



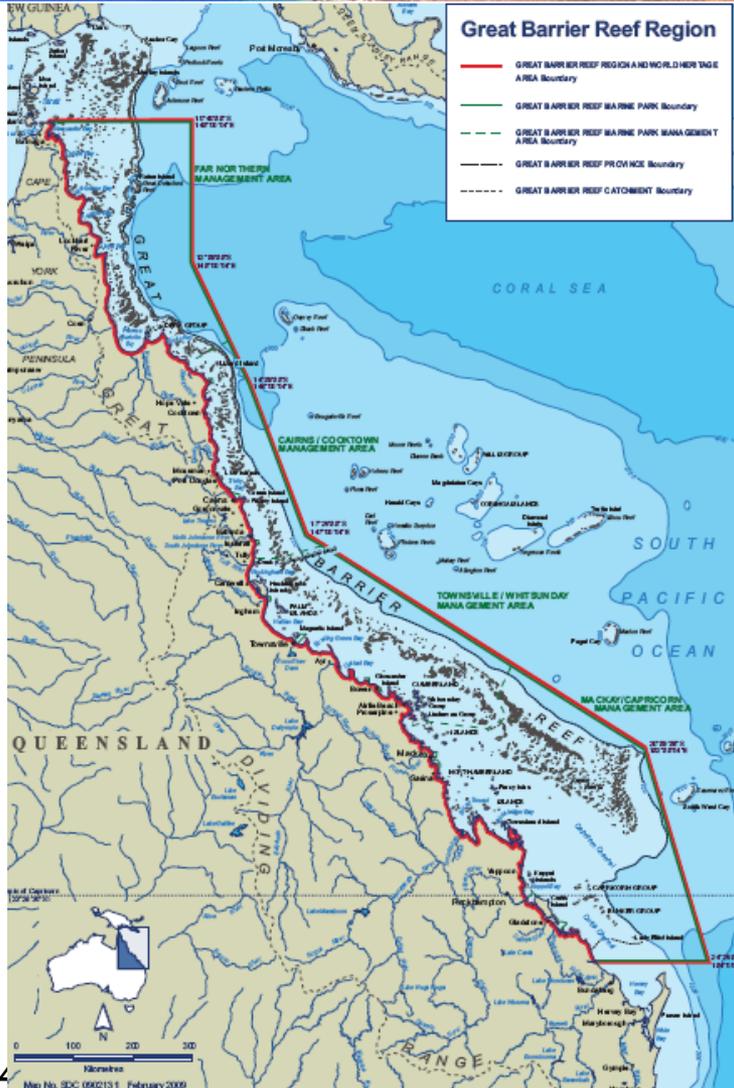
# **Understanding Great Barrier Reef Visitors as a Strategy for Developing Policy Responses to Expected Changes in Reef Health from Climate Change**

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# Outline

- Reports on findings of surveys (2) into tourist characteristic and perception to issues concerning the GBR
- Proposes a model that suggested a range of responses by destinations

# Great Barrier Reef Marine Park



- > 2000 km long and up to 250 km wide
- It includes over 3000 reefs and over 900 islands
- Over 1/3 of all the world's soft coral and sea pen species
- 54% of world's mangrove diversity
- Six of the world's 7 species of marine turtle; also largest green turtle breeding area in the world
- Seabird breeding islands of world significance
- 800 species of echinoderms (eg. sea stars (=13% of world's species))
- > 5000 species of molluscs (eg. shells)

# Drivers of Reef Tourism

1. **Tourism demand for reef experiences**
  - A. Because of its iconic status – thus a ‘must see’
  - B. Interest in nature – ecotourists
2. **The quality of the experience**
  - A. What there is to see
  - B. What there is to do
  - C. The quality of the trip to and from the reef
3. **The Public sector response to 1 and 2**
  - A. Management of the reef including visitor facilities, water quality and non tourism uses
  - B. Research

# Threats to Great Barrier Reef

## Tourism Demand

1. Decline in the quality (and resilience) of the reef ecosystem
2. Tourists perceptions of any changes in the potential quality of the experience may reduce demand
3. Change in the type of experiences desired by tourists ie less interested in nature overall
4. The scope of the public sector response to changes in both the ecosystem and changes in tourism demand

# Threats to Reef Ecosystem

## Classes of threats:

1. Climate change
2. Tropical cyclones
3. Biological threats – particularly Crown of Thorns (COTS)
4. Water quality – run-off from urban areas and farms
5. Inadequate management regimes – allowing mining, over fishing, dredging etc

A recent paper by De'ath, Fabricius, Sweatman and Puotinen (2012) found that coral cover on the GBR has declined by 50.7% in the period 1985-2012 due to cyclones (48%), COTS (42%) and coral bleaching (10%).

(De'ath, G., Fabricius, K., Sweatman, H. and Puotinen, M. (2012) The 27-year decline of coral cover on the Great Barrier Reef and its Causes, PNAS ([www.pnas.org/cgi/doi/10.1073/pnas.1208909109](http://www.pnas.org/cgi/doi/10.1073/pnas.1208909109)).

# Response by Tourists to Perceived Threats

## Survey 1: Prelim Results

The following *preliminary* results of a survey conducted at Cairns Airport (domestic terminal) in the period July to September 2012 involving 368 responses:

	Yes	No	Maybe
If the Great Barrier Reef near Cairns was <u>damaged</u> by a major oil spill, would you <i>still have made</i> this trip to Cairns?	26%	29%	45%
If the Great Barrier Reef was affected by a major <u>coral bleaching</u> event (when the coral dies because of high water temperatures), would you still have made this trip to Cairns?	30%	20%	50%
If the water at the reef was known to be murky would you have made this trip to Cairns?	25%	35%	40%
If the Great Barrier Reef <u>lost</u> its World Heritage status, would you still have made this trip to Cairns?	84%	16%	-

**NB.** In the above responses **maybe** in relation to **oil spills** was described as – depending on the scale of the damage; **Coral bleaching** - depending on the scale of the damage; **murky** - depending on the scale of the damage;

# Visitor Motives and Reef Experiences

## Survey 2

- Self-completion style questionnaire, administered at domestic terminal, Cairns International Airport using a convenience sampling approach
- Targeted holiday visitors to Cairns region
- Sample size: 586 valid surveys,
  - Response rate of 83%.

# Demographic Profile

- Higher representation of females (57%) to males (43%).
- 54% international tourists, compared to 46% domestic tourists.
  - Largest international source markets: UK & Ireland (15%), North America (12%), Europe (excluding Germany, 10.5%) and Germany and Asia (both 5.5%).
- Over a third (38%) of respondents aged 20-29 years, followed by 30-39 years (20.5%), and 50-59 years (14.5%).
- Almost a quarter (23%) were professionals, 18.5% were students, and 13% were (semi-)retired.
- 42% of tourists were travelling as couples, 20% travelling with friends (20%), 17% travelling alone, 11% as a family with children.
- 64% were first-time visitors to Cairns, remaining 36% repeat visitors.
- Average LOS in Cairns region - 7 nights, mode of 4 nights.

# Tourists' Motivations

## Features of Cairns affecting decision-making:

1. Visit the GBR (4.17)
2. Rest and relax (3.84)
3. Snorkelling & diving (3.72)
4. Experience the natural environment (3.64)
5. Climate (3.58)
6. Visit the Wet Tropics Rainforests (3.56)

Features ranked on a scale: 1 = not at all important, 5 = very important

# Trends in Tourists' Motivations

Changes in features affecting decision-making:

Top 5	2011-2012 (n=586)	2006-2010 (n=3808)
1	Visit the GBR (4.17)	Visit the GBR (4.27)
2	Rest and relax (3.84)	Rest and relax (3.97)
3	Snorkelling & diving (3.72)	Visit rainforest (3.90)
4	Experience the natural environment (3.64)	Experience the natural environment (3.85)
5	Climate (3.58)	See Australian wildlife (3.80)

Features ranked on a scale: 1 = not at all important, 5 = very important

# Participation in Reef Experiences

- Two-thirds (67%, n=392) of sample visited reef
- First-time to the reef for 80%

Reef Activity	Participation
Snorkelling	83%
Swimming	71%
Viewing marine animals	50%
Glass-bottom boat viewing	42%
Visiting the islands	35%
Sailing	20%
Certified scuba diving	15%
Resort/uncert. Scuba	13%
Overnight cruise	8%
Marine biologist tour	7%

# Importance of Reef Trip

- Importance of aspects of your reef trip

Aspect of reef trip	Mean rank
Colourful corals	4.44
Number of fish I was able to see	4.40
Value for money	4.26
Friendly boat crew	4.17
Commentary on marine life	3.88
Quality of meals served on boat	3.43

Features ranked on a scale: 1 = not at all important, 5 = very important

# Satisfaction with Reef Trip

- Satisfaction with aspects of your reef trip

Aspect of reef trip	Mean rank
Number of small fish present	4.24
Commentary on the reef by boat crew	4.06
Amount of coral cover at the site I visited	4.03
Colour of the coral	3.94
Number of large fish present	3.90
Clarity of the water	3.80
Seeing large marine animals (such as sharks, rays & turtles)	3.39

Features ranked on a scale: 1 = not at all important, 5 = very important

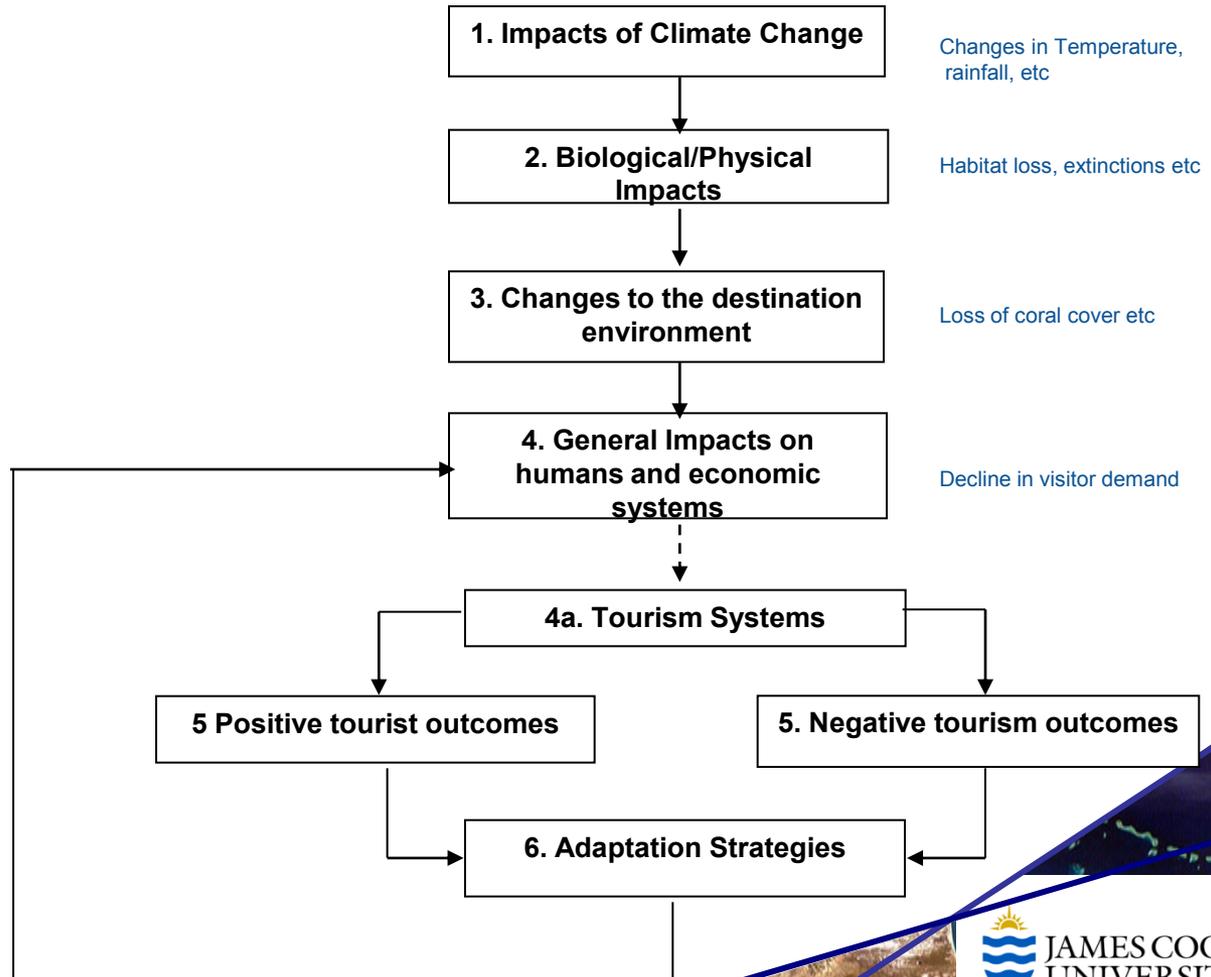
# What do the surveys tell us?

- The GBR is still the most significant motivation for visiting Cairns but its importance is slowly declining
- Most visitors see the GBR as an iconic experience (only 12% of visitors class themselves as ecotourists)
- Reports of a decline in the quality of the reef from oil spills, COTS, climate change and murky water will have a significant impact on the level of visitation
- A loss of World Heritage status will have a smaller impact on demand

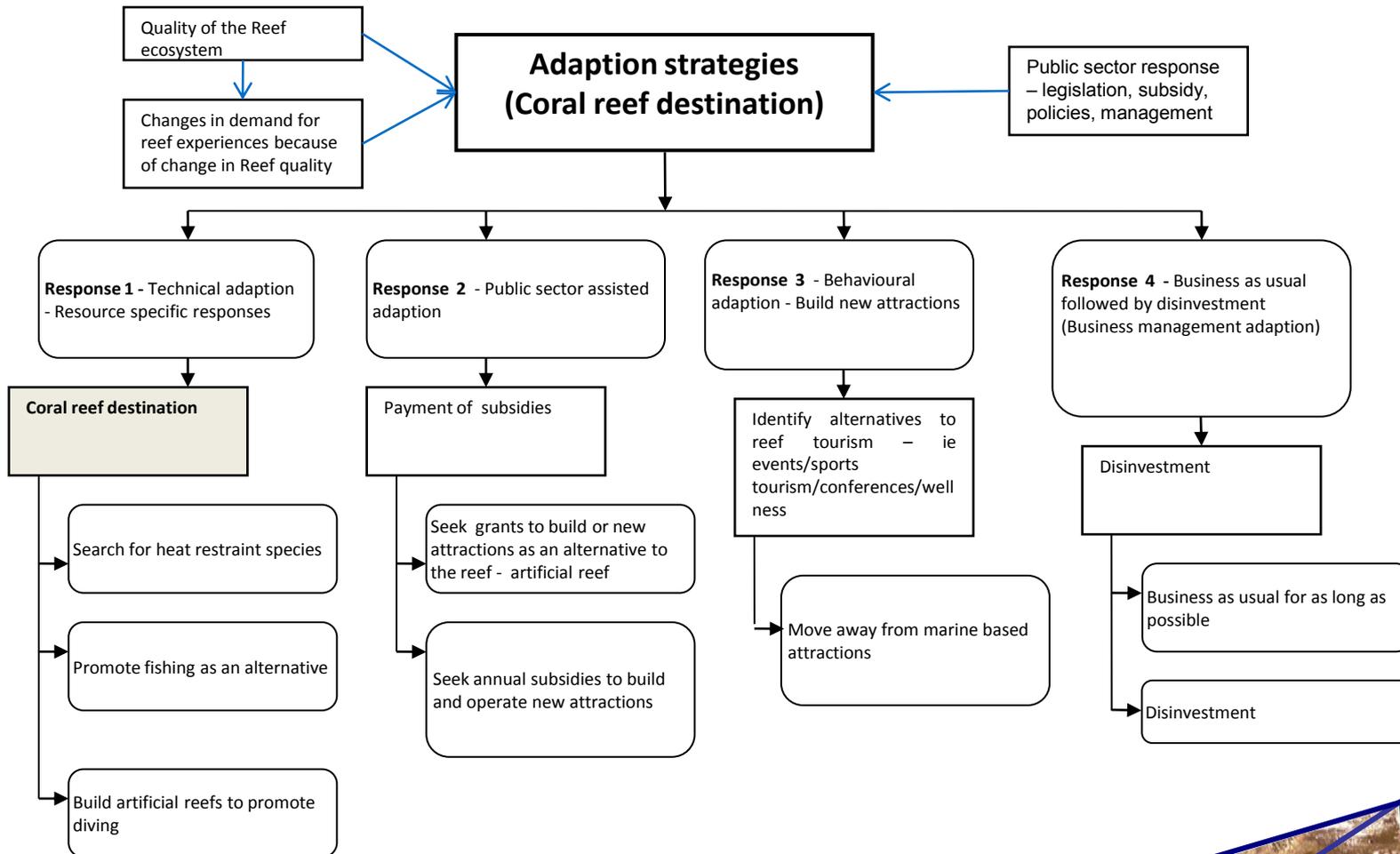
# Climate Change Impact Model

Scientific Input – measure physical changes

Social Science inputs – measure impact on humans



# Adaptation Strategies



# Conclusion

- It is apparent that changes in the quality of the reef will have significant impacts on the number of tourists visiting Cairns and the GBR
- Developing adaption policies are therefore essential particularly as climate change impacts increase in the future
- In the short term dredging, oil spills and failure to control COTS may have a significant impact on demand particularly if there is widespread media coverage
- It is therefore desirable that COTS be controlled, and policies implemented to mitigate the threats from dredging and oil spills