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RRRD039: Integrated assessment of BMP cost-effectiveness and decision tool for regions and landholders

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Department of the Environment, Water, Heritage and the Arts
Department of Agriculture, Fisheries and Forestry

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Summary of Issue

- Water quality improvements require improved land management practices across agricultural industries.
- How do we achieve this effectively and at least cost?
 - We know some costs, for some industries and practices ...
 - They suggest some practices will increase profits – yet uptake remains slow and patchy ...
- We argue that existing models are:
 - single-farm – they do not represent diversity of enterprises across land types, operating structures, or transition costs.
 - Incomplete – failing to recognise other barriers to adoption.
- Greater understanding of diversity and barriers and their implications will allow better targeting (across scales), more effective programs, and reduce costs of change.

Project objectives

1. Identify the cost differences for BMP adoption between regions and across different farm types (e.g. large – small).
2. Understand the impact of BMP adoption on farm economics for regional agriculture (do we expect large changes to production).
3. Improve identification of best investment options and their consequences for Reef Rescue targets (at regional and Reef-wide levels).
4. Develop information for landholders and regions that will support farmer decisions about practice change and investment by regions in delivering those changes.
5. Increase understanding of improving adoption of BMPs in GBR catchments.

Approach: Team, Methods

Component 1: An integrated decision support tool

Step 1

Assess opportunity for on-farm reduction in pollutants from management change



Step 2

Identify the costs and pollutant impact of management change



Step 3

Make adjustments for farm, regional, transition and delivery factors



Step 4

Summarise information in a form that supports farm/regional decisions

Component 2 & 3: Grazing and Cane cost effectiveness

Step 1

Grazing: extend model to Burdekin and Herbert, add practices and land-types.
Cane: regional diversity and transition costs



Step 2

Extend models to incorporate farm diversity across regions



Step 3

Integrated economic modelling at (sub-) regional scale

Component 4: Improving adoption of BMPs in GBR catchments

Step 1

Understanding the social and economic reasons why adoption works, partially works, does not work



Step 2

Categorisation of adoption patterns: adopted; some adoption; recommended but not adopted; no awareness.



Step 3

Categorisation of reasons for non-adoption / adoption: financial; information; attitudinal/ peer pressure; risk management

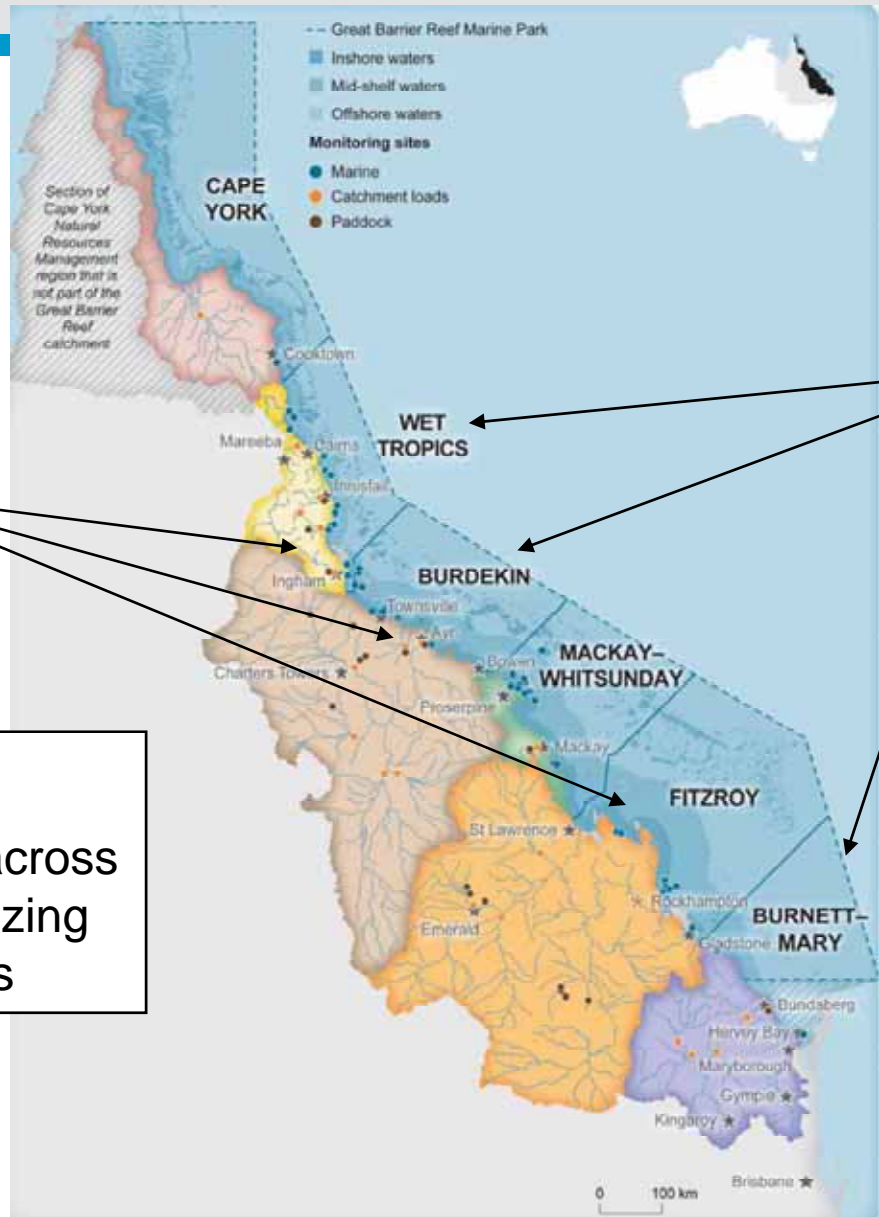
Approach: Team

Name	Organisation	Role
Stuart Whitten	CSIRO	Project leader and resource economist
Martijn van Grieken	CSIRO	Resource economist
Bruce Taylor	CSIRO	Social scientist
Andrew Higgins	CSIRO	Mathematical modeller
Art Langston	CSIRO	GIS modeller
John Rolfe	CQU	CQU team leader
Danielle Gregg	CQU	Modeller
Anonymous	CQU	CQU staff
Peter Donaghy	DEEDI	DEEDI team leader
Megan Star	DEEDI	Agricultural economist
Miriam East	DEEDI	Agricultural economist
Mark Poggio	DEEDI	Agricultural economist

Geographic scope

Grazing:
Fitzroy
Burdekin
Herbert

Adoption:
Likely to be across
cane and grazing
target regions



Cane:
Wet-tropics
Burdekin
Mackay-Whitsunday

Source: borrowed from P2R report.

Outputs

- Integrated farm and NRM region scale investment prioritisation assistance via a pre-populated simple decision support tool.
- Cost abatement curves that incorporate a diversity of management practices, scales, enterprises and transition costs across reef regions.
- Recommendations on cost effective investment portfolios for regions.
- A comparative analysis of management practice change and implementation by industry, region and GBR wide.
- A set of strategies that can be applied to reduce barriers to adoption that target different BMPs and landholder groups.

Synergies – Reef Rescue & external

Organisation	Nature of synergy
Regional NRM – Reef Catchments; Terrain; Fitzroy Basin Authority; Burnett Mary Regional Group; NQ Dry Tropics	Learning; Improvement; Identify success stories/failures Knowledge transfer To actively involve NRM in planning, implementation and dissemination results
RRRD projects (RRRD004; RRRD010; RRRD011; RRRD024; RRRD032; RRRD056)	Learning; Improvement; Data sharing
Queensland Government	Reporting, learning, prioritisation, future investment.
Federal government – Reef Rescue	Accountability; Reporting; Learning; Improvement; future investment

Management Implications

- Aim: Cost effectiveness estimates for improved management practices for cane, horticulture and grazing, including transition costs and regional differences, and strategies for addressing barriers to adoption.
- Integrated regional analysis informs the level of support required for adoption – directly informing what will be required to encourage practice change.
- It links to management effectiveness research to provide estimates of cost per unit reduction (by practice) which allows greater targeting of practices.
- Effective adoption of results will improve:
 - Landholder understanding of benefits and costs of practice change.
 - Regional understanding of support needed for practice change.
 - Aggregate costs of practice change and target achievement.

End user engagement & delivery

Engagement:

- End users of two types: landholders and NRM groups.
 - NRM groups directly involved Will Higham in project team.
 - Project advisory group will include landholders, NRM, industry and (exact membership still being decided)
 - Landholder engagement group will be landholder based.
 - A variety of media will be used to gather and communicate results (e.g. we have used farmer workshops very effectively in Cane and there are beef industry landholder groups for a base for grazing).
 - MERI and communication plan will guide specific activities.

Delivery:

- Scaling up through project from summary reports to fact sheets, seminars/conferences and research reports, finally to final report and journal papers.
- Targeted meetings throughout with key policy and other stakeholders.

CSIRO Ecosystem Sciences
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