

Coasts, capital and climate change

Harnessing private investment for coastal adaptation and resilience

Dr. Zsuzsa Banhalmi-Zakar

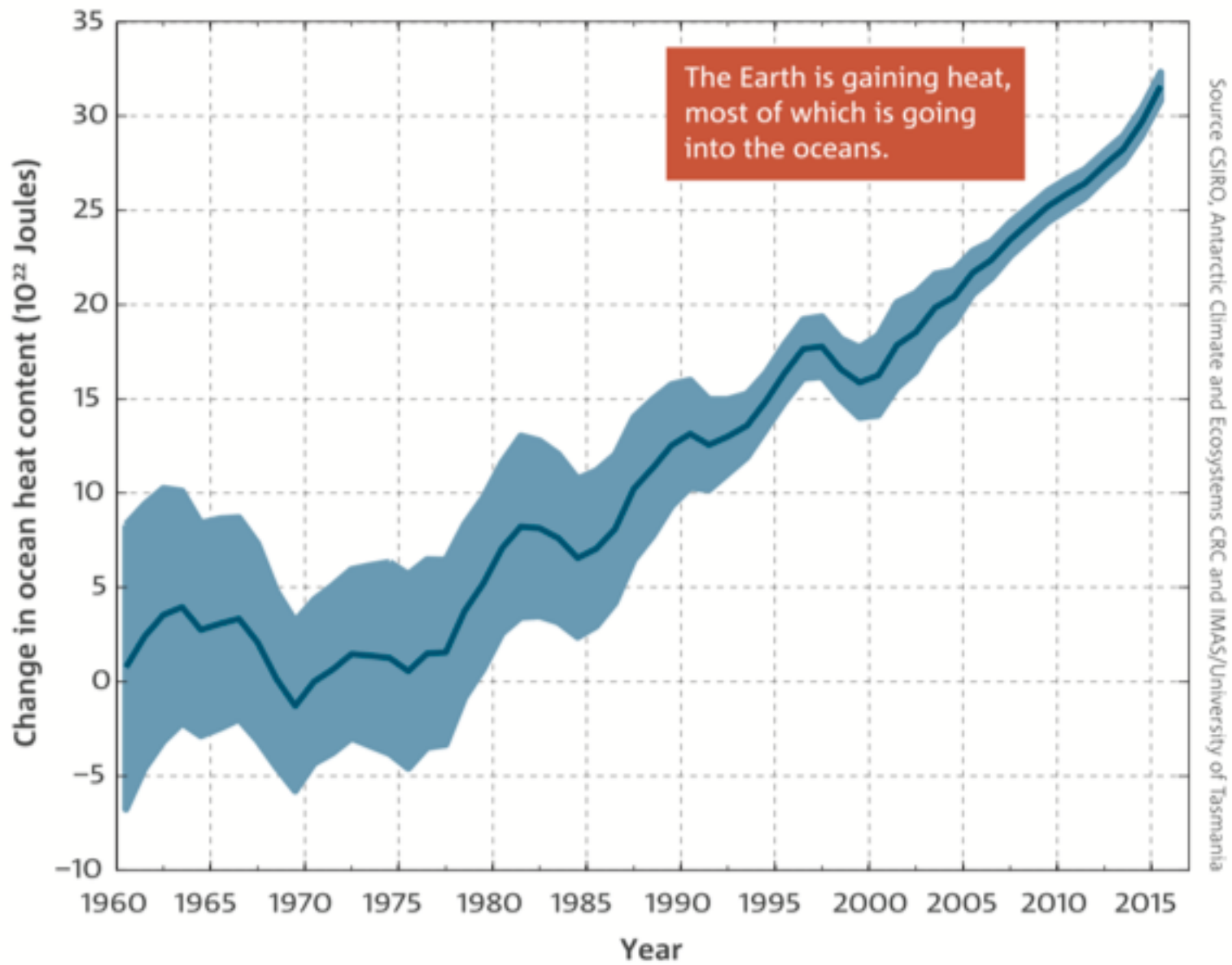
James Cook University, Townsville

zsuzsa.banhalmizakar@gmail.com

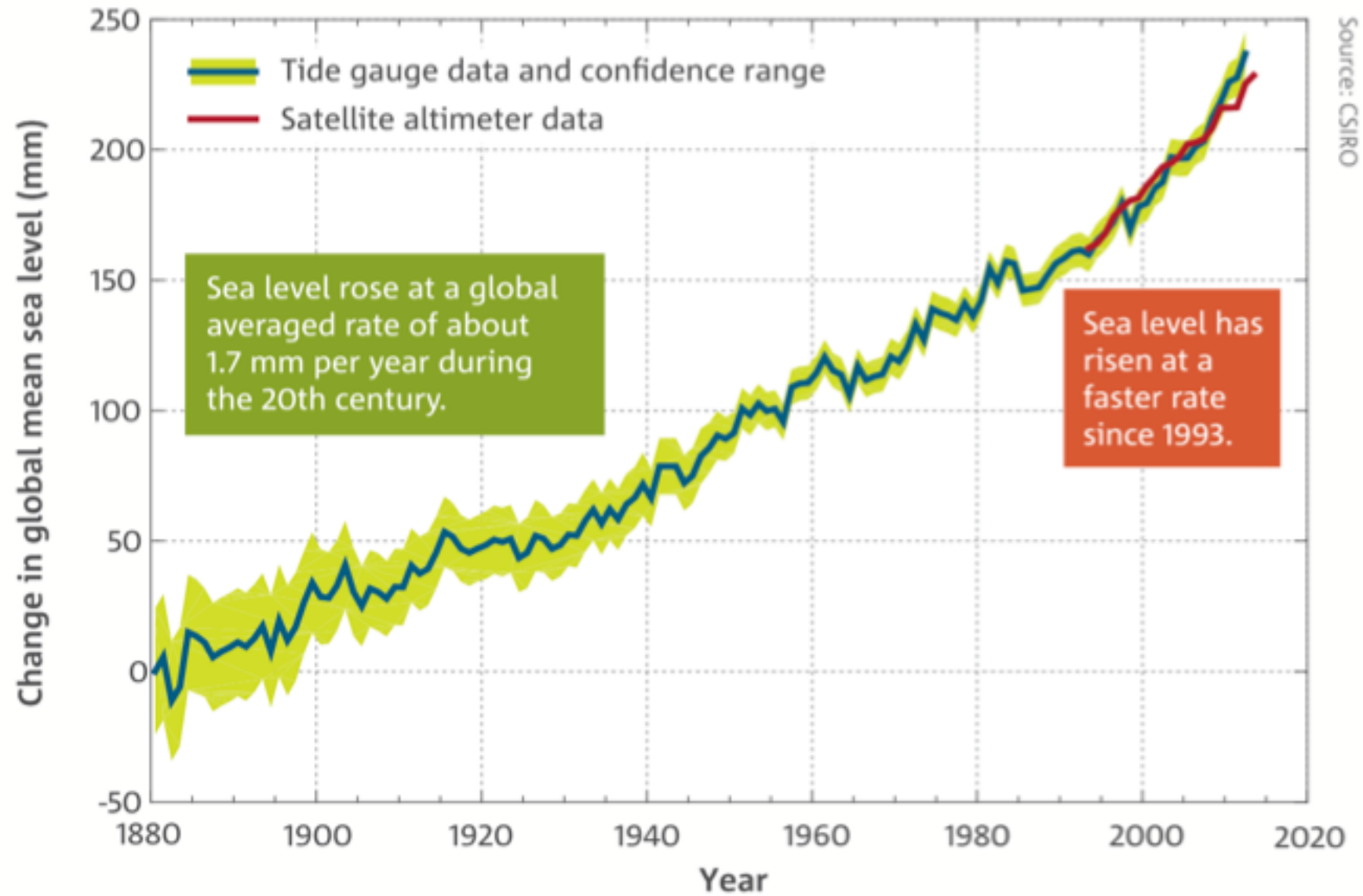
@banhalmizakar

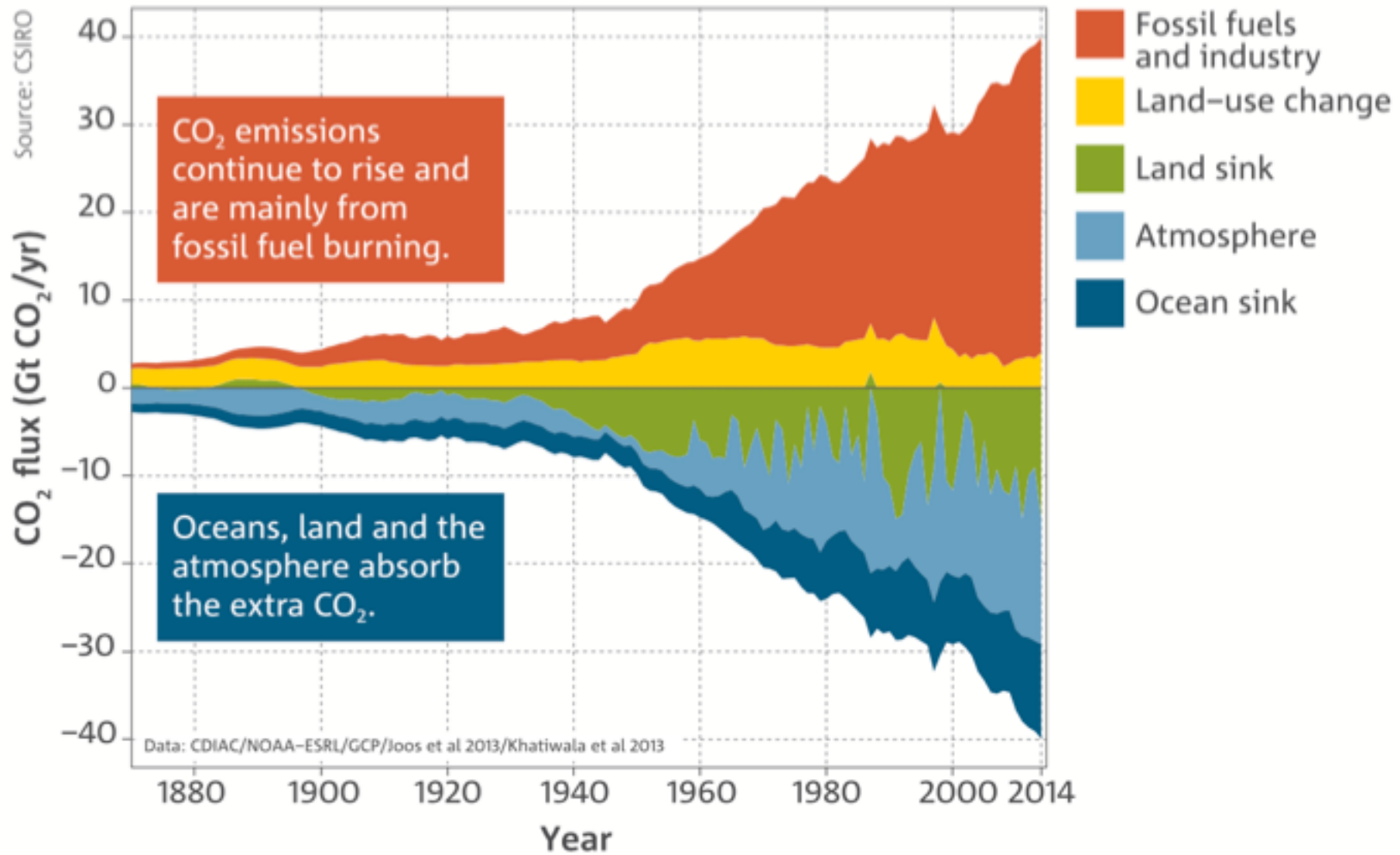
- Climate change: what to expect
- Introduction to 'adaptation finance'
- Climate change challenges for Australia, including financing adaptation and resilience
- The role of the private sector in funding adaptation and resilience and how to leverage this

Climate change: what to expect
and, more importantly, what to
plan for



Source: CSIRO and BoM (2016)





Source: CSIRO and BoM (2016)

Adaptation finance

Financial flows made available for the purposes of adapting to the impacts of climate change

LANDSCAPE OF CLIMATE FINANCE IN 2015/2016

Global climate finance flows along their life cycle in 2015 and 2016. Values are average of two years' data. **In USD billions**

410 BN USD ANNUAL AVERAGE



SOURCES AND INTERMEDIARIES

Which type of organizations are sources or intermediaries of capital for climate finance?

INSTRUMENTS

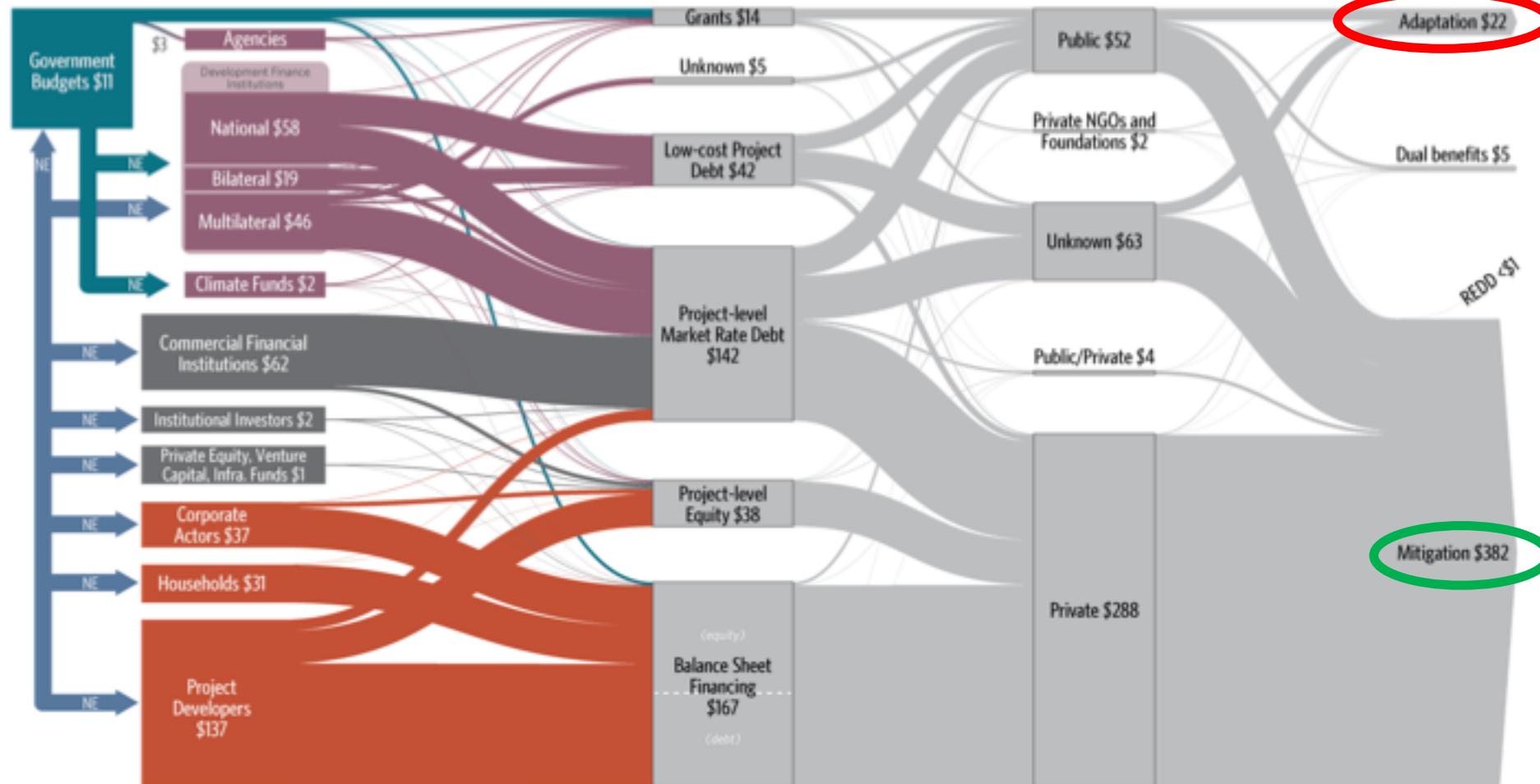
What mix of financial instruments are used?

RECIPIENTS

Does climate finance go through public or private channels?

USES

What types of activities are financed?



KEY

PUBLIC MONEY

PRIVATE MONEY

PUBLIC FINANCIAL INTERMEDIARIES

PRIVATE FINANCIAL INTERMEDIARIES

FINANCE FOR INVESTORS & LENDERS

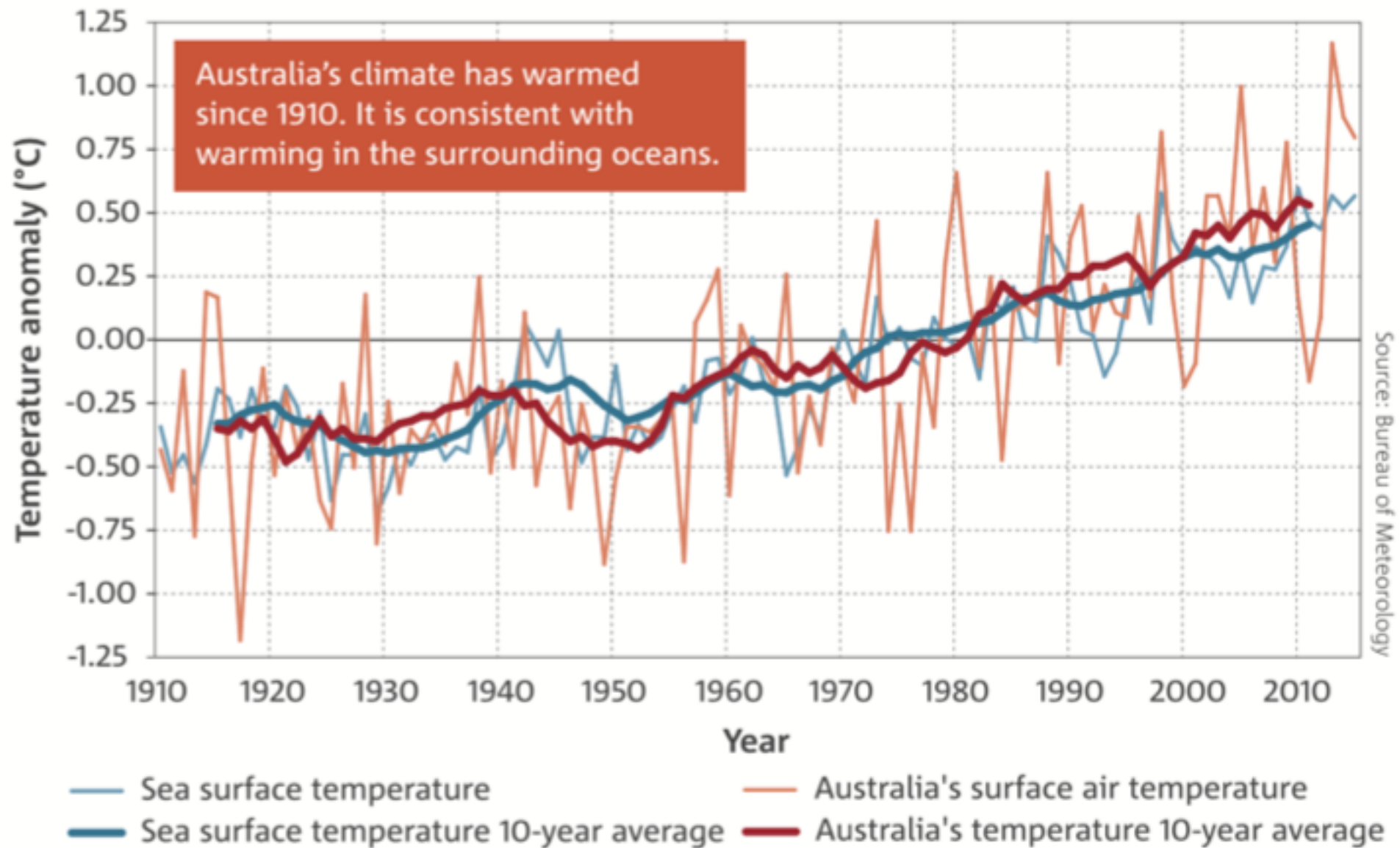
NE: NOT ESTIMATED

Cost of adapting to climate change in developing countries could range between \$140-\$300 billion/yr in 2030, and between \$280-\$500 billion/yr in 2050

Measured adaptation funding goes to developing countries

Australia's adaptation finance needs





\$226
BILLION WORTH OF
INFRASTRUCTURE & HOMES AT RISK
FROM COASTAL INUNDATION
AT A **SEA LEVEL RISE** OF
1.1 METRES.

CLOSE TO
250,000
HOMES
AT RISK!

NATIONAL INFRASTRUCTURE
WITHIN **200 M** OF
THE COASTLINE

120
PORTS



5 POWER
STATIONS



258 POLICE, FIRE &
AMBULANCE STATIONS



75 HOSPITALS &
HEALTH SERVICES



44 WATER AND
WASTE FACILITIES



AT RISK
\$87
BILLION
COMMERCIAL &
LIGHT INDUSTRIAL
BUILDINGS AT RISK

AT RISK
\$72
BILLION
HOMES
AT RISK

AT RISK
\$67
BILLION
ROAD & RAIL
AT RISK

**THE COSTS OF
COASTAL FLOODING**

WA
\$12.7-\$18.1 billion
of commercial and light
industrial buildings at risk

\$8.7-\$11.3
BILLION
OF ROADS AT RISK

NT
\$0.1 - \$0.5 billion
of rail and tramways at risk

QLD
\$11.3-\$17 billion worth of commercial
and light industrial buildings at risk

\$9.7-\$12.9 billion
of roads at risk

NSW
Up to **68,000**
HOMES AT RISK!

\$0.6-\$1.3 billion of
rail and tramways at risk

SA
\$22.6-\$28.2 BILLION
OF COMMERCIAL & LIGHT INDUSTRIAL
BUILDINGS AT RISK

\$0.6-\$1.3 billion of
rail and tramways at risk

Up to **48,000**
HOMES AT RISK!

Over \$7 billion
of roads at risk

TAS
Up to **15,000**
HOMES AT RISK!

\$0.6-\$1.3 billion of
rail and tramways at risk

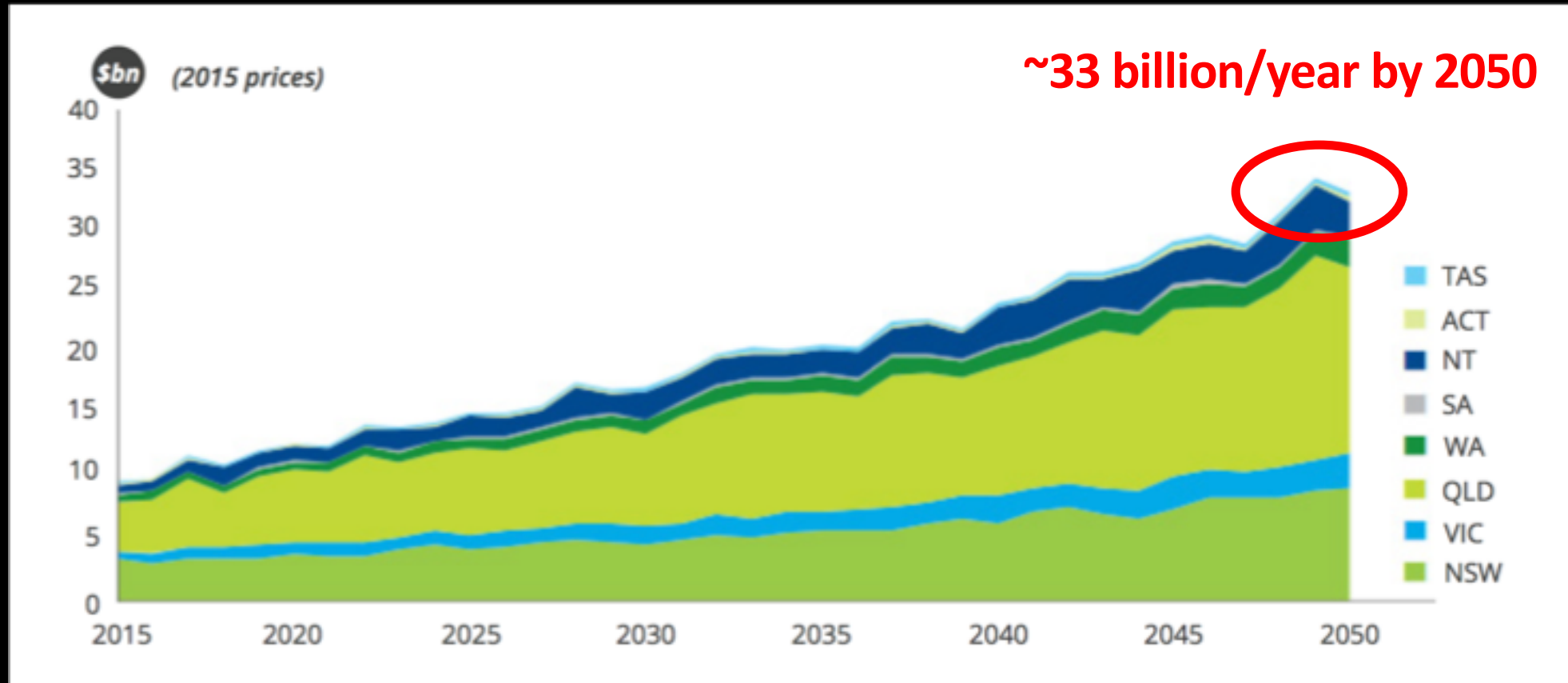
Data relates to infrastructure exposed to coastal inundation and shoreline recession at a sea level rise of 1.1 metres (high end scenario for 2100). The replacement values are drawn from Geoscience Australia's National Exposure Information System (NEXIS) database. Source: DCC 2009; DCCCE 2011.

The scale of
the
challenge
(Part 1)

Replacement
value in 2011

Most but not
all coastal
assets and
infrastructure
Social costs
missing

The scale of the challenge (part 2): The total economic cost of natural disasters in Australia



But, the estimate does not take slow onset changes like sea level rise into account, nor the expected impacts of climate change

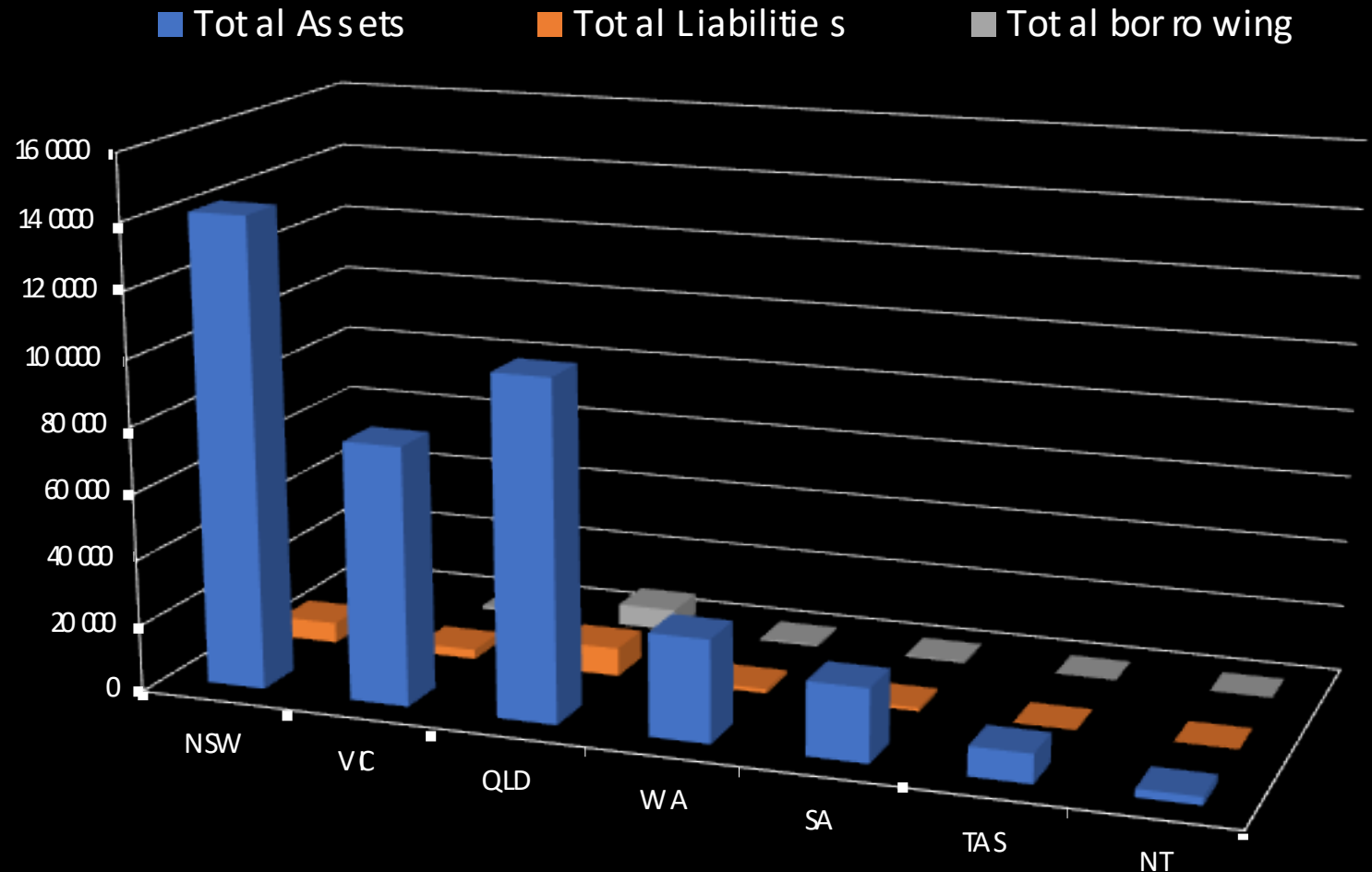
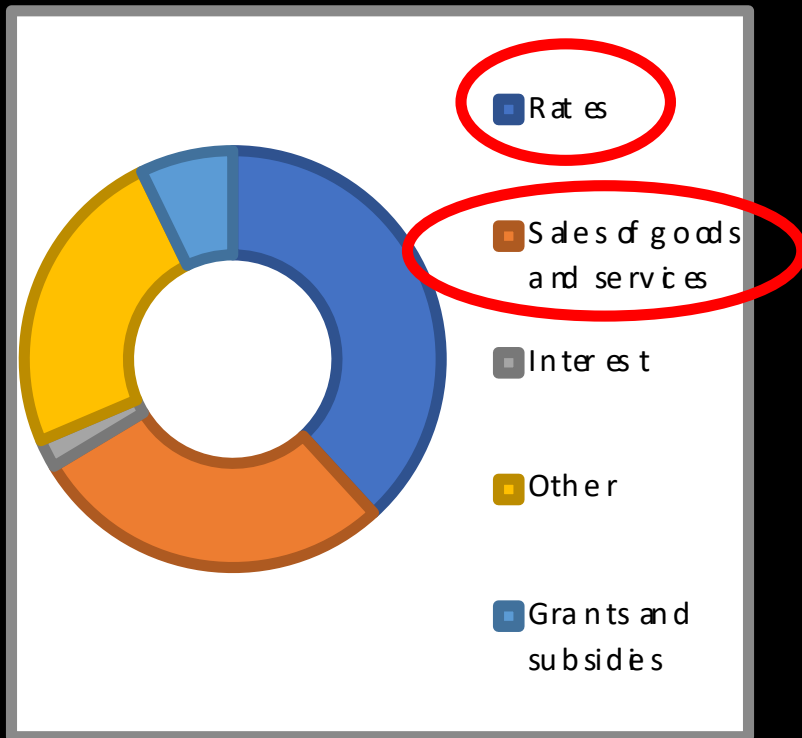
Key findings

- Who will pay for coastal protection? Already high on the agenda of many local governments
- Private assets are the responsibility of private actors while public assets are responsibility of public actors
- Adaptation is regarded as a local government responsibility
- Funding, finance and investment is not the same thing, at least not in the private sector
- Private sector has no experience in financing adaptation and most did not even know what adaptation finance meant, but this is changing



Local government finances

Relative contribution sources of local government revenue (all States and Territories) (2013-2014)

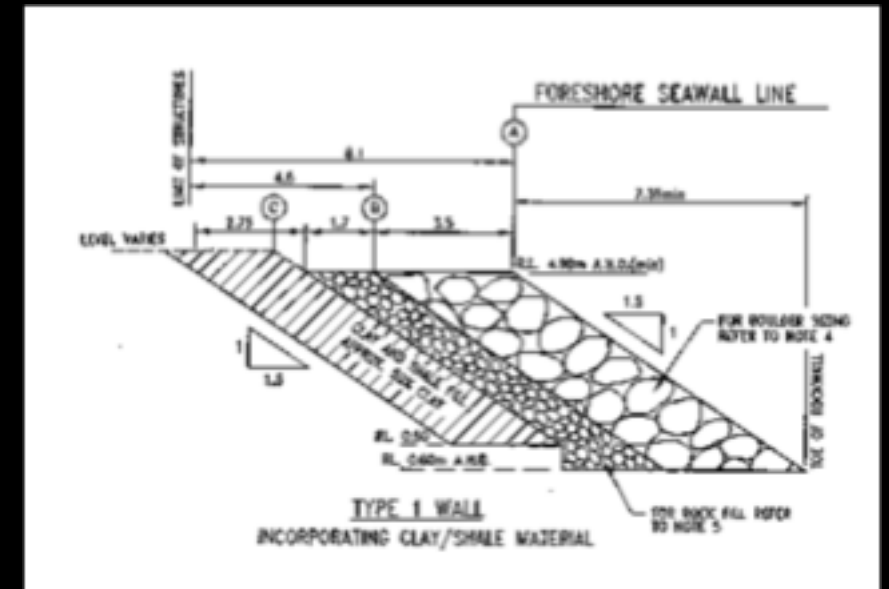


Source: Author's own, based on DIRD 2015

Options to fund adaptation in Australia

- Self-fund
- Grants – State and Federal, including disaster recovery
- **Insurance?** - for extreme weather events only
-for sea level rise (expected to occur)
- Borrow (debt finance) – State
- Handful of examples of innovative finance mechanisms used in Australia

Cross-section of the Gold Coast Seawall



Source: GCCC (2003) in Ware and Banhalimi-Zakar 2017)

Leveraging the private sector for
adaptation finance

Examples of potential finance mechanisms for adaptation

Finance mechanism	Features/limitations	Australian examples?	Used elsewhere?
Green or climate bonds	Large-scale only, must have 'green' credentials	Not for adaptation, renewable energy and energy efficiency only	Not for adaptation, renewable energy and energy efficiency only
Municipal bonds	Large-scale only	No	Yes, US for example
Corporate bonds	Large-scale only, can have green credentials	Yes, but for renewable energy and energy efficiency only	Yes, but for renewable energy and energy efficiency only
Resilience bonds	Linked to CAT bonds, proceeds used to increase resilience	No	No, conceptual (not yet?)
Project financing	Cash-flow based financing, SPV (special purpose vehicle), for large-scale and complex projects, common for PPPs	Yes, likely that adaptation features included for larger projects	Yes, likely that adaptation features included for larger projects
Corporate financing	Balance-sheet based financing	Yes, likely that adaptation features included for larger projects	Yes, likely that adaptation features included for larger projects
Green revolving fund	Internal funding for sustainability purposes, including possibly capital works	Yes, but usually not for climate change	Yes, including climate change

Features of adaptation projects that matter for financing options

Feature	↓	↓ Spectrum	↓
Size/capital requirement	Small: <\$25 million	Medium: \$25-50 million	Large: \$50+ million
Lifespan of project	Short-term: to 2030	Medium-term: to 2070	Long-term: beyond 2070
Physicality	Alternative measures e.g. plans, capacity building, retreat, etc.)	Soft measures e.g. beach nourishment, artificial reefs	Hard/engineered structures e.g. seawall
Discreetness	Integrated into a new structure	Upgrade of existing structure	New stand-alone investment
Ownership	Purely public e.g. council	Public-private partnership	Private only
Scalability	Not scalable	Scalable to an extent only	Scalable
Beneficiaries	Single/few individuals or companies	Some (countable)	Widespread/many
Financial return	Unable to generate	Able to generate, but unable to distinguish/quantify	Calculable, demonstrable
Return on investment timeframe	Short-term: in 2 years	Medium-term: 2-7 years	Long-term: 7+ years
Risk reduction	Difficult to demonstrate	Small-scale compared to investment size	Demonstrated ability to reduce substantial risk
Insurability	Uninsurable	Partly insurable	Insurable

Investor interest



- Call on all levels of government to agree and clearly set out the responsibilities for adaptation
- Updated national assessment of assets at risk from climate change and the investment required for adaptation, at least indicative
- Establishment of an expert advisory group to work with the finance sector on promoting adaptation investment across Australia
- IGCC will engage with global climate finance bodies to develop an adaptation and resilience measurement framework
- Investors to seek opportunities to blend adaptation outcomes into green or climate investment structures
- Investors seek to identify opportunities to apply mitigation investment structures to adaptation projects

Thank you

Banhalmi-Zakar, Z., Ware, D., Edwards, I., Kelly, K., Becken, S., Cox, R. (2016) *Mechanisms to finance climate change adaptation in Australia*. National Climate Change Adaptation Research Facility, Gold Coast, Australia.

Banhalmi-Zakar, Z., and Rissik, D. (2017) *From risk to return: Investing in climate change adaptation*, Investors Group on Climate Change, Sydney, Australia.

Climate Council (2017) *The costs of coastal flooding*. Available online

Climate Policy Initiative (2015) *Global landscape of climate finance 2015*.

CSIRO and BoM (2016) *State of the Climate 2016*. Accessed 1 November 2017. Available online at [<http://www.bom.gov.au/state-of-the-climate/State-of-the-Climate-2016.pdf>]

Ware, D. and Banhalmi-Zakar, Z. (2017). Funding coastal protection in a changing climate: Lessons from three projects in Australia. ACCARNSI Discussion Paper, Sydney, NSW.