are among the most important destinations for health, wellness and recreation, and offer a variety of options based on the occurrence of these natural resources (Travel in Style, 2010). The Japanese way of using geothermal springs for health, wellness and recreational purposes has also found followers in the western world, where typical Japanese onsen facilities have been established in a number of countries. The *Maruia Springs Thermal Resort* for example is located on the south island of New Zealand, and built in the Japanese onsen tradition, although adapted for New Zealand conditions (Figure 6.23). It is managed by Japanese owners, who cater for a growing demand of 'onsen style' hot spring bathing outside Japan, but the hot spring resort was originally developed with Japanese visitors in mind. The facilities are located in a quiet area next to a small river with mountain views. Similar to Japan, New Zealand has distinctive seasons,

which can be viewed through panoramic windows in the bathhouse and from the private pools (Pers. observation; pers. com.).

Figure 6.23 *Maruia Springs Thermal Resort on the southern island of New Zealand.* ***Clockwise from top right:*** *location in a valley next to a stream; separate bathing pools for female and male guests; wash stations typically used by Japanese onsen visitors before entering the community bath (Photos by Author).*

The *Peninsula Hot Spring Spa* in Australia (south of Melbourne) is another example that embraces the Japanese way of onsen bathing together with bathing traditions from several other countries. The idea for this Australian example originated from the owner's personal experience while in Japan and was developed into a day spa centre based on a combination of traditional Japanese onsen culture and access to local authentic hot spring water. The owner Charles Davidson suggests that hot springs are becoming more popular with the increased awareness of health and wellbeing on a world-wide basis and the growth in this tourism segment is *'set to rise considerably and will continue'* (Pers. com., 2008).

Japanese onsen can range from highly developed health resorts and spas to modest rock pools in the wilderness with no facilities; however, it is a matter of personal preference which type of onsen people choose to visit. Generally onsen facilities offer a range of alternatives to their visitors by using combinations of different onsen settings and a variety of alternative treatments for health and wellbeing. Additional types of bathing environments

are for example the popular aquatic theme parks and entertainment centres which include hot spring pools located indoors and outdoors. A number of options are summarised in Table 6.4.

Table 6.4 *Hot spring bathing environments (Compiled by Author).*

Type of Onsen	Key Characteristics	Purpose and Advantage
Onsen Bathhouse (Furo, Sento)	Traditional bathing environment for public use Common throughout residential neighbourhoods with access to natural hot spring water Can also be supplied with heated tap water in areas without access to natural hot springs Still used widely, although most households have bathrooms	Important element of Japanese bathing culture Association with others (tsukiai) Socialising, communicating with family, friends and neighbours Hygiene
Private Onsen	Residential connection to local hot spring water supply Available in areas with clusters of hot spring sources Pipelines provided by local municipalities as part of local infrastructure against a monthly user fee	Ease of access Relaxation on demand Heat source in winter Privacy
Onsen Theme Park (e.g. Spa Resort Hawaiians, Ooedo Onsen Monogatari, Nagashima Spaland, Spa World Osaka)	Period scenery for authentic historic onsen experience Traditional style onsen baths supplied with natural hot spring water Variety of indoor and outdoor onsen baths with different coloured hot spring water Sports facilities Restaurants and retail opportunities	Physical and mental relaxation Enhanced health and energy (Ooedo Onsen Monogatari, 2011) Socialising with friends, family and colleagues Corporate getaways
Aquatic Entertainment Centre (e.g. Acquabeat, Beppu; Spa Hawaiians, Iwaki)	Aquatic entertainment centres based on access to large volumes of natural hot spring water Large hot spring fed swimming pools Spa baths/onsen for all age groups Combined with large hotel/resort complexes	Fun activities for younger generations Water sport Socialising Relaxation
Kuahausu or Health Centre Special type of therapeutic resort (Clark, 1999)	Aquatic entertainment centres based on the German 'Kurhaus' model Offers activities to all age groups Onsen complex which can include sports facilities Variety of onsen baths and saunas Restaurants, shops, reading rooms, games rooms	Socialising Relaxation Health improvement Curative properties of hot spring water Promotion of health
Onsen Resort, Onsen Ryokan, Onsen Hotel, Onsen Health Resort or Therapeutic Resort (Tōjiba)	Traditional indoor and outdoor onsen baths Traditional resort setting Themed spa baths Restaurants, shops, cultural entertainment Therapeutic resorts offer long term spa therapy in combination with tourist facilities (Clark, 1999)	Healing and relaxation Prevention of illness Maintenance of good health Company trips Corporate bonding Fun attractions, entertainment
Onsen Hospital Rehabilitation Centre Medical Onsen (e.g. Beppu, Kyushu; Kusatsu, Honshu)	Rehabilitation and convalescence based on natural therapy and CAM (complementary and alternative medicine) Hot spring treatment for therapeutic use Mineral mud baths Steam pressure baths (Clark, 1999)	Rehabilitation after illness , accident, injury or surgery Hot spring medical treatment (balneology, spa medicine) Medicinal baths to treat health conditions (Table 6.5)
Outdoor Onsen or Rotenburo (e.g. Riverside Onsen, Lakeside Onsen, Cave Onsen)	Natural settings are a preferred option Outdoor onsen are surrounded by nature Tastefully designed and blended into the environment Outdoor onsen are often in addition to indoor facilities They can be either public or private Can be attached to hotel or ryokan (e.g. rooftop onsen at Suginoi Hotel, Beppu)	Important element of Japanese bathing culture Relaxation Be close to nature Maintenance of good health Association with family and friends
Sand Bath (Onsen)	Unique setting using volcanic sand which is soaked with natural hot spring water and drained	Relaxation Treatment for some health conditions

	again before use (e.g. Kitahama Beach, Beppu)	such as rheumatism or arthritis
Foot Spa (Ashiyu) Hand Spa	Small onsen pools popular during cold seasons Located in most hot spring areas for public access (e.g. Yufuin – outside souvenir shops)	Warming of cold extremities Relaxation after long walks Visual attraction
Rural or Rustic Onsen (Hidden Onsen)	Located in the countryside in a natural environment, frequently without any facilities Some rural/rustic onsen have facilities in the form of shelter, storage, cleaning equipment, paved areas or undercover shelving for clothes and bathing paraphernalia (Figure 6.6) Maintained by community of onsen users	Important element of Japanese bathing culture Getaway in natural surroundings Small facility Privacy
Family Onsen	Separate onsen pool for joint family baths – normally onsen baths are segregated by gender	Family bonding and socialising Privacy

The information in the compiled list of different onsen environments clearly supports three of the research objectives:

Research objective 2: settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism were clearly identified;

Research objective 4: the cultural context of hot springs as a tourism resource was determined; and

Research objective 5: the recognition of medical benefits derived from natural hot and mineral springs was confirmed through the existence of National Onsen Hospitals as well as rehabilitation centres based on natural hot and mineral spring treatments.

Many onsen destinations have cultivated a reputation for a specific type of hot spring water, knowing that the true connoisseur expects the genuine product and frowns upon artificially heated or recycled water, which requires the addition of chemicals to satisfy hygienic requirements (Pers. observation; pers. com.). Even the addition of tap water for cooling purposes can result in the blacklisting for disreputable conduct of those onsen facilities whose managers falsely advertise genuine hot spring water. Cases of dishonest onsen operators have surfaced in recent years, and generally dominate the Japanese media for a considerable time with public apologies one of the more minor sanctions applied in such cases. Nevertheless, many onsen have been owned and managed by the same family for centuries and it is a matter of honour to cater for the expectations of the customer by supplying genuine hot spring water from a local source. This explains why the Japanese are particularly sensitive about their hot springs and do not take kindly to the addition of chemicals, colouring agents, or recycled and artificially heated water, and expect absolute honesty when it comes to water quality (Erfurt-Cooper & Cooper, 2010).

Because onsen are frequently used by families and couples as well as groups of colleagues who enjoy sharing a bath after work, even small countryside onsen offer hot spring baths for

groups apart from the separated male and female baths. A trip to an onsen and the practice of group relaxation or 'corporate onsen relaxation' is very common in Japan. Many of the thousands of hot springs in Japan are aiming to maintain such a traditional atmosphere (Neff, 1995), even if they are located in modernised bathhouses and mainly used by local residents. The favourite facilities are outdoor baths *(rotenburo*) where people can enjoy a combination of health promoting hot spring bathing surrounded by nature (Japan in a Nutshell, 2002).

As noted earlier (Section 6.5.1) the sand bath or *Sunamushi buro* is another unique form of onsen, where the bather wears a *yukata* (light cotton robe) and lies down on the sandy ground heated by hot spring water and steam, while attendants shovel black, hot volcanic sand on the bather until only the head is left unburied (Pers. observation at Kitahama Beach, Beppu, 2003-2009; Japan in a Nutshell, 2000). Sand baths have been popular for centuries (Figure 6.24) and can be included in an onsen complex (e.g. Takegawara Onsen, Beppu) and a small number can be also found in beach environments,for example Kitahama Beach in Beppu (Oita-ken) and *Surigahama* Beach, *Ibusuki* (Kagoshima-ken) (Pers. observation).

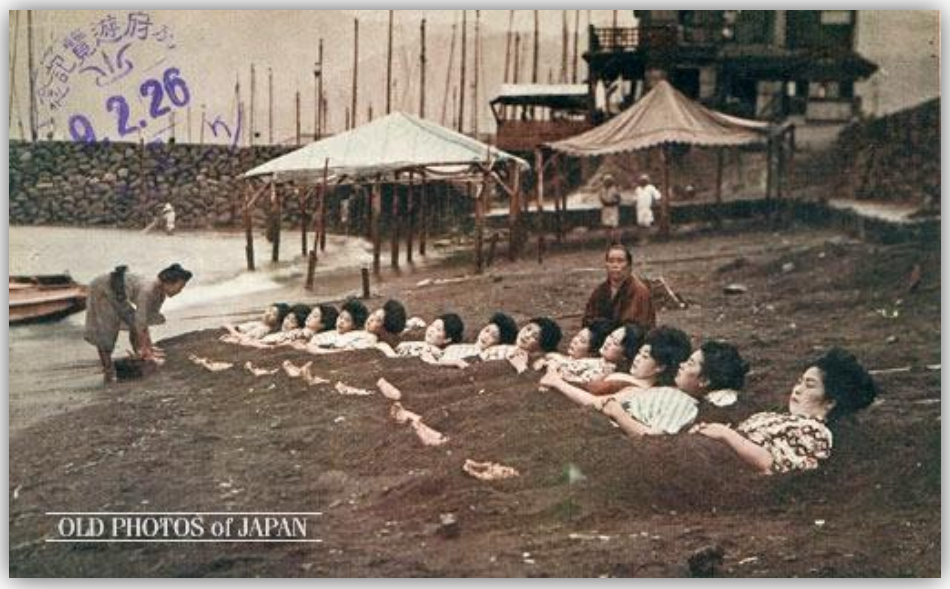

Figure 6.24 *Old post card from 1926 showing the hot spring beach Kitahama in Beppu with a group of women taking a sand bath (Old Photos of Japan, 2011).*

6.6.2 Onsen Etiquette - Bathing Customs

While staying at a traditional ryokan the companionship of other bathers is appreciated and considered an essential part of onsen bathing, accompanied by general socialising and the sampling of the local cuisine. Most hot spring resorts have large public baths which allow many visitors at a time, although in typical Japanese settings foreign visitors may still cause

a small distraction due to cultural differences and their inexperience with Japanese bathing traditions (Erfurt-Cooper & Cooper, 2009). These cultural differences become more for visitors who are entering a hot spring pool or onsen and realise that they have to follow strict bathing rules (onsen etiquette). The main priority is to keep the water as clean as possible and many traditional onsen do not permit the wearing of bathing suits in the bath whereas modern spa facilities encourage the use of swimsuits, especially in the mixed gender pools (Japanese Lifestyle, 2010). The following examples of onsen rules and regulations are part of distinctive cultural aspects and for visitors these are conveniently supplied in English, Korean, and Chinese and in Hokkaido also in Russian.

A Guide to Onsen Etiquette

1. Remove your shoes at the entrance to the onsen baths. Place them in the locker provided;
2. Take off all your clothes in the locker room. The only items to take into the bathing area are soap, shampoo, a large and a small towel. Do not wear clothes in the bath (unless otherwise specified). In the bathing area use one of the small stools to sit on well away from the bath;
3. Use the scoop, bucket or shower to wash thoroughly;
4. It is important to rinse off all traces of soap and shampoo. Under no circumstances must any traces of soap get into the actual bath water;
5. The large towel is left at a distance from the bath and a small 'modesty' towel is used to cover essentials - washing clothes is not allowed;
6. Enter the bath slowly and unhurried;
7. Japanese bath etiquette requires that the head must stay above water all the time;
8. In Japanese onsen it is common to enter and exit several times to cool down;
9. Alcohol should not be consumed before using Japanese onsen *(Adopted from various sources including brochures and guidebooks).*

The cultural factors related to hot spring bathing in Japan are an important part of the 'onsen experience' and it is expected that every visitor will follow the above guidelines. Another remarkable aspect of onsen culture is the common request posted on signs (Figure 6.25) in onsen facilities which state that: 'Persons with tattoos are asked to refrain from using the facilities' (Ooedo Onsen Monogatari, 2011). This request refers to excluding members of the Yakuza, which is considered as a criminal organisation and whose members are generally recognised by their tattoos.

Figure 6.25 *Sign in a public bathhouse (Wikimedia Commons, 2011).*

6. 7 GEOTHERMAL RESOURCES – GEOLOGICAL BACKGROUND

The settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism (Research Objective 2) are distributed throughout Japan. Due to tectonic activity and the resulting instability of the earth's crust directly under Japan disasters such as volcanic eruptions, earthquakes and tsunamis occur frequently. Ironically this tectonic instability is also responsible for the abundance of natural hot springs throughout the country with the majority usually found close to active volcanoes (Yoshiike, 2003). Many of these geothermal resources are located in areas of outstanding natural beauty and are protected in national parks, geoparks, quasi national parks and prefectural parks. Natural hot springs can surface at different altitudes; from hot spring fed sand baths at the beach to elevations of over 2000 metres above sea level in some volcanic mountain regions (Hotta & Ishiguro, 1986). The Beppu hydrothermal field for example, which provides the nation's premier hot spring resources is located under the Tsurumi-Garandake volcanic complex and contains three types of geothermal water: high-temperature sodium chloride water (150°C+) for commercial use, the onsen water supply, which is commonly of a lower temperature bicarbonate type, and the sulphate type spring water used mainly for the precipitation of sulphur and sulphates for producing mineral bath additives (*yu-no-hana*) (Yusa & Ohsawa, 2000). Due to the demand for natural hot spring water, approximately 70% of the overall discharge of approximately 2.8 million litres per minute in Japan is not free flowing from natural springs, but has to be pumped out of the ground (Nippon Onsen Research Institute, 2010). The overall discharge in the country adds up to over *4 billion litres* of hot spring water per day. Of this amount over 455 million litres of hot water per day are extracted in Oita Prefecture alone.

6.8 SPA MEDICINE (BALNEOLOGY) AND THE JAPANESE HEALTH SYSTEM

The Japanese health care system is said to be one of the best in the developed world (Esmail, 2004) and provides health care for every citizen and covers a comprehensive range of services (Castro, 2009; Jeong & Hurst, 2001), while being regulated by the government (Ward & Piccolo, 2010). Similar to Germany, in 1997 Japan underwent a revision of the Health Insurance Law, resulting in cost-sharing by the insured as well as a charge for pharmaceutical items (Fukawa, 2002), but medical procedures with rehabilitation therapies based on natural hot and mineral springs remained an important component of the national health system, mainly due to the widely held belief that the mineral content of hot springs

has curative effects.

The position of spa medicine in Japan is strong because the use of natural hot spring water is recommended by doctors as beneficial for rehabilitation after illness or injury, and for the maintenance of good health as well as the prevention of illness (Agishi & Ohtsuka, 1998). This view by the medical profession partly dates back to the Meiji Restoration era (1868 to 1912), when hot spring spa medicine in Japan was widely promoted and further developed by the German doctor Erwin Bälz. During this period high-ranking Japanese politicians went on study tours to Europe and America to investigate modern forms of government, medical institutions, educational systems as well as military organisations (Kanamori, 1998) while in return foreign lecturers, doctors and engineers were invited to work in Japan. Dr Bälz arrived in 1878 and quickly came to appreciate the tradition of onsen bathing and its health benefits (Kusatsu Onsen Tourism Association, 2003). He was instrumental in the development of a health resort and spa in Kusatsu and spread the word of the Japanese hot springs' excellence for balneology worldwide (Mönch, 2005).

Health conditions (Table 6.5) such as arthritis, rheumatism, neuralgia, problems related to the respiratory system, circulatory and nervous disorders and trauma are only a few which are officially recognised as being treatable with balneotherapy based on natural hot spring water (Agishi & Ohtsuka, 1998). Balneotherapy or onsen therapy may be covered by health insurance if prescribed by a doctor, who verifies that the patient will benefit from this type of alternative treatment (Ito, 2003). Subsequently the position of health resorts and spas based on natural hot springs is supported by a wide range of stakeholders (Figure 6.26) with an interest to sustain and further develop onsen tourism in Japan.

Table 6.5 *List of illnesses treated at hot spring hospitals throughout Japan (Compiled by Author from Japanese Literature).*

Health Conditions treated at Hot and Mineral Spring Facilities		
Aches and Pains	Digestive Disorders	Obesity
Allergies	Eye Problems	Palsy, Paralysis and Poliomyelitis
Anaemia	Fatigue	Recovery and Rehabilitation
Artherosclerosis	Female Disorders	Relaxation and Rejuvenation
Arthritis	Gout	Respiratory System
Athlete's Foot	Haemorrhoids	Rheumatism
Beautification	Heart Problems	Rest & Recuperation
Beriberi	Hypertension	Sciatica
Blood circulation	Insect Bites	Skin Problems
Brain Haemorrhage	Insomnia	Sprains and Breaks
Burns	Internal Disorders	Joint Problems
Chilblains	Longevity	Stomach Disorders
Common Cold	Muscular Problems	Surface Wounds
Detoxification	Nervous Disorders, Stress	Venereal Diseases
Diabetes	Neuralgia	Whiplash

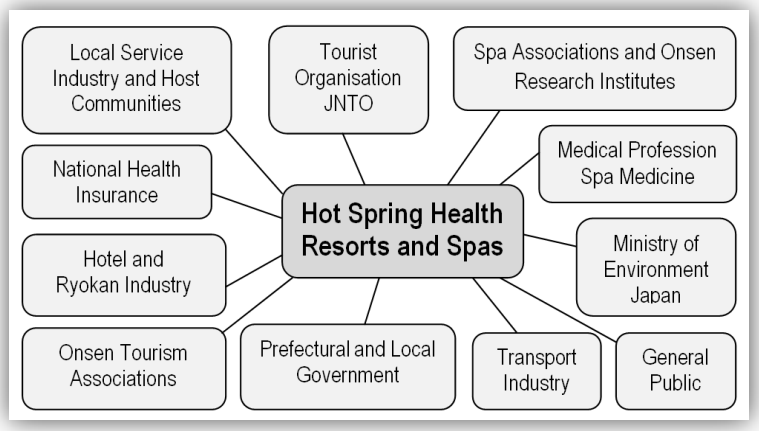

Figure 6.26 *Stakeholders supporting the use of hot springs in Japan's health and wellness system (Compiled by Author).*

The stakeholders range from medical professionals, national health insurers and the hotel industry over government authorities to tourism organisations and the transport industry. The local service industries as well as the general public all contribute to the hot spring destination development and management which is centred around hot spring health resorts and spas for health and wellness (Figure 6.25) as well as aquatic entertainment facilities for recreational purposes.

6.8.1 Onsen as Treatment Facilities

Japanese onsen come in a range of sizes with some set up like a hospital or health resort where treatment for various health conditions is available under medical supervision. Others are more like spas, where a range of wellness activities is provided in addition to healing waters. Others again, such as public baths, can be simple, no-frills establishments catering to locals who stop by after work, but nevertheless rely on the benefits of hot spring bathing (Pers. observation). Some hot spring based health resorts in Japan offer package tours including a general medical check-up with the option for further tests. Visitors are advised by qualified medical staff on the therapeutic benefits of hot spring bathing as part of a project to promote the medical use of natural hot springs. The project is backed up by local hospitals whose officials hail it as a significant approach to link medical treatments with a natural and curative environment (Japan Echo Inc., 2005).

6.8.2 Health Treatments at Hot Spring Facilities

Hot spring use in Japan has a long tradition in improving health conditions and it is common for people to recommend an onsen bath to somebody who is feeling unwell, especially in areas where hot springs at acceptable temperatures can be accessed. The effects of alternative or spa medicine in the form of onsen therapy are studied by medical professionals for a number of illnesses including those related to the respiratory system such as pulmonary emphysema, bronchial asthma and airway inflammations (Mitsanobu et al, 2003; Vu & Mitsanobu, 2004). Spa therapy based on natural hot springs is also continuously investigated by specialised practitioners for potential effects on the immune system (Mitsanobu et al, 1995), blood circulation (Nagasawa et al, 2001), diabetes (Ohtsuka, Nakaya, Nishikawa & Agishi, 2003) and skin afflictions such as atopic dermatitis (Kubota et al, 1994) as well as rheumatoid arthritis (Nobunaga et al, 1996).

In Kusatsu the unique treatment 'jikan-yu' using extreme hot water (48^{o}C) is practiced, under close medical supervision to treat health conditions such as psoriasis and rheumatoid arthritis (Shirakura & Sugai, 1986). While 48℃ is much too hot for bathing with regular water, this is however possible in the densely concentrated hot spring water of Kusatsu, which contains highly acidic hydrogen sulphate alums and ferrous sulphate. This special type of minerals (yu-no-hana) crystallises at direct contact with air and sunlight, which is enhanced through the yumomi process, causing even more yu-no-hana to be created and thereby further increasing in concentration. The yu-no-hana is said to form a thin layer on the bather's body with the effect that the temperature feels lower than it is (Kirishimaya Ryokan, 2010). This example illustrates the unusual potential of hot spring based spa medicine and its acceptance by the medical profession and the government of Japan.

The health conditions listed in Table 6.5 can be treated with either immersion in natural hot spring water, inhalation of steam from hot springs or by internal use (drinking). Because of the different mineral and trace element compositions of hot springs some health conditions are treated in certain areas only, whereas others may be treated more successfully at a different location. After World War II the Japanese started to develop national hot spring hospitals to make the medical benefits of mineral rich hot springs available to patients who suffer not only from a number of illnesses, but also for people with external injuries, or are in need of post-operative treatment and rehabilitation (Frommers.com, 2010). National hot spring hospitals are available throughout the prefectures of Japan with a number of examples given in Table 6.6. The fact that National Hospitals have integrated the use of natural hot and

mineral spring based therapies (balneology or spa medicine) presents evidence for the recognition of medical benefits derived from natural hot spring water and demonstrates how serious spa medicine is taken in Japan.

Table 6.6 *Examples of national hot spring hospitals in Japan (Compiled by Author).*

National Hot Spring (Onsen) Hospital	Prefecture
Iwate Medical University Hanamaki Onsen Hospital	Iwate-ken
National Sanatorium Hanamaki Onsen Hospital	Iwate-ken
Gero Onsen Hospital	Gifu-ken
Prefectural Shimabara Onsen Hospital	Nagasaki-ken
Kakeyu Onsen hospital	Nagano-ken
Yamanashi Onsen Hospital	Yamanashi-ken
Toya Onsen Hospital	Hokkaido
Kawayu Onsen Hospital	Hokkaido
Tsuruga Onsen Hospital	Fukui Prefecture
Hakone Sengakohara Onsen Hospital	Kanagawa-ken
Aso Onsen Hospital	Kumamoto-ken
Ube Onsen Hospital	Yamaguchi-ken
Kyouritu Onsen Hospital	Yamagata-ken
Yumura Onsen Hospital	Yamanashi-ken
Ichinomiya Onsen Hospital	Yamanashi-ken
Arima Onsen Hospital	Hyōgo-ken
Misasa Onsen Hospital	Tottori-ken

In addition to the large number of hot spring hospitals in Japan the government has established Rehabilitation Centres and Research Institutes throughout the country to further the knowledge about balneological treatments for medical purposes (Table 6.7). These institutes are generally located in hot spring centres and carry out clinical trials using balneotherapy based on natural hot and mineral springs for external and internal use.

Table 6.7 *Rehabilitation centres and research institutes (Compiled by Author).*

Rehabilitation Centres and Research Institutes
Japanese Association of Physical Medicine Balneology and Climatology
Institute of Balneotherapy Beppu – Oita-ken
Yutagawa Onsen Rehabilitation Medical Center – Yamagata-ken
Kakeyu Rehabilitation Research Institute - Nagano-ken
Research Institute for Health Resort Medicine
Okayama University Hospital Misasa Medical Center, the only institute practicing full-scale spa-treatment in Japan - Tottori-ken

6.8.3 Government Policies - Hot Spring Laws in Japan

The popularity of hot springs has made them economically valuable and an important attraction at many holiday destinations. The Japanese government has therefore decided that it is paramount to protect natural hot springs by governing subterranean water by legislation as part of the water rights (Ramseyer, 1989). These legislations regulate the use of natural

hot springs which are protected by the 1948 Hot Spring Law. This law was revised (1979) and updated in 2005 and 2007 by the Ministry of the Environment, Japan (Ito, 2003; Ministry of the Environment, Japan, 2005, 2007). The recent amendments (Appendix 6.8a and 6.8b) recognise the problem that several facilities have interfered with hot spring water to enhance their business by adding chemicals or colouring agents (Ministry of the Environment, Japan, 2005). This is a dilemma that perhaps goes back to the inadequate definitions of the original hot spring law, which are said to be based on the German hot spring law, where a natural spring is considered as hot when the temperature is 20^{o}C or above (Otake, 2004). In Japan the minimum temperature was set at 25^{o}C.

Under the 1948 Hot Spring Law which regulates onsen facilities, the Japanese government recognises as onsen only those hot springs that reach certain standards regarding temperature and mineral composition. The Hot Spring Law defines a hot spring as hot water, mineral water, water vapour and other gases that issue from the ground with a temperature in excess of 25°C or contains more than a pre-described amount of designated substances. On the basis of this law, the Minister of the Environment gives the designation of 'Hot Spring Health Resorts' to hot springs of good quality. As of March 2006 ninety one (91) such sites covering over 16,000 hectares (16,653.75 ha) had been designated (Ministry of the Environment, Japan, 2006). Nine types of onsen water were officially recognised in the revised 1997 Hot Spring or Onsen Law as having proven medical benefits (Ito, 2003).

However, the original Hot Spring Law merely notes that anyone who discovers a source of water with a temperature of 25°C (or above) can open a bathhouse, develop an onsen or build a health resort. Bathing facilities are required to be registered when they open, but licenses do not have to be renewed even if the original hot spring changes its mineral content, its colour or runs dry. Should this happen there is nothing legally binding to stop deceitful onsen managers to use heated tap water and colouring agents to pretend it is still the original source. According to Japan's Fair Trade Commission only about a third of the country's hot spring facilities use pure, undiluted spring water from natural sources (McCurry, 2004). In the cultural context of natural hot and mineral springs as a tourism resource the use of natural hot springs is an important part of Japanese life, and the close bond of the Japanese people with their natural treasures has made them very critical when it comes to undesirable chemical substances in what is supposed to be a natural hot spring.

6.8.4 Onsen Tourism Associations in Japan

The hot spring tourism sector in Japan is largely controlled by the local tourism organisations and associations (Table 6.8), which are linked to the *Nihon Onsen Kyokai* (Japan Spa Association). These associations are dealing with all onsen related tourism issues including legislations and marketing strategies. The *Nippon Onsen Research Institute* is a private enterprise that examines and researches onsen and tourism as well as consulting about onsen (Nippon Onsen Research Institute, 2010). This organisation maintains the principle of onsen to remain profitable without being affected by any external influences and restrictions.

Table 6.8 *Examples of Japanese Onsen Tourism Organisations (Compiled by Author).*

Onsen Tourism Associations in Japan	
Beppu Tourist Association Yufuin Hot Springs Tourism Association Kusatsu Onsen Tourism Association Toyako Onsen Tourist Association Arima Hot Springs Tourism Association Yamanaka Onsen Tourism Association Tokachigawa Onsen Tourist Association Tsuchiyu-Onsen Tourist Association Awazu Onsen Tourism Association Katayamazu Onsen Tourism Association	Kinugawa-Kawaji Hot Spring Tourist Association Zao Hot Springs Tourism Association Yugawara Onsen Tourist Association Niseko Resort Tourist Association Wakura-onsen Tourism Association Misasa Onsen Tourism Association Yuwaku Onsen Tourism Association Ureshino Onsen Tourist Association Nozawa Onsen Tourism Association

6.9 CASE STUDY JAPAN - FINDINGS

6.9.1 General Customer Expectations and Key Findings related to Hot Spring Destinations

Natural hot springs are among Japan's most important destinations for health, wellness and recreation and are accepted as an alternative health resource, which is contributing actively to the maintenance of good health and wellness. Attractions and activities of interest are vital aspects when choosing a hot spring resort or spa. The main expectations are relaxation and therapeutic benefits in natural surroundings in authentic hot spring water together with ease of access, reasonable pricing and special local cuisine. Table 6.9 contains the key findings of Japanese hot spring or onsen tourism.

Table 6.9 *The majority of the key findings related to Japanese hot spring (onsen) tourism are similar to those from a number of other countries.*

Japanese Hot Spring Tourism: Summary of Key Findings	
Unique destination drawcard and venue for tourism	Growing demand for health and medical facilities
Seasonally independent	Treatment under medical supervision
Volcanic origin, source of beneficial minerals	Therapeutical benefits, prevention instead of cure
Long history of hot spring use	Expectations of health improvements
Long tradition of medicinal and recreational use of hot springs	Protection of natural resource by government legislation
	Support and influence of medical profession
High awareness of the therapeutical value of hot springs	150+ million onsen visitors annually
Expectations of curative value from beneficial minerals	Used by both genders and all age groups
Preference for natural environment	Direct relationship between tourism and hot springs

6.9.2 Findings from Semi-structured Interviews and Observation

Semi-structured interviews were conducted between 2007-2010 in Japan with 200+ international residents and visitors including English speaking residents, who on request shared information about onsen use, as many onsen staff speak limited English or prefer not to be questioned directly (Pers. observation). The majority of the interviews were carried out on Kyushu with an additional 25 onsen visitors in Hokkaido and Honshu. The discussions ranged from being very short due to language barriers with only one or two questions to more in-depth interviews where a number of questions were considered. The specific aim of this research activity was to establish the reasons for visiting onsen, the customer expectations (Table 6.3) and experiences at hot spring destinations. The findings from these informal interviews are presented in relation to the research aim and objectives in Section 6.9.3.

Most importantly a small number of interviews (12) with key stakeholders yielded relevant information about the hot spring (onsen) industry. During these conversations a different set of questions was used. In response to these questions addressed to key representatives the importance of natural hot springs in Japan's health, wellness and recreational tourism sector was established and confirmed:

1. What is the capacity of the facility?
2. Are they catering for a demand?
3. Do they have a website?
4. What is their greatest attraction?
5. Where do their visitors/guests come from – do they travel far?
6. What is the temperature range?
7. What is the water replacement pattern?
8. Beneficial for which diseases?
9. Is any special research conducted into the use of natural hot spring water?
10. What are the house rules or bathing customs?

The results from the informal interviews with key stakeholders are summed up following the above list of questions:

1. The capacity of facilities varies greatly. Depending on the water resources, the infrastructure in place and whether the onsen offers accommodation as well, individual hot springs can cater for a few people to several hundred or as in the case of Spa Resort Hawaiians, for several thousand people;

2. The majority of facilities cater for a demand and it was observed during the research process, that several facilities underwent upgrades and renovations to cater for increasing visitor numbers;

3. The majority of onsen facilities or destinations maintain up-to-date websites in more than one language. This was not the case when this study was commenced, when the majority of existing websites were in Japanese only. Today the translations range from Chinese, Korean, and English to Russian;

4. One of the main attractions, pointed out repeatedly, is the demand for fresh flowing hot spring water, which directly refers to question 7. Other main attractions are the mineral content, temperature (Question 6) and overall quality of the hot spring water, the traditional ambience, historic architecture, outdoor pools in scenic surroundings and epicurean delights of individual regions;

5. The majority of the 150 million + annual onsen visitors are domestic tourists (over 80%), who travel to hot spring destinations of their choice within Japan. Local residents are usually regular visitors of onsen facilities and are not included in the tourist numbers;

6. The Japanese prefer their onsen hot the water temperatures around and above 40^{o}C. The highest temperature currently used for medicinal bathing is 48^{o}C, although only for immersions of at maximum three (3) minutes. The temperatures are usually noted at the entrance to onsen facilities or near the pools and in the promotional material;

7. The water replacement pattern is one of the most important issues related to onsen use; Japanese onsen users expect the water in the pools (indoor and outdoor pools) to be on a flow-through basis and therefore without the need for chemical additives to meet hygiene standards. The hot spring water is preferred to emerge directly from the ground with the mineral content in its original concentration, which is the reason why in Kusatsu the water is cooled down by the traditional yumomi method without adding cold water. In other places

technical systems and procedures are used to aerate the hot spring water to lower the temperatures to a level where bathing is possible; however, the mere addition of normal tap water is frowned upon as it dilutes the original hot spring water's mineral content;

8. The general response is the recommendation of taking a hot spring bath for colds and flu, rheumatism and arthritis as well as sports injuries and for relaxation with friends and family. Medical professionals recommend the use of hot spring water for a significant number of health conditions (Table 6.5), with many of the illnesses listed treatable with natural hot springs or onsen therapy. When it comes to the therapeutical benefits, all respondents agreed that hot spring bathing provides relaxation and refreshment. Repeated use is believed to strengthen the immune system with beneficial effects on aches and pains. One of the first measures Japanese people with access to hot springs take when they feel unwell is to have an onsen bath - preferably on a daily basis to prevent illness;

9. Special research into the effectiveness of onsen therapy such as clinical studies are undertaken at the National Hot Spring Hospitals and the Rehabilitation Centres and Research Institutes in Japan (Tables 6.6 and 6.7), but not at onsen facilities who mainly cater for wellness and recreation;

10. The cultural tradition of Japanese onsen bathing generally requires no bathing suits or swim wear, unless in aquatic centres. The onsen etiquette (Section 6.6.2) is a set of strict rules which are required to be followed by every onsen visitor for hygienic reasons and to keep the water as clean as possible. These rules do not vary much from one onsen facility to another. It is expected that everybody enters the water in a clean condition and follows the rules and recommendations to make the time in the hot spring pool enjoyable for all. Alcohol is generally not permitted due to health reasons, but there are still some floating *Sake* trays at more private facilities.

6.9.3 Findings in Relation to the Research Aim and Objectives

This chapter has presented an assessment of the role of hot springs in (onsen) tourism in Japan. The findings of this case study highlight the size of the onsen tourism sector and provide a reference for the history and the cultural use of natural hot and mineral springs in Japan. The continuing traditional use of geothermal resources in the form of natural hot and mineral springs has been documented. All research objectives were addressed in this case study and are detailed below.

Research Objective 1: 'Development of a conceptual model to assess the role of natural hot and mineral springs in health, wellness and recreational tourism'

Following the model the role of natural hot and mineral springs in health, wellness and recreational tourism was assessed by exploring the aspects of the three sectors: health, wellness and recreational tourism and taking into account the distinctive characteristics of natural hot and mineral spring settings as a tourism resource. The medical and health aspects are catered for by the provision of facilities for rehabilitative care; especially for patients recovering from accidents, injuries or operations as well as from a large number of other health conditions (Table 6.5). The wellness aspect is serviced by preventive care with the aim to improve or maintain good health and it is not uncommon, that frequently wellness is more pro medical or connects stronger with recreational aspects. This depends, like at many other destinations, on the actual tourism resources and consumer demand. Recreational and leisure activities are commonly catered for at hot spring destinations. This can include aquatic entertainment centres (e.g. Kuahausu), thermal water theme parks combined with restaurants and retail opportunities. The findings present evidence that hot spring destinations in Japan share a number of common elements as identified in the proposed model including cultural traditions, historical ambience and architecture, service infrastructure as well as the natural environment. All variables of the model have been used to assess the role of natural hot and mineral springs in health, wellness and recreational tourism in Japan and support the results for the individual research objectives. The remaining findings are summarised in relation to the research questions.

Research Objective 2: To identify settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism

Nearly all regions of Japan offer national hot spring hospitals, health resorts and spas based on geothermal resources with between 26,000 and 28,000 hot springs (26,796 officially registered in 2001) in over 5,500 hot spring areas throughout Japan (Erfurt-Cooper & Cooper, 2009). The majority of hot springs are commonly found close to active volcanoes (Yoshiike, 2003). Natural hot springs can surface at different elevations; from hot spring fed sand baths at the beach to over 2000 metres above sea level in some volcanic mountain regions (Hotta & Ishiguro, 1986).

Natural hot springs in Japan are used by over 150 million people every year (Beppu International Tourist Office, 2007) and are one of the greatest pleasures of the Japanese (Hotta & Ishiguro, 1986) and are used by families and couples as well as groups of

colleagues who enjoy sharing a bath after work. Natural hot springs are part of the everyday life of many Japanese of all age groups and all social, cultural and professional backgrounds. The practice of corporate group relaxation in an onsen environment is common in Japan, where company employees go out or travel together and share a hot spring bath in a traditional onsen. This includes food, drink and general recreation along with reduced inter-personal boundaries (Erfurt-Cooper & Cooper, 2009). Natural hot springs are also used for rehabilitation in National Hot Spring Hospitals, which are available throughout the prefectures of Japan (Table 6.6).

The ongoing popularity of natural hot springs has made them economically valuable and an important attraction for many destinations in Japan. The reviewed data reveals that health, wellness and recreational tourism based on natural hot springs is an essential part of the tourism sector in Japan, with the inclusion of natural hot spring health resorts and spas as a significant contribution to the wellbeing of visitors who want to relax and maintain their health. As of March 2006, ninety one (91) Hot Spring Health Resorts covering over 16,000 hectares (16,653.75 ha) have been designated by the Minister of the Environment (Ministry of the Environment, Japan, 2006). Generally onsen facilities offer a range of options to their visitors by using combinations of different onsen settings and a variety of alternative treatments for health and wellbeing. Moreover, many of these geothermal resources are located in areas of outstanding natural beauty and are protected in national parks, geoparks, quasi national parks and prefectural parks.

Research Objective 3 and 4: To explore the historical development of hot springs as destinations for tourism and determine their cultural context as a tourism resource

Natural hot spring use is deeply entrenched in the Japanese culture and tradition in the form of onsen bathing as well as onsen therapy (spa medicine, balneology). Anthropological studies show that everyday acts like Japanese onsen bathing are embedded in historically grounded, culturally specific complexity (Clark, 1999). As suggested by some scholars the culture of hot spring use may have found its way from China through Korea to Japan. The promotion of onsen bathing was recorded only after the Chinese and Koreans had established migratory ties with Japan prior to 297 AD when the first documented use of natural hot springs in Japan was mentioned (Clark, 1999). Onsen bathing was popular in the Heian Period more than 1,000 years ago with remains of early settlements found near natural hot springs (Talmadge, 2006). The custom of bathing in hot springs *(toji)* was adopted by farmers and city dwellers, for whom it was the only economical way to relax and recover from the rigours of their lives (Clark, 1999; Ito, 2003).

The more important onsen destinations were mentioned in a text from 712 AD (Kojiki) due to their association with the Imperial family, wars or religious events (Asian Info, 2000). Later during the Edo period, even though travel for pleasure was restricted, permission was given for special purposes including visits to onsen (Cooper et al, 2008). The attendance at shrines, temples and their associated onsen was commonplace in the past (Ashkenazi, 1993; Plutschow, 1996) and onsen tourism in the form of religious pilgrimage has flourished in Japan for centuries (Cooper et al, 2008). To this day even public bathhouses have little shrines at their entrance with larger facilities providing prayer areas or small temples.

Historical records indicate that the Shoguns of different periods visited hot springs for health, wellness and recreational purposes and even had water from special hot springs delivered to their residences. Japanese onsen were introduced to the world through the work of the German medical doctor Erwin Bälz, who arrived in Japan in 1878 and promoted onsen bathing and its health benefits worldwide (Kusatsu Onsen Tourism Association, 2003; Mönch, 2005). Facilities with time honoured Japanese architecture inside as well as outside are a cultural tourist attraction (Pers. observation) and the atmosphere of a traditional hot spring resort is appreciated by most visitors.

Research Objective 5: To investigate the recognition of the medical benefits of Japan's onsen

Hot spring use in Japan has a long tradition for improving health conditions and it is widely believed and expected that natural hot and mineral springs have curative value due to their mineral content. Medical procedures including onsen therapy for rehabilitation are an important component of the national health system in Japan, due to the widely held belief that the mineral content of hot springs has curative effects (Beppu City Office - pers. communication; Hotta & Ishiguro, 1986). The position of spa medicine in Japan is strong due to the fact that the use of natural hot spring water is recommended by doctors as beneficial for rehabilitation after illness or injury, for the maintenance of good health as well as for the prevention of illness. Medical professionals continuously investigate the potential effects of spa medicine on a number of health conditions (Table 6.5) including problems of the respiratory system, the immune system, rheumatism and skin diseases.

6.10 CONCLUSIONS

The history of Japanese hot spring (onsen) bathing goes back many centuries with its use first recorded in the book 'The History of the Kingdom of Wei' written in China in 297 AD.

This early use is supported by remains of early settlements found near natural hot springs (Clark, 1999; Talmadge, 2006). Onsen bathing is practiced as part of Japanese socio-cultural traditions, which emphasise hygiene and purification in a religious and personal sense. Many people in Japan travel to hot spring destinations as a matter of preference and visit them whenever they have the opportunity. A common preference to combine the hot spring experience with other local attractions, such as cultural activities, shopping as well as sampling the regional cuisine of the surrounding area, has been observed.

The data reviewed for this case study has revealed that health, wellness and recreational tourism based on natural hot springs is also central to the modern Japanese tourism industry. The size of the overall onsen tourism sector was explored in conjunction with the historical and cultural use of Japanese hot springs, which are frequently considered as sacred sites. Annual visitor numbers, which reach on average 150 million people, demonstrate the popularity of hot spring (onsen) tourism and support the premise that the inclusion of natural hot spring spas is a significant contribution to the wellbeing of onsen visitors who seek relaxation, want to regain or maintain their health or prevent illness. The findings of this case study have provided a practical reference for the historical, cultural and contemporary use of natural hot springs in Japan. The findings have also documented the role of natural hot springs within Japanese health, wellness and recreational tourism and are an essential contribution to the knowledge about hot spring tourism in Japan.

Apart from the overall research aim and Research Objectives 2 to 5 the case study research was based on the proposed conceptual model (Research Ojective 1) (Figure 1.3). The case study Japan has demonstrated the validity of this model which has taken into account the distinctive characteristics of the Japanese hot spring environment as a tourism resource and has detailed the specific expectations and customer demand of onsen visitors. The correlations between the individual components of the model, such as hot spring settings (socio-cultural and environmental), historical and cultural use, customs and traditions, medical recognition as well as access and infrastructure, were established. Treatment methods were acknowledged (e.g. Kusatsu Onsen) as well as health conditions, which benefit from balneology based on natural hot and mineral springs. The common elements identified for all three hot spring tourism sectors (health, wellness and recreation) constitute the foundation for Japanese hot spring tourism destinations. These elements include not just the natural hot springs with its beneficial mineral content, but also a generally well established infrastructure and service industry, the natural settings surrounding the onsen facilities and the cultural traditions and the requisite historical ambience. Information was

provided on the interactions between tourism and the use of natural hot springs (onsen) in Japan and raises greater awareness about the potential and the magnitude of hot spring use for health, wellness and recreational tourism in Japan. Today Japanese onsen enjoy an unabated popularity and the beneficial effects of thermal bathing are recognised by most Japanese.

CHAPTER 7
Discussion and Findings

7.1 INTRODUCTION

This thesis has explored and analysed the role of natural hot and mineral springs in health, wellness and recreational tourism. The findings presented here are the result of using several qualitative research methods which included a meta-analysis of literature pertaining to hot spring use worldwide (Chapter 2), two representative case studies (Chapter 5, Chapter 6), observations made at various hot spring locations and interviews with key representatives of the hot spring tourism industry, as well as with visitors at hot spring destinations.

7.1.1 Chapter Outline

The content of this presentation is guided by the research aim and objectives, which constitute the theoretical framework for this thesis. A conceptual model (Figure 1.3) was developed to assess the role of natural hot and mineral springs in health, wellness and recreational tourism. Findings from the current research have shown that natural hot and mineral springs play an important part in health, wellness and recreational tourism, although this is not covered in depth in the academic tourism literature. The findings of this study are summarised here and the research objectives addressed in sequence. Findings from the interview questions are presented under Research Objective 2.

This is followed by interpretation and discussion of the findings into the social and cultural complexity of the hot spring tourism phenomenon and the demographic background and physical settings associated with hot spring environments. The findings from the different research methods are triangulated to reduce the likelihood of misinterpretation (Denzin & Lincoln, 2000; Flick, 2004; Stake, 2000). Patterns of hot spring use have been established and a discussion of differences and similarities contributes to the knowledge base on hot spring tourism. The limitations encountered during the research process have been considered respectfully and further illustrate the current gaps in this field of tourism research.

7.1.2 The Purpose of the Study

The purpose of this research was to assess the role of natural hot and mineral springs in health, wellness and recreational tourism. The conceptual model of their role in health, wellness and recreational tourism is supported by the research findings. The results contribute to knowledge about natural hot and mineral springs as a tourism resource and will

support and add value to the current discussions about health, wellness and medical tourism as an area of increasing importance in international tourism. Because the role of natural hot and mineral springs in health, wellness and recreational tourism is currently underreported and academic research in this field is still limited, the findings add to the theoretical knowledge base of this particular field of tourism. The research findings are also an important contribution to closing a gap in the tourism literature by contributing essential references and by addressing the limitations identified in the meta-analysis.

7.1.3 The Research Methods Revisited

Research methods are tools for data collection and analysis (Jennings, 2001) in the form of specific research techniques (Silverman & Marvasti, 2008), which can include participant observation as a data collection technique (Yin, 2003; Platt, 1992), case studies as empirical enquiry to investigate a contemporary phenomenon within its real-life context (Yin, 2003), as well as semi-structured interviews and literature reviews. A research approach using several qualitative methods to collect a wide range of data was used in this study to achieve reliable results. The methods included a comprehensive review of the academic literature (meta-analysis) pertaining to the use of natural hot and mineral springs and two case studies of hot spring use in Japan and Germany. The meta-analysis of the literature has shown that the majority of publications referring to health and wellness spa tourism do not provide detailed assessments on the extent of hot spring use by tourists, customer motivations or the actual effects of the therapeutic and medicinal use of hot springs, but are more a visual type of literature designed primarily for marketing purposes. It was therefore essential to analyse a wide range of literature related to natural hot and mineral springs and establish a connection to health, wellness and recreational tourism.

To collect data for the case studies representative hot spring destinations were visited to observe and to gather information about individual facilities, cultural traditions, infrastructure and other components of hot spring tourism at these destinations. A brief description of the demographical background and the physical settings associated with hot spring environments of the two case studies takes into account the variables specified by the model. The case studies findings draw on the historical and the contemporary settings of natural hot and mineral springs as a tourism resource in Germany and Japan. The underlying geology and the diversity of socio-cultural settings contribute to the understanding of the hot spring tourism in these two contrasting countries. Despite the cultural, geographical and geophysical contrasts between these two countries, similarities exist in some medical

traditions. Similarities were also discovered between many other hot spring destinations, with a main focus on the tectonic activity that can influence the existence of natural hot springs. Other parallels relate to the way how hot springs were originally discovered, which frequently happened with the help of animals, regarded by the Japanese as messengers of the gods (Altman, 2000). Paired with a global reputation for healing purposes natural hot and mineral springs are without doubt integrated in health, wellness and recreational tourism wherever access allows their exploitation and inclusion in destination development.

Interviews can be conducted in three different ways: structured, semi-structured and unstructured (Fontana & Frey, 2005), with unstructured interviews selected as one of the qualitative research methods for data collection in this thesis (Zhang & Wildemuth, 2009). Researchers using unstructured interviews often hold a constructivist world view and may design their studies within an interpretive research paradigm (Denzin, 1989). Unstructured interviews can be a way to understand the complex behaviour of people (Punch, 1998) and are further clarified by Patton (2002) as a naturally occurring extension of observing people in their environment. Zhang and Wildemuth (2009) confirm that unstructured interviews rely solely on interactive conversation, which generates additional questions. Unstructured interviews are also determined by the socio-cultural criteria of the research environment. It involves understanding enough of the local language to be able to communicate as effectively as possible to understand the meanings of a specific cultural context (Minichiello et al, 1990; Fife, 2005).

Unstructured interviews are especially effective when attempting to find patterns or generate models and due to their conversational and generally non-intrusive approach, they can be used in most social settings to collect information (Zhang & Wildemuth, 2009). Although unstructured interviews may be considered by some researchers as random and lacking a direct focus because they do not rely on pre-determined questions, this type of interview cannot be carried out without substantial prior knowledge of the study environment (Patton, 2002). To make sense of a particular study setting the researcher has to take an approach whereby the perspective of the person interviewed is closely observed (Denzin, 1989) and understood. The merit of unstructured interviews lies in the conversational style, which allows for response to situational changes (Patton, 2002) while they can generate detailed information and thus assist in the understanding of a certain phenomenon (Zhang & Wildemuth, 2009). Good listening skills are required during the conversation and the ability to create subsequent questions immediately (Patton, 2002).

A number of semi-structured interviews with key representatives of the hot spring industry (e.g. managers and staff of health resorts and spas at hot spring destinations) were carried out as well as informal discussions with visitors at hot springs (Table 7.9). Focus groups, special interest groups as well as workshops at conferences were attended as part of the research. Both countries' case studies assess the role of natural hot and mineral spring use in tourism and highlight the traditions and customs related to hot spring use.

7.1.4 Analysis and Triangulation of Research Findings

The analysis of the findings has identified patterns and common elements (Merriam, 1998) which were described in the previous section. The recognition of common threads required a number of steps such as reviewing, categorising, evaluating and comparing of raw data (Neuman, 1997) to facilitate an interpretation of the emerging patterns and meanings. As a validation strategy triangulation is a recommended method to reduce the likelihood of misinterpretation (Denzin & Lincoln, 2000; Flick, 2004; Stake, 2000) and to ensure that research is interdisciplinary and holistic (Olsen, 2004) by using multiple sources of evidence (Yin, 2003). To combine data from a number of research methods with data from different research settings the process of triangulation clarifies meaning by identifying different ways in which the phenomenon is being viewed and to achieve a higher degree of validity (Flick, 1998; Sarantakos, 1998; Silverman, 1993; Stake, 2000). Data should be triangulated from at least three different perspectives on the same research topic (Somekh & Lewin, 2005) to see whether they corroborate one another (Silverman & Marvasti, 2008). Yin (2003) recommends the use of triangulation to support the facts for example of case studies by several sources of evidence and warns about using isolated data sources. Visual data such as photos can be triangulated with verbal data to create greater potential of verification (Flick, 2004). Yin's (2003:99) advice *is 'to collect information from multiple sources, but aimed at corroborating the same fact or phenomenon'.*

The research for this thesis employed several data collection methods (Figure 7.1), which allowed for triangulation of the research results for bringing the collected information and methods of analysis together (Jennings, 2001). Although it is true that historical analysis may provide only limited reliable evidence of past events, in the case of the research aim and the objectives addressed in this thesis the past use of natural hot and mineral springs for health, wellness and recreation has been confirmed and supported by historical and contemporary sources of evidence. The triangulation process in this thesis was based on historical evidence, on a meta-analysis of the literature and on two case studies as the main sources of

information, which were supported by semi-structured interviews with key representatives from the hot spring based health, wellness and recreational tourism industry as well as with visitors to selected sites. Data from all information sources were combined in this way to develop and enhance the overall understanding of the research objectives as outlined in Chapter 1 (Figure 7.2).

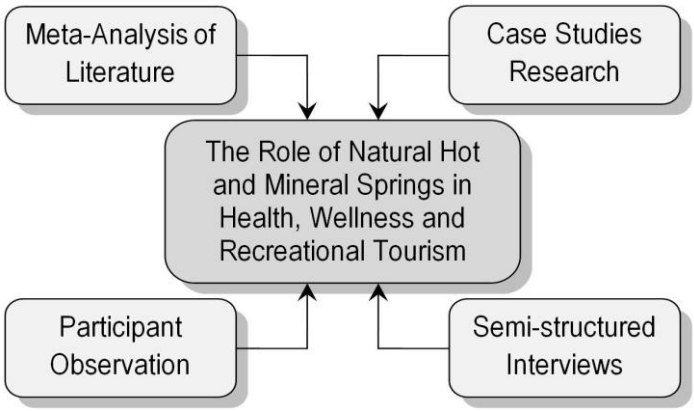

Figure 7.1 (Figure 3.5) *Data collection methods and a proposed triangulation model for this thesis (Author, 2011).*

The findings are based on the convergence of information from different sources (Jennings, 2001; Yin, 2003) with triangulation assisting in the comprehensive analysis of the role of natural hot and mineral springs in health, wellness and recreational tourism.

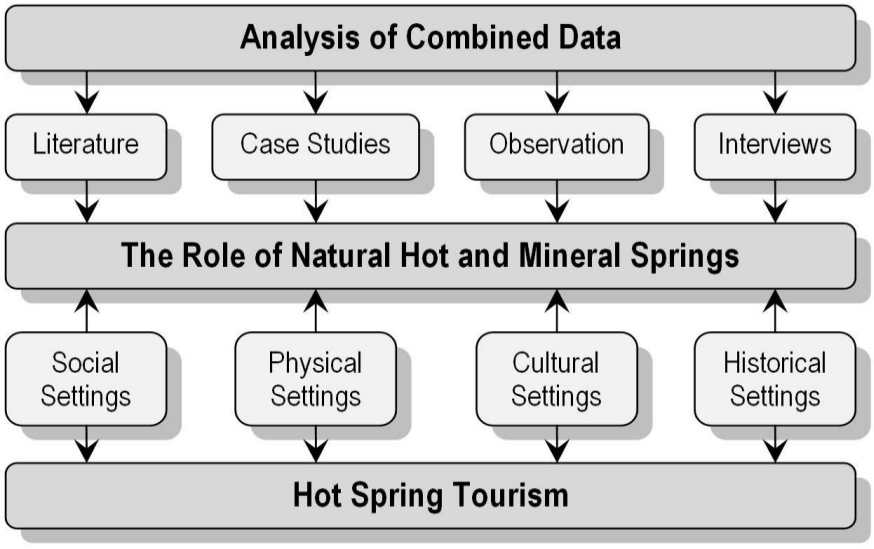

Figure 7.2 (Figure 3.6) *Data analysis concept for this thesis (Author, 2011).*

The diverse data sources enhanced the evaluation of the research phenomenon of natural hot and mineral springs through triangulation (Neuman, 1997; Huberman & Miles (2002).

7.2 INTERPRETATION AND DISCUSSION OF THE FINDINGS

The research identified the interrelationships between natural hot and mineral springs and health, wellness and recreational tourism. The key to defining these areas is the conceptual model which was used to assess the role of hot springs for health, wellness and recreational benefits as well as the extent to which people engage in their use at hot spring destinations. The following core findings emerged in the analysis of the combined data associated with hot springs as a tourism resource (Table 7.1), with further results presented here under the individual research objectives. Collectively these findings fill the current gap in the literature and contribute knowledge on the role of natural hot and mineral springs in tourism.

7.2.1 Summary of Key Findings

This section summarises the key findings of the study, which support the conceptual model of natural hot and mineral springs as an important resource for the tourism industry, especially for the health, wellness and recreational tourism sectors in many countries. The findings suggest that hot springs considerably influence destination development, are important components in marketing strategies and cater for a significant consumer demand.

Table 7.1 *The key findings address the overall research aim to 'assess the role of natural hot and mineral springs in health wellness and recreational tourism'.*

Key Findings
1. Hot spring tourism is rarely mentioned in the academic literature – significant gap
2. If mentioned it is frequently with a Euro-centric view, not acknowledging other parts of the world
3. Worldwide occurrence of geothermal resources in the form of hot and mineral springs
4. Hot springs are directly related to different tourism sectors (health, wellness, recreation)
5. Hot springs are seasonally independent
6. Hot springs are used as an alternative health resource
7. High awareness of therapeutical value from natural mineral content
8. Part of the natural environment (demand for nature-based tourism)
9. Unique natural resource
10. Sustainable/renewable resource if not over-exploited
11. Hot spring tourism is popular with all age groups

The key findings also highlight the two main limitations encountered during the research process, which identified not only a gap in the tourism literature related to health, wellness and recreational tourism at hot spring destinations, but also to a lack of acknowledgement of hot spring destinations outside Europe. Although the scientific literature identifies the benefits of natural hot and mineral springs and recommends their potential use in balneology, there is only the occasional connection made to the tourism industry based on hot springs. Variables considered in this research relate to the socio-cultural and geological

nature of natural hot and mineral springs and the history of their use, as well as to the contemporary use of hot springs in health, wellness and recreational tourism.

7.2.2 Research Objective 1: Development of a model which can be used to assess the role of natural hot and mineral springs within health, wellness and recreational tourism

The validity of the conceptual model (Figure 7.3), which takes into account the distinctive characteristics of hot spring environments as a natural resource for health, wellness and recreation in many countries, was verified throughout the research process. The correlations between the individual components of the model, such as hot spring settings (socio-cultural and environmental), historical and cultural use, customs and traditions as well as medical recognition, confirmed the important role of natural hot and mineral springs in the development of health, wellness and recreational tourism destinations.

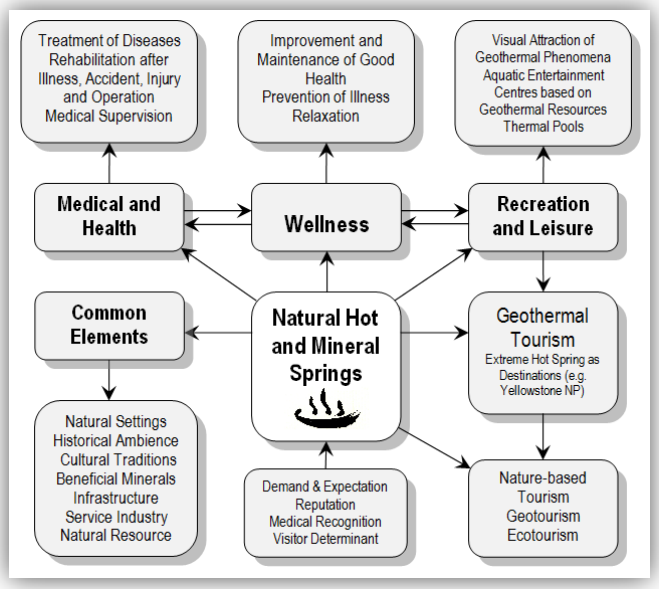

Figure 7.3 (Figure 1.3) *Graphic representation of the conceptual model which can be used as a model to assess the role of natural hot and mineral springs in tourism (Author, 2011).*

This model looks at how the presence of natural hot and mineral springs contributes to and affects the development of tourist destinations. Information collected from the literature, case study research, observations at hot spring destinations as well as interviews was tied into a conceptual model to measure the variables to see how they interact within the tourism industry. The findings from the model confirmed the importance of natural hot and mineral springs as a tourism resource with hot spring tourism defined as follows:

> *'Hot spring tourism (geothermal tourism) involves a visit to a destination, location, attraction or facility that takes advantage of geothermal resources in the form of natural hot and mineral springs' (Author, 2011).*

Hot spring tourism can be further described as a function of the demand for natural resources in the form of hot and mineral springs with a reputation for health benefits obtainable at destinations with the relevant infrastructure in combination with an agreeable climate and preferably surrounded by natural environment. The development of a tourist destination frequently incorporates natural hot and mineral springs where this is feasible to do so in a sustainable manner. The findings relating to the interaction of natural hot and mineral spring within the health, wellness and recreational tourism sector are consistent with the model, which outlines how the components of hot spring tourism relate to each other. This will be further detailed in the following sections; the findings related to Research Objective 1 are summarised in Table 7.2.

Table 7.2 *The findings responding to the first research objective are consistent with the conceptual model.*

Research Objective 1 – Findings concurrent with the Conceptual Model
1. Hot springs are used in health, wellness and recreational tourism 2. Treatment of diseases under medical supervision 3. Rehabilitation after illness, accident, injury or operation 4. Improvement and maintenance of good health 5. Prevention of illness 6. Relaxation and stress relief 7. Visual attraction of extreme hot springs (e.g. geysers) 8. Aquatic entertainment centres based on hot springs 9. Geothermal tourism, geotourism, ecotourism 10. Hot spring destinations are catering for a demand 11. Visitor expectations of health and wellbeing 12. Medical recognition of curative value of mineral rich hot springs 13. Hot spring s are a visitor determinant 14. Shared elements between health, wellness and recreational tourism: natural settings, historical ambience, cultural traditions, beneficial minerals, infrastructure, service industry, natural resource

The conceptual model was applied successfully to the case studies of Germany and Japan (Chapters 5 and 6) and has been effective in assessing and evaluating the role of natural hot and mineral springs in health, wellness and recreational tourism in these countries. Following the model the role of natural hot and mineral springs was assessed by exploring their distinctive characteristics as a tourism resource. All variables of the model have been used to assess and evaluate the role of natural hot and mineral springs in health, wellness and recreational tourism in Germany and Japan. The medical and health aspects are catered for by the provision of facilities for rehabilitative care; especially for patients recovering from accidents, injuries or operations as well as from a large number of other health conditions

(Table 5.3 and 6.5). The wellness aspect is serviced by preventive care with the aim to improve or maintain good health and it is not uncommon, that frequently wellness is either more pro-medical or connects stronger with recreational aspects depending on individual destinations and customer demand. Recreational and leisure activities are commonly catered for at hot spring destinations which can include aquatic entertainment centres and hot spring theme parks, but also restaurants, theatres, casinos and retail opportunities. The findings present evidence that hot spring destinations in Germany and Japan share a number of common elements as identified in the proposed model including natural settings, beneficial minerals, historic spa architecture, service industry and infrastructure and support the results for the individual research objectives.

7.2.3 Research Objective 2: Identification of settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism

The findings of this study have revealed the existence of natural hot and mineral springs in most countries worldwide, that they are generally recognised as a unique tourism resource, are part of the natural environment and seasonally independent. They cater for a well established demand for health, wellness and nature-based tourism recreational tourism (Table 7.3).

Table 7.3 *Findings related to settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism.*

Research Objective 2 – Findings
1. Natural hot and mineral springs are used worldwide as a tourism resource
2. Hot springs are integrated predominantly in health, wellness and recreational tourism
3. Hot spring destinations are catering for a demand for natural environments
4. Hot springs are an integrated part of complementary and alternative medicine (CAM)
5. Hot spring based therapies are supported by the medical profession in many countries
6. Hot springs can be used on a daily basis where these are available
7. They are part of the natural environment and frequently protected by legislation in ecologically sensitive areas as a unique natural resource
8. Large internet presence for the marketing of hot spring destinations
9. Suitable to complement every spa type

The findings in connection with Research Objective 2 became apparent initially during field research at representative hot spring locations, where traditions of hot spring use were explored. The research results were supported by data from the literature and during interviews with representatives from the hot spring industry as well as with other visitors, who shared their hot spring experiences at various locations. Most importantly the findings suggest that due to their seasonal independence natural hot springs for health and wellness

are frequently combined with other tourist attractions (cultural, historical) and leisure activities (e.g. skiing, hiking, water sports) to appeal to visitors of all age groups, genders and socio-cultural backgrounds all year round (Observation, pers. com.).

For example Pamukkale's (Turkey) spectacular sinter terraces, which are flooded by hot spring water (Figure 4.3), are mainly a visual tourist attraction, but they are combined with the ancient city of Hierapolis and together represent a UNESCO World Heritage Site. Further attractions of the ancient city of Hierapolis are the remains of the Roman Bath as well as the 'sacred' thermal pool with a reputation for healing waters, which is constantly fed by natural hot springs and is littered beneath the surface with fragments of ancient marble columns destroyed during earthquakes. This clearly shows how integrated natural hot springs are in tourist settings, which can also include cultural and natural World Heritage with the option of using hot springs as well as enjoying their unique visual appeal. Hierapolis-Pamukkale is an outstanding example of the close connection of natural hot springs and ancient architecture and attracts approximately 2.5 million people every year.

Findings from the current research have also shown that natural hot and mineral springs are a renewable resource which can be sustained if not over-exploited, but managed responsibly. An initial concern of this research was the possibility that natural hot and mineral springs would be increasingly superseded by other forms of water-based spa treatments as development of their health and wellness sub-sector intensifies. However, where this is feasible, new health resort and spa developments aim to include natural hot springs as a unique selling point, showing their importance to the industry. For example the Peninsula Hot Springs on the Mornington Peninsula south of Melbourne, Australia offers natural hot spring water and has become a popular destination for local visitors and for tourists because of this (Pers. observation).

Existing spa facilities also explore the possibility of accessing natural hot springs (e.g. Glacier Hot Pools, New Zealand, email communication, 2009) to increase the success of their facilities and to save the energy needed to heat the water for the hot pools. Other water based attractions such as swimming pools can also be maintained more economically if geothermal water can be used. To further advance the findings related to Research Objective 2 interviews with key representatives from the hot spring industry as well as interviews with visitors at hot spring destinations are summarised here.

Interviews with Key Representatives from the Hot Spring Industry

The findings gained from semi-structured interviews with key representatives from the hot spring industry at different destinations also supported the importance of natural hot and mineral springs for health, wellness and recreational tourism. Questions were selected from the following list according to the individual interview situation (Table 7.4).

Due to the number of listed questions the findings from the semi-structured interviews with key representatives of the hot spring tourism industry are summarised collectively instead of individually, although specific responses have been used to illustrate more important points. In response to the first three questions the findings show that in the case of existing facilities this information is often found in the promotional brochures or internet sites for marketing and promotional reasons. New facilities in Australia for example have recently been based on a demand for hot spring pools for recreation and health purposes (e.g. Peninsula Hot Springs). The capacity varies with demand – some hot spring health resorts and spas are developing in stages to keep up with growing customer numbers. In the meantime there may be waiting lists due to excessive demand. Marketing of facilities or destinations increasingly takes place on the internet and all respondents maintain websites with essential information about their hot spring facility (Questions 4 and 5). In relation to visitor numbers most hot spring operators reported a growing demand due to an increasing awareness of personal wellness and lifestyle changes to achieve health improvements (Question 6).

Table 7.4 *List of questions for semi-structured interviews with representatives from the hot spring tourism industry.*

Interview Questions - Staff/Managers at Natural Hot Spring Destinations	
11. How did the facility initially start? 12. What is the capacity of the facility? 13. Are they catering for a demand? 14. How do they market their facility? 15. Do they have a website? 16. Visitor numbers – are they satisfactory? 17. What is their greatest attraction? 18. Combined with other spa services? 19. What is the average time of stay? 20. Where do their visitors/guests/patients/clients come from – do they travel far? 21. Is the business viable? 22. If yes – why? 23. If no – why not? 14. Where is the water i sourced from (naturally flowing spring or drilled well)? 15. What is the temperature range?	16. What is the pH level of the spring water? 17. What is the mineral content? 18. What is the flow rate of the hot spring water? 19. What sort of replacement pattern do they use (water circulation)? 20. Are there any restrictions placed on the exploitation of the hot spring/resource through environmental legislations? 21. Do they have trained medically staff? 22. Beneficial for which diseases? 23. Are they conducting any clinical trials on benefits from hot and mineral springs? 24. What proof is there for success rate? 25. What are the house rules on bathing customs (Swimsuit or not)? 26. What are their future plans?

Individual facilities offer a wide range of features and treatments to attract visitors. The main attraction however are natural hot and mineral springs if these can be made available to the guests of health resorts and spas. Hot springs are generally combined with as many additional attractions and activities to encourage visitors to stay longer. These attractions frequently include cultural heritage sites, national parks, entertainment, sports, regional cuisine (e.g. food and wine), theme parks and retail opportunities. Apart from external attractions health resorts and spas expand into different types of alternative health treatments and activities including yoga, nutrition, massages, beauty therapies and educational advice on lifestyle choices (Questions 7 and 8).

The variations in settings, usage, culture and extent of development can be represented on a continuum (Figure 7.4), which illustrates the transition from undeveloped wilderness hot springs to highly developed multipurpose facilities as well as purely visual destinations due to extreme temperatures.

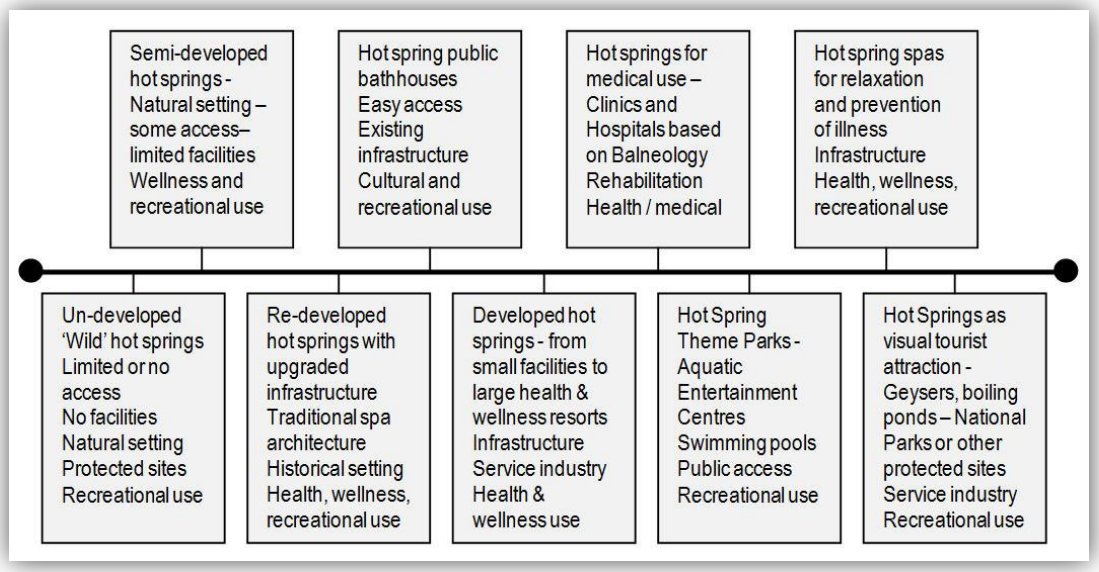

Figure 7.4 *A continuum depicting the possible transitions from undeveloped natural hot spring settings to highly developed hot spring destinations (Author, 2011).*

The average time of stay (Question 9) cannot be generalised as hot spring facilities vary greatly and while three weeks are recommended for a German (medical) hot spring spa this is not comparable with a hot spring resort that caters for weekend or day visitors (e.g. Spa Resort Hawaiians, Japan). The origin of visitors ranges from local residents to international travellers (Question 10). In Japan the majority of hot spring tourists are of domestic origin (app. 95%), whereas in Iceland for example the majority of tourists visiting the geothermal Blue Lagoon are of international origin. The attraction of clients or tourists determines the

overall viability of hot spring facilities, while those leaning more towards the health and medical side depend greatly on the qualifications and expertise of medical professionals available, a good reputation for mineral rich natural hot springs as well as a high success rate for rehabilitation after illness, accident and/or injury (e.g. German Kurklinik; Japanese Onsen Hospitals).

According to the feedback from industry experts natural hot and mineral spring facilities/destinations are as viable as any other business under good or bad management (Questions 11 to 13). However, the interest in natural hot spring destinations in combination with other attractions is encouraging for further investment to upgrade and expand (or *to further invest into upgrades and expansions*) (e.g. Peninsula Hot Springs, Australia; Hanmer Springs, New Zealand; Yufuin Hot Spring Resorts, Japan; Mývatn Nature Baths, Iceland; Bath Spa Thermae, UK; Bad Bevensen Kurklinik, Germany). Facilities based on natural hot and mineral spring that cater more for the wellness and recreational side have the definite advantage of the continuing/ongoing wellness trend, which is reaching more and more people through widespread promotion and marketing. This greater awareness of taking control of personal health improvement through rest and relaxation at a hot spring destination is supported very much by the media, especially web-based advertising.

A set of the important questions (Questions 14 to 19) looked at the origin of hot spring water at the research sites. There are distinct differences based on the geophysical conditions of the location. The majority of hot springs are found in areas of tectonic activity such as active volcanic environments, fractures in the rock and fault lines. However, a great number of natural hot springs at high temperatures emerge from artesian basins deep underground (e.g. Great Artesian Basin (GAB), Australia; Guarani Aquifer, South America). These groundwater reservoirs can provide equally hot and mineral rich springs as do active volcanic areas. A distinctive difference is how the water arrives on the surface; many hot springs emerge under pressure following cracks in the subterranean rocks or rise along fault lines. Sometimes earthquakes can cause hot springs to emerge or to stop flowing. But in many cases hot water is difficult to access and drilling into the ground and pumping it to the surface is necessary. This is a costly exercise, but due to the demand for hot spring facilities wells can be found in many countries to supply tourist destinations with authentic hot spring water (e.g. Japan, New Zealand and Germany). The temperature range of hot springs depends on the source and the requirements. For bathing and medical treatments temperatures between 25 to 48^{o}C are employed, the latter in Kusatsu, Japan (Chapter 6). There is a general consensus that water below 25^{o}C cannot be classed as a hot spring, but

also that higher temperatures have to be cooled down, which is done either by using traditional methods (Yumomi at Kusatsu Onsen) or modern technology. The addition of cold tap water is also practiced, although rejected in Japan as ruining pure hot spring water.

The pH level of water refers to the degree of its acidity or alkalinity, and in the case of hot springs the findings revealed a surprising range, with the lowest level used for bathing and health treatments around pH 1.4 (Tsukahara Onsen, Japan) and pH 1.6 (Kusatsu Onsen, Japan). For comparison vinegar has a pH level of 2.0, pure water is neutral at pH 7.0 and seawater is slightly alkaline at pH 8.0. Despite the high acidity of the above mentioned hot springs people trust in their curative powers and seek benefits in particular for skin conditions. Hot spring operators and visitors alike pointed towards the health benefits from acidic water as a determinant of visits to certain hot springs. The mineral content hot spring water is another very important feature at hot spring facilities and although visitors may not be aware which minerals and trace elements are beneficial for particular health conditions, almost every person interviewed was aware that such benefits may be gained from this water (Tables 2.1 and 2.1).

Part of the viability of hot spring destinations and facilities relies on the flow rate of the hot spring water. If the flow rates are low, inconsistent or unsustainable this rules out large scale hot spring developments such as for example the Spa Resort Hawaiians (Japan), which uses up to 11.5 million litres per day to cater for 6.7 million visitors per year (until the Great East Japan Earthquake of March 2011). The concern after large scale earthquakes is the potential loss of existing hot spring sources due to movement underground shutting natural conduits for the spring water to rise to the surface, and this is what happened to Spa Resort Hawaiians. Another example to demonstrate the importance of a high natural flow rate is Kusatsu Onsen, which claims the highest flow rate of hot spring water in Japan with a total volume of natural discharge at over one hundred (100) discharge points reaching approximately 32,000 litres per minute or over 46 million litres per day. The Polynesian Spa in Rotorua (New Zealand) reported 5 million litres hot spring water per day, Aachen (Germany) 3.5 million litres, Budapest (Hungary) 70-80 million litres, the Blue Lagoon (Iceland) 21.6 million litres while in contrast the Portuguese spa city Caldas da Rainha has to be content with ‘only’ 400,000 litres per day.

The pattern of water replacement (Question 19) varies widely. In Japan it is essential that natural hot spring water is not recycled, but continuously replenished on a flow-through basis (kakenagashi). Any chemical addition to hot spring water is not acceptable to the majority of onsen connoisseurs. This is in contrast to destinations where cold mineral spring

water is heated and chemically treated and then promoted as hot mineral spring water. In many areas it is also necessary to additionally heat lower temperature 'hot spring' water which usually necessitates the addition of chemicals to meet the required hygiene standards. This may be a reason why many people prefer natural hot springs. In countries with abundant hot spring water sources it is seldom necessary to recycle the water or chemically treat it to extend the time before it needs to be replaced, but this effectively depends on the availability of high flow rates, the maintenance cost involved and local legislation as well as cultural preferences. The visual aspect was mentioned frequently with reference to the more inviting look of a clear blue swimming pool compared to the sometimes dark and murky appearance of natural hot spring pools. Cultural preference and traditional acceptance vary from country to country with Japan preferring the natural look for a 'real' onsen bath.

Government legislation controls the water rights in most countries and larger developments must seek permission to access and extract natural resources (Question 20). For example the Peninsula Hot Springs (Australia) are accessing hot spring water from a groundwater reservoir via a drilled bore from a depth of 637 metres. According to government planning laws the volume of extraction is limited to maintain the natural water level in the aquifer for the future. Rotorua's (New Zealand) access to hot spring resources has been affected in the past by over-exploitation and has required strict regulation of private use. In South America Argentina and Uruguay are blaming each other for draining the Guarani Aquifer through excessive extraction to supply new large scale developments of hot spring based aquatic entertainment parks on both sides of the border. On the other hand, in Japan and Taiwan for example a Hot Spring Law regulates the use of geothermal resources to maintain a sustainable supply for the future. Countries such as Germany also use government legislation to control water extraction and quality for health resorts and spas. Any restrictions imposed have to be strictly adhered to and non-compliance attracts penalties under the respective environmental protection policies.

One of the most important aspects of hot spring facilities is the qualifications of staff (Questions 21). This is of great consequence especially in medical facilities, where professional health practitioners (doctors, nurses, therapists etc) are in control of patients who need to rehabilitate after illness, accident or injury. Depending on the type of hot spring facility individual respondents from the hot spring tourism industry reinforced this point and confirmed their own commitment to a team of qualified staff. This is important not only for the health/medical side, but also for the wellness and recreational sector as repeat visitors

based on a high quality service experience are valued and because satisfied customers generate more business.

The findings revealed that the list of health conditions (Question 22), which can be treated with balneotherapy, is surprisingly long (compare Tables 5.6 and 6.5). This was confirmed in semi-structured interviews with representatives from different hot spring facilities; however, even contrasting hot spring settings in different countries collectively agreed on the type of health conditions commonly known to be treatable with hot spring therapy, including rheumatism, arthritis, skin diseases, stress management, general aches and pains and prevention of illness through strengthening the immune system by taking regular hot spring baths. The findings in response to questions 23 and 24 refer to clinical trials that confirm that medical hot spring facilities (clinics, hospitals) are actively participating in research to prove the value of natural minerals in hot spring water and to clarify the effects of thermal treatments (e.g. Blue Lagoon, Iceland; National Hot Spring Hospitals, Japan; Health Resorts (Kurklinik), Germany) on health conditions. The Blue Lagoon for example, in cooperation with the Icelandic Health Authorities is successfully treating severe cases of Psoriasis in a combination of silica rich warm mineral water with UV therapy. Psoriasis sufferers from all over the world travel to Iceland to benefit from this unique treatment option; however, only Icelandic patients are covered by the Icelandic Health Insurance system.

House rules on bathing customs vary depending on the facility (Question 25). In Japan the rules are clear, strict and part of cultural traditions. For foreigners these are supplied in several languages, namely in English, Chinese, Korean and Russian to encourage an enjoyable hot spring experience. From observation Iceland and Germany insist on showers before entering hot spring pools, so do facilities in New Zealand and Australia. Again this depends on the state of development and the size of the facility, although it is generally expected by visitors that they share a hot spring bath only with clean individuals.

The last question (26) enquired about plans for the future of a number of hot spring facilities. The general response was optimistic with a confident assessment of future options. Some were planning to expand in stages to increase the size of their facilities (e.g. Peninsula Hot springs, Australia), others were in the actual process of expanding (Blue Lagoon and Mývatn Nature Baths, Iceland) and some have undergone extensive modernisation and reconstruction in recent times to meet the demand (e.g. Kaiser-Friedrich-Therme Wiesbaden, Germany). The findings regarding future plans of hot spring facilities at sites visited for interviews and observation were optimistic and based on the growing awareness among consumers that health improvements can be achieved if combined with positive lifestyle choices. Natural hot

and mineral springs are therefore an important resource for health, wellness and recreational destinations, recognised by operators and visitors alike.

Interviews with Visitors at Hot Spring Destinations

The following findings emerged from interviews with visitors at different hot spring destinations. Interview questions were selected from a prepared list according to the individual situation and the person interviewed (Table 7.5). In the case of visitors at hot springs in a natural setting the questions differed from the ones asked patients of medical spa facilities or visitors at hot spring resorts. Public pools or recreational centres fed by natural hot springs were opportunities for observation and informal interviews and were randomly carried out. The findings emerging from these settings usually resulted in comments about the benefits of hot springs for health and wellbeing, why and how often they are visited, any preferences about a particular location and whether other hot springs elsewhere have been visited. It emerged that many people develop a preference for hot springs and seek them out wherever they travel (pers. communication).

Table 7.5 *List of questions for semi-structured interviews with visitors at hot spring destinations.*

Interview Questions - Visitors
1. How do they like a particular hot/mineral spring location?
2. How did they find out about the place?
3. Are they visiting or local?
4. Are they visiting on their own or with company (friends/family)?
5. How often do they visit this place if they are regular visitors?
6. Are they visiting for recreation or to benefit their health?
7. How do they like the water (temperature, feel of it,)?
8. Have they heard of a special reputation or are they aware of a reputation for potential healing/curative value?
9. Do they prefer a natural setting or resort style hot spring facilities?
10. Have they noticed any positive effects (health improvements) or special benefits from using hot springs?
11. Have they ever noticed any negative effects from hot spring bathing?
12. Have they been to any other hot spring destination?

While carrying out field research at different destinations tour guides were asked for information about local hot springs, what they know about them and whether they take tourists to them (e.g. in Iran, Indonesia, Turkey). Travelling in Asian countries also provided the opportunity to ask local villagers about nearby hot springs, whether they are used and if so, for what purpose. Occasionally they are used by local people only, but generally visitors are welcome. The responses from visitors are detailed below:

Q 1: In response to question one *(How do they like a particular hot/mineral spring location?)* most respondents declared that they like the location they were presently visiting. Occasionally, in very natural settings, some respondents were hoping to see more facilities in the future such as change rooms and toilets (Kerosene Creek, New Zealand; Mataranka Hot Springs, Australia), but without destroying the natural aspects of the environment;

Q 2: Question two *(How did they find out about the place?)* related directly to the setting. In the case of a natural or 'hidden' hot spring (e.g. Hebinyu – Beppu, Japan), it was usually 'Word Of Mouth' (WOM) that caused a visit of the location. In case of a developed hot spring facility it was generally a combination of WOM through friends and family, and hard copy marketing/promotional material or an internet search;

Q 3: This question *(Are they visiting or local?)* again depended on the location. However, generally it can be said that natural or undeveloped hot springs are originally frequented by local residents, who may bring along friends, who tell their friends, etc. The percentage of locals compared to non-locals is difficult to determine, unlike at health resorts and spas, where the majority of visitors are non-residents;

Q 4: *(Are they visiting on their own or with company (friends/family)?)* The vast majority (90 % +) were visiting either with friends, family or their spouse. This again depends on the location with variations in percentage according to the setting and age group;

Q 5: *(How often do they visit this place if they are regular visitors?)* Regular visitors in Iceland for example use hot springs on an almost daily basis. So do the Japanese and it is therefore difficult to assess the tourism aspect, but regular visits in Germany would refer to an annual holiday spent at a certain hot spring health resort or spa. Regular visits in other countries could refer to weekly or monthly visits, depending on the logistics. The critical question that arises is whether all hot spring visitors can be classed as tourists or whether this depends on a certain distance travelled from home and if so, how and by whom this distance is determined (future research needed);

Q 6: *(Are they visiting for recreation or to benefit their health?)* The majority of natural hot and mineral spring users/visitors expect some form of benefit for their health. However, the main expectation is to find relaxation and stress relief in a natural environment. Any additional improvement in their health and wellbeing is considered a bonus. This is in contrast to patients of hot spring hospitals or rehabilitation clinics, where the expectations for health improvements dictate their stay with strong emphasis on rehabilitation after accident, injury or post-operational trauma;

Q 7: *(How do they like the water e.g. temperature, how it feels?)* Hot springs are generally appreciated at around body temperature and warmer than the ambient temperature. This however depends on the season of the year because in a cold climate water temperatures are expected to be higher to feel comfortable. It became clear in the findings that natural hot springs at lower temperatures (below 30^{o}C) do not attract as many visitors and additional heating is necessary at some hot spring resorts. However, temperatures can vary at the source depending on the tectonic activity underground. In Japan this depends on volcanic activity in some regions, which affects the water temperature noticeably (Pers. observation);

Q 8: *(Have they heard of or are they aware of a reputation for potential healing or curative value?)* The majority of respondents were aware of health benefits due to the mineral content of natural hot springs and had heard various reports/stories about someone's health being restored or improved. This awareness generally creates expectations for personal health benefits and none of the respondents was concerned of negative effects from hot spring bathing;

Q 9: *(Do they prefer a natural setting or resort style hot spring facilities?)* A large percentage (approximately 80%) preferred a natural environment when visiting a hot spring (e.g. Peninsula Hot Springs and their special endeavour to create a natural setting). This was the response from hot spring visitors to many countries including Iceland, New Zealand, Japan, Germany, Indonesia, Australia, South Africa, Hungary, and Turkey. This has encouraged the majority of hot spring destinations to develop natural landscape features around hot spring pools to cater for this demand;

Q 10: *(Have they noticed any positive effects (health improvements) or special benefits from using hot springs?)* The overwhelming majority of respondents (95%) indicated that bathing and soaking in natural hot springs has been beneficial for their health and wellbeing. Medical treatment based on mineral rich hot spring was generally lauded as beneficial, both for physical as well as for mental health and wellbeing;

Q 11: *(Have they ever noticed any negative effects from hot spring bathing?)* None of the respondents could think of negative effects during or after hot spring use. A few comments were received about a strong sulphur smell, which adhered to the skin for days after using a particularly sulphur rich hot spring in New Zealand;

Q 12: *(Have they been to any other hot spring destinations?)* The majority of the respondents described at least one other hot spring they had visited. Many people develop a preference for hot springs and seek them out wherever they travel.

These responses also confirm the elements of the conceptual model.

7.2.4 Research Objective 3: Establishment of the historical development of hot springs as destinations for tourism

The use of natural hot and mineral springs as thermal spas and health resorts has global roots and dates back to the earliest civilisations. The historical use of hot springs has been extensive in many countries and a comparison of hot spring locations has shown that these were considered places of healing and recreation in most parts of the world since ancient times (Appendix 4.1).

The findings (Table 7.6) of the history review (Chapter 4) confirm the integration of natural hot and mineral springs into health, wellness and recreational activities for many centuries, in some countries for several thousand years. The history of hot spring use also shows that a wide range of illnesses were treated with mineral rich waters, confirming the lasting reputation for curative power of natural hot springs. As a result, many original hot spring towns and spas are still in existence today; often with new facilities developed around the antique remains of the original hot springs.

Table 7.6 *Findings related to the historical development of natural hot springs as destinations for tourism.*

Research Objective 3 – Historical Findings
1. Worldwide use throughout recorded history (and very likely before as well) 2. Long history of medical and cultural use (health, wellness and recreation) 3. Ancient and traditional spa architecture 4. Preference for the ambience of traditional spa heritage (e.g. Kurhaus in Baden Baden, Pumproom in Bath, Bathhouse in Rotorua) 5. Hot spring history is rich in mythology and legends 6. Similarities of hot spring use in many countries

In addition to the historical aspects the findings document the magnitude of hot spring use worldwide and provide references for the origins of hot spring use. The historical background of natural hot and mineral spring destinations was assessed based on examples from a number of countries (37), which reveal an age-old reputation for medical benefits and a heritage of traditional spa destinations. The findings of the historical review highlight the different settings of hot spring destinations and provide a reference for the history of natural hot and mineral spring use.

Although the first human interactions with natural hot and mineral springs cannot be reliably documented due to lack of written records, it is understood that their use started in

prehistoric times and was passed on from one generation to the next. The reputation of hot springs for health, wellness and recreational benefits can be traced back several thousand years in countries, where written records were kept by Chinese, Greek and Roman scholars. Throughout history the most popular places for rest and recreation were those with access to natural hot and mineral springs and where health resorts with treatment facilities were available. For example during the pre-Hippocratic period (5^{th} – 6^{th} centuries BC) medicine was practiced at the temples of Aesculapius, which were purpose-built near hot and mineral springs (Katsambas & Antoniou, 1996), which confirms one of the key findings that the Romans were NOT the first users of natural hot and mineral springs in Europe, although hot spring use is frequently attributed to them. The maximum documented timeframe backed up by written records or oral communication (Appendix 4.1) is dated back to approximately 3000 BC; however, substantiating this was difficult at many locations due to conflicting dating systems and unreliable textual sources.

The findings from the historical review have contributed relevant information confirming the importance of natural hot and mineral springs in health, wellness and recreational tourism and their value for destination development over time. The extent of the historical use of natural hot and mineral springs clearly shows that the history of natural hot spring use has worldwide origins and dates back to the earliest civilisations. The findings compiled for this research also provide a detailed reference of the diverse origins of hot spring use.

7.2.5 Research Objective 4: Determine the cultural context of hot springs as a tourism resource

The cultural environment, which determines individual traditions at hot spring destinations, was analysed with different settings used as examples. The findings in response to Research Objective 4 examine and document the cultural aspects at hot spring destinations and provide references for their cultural use (Table 7.7). The analysis of the cultural background of natural hot and mineral spring use has included representative examples from a number of countries (37), which were assessed on the basis of their reputation for medical benefits, accessible historical records, their traditional ambience, as well as their cultural associations. The findings of the historical review highlight the different settings of hot spring destinations and provide a reference for the history and the cultural use of natural hot and mineral springs in these countries. The continuing traditional and cultural aspects of hot and mineral spring use have been documented and the research objectives were addressed as detailed below. The cultural use of natural hot and mineral springs has been extensive on a global basis.

Geothermal resources have been utilised by people since ancient history and developed over several thousands of years to the establishments we see today in many countries.

Table 7.7 *Findings related to the cultural context of natural hot springs as a tourism resource.*

Research Objective 4 – Cultural Findings
1. Traditional connection between natural hot springs and religion 2. Strong beliefs worldwide in the 'sacredness' of natural hot and mineral springs 3. Unique socio-cultural traditions related to natural hot springs 4. Legends and mythology are used to promote hot spring destinations 5. Similarities in traditions related to natural hot springs in many countries

Throughout the Asian region traditions of hot spring bathing developed around natural geothermal resources. However, the findings within the cultural context indicate with certainty, that the use of natural hot and mineral springs has global roots dating back to the earliest civilisations. Individual peoples developed and used their hot springs in ways most suitable to their socio-cultural needs. Ancient customs and cultural traditions related to the use of natural hot springs are still important at many destinations (e.g. Japan). Clark (1999) indicates that the Japanese had a tradition of ritual bathing at the end of the Yayoi Period around 297 AD, which was mentioned in the 'History of the Kingdom of Wei'. However, it remains unclear whether this referred to the use of natural hot and mineral springs or the general use of water for religious purification purposes, although Sekioka and Yoshi (2000) argue that there may be evidence indicating that bathing in natural hot and mineral springs was practiced as early as 6000 years ago at Lake Suwa (Nagano prefecture) where ruins of ancient settlements have been excavated (Erfurt-Cooper & Cooper, 2009). In Japan the attendance at shrines, temples and their associated onsen was commonplace in the past (Ashkenazi, 1993; Plutschow, 1996) and onsen tourism in the form of religious pilgrimage has flourished in Japan for centuries (Cooper et al, 2008).

During the collection of data it became obvious that religion, mythology and legends played a significant role in the history and culture of hot spring use. Many traditions and customs were based on the spiritual importance of natural hot and mineral springs and frequently these were placed under the 'divine protection' of a patron saint. Altman (2000) notes that the importance of drinking mineral water and bathing in hot springs for health and wellbeing was emphasised by early Greeks like Homer, Hippocrates (460-377 BC) and Asclepios (Aesculapius). Sources of water were in Greece usually linked to the divinities of the earth, and temples dedicated to Asklepios were also offering thermal baths (Melillo, 1995). During the pre-Hippocratic period (5th – 6th centuries BC) medicine was practiced at Asclepeia, the temples of Aesculapius, the god of medicine. The treatment was carried out by the priests

who were in charge of the temples, which were purpose-built near hot and mineral springs (Katsambas & Antoniou, 1996).

While it is difficult to assign reliable dates related to the historical use of hot springs in India, in many areas natural hot springs are associated with deities, which indicates that people have known about these natural resources for a long time. Legends disseminated by pilgrims refer to natural hot springs and temples located close together (Chandrasekharam, 1995), which corresponds with similar discoveries in Greece, Germany, Japan and UK. Baden (Austria) was primarily set up as a geothermal bathing facility for the Roman military with altars built near the springs (Baden Austria, 2010), which were dedicated to various divinities. The sulphuric springs were attributed with curative powers and visitors showed their gratitude for successful treatments through devotion to individual gods and goddesses (Erfurt-Cooper & Cooper, 2009). Natural hot and mineral springs with therapeutic properties have been used in Spain as religious centres and sites for pilgrimages since ancient times with different cultures including the Romans and the Arabs, leaving a legacy of thermal developments (Ledo, 1996). The spa town *Abano* in north-eastern Italy is one of Italy's best known health resort destinations based on the local natural hot springs. Traces of history indicate that the hot springs of this area were already used around the 9th century BC, when they were considered to have been of religious and cultural importance.

Similarities in Traditions

The city of Bath in southern England has a long tradition of natural hot spring use and for centuries has been a centre of religion, healing and pilgrimage (Bowman, 1998; Haley, Snaith & Miller, 2005) although the establishment of a more sophisticated bathing complex including temples did not happen until the year 70 AD (White, 2000).

In New Zealand natural hot and mineral springs were traditionally used by the Māori (c1100 AD) from the beginning of their settlement. They thought that certain geothermal pools had spiritual guardians, which made the hot springs central to important rituals (Swarbrick, 2006). Similarly, the Australian Aborigines knew about the Helidon springs for thousands of years and the local tribes regarded them as sacred (Anon, 1910; Pearn & Little, 1998) and although no written records exist, the natural hot springs are mentioned in the Indigenous dreamtime legends.

In the United States, Canada and Latin American countries the local native tribes used natural hot springs for health and ceremonial purposes (Table 4.3). The native Indians of

North America accepted natural hot and mineral springs as sacred places and believed in their healing powers. Most major hot springs in the United States have historical records of local tribes using natural hot springs for rituals and ceremonies (Frazier, 2000).

During the 18th and 19th centuries the hygienic aspects of bathing were endorsed as an important cultural element for health and wellness in Europe and hot spring destinations became the places to go and to be seen (Ascensio, 2002) after the hot spring bathing was banned in some European countries by religious leaders. This is in contrast to the approval of hot springs as sacred sites in many regions worldwide.

The cultural findings compiled for this research consequently provide a valuable reference about the different cultural aspects of hot spring destinations.

7.2.6 Research Objective 5: Recognition of the medical benefits of natural hot and mineral springs

This analysis of the role of natural hot and mineral springs has shown that they have been considered places of healing and recreation in many countries since ancient times. Their mineral content and its beneficial properties are still widely recognised as a source of health and wellbeing and are often now included in alternative natural health treatments. A high awareness related to the therapeutical value of hot and mineral springs was also found to be common throughout the literature and among interview respondents.

Table 7.8 *Findings related to the Recognition of the Medical Benefits of Natural Hot and Mineral Springs.*

Research Objective 5 – Medical Findings
1. Widely recognised benefits for health, wellness and recreation
2. Minerals contained in natural hot springs are beneficial for health and wellness
3. General expectation of health benefits from hot spring use
4. No negative side effects if used responsibly
5. Hot and mineral springs are part of complementary and alternative medicine (CAM)
6. Respected by the medical profession in many countries
7. Health/medical treatment using hot spring therapy or balneology is carried out by specialised medical practitioners under professional supervision in many countries
8. Clinical trials and research into hot spring treatment by specialised doctors
9. Health resort and spa medicine is an important part of the hot spring tourism sector
10. Hot springs are integrated in rehabilitation centres, specialist clinics and hospitals
11. Protected by legislation as a natural resource that can be used for medical treatment (e.g. Taiwan, Japan, Germany)

In relation to Research Objective 5 the benefits of natural hot and mineral springs for health and wellness are not only recognised in the medical tourism scene, but also sought after for

recreational use. Depending on the country the emphasis of use is either more therapeutical (rehabilitation and cure) or recreational (wellness, maintenance of good health and prevention of illness). The attributes and benefits of natural hot springs are currently being marketed to the health and wellness industry and to individual customers as beneficial for health, wellness and recreation, because they are considered as a significant drawcard by the health resort and spa industry. Where this is possible natural hot springs are being developed for tourism as a result.

The attitude towards hot springs for medical purposes does however vary in different countries. In Europe the use of natural hot and mineral springs is generally integrated into the health system and supported by the medical profession based on clinical studies and success rates. In the USA hot springs are not accepted as a valid medical cure, but are used for recreational purposes, including in the beauty therapy industry. Government policies and regulations in countries like Japan and Taiwan also indicate strongly that natural hot springs are an important part of the national health system and provide evidence for their role in health wellness and recreational use. However, in the tourism literature until very recently, despite the fact that the medical research analysed in this chapter reflects a positive attitude of the medical profession towards the use of natural hot and mineral springs, the connection to tourism is generally missing.

7.2.7 Interpretation of Findings from Individual Hot Spring Sites

Table 7.9 describes the research processes and findings derived from an analysis of results from individual hot spring locations in relation to their use. The most important points are listed in the Table. The numbers in brackets refer to the number of semi-structured interviews with industry representatives and visitors of hot springs carried out over several years. The interviews with representatives from the hot spring industry amount to a total of 119 including Japan. Interviews with visitors of hot springs amount to a total of 478 with an additional 200+ from Japan due to the long time spent researching hot spring tourism in that country.

Table 7.9 *Data collected from individual research sites.*

	Hot Spring Location	Information Source Interview/Observation	Findings
1	**Peninsula Hot Springs**, Mornington Peninsula, VIC, Australia	Discussions with manager C. Davidson over several years, Semi-structured interviews with staff and visitors (5 and 30+) Pers. Observation Photographic evidence for visual database	Newly developed natural hot spring facility catering for health and wellness, expanding to cater for growing demand, co-branding with nearby golf course as additional attraction, indoor and outdoor pools at different temperatures (36-43°C), therapeutic benefits for many health conditions, extensive landscaping, idyllic setting for relaxation, sustainable development approach, geothermal

			skin products, spa treatments, many themed bathing experiences, bathhouse, private pools, day spa, restaurant and retail outlet
2	**Mataranka Springs** and **Bitter Springs**, N.T. Australia	Semi-structured interviews with visitors (33) Pers. Observation Photographic evidence for visual database	Natural hot spring pools with access via boardwalk (Mataranka), paved area around hot spring bathing pool, no facilities, crocodile warning signs, repeat visitors, well-known must-see destination, visitors commenting on the health benefits from bathing in the springs
3	**Katherine Springs**, Australia	Semi-structured interviews with visitors (26) Pers. Observation Photographic evidence for visual database	Artesian bore water, mainly used by locals, picnic area, undeveloped, no facilities, theft warning signs
4	**Moree Spa Baths, Moree Hot Artesian Pool,** Moree, NSW Australia	Semi-structured interviews with staff and visitors (3 and 9) Pers. Observation Photographic evidence for visual database	Many elderly visitors of European origin familiar with health benefits from natural hot spring water, advertised as 'Fountain of Youth' (45^{o}C) and 'Spa Capital' of Australia, several pools at different temperatures, hotels offer hot artesian pools as well, reputation for curative power
5	**Mii Spa, Warnambool**, Australia	Semi-structured interviews with visitors (6)	Natural hot spring water relaxation and water therapies, located within hotel complex
6	**Innot Hot Springs**, Australia	Semi-structured interviews with visitors (14) Pers. Observation Photographic evidence for visual database	Promoted as health and leisure (caravan) park, in the process of being renovated, healing powers of hot springs advertised, hot river next to caravan park, temperature up to 78^{o}C
7	**Artesian Baths**, Lightning Ridge, Australia	Semi-structured interviews with visitors (2)	Artesian bore water pools, popular for relaxation, mineral rich water therapeutic for aches and pains, 42^{o}C and 24 hour free access, good facilities
8	**Polynesian Spa** – Rotorua, New Zealand	Semi-structured interviews with staff and visitors (2 and 11) Pers. Observation Photographic evidence for visual database	Acidic and alkaline volcanic hot springs, pools outdoor and under cover, 38-42^{o}C, private pools, promoted as 'Thermal Experience', constant replenishing of hot water, therapeutic properties for many health conditions, mud therapies, used by local Maōri for centuries, geothermal by-products, mud packs etc, souvenir shop, alkaline springs are cooled by adding cold tap water, health, wellness and socialising
9	**QE Health**, Rotorua, NZ	Email correspondence with manager and visitors (1 and 4) Pers. Observation Photographic evidence for visual database	New Zealand's No 1 healing mineral spa, public rehabilitation facility, treatment centre for arthritis and chronic pain, balneotherapy with natural hot and mineral spring water
10	**Hells Gate WaiOra Spa**, Rotorua, NZ	Semi-structured interviews with staff and visitors (3 and 7) Pers. Observation Photographic evidence for visual database	Geothermal reserve, advertised as the most active geothermal park in NZ, sulphur baths, public and private mud baths, (beauty) spa treatment, geothermal (cosmetic) mud products, cultural events, criticised by some visitors for being overpriced and overrated
11	**Kerosene Creek**, Rotorua, N Z	Semi-structured interviews with visitors (40+) Pers. Observation Photographic evidence for visual database	Natural, undeveloped hot spring fed creek, no facilities, theft and rubbish appear to be an increasing problem, danger of amoebic meningitis
12	**Hanmer Springs Thermal Pools & Spa**, Hanmer Springs Alpine Village, NZ	Semi-structured interviews with staff and visitors (4 and 20) Pers. Observation Photographic evidence for visual database	Surrounded by natural landscape, well-developed facilities, spa (beauty) treatments, sports massage and detox, restaurant, souvenirs
13	**Glacier Hot Pools**, NZ	Email correspondence with manager and visitors (1 and 3)	One of the facilities that is not using natural hot springs although the name may initially imply that, according to the manager there are plans to investigate access to natural hot spring water as heating of glacier water with gas is too expensive
14	**Blue Lagoon**, Iceland	Semi-structured interviews with staff and visitors (6 and 70+) Pers. Observation Photographic evidence for visual database	'Geothermal Spa' in a unique volcanic environment, 5000m^2 bathing area (37-39^{o}C), 400,000+ visitors annually, recent expansion of facilities due to growing demand, health clinic specialised in Psoriasis treatment using geothermal seawater, advertises a world of healing power, wellness and beauty, geothermal skin care products, restaurant, retail outlet
15	**Mývatn Nature Baths**, Iceland	Email discussions with manager and semi-structured interviews with visitors (1 and 24)	5000m^2 bathing lagoon fed by geothermal water, opened in 2004, has expanded since including new restaurant, geothermal skin products

		Pers. Observation Photographic evidence for visual database	
16	**Laugardalslaug** (Public Swimming Pools) Reyjkavik, Iceland	Semi-structured interviews with staff and visitors (2 and 12) Pers. Observation Photographic evidence for visual database	Thermal landscape with wide temperature range, meeting place to catch up with friends (and foreign visitors), public pools in Reykjavik have on average 3 hot tubs fed by geothermal spring water close to other attractions
17	**Haukadalur Geyserfields, Namafjall**, Iceland	Semi-structured interviews with staff and visitors (2 and 60+) Pers. Observation Photographic evidence for visual database	Must-see geothermal phenomena, visual attraction only due to extreme temperatures of the springs and boiling mud pools, organised tours, part of trip agenda, geotourism and ecotourism, combined with visits to important cultural sites and other natural attractions (e.g. 'Golden Circle', a popular tour includes Haukadalur, the famous waterfall Gulfoss and the national park Þingvellir
18	**Bath Spa Thermae**, Bath, UK	Personal tour and interview with the manager of the newly renovated Bath Spa Thermae Semi-structured interviews with other staff and visitors (3 and 5) Pers. Observation Photographic evidence for visual database	England's only genuine hot spring (33.5°C), completely re-developed health and wellness facility based on Celtic and Roman history, café and restaurant, spa shop, open-air rooftop pool (compare Suginoi Hotel, Japan)
19	**Gellért Baths and Spa,** Budapest, Hungary	Semi-structured interviews with staff and visitors (1 and 7) Personal Observation Photographic evidence for visual database	Historical hot spring spa , medicinal water, traditional architecture, 118 natural hot springs in Budapest, one of the original spa cities of Europe
20	**Kiraly Fürdo,** Budapest, Hungary	Semi-structured interviews with staff and visitors (1 and 2) Pers. Observation Photographic evidence for visual database	Monument of Ottoman architecture, medicinal bath, language problems
21	**Thermal Hotel Margitziget** and **Danubius Health Spa Resort,** Budapest, Hungary	Semi-structured interviews with staff and visitors (1 and 3) Pers. Observation Photographic evidence for visual database	Therapy and wellness centres, thermal baths with mineral rich healing waters, hotel spas, co-branding with cultural attractions
22	**Auvergne**, France, ten (10) thermal Spas including **Volvic** and **Vichy**	Semi-structured interviews with visitors (4)	Numerous volcanic hot springs including Vichy (30 different springs), Mont Dore, Volvic, Chaudes Aigues developed into health, wellness and recreational destinations many centuries ago, thermal spa treatments, geothermal skin care product line, co-branding with volcanic heritage, winter sports, water sports, golf, hiking
23	**Aeoloian Islands Sicily** and **Volcano,** Italy	Discussion with PhD colleague and semi- structured interviews with visitors (1 and 15) Pers. Observation Photographic evidence for visual database	Volcanic hot springs, medicinal waters, thermal caves, healing benefits from volcanic mud treatment for Psoriasis, co-branding with historical places such as former Greek, Arab and Roman baths near Palermo or Taormina
24	**Ischia, Bay of Naples,** Italy	Semi-structured interviews with tour guide and visitors (1 and 7) Pers. Observation	Volcanic hot springs (Mt Vesuvius on mainland), healing waters and health spas, used on the past by Greeks and Romans, thermal hotels, thermal treatment centres, thermal parks, co-branding with ancient architecture and beach access
25	**Soltau Therme Vitadrom Health & Wellness Centre**, Germany	Semi-structured interviews with staff and visitors (2 and 13) Pers. Observation Photographic evidence for visual database	Natural warm saline springs for health, wellness and recreation, healing properties, health therapies by qualified staff on referral by physician as outpatients (no accommodation), apart from thermal bathing a wide range of wellness spa treatments
26	**Saline Thermal Baths 'Salü',** Lüneburg, Germany	Semi-structured interviews with staff and visitors (3 and 11) Pers. Observation Photographic evidence for visual database	Natural saline (4% salt content) spring water (up to 36°C), developed into facilities for health (outpatient treatment), wellness, fitness and fun, family oriented, whirlpool, waterslide, artificial wave pool and geysers, 'Aquatainment', health & fitness programs, restaurant & salad bar
27	**Bad Bevensen**, several hospitals and 'Kur' clinics, Germany	Semi-structured interviews with staff and visitors (5 and 30+) Pers. Observation Photographic evidence for visual database	Natural iodine-saline spring water (3% salt content, 32°C) used as natural remedy for rehabilitation and prevention, certified as therapeutic hot springs, relaxing thermal baths, combined therapeutic and medical services, aquatic fitness training, constantly updated facilities throughout the spa

			city to meet the demand
28	**Kaiser Friedrich Therme** (KFT), Wiesbaden, Germany	Semi-structured interviews with staff and visitors (1 and 3) Pers. Observation Photographic evidence for visual database	Wiesbaden has 26 natural hot springs, spa facilities are mainly based on Roman bathing culture to cater for wellness and relaxation, KFT states clearly the origin (Adlerquelle) and the temperature (66°C) of the hot spring water
29	**Claudius Therme,** Cologne, Germany	Semi-structured interviews with staff and visitors (1 and 7) Pers. Observation Photographic evidence for visual database	Claims healing water, but does not make a reference to the source temperature which is usually a sign that the water is heated, provides health benefits, relaxation and rejuvenation
30	**Baden Baden,** Germany	Semi-structured interviews with visitors (6) Pers. Observation Photographic evidence for visual database	2000 years of tradition as town of spa resorts, 12 hot springs with therapeutic power, many health conditions are treated by bathing, drinking and inhalation, international reputation, promoted are health, wellness and cultural highlights, shopping and international events
31	**Ojo Caliente,** New Mexico	Email correspondence with manager of Ojo Caliente (1)	Mineral spring resort and spa, unique retreat with sulphur-free volcanic hot springs (26-43°C), ancient source of healing, classed as sacred by native tribes for centuries, health and wellness, relaxation, stress relief, whisper zone for peace and quiet in, combined with beauty spa
32	**Nisyros** (Dodecanese Islands), Greece	Semi-structured interviews with tour guides and visitors (2 and 20) Pers. Observation Photographic evidence for visual database	Volcanic crater springs (boiling) for visual attraction, healing sulphur springs at Loutra and Mandraki (30-60°C), others along the coast, all are known for their therapeutic properties, co-branding with volcano tourism including visits into the semi-active crater
33	**Pendulum Cove Hot Springs,** Deception Island, Antarctica	In-depth interviews/discussions with visitors who travelled to Antarctica on cruise ships (5)	Visual attractions include the volcanic beach with hot spring water seeping out of the sand, used by cruise ship passengers for a soak for its uniqueness and as photo opportunity, deemed the highlight of the trip and a must-see destinations, wildlife - penguins
34	**Pamukkale,** Turkey	Semi-structured interviews with tour guides, resort staff and visitors (3 and 12) Pers. Observation Photographic evidence for visual database	World Heritage listed sinter (travertine) terraces, hot springs (average 35°C) have ancient reputation for healing, attract people for health reasons to the 'sacred' pools above the travertine cliffs, co-branding with ancient ruins of Hierapolis which represents the cultural side of the World Heritage area
35	**Karahayit,** Turkey (5km from Pamukkale)	Semi-structured interviews with tour guides and visitors (2 and 4) Pers. Observation Photographic evidence for visual database	Red travertine springs, boiling and rich in iron, smaller version of the white travertine terraces of Pamukkale, visits are usually part of trip agenda and tourists are taken there after visiting Hierapolis and the famous white hot spring terraces, used mainly by locals for health and wellness
36	**Abe Garm Larijan,** Hot Springs of Damavand, Iran	Semi-structured interviews with tour guides and visitors (2 and 5) Pers. Observation Photographic evidence for visual database	Volcanic springs with therapeutic qualities mainly located around the volcano, protected as National Heritage, hot springs are used for public baths and thermal treatment for skin conditions, combined with hiking and trekking tours to Mt Damavand
37	**Beitou Hot Springs,** Taiwan (North)	Semi-structured interviews with spa staff, driver, resort staff and visitors (5 and 12) Pers. Observation Photographic evidence for visual database	Volcanic hot springs (37-40°C), predominantly large 'hot spring hotels', many hot springs were developed under Japanese occupation, co-branding with cultural sites and national parks, extreme hot springs (100°C) at the Geothermal (Hell) Valley, visual attraction only
38	**Kintamani Hot Springs,** Bali, Indonesia	Semi-structured interviews with tour guides, drivers, resort staff and visitors (6 and 16) Pers. Observation Photographic evidence for visual database	Volcanic hot springs near Mt Batur (active), reputation for curative powers, legends of miraculous healing, generally included in trip agenda and combined with activities (cultural, sport, sightseeing), resort facilities for wellness and recreation
39	**Poring Hot Springs,** Borneo (Malaysia)	Semi-structured interviews with resort staff, drivers, tour guides (5) Pers. Observation Photographic evidence for visual database	Sulphuric water with healing powers, hot spring pools, 50-60°C, covered soaking areas, mainly used by locals and domestic tourists, frequently included to visits to Kinabalu Park, originally set up under Japanese occupation (compare Beitou), accommodation available, also a 'fish massage' spa is located nearby (compare Kangal, Turkey)
40	**South Africa**	Discussions with other PhD student (E. Tschibalo) and his supervisor Email correspondence with M. Boekstein, author of a book about hot springs in South Africa (3)	Natural hot and mineral springs are widely recognised for their therapeutic benefits, health and wellness resorts close to nature, emphasis on natural environment, family friendly, combined with spiritual retreats, discussions about hot spring development in South Africa

41	**Tsukahara Onsen,** Mt Garandake, Beppu, Japan	Semi-structured interviews with staff and visitors (2 and 40+) Pers. Observation Photographic evidence for visual database	Volcanic hot springs strongly acidic (pH1.4), recognised as medicinal bath for treatment of skin conditions, used by locals and visitors of the area, boiling mud pool as visual attraction in the volcano crater, legend refers to injured animals healing their wounds in the springs
42	**Yufuin,** Japan	Semi-structured interviews with manager of facilities, staff and visitors (8 and 70+) Pers. Observation Photographic evidence for visual database	Volcanic hot springs for bathing and drinking, hot lake in town centre (Lake Kinrin), public onsen around the lake, many traditional hot spring inns (ryokan), open-air baths with mountain view, classed as top health resort destination, 'hot spring fish' treatments available now, annual hot spring festival, cultural attractions linked to hot springs, promoted as the 'Leading Hot Spring Resort of Japan'
43	**Spa Resort Hawaiians,** Yumoto, Japan	Semi-structured interviews with staff and visitors (4 and 20+) Pers. Observation Photographic evidence for visual database	Aquatic theme park based on natural hot springs, mainly recreational facility, including beauty salon, massage centre, aquatic exercise, European style bathhouse, traditional Japanese bathhouse, family friendly with water slides, stage performances, many restaurants and retail outlets, surrounded by large hotel complexes, awaiting re-opening after Great East Japan Earthquake
44	**Takegawara Onsen,** Beppu, Japan	Semi-structured interviews with staff and visitors (2 and 100+) Pers. Observation Photographic evidence for visual database	Public hot spring bathhouse, famous tourist attraction of Beppu, clear and odourless volcanic hot spring baths, temperature depends on the weather (42-57°C), traditional atmosphere, hot spring steam baths, mud baths, unique indoor sand baths
45	**Myoban Hot Spring Area,** Beppu, Japan	Semi-structured interviews with staff and visitors (12 and 150+) Pers. Observation Photographic evidence for visual database	Sulphur rich hot springs located in the Myoban Onsen area, onsen facilities throughout the suburb, reputation for effective treatment of a range of health conditions, hot spring mud baths, small straw thatched huts are used for Yunohana or Myoban (minerals for bathing) production, history of producing medicinal bath powders for nearly 300 years, seasonally independent, special food items cooked in steam (e.g. eggs, vegetables, cake), compulsory stop for tour buses, restaurants, retail outlets
46	**Beppu Jigoku,** Japan	Semi-structured interviews with staff and visitors (10 and 200+) Pers. Observation Photographic evidence for visual database	Jigoku (Hell in Japanese) are extreme hot springs, located in the city of Beppu in 10 individual small thermal parks, geothermal features are boiling ponds in different colours, spouting geysers, bubbling mud pools, foot spas, restaurants, retail outlets, geothermally heated greenhouse, food cooked in hot spring steam, some jigoku offer onsen for bathing as many locations have access to clusters of hot springs at varying temperatures
47	**Toyako Onsen,** Lake Toya Hokkaido	Semi-structured interviews with staff and visitors (2 and 25) Pers. Observation Photographic evidence for visual database	Hot spring resort town with 3 million visitors annually, many attractions and activities based on the local hot springs and the nearby active volcanoes and surrounding protected areas and national historic sites.

The collective findings on the role of natural hot and mineral springs in health, wellness and recreational tourism resulting from the semi-structured interviews and personal observation carried out between 2007 and 2009 during field research (Table 7.9). They are consistent with the key findings from the meta-analysis (Chapter 2) and the case study findings (Chapters 5 and 6) (Table 7.1). These findings include evidence for the worldwide occurrence of natural hot and mineral springs, their direct relationship to health, wellness and recreational tourism, their seasonal independence and their worldwide use as an alternative health resource. The semi-structured interviews and personal observations also confirm the findings summarised in Tables 7.2, 7.3, 7.6, 7.7 and 7.8.

7.3 CONTRIBUTION TO KNOWLEDGE

Research into the use of natural hot and mineral springs and their role in tourism is timely and supports the current international discussions about health, wellness and medical tourism as an area of increasing importance in international tourism. This thesis closes the identified gap in the academic tourism literature (Chapter 2) by contributing to the understanding of the role and importance of natural hot and mineral springs in tourism with special consideration to the health and wellness sector. The thesis presents a comprehensive analysis and assessment of the interactions between tourism and the use of geothermal resources such as hot springs and raises awareness about the current size and the future potential of hot spring use on a global basis. In doing this the research undertaken for this study provides new data to document the magnitude of hot spring based tourism including the health resort and spa sector and offers a new perspective in the discussion of health, wellness and recreational tourism as well as a reference for the historical and cultural use of hot springs worldwide.

These major contributions are summarised in the conceptual model (Figure 7.3 above), which can be used for the assessment of the role of natural hot and mineral springs in health, wellness and recreational tourism in other geophysical, geographical, social and cultural contexts. This contribution to knowledge about the role of natural hot and mineral springs in tourism is a powerful tool and supports and adds value to the current discussions about health, wellness and medical tourism as an area of increasing importance in international tourism.

7.4 LIMITATIONS OF THE STUDY

As with any research project there have been some limitations, which have affected the scope of the study. These are:

1. Previous theoretical contributions. While general publications cover health resorts and spa destinations in a stylish magazine context, a lack of academic information relating to the role of natural hot and mineral spring and their therapeutic value especially for health and wellness tourism is apparent. The use of natural hot and mineral springs in health, wellness and recreational tourism has so far received limited attention from tourism researchers. The academic research available in health, wellness and recreational tourism also predominantly reflects a Euro-centric or North American view with the remainder of the world rarely recognised. Although a selection of existing academic literature refers to the use of natural hot and mineral springs for health purposes (Pratzel & Schnizer, 1991; Weisz, 2001) and to

their medicinal properties (Högl, 1980; Bar-On, 1989; Nahrstedt, 2004; Pratzel & Schnizer, 1991), most previous research has neither been global in its approach, nor has it tried to compare and evaluate the different types of natural hot and mineral springs and their applications within different divisions of tourism including health and wellness. This imposed a significant limitation on the review of previous theoretical contributions for this thesis.

2. Historical accuracy. The maximum timeframe which can be documented and backed up by reliable records (Appendix 4.1) appears to reach back to approximately 3000 BC, although substantiating this has proven difficult at some locations due to conflicting dating systems and unreliable textual sources. In general however, the evaluation of existing records indicates that the use of natural hot and mineral springs has global roots and a long time-frame, so this was considered only a minor limitation to the present study.

3. Overabundance of hot springs. Due to the worldwide occurrence of natural hot and mineral springs, itself a comment on Finding 1 above, only some of the more important destinations could be selected for this thesis. These were carefully chosen to give as much geographical, social and cultural coverage as possible.

4. Missing connection to tourism in science literature. Although the scientific research identifies the geophysical and mineralogical factors of natural hot and mineral springs and recommends their potential use in balneology, there is only the occasional connection made to the tourism industry based on hot springs, thus limiting the available theoretical and practical literature for the thesis.

5. Missing connection to tourism in medical literature. Despite the fact that the medical research analysed in this thesis reflects a generally positive attitude of the medical profession towards the use of natural hot and mineral springs, the connection to tourism in the medical literature is generally missing. Again, this fact limited background research for this study;

6. Language restrictions. A minor limitation in reviewing the relevant medical research was the fact that, while countries with a longstanding medical acceptance of balneology based on natural hot and mineral springs publish in English, many journal articles and research papers on other locations are published in other languages. Given the researcher's familiarity with a number of these languages, this was not considered to be very important;

7. Lack of reliable data. A difficulty was experienced in the form of reliable data for the hot spring tourism industry, because there is no conceptual separation between health, wellness

and recreational tourism with and without natural hot springs. Also, annual reports of the spa industry and tourist organisations are only accessible at considerable cost per report and only brief and inconclusive abstracts are made available for private researchers. This puts limits on the use of published demographic and industrial data which had to be overcome through the use of semi-structured interviews.

7.6 SUMMARY

This thesis has described, interpreted and discussed the findings derived from a number of triangulated qualitative research methods (Jennings, 2001; Yin, 2003). The following research aim and objectives were addressed:

1. To develop a conceptual model to aid in assessment the role of natural hot and mineral springs within health, wellness and recreational tourism;
2. To identify settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism;
3. To explore the historical development of hot springs as destinations for tourism;
4. To determine the cultural context of hot springs as a tourism resource; and
5. To investigate the recognition of medical benefits associated with natural hot and mineral springs.

The findings presented in this chapter are therefore the result of several qualitative research methods including a meta-analysis of literature on hot spring use worldwide (Chapter 2), two representative case studies (Chapter 5, Chapter 6), personal observations made at various hot spring locations and semi-structured interviews with key representatives of the hot spring tourism industry, as well as with visitors at hot spring destinations.

The content of the presentation was guided by the research aim and objectives, which constituted the theoretical framework for this thesis. A conceptual model (Figure 7.3) was developed to investigate the role of natural hot and mineral springs in health, wellness and recreational tourism, and to assess the individual components of this role in line with Research Objective 1. The findings from this research have shown that natural hot and mineral springs play an important part in health, wellness and recreational tourism, although this is not covered sufficiently in the academic tourism literature.

The research objectives were addressed in sequence in presenting the findings. Those from the interview questions were presented under Research Objective 2, which was followed by interpretation and discussion of the findings to share insights into the social and cultural complexity of the hot spring tourism phenomenon and to illustrate the demographic background and physical settings associated with hot spring environments in accordance with Research Objectives 3 to 5. The findings from the different research methods were triangulated to reduce the likelihood of misinterpretation (Denzin & Lincoln, 2000; Flick, 2004; Stake, 2000). Patterns of hot spring use were established and a discussion of differences and similarities contributed to the knowledge base of hot spring tourism. A brief reference to the limitations encountered during the research process has illustrated the current gaps in this field of tourism research.

The results contribute to the knowledge about natural hot and mineral springs as a tourism resource and will support and add value to the current discussions about health, wellness and medical tourism as an area of increasing importance in international tourism. Because the role of natural hot and mineral springs in health, wellness and recreational tourism is currently underreported and academic research in this field is still limited, the findings add an important dimension to the theoretical knowledge base of this particular field of tourism. The research findings are also an important contribution to closing a gap in the tourism literature by contributing essential references and by addressing the limitations identified in the meta-analysis.

The case studies representing hot spring destinations provided specific information about individual facilities, cultural traditions, infrastructure and other components of hot spring tourism at these destinations taking into account the variables specified by the model and drew on the historical and the contemporary settings of natural hot and mineral springs as a tourism resource in Germany and Japan. Despite the cultural, geographical and geophysical contrast between these two countries, similarities were discovered in some medical traditions. Similarities were also observed between many other hot spring destinations, including geophysical aspects, ways of original discovery, and a global reputation for healing powers. Natural hot and mineral springs were found to be integrated in health, wellness and recreational tourism wherever access allows their exploitation and inclusion in destination development.

CHAPTER 8
Conclusion

8.1 INTRODUCTION

This thesis has examined the role of natural hot and mineral springs in health, wellness and recreational tourism. Hot spring tourism includes visiting destinations where natural hot and mineral springs are a key tourist attraction and has been underreported in the academic literature. Hot spring tourism caters for a demand by visitors who rely on the beneficial mineral content of natural hot springs for the purpose of improving their health, but also for tourists with an interest in the visual effects of geothermal phenomena associated with hot springs. Hot spring tourism has strong links to nature-based tourism, but also maintains a focus on the historical and the cultural heritage related to the use of natural hot and mineral springs. The uniqueness of natural hot springs frequently makes them protected sites such as national parks (e.g. Yellowstone National Park, USA) or recognised as World Heritage (e.g. Pamukkale, Turkey). Hot spring tourism generally synergizes well with health and wellness tourism, ecotourism and geotourism.

For this study elements of the hot spring experience were examined and these included their historical use and cultural background, their geophysical background and their contribution to the health, wellness and recreational tourism sector based on facilities available for medical and recreational purposes at hot spring destinations. This evaluation was accomplished through a meta-analysis of background literature combined with two case studies of natural hot and mineral spring tourist destinations in Japan and Germany and personal observation and semi-structured interviews with clients and hot spring management. The case studies were developed to illustrate the historical background as well as the impact of the contemporary interest in natural hot and mineral springs in relation to health, wellness and recreational tourism. Discussions with key industry representatives, local tourism associations, information centres and visitors of natural hot and mineral springs were carried out in combination with personal observation and provided valuable data for the study.

8.2 THE RESEARCH OBJECTIVES AND THE LITERATURE

A comprehensive model to assess the role and importance of natural hot and mineral springs in health, wellness and recreational tourism was developed and used to address the research objectives (Figure 8.1 (Figure 1.3)). The model shows that to establish the interconnection between natural hot and mineral springs and the tourism industry it was necessary to explore several categories of the scientific literature including medical, cultural, geological as well as environmental books, reports and research papers. The data to accomplish this task were

obtained from a representative range of publications including research papers, books and articles covering natural hot and mineral spring use. This analysis had several purposes: a) to provide the background and theoretical foundation for the discussion of the role of natural hot and mineral springs within the health, wellness and recreational tourism industry; b) to summarise previous research and point out gaps in the literature; and c) to develop research objectives based on the research gaps identified in the review of the literature.

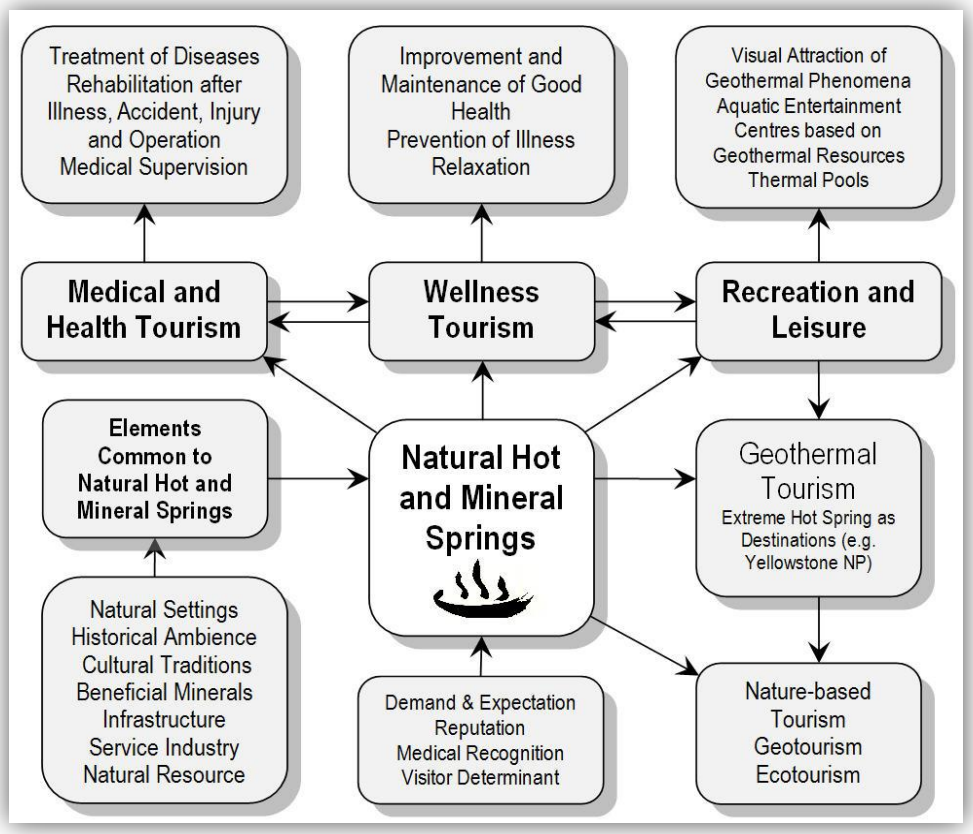

Figure 8.1 *The conceptual model used to assess the role of natural hot and mineral springs in health, wellness and recreational tourism.*

While attempting to establish connections between the role of natural hot springs and the tourism industry it was noted that the majority of the literature on hot springs reviewed was unrelated to the tourism sector. Natural hot and mineral springs and their usage are commonly viewed from medical, health and wellness, historical and geophysical perspectives rather than from the tourism standpoint. These scientific publications were however important because they could be analysed to confirm the importance of natural hot and mineral springs for medical treatments and demonstrate the coverage these natural resources receive in other academic disciplines (see Table 2.5). The findings confirmed the absence of tourism-based literature covering the role of natural hot springs in health,

wellness and recreational tourism. One of the primary aims of this research was to close this gap. The following research objectives were derived from the gaps identified in the literature:

1) To develop a conceptual model to assess the role of natural hot and mineral springs within health, wellness and recreational tourism;

2) To identify settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism;

3) To explore the historical development of hot springs as destinations for tourism;

4) To determine the cultural context of hot springs as a tourism resource; and

5) To investigate the recognition of medical benefits as a major factor in the demand for natural hot and mineral springs in health, wellness and recreational tourism.

The trend towards a healthier lifestyle and the prevention of illness has advanced over the last two decades, with many publications available about choices for lifestyle changes. However, the academic literature covering health and wellness tourism has remained silent on the correlation of the use of natural hot and mineral springs with health resort and spa tourism, although these natural resources have played an important role in health and recreation for many centuries worldwide. Few mainstream tourism texts recognise the role of natural hot and mineral springs for health, wellness and recreational tourism. The existing information is scattered throughout a limited number of tourism journals (see Table 2.3) and apart from one text by Erfurt-Cooper and Cooper (2009) there is currently no specialised literature which takes a global approach in providing an overview of the role of natural hot and mineral springs as a tourism resource, although this resource is available worldwide.

A number of similarities regarding hot spring use were identified in many countries, although there are considerable differences in marketing strategies and destination management practices. To date most academic research has focused on health and wellness tourism with a recent increase in medical tourism, while hot spring tourism as such is vastly under-researched; despite the fact that longstanding traditions of successful balneological treatments are commonplace worldwide. Consequently, the subject of natural hot and mineral springs and their use in health, wellness and recreational tourism is underreported in the academic tourism literature, and textbooks for tourism students at university level do not take into account the important role of natural hot and mineral springs in the health, wellness and recreational tourism sector and their considerable economic contribution in many countries.

Sources such as conference proceedings have on the other hand provided essential information regarding the current and future developments of the direct use of natural hot and mineral springs worldwide. And, while previous research has not covered the importance of hot spring use in health, wellness and recreational tourism and additional comparative information can be gained from the internet, 'coffee table' books and marketing/promotional material. Reliable and credible scientific sources on the use of geothermal springs are medical journals reporting on clinical trials under medical supervision to evaluate their curative value (Table 2.2) and some earth science journals (Table 2.3), although the research published in those journals is not directly related to tourism.

In conclusion the meta-analysis of literature for this thesis established that there is limited published academic research on the role of natural hot and mineral springs in health, wellness and recreational tourism (although an increasing conference literature is evident), with the sparse information found being repetitive and basic with a narrow focus. Despite the growing interest in alternative health treatments and the revival of existing health resorts and spas based on natural hot springs there is no separation of these from the general health and wellness tourism sector, which presents a considerable gap in the available information, especially with regards to visitor statistics. Wellness tourism and health and medical tourism are researched individually and so is the general spa industry; however, the main focus appears to be on the growing phenomenon of travel for the purpose of health and wellness and the motivations that direct tourists to the health and wellness sector.

Finally, the importance of the natural environment and its co-branding with cultural attractions was explored in this thesis, although the academic literature does not currently offer a theory or a suitable model to evaluate hot spring tourism as an independent sector. To contribute further towards the hot spring tourism literature and to close the existing gaps, more focused research into assessing the role of natural hot and mineral springs in health, wellness and recreational tourism has also been recommended.

8.3 SUMMARY OF MAJOR FINDINGS

This research has identified the interrelationships between natural hot and mineral springs and health, wellness and recreational tourism. The resulting core findings emerged in the analysis of the combined data associated with hot springs as a tourism resource (see Table

7.1), and collectively fill the current gap in the literature and contribute to understanding of their role in tourism. The key findings summarised here support the conceptual model of natural hot and mineral springs as an important resource for the tourism industry, especially for the health, wellness and recreational tourism sectors in many countries. The findings here, summarised by each Research Objective progressively, further suggest that hot springs considerably influence destination development, are important components in destination marketing strategies, and cater for a significant consumer demand.

8.3.1 Research Objective 1: Development of a conceptual model which can be used to assess the role of natural hot and mineral springs within health, wellness and recreational tourism

The validity of the conceptual model (Figure 8.1), which takes into account the distinctive characteristics of hot spring environments as a natural resource for health, wellness and recreation in many countries, was verified throughout the research process, especially in the case studies of Germany and Japan (Chapters 5 and 6). The successful application of the model has been effective in assessing and evaluating the role of natural hot and mineral springs in health, wellness and recreational tourism in these countries. Following the model the role of natural hot and mineral springs was assessed by exploring their distinctive characteristics as a tourism resource. All variables of the model have been used to assess and evaluate the role of natural hot and mineral springs in health, wellness and recreational tourism in Germany and Japan. The **medical and health** aspects are catered for by the provision of facilities for rehabilitative care; especially for patients recovering from accidents, injuries or operations as well as from a large number of other health conditions (Table 5.3 and 6.5). The **wellness** aspect is serviced by preventive care with the aim to improve or maintain good health and it is not uncommon, that frequently wellness is either more pro-medical or connects stronger with recreational aspects depending on individual destinations and customer demand. **Recreational and leisure** activities are commonly catered for at hot spring destinations which can include aquatic entertainment centres and hot spring theme parks, but also restaurants, theatres, casinos and retail opportunities. The findings present evidence that hot spring destinations in Germany and Japan share a number of common elements as identified in the proposed model including natural settings, beneficial minerals, historic spa architecture, service industry and infrastructure and support the results for the individual research objectives.

The correlations between the individual components of the model, such as hot spring settings (socio-cultural and environmental), historical and cultural use, customs and traditions as well as medical recognition, confirmed the important role of natural hot and mineral springs in the development of health, wellness and recreational tourism destinations. The findings from the model confirmed the importance of natural hot and mineral springs as a tourism resource with hot spring tourism defined as follows:

> *'Hot spring tourism (geothermal tourism) involves a visit to a destination, location, attraction or facility that takes advantage of geothermal resources in the form of natural hot and mineral springs' (Author, 2010).*

Hot spring tourism can be further described as a function of the demand for natural resources in the form of hot and mineral springs with a reputation for health benefits obtainable at destinations with the relevant infrastructure in combination with an agreeable climate and preferably surrounded by natural environment. The development of a tourist destination frequently incorporates natural hot and mineral springs where this is feasible to do so in a sustainable manner. The findings relating to the interaction of natural hot and mineral springs within the health, wellness and recreational tourism sector are therefore consistent with the model, which outlines how the components of hot spring tourism relate to each other.

8.3.2 Research Objective 2: Identification of settings where natural hot and mineral springs are integrated in health, wellness and recreational tourism

The findings of this study have revealed the existence of natural hot and mineral springs in most countries worldwide, have confirmed that they are generally recognised as a unique tourism resource, and shown that they are part of the natural environment as well as being seasonally independent. They cater for a well-established demand for health, wellness and nature-based tourism recreational tourism (Table 7.3).

These results were developed using data from the literature review and that obtained during interviews with representatives from the hot spring industry as well as with other visitors. Most importantly the findings suggest that due to their seasonal independence natural hot springs for health and wellness are frequently combined with other tourist attractions (cultural, historical) and leisure activities (e.g. skiing, hiking, water sports) to appeal to visitors of all age groups, genders and socio-cultural backgrounds all year round. Thus the findings clearly show how integrated natural hot springs are in tourist settings, which can

also include cultural and natural World Heritage sites with the option of using hot springs as well as enjoying their unique visual appeal. In addition, the findings also show that natural hot and mineral springs are a renewable resource which can be sustained if not over-exploited but managed responsibly.

An initial concern of this research was the possibility that natural hot and mineral springs would be increasingly superseded by other forms of water-based spa treatments as development of the health and wellness sub-sector intensifies. However, it is apparent that where this is feasible, new health resort and spa developments aim to include natural hot springs as a unique selling point, further illustrating their importance to the industry. Existing spa facilities also explore the possibility of accessing natural hot springs to increase the success of their facilities and to save the energy needed to heat the water for the hot pools. Other water based attractions such as swimming pools can also be maintained more economically if geothermal water can be used.

The findings gained from semi-structured interviews with key representatives from the hot spring industry at different destinations also supported the importance of natural hot and mineral springs for health, wellness and recreational tourism. Those findings regarding future plans of hot spring facilities at sites visited for interviews and observation were optimistic and based on a growing awareness among consumers that health improvements can be achieved if combined with positive lifestyle choices. Natural hot and mineral springs are therefore an important resource for health, wellness and recreational destinations, recognised by operators and visitors alike.

The findings emerging from these settings usually resulted in comments about the benefits of hot springs for health and wellbeing, why and how often they are visited, any preferences about a particular location and whether other hot springs elsewhere have been visited. It emerged that many people develop a preference for hot springs and seek them out wherever they travel (pers. communication). These responses also confirm the elements of the conceptual model.

8.3.3 Research Objective 3: Establishment of the historical development of hot springs as destinations for tourism

The use of natural hot and mineral springs as thermal spas and health resorts has global roots and dates back to the earliest civilisations. The historical use of hot springs has been shown in this thesis to be extensive in many countries and a comparison of hot spring locations has

shown that these have been considered places of healing and recreation in most parts of the world since ancient times (Appendix 4.1). The findings (see Table 7.6) of the historical review (Chapter 4) confirm that the integration of natural hot and mineral springs into health, wellness and recreational activities has lasted for many centuries, in some countries for several thousand years. The history of hot spring use also shows that a wide range of illnesses have consistently been treated with mineral rich waters, confirming the lasting reputation for curative power of natural hot springs. As a result, many original hot spring towns and spas are still in existence today; often with new facilities developed around the antique remains of the original hot springs.

In addition to the historical aspects the findings document the magnitude of hot spring use worldwide and provide references for the origins of hot spring use. The findings of the historical review also highlight the different settings of hot spring destinations and provide a reference for the history of natural hot and mineral spring use. The extent of the historical use of natural hot and mineral springs clearly shows that the history of natural hot spring use has worldwide origins and dates back to the earliest civilisations. The findings compiled for this research also provide a detailed reference of the diverse origins of hot spring use.

8.3.4 Research Objective 4: Determine the cultural context of hot springs as a tourism resource

The cultural environment, which determines individual traditions at hot spring destinations, was analysed with different settings used as examples. The findings in response to Research Objective 4 document the cultural aspects at hot spring destinations and provide references for their cultural use (see Table 7.7). The findings of the historical review highlight the different settings of hot spring destinations and provide a reference for the history and the cultural use of natural hot and mineral springs at many locations. The cultural use of natural hot and mineral springs has been extensive on a global basis. Geothermal resources have been utilised by people since ancient history and developed over several thousands of years to the establishments we see today in many countries.

The cultural findings compiled for this research consequently provide a valuable reference about the different cultural aspects of hot spring destinations.

8.3.5 Research Objective 5: Recognition of the medical benefits of natural hot and mineral springs

The analysis of the role of natural hot and mineral springs has shown that they have been considered places of healing and recreation in many countries since ancient times. Their mineral content and its beneficial properties are still widely recognised as a source of health and wellbeing and are often now included in alternative natural health treatments. A high awareness related to the therapeutical value of hot and mineral springs was also found to be common throughout the literature and among interview respondents.

In relation to Research Objective 5 the benefits of natural hot and mineral springs for health and wellness are not only recognised in the medical tourism scene, but also sought after for recreational use. Depending on the country the emphasis of use is either more therapeutical (rehabilitation and cure) or recreational (wellness, maintenance of good health and prevention of illness). Where this is possible natural hot springs are being developed for tourism as a result.

In Europe the use of natural hot and mineral springs is generally integrated into the health system and supported by the medical profession based on clinical studies and success rates. In the USA however hot springs are not accepted as a valid medical cure, but are used for recreational purposes and beauty therapy. Government policies and regulations in countries like Japan and Taiwan also indicate strongly that natural hot springs are an important part of the national health system and provide evidence for their role in health wellness and recreational use.

8.3.6 Interpretation of Findings from Individual Hot Spring Sites

The collective findings on the role of natural hot and mineral springs in health, wellness and recreational tourism are consistent with the key findings from the meta-analysis and the case study findings. These findings include evidence for the worldwide occurrence of natural hot and mineral springs, their direct relationship to health, wellness and recreational tourism, their seasonal independence and their worldwide use as an alternative health resource. This analysis of the historical and cultural background of natural hot and mineral spring destinations included representative examples from a number of countries (37), which were described on the basis of their reputation for medical benefits, accessible historical records, their traditional ambience, as well as their cultural associations. The findings of this historical review highlight the different settings of hot spring destinations and provide a

reference for the history and the cultural use of natural hot and mineral springs in 37 countries.

Although the first human interactions with natural hot and mineral springs cannot be reliably documented due to the lack of written records, it is understood from the myths and legends referring to the healing powers of natural hot springs and their assumed sacred nature, that any knowledge about their use started in prehistoric times and was passed on from one generation to the next. Their reputation for health, wellness and recreational benefits can be traced back several thousand years in a number of countries mainly through written records kept by Chinese, Greek and Roman scholars. Throughout history the most popular places for rest and recreation were those with access to natural hot and mineral springs and where health resorts with treatment facilities were available. For example during the pre-Hippocratic period (5^{th} – 6^{th} centuries BC) medicine was practiced at Asclepeia, the temples of Aesculapius, which were purpose-built near hot and mineral springs (Katsambas & Antoniou, 1996). This confirms the key finding that the Romans were NOT the first users of natural hot and mineral springs, although hot spring use is frequently attributed to them. The maximum documented timeframe backed up either by written records or oral communication (Appendix 4.1) can be dated back to approximately 3000 BC, although substantiating this is difficult at many locations due to conflicting dating systems and unreliable textual sources. This historical timeline provides a detailed reference of the different origins of the hot spring culture.

The data show that use of natural hot and mineral springs is practiced mainly to achieve health improvements such as rehabilitation from accident, injury or surgery and to prevent illness by maintaining good health. As part of the German cultural traditions for example the use of natural hot and mineral springs emphasises hygienic aspects on a personal basis, although, depending on the type of hot spring facility, socialising is another important cultural element. People in Germany generally travel to a certain hot spring destination to seek health improvements based on a referral by their general practitioner, medical specialist or surgeon. Even so many people in Germany (domestic and international visitors) visit hot spring facilities for public use (e.g. thermal swimming pools) purely for recreational purposes. In a similar fashion to Japan a common preference to combine the hot spring experience with other local attractions, such as cultural activities, shopping as well as sampling the regional cuisine of the surrounding area, has been observed.

In fact, the data reviewed for each case study has revealed that health, wellness and recreational tourism based on natural hot springs is an essential part of the two countries' tourism industry. The size of the overall hot spring tourism sector was explored in conjunction with the historical and cultural use of hot springs, which frequently were considered as sacred sites by their original users. In Germany, annual visitor numbers, which reach on average 7 to 8 million people (7.7 million in 2010 with a 34.5% increase since 1999), demonstrate the popularity of hot spring tourism and support the premise that the inclusion of natural hot spring and mineral springs is a significant contribution to the wellbeing of visitors who seek relaxation, want to regain or maintain their health and/or wish to prevent illness. The findings of this case study have provided a practical reference for the historical, cultural and contemporary use of natural hot springs in Germany. The findings also have documented the role of natural hot springs within German health, wellness and recreational tourism and are an essential contribution to the knowledge about hot spring tourism in Germany.

The second case study showed that the history of Japanese hot spring (onsen) bathing goes back many centuries, with its use first recorded in the book 'The History of the Kingdom of Wei' written in China in 297 AD. This early use is supported by remains of early settlements found near natural hot springs (Clark, 1999; Talmadge, 2006). Onsen bathing is practiced as part of Japanese socio-cultural traditions, which emphasise hygiene and purification in a religious and personal sense. Many people in Japan travel to hot spring destinations as a matter of preference and visit them whenever they have the opportunity. A common preference to combine the hot spring experience with other local attractions, such as cultural activities, shopping as well as sampling the regional cuisine of the surrounding area has been observed.

The data reviewed for the case study on Japan has revealed that health, wellness and recreational tourism based on natural hot springs is central to the Japanese domestic tourism industry. The size of the overall onsen tourism sector was explored in conjunction with the historical and cultural use of Japanese hot springs, which are frequently considered as sacred sites. Annual visitor numbers, which reach on average 150 million people, demonstrate the popularity of hot spring (onsen) tourism and support the premise that the inclusion of natural hot spring spas is a significant contribution to the wellbeing of onsen visitors who seek relaxation, want to regain or maintain their health or prevent illness. The findings of this case study have provided a practical reference for the historical, cultural and contemporary use of natural hot springs in Japan. The findings also have documented the role of natural hot

springs within Japanese health, wellness and recreational tourism and are an essential contribution to the knowledge about hot spring tourism in Japan.

8.4 FINAL CONCLUSIONS

The findings presented in this thesis were obtained using several qualitative research methods including a meta-analysis of literature on hot spring use, two representative case studies, personal observations made at various hot spring locations and semi-structured interviews with key representatives of the hot spring tourism industry, as well as with visitors at hot spring destinations. This study was guided by a research aim and set of objectives, which constituted the theoretical framework for the thesis. A conceptual model was developed to investigate the role of natural hot and mineral springs in health, wellness and recreational tourism and was used to assess the individual components of this role. The findings from this research have shown that natural hot and mineral springs play an important part in health, wellness and recreational tourism. Previously, this has not been covered sufficiently in the academic tourism literature.

The conceptual model of their role in health, wellness and recreational tourism was supported by the research findings. The collective findings were based on the convergence of information from different sources (Jennings, 2001; Yin, 2003) by triangulating the results. The study broadens and deepens knowledge of the contribution of natural hot and mineral springs as a tourism resource and adds value to the current discussions about health, wellness and medical tourism as an area of increasing importance in international tourism. As the role of natural hot and mineral springs in health, wellness and recreational tourism is currently underreported and academic research in this field is still limited, the findings are an important addition to the theoretical knowledge base of this particular field of tourism.

The case studies representing hot spring destinations provided information about individual facilities, cultural traditions, infrastructure and other components of hot spring tourism at these destinations taking into account the variables specified by the model and draw on the historical and the contemporary settings of natural hot and mineral springs as a tourism resource in Germany and Japan. Despite the cultural, geographical and geophysical contrast between these two countries, similarities were discovered in their medical traditions. Similarities were also observed between many other hot spring destinations worldwide, including their geophysical aspects, methods of original discovery, and their global reputation for healing powers. Finally, natural hot and mineral springs were found to be

integrated in health, wellness and recreational tourism wherever access allows their exploitation and inclusion in destination development.

8.5 RECOMMENDATIONS FOR FUTURE RESEARCH

It is recommended that further research is carried out on the following:

1. While there is considerable scientific research conducted into hot springs and their use in health and medical facilities, the role of natural hot and mineral springs in health, wellness and recreational tourism is underreported yet. Another point of weakness is the lack of reliable data on the size of the hot spring tourism industry.

2. Although the scientific research identifies the geophysical and mineralogical factors of natural hot and mineral springs and recommends their potential use in balneology, there is only the occasional connection made to the tourism industry based on hot springs.

3. Tourism textbooks do not provide sufficient information about the role of natural hot springs in the health, wellness and recreational tourism sector, nor do they recognise hot spring tourism. Although acknowledging the historical use and the development of hot spring destinations in European countries, the fact, that health and wellness tourism, with or without natural hot and mineral springs, is one of the fastest growing segments of the tourism industry. Also, the findings from reviewing academic tourism journals revealed that while there are a number of references to health, wellness and recreational tourism (Table 2.4), relatively few articles have been published which directly relate to the role and use of natural hot and mineral springs in tourism. This is an indication that the role of natural hot and mineral springs in health, wellness and recreational tourism is not fully recognised as a valuable tourism resource, neither is the substantial economic contribution the usage of these resources makes to the tourism industry. This should be rectified.

4. From the findings presented it becomes obvious that the role of natural hot and mineral springs in tourism is an important one. Hot springs are natural resources which are popular with visitors wherever they are available. It is a challenge however to have this importance recognised and separated from health and wellness tourism without hot spring access, and methods to do this should be developed.

5. The literature frequently gives the impression that natural hot spring destination and their use are mainly concentrated either in the European region or in the United States and subsequently there is not much else documented. While some of these limitations may be

due to language restrictions, word limits and other restrictions by editors, this has meant a considerable gap in the existing hot spring literature, and alternative cultural traditions need to be researched.

6. Because there is generally no separation between health and wellness destinations with or without hot springs, it is difficult to find reliable visitor numbers and references to the economic value of hot spring tourism. Another point of weakness is the lack of reliable data on the size of the hot spring tourism industry. To make matters worse, the annual reports of the spa industry and tourist organisations, which may contain more detailed data, are generally only accessible at considerable cost per report while only brief and inconclusive abstracts are made available. Again, this situation needs rectifying with further research.

7. To determine exact visitor numbers at hot spring facilities or destinations is a demanding task with the question whether this depends on a certain distance travelled from home and if so, how and by whom this distance is determined. Many hot spring facilities are visited regularly by local residents and it is not clear how they are included in this equation, and this needs further research.

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APPENDIX 2.1

SWOT Analysis of Natural Hot & Mineral Springs used in Health, Wellness and Recreational Tourism

Strengths	Weaknesses
Independent from seasons and climate Natural environments and surroundings Renewable natural resource Occurrence in many areas worldwide Historical and cultural geothermal heritage Government health funding in several countries Medical support for the use of hot springs Qualified medical staff in many hot spring facilities Authentic and chemical-free natural hot spring water Reputation of curative properties and therapeutical value Benefits for health and wellbeing WOM recommendations, internet, blog sites Suitable to complement every spa type Recreation and leisure destinations Many books describing individual areas with NH&MS Visual attraction of extreme hot springs	Lack of government funding in many countries via health systems Old facilities need to upgrade and expand Not supported by medical professions in some countries Not enough clinical trial results available to general public for information Not marketed as strongly as wellness spas without natural thermal springs Restricted or lack of access for many people due to distance to location Unaffordable for many people, due to expensive establishments Old infrastructure in some spa towns
Opportunities	**Threats**
Wellness movement has caused unexpected revival for existing hot spring facilities Existing Hot Spring facilities undergo modernisation Potentially sustainable development Good prospects for future expansion Integration into health and wellness market Link to nature-based geotourism Untapped markets hold further potential Domestic and international access worldwide Universal preference for 'Back to Nature' Reinforcement for the wellness trend Many countries are developing hot spring areas Drawcards for holiday destinations Geothermal by-products (Cosmetic and therapeutic use of thermal mud and mineral bath powders) are value adding with large business potential Geothermal Aqua Parks and Hot Spring Theme Parks Prevention instead of cure Active hot springs are utilised for new developments	Development of new facilities expensive Maintenance of old facilities can also be very costly Lack of qualified medical staff Reputation of possible health hazards Ignorance by uninformed people Spas without natural thermal springs use ambiguous advertising to mask that fact Strong competition worldwide Disregarded or not recommended as worthwhile by medical practitioners Disregarded by pharmaceutical industries Some countries have disbanded public health cover for treatment at NH&MS spas Reduced funding through legislation in some countries e.g. Germany Micro bacteria found in some hot springs (Rotorua, New Zealand; Bath, UK; Helidon, Australia) Toxic gas emissions can pose significant risks at some hot springs (Greece, Japan) Potential danger from nearby active volcanic systems

This initial SWOT analysis was used to establish the (S)trengths, (W)eaknesses, (O)pportunities and (T)hreats of tourism based on natural hot and mineral springs as an important resource. It was subsequently transformed into a typology (see Appendix 2.2), on which a conceptual model was based with the aim to use this to assess the role of natural hot and mineral springs in health, wellness and recreational tourism.

APPENDIX 2.2

Typology of Natural Hot and Mineral Springs and their use in Tourism

Characteristics of Natural Hot and Mineral Springs	Visitor Expectations at Hot Spring Destinations
Renewable natural resource Common occurrence worldwide Domestic and international access worldwide Rich in mineral beneficial for health Pleasant temperatures for winter use Often located in natural environments Historical and cultural geothermal heritage Reputation of curative properties and therapeutical value Visually attractive Unique destination drawcard Considered healthy by many Relaxing and enjoyable Popular worldwide for recreation and wellness Accessible hot springs are used for tourism Undeveloped hot springs are often located in national parks or other protected sites	Variations depend on personal preference and length of stay Time out – away from home Relaxation and stress management Improvement of health and wellbeing Prevention instead of cure Healing of illness Rehabilitation after accident, injury and surgery Boosting the immune system Enjoyment of natural surroundings Unique landscapes Authentic and chemical-free hot spring water Geothermal water features (rivers, waterfalls, rock pools) Purification Rejuvenation Safe environment Quality service and friendly staff Qualified medical staff, especially in health resorts
Health and Medical use of Natural Hot Springs	**Advantages of Hot Springs for Tourism/Economy**
Reputation of curative value, therapeutical or healing benefits Treatments are funded by governments and national health systems in many countries Supported by medical profession in many countries Qualified medical staff required in hot spring based facilities Rehabilitation after accident and injury Convalescence after illness, post-operation Clinical trials Research into the effectiveness of mineral rich hot springs Can be included in complementary and alternative (CAM) treatment programs Long history of use for medicinal purposes Worldwide similarities regarding treatment of illnesses	Unique selling points for holiday destinations Independent from seasons and climate Employment for local communities Value adding by-products for cosmetic and therapeutic use *(thermal mud and mineral bath powders)* Active hot springs encourage new developments Hot Spring Theme Parks and Aquatic Parks Existing hot spring facilities undergo modernisation Many countries are developing potential hot spring areas Good prospects for future expansion - untapped markets hold further potential Sustainable development possible WOM recommendations, internet, blog sites Suitable to complement every spa type Value adding to all recreational facilities Suitable for all types of destinations (rural, urban, coastal, mountains) Integrated in health, wellness and recreational tourism Historical hot spring architecture provide added visitor attraction Substantial financial savings by using geothermal energy for tourism infrastructure

This typology contributed important elements to the development of the model to assess the role of natural hot and mineral springs in health, wellness and recreational tourism.

APPENDIX 4.1

Historical Time Frame of Hot Spring Use Worldwide

(Compiled by Author from various sources)

The use of natural hot springs by ancient peoples is suggested by settlements near geothermal manifestations in many countries and it can be argued within reason that native peoples used natural resources in the form of hot and mineral springs where these were available (Calderón 1999). The original users of natural hot and mineral springs are difficult to identify beyond any doubt and the history of hot spring use therefore is to a large degree dominated by speculation and guesswork. However, examination of hydro-geological data from Pakistan has lead to the conclusion that the presence of clusters of thermal springs in the Indus Valley should be taken into serious consideration when analysing the history of the Indus Valley civilisations. Therefore this timeline of hot spring use does **not** lead straight to the Romans as is the common belief, but to a civilisation whose history is largely undecided and their decline not sufficiently explained to date.

Time Period	Country	Historical Hot Spring Locations
3000 BC - 1700 BC	**Indus Valley, Pakistan**	The Indus Valley civilisations (e.g. Mohenjo Daro and Harappa) are likely to have used thermal springs at that time, as the Indus Valley includes areas abundant with natural Hot Springs, which are still utilised for various purposes
1680 - 1193 BC	**Anatolia, Turkey**	The Hittite Empires are said to have used hot springs for recreation and therapeutic treatments (Özgüler and Kasap, 1999)
1430 BC	**Lipari - Sicily, Italy**	Stone-lined ponds with thermal spring water channelled into them were probably used for therapeutic thermal bathing (Cataldi et al, 1999)
1050 – 771 BC	**Huaqing, China**	Huaqing Hot Spring was the favourite thermal Spa of Emperors of various dynasties (Schafer, 1956) and appears to have been reliably documented
1000 BC	**Mesoamerica**	The Maya Empire dates back to about 1000 BC and included Mexico in the Yucatán Peninsula, Guatemala and parts of Belize and Honduras. Due to the many hot springs in these countries it is assumed that they were used by the Mayas for various purposes as they were a highly advanced people
1000 BC (app.)	**Western Europe**	West European tradition based on worshipping of sacred and healing springs
8th Century BC	**Italy**	Pompeii was founded around this time and geothermal water was used to heat buildings and baths within the city
7th Century BC	**Greece**	Homer mentions natural hot and mineral springs as do several classical authors later, e.g. Hippocrates (460-377BC), Plato (427-347 BC), Aristotle (384-322 BC), Pliny the Elder (23-79AD) (Cataldi et al, 1999)

8th Century BC	**Loutraki, Greece**	The thermal waters of Thermae (Loutraki today) were 'revitalised' around this time for athletic games held at Corinth (Fytikas et al, 1999)
863 BC	**Bath, England**	The Legend of the founding of Bath tells that Bladud, father of King Lear, was cured of disease by immersion in the warm springs found there
750 to 500 BC	**Italy**	North of Rome the Etruscans used thermal bathing and other hydrothermal by-products (Cataldi & Burgassi, 1999)
700 BC (app.)	**Japan**	Dōgo Onsen in Ehime Prefecture on the island of Shikoku is one of the oldest and best known *onsen* hot springs in Japan and **may** have been used approximately 3000 years ago or even as early as during the Jomon and Yayoi periods
c. 420 BC	**Greece**	Hippocrates of Kos was the first author who systematically classified the waters and their distinctive properties (Fytikas et al, 1999)
5th Century BC	**Greece**	Hippocrates of Kos treated patients from all over the Mediterranean by using thermal balneology in his famous Asclepian Centre (Cataldi et al, 1999)
5th Century BC	**Spain**	Archaeological evidence indicates that the thermal springs of Archena may have been used by early Iberian settlers (Balneario de Archena, 2011)
500 BC	**Guatemala**	The Maya kingdoms may have used Hot Springs (Altman, 2000)
5th - 4th Century BC	**Roman Empire**	Roman soldiers visited hot springs for thermal bathing on military expeditions (Cataldi & Burgassi, 1999)
3rd Century BC	**India**	Megastenes, an ambassador from Greece mentioned the medicinal value of Indian thermal springs (Chandrasekharam, 1999)
3rd - 2nd Century BC	**Greece**	Greece and other Mediterranean countries traded in geothermal by-products, eg. Kaolin, sulphur, pozzolana, iron oxide etc. (Cataldi et al,1999)
2nd Century BC	**Turkey**	Hierapolis was established by Eumenes, King of Pergamon, and in 133 BC the city was bequeathed to the Romans who built large baths around the geothermal springs
120 BC (app.)	**Aix les Bains, France**	The Romans constructed comfortable thermal baths and called them *Aquae Grantianae* after taking over the whole surrounding region
84 BC	**Aedipsos, Greece**	Roman general Sulla underwent thermal treatment after which he backed the construction of a 'hydrotherapeutic thermal establishment', the Thermae of Sulla (Fytikas et al, 1999)
49 BC	**Lisbon, Portugal**	The Cassian Spas under Quinto Cassio and Lucio Cassio were built, while they were representing Julius Caesar (Picoto, 1996)
1st Century BC	**Jordan**	Jordan Valley Springs were described in classical literature by Roman and Byzantine historians (between 1st Century BC and 6th Century AD) as having healing properties especially for leprosy (Cataldi et al, 1999)
1st Century BC	**Pompeii, Italy**	The Forum Thermal Baths were established under the Roman dictator Lucius Cornelius Sulla (138-78 B.C.)
1st Century AD (app.)	**Palmyra, Syria**	The sulphur springs Efca were used for health purposes in 'Biblical Times', and are still in use today

1st Century AD	**North America**	Yellowstone National Park – Shoshone Indians are said to have lived around the hot springs and used them for healing. It is assumed that other tribes also made use of natural hot springs where available and that their use goes back much further than has been documented
1st Century AD	**Croatia**	The first Roman thermae is built in Varaždinske Toplice and named *Aquae Iasae*
43 AD	**Bath, England**	The initial development of the thermal bath is thought to coincide with the Roman invasion of Britain in the year 43 AD
50 AD	**Austria**	Baden near Vienna was founded by the Romans and named *Aquae* (Baden Austria, 2010)
70 AD	**Bath, England**	The Romans built a more sophisticated bathing complex including temples at Bath and named it *Aquae Sulis*
81 AD	**Vizela, Portugal**	Roman baths were built under the reign of Titus Flavius (Picoto, 1996)
2nd Century AD	**Middle East**	The springs at Hammat Gader were first exploited by the Romans who converted the site into thermal baths around the 2nd Century AD (Archaeological World, 2006)
2nd Century AD	**Israel**	Tiberias – Romans first exploited the Hot Springs and converted the site into Thermal Baths
5th Century AD	**Caucasus, Georgia**	The city of Tbilisi founded by King Vakhtang on the site of a Hot Spring with healing powers
552 AD	**Japan**	Introduction of Buddhism and purification through immersion using natural hot springs (Hotta and Ishiguro, 1986)
700 AD (app.)	**Japan**	Yamanaka Onsen Hot Spring of Kaga was founded near a temple
765 AD	**Germany**	First written record of Aachen, previously named by the Romans *Aquis Villa*
870 to 930 AD	**Iceland**	The time of settlement and according to the Sagas thermal spring water was used for washing and bathing (Hróarsson &Jónsson, 1992)
800 to 1200 AD (app.)	**Kyushu, Japan**	Yamaga Onsen in Kumamoto Prefecture is thought to have a history of 1200 years, discovered during the Heian Period (794 - 1192).
1137	**Cieplice, Poland**	Cieplice Śląskie was mentioned in historical records and is regarded as Poland's first health resort (Omulecki et al, 1996). However the legend says that the hot spring was accidentally discovered by Prince Boleslaus the Tall in the year 1175 AD while chasing a wounded deer, which regained its strength from the warm water
1178	**Hungary**	A hospital was built on today's Hotel Gellert site (Altman, 2000)
12th Century	**Hungary**	Budapest – Knights of the order of St John engaging in curing the sick settled in the area of today's Lucác's Bath
1281	**Cieplice, Poland**	Historical record of the use of thermal spring water by the Knights of St. John of Jerusalem to cure diseases (Cataldi et al, 1999)
14th Century	**Belgium**	A Health Resort was founded in the city of Spa
1300s (app.)	**New Zealand**	Maori have used healing hot springs Since their colonisation of New Zealand

1349 - 1350	**Czech Republic**	Discovery of Karlovy Vary [Karlsbad] according to legends during deer hunt with emerging settlements close to the thermal springs (Altman, 2000)
1359 - 1389	**Turkey**	Bursa – the Ottomans built a large complex of domed baths during the reign of Murat
14th -16th Century	**Europe**	Early development of spas on sites of ancient hot springs used for medicinal purposes
1417	**Italy**	Ugolino de Montecatini (1348-1425), the founder of balneology in Italy recommended the use of the mineral waters of Montecatini (Altman, 2000)
1458	**Korea**	Oonyang Spa in use (Altman, 2000)
1485	**Portugal**	Caldas da Rainha hospital is founded by Queen Leonor, after discovering natural hot springs with healing properties
15th Century	**Germany**	Annual visits to curative Hot Spring centres en vogue among wealthy citizens
15th Century	**Budapest, Hungary**	Early records about miraculous springs at the site of the Hotel Gellert, which was built much later and opened in 1918
1500s	**America**	First recorded history of European style hot spring spas in North America
1502 – 1533	**Peru, South America**	The hot springs of Cajamarca were used by the Inca ruler Atahualpa and his court, as oral history indicates
1522	**Karlsbad, Czech Republic**	The water of the Mill Spring was used in the 16th century mainly for bathing. Around 1522 the drinking cure of Karlovy Vary was introduced (Altman, 2000)
1541	**America**	Spanish explorer Hernando deSoto is claimed to be the first European visitor of Arkansas Hot Springs, then named the valley of the vapours
1545	**Brazil, South America**	Caldas Novas Hot Springs first mentioned in Spanish publication
1550	**Peru**	First European (Spanish) written record of hot springs and their use
1558 - 1603	**Bath, England**	During the Elizabethan era Bath was revived as a spa with improvements to the thermal baths (Ros, 2006), and began to attract members of the aristocracy who spent the fashionable *'Saison'* in Bath
1565	**Budapest, Hungary**	Construction of Király Thermal Bath started by Arslan, Pasha of Buda
16th Century	**Budapest, Hungary**	Budapest – Rudas Thermal Bath was built under Turkish occupation
1697	**Taiwan**	Hot Springs first mentioned in a manuscript (Beihai Jiyou), but not fully developed until 1893
17th Century	**Spa, Belgium**	Town of Spa developed further
17th Century	**Europe**	Spas in existence throughout much of the European continent
17th Century	**China and Japan**	Physicians evaluate and classify several medicinal springs
1700	**Nantali, Finland**	Thermal springs with healing properties were known and used
1709	**Japan**	First Japanese medical study of Hot Springs
1722	**Caldas Novas, Brazil**	*Bartolomeu Bueno da Silva* discovered thermal springs in the area while searching for gold, and settlers made use of the hot springs
1737	**Belgium**	"Demonstrations on the usefulness of the Mineral Waters of Spa" published
1741	**France**	First thermal baths were built in Avéne

1776 - 1784	**France**	Aix les Bains – Victor Amedée II, King of Sardinia established the thermal baths, called the 'Etablissement Royal des Bains'
1790	**America**	Saratoga Hot Springs (New York State) began offering spa treatments and accommodation
Early 18th Century	**Hungary**	First water analyses were carried out in Budapest on the orders of Maria Theresia (Archduchess of Austria, Queen of Hungary and Bohemia)
19th Century	**America**	Hot Spring therapy became popular
19th Century	**Azores, Portugal**	Spa resort of Furnas is already a popular tourist destination, however locals may have used the thermal springs since the islands were first settled during the 15th and 16th Centuries
Early 1800s	**Austria**	Baden near Vienna redeveloped bath traditions and established Spa town policies
1826	**Hawaii**	An early missionary and historian, William Ellis, describes the use of a hot spring fed crater lake in the Kapoho area (Woodruff & Takahashi, 1993).
1832	**Arkansas, USA**	The Hot Springs area in Arkansas became the first national reserve in the United States.
1834	**Chile**	Jahuel Hot Springs, which is considered one of Chile's oldest thermal centres was visited by Charles Darwin in 1834
1859	**New Zealand (South)**	Hanmer Springs discovered and in use since then
1873	**Namibia, Africa**	The potential of the hot springs of Warmbad (Bela Bela) was discovered by white settlers, but the thermal waters were known earlier to local tribes who used it for its curative benefits
1876	**Uganda, Africa**	HM Stanley, African explorer visited Mtagata Hot Springs in Uganda – local inhabitants appear to have used thermal springs for their curative properties (Cataldi et al, 1999)
1878	**New Zealand**	Rotorua - the Priest Spring is discovered by a catholic priest, who cured his arthritis in the hot spring
1879	**Australia**	Helidon Spa in Queensland was first developed (Anon, 1910)
1882	**Canada**	Banff Hot Springs discovered and used by European visitors
1884	**Hungary**	Budapest - Lucac's Bath Spa Hotel was built
1891	**Bulgaria**	The first 'Law for the preservation of mineral springs' was enacted in Bulgaria and springs were declared a national properety by law (Tsankov & Kamarashev, 1996)
1891	**Kyrgyzstan**	The Issyk-Ata sanatorium in Kyrgyzstan was built in the year 1891 as a thermal health facility
1892	**Portugal**	The first official regulation concerning the Portuguese waters is published (Picoto, 1996)
1895	**Australia**	Moree/NSW - the first bore into the Great Artesian Basin at Moree was completed with the water gaining fame for its use in Moree's hot artesian baths, which are said to heal numerous ailments
1895 - 1945	**Taiwan**	Taiwan's Hot Springs developed under Japanese occupation
Early 1900s	**Turkey**	Kangal healing springs first attracted attention when a shepherd hurt his foot only to see it healed by the water of the spring (Deren Koray Tourism, 2011)
1911	**Czech Republic**	Karlsbad reached the highest number of spa guests in its history with 70,935 people cured in the year 1911 (Karlovy Vary, 2011)

1925	**Hungary**	Hajdúszoboszló – thermal springs with healing powers were discovered while drilling for oil **(**Hajdúszoboszló, 2011)**)**
1929	**Bulgaria**	The Bulgarian Balneological Society was set up and united specialists from different scientific fields (Tsankov & Kamarashev, 1996)
1931	**Japan**	Japan began more scientific research programs in Hot Springs
1940	**America**	Most American Hot Spring resorts went into decline
1940s	**Tbilisi, Georgia**	Establishment of the Tbilisi Balneological Health Resort
1945	**Taiwan**	Hot Spring culture went into decline
1970	**France**	Aix les Bains – restoration and enlargement of the thermal baths
1975	**Tunisia, Africa**	The Tunisian Office for Thermalism *(Office du Thermalisme)* was established and located in the capital Tunis
1976	**Iceland**	A geothermal power station was built in Svartsengi and shortly after an employee noticed the healing properties of the [clean] waste water, which had created a large warm lagoon (Ólafsson, 1996)
1978	**Bath, England**	The old thermal baths closed down and bathing was prohibited due to public health concerns over the purity of the spring water
1979	**Hungary**	Budapest – Daytime Hospital with complex thermal bath facilities was established in the Lucac's Thermal Bath
1982	**Huaqing, China**	Ruins of the imperial hot spring pools in Huaqing are discovered and restored
1987	**Blue Lagoon, Iceland**	The first public bathing facilities opened
1989	**Czech Republic**	Karlovy Vary or Karlsbad – new era of free development of balneology in the Thermal Spring Valley
1994	**Portugal**	Forty health spas using natural thermal and mineral waters are in operation. Of these seventeen are permitted by government regulation to treat dermatologic diseases (Picoto, 1996)
1994	**Hainan, China**	National Mineral Storage Resource Committee verified and approved thermal springs in Guantang as suitable for tourism and medical treatment, but the thermal spring was well-known as early as the interim between Qing dynasty (1644-1911) and the Republic of China (AsiaVtour.com, 2011)
1995	**Japan**	Hospitals integrate spa medicine using thermal springs
1997	**Argentina**	After successful drilling for thermal water the first thermal spa in the northeast of Argentina was opened in 1997
1999	**Taiwan**	Hot Spring culture makes comeback due to large scale promotion
2004	**Myvatn, Iceland**	In the north-east of Iceland the Mývatn Nature Baths *(Jarðböðin við Mývatn)* opened
2005	**Victoria, Australia**	The first stage of the Peninsula Hot Springs Centre, a new development with natural hot springs opened south of Melbourne near Rye on the Mornington Peninsula **(**Pers. observation; pers. com.)
2005	**Blue Lagoon, Iceland**	A new clinic for Psoriasis sufferers opened using natural geothermal seawater
2006	**Bath, England**	Opening of the new Thermae Bath Spa with access to the natural hot spring waters of Bath
2009	**Victoria, Australia**	Opening of the second stage of the Peninsula Hot Springs Centre south of Melbourne

APPENDIX 5.1

Glossary of German Terms

Badekultur	Culture of bathing based on the socio-cultural background of individual countries and their traditions.
Balneologie	Balneology.
Balneotherapie	Balneotherapy.
Heilbad	Health resort or spa town based on natural resources such as climate and hot and mineral springs (see Kurort).
Heilbäderverband	Health Resort/Spa Association
Heilquelle	Natural spring recognised as a healing spring with therapeutical benefits.
Heiltherme	Health resort or spa based on the medicinal use of natural hot and mineral springs.
Klimatherapie	Spa therapy which includes specific local climatic conditions in the treatment plan developed by the supervising doctor – Climatotherapy.
Kneippheilbad	Kneipp spa based mainly on cold water therapy.
Kur	Health improvement through staying at a health resort or spa for a predetermined timeframe and undergoing health treatments including balneotherapy and hydrotherapy based on natural hot and mineral spring water.
Kuraufenthalt	The time of staying at a health resort or spa for treatment.
Kurarzt	Medical doctor specialised in spa medicine including balneology, hydrotherapy. The term 'Spa doctor' is inadequate, as in some countries swimming pool technicians use the term spa doctor for their business.
Kurgast	Visitor staying at a health resort or spa to undergo treatment.
Kurhaus	Originally the treatment facility where the cure was taken, either by drinking healing spring water or by immersion. Today the *Kurhaus* is a place of social gathering or assembly (compare the Pumproom or the Assembly Rooms in Bath, UK).
Kurmedizin, Kurortmedizin	Health resort and spa medicine.
Kurort	Spa town, health resort, actual destination.
Kurpark	Landscaped gardens surrounding the *Kurhaus* where people walk and meet other visitors while 'taking the waters' and to

	be seen – that was the original concept. Today the parks remain, but with a less formal atmosphere.
Medizinische Kur	Medical cure under the supervision of qualified medical practitioners, doctors.
Mineralheilbad	Mineral spring spa – hot or cold water.
Moorheilbad	Mud spa, peloids.
Soleheilbad	Brine spa, saline chloride water.
Thalassotherapie	Hydrotherapy using seawater at different temperatures and mineral contents.
Thermalbad	Geothermal or hot spring spa, frequently referring to aquatic entertainment parks.
Thermalheilbad	Geothermal or hot spring spa for the purpose of treating illness and provide remediation after accident or injury.
Therme	Generally a facility with heated swimming pools for use all year round with indoor and outdoor areas. Not necessarily based on natural hot spring water.
Seeheilbad, Meeresheilbad	Sea spas or seawater spas which provide Thalasso therapy.

APPENDIX 6.1

Glossary of Japanese Terms

Ashiyu	A relaxing hot spring foot bath, provided by many cities in main shopping areas or at popular sightseeing spots (e.g. railways stations at Yumoto and Yufuin) People can sit down and enjoy natural hot spring water before they continue walking.
Edo period	Also known as the Tokugawa period (1603-1867AD) under the rulership of the shoguns of the Tokugawa family.
Furo	Japanese hot bath.
Heian Period	The last division of classical Japanese history (794-1185AD) named after the old capital of Japan, Heian-kyō which today is Kyōto.
Jakuza	Traditional organised crime syndicates masking as 'Business' organisations, whose members frequently engage in criminal activities and can be recognised by their often elaborate tattoos.
Jigoku	Japanese for *hell* – extreme hot springs which are used to attract visitors to geothermal areas with their visual impact.
Jigoku meguri	The city of Beppu has 10 'hells' or jigoku which are promoted as *Jigoku Meguri* – the hell pilgrimage. **NOT** for bathing.
Kakenagashi	Natural hot spring water flowing permanently and is not recycled or treated with chemicals. Very important in Japan when people decide on a hot spring destination.
Kamakura era	(1192–1333 AD) sanatoria were built in the city of Beppu to treat soldiers, which were wounded during the battles against the Mongolians (Yoneie, 2005).
Kojiki	'Records of Ancient matters' published in 712 AD.
Man'yoshu	Collection of poems written between the fifth and eighth centuries AD in what is Japan's oldest extant anthology.
Meiji Restoration	(1868 to 1912AD) restored imperial rulership in Japan's political and social structure.
Onsen	General term for hot spring, bathing facility with hot springs, hot bath, hot spring location in Japan. The word onsen is recognised widely in other countries as hot spring facility in the Japanese style.
Rotenburo	Outdoor/open air pools fed by natural hot spring water usually situated in a natural environment or at least in an imitation of nature, if within urban development.

Ryokan	Traditional Japanese inn similar to a hotel although the architecture and furnishings are different from Western hotels with onsen facilities as one of the central experiences.
Sento	Japanese public bathhouses used by the local community for daily bathing. Not all sento are supplied with natural hot spring water, but use heated tap water. The preference is for bath houses with connection to natural hot springs.
Sunamushi buro	Sand bath where the bather is covered with volcanic sand heated by hot spring water and steam. Health benefits are sought especially by people suffering from rheumatic diseases, arthritis and gout. The common and effective way to treat aches and pains involves being buried up to the neck in sand soaked in hot spring water.
Toji	Onsen therapy or balneotherapy – also referred to as spa medicine.
Tōjiba	Health Resort or Therapeutic Resort.
Tsukiai	Association with others – socialising in onsen settings.
Yikan yu	Japanese for *timed bath* - special way of hot spring bathing to treat certain health conditions and involves the immersion in very hot water for short periods of time (3 minutes) and is repeated under medical supervision.
Yu	Hot water.
Yukata	Cotton robe in kimono style which is worn around bathing facilities and while in a sand bath.
Yumomi	Traditional way of cooling hot spring water with wooden paddles, stirring air into the water.
Yu-no-hana	Minerals extracted from hot spring water in the form of crystals or crystalline powder to use as a bath additive. Yu-no-hana is also used in soap and other cosmetic hot spring by-products. The name Yunohan is often used by hotel or ryokan owners (e.g. Yunohana Onsen Ryokan, Hakone Yunohana Onsen).

APPENDIX 6.2

http://www.jph-ri.or.jp/kenko_f/onsen_english/contents/onsentowa.html

Japan Health & Research Institute

The Japan Health & Research Institute works for the development and spread of onsen (hot spring) facilities, the operation of comprehensive physical examination centers, and other efforts. Based on the concept of improving and maintaining health and vigor, the Institute also carries out research and surveys, promotes healthy living, and holds physical examinations.

What is an onsen?

The Hot Spring Law defines an onsen as water, water vapor, or other gas (excluding natural gas for which the main ingredient is hydrocarbon) that gushes out of the earth and meets or exceeds the prescribed amount of chemical components, or a spring with a water temperature of 25°C or greater.

Hot springs for medical treatment are defined by the Mineral Spring Analysis Law and are divided into four categories.

1. Saline springs (chloride springs, carbonated springs, sulphate springs)
2. Simple springs
3. Simple cold/hot springs that contain special components (simple carbon dioxide springs, simple iron springs, simple acidic springs, simple sulphur springs)
4. Salt springs that contain special components (acidic springs, carbon dioxide springs, cupriferous springs, ferruginous spring, aluminum springs, sulphurous springs, radioactive springs, etc.)

These eleven spring types have been re-organized into nine new types, which are now often used.

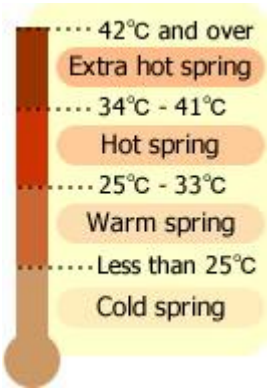
1.	2.	3. Carbonated spring

Simple spring	**Simple carbon dioxide spring**	**(former bicarbonate earth spring and former sodium bicarbonate spring)**
4. Chloride spring	**5. Sulphate spring**	**6. Ferruginous spring (former iron spring and former melanterite spring)**
7. Sulphur spring	**8. Acidic spring**	**9. Radioactive spring**

Onsen are also divided into four types by source water temperature.

Types of onsen by temperature		
		Water temperature
Hot spring	**Extra hot spring**	42°C or higher
	Hot spring	34°C - 41°C
	Warm spring	25°C - 33°C
Cold spring		Less than 25°C

According to the Mineral Spring Analysis Law
(These divisions reflect the pre-Hot Spring Law concept that hot water is a hot spring and cold water is a cold spring.)



Some onsen are diluted or heated to bring them to a suitable temperature.

Onsen are good for your body!

Submerging yourself in hot spring water isn't the only way to enjoy onsen. When you visit an onsen resort you have the opportunity to encounter nature and culture, allowing you to relax and rid yourself of stress. Moreover, the physical effects of bathing, along with the onsen's chemical components, stimulate your body in an integrated way, improving your body's natural ability for self healing.

Chemical components in onsen that help relieve fatigue

Onsen are effective for many things including recovery from fatigue and reducing stress. Please refer to the following table that conveniently outlines which type of spring water you should choose for your condition. And of course, onsen have many other beneficial effects that are unrelated to the actual contents of the water.

Selecting an onsen (hot spring) according to your condition (PDF, 176 KB)

Three effects of bathing

*** Your body becomes buoyant**

When you bathe your entire body, it becomes buoyant and weighs approximately one tenth of its normal weight. By leisurely stretching out, you can free your limbs from their everyday burden.

*** Natural massage and hydrostatic effects**

When submersed in hot water, abdominal girth is decreased by several centimeters through hydrostatic pressure. This creates a massage effect that encourages circulation and also relieves foot fatigue and swelling.
* However, people with disorders of the lung or heart may experience adverse effects. Hip baths, which have little hydraulic pressure, are ideal for such people.

*** Warming effects**

The heat of the water improves circulation and accelerates your metabolism, which helps discharge waste material. The key factor is water temperature.

Submersion in a warm bath for twenty to thirty minutes is effective for reducing fatigue.

Beneficial "nature bathing"

Many onsen resorts are located in areas with abundant nature and are fantastic for relaxation. Onsen in the forest or mountains offer the opportunity for peaceful walks in nature, while onsen near the ocean are perfect for strolls on the beach.

What types of onsen have you tried?

1 Simple spring

* Many famous hot springs are of this type.

Refers to an onsen in which none of the included components reached a defined amount even when the water is over 25°C. This type of onsen does not stimulate your body, and is widely used for various beneficial effects.
Effective for: Recovery from fatigue, nerve pain, insomnia, hardening of the arteries, high blood pressure, etc.

2 Simple carbon dioxide spring (simple carbonic acid spring)

* Very warming even at low temperatures.

Your blood vessels expand when bathing in this type of onsen, which lowers blood pressure. There aren't many simple carbon dioxide springs in Japan.
Effective for: Paralysis, muscle/joint pain, contusions, high blood pressure, hardening of the arteries, cuts, sensitivity to cold, menopausal disorders, infertility, etc.

3 Carbonated spring (bicarbonate earth spring, sodium bicarbonate spring)

* You'll be refreshed after bathing in this so-called "cold spring."

There are two types: bicarbonate earth springs, which have alkaline properties, and sodium bicarbonate springs.
Effective for: muscle/joint pain, contusions, cuts, chronic skin diseases, etc.

4 Chloride spring (Chloride spring)

* Ideal for the elderly or people recovering from illness.

This type of spring contains salt and resembles the properties of seawater. After bathing, the salt on your skin prevents the evaporation of sweat, keeping you nice and warm.
Effective for: muscle/joint pain, contusions, sprains, sensitivity to cold, chronic women's diseases, infertility, etc.

5 Sulphate spring

* Prevents hardening of the arteries and also calms and relaxes you.

There are three types: Calcium sulphate, sodium sulphate, and magnesium sulphate springs.
Effective for:
Calcium sulphate spring: Rheumatism, bruises, cuts, burns, etc.
Sodium sulphate spring: High blood pressure, hardening of the arteries, external wounds, etc.
Magnesium sulphate spring: Same as calcium sulphate spring and sodium sulphate spring

6 Ferruginous spring (iron spring)

* Non-oxidized ferruginous springs that are close to the source are especially good!

There are two types of ferruginous springs: those that contain iron carbonate, and those that contain melanterite. When the spring water first gushes forth from the source it is colorless and transparent, but it turns a dark reddish-brown color when exposed to oxygen, and its effects also grow weaker.
Effective for: Anemia, rheumatism, menopausal disorders, hypoplastic uterus, chronic eczema, etc.

7 Sulphur spring (sulphur spring, hydrogen sulphide spring)

* This type of spring is very stimulating, so watch out for overheating and overexposure.

This type of onsen is known for its characteristic odor of hydrogen sulphide, and causes the blood vessels to expand. However, poor ventilation can be dangerous and should be avoided.
Effective for: High blood pressure, hardening of the arteries, chronic skin diseases, joint pain, etc.

8 Acidic spring (alunite spring)

* To prevent stress on your body from overexposure to hot water, make sure to pour fresh water on your body after bathing.

This type of spring is extremely stimulating, even to the extent that it can permeate your skin. People with sensitive skin should watch out for overexposure. Acidic springs are used to treat chronic skin diseases and other ailments.
Effective for: chronic skin diseases, chronic women's diseases, diabetes, athlete's foot, etc.

9 Radioactive spring

* Inhale for the most beneficial effects.

Radioactive springs contain miniscule amounts of radioactivity, and are also referred to as radium springs or radon springs. Radiation is absorbed by the skin and respiratory organs. However, there's no need to worry since it leaves your body immediately after bathing.
Effective for: High blood pressure, hardening of the arteries, nerve pain, rheumatism, calming stress, gout, etc.

Selecting an onsen (hot spring) according to your condition (PDF, 176 KB)

How to bathe in an onsen

Increase the health-related effects of onsen by being conscious of how you bathe. By familiarizing yourself with proper bathing procedures, you too can become an onsen expert.

* How to bathe in an onsen

1 Rinsing off

Careful attention is required when pouring water over your body in order to acclimate it to high temperatures. In order to protect against sudden rises in blood pressure immediately after entering the onsen, be sure to pour water (about ten times) on your body starting from your extremities and moving toward your chest – from your ankles to your knees, and your wrists to your shoulders. Simply pouring water over yourself will not have any effect. It is also an important aspect of bathing etiquette to make sure you thoroughly rinse off your body before entering the baths.

2 When soaking in hot water, first submerge only half of your body

It is good practice to start off by allowing your body to acclimate to the water by submerging only halfway rather than immediately soaking your entire body. By following this procedure, you can avoid excessive physical burdens resultant from high temperature and water pressure.
It is especially effective to wash your body after warming up in a bath. Old dead skin cells become softened and your pores open, which allows dirt to rise to the surface of your skin, making it easy to rinse off.
* Be sure to slowly enter high-temperature baths
* People wearing makeup should cleanse their faces during the rinsing stage. This is because makeup becomes an obstruction preventing pores from opening even after your body temperature rises.
* It is a good rule of thumb to bathe until you feel sweat on your forehead and the tip of your nose. You should not bathe so long that you begin to sweat heavily and experience palpitations. Bathing for too long can conversely lead to feeling chilly after leaving the water.

3 Do not rinse off after bathing in onsen

It depends on the type of onsen, but rinsing yourself off after bathing in an onsen can also weaken the effects of nutrients and other elements in the water. When drying off, try to only wipe off the beads of water.
* People with sensitive skin should wash and rinse thoroughly. Also note that in the case of extremely stimulating acidic springs or people with weak skin, overexposure may be a concern.

4 Keep your body hydrated

When you sweat, your body loses internal moisture. Make sure to help your body retain moisture by drinking lukewarm water or sport drinks.

5 Rest and relax

Your body consumes energy while bathing in hot water. There are also fluctuations that take place in your blood pressure, so it's a good idea to allow your body to rest for at least thirty minutes in order for your physical condition to stabilize. During this period, it is

important to prevent yourself from chilling off by drying your body and your hair.

Bathing manners

Thoroughly rinse off sweat and dirt before entering the water.	Do not drop your towel into the water.	Refrain from swimming in the water.

Taking full advantage of onsen

* **Places to maintain and promote health through onsen usage**

In addition to traditional hot spring cures such as utase-yu (waterfall baths) and mushi-yu (steam baths) at health promotion facilities, institutions that offer onsen programs for health promotion and feature modern facilities that employ onsen science and exercise physiology are gaining a great deal of renown lately. Onsen experts and bathing guides who are possessed of specialized knowledge work at these institutions, and visitors can consult them on health related issues. Other benefits of these institutions include the creation of effective bathing and exercise programs.

For example...

Bathing programs between thirty and sixty minutes are offered for different purposes such as stress reduction and reducing fatigue.

Bathing program for stiff lower back and shoulders

*** Kake-yu (pouring water on your body) 10 times**
*** Kiho-yoku (bubble bath) 5 - 10 minutes**
*** Ne-yu (sleeping bath) 10 - 15 minutes**
*** Rest 5 - 10 minutes**
*** Utase-yu (waterfall bath) 3 - 5 minutes**
*** Whole body/partial bathing 5 - 10 minutes**
*** Rest 30 - 60 minutes**

Kake-yu (pouring water on your body)

Kiho-yoku (bubble bath)

Ne-yu (sleeping bath)

What are institutions that offer onsen programs for health promotion?
Institutions displaying this mark meet requirements prescribed by the Ministry of Health, Labour and Welfare, and have been approved by that ministry as facilities that can offer onsen programs for health promotion.
For more information, please visit the Japan Health & Research Institute website

Unusual bathing methods

Onsen resorts all over the country feature a variety of unique bathing methods that employ waterfalls, steam, mud, sand, and more. Each offers different beneficial effects, so why not try one that is ideal for your own constitution and physical condition?

For more information, please visit the "Other types of bathing" special feature page

When drinking spring water, temperature is the key!

Drinking spring water has direct effects on your digestive system. It is said that if you continue drinking it for a long period of time, you can relieve gastrointestinal disorders, liver disease, and constipation. Hot water weakens stomach stress and is good for gastric hyperacidity, while cold water invigorates your stomach and is good for reducing stomach acid and relieving constipation. Because you're drinking water that comes from a natural spring, make sure to do so at a licensed location after checking the included components and which conditions the water is recommended for.

Onsen inhalation

Few onsen resorts offer facilities for onsen inhalation. At such facilities, the bather inhales onsen steam, gas, or spring water mist. Springs used for this type of bathing method include chloride springs and sodium bicarbonate springs.

Things to keep in mind

You should take care if...

* When bathing, make sure to consider your own condition and respect bathing rules.

*** After drinking alcohol**

Drinking alcohol suddenly changes your blood pressure, which can present the risk of cerebral anemia.

*** Right after eating**

Bathing affects your blood, skin, and kidneys, which can worsen digestion and absorption. After eating, make sure to rest for thirty minutes to an hour before getting in an onsen.

*** Right after exercising**

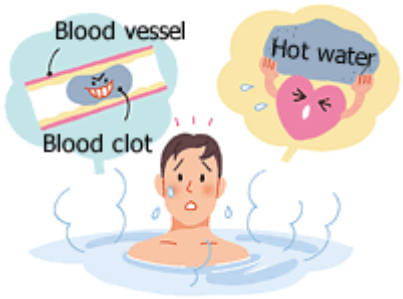
Bathing can make it harder for muscles to relax and can place a greater burden on your heart. Wait at least thirty minutes after exercising before bathing.

*** When you have a cold**

You shouldn't immerse yourself in hot water when you don't feel well. If you don't have a fever, it's a good idea to take a relaxing bath in warm water while taking care not to become chilled afterwards.

*** Bathing in hot water**

Elderly people or people who have high blood pressure, arteriosclerosis, heart disease, or disorders of the respiratory organs should not bathe in water that is 42°C or hotter.



You should avoid onsen bathing if...

If your body is weakened by illness or other causes, the medicinal components in onsen may have adverse effects.

* People with the following conditions should avoid onsen:

- Advanced rheumatoid arthritis
- Colds or other acute illnesses (fever)
- Cancer, leukemia, sarcoma
- Acute communicable disease
- Serious high blood pressure or arteriosclerosis
- Serious diabetes
- Serious heart disease or kidney disease
- If you have recently experienced cerebral haemorrhage or gastroduodenal ulceration
- Large vessel aneurysm
- If you are in the early or late stages of pregnancy (*Pregnant women may enter the sleeping bath twice a day)

* People with the following conditions should avoid sulphur springs:

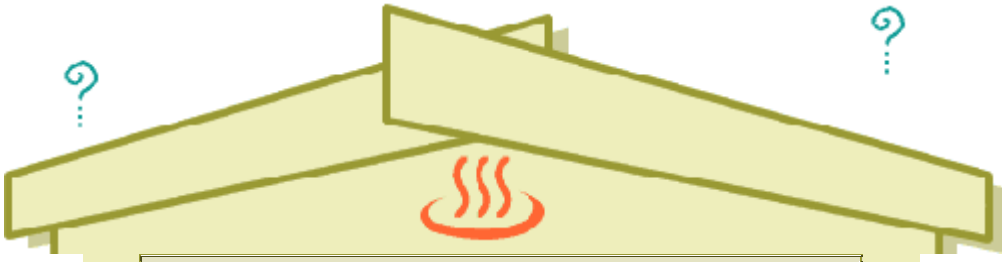
- Elderly people, people with dry skin, people with extremely sensitive skin (especially people with photodermatosis)

* People with the following conditions should avoid drinking water from the following types of springs:

- Sulphur springs, simple carbon dioxide springs: If you are experiencing diarrhea
- Chloride springs, sodium bicarbonate springs, sodium sulphate springs: People with kidney disease, high blood pressure, or edema
- Springs that contain iodine: People with hyperthyroidism

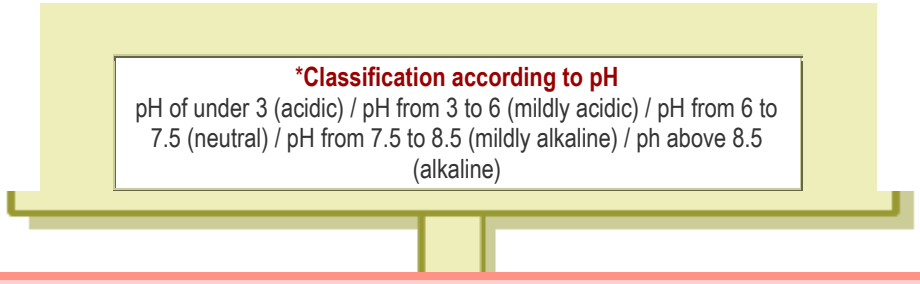
Onsen composition

Before bathing in an onsen, be sure to check the onsen composition chart hanging in the changing area or other locations.



Name of source spring	
Effects	Upon bathing in this onsen you can expect improvements for these symptoms. * Selecting an onsen (hot spring) according to your condition (PDF, 176 KB)
Prohibited diseases	People with these symptoms or diseases are not allowed to bathe in this onsen. * Things to keep in mind
Notes on bathing duration	Cautions about the duration and frequency of bathing in this onsen will be written here. Pay particular attention to the length of time for medicinal bathing. * How to bathe in an onsen

	There is also a place where the content of regulated components will be listed in detail.	
	Onsen type	pH level
Composition	Based on their composition, medicinal springs are divided into nine different categories. * What types of onsen have you tried?	Classification according to hydrogen ion concentration. Water with mild alkalinity has the effect of making skin smooth.*



Note

As a result of a 2005 partial revision to the Hot Spring Law, it has also become obligatory to make clear the following points.

- If water is added to an onsen which is then provided for public bathing, this fact as well as the reason for the action must be made clear.
- If onsen water has been heated and provided for public bathing, this fact as well as the reason for the action must be made clear.
- If onsen water has been circulated and provided for public bathing, this fact (including whether or not a filter is being used) as well as the reason for the action must be made clear.
- If bath additives have been added to onsen water, or if onsen water has been sterilized, and provided for public bathing, the name of the bath additives and the sterilization process must be made clear along with the reason for the action.

Other types of bathing

Onsen resorts all over the country feature a variety of unique bathing methods. This page introduces a few of the more unusual ones, each of which has different beneficial effects. Why not try one that is ideal for your own constitution and physical condition?
For shoulder and lower back pain...

Utase-yu (waterfall bath)

This type of bath features hot water that falls from a high location, relieving muscle pain through pressure and warmth. Try standing, sitting, or covering the affected area with a towel to find the water pressure that's ideal for you. If there's enough space, laying down and allowing the water to hit your lower back is also beneficial.

Caution!

Please note!

Five minutes per body part, for a total of about fifteen minutes, is ideal.

If the waterfall is too strong or you spend too long in it, you might experience increased stiffness. And depending on the type and cause of the pain, it might grow worse when exposed to the utase-yu. If so, stop using the bath immediately.

Truly relaxing...

Mushi-yu (steam bath)

The mushi-yu warms your body with onsen steam, which means that you experience no hydrostatic pressure. There are many types of mushi-yu, including the normal type that makes use of steam that rises from a high temperature onsen in a small room, a “steam box" where you immerse your body in steam up to your neck, or a special bath for hemorrhoids that steams your posterior only.

Caution! Your body experiences no hydrostatic pressure, but the high temperature means that people with disorders of the heart or lungs should not use this type of bath. Don't forget to re-hydrate yourself after bathing, and limit water vapor steam baths to short periods only.

A long, soothing soak...

Jizoku-yu (long bath)

With this type of bath, the bather spends between two and three hours – or even more – stretched out in in a 34 to 37°C onsen. The warm water doesn't affect your blood pressure or heart rate, or stimulate the parasympathetic nervous system, so it's gentle to both mind and body.

Warm your body to the core…

Suna-yu (sand bath)

The suna-yu is a type of steam bath where the bather rests inside sand that has been warmed by chloride spring water that gushes forth at the coast. The weight and

temperature of the sand improve blood circulation and relax muscles. Chloride spring water is effective for keeping you warm even after bathing.

Please note! Ten to fifteen minutes per time is ideal. Suna-yu have gained popularity with women who visit them to beautify skin and help lose weight.

Combine baths for a stimulating, soothing harmony...

Awase-yu (series of baths)

With the awase-yu, the bather immerses themselves in different onsen with varying strong and gentle water qualities. By combining stimulus and relaxation, beneficial effects can be had on skin diseases, atopic dermatitis, athlete's foot, trichophytosis, and more.
Stimulating: Acidic spring
Relaxing: Sulphate spring or simple spring

Beautify skin...

Deiyoku (mud bath)

Deiyoku refers to a bath where the bather submerges themselves in mud that contains onsen components. The mud does not feel warm against the body, so you can spend a long time in the bath and allow the onsen ingredients to be fully absorbed into your skin. This helps make skin more beautiful.

Onsen Q&A

* Question list

- If an onsen is reheated or diluted with other water, does it stop being an onsen?
- Are onsen actually effective against disease?
- Is it a good idea to rinse off your body after bathing in an onsen?
- Which is better, hot water or warm water?
- Is it okay to drink alcohol while bathing in an onsen?

- Are onsen with colored water or particularly strong odors more effective than other onsen?
- Do onsen of the same type all provide the same effects?
- Do the effects of an onsen become greater depending on the number of times you bathe in it?
- Do the effects of an onsen become greater depending on the amount of time you spend bathing in it?
- Is it true that bathing in an onsen will make your skin smooth?
- I've seen people drinking onsen water. Is it alright to do this?

Q **If an onsen is reheated or diluted with other water, does it stop being an onsen?**

A If an onsen is too irritating or not at an appropriate temperature for bathing, there are cases when it is heated or more water is added.

Q **Are onsen actually effective against disease?**

A Onsen are good for your heath. However, that does not mean the qualities of the water or its temperature, alone, will have effects on your ailments. Also, the appropriate types of onsen and bathing procedures vary depending on your condition, so it is important to find an onsen that matches your physical condition and symptoms.

Q **Is it a good idea to rinse off your body after bathing in an onsen?**

A If you rinse off your body with normal (warm) water, the effects of onsen nutrients will also become diluted. However, with respect to extremely stimulating acidic springs or people with weak skin, it is a good idea to rinse off with normal (warm) water because overexposure may be a concern.

Q **Which is better, hot water or warm water?**

A Hot water engages the sympathetic nerves, which stimulates your body's activity level. Warm water engages the parasympathetic nerves, which allows your body to rest. In other words, you should match the temperature of the water with your physical condition and goal. This may involve using hot water if you want to make your body more alert, or using warm water if you want to let your body rest. There are cases when it is best to avoid hot water depending on your condition and symptoms, so please be careful.

Q **Is it okay to drink alcohol while bathing in an onsen?**

A A combination of alcohol and onsen may cause blood circulation to become too efficient and place strain on your heart. There is also a possibility of

cerebral anaemia due to changes in blood pressure upon exiting the water. Please avoid onsen while drinking or after becoming intoxicated.

Are onsen with colored water or particularly strong odors more effective than other onsen?

Onsen color and smell vary mainly depending on the type of onsen. Onsen with deep coloring or strong odors do not necessarily have more of an effect than other onsen. For instance, iron springs are colorless and transparent immediately coming to the surface, but turn a reddish-brown color and weaken after coming in contact with oxygen.

Do onsen of the same type all provide the same effects?

The variety of different onsen is endless. Although medicinal springs can be broadly divided up into nine different categories, even by looking at the composition of these springs, you will notice that no two are the same. The environment around the onsen also differs. As a result, the effects of produced by any onsen are unique to that onsen.

Do the effects of an onsen become greater depending on the number of times you bathe in it?

Even though onsen may be good for your health, bathing in onsen too many times on the same day places strain on your body and produces opposite results. As a rule of thumb, consider bathing in onsen two to three times per day. Be sure not to forget to rest and hydrate your body during the intervals between bathing.

Do the effects of an onsen become greater depending on the amount of time you spend bathing in it?

Long baths may result in hot or cold spells, and are generally not recommended. Although effects vary depending on the temperature of the water, bathing for periods so long that you lose significant amounts of sweat, your face becomes extremely red, or you feel palpitations should be avoided. If the water is very hot, you should try to avoid bathing for longer than two to three minutes.

Is it true that bathing in an onsen will make your skin smooth?

Sodium bicarbonate springs and sulphate springs are said to have a particularly strong beautifying effect on the skin. Sodium bicarbonate springs remove dirt and make skin soft, leaving it with a smooth feel. On the other hand, the sulfur of sulphate springs softens and helps remove hardened dead skin and is effective against pimples and breakouts. The heat of the water also improves circulation and promotes metabolism, assisting with the elimination of waste products.

Q **I've seen people drinking onsen water. Is it alright to do this?**

A Drinking onsen water is an effective way to get the water directly into your system. However, since you'll be ingesting natural spring water, be sure to only ingest water at onsen which allow drinking, and carefully confirm the components and effects of the water. The components of onsen water change with time, so try to drink the fresh water coming from the mouth of the spring.

Institutions that offer onsen programs for health promotion

List of institutions that offer onsen programs for health promotion and are approved by the Minister of Health, Labour and Welfare

Below are the institutions offering onsen programs for health promotion that are currently approved by the Minister of Health, Labour and Welfare.

Current as of October 31, 2009

	Name of institution	Location	Date approved by the Minister of Health, Labour and Welfare
1	Hotel Kaminoyu-onsen	Ryuji, Kai-shi, Yamanashi Prefecture	July 2005
2	Fujinoya Yutei	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	July 2005
3	Hotel Hatta	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	July 2005
4	Hotel Kimiyoshi	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	September 2005
5	Hotel Kaiji	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	September 2005
6	Hotel Heian	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	September 2005
7	Kizukuri Ryokan Kikori	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	October 2005
8	Nagomi no Yu	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	October 2005

9	Isawa View Hotel	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	October 2005
10	Yumuru Hotel B&B	Yumura, Kofu-shi, Yamanashi Prefecture	January 2007
11	Mitama no Yu, Ichikawamisato-cho	Ichikawamisato-cho, Yamanashi Prefecture	February 2007
12	Arima View Hotel	Arimacho, Kita-ku, Kobe-shi, Hyogo Prefecture	March 2007
13	Masutomi no Yu	Sutamacho, Hokuto-shi, Yamanashi Prefecture	March 2007
14	Tsumugi no Yu, Ichikawamisato-cho	Ichikawamisato-cho, Yamanashi Prefecture	March 2007
15	Keizan	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	March 2007
16	Kurhouse Koryo	Koryo-cho, Izumo-shi, Shimane Prefecture	March 2007
17	Gero-onsen Yamagataya	Yunoshima, Gero-shi, Gifu Prefecture	March 2007
18	Aburaya Bekkan	Toyosaka, Maniwa-shi, Okayama Prefecture	March 2007
19	Super Hotel City Osaka & Natural Hot Springs	Nishi-ku, Osaka-shi, Osaka	March 2007
20	Gero Royal Hotel Miyabitei	Yunoshima, Gero-shi, Gifu Prefecture	March 2007
21	Suimeikan	Koden, Gero-shi, Gifu Prefecture	October 2007
22	Bosenkan	Yunoshima, Gero-shi, Gifu Prefecture	October 2007
23	Isawa Onsen Hotel Fuji	Isawa-cho, Fuefuki-shi, Yamanashi Prefecture	October 2007
24	Asino Onsen	Nasu-machi, Nasu-gun, Tochigi Prefecture	December 2007
25	Ogawaya	Yunoshima, Gero-shi, Gifu Prefecture	January 2008
26	Aso Refresh Resort	Minamiaso-mura, Aso-gun, Kumamoto Prefecture	January 2008
27	Wagaku Wellness Care (Welfare center for the aged)	Miyukifueda, Kumamoto-shi, Kumamoto Prefecture	January 2008
28	Minami Alps-shi Yamanami no Yu (Exchange facility)	Nishinango, Minami Alps-shi, Yamanashi Prefecture	March 2008
29	Juen, Minami Alps-shi (Agricultural experience and training facility)	Yagoshima, Minami Alps-shi,	March 2008

		Yamanashi Prefecture	
30	Mukawa no Yu, Hokuto-shi (Health promotion facility for the aged)	Mukawa-cho, Hokuto-shi, Yamanashi Prefecture	March 2008
31	Spa World	Ebisu Higashi, Naniwa-ku, Osaka-shi, Osaka	January 2009
32	Suruga Health Land	Shimizu-ku, Shizuoka-shi, Shizuoka Prefecture	June 2009
33	Hotel Kaneyamaen	Kamiyoshida, Fujiyoshida-shi, Yamanashi Prefecture	October 2009

OVERVIEW

The increase of chronic ailments commonly referred to as "diseases related to civilization" is adversely affecting our national life-style. These diseases include lack of exercise owing to the mechanization of our daily environment, mounting stress from our social environment becoming more and more complex, and overeating for want of proper knowledge about nutrition and diet. In addition, muscle fatigue arising from overwork as well as iatrogenic illnesses caused by the indiscriminate use of drugs are reportedly on the rise.

To reduce these widespread health problems, measures to combat sickness such as early detection and conventional treatment, alone, are not enough. Rather, it is necessary to consider the demanding requirements of proper health care and engage in health improvement measures built on a life style and exercise habits that bring about better health. In light of this, the need to develop health improvement programs including hot spring, climate, and exercise treatments taking advantage of rich, natural environments has become apparent.

With national leisure time increasing, the desire for health care and physical improvement among individuals is rising at remarkable speed. However, owing to the shortage of suitable health programs and places to practice them, leisure activities do not go beyond relaxation, and Japan's legacy of hot springs is used almost entirely for purposes of entertainment and sightseeing. In effect, health care and physical improvement go largely ignored.

Taking into account the present state of affairs, the Japan Health & Research Institute was established to develop and promote prescriptions for exercise, life-style, rehabilitation programs, and other activities for the healthy and moderately ill with a focus on introducing natural treatment calling for hot springs, proper diet, climate, and other related elements. These activities are performed in close cooperation with the Japanese Association of Physical Medicine Balneology Climatology and various other societies and institutes with the aim of building a national program of health-building and rehabilitation in connection with facilities suitable for the purpose of answering the many requests for health improvement from individuals caught up in today's hectic environment.

ESTABLISHED OCTOBER 5, 1974
APPROVED BY THE MINISTRY OF HEALTH AND WELFARE

OBJECTIVE

1. Purpose

The institute offers assistance and instruction in basic research on natural, climatic, dietary and physical treatment, etc. to improve and regain national health. Based upon these principles, the institute develops and propagates a rehabilitation plan at health resorts in addition to offering research and development as well as advice on rehabilitation programs for children, adults, and the moderately ill.

2. Activities

We engage in the following in order to achieve our objective.
(1) Assist with research on hot springs, climate, diets, physical treatments, etc.
(2) Collect data on hot springs, climate, diets, physical treatments, etc.
(3) Assist in the research and development of rehabilitation systems related to hot springs, climate, diets, physical treatments, etc.
(4) Develop rehabilitation programs
(5) Survey hot spring qualifications with respect to health improvement capabilities
(6) Conduct health diagnostics
(7) Present rehabilitation programs based on health diagnostic results, introduce health improvement programs in daily life, and supply necessary related information
(8) Exchanges of information and promotion with related domestic and foreign organizations
(9) Perform other research necessary to achieve the institute's objective

DESCRIPTION OF ACTIVITIES

1. Research Assistance

The institute enjoys the assistance of other researchers and research institutes in its research on health improvement and rehabilitation.

2. Independent Research

We engage in independent research for the development of our health improvement and rehabilitation programs based on natural treatment associated with hot springs, climate, diet and exercise, and taking advantage of natural environments. We report the results of research to the Japanese Association of Physical Medicine Balneology and Climatology, the Japan Health Diagnostic Medical Society, the Japan Rehabilitation Medical Society, and other institutions.

3. Instructions and Propagation

We propagate our health improvement and rehabilitation program and undertake various activities as a means to establish true hot spring health resorts that fulfill various conditions and needs as places suitable for our program, which include:
(1) Plans to establish rehabilitating hot springs
(2) Basic planning and acceptance of the hot spring rehabilitation system
(3) Basic planning, instruction and propagation of the hot spring rehabilitation program
(4) Basic planning and acceptance of health improvement facilities that employ water-based techniques
(5) Planning and instruction regarding "health improvement and rehabilitation trips"

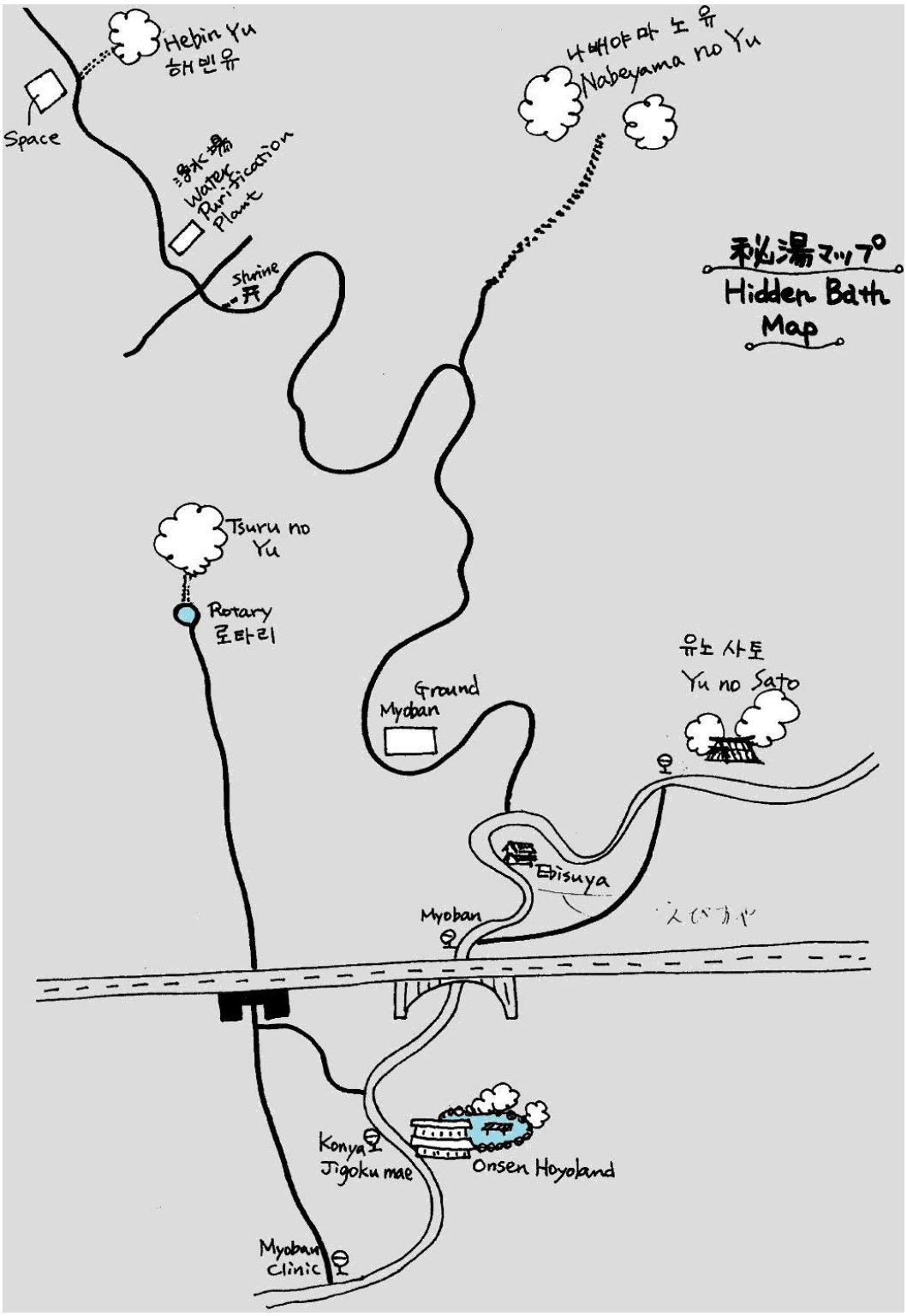
4. International Exchange

Survey groups are dispatched annually to advanced European nations to study hot spring rehabilitation methods.

5. Health Diagnostic Functions

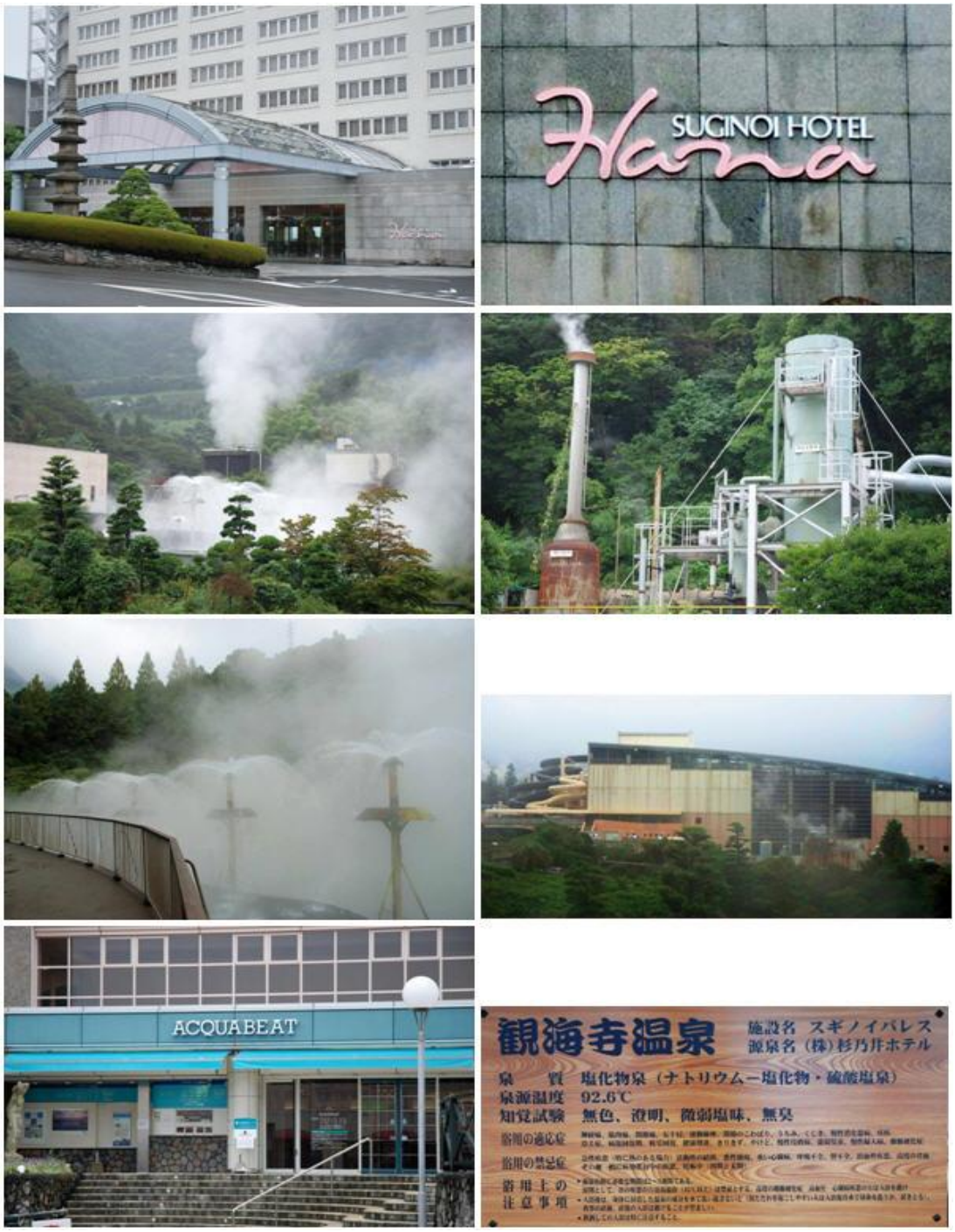
We established our General Health Diagnostic Center in 1975, and are performing health diagnostic care by advocating the need for daily health control to medical examinees, specially qualified nutritional and rehabilitation instructors, and other related individuals.

Appendix 6.3



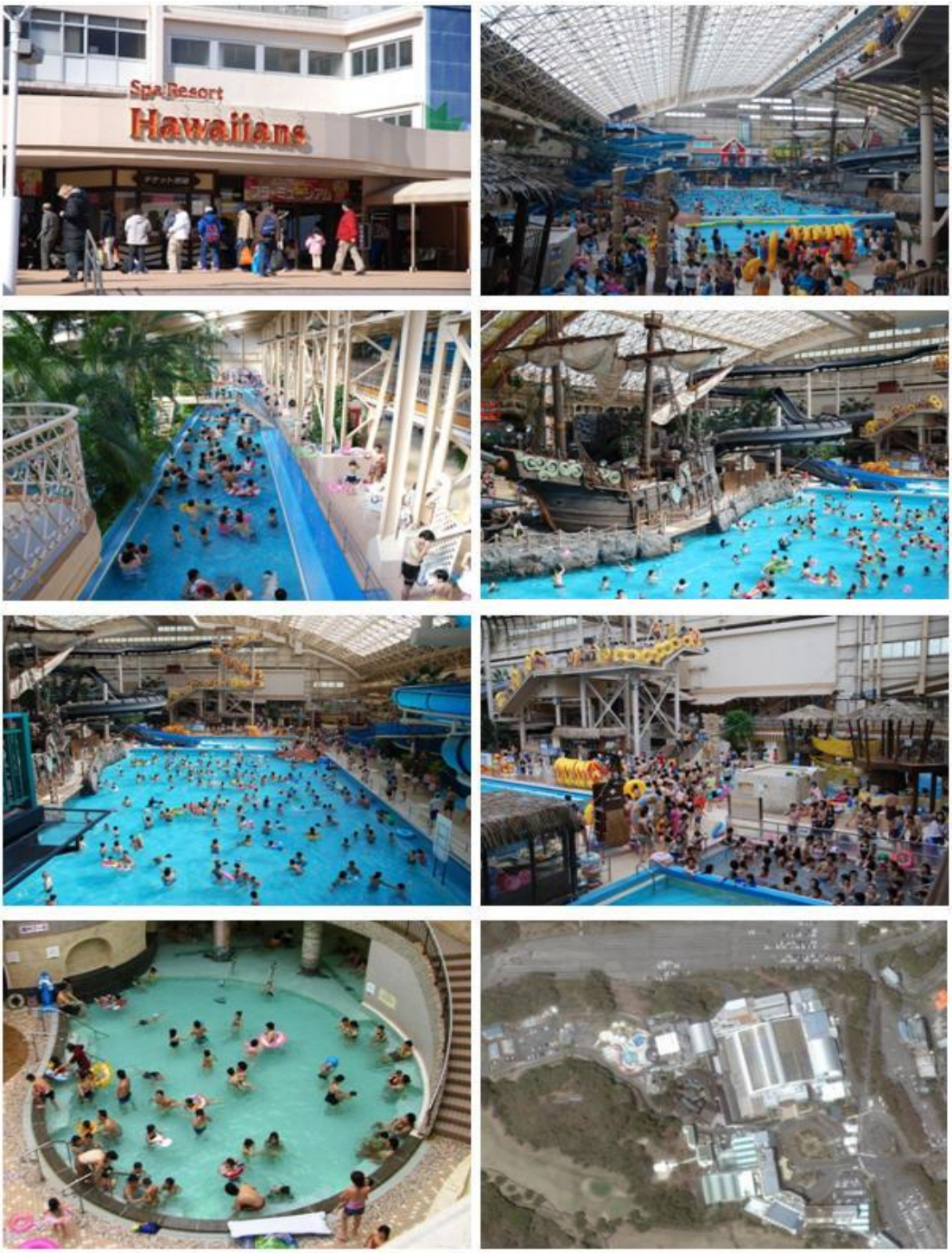
This hand drawn map was obtained in the foreign tourist information centre at the Beppu railway station. Word of mouth is another way of promoting 'hidden' onsen locations. Access is negotiable, but the effort is worth it.

Appendix 6.4



The Suginoi Hotel Complex in Beppu, Kyushu, maintains its own geothermal power plant, which supplies the bathing and swimming facilities with hot spring water and the accommodation with geothermal heat. The water emerges close to boiling point from the ground and needs to be cooled down before use.

Appendix 6.5a

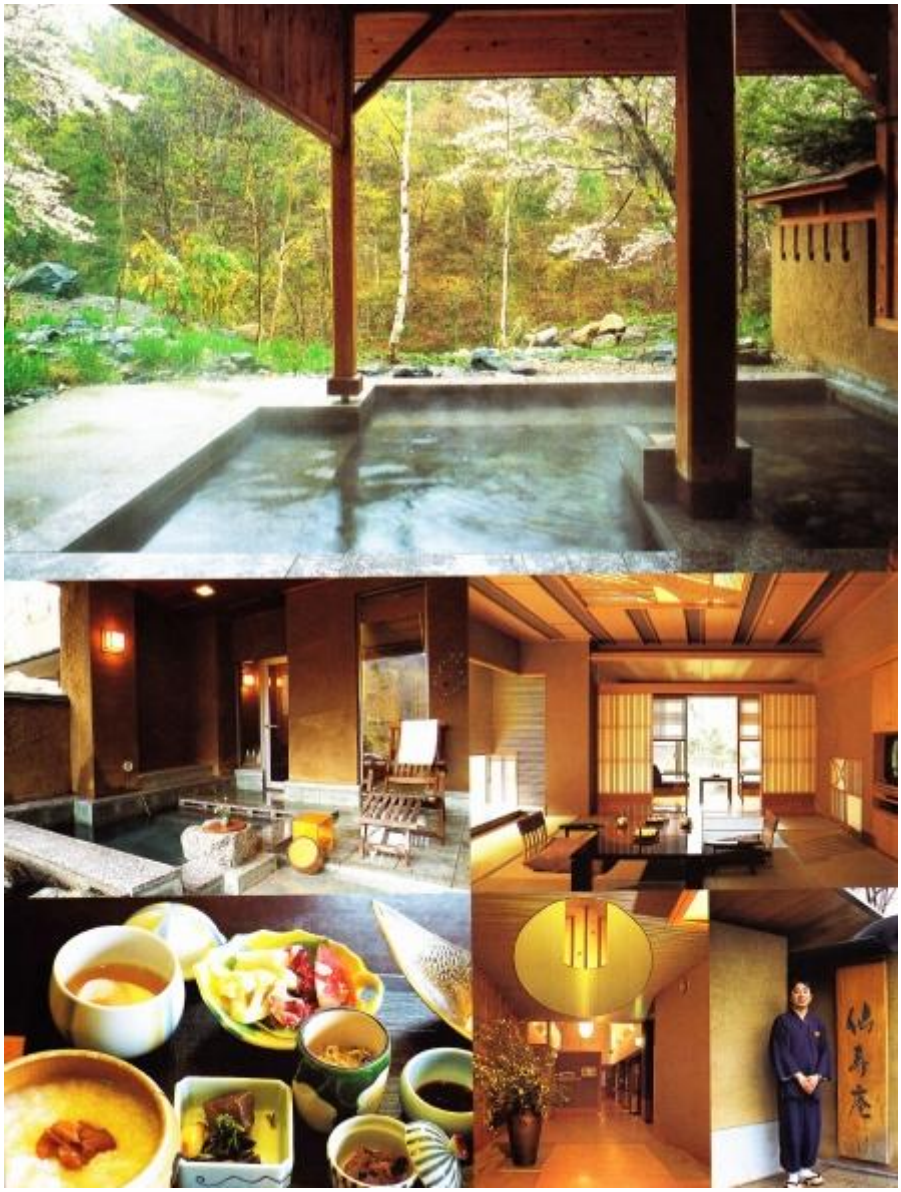


The Spa Hawaiians Resort is aimed at mass tourism with all its commercial aspects. A number of pools with different water types are themed around a stage for Polynesian and Hawaiian dance performances. An artificial tropical climate caters for a greenhouse environment where banana trees and orchids are on display. Families and young couples appear to be in the majority, but age is no limit at this hot spring park as there are themed pools for everybody and every taste.

Appendix 6.5b

Spa Hawaiians Resort offers a variety of hot spring based entertainment for people of all age groups. The photos above were taken of large posters displayed throughout the complex. It was considered important to show that the Spa Resort Hawaiians is accustomed to foreign visitors and offers English translations in most areas.

Appendix 6.6



Senjyuan Ryokan, opened in 1997 and owned by the chairman of the Association for the Preservation of Japanese Ryokan. Gunma Prefecture (Source: Seki and Brooke, 2005). This is an example for a hot spring resort in traditional style with indoor and outdoor baths.

Appendix 6.7

A typical page out of an onsen 'catalogue' with references to the hot spring pools as the main attraction. Commonly pictures of the local delicacies and the accommodation (inside or outside) give an indication whether this destination may be desirable to visit or not.

Appendix 6.8a

http://www.env.go.jp/en/press/2005/0224a.html

Ministerial Ordinance Partially Amending the Enforcement Regulation of the Hot Springs Law

Ministerial Ordinance partially amending the Enforcement Regulation of the Hot Springs Law was promulgated on February 24 and it will be enforced on May 24, 2005.

The Minister of the Environment consulted the Central Environment Council on preferable indication by hot spring operators in November 2004. Based on the report submitted by the Council on February 10, 2005, the Ministry of the Environment supplemented new enforcement regulation in relation to the notification of constituents of hot spring.

In addition to the notification items on hot spring constituents stipulated in Paragraph 1, Article 14 of the Hot Springs Law, the following items which may give impacts to hot spring constituents are added as items to be notified.

- For adding water to hot spring for public bathing, that effect and its reason.
- For heating hot spring for public bathing, that effect and its reason.
- For circulating (and filtering in case it is adopted) hot spring for public bathing, that effect and its reason.
- For adding any bath agent to or sterilizing hot spring for public bath, the name of bath agent and sterilizing method and reasons for them.

Appendix 6.8b

www.env.go.jp/en/press/2005/0224a.html

Ministry of the Environment
Government of Japan

Press Release

Ministerial Ordinance Partially Amending the Enforcement Regulation of the Hot Springs Law

February 24, 2005

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