

Project Implementation manual



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- Project Appraisal Document, World Bank
- Research project plans, Scientific Working Groups

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Abbreviations and Acronyms

AO	Administrative Officer
BML	Bolinao Marine Laboratory, Philippines
BWG	Bleaching (and Local Ecological Responses) Working Group
CMS	Centre for Marine Studies
COE	Centre of Excellence
CRTR	GEF Coral Reef Targeted Research
CWG	Connectivity (and Large-scale Ecological Processes) Working Group
DCCO	Data integration, Communication and Capacity building Officer
DGF	Development Grant Facility
DWG	Disease Working Group
EO	Executive Officer
FMR	Financial Monitoring Report
FO	Finance Officer
GEF	Global Environment Facility
GBR	Great Barrier Reef
ICML	Instituto de Ciencias del Mar y Limnología, UNAM
IMS	Institute of Marine Sciences, University of Dar es Salaam
IOC	Intergovernmental Oceanographic Commission
ISRS	International Society for Reef Studies
MDSWG	Modeling and Decision Support Working Group
PDF B	Project Development Facility, Phase B Planning Grant
PEA	Project Executing Agency
PIM	Project Implementation Manual
PM	Puerto Morelos
RRWG	Restoration and Remediation Working Group
RSWG	Remote Sensing Working Group
SOP	Standard Operating Procedures
STAP	Scientific Technical Advisory Panel
UNAM	Universidad Nacional Autónoma de México
UPMSI	University of Philippines, Marine Science Institute
UQ	The University of Queensland
UNESCO	United Nations Educational, Scientific & Cultural Organization
WB	World Bank

Introduction

Background

Coral reefs are not only global assets of exceptional biodiversity value, they are significant drivers of economic growth in more than 70 developing countries where they occur. In November 2003, as part of its International Waters Strategy, the Global Environmental Facility (GEF) Council approved the Project Brief for the Coral Reef Targeted Research and Capacity Building for Management (CRTR) Project. As implementing agency for the GEF, the World Bank's Executive Board approved the full project on 23 September 2004 and also included co-financing support from the Institution's Development Grant Facility.

The Coral Reef Targeted Research and Capacity Building for Management Project (CRTR) is designed to be the first phase of a long-term effort concerning research into the impacts of human activity and climate change on coral reefs. The initial five-year phase will support the establishment of an applied research framework and build capacity for science-based management of coral reefs in areas with significant coral reef resources and World Bank/Global Environmental Facility (GEF) investments. These include sites in the Mesoamerica region of the Caribbean Sea, East Africa, Southeast Asia and the South Pacific/Australasia. Whilst the impacts of this project are expected to be realised well beyond the five year timeframe of the initial phase, expected outcomes include a coordinated process to fill critical knowledge gaps, improved capacity for science-based management of coral reef ecosystems and the development and uptake of new knowledge products to enhance decision-making.

Management and administration of the CRTR Project is being achieved through the University of Queensland (Project Executing Agency) which is responsible for the establishment and support of the Project Executing Agency Office (PEA). As part of its management and administrative role in implementing the Project, the PEA Office has developed this Project Implementation Manual.

The Project Implementation Manual (PIM) is intended to provide an overall strategic and management framework for the implementation of the GEF CRTR in conjunction with other plans and strategies as they are developed. The PIM serves as the overarching reference document to be used for strategic purposes and is aimed at addressing how the Project deliverables, that is, research and capacity building, will be delivered in achieving the Project's goals and objectives throughout this first phase.

Project Context

Coral reef ecosystems are open and trans-boundary in nature by virtue of the flow of nutrients, pollutants, larvae and adults of migratory species across ecosystem boundaries and often national frontiers. Pollutants entering the system are primarily land based, emphasising connections between drainage basins and shallow, coastal receiving waters, where most coral reefs are found. Coral reefs are a major feature of large tropical marine ecosystems. They are extraordinarily diverse and generate an array of environmental goods and services which are dependant on reef integrity and the maintenance of ecosystem processes.

Despite their global significance as environmental and economic assets, coral reefs are in decline worldwide. The main threats to coral ecosystem sustainability stem from localised impacts of human pressure and accelerated climate change.

Human impacts include (i) over-fishing and destructive fishing techniques, which alter trophic levels and destroy the ecological integrity of reef communities (ii) land-based sources of pollution (e.g. sedimentation from deforestation and other poor land-use practices, pesticides, eutrophication from agricultural run off and municipal waste and persistent organic pollutants (POPs) (iii) habitat loss from land reclamation and construction (iv) marine-based threats, including maritime transport, and the cruise line industry. Impacts associated with climate change include (i) increased sea surface temperature, sea-level rise and storm frequency and severity, and (ii) changes in ocean chemistry, all of which undermine reef growth and the physical integrity of coral reef ecosystems.

Through a series of highly integrated investigations in four coral reef regions of the world, the CRTR Project seeks to fill in the most significant gaps in our global understanding of the relationship between major stressors and the structure and function of coral reefs. By virtue of its cross-cutting investigations, which will shed light on the relationship between the effects of climate change on coral reef ecosystem integrity (including biodiversity and connectivity between reefs), as well as between watersheds and aquatic ecosystems, the project will have benefits in several different focal areas and operational programs.

The CRTR Project will also support capacity building across focal areas by creating a robust scientific framework within developing countries to investigate the basis for ecosystem vulnerability and resilience to climate change and localised human pressures. Impacts on ecosystem structure and biodiversity will also be examined as part of these investigations. The model for establishing global networks of researchers to jointly investigate topics of high priority for coral reef ecosystem management and to link the results to policy and decision-making is eminently transferable to other focal areas and themes. Cross-cutting capacity building projects will support activities outside the scope of any one focal area but common to achieving the goals of all focal areas. The joint investigations and targeted learning that result from collaborative, applied research, involving networks of developed and developing country scientists will build the foundation for knowledge-based management and policies.

The research findings and cutting edge tools developed will be disseminated periodically through a series of management and policy briefs and other communication products aimed at improving our global capacity to manage coral reef ecosystems.

Project Goals

The overarching goal of the Coral Reef Targeted Research and Capacity Building for Management Project is to seek to:

Build the scientific capacity necessary to provide the information needed for management and policy, so that coral reef ecosystems under threat from climate change and multiple human stressors can be sustained for current and future generations.

To achieve this goal, the Project will establish a global network of eminent coral reef scientists working together across disciplines and regions so that:

1. Key knowledge gaps can be systematically addressed to reduce uncertainty in the context of management.

2. Targeted research is multidisciplinary, drawing on a blend of biophysical and social sciences.
3. The research is integrated across space and time to allow for a synoptic view of coral reef ecosystems dynamics in response to stress at local, regional and global scales.
4. Research findings are effectively communicated to policy and management, decision-makers and other disciplines.
5. These findings will be followed up at the policy level, by the World Bank and IOC/UNESCO in country dialogue with coral reef practitioners and decision-makers, as to appropriate policy actions and investments.

Project Objectives

In achieving the Project goal, this Project will seek to address two main objectives, the Global Environment Objective and the Project Development Objective.

The Global Environment Objective of the Project is:

To fill critical gaps in our global understanding of what determines coral reef ecosystem vulnerability and resilience to a range of key stressors – from localised human stress to climate change – and to inform policies and management interventions on behalf of coral reefs and the communities that depend on them.

The Project Development Objective is:

To align, for the first time, the expertise and resources of the global coral reef community around key research questions related to the resilience and vulnerability of coral reef ecosystems, to integrate the results and to disseminate them in formats readily accessible to managers and decision-makers.

A related objective is to build much-needed capacity for science-based management of coral reefs in developing countries, where the majority of reefs are found. These objectives will be achieved through targeted investigations involving networks of scientists, in consultation with managers and the dissemination of knowledge within and across regions to decision-makers.

Project Research Activities

Research Context

The Coral Reef Targeted Research and Capacity Building for Management Project (CRTR) aims to lay the foundation for science-based management through a strategic alignment of scientists, institutions and resources. It is designed as the first phase of a multi-phased, targeted research and capacity building effort to advance the state of knowledge and the interpretation of knowledge for decision-making, management approaches, and policy verification and development.

In addressing the issues confronting the decline of coral reefs worldwide, the CRTR Project seeks to coordinate and target research for the first time in this community's history.

It will establish a global network of eminent coral reef scientists working together across disciplines and regions so that (i) key knowledge gaps can be systematically addressed to reduce uncertainty in the context of management, (ii) targeted research is multidisciplinary, drawing on a blend of biophysical and social sciences, (iii) the research is integrated across space and time to allow for a synoptic view of coral reef ecosystem dynamics in response to stress at local, regional and global scales, and (iv) research findings are effectively communicated to decision-makers.

Research Activity

Addressing knowledge and technology gaps

Background

Over the past ten years, an increasing awareness of the importance of coral reefs has been evident, especially in light of their rapid decline in many regions, and their significance to developing countries. However, what remains fundamentally unknown about these ecosystems is alarming, especially when management interventions are becoming increasingly important.

Significant gaps in understanding some of the basic forcing functions affecting coral reefs remain. This targeted research framework will systematically define those information gaps and prioritise them in order of strategic importance to management, so that the resulting information and tools developed can lead to credible outcomes.

Research Themes

The project is organised around six key themes, which will be investigated by interdisciplinary teams of developing and developed country scientists. These themes were identified through extensive consultation with the scientific and management communities over the course of project preparation to encompass the kinds of knowledge and management tools that underpin sustainability science for coral reefs. Five of these are the focus of investigations by distinct working groups under Component I:

1. Bleaching and Local Ecological Effects:
The physiological mechanisms and ecological consequences of large area (or massive) coral reef bleaching, particularly in response to sea surface temperature anomalies, like the El Nino/Southern Oscillation episodes and forcing factors such as nutrients and others stressors; and the potential consequences of changes in frequency of coral taxa in response to such stressors on coral reef integrity and function, for the development of biomarkers of stress in corals and scenario-building tools predicting the socio-economic effects.
2. Disease:
The nature, severity and spread of coral reef diseases, some of which may be responsible for major shifts in the structure, function, health and sustainability of coral reefs.
3. Connectivity and large-scale ecological processes:
The importance of physical and biological connections (or 'connectivity') between coral reefs, whether within or between different regions of International Waters. This also has direct bearing on the environmental conditions and key design factors needed to establish and sustain effective Marine Protected Areas (MPAs).

4. Restoration and Remediation:
The tools, technologies and efficacy of restoring coral reefs that have been severely degraded or destroyed and the key organisms and environmental conditions to consider when rehabilitating a given coral reef environment and the circumstances under which such restoration may be cost-effective.
5. Remote sensing:
The application of remote sensing to refine information and enhance the rate and scale at which knowledge can be generated and applied. This includes the need to modify remote sensing applications and related technologies so that they can be practically deployed and sustained within developing countries.
6. Modelling and Decision Support Tools:

This development of decision support tools to help managers and policymakers understand the likely pressure/response behaviour of coral reef ecosystems to a range of local and climate change related stressors and the types of interventions that could mitigate these effects. This theme also has strong linkages to Component III – Linking Science to Management.

The Project aims to integrate and coordinate the research work undertaken by the Working Groups through various activities, including the thematic integration and coordination between the Working Groups at given sites (see Figure 1) within the Mesoamerica region of the Caribbean Sea, East Africa, Southeast Asia and the South Pacific/Australasia (for further details on the sites, or Centres of Excellence, see the section on Capacity Building). Given resource limitations, not all Working Groups can begin targeted investigations in all four regions initially.

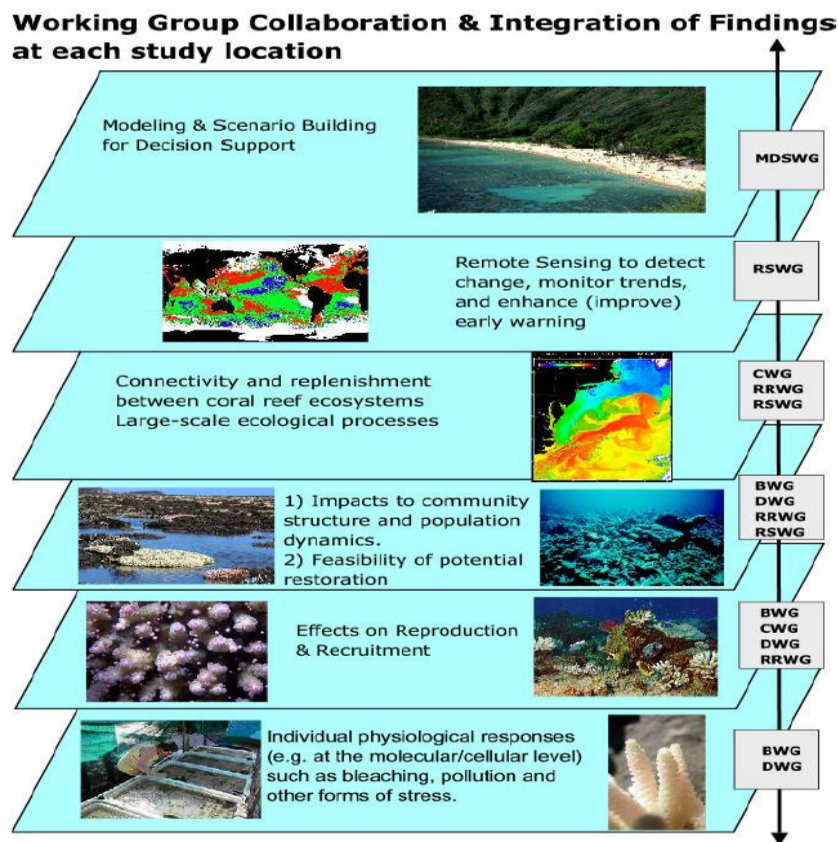


Figure 1 - Major coral reef research themes and the integration of research across working groups. By employing this layering approach, there is greater leverage in relating information across themes and within the initially limited number of study sites. Sites may increase in replication as this model evolves over the course of the Targeted Research program.

The intent is to have all Working Groups engaged in at least two of the four locations within the Project's first phase. Figure 2 shows the location and stages in the project at which the Working Groups will engage within each region. Standard operating procedures are being developed to ensure statistical rigor and comparability of results across field sites.

Working Groups will work with researchers from the Centres of Excellence to set up sampling, permanent plots and experimental work that can be initiated jointly and monitored by visits by Working Group members. The Modelling and Decision Support Working Group will pull together results from other groups and their own collection of socioeconomic data to create models of the system at each site that can be disturbed by various stressors. Outcomes, including their social and economic implications, will help elucidate tradeoffs of various policies to decision-makers.

Initial status of Working Group activities within each of the four regions and Centers of Excellence					Four Targeted Research Regions and the stages in which each Working Group executes specific activities. Based on fiscal limitations several of the WG's will start in a limited number of sites, and will gradually expand to the other regions. In the meantime cross-cutting meetings of WG member are designing standard operating procedures to assist one another with data collection. See notes below ¹ .
Year 1	Year 2	Year 3	Year 4	Year 5 or later phases	
Puerto Morelos / Akumal (Mexico)					
BWG DWG CWG RSWG* RRWG*	BWG* SP CWG* MDSWG*	BWG* DWG* CWG	BWG* DWG* CWG	BWG* DWG* CWG* RRWG* RSWG* MDSWG*	
Zanzibar (Tanzania)					
SP RRWG* DWG*	BWG* RSWG*	BWG* DWG*	BWG DWG RSWG CWG* MDSWG*	BWG* DWG* RSWG* MDSWG* RRWG*	
Bolinao (Philippines)					
RRWG CWG*	RRWG BWG* DWG* RSWG* MDSWG*	RRWG BWG DWG RSWG	RRWG* CWG*	BWG* DWG* RSWG* MDSWG*	
Heron Island (Australia)					
BWG* RSWG*	BWG DWG RSWG	BWG* DWG* RSWG* MDSWG*	BWG* SP	BWG* DWG* RSWG* MDSWG*	

¹Working Group letters in larger **Bold** font refer to a full working group meeting held at a given COE for the year indicated. *representatives from these groups will be visiting & working with the COEs during these periods, or holding smaller meetings

Figure 2 - Study Site locations and the stages at which working groups will engage.

Outputs and Outcomes

The Project will support interdisciplinary research to address priority hypotheses through close linkages between six scientific working groups in a global research network. It will involve national, regional and international researchers and students, engaging in laboratory- and field investigations and scientific discussions.

The major output of addressing the knowledge and technology gaps component will be a series of targeted research studies addressing the most significant gaps in global understanding of how major forcings and stressors affect the structure and function of coral reefs, from the cellular level to the ecosystem level and how this knowledge can be used to design more effective management tools and techniques. The resulting new knowledge and management tools will enhance the ability of coral reef managers to understand and address both chronic and acute forms of stress.

Policy recommendations will be developed and disseminated at global, regional and national levels to help focus more concern and attention on coral reef management and to stimulate more effective global, regional and local remedial action.

Implementation and Delivery

To address the Project themes and ensure that the stated outputs and outcomes are met, six scientific working groups of international scientists have been established to identify and investigate priority hypothesis and further targeted research in the development of tools and knowledge products. These Scientific Working Groups are:

1. Coral Bleaching and Local Ecological Effects
2. Coral Diseases
3. Reef Connectivity and Large-scale Ecological Processes
4. Remote Sensing
5. Remediation and Restoration
6. Modelling and Decision Support Tools

Details on Working Group members are presented in Annexure B. Each Working Group has the responsibility to develop an overarching project plan and annual workplans and budgets for their particular research theme outlining the knowledge and technological gaps to be addressed and the activities to be undertaken in delivering on these gaps. A brief description of the objectives of each Working Group in addressing these gaps is presented below with the detailed project plans available in the Technical Manual. Information on the sub-grant process can be found in the CRTR Sub-Grant Management Manual.

1. Working Group on Coral Bleaching and Local Ecological Effects

Corals bleach in response to a range of environmental stress--from localised, anthropogenic stress (like declining water quality, sediment and nutrient runoff, changes in salinity and pH) to climate change-related stress. While it is known that corals bleach when sea surface temperatures exceed their thermal tolerance levels, the mechanism is poorly understood. Understanding the physiology of bleaching in corals and the differential tolerance of algal symbionts to heat and other forms of stress may explain why some corals bleach more readily than others. It may also shed light on questions of adaptation and whether corals may develop resistance to environmental change through changes in the relative proportion of strains of heat-(and other stress) tolerant zooxanthellae that colonize them. Unraveling these relationships is essential to understanding current changes in patterns of coral diversity and reef community structure and to predicting changes that will occur in the future, under various scenarios of global change. The goal is to help reef managers: refine early warning systems for bleaching; stimulate development of bio-indicators of different kinds of stress; and refine projections of future change on coral reefs and the implications to society.

The IOC/GEF/WB Coral Bleaching and Local Ecological Effects Working Group has identified four key areas in which further knowledge is vital to strengthening management and policy responses to global climate change and sustaining coral reefs. The project will focus on four key areas, representing the most urgent information gaps. These are: (a) a more complete understanding of the susceptibility and tolerance of corals to rising sea temperatures; (b) a more accurate model of the impact of global climate change on coral reef ecosystems; (c) management tools by which to identify and monitor stress on coral reefs; and (d) better scenarios of the socio-economic implications of global climate change on coral reefs.

2. Working Group on Coral Diseases

There has been an unprecedented increase in coral disease over the last 20 years, which has contributed significantly to major coral losses. Disease outbreaks cause not only coral loss, but also cause significant changes in community structure, species diversity and abundance of reef organisms. While diseased-related damage of coral reefs has been well documented in the Caribbean, the status of disease throughout the Indo-Pacific is largely unknown. Preliminary surveys in Australia, the Philippines, and East Africa reveal significant and damaging new diseases in all locations surveyed. What has prompted this rapid emergence of coral disease? Current research indicates that there is a connection between climate warming and increased incidence of disease and disease outbreaks are threshold phenomena associated with warming environments in many ecosystems. Coral reefs appear to be among the most susceptible due to a very narrow thermal threshold for coral health. The coral bleaching during the 1998 El Nino was the most massive and devastating ever recorded and it is probable that much of the mortality was due to opportunistic pathogens, which accelerated the death of bleached corals.

It is probable that deteriorating environmental conditions influence disease by altering host - pathogen interactions. For example, warmer waters could affect basic biological and physiological properties of coral, and change the balance between opportunistic pathogens and the natural ability in corals to fight them. Other stresses include nutrient loading, which could enhance pathogen growth, and sedimentation, which could decrease coral resistance. Little is known about the organisms that cause disease in corals. Of the 18 or so disease symptoms described, the infectious agent is known for only five and reservoirs have only been identified for only black band disease and aspergillosis. Exploring even basic questions is hampered by: (1) the global nature of the problem; (2) an overall lack of resources; and (3) a lack of expertise and technology in developing countries. The Coral Disease Working Group will evaluate the impacts of localised stress and compounding effects of climate change on coral disease. The Working Group has prioritised the research avenues that will provide the most direct outcomes to managing reefs under disease threat and also lead to the most productive opportunities for global capacity building in coral epidemiology, disease ecology and management. These priorities are:

1. Conducting a global assessment of coral diseases and anthropogenic facilitators
2. Pinpointing the ongoing impacts of coral disease on coral biodiversity, coral community diversity and population growth
3. Advancing understanding of epidemiology (origins, vectors and spread rates) of coral diseases
4. Evaluating major mechanisms of coral disease resistance

3. Working Group on Coral Reef Connectivity

Coral reefs are patchily distributed in the oceans and connected by currents that move in complex and variable ways, particularly in coastal waters and in atoll chains. These currents transport the following: coastal sediment and pollutant runoff; nutrients and especially the pelagic larvae of most reef species. Connectivity measures the flux of these items between locations. Coral reef managers must understand how nutrients, sediments, pollutants, and larvae arrive at and leave their coral reef areas. Most of the transfer of non-living materials is determined by local and regional hydrodynamics.

The transfer of organisms is more complex since there are two components: the passive transport by currents and additional movements due to the sensory and behavioural responses of the larvae. The most important component of the transfer of larvae is ensuring that they are upstream of the breeding populations.

Knowledge of connectivity patterns among coral reef organisms is essential to carrying out site-based management of these and associated ecosystems, and to improving the design and implementation of networks of MPAs. Most MPA design and implementation uses 'educated guesses' to select the appropriate size and location, but there is little information to determine whether these guesses are correct. Pressures on reefs will continue to increase with growing coastal populations, and more direct exploitation of reef resources, therefore it is increasingly important that the establishment of MPAs be designed using well determined patterns of connectivity between target populations. Explicit data on demographic connectivity are essential to develop models of recovery rates from broad-scale disturbances such as massive bleaching events, severe hurricanes, outbreaks of disease or chronic over-fishing.

The primary goal of the connectivity component during the first five-year phase is to undertake demonstration projects that will make empirical measurements of connectivity for key taxa at specific locations. In doing this, it will be necessary to develop new methodologies for modelling local-scale hydrodynamics and for marking and matching newly settled recruits to source populations. These new techniques will become the tools that permit additional measurements of demographic connectivity in other places and using other taxa. The research will likely use three different, multidisciplinary approaches that take advantage of particular characteristics of coral reef fauna: 'flux' experiments, 'pulse' experiments and recruitment monitoring.

Research by this working group will focus on taxa that are experimentally amendable, but where possible will choose species of economic importance, or species that are important in structuring the reef community. Work will focus on selected fish, corals and lobster.

4. *Working Group on Remote Sensing*

Most remote sensing of coral reefs has been conducted on an *ad-hoc* basis with little consistency or recognition of the limitations for wide-scale application. For example, some aspects of coral reef health can be resolved on shallow reefs in French Polynesia, but it is not known whether this can be applied in Jamaica, where the reefs have different organisms, are in deeper water, and where there is higher suspended sediment in the water column. Without an assessment of the limitation of coral reef remote sensing, the technology may be oversold or deployed for unrealistic management objectives, resulting in an inappropriate use of financial resources.

The Remote Sensing Working Group will measure the limitations of coral reef remote sensing by combining modeling and field experiments. Models will predict the ability of a remote sensing instrument to detect the slight differences in bottom reflectance that distinguish the cover of corals from macro-algae. The challenge is to combine knowledge of the physics of light passing through the water, with the interaction of light between complex mixtures of reef organisms. The methods developed in the computer graphic industry are used to divide coral structures into thousands of individual patches, each of which has a particular reflecting surface. Sunlight is reflected and scattered in predictable directions on the reef and it is possible to calculate the signal recorded by the sensor of the net light that reflected back through the water and atmosphere.

Computer models will be refined and tested in the laboratory and the field conditions in a large-scale remote sensing experiment.

The group will provide tools to identify various coral reef habitats and possibly predict the cover of corals and algae on a reef, using high resolution imagery and direct field surveys. There is a wealth of satellite and photographic data for reefs, with some from World War II. The group will try to improve methods for detecting changes in reef condition indirectly using remote sensing, to assist managers to quantify the rate of change in coral reef habitats over large spatial scales at different time intervals.

Recent remote sensing research has improved the detail of reef maps, but the interpretation of these maps for management and assessing biodiversity has received relatively little attention. The Targeted Research project will improve taxonomic capacity within the Centres of Excellence to allow scientists to prepare habitat maps for priority areas in the region and to provide technical assistance to the other scientific working groups. The Working Group will compile many oceanographic and atmospheric remote sensing products in an International Oceanographic Atlas and make them available for coral reef and coastal management within a single website.

5. *Working Group on Remediation and Restoration*

Coral reef remediation and restoration is an important area where the results of scientific research are being widely applied to improve the sustainability of coral reefs. Thus, the Remediation and Restoration Working Group (RRWG) is very much at the interface between science and management. However, reef restoration is still in its infancy and thus there are many important gaps in our scientific understanding.

The RRWG proposes three integrated research programs to investigate the following:

1. The long-term efficacy and cost-effectiveness of restoration interventions as well as the processes underpinning natural recovery. This will be tackled by an integrated series of manipulative experiments involving substrate modification, larval supply, coral transplants, and algal grazing.
2. Cost-effective methods for enhancing larval recruitment.
3. Cost-effective methods for coral transplantation and culture.

In the first program, three principal types of biological intervention will be evaluated: early stage interventions focused on enhancement of larval supply, later stage interventions focused on enhancement via transplantation and thirdly enhancement of algal grazing to assist recovery via natural recruitment. Each intervention will be compared to natural recovery without any intervention. Underlying this approach is the assumption that the long-term benefits of restoration (if any) should only be measured in terms of recovery over and above what would have occurred naturally. The effectiveness of selected repair or replacement substrates will also be investigated. Central to the long-term manipulative experiments will be continual measurement of the key processes driving natural recovery so that we can better understand why some reefs are resilient to disturbance (recover well) whilst others fail to recover.

The other two programs will focus on a) shorter term experiments to improve our understanding of the science underpinning restoration, and b) the development of low-cost technologies to improve the cost-effectiveness of augmentation of larval recruitment and transplantation interventions.

6. Working Group on Modelling and Decision Support

The Modelling and Decision Support Working Group aims to create an integrated model of the human-based coral reef ecosystem at each site. The group will assist decision makers and local reef users understand the dynamics of the whole system - both the biophysical and the socio-economic component - of which they are a part. The task is multi-disciplinary, multi-scaled and highly spatial. It deals with the complexity of biophysical coral reef system drivers together with the equally complex human socio-economic aspects. The research is within the new discipline of complex systems science that started in the 1980s and is an area of active research in analytical and modelling techniques. There are many institutes, major government research initiatives and university centres and consortia around the world promoting this approach; some will be involved in this component.

Not all the effort is directed at sustainability issues, but also at breaking down stress-response relationships to identify cause and effect of coral reef decline.

Complex systems are rarely predictable and modelling them will require constructing a series of clusters of sub-models to help understand dynamics between sub-components of the system, which can serve as building blocks in the construction of the whole. Clusters of models are particularly effective when several disciplines are involved, or when the questions posed are evolving. In some traditional 'unified' model domains, such as oceanography or meteorology, where the range of disciplines is restricted and the questions clear, clustering is becoming the strategy of choice.

This exploration can become an integral part of the policy development process in an ongoing iteration between scientists and decision makers. Using visualisation techniques involving maps and other spatially explicit media will help engage different classes of users and help them to understand the tradeoffs of different coral reef use options. Through modeling, it is possible for decision-makers not only to see the consequences of their policies, but to identify synergies across sectors which can reinforce sustainable outcomes for coral reefs. Faced with alternative scenarios, coral reef managers are in a better position to optimize environmental, social or economic objectives and to select the most cost-effective interventions to mitigate unwanted impacts.

Project Capacity Building Activities

Context

In shaping and changing the way policy and decision-makers view coral reef management, this Project aims to achieve the capacity building outcomes via the promotion of scientific learning and linking scientific knowledge to management and policy through science-based coral reef management and policy tools. The major benefits under these two areas will include:

- Networks of developed and developing country scientists collaborating on the testing of strategic priority hypotheses related to determinants of coral reef vulnerability and resilience under various forms of stress and coordinating their research across regions
- Capacity and long-term commitments for targeted learning within and across regions strengthened
- A rigorous framework in place for science based management of coral reef ecosystems in four key regions of the world

- Informed decision making backed by solid science that reduces uncertainty and guidance to GEF and other partners on the range of options and most cost-effective investments to improve the condition of coral reefs globally

Within the CRTR Project the capacity building components will strive to (i) better transfer information and knowledge concerning how management practices can most effectively alleviate local human stressors, and those that may render coral reefs more vulnerable to the effects of climate change, (ii) further develop institutional and human resource capacity to support coordinated, long-term investigations into the nature of stress/response interactions determining coral reef sustainability in the face of cumulative stress from natural and human-induced causes, (iii) facilitate the linkages between science and management to visualise future scenarios and support decisions about tradeoffs related to coral reefs use, identify appropriate regulatory and incentive-based interventions and build support for sustained conservation of coral reefs.

Although this framework is designed to address targeted research globally, the Project also aims to shape policy decisions affecting the sustainability of coral reef ecosystems at national and local levels and to provide decision-makers with the basis for significantly improved management interventions and the design or strengthening of relevant policies that contribute to the sustainability of coral reef ecosystems for generations to come.

Capacity Building Activities

Promoting Scientific Learning and Capacity Building

Background

Currently, most coral reef research is based in universities and research institutes in the developed world, whereas most coral reefs are located in developing countries. Rectifying this global imbalance in knowledge and capacity is a key mission of the CRTR Project. To accomplish this, most of the research work outlined in the knowledge and technology gaps theme will be conducted at sites in developing countries by scientists from developing countries. These scientists will in turn, be supported by top coral reef research scientists from throughout the world. This will ensure that the new information supplied to coral reef managers in developing countries is locally appropriate and will generate significant new coral reef research and management advisory capacity in the developing world.

Outputs and Outcomes

The Project intends to help build or enhance the capacity of institutions in at least three developing country sites within the first phase of the project so that they can function as Centres of Excellence for coral reef research. Capacity building and learning will be an integrated part of the research through activities such as 'training-through-research', travel grants and scholarships provided to developing country researchers and students. Whilst this theme concentrates mainly on the concept of workshops, in particular a 'targeted research and learning workshop', it will also be required to integrate with the proposed activities to be outlined under the Capacity Building Strategy which will explore further capacity building options including the use of more targeted products or activities such as training, educational and scientific tools, manuals, communication tools and the establishment of networks.

The concept of a 'targeted research and learning workshop' has been developed with the dual purpose of providing answers to complex scientific questions as well as learning opportunities for participating scientists and managers via each Centre of Excellence.

The concept brings together local, regional and international research expertise and students at the regional Centres of Excellence for 2-3 week intensive research and training campaigns on different research topics, integrating two main elements: 1) Collaborative research activities focusing inter-disciplinary investigations on key topics, providing training-through-research and skills in new methods and technologies, and 2) Seminars, research discussions and targeted training.

The concept combines research and capacity building, and seeks to address complex research questions and enhance regional capacities, skills and knowledge at Regional Centres of Excellence through collaborative experiments, directly engaging local and international students and researchers in joint field and lab experiments, and targeted learning with seminars, training and informal discussions. The concept will be used for joint research and learning exchanges at each COE, serving the following functions:

- Regional and global platforms for collaborative research
- Training-through-research opportunities for local students and researchers
- Scientific seminars, training and supervision of local students by international research expertise
- Targeted 'think-tanks', integrating disciplines, reviewing new findings, develop research directions
- Methods development and inter-calibration of standard procedures; sharing of data and results; and analysis across CRTR field sites
- Annual or six-monthly benchmarks assessing CRTR progress, reviewing workplans, catalyst for further CRTR activity
- Forum for interaction between researchers and managers

Regional and international activities and interaction will further seek to enhance institutional capacities to undertake targeted investigations improving the effectiveness of management interventions. Furthermore, the Project will also support a series of workshops each year which will bring together researchers in the various working groups to orient field research, brief each other on findings and based on these results, modify and design the next phase of investigation.

Researchers are also encouraged to explore together with other stakeholders, how such research findings can be applied in practice. At least once during the life of the project, a symposium will be convened involving all project participants and representatives of relevant GEF IW and Marine Biodiversity Projects to presents findings, demonstrate their application to improving management (e.g. through new tools and decision support systems) and public awareness about cause and effect relationships between human impacts and coral reef health.

Implementation and Delivery

The promotion of scientific learning and capacity building component of the CRTR Project will be coordinated around four "Centres of Excellence" (COE). These Centres are based in major coral reef regions around the world and include:

- Southeast Asia: Marine Science Institute of Bolinao of the University of the Philippines.
- Eastern Africa: Institute of Marine Sciences (IMS), of the University of Dar Es Salaam, Zanzibar, Tanzania.
- Western Caribbean/Mesoamerica: Unidad Académica Puerto Morelos, Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México (UNAM).
- South Pacific/Australasia: Heron Island Research Laboratory of the Centre of Marine Studies at the University of Queensland, Australia.



Figure 3: CRTR coral reef targeted research network and regional Centres of Excellence.

Each Centre will have an important function within the Project and will be responsible for the development of an overarching project plan, annual workplans and budgets for their capacity building activities under this Project. These Centres will also host the majority (but not all) of the research of the Working Groups and promote the participation of local scientists and graduate students in this or similar research. Funds will be made available to each COE to support regionally relevant coral reef research, identified as a high priority, which links to the Targeted Research carried out by various Working Groups and can benefit from the expertise of these visiting researchers. This scientific mentoring will help build capacity for world class research that will eventually be designed and sustained by local scientists in the region.

The model also presents an opportunity for the scientific community to learn and benefit from the knowledge of local stakeholders, especially with those who may possess traditional knowledge. It will be replicated in all four Centres of Excellence over the course of the project to promote north-south and intergenerational learning between scientists, as well as a greater appreciation of the need to make research relevant to local and regional needs.

Lastly, the Centres of Excellence will be institutes where regional and local scientists can improve their technical skills, such as:

- Taxonomic classification to assist visiting regional and international researchers
- Experimental design and implementation
- Communication workshops to more accurately convey research results to an array of audiences
- Writing workshops to improve the quality of papers to be accepted in international scientific journals

The Centres of Excellence (COEs) will play a major role in the delivery of the outcomes for the promotion of scientific learning and capacity building component, and will be responsible for a broad range of activities in linking the research from the Working Groups to building capacity within their local regions. These responsibilities are outlined in Annexure C.

Linking Scientific Knowledge to Management and Policy

Context

The third major component of the Coral Reef Targeted Research and Capacity Building Project is to link the outcomes from the Working Groups and Centres of Excellence to management and policy guidelines and procedures through the influence on policy-makers and decision-makers within developing and developed countries. In order to achieve this component, a guiding Synthesis Panel has been established to give direction to the CRTR Project and ensure that the generated scientific knowledge is being integrated across regions into management and policy decision-making. In addition to overseeing the quality of the research, the Synthesis Panel synthesises results across the Working Groups and Centres of Excellence, interprets these findings and makes policy recommendations where appropriate.

Outputs and Outcomes

In order to interpret and synthesise these results, the Synthesis Panel will convene periodic meetings throughout the project to engage key stakeholders, public policy makers and experts in economics, social development and law concerning the relevance and implications of research outcomes. With input from these groups and from regular independent reviewers, the Synthesis Panel will modify the focus of investigations as needed to benefit management and policy. Research findings will be synthesised for use by management and policymaking and disseminated to GEF project managers, governmental agencies and officials, ministerial level planners and decision makers through a range of media.

A data storage system will also be developed to facilitate the information flow between working groups and external users.

The results generated from the targeted investigations will be formulated for various key users and the information and tools produced will be disseminated as knowledge products to enhance the management of coral reefs. These products will range from in-situ diagnostics (for example, disease assessment and bio-indicators of specific forms of stress and metabolic response in coral reef organisms), to markers for larval recruitment indicating source and sink reefs, and to remote sensing products and applications to assess the state of coral reef health. In addition to these tools, a series of management and policy briefs will be developed periodically by the Synthesis Panel and released to targeted audiences. These audiences include GEF project teams, national and local policy-makers and coral reef managers, and members of international environment and development fora (e.g. the Intergovernmental Panel on Climate Change (IPCC), Convention on Sustainable Development (CSD), the International Coral Reef Initiative (ICRI), the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), Regional Seas Conventions). World Bank Country and Sector Directors will be briefed periodically of the research results and their implications for the Bank's clients, by an internal Project working group of Bank Task Team Leaders with coral reef projects.

Another important element of this component will be the work undertaken by the Modelling and Decision Support Working Group. Its task will be to integrate bio-physical data and other information about coral reef ecosystem boundaries and drivers with economic and social data from human communities in and around the Centres of Excellence. Modelling the response of coral reefs to these ecosystem drivers, incorporating disturbance from both human stressors and climate change, can help decision-makers visualise the results of various policy decisions on coral reef structures and function.

Implementation and Delivery

The implementation of frameworks and activities designed to meet the expected outputs and outcomes in linking research results to management and policy can be achieved through a structure that incorporates a 'whole of project' approach. Each 'team' (and therefore each person) directly associated with the CRTR Project has a role to play in the success of this component.

As the major driver behind the linkages of science to management and policy, the Synthesis Panel will be responsible for the delivery of the research findings to high level audiences. In order to be able to disseminate the research results from the Project, the Synthesis Panel will need to be able to synthesise the information which is forthcoming from the Working Groups and Centres of Excellence. Both of these groups will have the responsibility of disseminating their results to the Synthesis Panel (through the Project Executing Agency office), via six-monthly and annual reports and through other activities including meetings, workshops, communication and capacity building activities.

In addition to overseeing the direction and quality of the CRTR Project's research, the Synthesis Panel will integrate the research findings and serve as a formal interlocutor with other disciplines, such as development economics and law. This is aimed at enhancing the relevance and uptake of results by policymakers and to recommend key policy and institutional reforms stemming from the targeted research. In addition to publishing findings in the peer reviewed scientific literature, the Synthesis Panel will periodically develop and disseminate a series of management and policy briefs. It will also help to disseminate and promote the results through the IW: Learn Project (a GEF/UNDP/UNEP/WB Knowledge Management Project for International Waters).

The World Bank (Implementing Agency) will be responsible for the dissemination of results and information to their strategic clients. To inform the World Bank's country dialogue with strategic clients with coral reef resources, an internal working group composed of Bank Task Team Leaders of relevant coral reef and coastal resource management projects has been formed. This working group will liaise closely with the Synthesis Panel and relay project findings and recommendations to country teams. Country Directors will be briefed periodically on the results in order to influence policy, as well as feed into AAA work, preparation of CASes, PRSPs and sector strategies.

Further to these high-level activities, each Centre of Excellence will serve as the conduit of information to satellite sites in the region and to various user/stakeholder groups. These user groups include other GEF projects such as the Global Coral Reef Monitoring Network (GCRMN), the International Coral Reef Action Network (ICRAN), the International Coral Reef Initiative (ICRI) and Coral Reef Degradation in the Indian Ocean (CORDIO). In addition to strengthening scientific capacity in the region, the Centres of Excellence will be responsible for enhancing management capacity locally by communicating relevant information to coastal resource managers (including coastal developers, managers of watersheds draining into coral reefs, community-based groups and NGOs promoting conservation and sustainable use of coral reefs) by: (i) overseeing training in monitoring and application of new or improved management tools developed by the Working Groups to emerging management initiatives (ii) incorporating traditional knowledge into the training and data collection methods, and (iii) translating research findings into user friendly information and tools for decision-makers. This will include demonstrations of the visualisation tools developed by the Modelling and Decision Support Working Group.

The Centres of Excellence will also serve as conduits of information to decision-makers at the national and regional levels in the design of national development plans and policies where tourism and fisheries are concerned, in the implementation of international conventions and negotiating access agreements to coastal resources.

The Project has also identified as a source of new knowledge for an innovative Learning Partnership – the Tropical Marine Protected Area Network, initiated by Conservation International, the Nature Conservancy, Wildlife Conservation Society and World Wildlife Fund. This learning network will operate in the same regions where the Centres of Excellence are located and help disseminate project findings by MPA managers.

The Project Executing Agency will be responsible for ensuring that a Communication Strategy; a Capacity Building Strategy, and a Monitoring and Evaluation Strategy are developed and implemented with the assistance of the Synthesis Panel, Centres of Excellence and Working Groups. These strategies will outline how the information from these groups will be integrated, produced and disseminated to the wider audiences.

Project Governance and Reporting

The CRTR Project views the Project governance and reporting structure as a critical element in achieving its success and as such the Project aims to deliver on its objectives in an open and accountable manner. In order to achieve this, governance and reporting procedures have been established and implemented. Figure 3.0 demonstrates the governance, implementation and reporting procedures of the Implementing Agency (World Bank), Executive Committee, Synthesis Panel, Project Executing Agency (PEA), Working Groups and Centres of Excellence are to operate within the Project structure. Further to this, detailed terms of reference for these groups have been developed and can be viewed at Attachment C.

Whilst the governance structure and reporting requirements for each group is discussed below, the overall strategic focus of reporting for the Project to the World Bank and other partners will be the development of six-monthly technical reports (mid-year and annual) and quarterly financial progress reports. The six-monthly reports will include progress on the research and capacity building activities undertaken by the Working Groups and Centres of Excellence and will include the results of supervision missions by PEA staff to research sites and are due by 1 June and 1 December of each year. These reports will be drafted by the PEA with input from the Synthesis Panel, Working Groups and Centres of Excellence. Prior to being submitted to the World Bank, these reports will be reviewed by the Executive Committee and the Synthesis Panel. The scientific output of the Project will be continuously evaluated through ad hoc reviews by the Scientific Review Panel and through publications in peer reviewed journals and presentations at international forums.

Further to this ongoing reporting and monitoring structure, the Project is required to conduct a report integrating the results of the monitoring and evaluation activities by December 2007 and a Mid-Term Review of the Project at the end of Year 3 (2008) which will also coincide with an evaluation of the key outcomes of the Development Grant Facility financed components (2 and 3). Further monitoring and evaluation methods are discussed under Project Monitoring and Evaluation in this Manual.

Further to the strategic reporting guidelines mentioned above, listed below is further detail on each group's requirements against the Project governance and reporting structure:

Implementing Agency (IA)

The World Bank is the GEF Implementing Agency for the CRTR Project. The World Bank is one of the formally designated GEF Implementing Agencies and is accountable to the GEF for all aspects of project implementation. A Project Team Leader will be nominated by the World Bank to oversee project implementation, report on progress and financial status to relevant World Bank and GEF entities, and liaise with the internal GEF TR working group within the World Bank. The Team Leader is represented on the Synthesis Panel as an observer. All progress reports and financial reports will be directed to the Project Team Leader through the Project Executing Agency.

An internal working group within the World Bank will be established to inform World Bank project personnel and GEF focal points from various bank regions involved with project development, both World Bank loans and GEF grants, of GEF TR progress and to see how results will be relevant to project designs. The group will be chaired by the Project Team Leader and on occasion, join the PEA Executive Officer on reporting missions to the focal areas where the research is being conducted.

Executive Committee

The Executive Committee serves as an executive sub-committee of the Synthesis Panel and consists of external experts in various disciplines from the 'financially disinterested' members of the Synthesis Panel (those not affiliated with a Working Group or Centre of Excellence or gaining financial benefit from the Project), a representative of the University of Queensland not directly associated with the PEA Office and the PEA Executive Officer (observer). Full membership details can be viewed at Appendix B.

The Executive Committee will meet face-to-face at least once a year with the PEA to approve and adopt the work program of each Working Group and Centre of Excellence and to allocate financial resources corresponding to the agreed work program for the following year. This Committee is directly responsible for decisions relating to the allocation of financial resources consistent with the performance and research priorities agreed by the group as a whole. The Executive Committee will also take into account the recommendations of the Scientific Review Panel who will be selected from the coral reef research and management communities to provide an arms length review of the annual reports and workplans for each Working Group and Centre of Excellence and the Synthesis Panel outputs.

The Executive Committee will submit reports and work programs to the World Bank through the PEA. Further operating procedures can be viewed in the Meeting Guidelines procedures.

Synthesis Panel

The Synthesis Panel will meet at least once a year to review the Project's annual outcomes, discuss any outstanding issues related to the direction of the science, agree on publications to be developed for the coming year and review proposals of the WG and COEs. In between meetings, the Synthesis Panel will communicate regularly through conference calls and email.

Extraordinary meetings of the Synthesis Panel may be convened if necessary, although efforts will be made to convene these around other conferences and meetings which Synthesis Panel members may be attending.

Results of the meetings will be documented in official minutes by the executive secretariat and communicated to the PEA and Panel members. The minutes of the meetings and follow up actions will be included in six-monthly technical and financial progress reports submitted to the World Bank.

The Synthesis Panel reports to the World Bank through the Executive Committee on its recommendations and issues of concern and reports its recommendations to the PEA for implementation. Further operating procedures can be viewed in the Meeting Guidelines procedures.

Project Executing Agency

The Project Executing Agency is tasked with the responsibility of implementing and managing the CRTR Project on behalf of the World Bank and other partners. The PEA Office has been established and funded by the University of Queensland with clear reporting lines to the Executive Dean (Faculty of Biological and Chemical Sciences) and to the Deputy Vice-Chancellor (Research) for day-to-day management and administrative issues.

The PEA will report to the Synthesis Panel on development and implementation matters pertaining to the Project and will also receive technical guidance and programmatic direction from the Synthesis Panel. The PEA will report technical and financial progress of the Project on a six-monthly basis to the World Bank with copies to be provided to the Synthesis Panel, Executive Committee and Project partners. A full briefing on Project progress will be made during annual meetings of the Executive Committee and Synthesis Panel.

Further details on the role and responsibilities of the PEA can be viewed under Program Management and at Appendix C – Terms of Reference.

Working Groups and Centres of Excellence

At the field site level, the four Centres of Excellence will be responsible for hosting the research of the Working Groups, helping to organise training workshops and information outreach activities. They will work closely with the six scientific working groups, who will be directly in charge of organising and leading the research program.

The Working Groups will be responsible for planning detailed work programs around key research questions in their area of concern and translating these into research proposals that will be reviewed for management, feasibility and cost effectiveness. Input of the management community in shaping the research agenda and on interpretation of research findings will be obtained inter alia, through inclusion of managers in each Working Group and in the independent peer review of proposals, through reference groups of end users associated with each Working Group, through workshops and multi-disciplinary symposia designed to interpret the application of results and, in the case of the Modelling and Decision Support Working Group, through ongoing consultations with decision-makers at the local and higher levels.

Chairs of the Working Groups and the representative of the Centres of Excellence will be responsible for developing and submitting annual workplans to the PEA and reports on performance relative to annual benchmarks. These will be reviewed, in turn, by the Synthesis Panel and by independent reviewers as appropriate.

The Working Groups and Centres of Excellence will report directly to the Project Executing Agency on a contractual basis, however, their research results will be reviewed by the Synthesis Panel and their workplans and budgets approved by the Executive Committee. Each Working Group Chair and a representative of the Centres of Excellence will be a member of the Synthesis Panel.

Scientific Review Panel

An independent scientific review panel, whose members are not involved in the CRTR Project activities, will undertake ad hoc reviews of the Synthesis Panel outputs, including reports from the Working Groups and Centres of Excellence. Members will be appointed from sources recommended by the Synthesis Panel in consultation with other parties. The panel will report its findings directly to the Executive Committee, however, the Synthesis Panel will also have access to the final review reports.

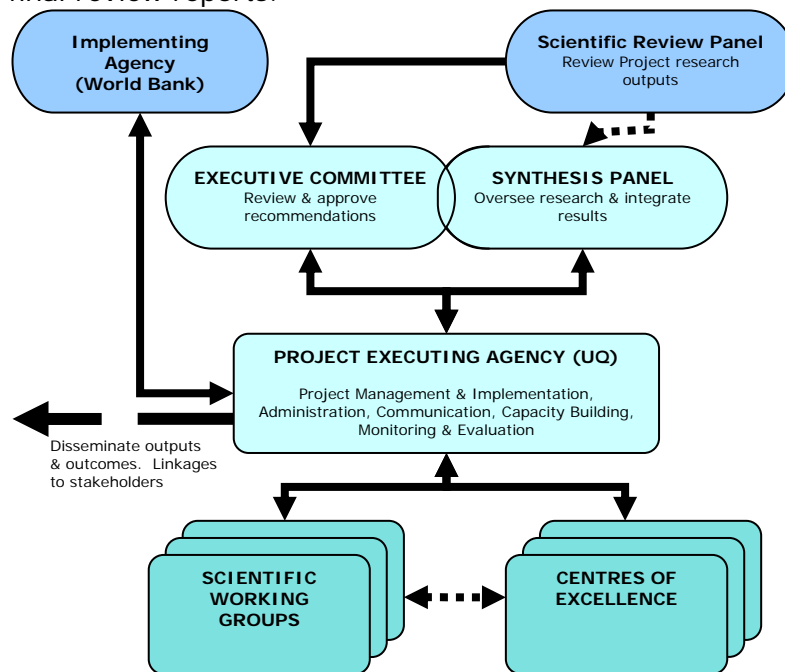


Figure 4: Project Governance and Reporting Structure.

Project Management

The University of Queensland has been appointed by the World Bank as the Project Executing Agency (PEA) and will serve as the recipient of the Grant funds on behalf of the project beneficiaries. The University offers an optimal combination of financial accountability, technical expertise, capacity building and long-term institutional commitment to fulfilling the responsibilities of a global executing agency. The full duties and responsibilities of the Project Executing Agency can be seen at Annexure C. In order to implement the Project, the University has established a Project Executing Agency Office within the Centre for Marine Studies at the University. This office will have a fully dedicated staff to oversee project implementation, outreach and communication activities and future planning (including development activities to identify future co-financing and new partnerships).

Staffing

The PEA will have a fully dedicated staff to oversee project implementation, outreach and communication activities and future planning (including development activities to identify future co-financing and new partnerships). The Office will be staffed, at a minimum, by an Executive Officer, Finance Officer and a Communication & Capacity Building Officer. These will be full time positions operating out of the same centralised office, with further staffing appointments to be made as appropriate. Additional appointments may include an Administrative Assistant with short-term consultants hired as required to (1) design workshops to integrate the research efforts of the scientific Working Groups, (2) oversee capacity building efforts within the regions, and (3) disseminate synthesised results of targeted research to recipients involved in coral reef management, such as decision-makers, non-governmental organisations and donor organisations.

Administrative Systems

The Project Executing Agency is responsible for the development and implementation of effective and efficient administrative systems to support the strategic and operational processes of the CRTR Project. Under this mandate, the PEA will be responsible for executing the Project as set out in the Agreement with the World Bank and ensuring that all processes and procedures for the operation of the Project are developed and in place.

The administrative systems to be developed are to support the operations of the Project and the personnel working under the Project and will include Project both soft and hard systems. For example, Project strategies, procedures and guidelines relating to Project implementation will be developed as will hard systems to assist in the dissemination and reporting of Project findings.

Project strategies, procedures and guidelines

The PEA is responsible for the development and implementation of the Project strategies, procedures and guidelines which outline the operating procedures of the Project. Strategies and procedures which are to outline this framework include the following:

- Project Implementation Manual
- Sub-Grant Management Manual
- Technical Manual
- Funding strategy
- Data protocols
- Communication strategy
- Capacity Building strategy
- Monitoring and evaluation strategy
- Project operating processes and procedures
- Other Project documentation as the need arises

Whilst some of these documents have been developed, others will be developed and implemented over the first year of operation. Whilst each document will form an annexure to this Project Implementation Manual, they will also be designed so that they can be viewed as a stand-alone document outlining a set of operating procedures for specific purposes. This documentation will be distributed to relevant stakeholders for their information and guidance.

Systems / Databases

Building upon the administrative systems and documentation, the PEA Office is also responsible for the development and implementation of electronic systems and databases, which are to allow interaction and integration of research data to occur. Whilst these systems will be developed over time, in consultation with the Working Groups and Centres of Excellence, planning has commenced for the development of the following systems:

- An informative and interactive Project website aimed at providing Project related information to various stakeholder groups and at supporting Internet based project information systems.
- A project management database incorporating stakeholder dialogue/interaction, partner contributions and project tracking, as well as CRTR Project research findings and results.
- Data storage systems including project information (research data, results and findings), document storage systems, Project publications information and stakeholder contact information.

Project Budgets

Project Budgets

The Project Executing Agency will be responsible for the submission, maintenance and reporting of the CRTR Project budgets. Following approval by the Executive Committee of all workplans and project budgets, all research project plans and approved budgets will be submitted to the Implementing Agency for review no less than 30 days prior to the beginning of the fiscal year. Following the Implementing Agency's 'no objection', the budget will form the basis for the Project's financial management for that year.

Sub-Grant Budgets

The PEA requires that all sub-grantees prepare applications (including budgets) in accordance with the procedures set out in the Sub-grants Management Manual. Sub-grant budgets are to be submitted to the Project Executing Agency on an annual basis for approval. The Executive Committee will then approve the annual budgets prior to the disbursement by the PEA of funds for that financial year. These approved budgets will form part of the overall CRTR Project budget, which is submitted to the Implementing Agency (World Bank) for their approval.

Administration Budgets

The University of Queensland is responsible for the provision of funding to support the Project Executing Agency and as such, the administrative effort of the CRTR Project. The PEA's annual administration budget will be drafted and submitted prior to the 31 October of each year for approval by the Deputy Vice-Chancellor (Research) at the University of Queensland.

Financial Management

Financial Governance

The University of Queensland is governed by The University of Queensland Act of 1998. This Act provides for the establishment of the governing body (the Senate) and defines its financial and corporate powers and responsibilities.

Under the Financial Administration and Audit Act 1977 of the Queensland Government (State) the principles to be observed in relation to the University's financial management and audit practices are set out. The Financial Management Standard provides detailed governance policy to be observed by all public sector agencies (the University is included under this classification). The Standard relates to agencies' financial management, internal controls, risk management strategies, operational planning, user charging, resource management and annual reports. Under this legislation, the University is required to have a Financial Management Practice Manual which describes the University's financial policies, systems and procedures. The prescribed accounting standards are consistent with generally accepted accounting principles and Australian Accounting Standards.

Accounting Policies and Procedures

The Project Executing Agency (PEA) will follow the accounting policies and procedures of The University of Queensland in the recording and reporting of project transactions. Separate project accounts will be maintained within the University's accounting system with the chart of accounts that will facilitate reporting of project expenditures in the format agreed for Financial Monitoring Reports (refer Appendix D). The Sub-Grant Management Manual will include policies and procedures for accounting and reporting at the level of field entities such as the Institutions of the members of the Working Groups and Centres of Excellence.

Audits

The Auditor-General, Queensland Audit Office, of the Queensland Government, in accordance with the Financial Administration and Audit Act, audits the University's financial statements. The PEA will arrange for the annual financial statements for the project to be audited by The Queensland Audit Office, as specified in the Legal Agreement.

Further to this external audit, the University of Queensland has an internal Audit Office, whose role is to carry out audits on organisational units of the University as part of an annual audit program. In addition, field internal audits can be undertaken if significant risks are identified.

Funds Flow and Disbursement Arrangements

Fund flow from the Implementing Agency to the PEA

The PEA shall establish a separate bank account (Project Special Account) denominated in US dollars for deposit of GEF and World Bank (DGF) funds. A Project Special Bank Account (SA) shall be established with a commercial bank acceptable to the IA. The initial deposit in the amount not exceeding US\$1 million will be deposited to the SA on receipt of the first withdrawal application. The replenishment of the Special Account shall be based on Statement of Expenditures (SOE) to be submitted monthly or whenever the SA is drawn below half of its initial deposit. All GEF and DGF portions of project eligible expenditures shall be paid out of the Special Account in accordance with agreed accounting policies and procedures.

The Implementing Agency (World Bank) will start recovery of funds advanced (i.e. no longer replenish the SA) either when the undisbursed balance of the grant equals two times the authorised allocation (i.e. USD2 million) or six months before the Closing Date, whichever comes first.

Fund flow from PEA to project executing agencies

Project funds will be disbursed as research grants (herein after called sub-grants) to project participating institutions and Centres of Excellence to fund approved research activities. Disbursement of funds from the SA to sub-grantees would be based upon signed sub-grant agreements in accordance with the procedures described in the Sub-Grants Management Manual.

Fund flow from Co-Financiers to project

The deposit of funds from co-financiers shall be in accordance with the agreements negotiated with them and will be accounted for separately by the institution administering these funds.

Financial Reporting

Periodic Financial Monitoring Report

The University shall prepare and furnish to the Bank a financial monitoring report, which:

- i. Sets forth sources and uses of funds for the Project, both cumulatively and for the period covered by said report, showing separately funds provided under the GEF Trust Fund Grant and explains variances between the actual and planned uses of such funds; (refer Appendix X (i) and (ii))
- ii. Describes progress in implementation of the Project, both cumulatively and for the period covered by said report, and explains variances between the actual and planned implementation of the Project; (refer Appendix X (iii)) and
- iii. Sets forth the status of procurement under the Project, as at the end of the period covered by said report

The first financial monitoring report shall be furnished to the Bank no later than ninety (90) days after the end of February 2005 and shall cover the period from the incurrence of the first expenditure under the Project through to the end of February. Thereafter, each financial monitoring report shall be furnished to the Bank no later than ninety (90) days after each subsequent quarter and shall cover each previous quarter.

Annual Audited Financial Statement

The PEA Office will furnish to the World Bank, in accordance with the requirements outlined in GEF and DGF legal agreements:

- i. Certified annual financial statements audited by the Queensland Audit Office;
- ii. An opinion on such statements by the Queensland Audit Office, in scope and detail satisfactory to the Bank; and;
- iii. Furnish to the Bank such other information concerning such records and accounts and the audit of such financial statements, and concerning the Queensland Audit Office, as the Bank may from time to time reasonably request.

Financial Records

For all expenditures made on the basis of statements of expenditure, the University of Queensland shall:

- i. Retain, until at least one year after the Bank has received the audit report for or covering the fiscal year in which the last withdrawal from the GEF Trust Fund Grant Account was made, all records (contracts, orders, invoices, bills, receipts and other documents) evidencing such expenditures;
- ii. Enable the Bank's representatives to examine such records; and
- iii. Ensure that such statements of expenditure are included in the audit for each fiscal year.

Procurement Policy

All goods and services procured for the Project must be in accordance with the World Bank's procurement policy. This policy is detailed in two documents, "Guidelines for Procurement Under IBRD Loans and IDA Credits" and "Guidelines for the Selection and Engagement of Consultants" which are available for downloading from the web at the following addresses:

- <http://siteresources.worldbank.org/INTPROCUREMENT/Resources/Procurement-May-2004.pdf>
- <http://siteresources.worldbank.org/INTPROCUREMENT/Resources/Consultant-May-2004.pdf>

Project Monitoring & Evaluation

Day-to-day project monitoring and evaluation (M&E) will be the shared responsibility of the Project Executing Agency and the Synthesis Panel. M&E of progress by the Working Groups and COEs will be an ongoing task of both the PEA and the Synthesis Panel, whose responsibility includes reviewing outputs against agreed workplans and budgets and a series of project performance indicators, developed in the early stages of the project using Logical Framework Analysis. These indicators will be included in the sub-grant agreements between the PEA and the Working Groups and Centres of Excellence. These will reflect outputs and outcomes described in Annex 1 of the Project Appraisal Document and the agreed goals and objectives of the specific Working Groups or Centres of Excellence as outlined in their Logical Framework Analysis as part of their Project Plans.

Key performance indicators

Because the Project will support targeted research, which is necessarily a long-term process, project impacts cannot be fully measured within a five year timeframe. Expected outcomes focus on process, knowledge products and capacity as benchmarks for improved management and stress reduction policies leading to the sustainability of coral reef ecosystems. In this light, key indicators of project success are described as follows:

- i. Formerly fragmented research efforts are coordinated and targeted for the first time around key sustainability themes. A coalition of scientists and research institutions from developed and developing countries is built to support this effort.

- ii. Major partners from different sectors are aligned with this initiative, building momentum toward a critical mass of resources and a sustained effort.
- iii. Research results are peer reviewed, synthesised and broadly disseminated to a wide array of stakeholders.
- iv. New assessment tools and decision support systems developed, empowering coral reef managers with knowledge to make better decisions.
- v. Institutional and human capacity for science-based management of coral reef ecosystems is built in countries where coral reefs are found.
- vi. Policies in these countries to protect coral reefs or mitigate impacts from key stressors are strengthened as a result of new information.
- vii. Research findings are mainstreamed into World Bank country dialogue and assistance strategies for countries with coral reefs.
- viii. Coral reef management projects under early implementation or in preparation - many with GEF support - incorporate findings into project design.
- ix. The GEF uses results to guide future resource allocations to address cross cutting issues in Climate Change, International Waters and Biodiversity and to guide clients in the design of large-scale targeted research.

These performance indicators will form the basis of the monitoring and evaluation strategy and be reported against in each Annual Report.

Communication

Communication will be critical to the effectiveness of the coral reef targeted research projects in delivering the outcomes outlined in this Manual and the Working Group and Centres of Excellence project plans. The PEA will work with the Synthesis Panel, Working Groups and Centres of Excellence to develop a Communication Strategy, which will outline activities including the coordination, integration and dissemination of internal and external project information and outreach materials, including printed and electronic project documents and assist in the development and implementation of regional capacity building activities, such as targeted research workshops and learning exchanges and assist in the translation of scientific findings for use by management and policy. This strategy will be a significant element of the program by ensuring that products and services developed to meet the project's objectives are delivered.

Outputs and Outcomes

In delivering the products and services developed by project activities, the Communication Strategy will deliver on Project outputs and outcomes through:

- Assisting communication across the Centres of Excellence and Working Groups to ensure an international approach can be taken when required, and to facilitate the flow of information between these groups and to enhance each areas communication program.

- Using a range of communication instruments such as newsletters, email updates, Internet and personal contact, ensuring that the communication is a two-way process.
- Understanding the local and international issues surrounding the management of coral reefs, including the operating environment that impinges upon management and policy decisions.
- Assessing the different communication needs of those dealing with coral reef research and management.
- Identifying, acquiring, preparing and providing resources of interest to particular regions or stakeholder groups.
- Establishing and maintaining communication with relevant research groups, funders, policy makers, managers and regulators.
- Preparing and providing topical and informative media releases for regional, national and international media.

Implementation and Delivery

The Project Executing Agency and Synthesis Panel will have overall responsibility for the implementation of a Communication Strategy which will be developed in conjunction with the Project funding bodies, Working Groups, Centres of Excellence and other relevant personnel.

However, communication is not the sole responsibility of the PEA and Synthesis Panel. All parties involved in the Project are responsible for the development and implementation of the communication services, activities or products which will be generated through the implementation of activities outlined in the communication strategy. Working Groups and Centres of Excellence are encouraged to incorporate the budgeting of communication activities into their workplans to assist the PEA in this area and to clearly outline communication activities which are to be undertaken as part of their project plans.

Further details on the delivery of communication outputs and outcomes are available in the Communication Strategy.

Capacity Building

As mentioned under the project component 'promoting scientific learning and capacity building' the GEF sees capacity building as critical in ensuring that knowledge for managing coral reefs is transferred to those areas of knowledge within developing countries. The PEA will develop and implement a strategic Capacity Building Strategy (in conjunction with the Synthesis Panel, Working Groups and COEs), which will serve to ensure that the information ultimately used by managers is regionally appropriate and to provide collaborative training opportunities with local scientists so that they can respond to future developments. In particular, this will include:

- Servicing international networks which could comprise leading coral reef scientists, funding bodies, project officers, private and government providers, and students of coral reef research.
- Encouraging the development of local networks of scientists and managers with skills in particular aspects of coral reef management at the local level.

The Capacity Building Strategy will link in with the research components in delivering outputs and outcomes to target audiences through knowledge exchange activities such as training, educational and scientific tools, manuals, communication tools and the establishment of networks. The PEA, Synthesis Panel, Working Groups and Centres of Excellence will all be responsible for assisting in the development and implementation of regional capacity building activities, as well as assisting in the translation of scientific findings for use by management and policy.

ANNEXURES

ANNEXURE A

PROJECT BUDGET

Category	Amount Allocated (\$US)	% of Expenditures to be Financed
Sub-grants – Working Groups	10,300,000	100%
Sub-grants – Centres of Excellence	3,000,000	100%
Consultancy Services	300,000	100%
Incremental Operating Costs	400,000	100%
Administration	2,220,000 ⁽¹⁾	100%
TOTAL	16,220,000	100%

Note: (1) UQ's contribution of \$AUD3 million, converted to USD based on an exchange rate of 0.74 as at 30 October 2004.

ANNEXURE B**PROJECT MEMBERSHIP****Executive Committee**

Dr Nancy KNOWLTON	Chair	Scripps Institute of Oceanography, USA
Dr Nyawira MUTHIGA		The Wildlife Conservation Society, Kenya
Prof. Paul GREENFIELD	UQ Representative	The University of Queensland
Ms Melanie KING	Executive Officer – PEA (Observer)	The University of QLD, Australia
Mr Andy HOOTEN	Executive Secretary (Observer)	USA

Synthesis Panel

Dr Nancy KNOWLTON	Chair	Scripps Institute of Oceanography, USA
Dr Ove HOEGH-GULDBERG	BWG Chair / HIRS COE Rep	The University of QLD, Australia
Dr C. Drew HARVELL	DWG Chair	Cornell University, USA
Dr Peter F. SALE	CWG Chair	University of Windsor, Canada
Dr Alasdair EDWARDS	RRWG Chair	University of Newcastle, U.K
Dr Peter J. MUMBY	RSWG Chair	University of Exeter, U.K
Dr Roger BRADBURY	MDSWG Chair	ANU, Canberra
Dr Roberto IGLESIAS-PRIETO	PM/UNAM COE Rep	Mexico
Dr Edgardo D. GOMEZ	BML/UPMSI COE Rep	Philippines
Dr Alfonse DUBI	IMS/UDES COE Rep	Tanzania
Dr Nyawira MUTHIGA		The Wildlife Conservation Society, Kenya
Dr Patricio BERNAL	IOC/UNESCO Representative	IOC/UNESCO
Prof. Paul GREENFIELD	UQ Representative	The University of QLD, Australia
Ms Melanie KING	Executive Officer – PEA (Observer)	The University of QLD, Australia
Dr Marea HATZIOLOS	WB Project Task Leader (Observer)	World Bank, USA
Mr Andy HOOTEN	Executive Secretary (Observer)	USA

Project Executing Agency – Project Office

Ms Melanie KING	Project Executive Officer	The University of QLD, Australia
Ms Elaine TILSON	Communication and Capacity Building Officer	The University of QLD, Australia
Mrs Kristen SAMPSON	Finance Officer	The University of QLD, Australia
Ms Louise CROSS	Administrative Assistant	The University of QLD, Australia

Project Executing Agency – Senior Management

Professor David SIDDLE	Deputy Vice-Chancellor, Research	The University of QLD, Australia
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Working Group Members

Coral Bleaching and Local Ecological Effects Working Group (BWG)

Prof. Ove HOEGH-GULDBERG (Chair)	Professor, Director of Centre for Marine Studies	The University of QLD, Australia
Dr Yossi LOYA (Co-Chair)	Professor of Marine Biology	Tel Aviv University, Israel
Dr William FITT	Associate Professor	University of Georgia, USA
Dr John BYTHEL	Lecturer	University of Newcastle, UK
Dr Robert VAN WOESIK	Associate Professor	Florida Institute of Technology, USA
Dr Roberto IGLESIAS-PRIETO	Unidad Academica de Sistemas Arrecifiales	Universidad Nacional Autonoma de Mexico, Mexico
Dr Ruth GATES	Assistant Researcher	University of Hawaii at Manoa, USA
Dr Michael LESSER	Research Professor	University of New Hampshire, USA
Dr Ron JOHNSTONE	Deputy Director, Centre for Marine Studies	The University of QLD, Australia
Dr Tim MCCLANNAHAN		The Wildlife Conservation Society, Kenya
Dr David OBURA		CORDIO-East Africa, Kenya

Connectivity and Large-Scale Ecological Processes Working Group (CWG)

Name	Institution Appointment	Institution
Dr Peter F. SALE (Chair)	Project Manager (UNU) & Professor (UW)	United Nations University & University of Windsor, Canada
Dr Yvonne SADOVY (Co-Chair)	Associate Professor, Director	The University of Hong Kong, China
Dr Carmen A. ABLAN	Research Scientist	The World Fish Centre, Malaysia
Dr J. Ernesto ARIAS	Principal Research Scientist	Dpto. Recursos del Mar, Mexico
Dr Mark J. BUTLER IV	Professor & Assistant Chairman	Old Dominion University, USA
Dr Robert COWEN	Professor & Maytag chair of Ichthyology	University of Miami, USA
Dr Geoff P. JONES	Reader	James Cook University, Australia
Dr Serge PLANES	Principal Research Scientist	Universite de Perpignan, France
Dr Barry RUDDICK	Professor	Dalhousie University, Canada
Dr Robert S. STENECK	Professor, Pew Fellow in Marine Conservation	University of Maine, USA
Dr Alina M. SZMANT	Professor of Biology	University of North Carolina at Wilmington, USA
Dr Simon THORROLD	Associate Scientist, Biology	Woods Hole Oceanographic Institution, USA
Dr Bret S. DANILOWICZ	Associate Dean	Georgia Southern University, USA
Dr Ken LINDEMAN	Senior Scientist	Environmental Defence, USA
Dr Enriq SALA	Deputy Director	Scripps Institution of Oceanography, USA
Dr Mary Alice COFFROTH	Associate Professor	State University of New York, USA

Coral Disease Working Group (DWG)

Dr C. Drew HARVELL (Chair)	Full Professor	Cornell University, USA
Dr Garriet SMITH (Co-Chair)	Associate Professor	University of South Carolina, USA
Dr Farooq AZAM	Full Professor	University of Southern California, USA
Dr Eric JORDAN DAHLGREN	Investigador Titular "A"	Universidad Nacional Autonoma de Mexico, Mexico
Dr Eugene ROSENBERG	Full Professor	Tel Aviv University, Israel
Dr Ernesto WEIL	Professor	Universidad de Puerto Rico, Puerto Rico
Dr Bette WILLIS (Co-Chair)	Associate Professor	James Cook University, Australia
Dr Laurie RAYMUNDO		University of Guam, USA

Restoration and Remediation Working Group (RRWG)

Dr Alasdair EDWARDS (Chair)	Senior Lecturer	University of Newcastle, U.K
Dr Edgardo D. GOMEZ (Co-Chair)	Professor	University of the Philippines
Professor Loke Ming CHOU	Professor	National University of Singapore
Dr Andrew HEYWARD	Principal Research Scientist	Australian Institute of Marine Science
Dr Richard E. DODGE	Executive Director and Dean	Nova Southeastern University
Dr Baruch RINKEVICH	Senior Scientist, Head of Department	National Institute of Oceanography, Israel
Dr Aileen N.C MORSE	Assistant Research Biologist	University of California Santa Barbara
Dr Tadashi KIMURA	Researcher	Japan Wildlife Research Centre
Prof Makoto OMORI	Director	Akajima Marine Science Laboratory, Japan

Remote Sensing Working Group (RSWG)

Dr Peter J. MUMBY (Chair)	Royal Society Research Fellow	University of Exeter, UK
Dr Laura DAVID (Co-Chair)		University of the Philippines
Dr Ian GILLET	GIS analyst	Belize CZM Authority & Institute, Central America
Dr Jack HARDY	Associate member	Western Washington University, USA
Dr Eric HOCHBERG	Assistant Researcher	University of Hawaii, Hawaii Institute of Marine Biology, USA
Dr Ellsworth LeDRES	Professor of Geography, Interim Dean	University of Waterloo, Canada
Dr William SKIRVING	Coral Reef Watch Project Phys Scientist/Oceanographer	NOAA Science Centre, USA
Dr Alan STRONG	Team Leader, Marine Applications Science Team, Phys Scientist/Oceanographer, Coral Reef Watch Project Coordinator	NOAA Science Centre, USA
Dr Mary VASQUEZ	Information Systems Specialist	Mesoamerican Barrier Reef Systems Project (MBRS)
Dr Stuart PHINN	Reader	School of Geography, Planning & Architecture, University of QLD, Aust.
Dr Pat COLIN	Director	Coral Reef Research Foundation, Palau
Dr Richard STUMPF		NOAA National Ocean Service, USA
Dr Dave IDIP		Palau Internacional Coral Reef Centre, University of Tokyo

Modelling and Decision Support Working Group (MDSWG)

Dr Roger BRADBURY (Chair)		Australian National University, Australia
Dr Pascal PEREZ (Co-Chair)		Australian National University, Australia
Dr Porfirio ALIÑO		Philippines
Dr Ernesto ARIAS	Team Leader for MBRS	Mexico
Dr Antonio BADAN		Mexico
Dr Herminia CARNIGAL		Philippines
Dr Bohdan DURNOTA		Australia
Dr Craig JOHNSON		Tasmania
Dr Richard POLLNAC		USA
Dr Rob SEYMOUR		UK
Dr Rodrigo GARZA		Mexico
Dr Eloy SOSA		Mexico
Dr Cesar VILLANOY		Philippines
Dr Scott WOOLRIDGE		Australia
Dr Ramon SAMPANG		Philippines

Centre of Excellence Representatives**Research coordination, scientific reporting**

Dr. Roberto IGLESIAS-PRIETO	Puerto Morelos	Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México
Dr. Edgardo GOMEZ	Bolinao	Marine Science Institute, University of the Philippines
Dr. Alfonse DUBI	Zanzibar	Institute of Marine Sciences, University of Dar es Salaam
Prof. Ove HOEGH-GULDBERG	Heron Island	Centre of Marine Studies, The University of Queensland

Research assistant, accounting, communication

TBC	Puerto Morelos	Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México
Mr Rene Abesamis	Bolinao	Marine Science Institute, University of the Philippines
TBC	Zanzibar	Institute of Marine Sciences, University of Dar es Salaam
Ms Veronica Westacott	Heron	The University of Queensland

Scientific Review Panel

The Scientific Review Panel is to consist of four senior scientists in relevant fields, to be appointed by the Synthesis Panel and a GEF Scientific Technical Advisory Panel representative.

ANNEXURE C**TERMS OF REFERENCE**

TERMS OF REFERENCE	
Title:	Implementing Agency and Project Team Leader
Organisation Unit:	Global Environmental Facility Project, World Bank

BACKGROUND**Organisational Environment**

The Global Environmental Facility (GEF) has committed resources toward a multi-million million project (>\$20 million, 2004-2009) on environmental change and coral reefs to be administered through a partnership of the University of Queensland, World Bank and the Intergovernmental Oceanographic Commission of UNESCO. A Project Office has been established in the Centre for Marine Studies at The University of Queensland to coordinate the management of the project.

The Project includes research and capacity building activities being undertaken by six Working Groups (Coral Bleaching and Local Ecological Effects, Coral Diseases, Reef Connectivity and large-scale ecological processes, Remote Sensing, Remediation and Restoration and Modelling and Decision Support), and four Centres of Excellence (UNAM Research Station in Puerto Morelos, Mexico, Institute of Marine Sciences, Zanzibar, Heron Island Research Station, Queensland and the Marine Science Centre, University of the Philippines).

This will be the first five year phase of 15 year program which aims to align the expertise and resources of the coral reef community around key research questions related to the resilience and vulnerability of coral reef ecosystems, to integrate the results and to disseminate them in formats readily accessible to managers and decisions makers. The project also aims to build capacity for science-based management of coral reefs in development countries, where the majority of reefs are found.

Primary Purpose of Role

The World Bank is the GEF Implementing Agency for the Coral Reef Targeted Research and Capacity Building for Management Project (CRTR). The World Bank is one of the formally designated GEF Implementing Agencies and is accountable to the GEF for all aspects of project implementation.

RESPONSIBILITIES

Duties and responsibilities include, but are not limited to:

- Oversee Project implementation on behalf of the Implementing Agency.
- Report on progress and financial status to relevant World Bank and GEF entities.
- Liaise with the internal GEF TR working group within the World Bank.
- Undertake supervision missions in ensuring the Project is operating to World Bank guidelines and the Project Appraisal Document guidelines.

Reporting Relationships

The Project Team Leader will liaise with the Project Executing Agency to receive regular updates regarding the progress of the CRTR Project. Formal reporting arrangements to the Implementing Agency will include the provision of six monthly and annual reports from the Synthesis Panel and the Project Executing Agency. The Project Team Leader will also represent the Implementing Agency on the Synthesis Panel as an observer.

An internal working group will be established to inform World Bank project personnel and GEF focal points from various bank regions involved with project development (both World Bank loans and GEF grants), of GEF TR progress and to see how results will be relevant to project designs. The group will be chaired by the GEF TR Project Team Leader. The Bank will provide financial and technical oversight through joint missions with the PEA office and the internal Bank Working Group, consisting of staff with relevant projects.

TERMS OF REFERENCE	
Title:	Executive Committee
Project:	Coral Reef Targeted Research and Capacity Building for Management Project

BACKGROUND

Organisational Environment

The Global Environmental Facility (GEF) has committed resources toward a multi-million million project (>\$20 million, 2004-2009) on environmental change and coral reefs to be administered through a partnership of the University of Queensland, World Bank and the Intergovernmental Oceanographic Commission of UNESCO. A Project Office has been established in the Centre for Marine Studies at The University of Queensland to coordinate the management of the project.

The Project includes research and capacity building activities being undertaken by six Working Groups (Coral Bleaching and Local Ecological Effects, Coral Diseases, Reef Connectivity and large-scale ecological processes, Remote Sensing, Remediation and Restoration and Modelling and Decision Support), and four Centres of Excellence (UNAM Research Station in Puerto Morelos, Mexico, Institute of Marine Sciences, Zanzibar, Heron Island Research Station, Queensland and the Marine Science Centre, University of the Philippines).

This will be the first five year phase of 15 year program which aims to align the expertise and resources of the coral reef community around key research questions related to the resilience and vulnerability of coral reef ecosystems, to integrate the results and to disseminate them in formats readily accessible to managers and decisions makers. The project also aims to build capacity for science-based management of coral reefs in development countries, where the majority of reefs are found.

Primary Purpose of Role

The Executive Committee serves as an executive sub-committee of the Synthesis Panel and is directly responsible for decisions relating to the allocation of financial resources for the four CRTR Project components – addressing knowledge and technology gaps; promoting scientific learning and capacity building; linking scientific knowledge to management and policy, and; administration.

RESPONSIBILITIES

Responsibilities include, but are not limited to:

- Review and approve the recommendations from the Synthesis Panel regarding the workplans, budgets and progress and annual reports submitted by the Working Groups and Centres of Excellence.
- Make decisions about financial allocations consistent with the performance and research priorities agreed by the group as a whole.

Reporting Relationships

The Executive Committee will submit reports and work programs to the World Bank through the PEA. The PEA Office will, in turn, report on the decisions and activities to the Implementing Agency as part of its six-monthly and annual reporting processes.

TERMS OF REFERENCE	
Title:	Synthesis Panel
Organisation Unit:	Coral Reef Targeted Research and Capacity Building for Management Project

BACKGROUND

Organisational Environment

The Global Environmental Facility (GEF) has committed resources toward a multi-million million project (>\$20 million, 2004-2009) on environmental change and coral reefs to be administered through a partnership of the University of Queensland, World Bank and the Intergovernmental Oceanographic Commission of UNESCO. A Project Office has been established in the Centre for Marine Studies at The University of Queensland to coordinate the management of the project.

The Project includes research and capacity building activities being undertaken by six Working Groups (Coral Bleaching and Local Ecological Effects, Coral Diseases, Reef Connectivity and large-scale ecological processes, Remote Sensing, Remediation and Restoration and Modelling and Decision Support), and four Centres of Excellence (UNAM Research Station in Puerto Morelos, Mexico, Institute of Marine Sciences, Zanzibar, Heron Island Research Station, Queensland and the Marine Science Centre, University of the Philippines).

This will be the first five year phase of 15 year program which aims to align the expertise and resources of the coral reef community around key research questions related to the resilience and vulnerability of coral reef ecosystems, to integrate the results and to disseminate them in formats readily accessible to managers and decisions makers. The project also aims to build capacity for science-based management of coral reefs in development countries, where the majority of reefs are found.

Primary Purpose of Role

The Synthesis Panel has been established to provide direction to the Coral Reef Targeted Research Project and that the outputs are being fully integrated to achieve the Project objectives. In addition to overseeing the quality of the research, the Synthesis Panel synthesises the results across the Working Groups and Centres of Excellence to interpret the findings and make policy recommendations where appropriate.

RESPONSIBILITIES

Responsibilities include, but are not limited to:

- Act as the technical advisory body to provide technical oversight and guidance for the CRTR Project.

- Review and evaluate submissions from the chairs of the Scientific Working Groups and the Centres of Excellence. This includes:
 - ↳ Reviewing and making recommendations on project plans
 - ↳ Reviewing six-monthly progress reports and annual reports submitted by the Scientific Working Groups and Centres of Excellence, particularly in regard to monitoring project progress and effectiveness against the stated workplan objectives and outcomes/outputs
 - ↳ Providing recommendations to the Executive Committee regarding the funding of sub-grants

- In close collaboration with PEA Project Office and the Synthesis Panel Executive Secretary, assist in the integration, synthesis and linking of scientific results generated by the Scientific Working Groups to management and oversee the development and dissemination of a series of management and policy briefs.

- Review progress by Working Groups and Centres of Excellence including reviewing progress against workplans and budgets.

- Approve procedures and policies for effective operation of the project through the Project Executing Agency.

- Work with the Working Groups and Centres of Excellence to analyse the external environment, identify new opportunities and strategically plan for the long-term research activities of the project. Keep abreast of national and international priorities and developments in research, commercialisation and innovation as relates to the project.

- Assist in the development and analysis of performance indicators and benchmarking of the project against national and international institutions as required.

- Assist in the preparation of business plans and annual reports for the project development and initiatives.

- Supervise and assist in the implementation of a communication and marketing plan and a capacity building strategy to meet the goals of disseminating project outcomes to managers, decision makers and stakeholders.

- Serve as a formal interlocutor with other disciplines, such as development economics and law, to enhance the relevance and uptake of the project results by policymakers.

REPORTING RELATIONSHIPS

The Synthesis Panel reports to the World Bank through the Executive Committee on its recommendations and issues of concern and reports its recommendations to the PEA for implementation.

TERMS OF REFERENCE	
Title:	Project Executing Agency
Organisation Unit:	Global Environmental Facility Project, Centre for Marine Studies, University of Queensland

BACKGROUND

Organisational Environment

The Global Environmental Facility (GEF) has committed resources toward a multi-million million project (>\$20 million, 2004-2009) on environmental change and coral reefs to be administered through a partnership of the University of Queensland, World Bank and the Intergovernmental Oceanographic Commission of UNESCO. The Project Office will be established in the Centre for Marine Studies to coordinate the management of the project and work closely with four Centres of Excellence located in UNAM Research Station in Puerto Morelos, Mexico, Institute of Marine Sciences, Zanzibar, Heron Island Research Station, Queensland and the Marine Science Centre, University of the Philippines. This will be the first 5 year phase of 15 year program which aims to align the expertise and resources of the coral reef community around key research questions related to the resilience and vulnerability of coral reef ecosystems, to integrate the results and to disseminate them in formats readily accessible to managers and decisions makers. The project also aims to build capacity for science-based management of coral reefs in development countries, where the majority of reefs are found.

Primary Purpose of Role

The Project Executing Agency is to ensure effective, efficient and accountable project administration and management through the provision of a coordinating and management structure for the Project, including financial management and reporting; strategic communication and capacity building activities; information management; liaison with stakeholders and potential project co-financing sources.

RESPONSIBILITIES

Duties and responsibilities include, but are not limited to:

- Execute the Project as per the Agreement with the World Bank.
- Provide a coordination and management structure for the program including:
 - ↳ Financial management and reporting.
 - ↳ Development and implementation of information management systems.
 - ↳ Development, production and dissemination of projects outputs in formats tailored for different audiences and users.
- Liaise with external stakeholders and potential project co-financing sources.
- Day-to-day project management of the CRTR Project.
- Contract execution and follow up with working groups, COEs and other entities.

- Project procurement, accounting and financial reporting to project partners.
- Coordinate work plans from each of the Working Groups and Centres of Excellence for review and evaluation by the Synthesis Panel and Executive Committee.
- Facilitate scientific communication including integration and dissemination of data and other information among scientific working groups, COE's and the Synthesis Panel.
- Coordinate strategic development, production and dissemination of printed and electronic project documents, such as monographs, technical guidelines, policy briefs, and capacity building material.
- Coordinate external project communication, including press releases and similar information dissemination.
- Coordinate, jointly with the Synthesis Panel Chair and Secretary, the annual Synthesis Panel meeting and preparation of documentation to assist reviewing annual work plans, providing input on integrative activities, assessing progress towards the stated goals of the project, approving the following year's research work program and budget for each of the six working groups and the four COEs.
- Coordinate the preparation of six-monthly progress reports to the Synthesis Panel, highlighting any areas of major discrepancy or inadequate progress towards stated goals.
- Develop and maintain a project database with TR research findings and results
- Develop and maintain Internet based project information system.

Reporting Relationships

The Project Executing Agency will report to:

1. The University of Queensland on day-to-day management and administrative issues and on administrative budgetary matters.
2. The Synthesis Panel in relation to Project progress ie Working Group and Centres of Excellence workplans, monitoring and evaluation, communication and capacity building activities.
3. The Implementing Agency (World Bank) on a six-monthly and annual basis regarding the Project's progress through the submission of reports and financial audits.

TERMS OF REFERENCE	
Job Title:	Centres of Excellence
Organisation Unit:	Coral Reef Targeted Research and Capacity Building for Management Project

BACKGROUND

Organisational Environment

The Global Environmental Facility (GEF) has committed resources toward a multi-million million project (>\$20 million, 2004-2009) on environmental change and coral reefs to be administered through a partnership of the University of Queensland, World Bank and the Intergovernmental Oceanographic Commission of UNESCO. A Project Office has been established in the Centre for Marine Studies at The University of Queensland to coordinate the management of the project.

The Project includes research and capacity building activities being undertaken by six Working Groups (Coral Bleaching and Local Ecological Effects, Coral Diseases, Reef Connectivity and large-scale ecological processes, Remote Sensing, Remediation and Restoration and Modelling and Decision Support), and four Centres of Excellence (UNAM Research Station in Puerto Morelos, Mexico, Institute of Marine Science, Zanzibar, Heron Island Research Station, Queensland and the Marine Science Centre, University of the Philippines).

This will be the first five year phase of 15 year program which aims to align the expertise and resources of the coral reef community around key research questions related to the resilience and vulnerability of coral reef ecosystems, to integrate the results and to disseminate them in formats readily accessible to managers and decisions makers. The project also aims to build capacity for science-based management of coral reefs in development countries, where the majority of reefs are found.

Primary Purpose of Role

A global collaborative research and training network has been established with centres for research and training in: UNAM Research Station in Puerto Morelos, Mexico, Institute of Marine Science, Zanzibar, Heron Island Research Station, Queensland and the Marine Science Centre, University of the Philippines.

These Centres of Excellence (COEs) will be supported at national research institutions or universities in each region to facilitate collaborative research and replicate experiment, as well as serve for platforms for training, seminars and learning exchanges among local and international scientists as well as knowledge exchanges between researchers, managers and government officials.

RESPONSIBILITIES

Responsibilities include, but are not limited to:

- Each COE will serve as a regional centre for larger collaborative research workshops and longer term ecological surveys. COEs will provide logistical support for visiting CRTR research groups and routine ecological monitoring.

- The COE's will host research workshops and seminars, training sessions and regional consultations and will serve as focal points for capacity building and interaction with local and regional entities, local communities, resource users, managers and government officials.
- A COE Representative will be appointed for each COE with the day-to-day responsibility and scientific oversight of COE field and lab activities. The COE representative will liaise directly, as appropriate, with all Working Group chairs, the PEA and the Synthesis Panel.
- Each COE will have a dedicated project staff (full time or part time) to assist, as appropriate, the COE Representative to organise local logistics, coordinate collaborative workshops, maintain CRTR equipment, maintain a calendar of CRTR working group research activities, liaise with working groups, organize scientific training and seminars, assist reporting to PEA, assist collation of information gathering and production of publications and information material, assist collation of routine environmental data and make available to CRTR partners.
- The COE is responsible for regional capacity building to local and regional managers, government agencies, NGO, education institution and similar public, as appropriate.
- Each centre will host and maintain shared CRTR field and laboratory equipment, complemented with research equipment residing with individual researchers. Some equipment may travel between the COE's for cost-effectiveness.
- All working groups shall seek to maximise use of regional CRTR logistics for research workshops, seminars and trainings at each the relevant COE, enhancing cost-sharing and institutional capacities.

Reporting Relationships

The Centre of Excellence representatives will report to the Synthesis Panel through the submission of annual workplans, reports and milestone reporting arrangements.

ANNEXURE D

FINANCIAL MONITORING REPORTS

THE UNIVERSITY OF QUEENSLAND		
World Bank/GEF Coral Reef Targeted Research Project		
Sources and Uses of Funds Statement for the six months ended		
	Period USD	Cumulative USD
Opening Cash Balances	-	
World Bank Special Account Project Bank Account Other Donor Funds Account		
Add: Sources of Funds	-	-
GEF World Bank Funds UQ Funds Other Donor Funds		
Cash Available	-	-
Less: Use of Funds, by Project Component		
I. Sub-grants (cash transfers) to:	-	-
Coral Bleaching and Local Ecological Factors Coral Diseases Reef Connectivity Remote Sensing Remediation and Restoration Modelling and Decision Support Heron Island Research Station, UQ Institute of Marine Sciences, UDS Marine Science Institute, UP Puerto Morelos Marine Station, UM		
II. Research scholarships		
III. Institutional costs		
IV. Expenditure from Other Donor Funds		
Total Expenditure	-	-
Cash Available less Expenditure	-	-
Foreign Exchange Diference		
Net Cash Available	-	-
Closing Cash Balances		
World Bank Special Account	-	-
Project Bank Account	-	-
Other Donor Funds Account	-	-
Total Closing Cash Balances	-	-
Notes		