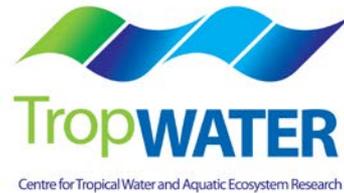




National Environmental Science Programme



NESP Project 2.1.3

*Harnessing the science
of social marketing and behaviour change
for improved water quality in the GBR:
an action research project*

Progress Update April 2017
Lynne Eagle, Rachel Hay and Marina Farr

Update on project to date

- Literature review and first document readability analysis completed (Eagle, Hay et al. 2016; Hay and Eagle 2016)
- Webinars presented late 2016, Segmentation / typology webinar presented early 2017
- Data collection: later than originally planned in both NQDT and Terrain regions
- Therefore we have a preliminary analysis only – this webinar does not include a detailed analysis and does not cover the quality of life and aspirations data

Eagle, L., Hay, R., & Farr, M. (2016). *Harnessing the science of social marketing and behaviour change for improved water quality in the Great Barrier Reef: an Action Research Project - Background Review of Literature* (2.1.3). Retrieved from <http://nesptropical.edu.au/wp-content/uploads/2017/01/NESP-TWQ-2.1.3-INTERIM-REPORT-1.pdf>

Hay, R., & Eagle, L. (2016). *Harnessing the science of social marketing and behaviour change for improved water quality in the GBR: Documentary Analysis (readability, message framing and message tone)*. Retrieved from <http://nesptropical.edu.au/wp-content/uploads/2017/01/NESP-TWQ-2.1.3-INTERIM-REPORT-2.pdf>



Expectations from Literature Review

- Tensions between freedom to farm and constraints
- Lack of credibility and trust re government-originated information; some resistance to change
- Strong social norms
- Frustration that farmer voices are not being heard and expertise is not valued
- Different segments / typologies: differing “buy-in” to key issues



Findings consistent with expectations from Literature Review (1)

- Expectations confirmed, especially:
- Tensions and trust:
 - *“People (e.g. government) who come to your farm and tell you what to do need to look at it from a farm view”...“reinventing the wheel” ... don’t consider the financial viability...”*
 - *“Abolished - Government got too much say to control. Get a grant & have to report back and the government agenda not necessarily helpful”*
 - *“Not happy how treated by Government & regulations”*
 - *“Government leave me alone, don't tell me how to do things”*

Findings consistent with expectations from Literature Review (2)

- Beliefs are out of line with reality:
 - *approx. 4% of cane growers blame graziers for poor WQ in local streams, rivers, and waterways*
 - *2% of cane growers in the WT & 15.3% in the Burdekin blame grazing for the declining health of the GBR*
 - *Approx. 3% of graziers blame cane growers for poor WQ locally and 4.6% blame cane growers for the declining health of the GBR*
- Top causes of pressure on water quality
 - *Urban chemical runoff (21% of graziers/16% of cane growers)*
 - *Feral pigs (approx. 18% of cane growers)*
 - *Climate change/Extreme events (approx. 20% of graziers/9% of cane growers)*
- *Over half of cane growers do not believe nutrient loss impacts GBR (54%)*
- *Approximately 1/3 of graziers do not believe that sediment loss impacts the GBR (Approx. 40%)*



Findings consistent with expectations from Literature Review (3)

- Social norms are important -
 - But community recognition less important than “farmers I respect” (social identity)(63% of cane growers/56% of graziers)
- Sharing new ideas is important (*93% of cane growers/76% of graziers*)
- Need to support “positive deviants” (innovators” who go against perceived norms).
 - Recently a farmer contacted the research team to tell of his alternative farming method... by applying 70N per hectare, he is getting similar yields and marginally less CCS, more or less the same as other farmers, but with different preparation and planting practices
 - ***The farmer asked SRA and others to come and make a case study, but they did not want to be involved and just said its working so keep doing what you are doing***
 - The farmer feels like he is knocking his head against the wall, it has come a great cost, has lost support of extended family and financial interest in family farm.
 - The farmer feels he is too old to keep fighting, but has worthy results and answers and no one is listening.

Findings consistent with expectations from Literature Review (4)

Some evidence of self-efficacy concerns

- “Most farmers in this region would not have the technical knowledge to calculate fertiliser application rate” (16% of cane growers in the WT / 37% in the BDT)
- “Most farmers in this region would not have the technical knowledge to handle run-off” (13% of cane growers in the WT/16% in the BDT)
- “Most graziers in this region would not have the technical knowledge for” (BDT)
 - spelling paddocks (30%)
 - adjusting stock to pasture conditions (22%)
 - managing stock around waterways (22%)



Further findings (1)

- Decisions are not always made in isolation
- Over 50% involve others – usually family or extended family.

40% of cane growers and 66% of graziers share decisions

Graziers prefer to share decision with

- Spouses (32%)
- Spouse/Children (25%)

Cane growers prefer to consult with

- Spouses (20%)
- Parents (17%)
- Brothers/Sisters (17%)
- Children (12%)



Further findings (2)

Main Sources of Information						
	Grants and Financial Assistance			Workshops & Training Programmes		
	Graziers	Cane Growers		Graziers	Cane Growers	
	BDT	BDT	WT	BDT	BDT	WT
Cane growers*		11.0%				
Canegrowers organisation			39.0%			35%
Email	11.0%			30.0%		
Extension officer	27.0%	13.0%	26.0%	8.5%	29%	18%
Friend				11.0%	14%	
Google	11.0%					
NQDT	23.0%	23.0%		18.0%		
Peers					12%	

Further findings (3)

- Positive feedback re extension officers
 - “More extension officers on ground”*
 - “Continuing use of extension officers”*
 - “One on one extension support”*
 - “Development pathways for extension officers”*
 - “Extension officers important for keeping knowledge up to date: great communication device is the extension officer for farmer to farmer”*

ABCD framework

- Cane growers - need help from NQDT and Terrain
- Graziers – need help from NQDT



Comments: Extension Officers

- Key role of extension officers in interactions with land managers is recognized (see, for example, Ampt, Cross, Ross, & Howie, 2015; Vanclay, 2004).
- Challenge now is to support officers, particularly in difficult relationships with land managers who hold entrenched views regarding the best practice for managing their own land.
- This may be more difficult when there is a considerable difference between the land manager and extension officer ages.
- “Need people who have experience (not failed farmers or first graduates”).
- Benefits in extending professional development
 - Social marketing principles, especially communication.



Comments: Extension Officers (2)

- Opportunities for extension officers to facilitating group ‘social learning’ with land managers, to share ideas and to learn from and support each other (Hermans, Klerkx, & Roep, 2015) as part of strategies for “*persuasion by discussion*” (Scott, 2012, p. 64)
- Need to determine what training to recommend, what areas they most want to include in training and in what form.



Other Actions: Integrated Communications

- Range of competing and conflicting messages received by land managers, including:
 - largely negative media coverage of issues relating to the health of the Great Barrier Reef
 - messages from mills and farm supply merchants.
 - Information overload appears to be an irritating factor for some land managers (*Marina – add data / comments / quotes – put recommendations on a separate slide if you need the space*)
- Recommendations:
 - System be set up to monitor information from all sources and to combat messages that run counter to the desired core messages re BMP.
 - Need for consistent messages to be sent, irrespective of the source with key informants being involved in message design and delivery where possible.
 - Ideally as part of an integrated communications strategy (Dahl, Eagle, & Low, 2015), using both traditional and digital media (Batra & Keller, 2016; Keller, 2016) that encompasses federal, state and local-originated material.
 - Consistency across all forms of communication, whether print, electronic or face-to-face advice as part of this integration.

Social Media

- Consider digital media communication as part of a wider integrated communication strategy rather than replacing existing strategies.
- May have several benefits:
 - It may help to reach individuals who are hard to reach via conventional media or who resist face to face contact (Quinton, 2013)
 - It can be a low cost and fast way of distributing information (White, Meyers, Doerfert, & Irlbeck, 2014)
 - More popular with younger land managers



Customer Relations Management

- Acknowledged that *“a farmer’s commitment to their advisor will remain strong if they have frequent meaningful interaction over a long period of time, high perceptions of equity and value, trust and confidence”* (Kuehne, Nettle, & LLewellyn, 2015, p. 1).
- Formal CRM systems may be of use, in conjunction with the use of other strategies.
- Principles of business-to-business marketing may be useful in recognizing long decision making cycles, complex decision making units and the importance of reference groups
(Brennan, Canning, & McDowell, 2014).



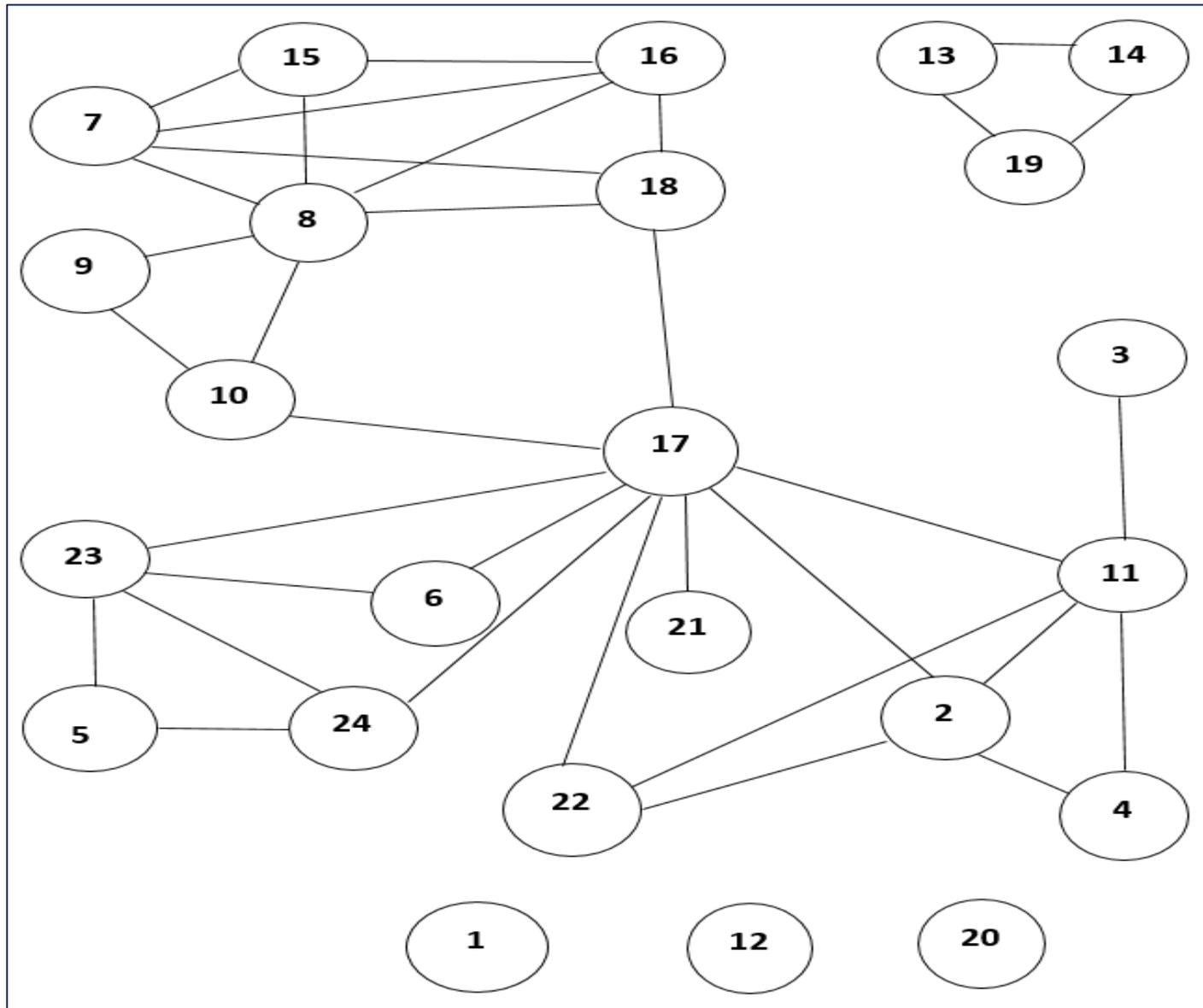
Social Network Analysis

- Given the evidence that decisions are generally not made by one single individual and that the views of '*farmers I respect*' are important, there is value in considering the use of Social Network Analysis (SNA).
- SNA is a set of techniques used to analyse the social and informational contacts between individuals with graphical representation ('sociograms') that use dots or circles to represent individuals and lines to represent connections between them (Dempwolf & Lyles, 2012).
- Identifies information gatekeepers and opinion leaders – power or influence over adoption of innovations.
- Following example: connections between a group of 24 individuals.



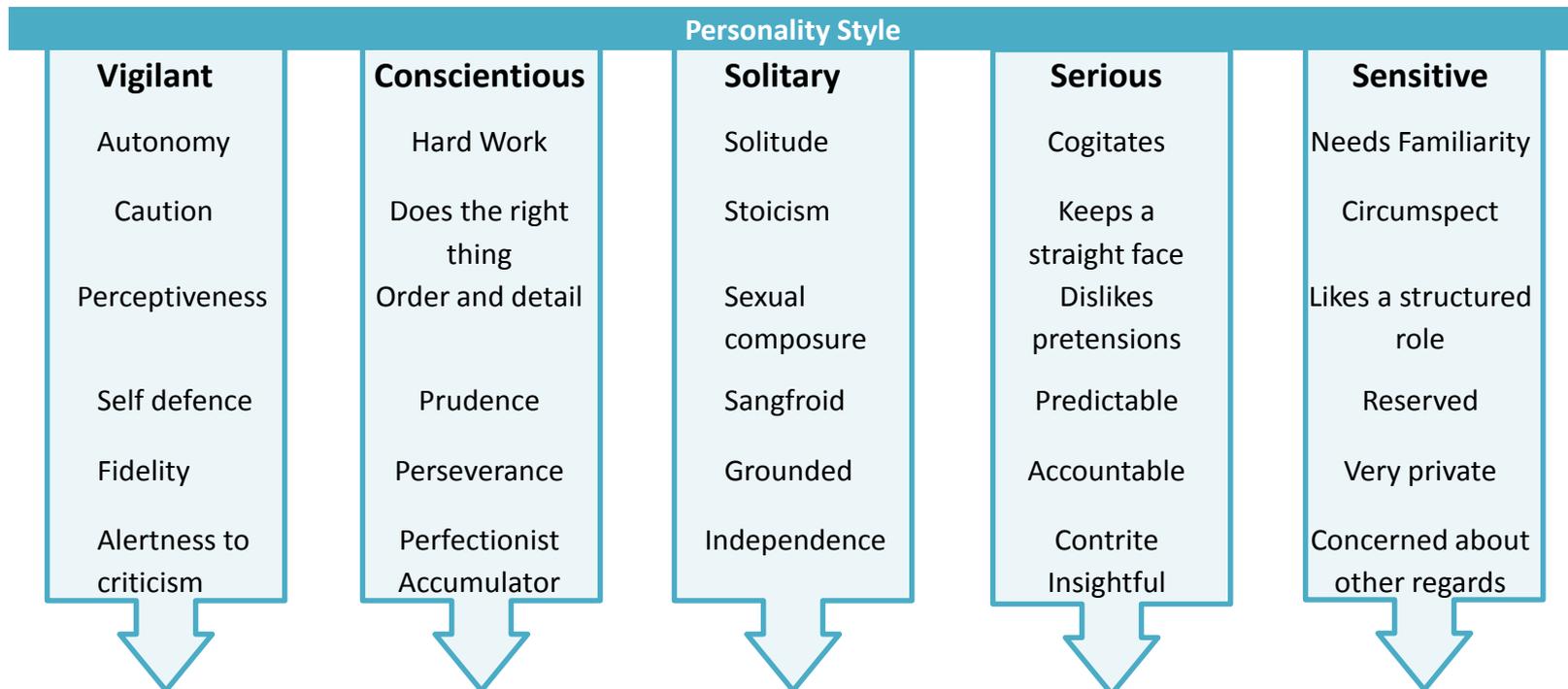
Social Network Analysis Example (Scott, 201

from Moreno, 1934, p. 145)



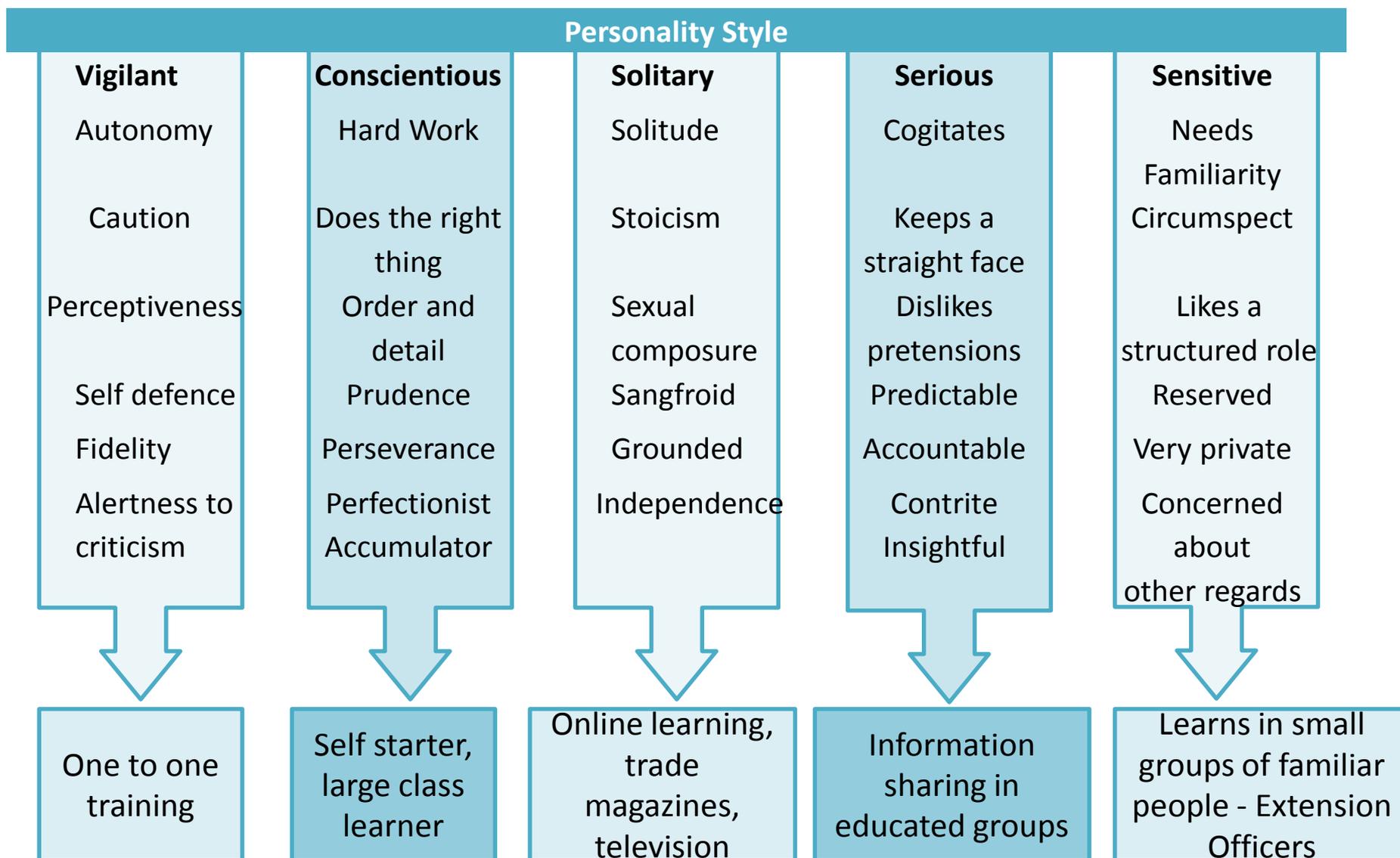
Typologies / Segments

- The diversity of farmers and farming practice is acknowledged....
 - *Understanding dominant personality styles may help in developing resources to help extension officers*



Characteristics of the dominant personality styles

(reproduced from Shrapnel and Davie, 2001)



Where to from here (1)

1st June 2017 reporting period

- Interim report (Burdekin) descriptive stats 1st round of data (Graziers & Terrain) } Discuss with NQDT & Terrain
- Interim report (WT) descriptive stats 1st round of data (Cane growers) } Discuss timing with NQDT & Terrain
- Factsheet summarising 1st round of data for NQDT
- Factsheet summarising 1st round of data for Terrain
- Factsheets for Graziers (Burdekin)/Cane growers (Burdekin)/Cane growers (WT)

Where to from here (2)

1st December 2017

Data analysis (1st round of data) using Structural Equation Model (SEM)/Generalised SEM (GSEM):

- Graziers (SEM/GSEM) – Burdekin
- Cane growers (SEM) – WT
- Cane growers (GSEM) – Burdekin & WT

2nd round of data collection

Preliminary data analysis (panel data models) of 1st and 2nd round data to see if there is any changes in farmer's behaviour attributable to impact of intervention

Link to NESP Project 3.1.3

- *Will assess the readability of current projects/programmes supplied by interested stakeholders*
- *Will include the use of visual imagery*
 - *Gains interest and attention*
 - *Helps those who struggle to understand text based information or other concepts*
 - *Helps communication to stand out*



Imagery

- *High involvement topics*
 - >> *central route to persuasion – may influence decisions*
- *Low involvement topics*
 - >> *allows for non-conscious belief – may lead to behavioural or attitude change*
- *Therefore it is important that visual imagery represents and is relevant to the topic being presented*
- *Further investigation in NESP Project 3.1.3*



Analysis of news media coverage:

Issues relating to the health and future of the GBR (1)

- Why is this important?
- Mass media (traditional or digital forms) are still primary information source.
- Substantial influence on public perceptions and on policy development.
- False balance can cause intentional or unintentional bias, magnifying the perceived levels of agreement or disagreement

(Boykoff and Mansfield, 2008, Finnis et al., 2015).

Analysis of news media coverage:

Issues relating to the health and future of the GBR (2)

- Perceptions may be created or maintained that there is a lack of consensus on particular issues (Clarke et al., 2015).
- Stories of conflict or disagreement may stimulate attention and interest BUT they have decrease confidence in scientific evidence (Stocking and Holstein, 2008, Jensen and Hurley, 2012).
- Uncertainty and doubt may be magnified, misrepresented or manipulated (Bailey et al., 2014), particularly by providing a “*forum for contrarian views*” (Brüggemann and Engesser, 2017, p. 58).

Sensational and at times hostile news media: Great Barrier Reef Examples (2016)

Category	Example
Climate change / Global Warming / Ocean Acidification (23 articles)	Ritter, D. (2016). Great Barrier Reef: why are government and business perpetuating the big lie? <i>The Guardian</i> , November 1.
Coral bleaching (42 articles)	Brissenden, M. (2016). Two-thirds of the northern Great Barrier Reef wiped out. <i>ABC Radio</i> , 29 November.
Reef is Dead / Dying (21 articles)	Marshall, P. & Smith, A. (2016). Outside magazine's reef 'obituary' misleads and crosses line. <i>The Australian</i> , 4 November.
"Peter Ridd controversy" (10 articles)	Micheal, P. (2016). Great Barrier Reef threat overstated, says Queensland professor. <i>Courier Mail</i> , May 19.
UNESCO potential 'at risk' listing (16 articles)	Day, J., Grech, A. & Brodie, J. (2016). Great Barrier Reef needs far more help than Australia claims in its latest report to UNESCO. <i>The Conversation</i> , 6 December.
Water quality improvement (4 articles)	Smail, S. (2016). Great Barrier Reef water quality improved by wetlands restoration, scientist says. <i>ABC News</i> , 14 June.
Funding increase calls (17 articles)	Michael, P., Viellaris, R. (2016). Great Barrier Reef Marine Park authority 'starved of funds'. <i>Courier Mail</i> , 7 November.
Cane monitoring compliance measures (4 articles)	Anon. (2016). Queensland to enforce Great Barrier Reef protection methods with cane farmers. <i>Envirotech-online.com</i> , April 1.
Farmer protests at negative portrayal (4 articles)	McKillop, C. (2016). Great Barrier Reef debate leaves farmers frustrated over their negative portrayal on water quality improvements. <i>ABC Rural</i> , 29 June.
Government actions re reducing runoff (5 articles)	Gregory, K. (2016). Great Barrier Reef: Qld Government's cattle station purchase 'makes agriculture sector scapegoat'. <i>ABC News</i> , 23 June.
Reef Report Card (5 articles)	Smail, S. (2016). Barrier Reef's bleak report card reveals pollution levels too high. <i>ABC News</i> , 20 October.
Plastic bags (14 articles)	Aust Assoc Press (2016). Qld govt seeks plastic bag ban reactions. November 25.
Coal mines (22 articles)	Knaus, C. (2016). Minister defends coal industry after call to ban new mines to save reef. <i>The Guardian</i> , 25 November.
Shipping	Whigham, N. (2016). Research shows the devastation of a potential coal spill on Great Barrier Reef. <i>News.com</i> , May 17.

- Continued repetition of statements that the GBR is dying is likely to reinforce perceptions that any individual action, such as by farmers, to mitigate water quality problems will be useless.
- Also makes it difficult to set well-informed effective policies for future management of the GBR.
- Need for proactive media relations and active countering of negative media coverage.

Recommendations

- Work with environmental science specialists to change views on the impact of farming practice on water quality: “selling the science”.
- Recognise the key role of extension officers and determine what professional development support might be beneficial in continuing to build trust and engagement with land managers.
- Support innovation by celebrating success and sharing ideas.
- Ensure all communication, by whatever means, sends consistent messages irrespective of source, and channelling communication through trusted sources.
- Monitor media coverage and respond to inaccurate messages and develop proactive media relationships.
- Review communication strategies, adding social media where appropriate. Need to recognise the overall diversity of information sources and preferences.
- Formalise customer relationship management tracking.
- Use social network analysis to identify information gatekeepers and opinion leaders. Recognise social relationships based on cultural / kinship factors.
- Recognise land manager diversity but use typology principles to develop material and communication approaches to support extension officers.

Summary: Overall Project

- Numerous complex issues: challenging.
- Our aim: to provide outputs that have practical application:
 - Integrating behavioural insights into policy and programmes,
 - Strategies for identifying potential barriers – and overcoming them,
 - Identifying potential enablers of behaviour change,
 - Advising on effective message strategies, including readability, message framing and message tone, together with recommendations regarding the use of visual imagery.

Questions, comments and suggestions??

- If you have any comments or questions about this part of the project, contact
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- Or email: lynne.eagle@jcu.edu.au

