

PROGRAM 1: MODELLING AND MONITORING

Developing decision support tools that address India and Australia's marine-based food security and carbon economies in a changing climate

OBJECTIVES

- To review and evaluate integrated assessment models and frameworks that capture the different data streams essential for predicting and evaluating climate change
- To develop appropriate regional specific decision support tools that effectively capture the physical, biological, social and economic dimensions of marine production systems
- To project the implications of future climate change scenarios on the social-ecological system, and that impact marine-based food security and carbon economies in India and Australia
- To evaluate the social and economic implications in the development of adaptation options
- To develop cost effective monitoring programs across all disciplines

PROGRAM 2: MANAGEMENT AND POLICY

Policy and management options for adapting to climate change in marine ecosystems

OBJECTIVES

- To gain understanding of existing management and policy frameworks for marine ecosystems in India and Australia
- To document the risks, barriers and incentives for developing sustainable and innovative industries, maintaining ecosystem integrity and promoting sustainable livelihoods and communities under a changing climate
- To document and identify the drivers affecting policy and management arrangements for climate change in marine ecosystems and communities
- To benchmark existing options and develop alternative options for adapting to and managing climate change in the context of food security and carbon economy

PROGRAM 3: COMMUNICATION

Strategic communication and education for climate change preparedness

OBJECTIVES

- To identify the knowledge, attitude and skill drivers and barriers that affect climate change communication
- To document citizens ecological knowledge and to explore its potential to enhance models and tools for adaptation and mitigation
- To explore the use of advanced information and communication technology to enhance climate change communication and knowledge exchange
- To design and validate cost effective communication tools and strategies for the exchange and mainstreaming of climate change knowledge

PREPARING FOR CLIMATE CHANGE ON MARINE SYSTEMS IN AUSTRALIA AND INDIA



EXECUTIVE SUMMARY

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SUMMARY

Australia and India have coastal marine waters warming at a rate faster than 90% of the world's oceans. Both countries have extensive coastlines and marine jurisdictions with the majority of the population living adjacent to the coast (Box 1).

Marine industries play important roles in sustaining the livelihoods of people in coastal rural towns. Increasing food production, minimising carbon emissions and evaluating carbon sequestration are key issues facing both countries and form the basis of this research plan.

In addressing these issues India and Australia are well placed to become leaders in the development of adaptation options, and pioneers of transformational industries.

The Plan has been developed around two central themes: food security and blue carbon economy. These themes focus on development of: (i) adaptation options to increase food production under a changing climate; and (ii) mitigation and sequestration options to minimize continued carbon emissions and recognition of the value of coastal habitats.

Essential to delivering practical and applied outcomes is the need to link the science to individuals, communities, industries and managers. To achieve this we have developed three core programs that span both themes: modelling and monitoring; policy and management; and, communication (Fig 1).

VISION

Resilient and sustainable communities and marine systems that can adapt to the challenges of, and capture the opportunities afforded by, a changing climate

MISSION

To develop the capacity and knowledge base that enables coastal communities, fisheries and mariculture sectors, to strategically and positively respond to climate change

OBJECTIVES

- To develop adaptation options through innovative and novel projects that enable fisher communities and industries to take advantage of the opportunities that climate change offers
- To ensure that developments maintain ecosystem integrity and, given uncertainty about future changes, operate under a precautionary approach
- To take advantage of the multi-disciplinary researcher capability and experience and our locations within the fastest warming regions globally to facilitate the uptake of new opportunities
- To facilitate global learning and knowledge exchange that enhances uptake and implementation of adaptation solutions
- To develop tools for predicting, evaluating and monitoring climate change impacts and adaptation on socio-ecological marine systems
- To build capacity and the "next generation" of interdisciplinary researchers to address future climate change challenges

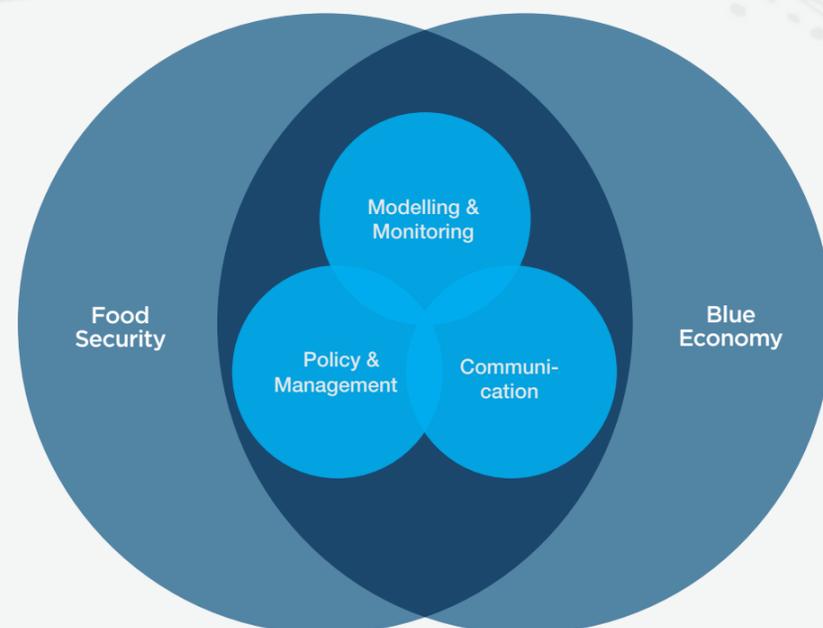


Figure 1 (right): Two theme areas (Food security and Blue economy) and three programs (Modelling & Monitoring, Policy and Management, Communication).

THEME 1: FOOD SECURITY

Ensuring future food security in a changing climate through sustainable marine production and designing new opportunities for India and Australia

OBJECTIVES

- To ensure resilience in food security by:
 - enhancing and modifying existing marine production systems
 - identifying and developing new marine production systems
- To ensure adaptive capacity and well being, social inclusion, and gender equity through marine food security
- To enable adoption of the new opportunities through effective communication
- To benefit from and build on scientific expertise in climate change hotspots

THEME 2: BLUE CARBON

An interdisciplinary assessment of fishery systems in the carbon economy: Carbon footprint and sequestration opportunities in India and Australia

OBJECTIVES

- To identify efficient carbon mitigation actions across the supply chain for selected commercially important fisheries in India and Australia
- To develop optimal carbon mitigation strategies for selected commercially important fisheries in India and Australia
- To identify the potential for efficient carbon sequestration in the key coastal ecosystems in India and Australia
- To develop strategies for incorporating blue carbon into integrated coastal management systems and coastal livelihoods

Box 1 (below): Information about marine related industries in Australia and India.

	Australia	India
Land size	7,682,300 km ²	2,973,193 km ²
Coastline length	25,760 km	8,129 km
EEZ (Exclusive Economical Zone)	6,050,000 km ²	2,020,000 km ²
Population	22,800,000 (2011)	1,210,000,000 (2011)
Population within 100 km of coast	20,520,000	31,460,000
Annual fisheries production (wild and aquaculture)	241,123 metric tonnes (2010)	3,320,000 metric tonnes (2010)
Fisheries value (wild and aquaculture)	AUD \$2,180,000,000 (2010)	AUD \$12,289,500,000* (2010)
Annual fishery Imports	207,559 tonnes (2010)	6,092 tonnes (2010)
Imports (value)	AUD \$1.5 Million (2009)	AUD \$15.9 Million* (2010)
Annual fishery Exports	39,968 tonnes (2010)	800,000 tonnes (2010)
Exports (value)	AUD \$1,220 Million (2010)	AUD \$3,164 Million* (2010)
Annual per capita food supply from fish and fishery products	22 kg/person	9 kg/person
Marine fishers	13,800	4,000,000
Fisheries related employment	11,431	11,000,000

*Exchange rate on the 01/01/2010: AUD \$1 = US \$0.89768