Mangroves for the Future
INVESTING IN COASTAL ECOSYSTEMS

IUCN/UNEP/UNDP

MANGROVES FOR THE FUTURE
An approach to mainstreaming adaptation to climate change

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List of acronyms

ADB	Asian Development Bank
APF	Adaptation Policy Framework
ARA	Adaptation Rapid Appraisal
CC	Climate Change
CCA	Climate Change Adaptation
CCAIR	Climate Change Adaptation through Integrated Risk Assessment
ENSO	El Niño Southern Oscillation
GCM	General Circulation Model
GEF	Global Environment Facility
IISD	International Institute for Sustainable Development
INC	Initial National communication (to the UNFCCC)
IPCC	Inter-governmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature
LDCF	Lest Developed Countries' Fund
MFF	Mangroves for the Future
NAPA	National Adaptation Plan of Action
NC	National Communication
NCB	National Coordination Board
SCCF	Special Climate Change Fund
SEI-US	Stockholm Environment Institute – US
SST	Sea surface temperature
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
V&A	Vulnerability and Adaptation

SECTION 1: INTRODUCTION

The IPCC defines vulnerability to climate change as being the degree to which individuals and systems are susceptible to or unable to cope with the adverse effects of climate change, including climate variability and extremes. This is a function of:

- *Sensitivity*, which includes the extent to which natural or social systems are sensitive to changes in weather and climate (the exposure-response relationship) and the characteristics of the population, such as the level of development and its demographic structure
- *Exposure* to the weather or climate-related hazard, including the character, magnitude, and rate of climate variation and long term change
- *Adaptation* measures in place to reduce the burden of a specific adverse outcome (the adaptation baseline), the effectiveness of which determines in part the exposure–response relationship.

Reducing vulnerability to the likely impacts of climate change thus involves modification to one or more of these components of vulnerability. Exposure to climate-related hazards cannot realistically be modified (other than through “drastic” measures such as re-location of communities), therefore “climate-proofing” involves reducing sensitivity (or increasing resilience) and improving adaptation measures.

The term “climate-proofing” is a relatively recent introduction to the sustainable development lexicon and its meaning is subject to differing interpretations. For example, Glantz (2006) concludes that the term could be interpreted in either of two ways:

1) To insulate human activities from the influence of weather and climate conditions, most likely extremes in precipitation (rain or snow) and in temperature;

2) To reduce the exposure of a weather- and climate-sensitive activities to climate-related hazards.

He points out that the first objective is quite idealistic and can be misleading to the public, because such a goal may be unattainable. On the other hand, the second objective is much more realistic, in that it suggests that climate-proofing is a process and not just an end state and that, even if the end state is still rather idealistic, effective operational steps towards achieving an increasingly protected society is an attainable goal. This second alternative is the most relevant one for a programme like “Mangroves for the Future” (hereafter “MFF”).

However, there are also issues of scale to be considered. For example, Glantz describes efforts by the government of Canada to “drought-proof” the prairies in the 1970s – covering an area exceeding the size of most countries. Conversely, UNDP has recently initiated a programme to support “Community-based Adaptation” in five countries. The implications of “climate-proofing” at such different scales relate to the types of interventions supported. To take the Canadian example, the large-scale efforts of the 1970s focused on changes in land-use practices - i.e., agricultural policy, such as promoting practices that retained snow and protected the topsoil from being eroded by wind action over large areas. In contrast (these large-scale efforts having failed to produce lasting results) more recent climate-proofing in the prairies has focused on much smaller-scale interventions, such as drought-proofing farm water supplies.

While climate-proofing is much discussed, there have as yet been relatively few examples of efforts to introduce and apply climate-proofing in a systematic way to sustainable development programmes. Since 2004, the GEF has made available funding for adaptation to climate change. Initially, funds were made available for "climate-proofing" on-going GEF-funded projects, but subsequently two special UNFCCC funds, the Special Climate-Change Fund (SCCF) and Least-Developed Countries Fund (LDCF) were introduced to support stand-alone adaptation projects. A third fund, the Adaptation Fund, to be capitalized with proceeds from Clean Development Mechanism initiatives, is yet to become operational.

One reason for the paucity of examples of successful climate proofing is that it is rather difficult to actually implement adaptation measures because of the nature of the impacts of climate change, i.e., their incremental nature. For example, if it is predicted that sea-levels will be 20cm higher in 2050 (a conservative figure from various models), it makes little sense to implement measures to address a 20cm sea-level rise today – local stakeholders will not see the need for such measures, and any community support will quickly be eroded as the measures are seen as being unnecessary. Conversely, implementing measures to deal with a 2cm sea-level rise, which might be seen as being justified by local stakeholders, will cease to be effective within the next 5-10 years, undermining confidence of those local stakeholders in adaptation measures. Consequently, "climate-proofing" usually involves increasing the "**adaptive capacity**" of communities or other social groupings to deal with the impacts of climate change. Increased adaptive capacity implies both increased resilience (reduced sensitivity) and an ability to implement socially and economically appropriate adaptation measures.

1.1: Vulnerability to Climate Change in the context of the MFF

The Objective of the MFF programme (adapted from http://www.iucn.org/mff/) is to "*strengthen the environmental sustainability of coastal development through promotion of increased investment and efforts in coastal ecosystem management*". In the present context of global environmental change, sustainability must incorporate measures to address the likely impacts of short-term climate variability and long-term climate change. Thus, individual interventions supported through the MFF, and indeed the programme as a whole, need to ensure that the increased investments and efforts in coastal ecosystem management supported by the programme address the issue of increasing adaptive capacity to deal with the likely impacts of climate change. Furthermore, increasing adaptive capacity needs to be an integral part of each MFF intervention, not an "add-on".

Increasing adaptive capacity to deal with the likely impacts of climate change is now a concept that has been firmly established, not only in the academic literature, but even in media circles. However, there have been as yet few practical examples from "on-the-ground" interventions. Consequently, while most MFF partners will be aware of the need to address the impacts of climate change, it is likely that few will know how to go about the process, and consequently their focus will be primarily on the proposed investments and efforts themselves, rather than on ensuring sustainability through "climate-proofing". This implies that climate-proofing the MFF should be based on two principles:

- A set of "tools" needs to be available to potential MFF partners to assist them in understanding the need for and the approach to "climate-proofing" their proposed interventions; and
- The processes of "climate-proofing" should be integrated into the processes of MFF project design and implementation, rather than being separate.

1.2: Impacts of Climate Change on coastal systems

Acknowledgement: Much of the text in this section is adapted from the IPCC 2007 Report "Climate Change 2007 – Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the IPCC (978 0521 88010-7 Hardback; 978 0521 70597-4 Paperback)".

Beaches and rocky shorelines

Acceleration in sea-level rise will widely exacerbate beach erosion around the globe, although the local response will depend on the total sediment budget. An indirect influence of sea-level rise on the beach sediment budget is due to the infilling of coastal embayments. As sea-level rises, estuaries and lagoons attempt to maintain equilibrium by raising their bed elevation in tandem, and hence potentially act as a major sink of sand which is often derived from the open coast, implying the potential for major coastal instability due to sea-level rise in the vicinity of tidal inlets.

Several recent studies indicate that beach protection strategies and changes in the behaviour or frequency of storms can be more important than the projected acceleration of sea-level rise in determining future beach erosion rates. The combined effects of beach erosion and storms can lead to the erosion or inundation of other coastal systems.

Hard rock cliffs have a relatively high resistance to erosion, while cliffs formed in softer lithologies are likely to retreat more rapidly in the future due to increased to erosion resulting from sea-level rise. Cliff failure and retreat may be amplified in many areas by increased precipitation and higher groundwater levels. Four physical features of climate change – temperature, precipitation, sea level and wave climate – can affect the stability of soft rock cliffs. Soft rock cliff retreat is usually episodic with many metres of cliff top retreat occurring locally in a single event, followed by relative quiescence for significant periods

Deltas

Human development patterns influence the differential vulnerability of deltas to the effects of climate change. Sediment starvation due to dams, alterations in tidal flow patterns, navigation and flood control works are common consequences of human activity. Changes in surface water runoff and sediment loads can greatly affect the ability of a delta to cope with the physical impacts of climatic change.

Deltas have long been recognised as highly sensitive to sea-level rise. Rates of relative sea-level rise can greatly exceed the global average in many heavily populated deltaic areas due to subsidence, including the Chao Phraya delta, because of human activities. Natural subsidence due to auto-compaction of sediment under its own weight is enhanced by sub-surface fluid withdrawals and drainage. This increases the potential for inundation, especially for the most populated cities on these deltaic plains (i.e., Bangkok). Most of the land area of Bangladesh consists of the deltaic plains of the Ganges, Brahmaputra and Meghna rivers. Accelerated global sea-level rise and higher extreme water levels may have acute effects on human populations of Bangladesh (and parts of West Bengal, India) because of the complex relationships between observed trends in surface sea temperature over the Bay of Bengal and monsoon rains, subsidence and human activity that has converted natural coastal defences (mangroves) to aquaculture.

Estuaries and lagoons

Global mean sea-level rise will generally lead to higher relative coastal water levels and increasing salinity in estuarine systems, thereby tending to displace existing coastal plant and animal communities inland. Estuarine plant and animal communities may persist as sea level rises if migration is not blocked and if the rate of change does not exceed the capacity of natural communities to adapt or migrate.

Some of the greatest potential impacts of climate change on estuaries may result from changes in physical mixing characteristics caused by changes in freshwater runoff. A globally intensified hydrologic cycle and regional changes in runoff all portend changes in coastal water quality. Freshwater inflows into estuaries influence water residence time, nutrient delivery, vertical stratification, salinity and control of phytoplankton growth rates. Increased freshwater inflows decrease water residence time and increase vertical stratification, and vice versa. The effects of altered residence times can have significant effects on phytoplankton populations, which have the potential to increase fourfold per day. Consequently, in estuaries with very short water residence times, phytoplankton are generally flushed from the system as fast as they can grow, reducing the estuary's susceptibility to eutrophication and algal blooms. Changes in the timing of freshwater delivery to estuaries could lead to a decoupling of the juvenile phases of many estuarine and marine fishery species from the available nursery habitat.

A projected increase in the intensity of tropical cyclones and other coastal storms could alter bottom sediment dynamics, organic matter inputs, phytoplankton and fisheries populations, salinity and oxygen levels, and biogeochemical processes in estuaries.

Mangroves and sea grasses

Coastal vegetated wetlands are sensitive to climate change and long-term sea-level change as their location is intimately linked to sea level. Modelling suggests global losses of coastal wetlands from 2000 to 2080 of 33% and 44% given a 36 cm and 72 cm rise in sea level, respectively.

Mangrove communities are likely to show a blend of positive responses to climate change, such as enhanced growth resulting from higher levels of CO_2 and temperature, as well as negative impacts, such as increased saline intrusion and erosion, largely depending on site-specific factors. The sedimentary response of the shoreline is a function of both the availability of sediment and the ability of the organic production by mangroves themselves to fill accommodation space provided by sea-level rise.

Groundwater levels play an important role in the elevation of mangrove soils by processes affecting soil shrink and swell. Hence, the influence of hydrology should be considered when evaluating the effect of disturbances, sea-level rise and water management decisions on mangrove systems. Vertical accretion of mangroves is variable but commonly approaches 5 mm/yr. However, many mangrove shorelines are subsiding and thus experiencing a more rapid relative sea-level rise.

Sea grasses appear to be declining around many coasts due to human impacts, and this is expected to accelerate if climate change alters environmental conditions in coastal waters. Changes in salinity and temperature and increased sea level, atmospheric CO_2, storm activity and ultraviolet irradiance alter sea grass distribution, productivity and community composition.

Increases in the amount of dissolved CO_2 and, for some species, HCO_3 present in aquatic environments, will lead to higher rates of photosynthesis in submerged aquatic vegetation, similar to the effects of CO_2 enrichment on most terrestrial plants, if nutrient availability or other limiting factors do not offset the potential for enhanced productivity. An increase in epiphytic or suspended algae would decrease light available to submerged aquatic vegetation in estuarine and lagoonal systems.

Coral reefs

Reefs have deteriorated as a result of a combination of anthropogenic impacts such as overfishing and pollution from adjacent landmasses, together with an increased frequency and severity of bleaching associated with climate change. The relative significance of these stresses varies from site to site. Mass coral bleaching events are clearly correlated with rises of surface sea temperature of short duration above summer maxima. Particularly extensive bleaching was recorded across the Indian Ocean region associated with extreme El Niño conditions in 1998.

There is limited ecological and genetic evidence for adaptation of corals to warmer conditions. It is very likely that projected future increases in sea surface temperature will result in more frequent bleaching events and widespread mortality, if there is not thermal adaptation or acclimatisation by corals and their symbionts. The ability of coral reef ecosystems to withstand the impacts of climate change will depend on the extent of degradation from other anthropogenic pressures and the frequency of future bleaching events.

Increased concentrations of CO2 in seawater will lead to ocean acidification reducing calcification rates of calcifying organisms such as corals. Disintegration of degraded reefs following bleaching or reduced calcification may result in increased wave energy across reef flats with potential for shoreline erosion. However, relative sea-level rise appears unlikely to threaten reefs in the next few decades; coral reefs have been shown to keep pace with rapid postglacial sea-level rise when not subjected to environmental or anthropogenic stresses.

Many reefs are affected by tropical cyclones; impacts range from minor breakage of fragile corals to destruction of the majority of corals on a reef and deposition of debris as coarse storm ridges. Such storms represent major perturbations, affecting species composition and abundance, from which reef ecosystems require time to recover. An intensification of tropical storms could have devastating consequences on the reefs themselves, as well as for the inhabitants of many low-lying islands.

Human systems

Socio-economic impacts are also influenced by the magnitude and frequency of existing processes and extreme events, e.g., the densely populated coasts of East, South and South-east Asia are already exposed to frequent cyclones, and this will compound the impacts of other climate changes

Significant regional differences in climate change and local variability of the coast, including human development patterns, result in variable impacts and adjustments along the coast, with implications for adaptation responses. Human vulnerability to sea-level rise and climate change is strongly influenced by the characteristics of socio-economic development. Vulnerability to the impacts of climate change, including the higher socio-economic burden imposed by present climate-related hazards and disasters, is very likely to be greater on coastal communities of developing countries than in developed countries due to inequalities in adaptive capacity. Low-lying densely populated areas in India, China and Bangladesh and other deltaic areas are highly exposed, as are the economies of small islands.

The direct influences of sea-level rise on freshwater resources come principally from seawater intrusion into surface waters and coastal aquifers, further encroachment of saltwater into estuaries and coastal river systems, more extensive coastal inundation and higher levels of sea flooding, increases in the landward reach of sea waves and storm surges, and new or accelerated coastal erosion. Although the coast contains a substantial proportion of the world's population, it has a much smaller proportion of the global renewable water supply, and the coastal population is growing faster than elsewhere, exacerbating this imbalance. Many coastal aquifers, especially shallow ones, experience saltwater intrusion caused by natural and human-induced factors, and this is exacerbated by sea-level rise. Globally, freshwater supply problems due to climate change are most likely in developing countries with a high proportion of coastal lowland, arid and semi-arid coasts, coastal megacities particularly in the Asia-Pacific region, and small island states, reflecting both natural and socio-economic factors that enhance the levels of risks.

Climate change is expected to have impacts on agriculture, although non-climatic factors, such as technological development and management practices can be more significant. Climate variability and change also impacts fisheries in coastal and estuarine waters, although non-climatic factors, such as overfishing and habitat loss and degradation, are already responsible for reducing fish stocks. Globally an increased agricultural production potential due to climate change and CO_2 fertilisation should in principle add to food security, but the impacts on the coastal areas may differ regionally and locally.

Temperature increases can shorten growing cycles, but more frequent extreme climate events during specific crop development stages, together with higher rainfall intensity and longer dry spells, may impact negatively on crop yields. Cyclone landfalls causing floods and destruction have negative impacts on coastal areas, e.g., on coconuts in India. Rising sea level has negative impacts on coastal agriculture.

In terms of fishery resources, future climate change impacts will be greater on coastal than on pelagic species. The biotic communities and productivity of coastal lagoons may experience a variety of changes, depending on the changes in wetland area, freshwater flows and salt intrusion which affect the species. Intensification of ENSO events and increases in SST, wind stress, hypoxia (shortage of oxygen) and the deepening of the thermocline have the potential to reduce spawning areas.

Climate change and sea-level rise affect coastal settlements and infrastructure in several ways. Sea-level rise raises extreme water levels with possible increases in storm intensity portending additional climate impacts on many coastal areas, while saltwater intrusion may threaten water supplies. The degradation of natural coastal systems due to climate change, such as wetlands, beaches and barrier islands, removes the natural defences of coastal communities against extreme water levels during storms. Rapid population growth, urban sprawl, and coastal resort development have additional deleterious effects on protective coastal ecosystems.

The population exposed to flooding by storm surges will increase over the 21st century. Asia dominates the global exposure with its large coastal population: Bangladesh, China, Japan, Vietnam and Thailand having serious coastal flooding problems.

SECTION 2: REVIEW OF AVAILABLE TOOLS

This section describes tools that have been introduced to promote climate-proofing. These are:

- UNDP Adaptation Policy Framework
- ADB's Climate Proofing: A Risk-based Approach to Adaptation
- USAID Guidance Manual on Adapting to Climate Variability and Change
- The World Bank: Managing Climate Risk: Integrating Adaptation into World Bank Group Operations
- UNDP/GEF template for Climate Change Adaptation projects
- UNDP Monitoring & Evaluation Framework for Climate Change Adaptation projects
- UNDP Country Database
- Community-based Risk Screening Tool – Adaptation & Livelihoods (CRiSTAL) IUCN, IISD, SEI-US and Inter-cooperation

2.1: UNDP: The Adaptation Policy Framework (APF)

UNDP led in the development of a process to help countries as they integrate adaptation concerns into the broader goals of national development. The result is called the Adaptation Policy Framework. The full document can be found at the same site as the LFA Reader … http://www.undp.org/gef/undp-gef_publications/undp-gef_publications.html (see "Practitioners' Guides" under Project Formulation Materials). A brief outline of the APF follows.

The APF is comprised of five Components which largely coincide with the requirements of the GEF in project formulation:

Component 1: Scoping and designing an adaptation project.
Component 2: Assessing current vulnerability.
Component 3: Assessing future climate risks.
Component 4: Formulating an adaptation strategy.
Component 5: Continuing the adaptation process.

Component 1. Scope project and define objectives

Effective adaptation projects will have long-lasting benefits for a given country. The project should carefully take into account existing development plans in order to identify linkages between adaptation to climate change and other priorities. Strategies, policies, and measures identified should be consistent with national development plans (e.g., to meet Millennium Development Goals). The project team needs to identify ongoing and/or planned projects within the country that have relevance to the adaptation project. These projects may be complementary, and possibly synergistic.

Key activities in this scoping exercise include:

• *Establishing the stakeholder process*: As an initial step, the project team will need to establish a process for generating stakeholder input to the design, implementation, and conduct of an adaptation project.
• *Prioritizing the key systems*: Although the coastal zone management sector is pre-determined as the priority for this project, there are nevertheless sub-sectors which require more attention under conditions of climate change than others.

• *Reviewing the policy process*: Understanding national, sectoral and local policy-making processes is essential for determining how to design and implement an adaptation strategy, policy, or measure. In support of their commitments under the UNFCCC, almost all governments have prepared national climate change reports. In such countries, the APF process can build upon the national vulnerability and adaptation assessments that were conducted as part of National Communications and/or National Adaptation Programmes of Action.
• *Defining the project objectives and expected outcomes*: Framing the project objectives and expected outcomes is critical to developing a project that will be informative and responsive to the needs of stakeholders and policy-makers. The project objective should state what the project is specifically intended to enable in the priority system, both during and after the project lifetime. The objective must be achievable within the project constraints, such as available funding. The process of setting objectives can be accomplished using facilitated stakeholder fora, expert opinion, and direction from policy makers.
• *Developing a communication plan*: The project will only be effective if the results are effectively communicated with key stakeholders, decision-makers and the public. Therefore, it is important to produce a communication plan that is closely tailored to the needs of the target audiences, rather than the needs of the information generator. Communication should be adjusted and modified as required, based on monitoring of its effectiveness.

Component 2: Assessing current and future vulnerability

The five activities outlined below enable the user to prepare a vulnerability assessment that can serve as a stand-alone indication of current vulnerability, or can be integrated with climate change forecasts for an assessment of future climate vulnerability.

Activity 1: Structuring the vulnerability assessment: Definitions, frameworks and objectives: The first activity of the vulnerability assessment team is to clarify the conceptual framework being used, and the analytical definitions of vulnerability. A shared language will facilitate new insights and help communicate to key stakeholders. In the overall scoping, the team likely reviewed existing regional or national assessments that relate to vulnerability, for instance, national development plans, Poverty Reduction Strategy Papers, environmental sustainability plans and natural hazards assessments. Stakeholder-led exercises are valuable at this point.

Activity 2: Identifying vulnerable groups: Exposure and assessment boundaries: The team needs to identify who is vulnerable, to what, in what way, and where. The characteristics of the system chosen for the assessment include sectors, stakeholders and institutions, geographical regions and scales, and time periods.

The output of this activity is a set of vulnerability indicators and identification of vulnerable livelihoods (or other targets) that, together, form a vulnerability baseline of present conditions. The collation of vulnerability indicators underpins the analyses and identification of priorities for adaptation.

Activity 3: Assessing sensitivity: Current vulnerability of the selected system and vulnerable group: Current vulnerability can be expressed as the conjunction of the climatic hazards, socio-economic conditions, and the adaptation baseline. The first two activities in the vulnerability assessment establish the present conditions of development. Activity 3 directly links climate hazards to key socio-economic outcomes or impacts. In this activity, we develop an understanding of the process by which climate outcomes translate into risks and disasters. This may be done through a variety of approaches ranging from simple, empirical relationships to more complex, process-based models.

Activity 4: Assessing future vulnerability: The next activity in a vulnerability assessment is to develop a more qualitative understanding of the drivers of vulnerability, in order to better understand possible future vulnerability: "What shapes future exposure to climatic risks?" "At what scales?" This analysis links the present (snapshot) with pathways of the future, pathways that may lead to sustainable development or increased vulnerability through maladaptation. Interactive exercises (such as cognitive mapping) among experts and stakeholders can help refine the initial vulnerability assessment framework (Activity 1) by suggesting linkages between the vulnerable groups, socio-institutional factors (e.g., social networks, regulation and governance), their resources and economic activities, and the kinds of threats (and opportunities) resulting from climatic variations. Outputs of this activity are qualitative descriptions of the present structure of socio-economic vulnerability, future vulnerabilities and a revised set of vulnerability indicators that include future scenarios.

Activity 5: Linking vulnerability assessment outputs with adaptation policy: The outputs of a vulnerability assessment include:
• A description and analysis of present vulnerability, including representative vulnerable groups (for instance, specific livelihoods at risk of climatic hazards)
Descriptions of potential vulnerabilities in the future, including an analysis of pathways that relate the present to the future responses;
• Identification of points and options for intervention, which can lead to formulation of adaptation responses.

Component 3: Assessing future climate risks

Climate change assessments are permeated by uncertainty, requiring the use of specialized methods such as climate scenarios. This is a principle reason to recommend that adaptation assessments be anchored with an understanding of current climate risk; it helps to provide a road map from known territory into uncertain futures. Risk assessment also utilizes a formalized set of techniques for managing uncertainty that can be used to expand the methods developed and utilized in Intergovernmental Panel on Climate Change (IPCC) assessments. Particularly valuable is the advice on providing guidance on the confidence used in terms such as *likely*, *unlikely*, *possible* and *probable*. The major tool used to assess the impacts of future climate is the climate scenario. *A scenario is a coherent, internally consistent and plausible description of a possible future state of the world*. It is one of the main tools for assessing future developments in complex systems that may be unpredictable, are insufficiently under understood and have high scientific uncertainties. Scenarios can range from the simple to the complex, and from the qualitative to quantitative, encompassing narrative descriptions of possible futures to complex mathematical descriptions combining mean climate changes with climate extremes. Climate scenarios are not restricted to Global Climate Models (GCM) output – any information about future climate utilized in an assessment will suffice. Even when scenarios are constructed in narrative form, or are based on broad projections of climate change, plausibility and consistency should be maintained as much as possible. Usually, a scenario has no likelihood attached to it beyond being plausible.

Component 4: Formulating an adaptation strategy

The first activity is to synthesize what is known about the country's vulnerability and adaptive capacity with regard to the potential impacts of climate change. Most likely, this information will include responses around the following questions:

• What is the current level of adaptation and adaptive capacity that constitutes the adaptation baseline? The determinants of adaptive capacity may include technological advances, institutional arrangements, new and existing policies, availability of financing, level of information exchange, etc.
• What sets of indicators were chosen for vulnerability, socio-economic and adaptive capacity analyses? These should lay the basis for evaluating and prioritizing alternative adaptations.
• Which set of stakeholders represents the sector?

Upon completing this task, the team should have a clear idea of the vulnerability of the country with regard to climate change, the capacity of the country to adapt, and the overall policy context to be considered while developing the adaptation strategy. A detailed plan to engage stakeholders in strategy development should be also prepared, as well as indicators that could be used to assess alternative adaptation strategies.

Once the broad objectives of the adaptation strategy have been determined, it is possible to formulate policies and measures to achieve these objectives. Measures have to be formulated in such a manner that their selection and prioritization is possible using various methods. Since options will vary widely, it is only possible to outline typical information requirements, rather than give a prescribed format. Typical requirements are:

• Description of the measure, indicating objective(s), location (e.g., national, subnational, or local), timing of and responsibilities for implementation, and financing. This description would address the technical feasibility of measures, barriers to their implementation (e.g., cultural, social), the capacity to implement and sustain the measure, the cultural acceptability of the technology involved, etc.
• Estimated costs of the measure*.* The cost is a prerequisite for ranking a measure and including it in the (national, provincial, etc.) budget, or in a wider adaptation programme.
• Estimated benefits of the measure. The impacts of the measures on the environment and on society can be determined by comparing the "with" and "without" case. These impacts need to be described in terms of their contribution to the objectives or criteria, preferably in monetary terms. As is the case with costs, impacts may be system specific (e.g., coastal zone), and be multi- or cross-sectoral. Costs and benefits are mirror images and often benefits result in reduction of the (social) costs.

After adaptation policies and measures have been formulated, they can be prioritized with various methods and, subsequently, rejected, postponed, or selected for implementation. From a methodological point of view, the threats caused by climate change are not essentially different from what people have been experiencing in the past. Therefore, evaluation methods used in the selection and prioritization exercise need not differ either. However, the increase in frequency and intensity of extreme events puts more emphasis on the treatment of uncertainty and risk. Sensitivity and risk analysis are therefore valuable elements in the decision-making process

Once the prioritization process is completed, an adaptation strategy can be prepared with a combination of different measures and policies. The adaptation strategy consists of a plan containing the collection of measures selected for implementation, a time frame and other operational modalities for implementation.

Component 5: Continuing the adaptation process

For successful continuation of the adaptation process, isolated evaluations are not sufficient. The notion of opportunity cost, expressed as monetary units, is really an observation that any action occurs at the expense of another. These costs are diminished if adaptations complement one another either directly or by promoting synergies across the underlying determinants of adaptive capacity. Careful evaluation of any adaptation will therefore contemplate the interaction of a suite of adaptations in the context of a more general pursuit of social and economic objectives.

Like other environmental issues, climate change adaptation is most cost-effective if mainstreamed into the development processes. As the term “mainstreaming” implies, the approach places environment squarely in the centre of development poverty reduction. This approach is warranted because global environmental issues remain marginalized in all but a few countries leading to conclusion that rather than introducing additional environmental plans at this stage, governments should renew effort on implementing those plans. Note that mainstreaming is not unique to adaptation; it is a policy principle for introducing all multilateral environmental issues onto the policy agenda.

Environmental mainstreaming is seen as both a popular and elusive goal. In reality, the process is poorly documented, and the gap between theory and practice is acute. Both mainstreaming and adaptation are extremely broad concepts. To develop an approach to mainstreaming, it is absolutely essential to define the system boundary and to be as specific as possible about the scale and type of intervention. In other words, what is being mainstreamed into what, and how?

A sectoral or multi-sectoral approach to mainstreaming should be chosen since climate change will affect all sectors to some degree. It is preferable to aim to influence the policy process at as high a level as possible. Project teams should decide what adaptations are politically feasible, if the capacity exists to implement the measures, and to tailor the mainstreaming strategy accordingly.

Another dimension of mainstreaming is the analysis of barriers. Barrier analysis will help to identify appropriate policy instruments for adaptation including: legislative/regulatory/juridical, institutional, financial/market, and education/information mechanisms. At the national level, common barriers may be:

• *Institutional framework:* It would be equally important to identify the institution responsible for adaptation, define its mandate, and assess its human capacity, financial resources, and organizational effectiveness in convening different sectoral bodies. For example, the institution may need to bring together the climate change and the disaster risk management communities.
• *Legal framework:* Successful mainstreaming may require new laws and regulations or the improvement and enforcement of existing regulations (e.g., a building code to limit the elevation of construction to above the 50- or 100-year flood level).
• *Social institutions* and arrangements that discourage concentration of power and prevent marginalization of sections of the local population (Mustafa, 1998), arrangements to ensure the representativeness of decision-making bodies and maintenance of flexibility in the functioning of local institutions.

Relevance to the MFF

The APF is a tool that is designed to integrate vulnerability to climate change into the policy development process. As such, it relies on information available from large scale assessments such as the IPCC Technical Assessments and national INC's and NAPA's. Some of the steps involved in the APF are therefore of little relevance to the MFF, or are impractical at the local scale at which the MFF will work.

The time-scale required for application of the APF is also much longer than is relevant to the MFF, requiring several months to complete the entire analytical process. Nevertheless, the step-wise approach to analysis of vulnerability is useful in developing an equivalent process that can be used by the MFF (see tool 2).

2.2: ADB's Climate Proofing: A Risk-based Approach to Adaptation

Based on six case studies in Pacific island countries, information on the approach, methods, and tools used during preparation of the case studies is presented, together with methods that might be used to incorporate climate change adaptation into policy development, planning, and decision-making processes at the national level. Thus, the tools are very much targeted at national level adaptation and climate proofing.

Some of the key lessons learned from the case studies, of relevance to the MFF, are:

- Climate change will manifest itself largely as changes in the frequency and consequences of extreme events and inter-annual variations (e.g., the El Niño Southern Oscillation), rather than as long-term trends in average conditions.
- The climate risk profiles for some Pacific island states reveal high current levels of risk related to extreme rainfall, drought, strong winds, high sea levels, and extremely high temperatures, with most of these risks projected to increase substantially in the near term as a consequence of global warming.
- At a practical level adaptation should thus focus on reducing both present and future risks related to climate variability and extremes. Adapting to current climate extremes and variability prevents precious financial and other resources from being squandered on disaster recovery and rehabilitation.
- Adaptation takes place at many levels, and these need to be linked across the full ranges of time frames, spatial scales, and sectors.
- The success of adaptation is enhanced by integration of bottom-up and top-down approaches.
    - Top-down activities should focus on creating a favorable enabling environment, such as by climate proofing policies, plans, and regulations. This is a prerequisite to successful adaptation and should be the major emphasis and benefit of adaptation mainstreaming.
    - Bottom-up approaches reflect the fact that adaptation typically takes place at the local level—in communities, households, businesses, etc.
- Typically, adaptation is a cost-effective intervention, especially when implemented at the concept and design stages of a project. Retrospective adaptation normally incurs far greater costs.
- Climate change, especially through changes in extreme events and variability, has the potential to reduce project sustainability, such as the effective lifetime of infrastructure, community, and other development projects.
- Project sustainability can be maintained, however, despite climate change, through timely identification of the climate-related risks and implementation of measures to reduce those risks to an acceptable level.
- Addressing climate change is unlikely to increase project costs, and hence reduce project viability, but this requires that costs and benefits be evaluated over somewhat longer time frames than is common practice today.

The tool, or method, applied in the case studies is described as "*climate change adaptation through integrated risk assessment*" (CCAIR), and involves the following steps:

- Adaptation Rapid Assessment
- Risk characterization and management
- Characterizing the baseline conditions

- Building and characterizing scenarios
- Cost-benefit analysis for evaluating adaptation
- The “SlimClim” system

These are outlined below:

Adaptation Rapid Assessment

Adaptation Rapid Assessment (ARA) paints an initial, integrated picture of:

- The types and relative importance of climate and sea-level extremes and the nature and relative magnitude of the risks they pose to communities and other groupings;
- The extent to which such risks and management options are currently perceived and incorporated into policy, planning, and decision making at various levels; and
- The existing capacity to adapt to present and future risks in the context of sustainable development and management.

It involves five “components”, which are:

Component 1: Capacity Assessment and Strengthening
A consultative and interactive approach is used to develop the broad picture of the study area and types of risks faced in the local situation.

Component 2: Knowledge, Data, and Tools
A first-order identification and assessment of sources of existing knowledge, data, and tools that are applicable to high-priority risks, areas, and development projects.

Component 3: Rapid Risk Assessment
Based on a first order assessment of the current risks posed by climate variability and extreme events, as well as an estimation of the extent to which future changes in the climate and sea level could exacerbate these risks.

Component 4: Mainstreaming
Identifies actions required for strengthening individual skills, technical and institutional capabilities, and the enabling environment for decision making.

Component 5: Monitoring and Evaluation
Procedures for monitoring and evaluating any changes in risk, and the success and failures of adaptation initiatives, must be in place in order to provide the necessary feedback. Such feedback will lead to modification of policies, plans, and implementation measures..

Risk characterization and management

Widely-used procedures for characterizing and managing risk provide the basis for the following procedures, which relate specifically to climate risks

Risk Scoping
Through a consultative process involving stakeholders and in-country experts, risk reduction targets and criteria are established. These are based on identifying levels of risk that are acceptable to stakeholders.

Risk Characterization and Evaluation

For each of the risk events identified in Step A, scenarios are developed to provide a basis for estimating the change in the likelihood of each risk event as a result of climate change. The consequences of a given risk event are quantified in terms of individual and annualized costs.

Risk Management
A number of questions are asked, all with reference to the target agreed in Step A. Actions to be taken depend on the responses to the questions.
Is the risk acceptable?
Are the current risk management options adequate? If "no", one or more of the following risk management strategies should be implemented:

- Take actions to reduce the likelihood of the risk event occurring. For example, design and construct a breakwater.
- Avoid the risk. For example, prohibit development in areas that are exposed to risk events of concern.
- Redistribute the risk. For example, ensure provision of insurance cover or the availability of disaster relief programs.
- Reduce the consequences. For example, plant drought-tolerant crops if drought is a risk event of concern.

Monitoring and Review
The next step is to implement the risk management program, and monitor and review the risk management outcomes in relation to the agreed target.

The process of risk characterization and management is iterative, to ensure that the quality of the outcomes are always consistent with the risk reduction targets that are established, reviewed, revised, and reaffirmed through a consultative process.

Characterizing the baseline conditions

Following is a list of the information that, depending on specific circumstances, may be used to characterize the baseline conditions:

- Precipitation data (daily and hourly) to estimate drought and heavy rainfall risks;
- Air temperature data (daily maximum and minimum);
- Wind gust data, to assess risks related to structure damage, erosion, and food supply;
- Sea-level data (tide gauge and satellite), to assess risks related to erosion and structure damage;
- Ocean temperature data, to assess risks to reef and lagoon ecosystems and to fish stocks;
- Tropical cyclone tracks and intensity, to assess risks associated with severe weather and storm surges;
- Maps (current and historical);
- Aerial photographs (current and historical);
- Satellite imagery (current and historical);
- Descriptions (written, oral) of adverse weather and climate events affecting the study areas in the past;
- Inventories of land and marine resources;
- Population and dwelling data (past, present, and projected);
- Employment data (past, present, and projected);
- History of, and plans for, infrastructure and other major investments; and
- Income and expenditures (family, study areas, and national).

Building and characterizing scenarios

Scenarios of future climate, sea-level, and socioeconomic changes are required. These must

- meet given sector requirements (e.g., coastal flooding) and provide “time slices” in the future (e.g., 2040, 2080);
- satisfy the requirements of risk assessments (e.g., be applied to extreme events; daily, monthly or seasonal temporal resolutions; or spatial patterns or site-specific time-series data);
- take account of the scientific uncertainties in modeling;
- take account of different scenarios of future greenhouse gas emissions; and
- be updated as knowledge and information change.

The scenario-generating tools themselves are imbedded within an integrated model system called SimClim (see below).

Cost-benefit analysis for evaluating adaptation

Once the expected risks from climate change at a specific location are understood, decisions need to be made about how much, if any, of today’s resources should be invested to reduce the risks to an acceptable level. “Adaptation option” is the term used to describe a proposed investment of this type. Different adaptation options may have different degrees of effectiveness at reducing climate-induced risks, and each will come at a different cost.

The purpose of cost-benefit analysis is to compare all feasible adaptation options at a particular location and select those with the greatest economic value. Economic analysis in this context is necessarily a long-run analysis, as it must capture the effects of changes in the physical environment (climate change itself) over decades, and express them in terms of value in the present. A long time horizon means that fundamental changes will also occur in the human environment, e.g., in infrastructure, demographics, and growth and mix of economic activity; these need to be taken into account. Changes in vulnerability and risk are the product of the changing frequency of extreme events and the changing value on the ground of the assets that might be damaged (or the productive activities that might be curtailed).

The “SlimClim” system

SimClim is a generic, “open-framework” software modeling tool for examining impacts and adaptations to climate variability and future change, including extreme events. The system contains tools for spatial analyses (like a geographic information system) as well as tools for temporal analyses at specific sites (for example, for examining climate time-series data or estimating return periods of extreme events).

At its core, SimClim contains a climate change scenario generator. This component allows the user to produce customized, regionally specific scenarios, drawing upon a range of IPCC projections of global warming and regional patterns of change from GCM results.

Relevance to the MFF

As with the APF, this tool is designed for larger scale interventions than those supported by the MFF, and the level of detailed required in the analysis is greater than that which can reasonably be expected to be feasible within the MFF. As with the APF, the process itself is useful (and not so dissimilar from the APF), and elements of the process can be adapted for use within the MFF (see tool 2).

2.3: The World Bank: Managing Climate Risk: Integrating Adaptation into World Bank Group Operations

This paper takes stock of a number of early experiences in adaptation to climate change and highlights key elements of how the World Bank Group can continue to help its clients better manage the risks to poverty reduction and sustainable development posed by climate change.

A number of lessons are described which highlight several general ingredients for successful climate risk management:

- *Climate change needs to be treated as a major economic and social risk to national economies*, not just as a long-term environmental problem.
- *Addressing short-term vulnerabilities is the best strategy for preparing for long-term impacts.* From this perspective, adaptation and disaster risk reduction clearly need to be integrated efforts—that is, climate risk management is called for.
- *Climate risk management requires high-level coordination, since it cuts across major sectors of the economy*. Climate cannot be dealt with simply as an environmental issue.
- *Climate risk management needs to be fully integrated into economic planning and the preparation of sectoral plans and budgets*. Adaptation plans that are delinked from the crucial planning and budget machinery will likely fail to achieve the desired impact.
- *Much of the climate risk management effort will have to be undertaken by communities and the private sector*. These actors therefore need to be involved in the planning and implementation of adaptation.
- *Adaptation investments need to be informed by a long-term process that links bottom-up consultation with top-down planning and policy*. This approach should allow key implementers (communities, the private sector, and so on) to have a say in government planning and should in turn enable the government to hold these actors accountable for effective implementation
- *Many adaptation investments involve strengthening or enforcing existing regulations* and therefore require full buy-in from regulatory agencies.

A climate risk screening tool being prepared by the World Bank Global Climate Change Team is aimed at project developers from both donor agencies and recipient countries. It is designed to be a simple means for quickly assessing whether a development project, investment, or activity might be subject to climate risks. Thus, it is a quality assurance tool

The Web-based tool assesses whether projected climate changes might increase or reduce risks arising from climate and provides an explanation of those changes. The tool also points towards resources—relevant projects, technical literature, and experts—that may be helpful to project designers in moving toward the next step in due diligence.

Relevance to the MFF

As a lessons learned tool, many of the quoted lessons should be incorporated into programme and project design of the MFF.

2.4: USAID Guidance Manual on Adapting to Climate Variability and Change

This publication describes how development activities proceed through a design process that is generally referred to as the "project cycle." The project cycle includes four basic steps: problem diagnosis, project design, implementation and evaluation. This sequence is viewed as a cycle owing to the dynamic nature of assistance: the completion and evaluation of one project could provide the impetus for a subsequent project to build on the previous project's accomplishments, or address issues that were absent in the previous design or emerged over the course of implementation.

The six-step approach for assessing vulnerability and identifying and implementing climate change adaptations (the V&A approach) follows a developmental path parallel to the more general project cycle. This is not surprising because the V&A approach can be utilized for a stand-alone project or incorporated into a separate project or program.

The approach can be used in different circumstances, such as the incorporation of adaptation measures from the beginning of project design (the ideal situation), or the modification of project design to incorporate adaptation measures during implementation, when the need to do so is recognized.

The six-step approach proceeds as follows:

Step 1: Screen for Vulnerability

Step 1 involves screening a current or proposed project design to determine if it might be affected by climate variability or climate change. Even if climate issues are important, it must be assessed whether it is cost-effective to invest in additional V&A steps. Although incorporating adaptation incurs costs, there may be costs associated with not modifying the project, if climate change reduces project performance.

Screening of climate impacts and relevance to the proposed project
The screening of climate impacts determines how climate relates to the proposed development project or program. This entails a two-part assessment – first, what do the climate data and models tell us about changes in climate variability and climate change in the geographical area covered by the project; and second, how will these potential changes in climate impact the relevant sectors in the development project.

Ideally, Step 1 involves an extensive review of current climate data, recent climate trends, and climate scenarios, preferably analyzed at the same geographic scale as the proposed project. In screening climate impacts, two rules of thumb are useful in making the determination:

Rule 1: If a project is sensitive to climate variability, it is likely to be sensitive to climate change.
Rule 2: Long-term climate changes can introduce other risks to projects. Climate change involves not only changes in extreme weather and patterns of wet and dry, hot and cool periods, but also changes to average climate.

The screening process for assessing climate impacts might proceed as follows:

1. Characterize current climate variability including short-term events (extreme weather events) and long-term events (trends in seasonal and annual variations) in the

geographical area. Sources may include historical weather records (if available), stakeholder input, and climate change projections.

2. For the relevant development sectors and planned project or program activities, determine which of these sectors or activities is or would likely be impacted by the various types of short- or long-term climate variability events (see Rules 1 and 2). It would be useful to describe the nature of the impact and assess the magnitude, even if only in relative (e.g., high, medium, or low) or qualitative terms.
3. Identify maladaptations (project designs that create or exacerbate a problem) in the relevant development sectors and current and planned projects that increase exposure to climate-related hazards.
4. Identify current or proposed adaptation strategies and policies in the sectors of interest. Are adaptation policies and strategies in place to address current climate issues such as extreme events or variability? Is there a national/local commitment to understand climate-related risks and develop adaptation strategies?
5. Discuss the screening results with implementing partners and stakeholders to determine if there are gaps in the analysis.
6. Gauge the level of concern among implementing partners and stakeholders about the impacts of climate variability and climate change.

Should vulnerability &adaptation be incorporated into the project design?
If the analysis in Step 1 indicates that climate impacts are likely to affect the sectors and/or activities envisioned in the proposed development project or program, additional factors related to USAID's manageable interests should be considered before committing to additional steps in the V&A approach. The factors that Mission staff might consider in making this determination are organized below into a checklist divided into three groups of questions:

1) project/program parameters;
2) V&A content; and
3) Local context for adaptation.

<u>Step 2: Identify Adaptationoptions</u>

Step 2 is to identify options for modifying the project in response to vulnerabilities identified in Step 1. Step 2 involves compiling an initial list of adaptation options and applying a process to review, refine and finalize the list of adaptations prior to analysis and ranking.

Compile adaptations
In developing a list of adaptation options, a number of approaches and information sources might be considered, depending on resources. A suggested process for compiling a list of adaptations is divided into preparatory and participatory activities.

Preparatory activities:

- Review and extract information on climate impacts and project vulnerabilities developed in Step 1;
- Review previous and current programs and projects to determine if adaptations were identified, assessed, or implemented; Solicit advice from and/or review recent reports and documents prepared by experts in climate change, climate adaptation and environmental science and policy that will have an intimate knowledge of the scientific underpinnings of the problem and will likely provide credible suggestions based on sound science;
- Review country strategies and policies that pertain to adaptations.

Participatory activities:

- Hold meetings with decision-makers and stakeholders to discuss climate impacts and adaptation options. These may involve workshops, smaller focus group interviews or field interviews.
- Consult with national and international experts on climate change adaptations. The list of adaptations developed from stakeholder meetings should be compiled and shared with experts to obtain their help in reviewing stakeholder adaptations and to identify gaps in the list.

<u>Step 3: Conduct Analysis</u>

The purpose of this step is for stakeholders and experts to evaluate each of the adaptation options included on the final list in Step 2. Options should be evaluated for their effectiveness at building resilience to climatic changes identified in Step 1. This analysis also must give consideration to the project's timeframe and budget as well as to the analytical requirements for implementing different adaptation options.

Define baseline of performance
The only reason to modify project plans is to improve project performance. Therefore, it is useful to assess how the original project is expected to perform undercurrent and projected conditions, and compare that performance with the options identified in Step 2.

Considerations in developing this performance baseline include:

- How would the original project perform under under current or expected conditions? Is it well-suited, given stakeholder experience with the local climate? How would the modified (climate-adapted)project options perform under current or expected conditions. Is it at least as well-suited to local conditions?
- How would the original project perform under expected future conditions? How would the modified options perform under expected future conditions?

Create adaptation assessment matrix
A variety of factors or criteria can be used in the analysis. An illustrative list of factors is provided below. Consultations with decision-makers and stakeholders will be useful in selecting the final set of factors and assigning "weight" or level of importance to each of them:

- <u>Cost</u> – cost to implement adaptation options; cost of not modifying the project
- <u>Effectiveness</u> – effectiveness of adaptation options as a solution to problems arising from climate variability and climate change (benefits, damages mitigated, costs avoided, and lives saved as different specifications of "effectiveness")
- <u>Ease of implementation</u> – includes issues such as barriers to implementation and the need to adjust other policies to accommodate the adaptation option
- <u>Acceptability to local stakeholders</u> – in Step 2 all adaptations would have been identified as feasible but not all will be equally attractive to all stakeholders for political, economic, social, or cultural reasons

<u>Step 4: Select Course Of Action</u>

The purpose of this step is to use the results from Step3 to select one or more adaptations to be implemented with assistance from the project or program. This step is very important in terms of determining the ultimate success of the V&A elements in the project or program. It is also the step in the approach where local ownership of both the process and decision is essential. The implementing partner should make an effort to ensure there is buy-in to the decision-making process in government and that all important parties, including key stakeholders, are represented in the decision-making process. Decision-makers should be encouraged to rank the relative importance of selection factors to promote transparency in the final selection. It is important to recognize that the ranking of factors must be in the context of the country's economic, environmental, and social goals – not in terms of the success of the project or program. Partly this reflects the fact that projects have limited timeframes and resources that might only allow support for a subset of adaptations under consideration. The process of selecting

Step 5: Implement Adaptations

Once adaptation options are selected, the next step is implementation. If the options were selected to modify a project that was already being planned, implementation of the options will become a part of the implementation of that "parent" project. The implementation plan will typically include the following components: better definition of the specific tasks, schedule, and roles of implementing partners, decision-makers, and stakeholders; and, resource requirements.

The implementation plan typically will include the following components:

- Strategy that describes actions and a timeline for formalizing the adaptation options, initiating activities, designing investments, and coordinating activities with other projects and programs;
- Capacity building needs assessment and training plan;
- Financial/business plan covering expenditure needs and revenue generation, opportunities for co-financing;
- Outreach/communications plan;
- Exit/sustainability plan; and
- Plan for monitoring performance of the adaptations.

Step 6: Evaluate The Adaptations

After adaptation options have been implemented, the final step is to evaluate them. The purpose of the evaluation is to determine whether the project or activity 1) delivers the intended benefits and/or 2) causes adverse outcomes. Evaluating a project or activity's effectiveness in reducing risks from climate variability and change can present immediate problems for two reasons:

1. The project may be designed to reduce vulnerability to infrequent extreme events. If an extreme event occurs, then the project or activity can be evaluated. If such an event has not occurred, it may be difficult to determine if the project or activity was properly implemented. Note that even if the event does not happen following implementation, this does not mean the investment was unjustified.
2. The project may have been modified to incorporate long-term risks from climate change. This can be even more difficult to evaluate. Long-term changes in climate may not be evident when it comes time to evaluate the project. This lack of an immediate payoff should not be a factor in the decision analysis.

Relevance to the MFF

This is the third tool (along with UNDP's APF and ADB's Climate Proofing tool) that is designed to ensure that vulnerability to climate change is addressed in development programmes and mainstreamed into the policy development process.

All three tools are quite similar, as shown in the Table below:

USAID	ADB	UNDP
STEP 1: SCREEN FOR VULNERABILITY	**STEP 1 ADAPTATION RAPID ASSESSMENT**	**COMPONENT 1. SCOPE PROJECT AND DEFINE OBJECTIVES**
Characterize current climate variability.	Capacity Assessment and Strengthening	Establishing the stakeholder process:
Determine which sectors/activities would likely be impacted	Knowledge, Data, and Tools	Prioritizing the key systems:
Identify maladaptations	Rapid Risk Assessment	Reviewing the policy process:
Identify current/proposed adaptation strategies and policies	Mainstreaming	Defining the project objectives and expected outcomes:
Discuss the screening results	Monitoring and Evaluation	Developing a communication plan:
Gauge the level of concern among stakeholders		
STEP 2: IDENTIFY ADAPTATION OPTIONS	**STEP 2 RISK CHARACTERIZATION AND MANAGEMENT**	**COMPONENT 2: ASSESSING CURRENT AND FUTURE VULNERABILITY**
Compile adaptations	Risk Scoping	Definitions, frameworks and objectives:
	Risk Characterization and Evaluation	Identifying vulnerable groups:
	Risk Management	Assessing sensitivity:
	Monitoring and Review	Assessing future vulnerability:
		Linking vulnerability assessment outputs with adaptation policy:
STEP 3: CONDUCT ANALYSIS	**STEP 3 CHARACTERIZING THE BASELINE CONDITIONS**	**COMPONENT 3: ASSESSING FUTURE CLIMATE RISKS.**
Define baseline of performance		
Create adaptation assessment matrix		
STEP 4: SELECT COURSE OF ACTION	**STEP 4 BUILDING AND CHARACTERIZING SCENARIOS**	**COMPONENT 4: FORMULATING AN ADAPTATION STRATEGY.**
		Description of the measure,
		Estimated costs of the measure.
		Estimated benefits of the measure.
STEP 5: IMPLEMENT ADAPTATIONS	**STEP 5 COST-BENEFIT ANALYSIS FOR EVALUATING ADAPTATION**	**COMPONENT 5: CONTINUING THE ADAPTATION PROCESS.**
		Careful evaluation
		Climate change adaptation is most cost-effective if mainstreamed
STEP 6: EVALUATE THE ADAPTATIONS	**STEP 6. THE "SLIMCLIM" SYSTEM**	

The USAID approach, like the other two tools, cannot be directly applied to the MFF, but element from the approach can be incorporated into a simpler, scaled-down version of vulnerability analysis.

2.5: UNDP/GEF template for Climate Change Adaptation projects and check list for quality assurance

UNDP has developed an annotated template for the formulation of Climate Change Adaptation proposals in line with GEF requirements, which is based on the additionality concept of climate change. This essentially forms a link between the project design phase of the project cycle and the project approval process. To complete this link, UNDP uses a check-list for quality assurance. These two tools together ensure that the guidance provided by the UNDP/GEF CC Adaptation Programme Manual (which is based on the APF) has been adhered to in the project design.

Relevance to the MFF

The check-list itself, which is tailored to the needs of UNDP and the GEF, is of limited relevance to the MFF, but the use of a check-list as a tool to ensure that CCA issues are adequately addressed in the project design process is an essential tool (see tool 4).

2.6: UNDP Monitoring & Evaluation Framework for Climate Change Adaptation projects

UNDP's draft Monitoring and Evaluation Framework views climate change adaptation as a set of ongoing processes that enable the achievement of development objectives despite climate change. Accordingly, adaptation interventions are considered to fall into the following general categories of processes at various scales:

- Policy making & planning;
- Capacity building;
- Information managemant;
- Decision-making for investment; and
- Livelihood or resource management.

Given the wide-ranging effects of climate change and the many sectors that play a role in adaptation, the M&E framework presents indicators for 6 Thematic Areas, among which the two most relevant to the MFF are:

TA 5: Coastal zone development

TA 6: Natural resources management

Indicators are proposed in four categories for monitoring the effectiveness of adaptation initiatives:

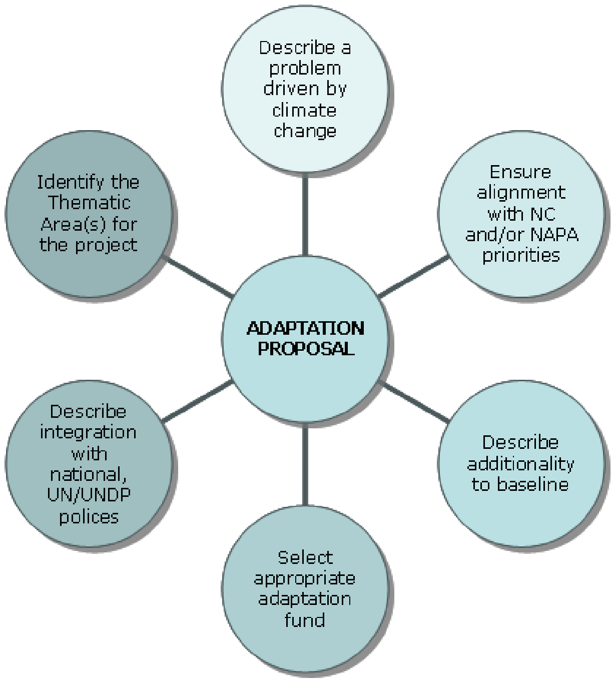
- **Coverage:** the extent to which projects engage with stakeholders (individuals, households, businesses, communities, community-based organizations, government agencies, policymakers, etc.).
- **Impact:** the extent to which projects bring about changes that support adaptation.
- **Sustainability:** the ability of stakeholders to continue to implement adaptive interventions on timescales that extend beyond project lifetimes.
- Replicability: the extent to which projects generate results and lessons that are potentially useful in other, comparable contexts, and the extent to which these lessons are disseminated and acted upon.

Relevance to the MFF

This monitoring tool is designed to measure progress in a programme that is specifically targeting climate change adaptation, rather than a programme which is seeking to secure other goals while ensuring that CCA is accounted for. It is also designed for a programme consisting of individual elements (projects) at a substantially larger scale than those supported by the MFF, and is therefore of little direct relevance to the MFF programme.

2.7: UNDP Country Database

The project development or 'pipelining' approach for climate change adaptation consists of six key steps. Note that these steps are not sequential



The country database aims to help project proponents and RTAs undertake these 6 steps by providing the following information for each country:

1. Summaries of the National Communication (NC) and National Adaptation Programme of Action (NAPA);
2. Supporting scientific data including historic climate-related disaster risks, climate change projections for temperature and precipitation, and findings of selected studies on climate change-related impacts;
3. Links to UNDP programming documents;
4. Links to UNDP-GEF climate change adaptation project summaries;
5. Links to additional documents and the option to upload and share useful documents.

Relevance to the MFF

The information in the UNDP Country database may be of use to NCB's in ensuring that vulnerability to climate change is adequately reflected in the MFF national strategies (see tool 1).

2.8: Community-based Risk Screening Tool – Adaptation & Livelihoods (CRiSTAL)

As part of a collaboration with IISD, IUCN, and the Swiss organization, Intercooperation, SEI/US has developed a new software tool called CRISTAL (Community-based RIsk Screeening Tool - Adaptation & Livelihoods) to assist local communities, project planners, and project managers to assess climate risk management for planned or ongoing development projects. The tool provides a basis for improving community- and project-based decision-making so that adaptation opportunities can be maximized, and mal-adaptation minimized.

Goal:
To promote the integration of risk reduction and climate change adaptation into community-level projects.

Objectives:
(a) Help users to systematically understand the links between local livelihoods and climate;
(b) Enable users to assess a project's impact on community-level adaptive capacity;
(c) Assist users in making adjustments to improve a project's impact on adaptive capacity.

Approach:
(a) Draw on environmental impact assessment model;
(b) Use the sustainable livelihoods framework to enable users to focus on elements of coping and adaptive capacity at the community level;
(c) Offer the tool in multiple formats (e.g., hard-copy, Excel) and in several languages;
(d) Encourage users to adapt the use of CRiSTAL to suit specific needs.

Intended Results:
Enhanced local adaptive capacity through a better understanding of:

- How current climate hazards and climate change affect a project area and local livelihoods;
- How people cope, looking specifically at the resources needed to cope with climate stress;
- How project activities affect livelihood resources that are vulnerable to climate risk and/or important to local coping strategies; and
- How project activities can be adjusted so they enhance adaptive capacity.

Structure:
Focus on four framing questions divided into two modules:

Module 1: Synthesizing Info on Climate & Livelihoods

Q1: What is the Climate Context?

- What are the anticipated impacts of climate change in the project area?
- What climate hazards are currently affecting the project area?
- What are the impacts of these hazards?
- What are the coping strategies used to deal with these impacts?

Q2: What is the Livelihood Context?

- What resources are important to local livelihoods in the project area?
- How are these resources affected by current climate hazards?
- How important are these resources to coping strategies?

Module 2: Planning & Managing Projects for Adaptation

Q3: What are the Impacts of Project Activities on Livelihood Resources that…

- Are vulnerable to current climate hazards?
- Are important to local coping strategies?

Q4: How can Project Activities be Adjusted to Reduce Vulnerability and Enhance Adaptive Capacity?

- How feasible is it to implement these changes in terms of…?
  - Local priorities/needs
  - Project finances
  - Institutional capacity
  - A supportive policy framework
  - Risks associated with future climate change

Microsoft Excel™ is required to run CRiSTAL. The latest version of CRiSTAL can be downloaded from the Web site:
http://www.iisd.org/security/es/resilience/climate_phase2.asp

Relevance to the MFF

CRiSTAL may be a useful tool to assist the NCB's and project proponents to understand how current climate hazards affect a project area and local livelihoods, how people cope, and how project activities can be adjusted so they enhance adaptive capacity.

2.9: Analysis of tools

The various tools described in the preceding sections fall into different categories. The UNDP "Adaptation Policy Framework", ADB's "Climate Proofing: A Risk-based Approach to Adaptation", and USAID's "Guidance Manual on Adapting to Climate Variability and Change" are all guides to the formulation of climate change adaptation interventions. The World Bank document is largely a description of lessons learned, while the ADB document also lists lessons learned. The UNDP project document template and check-list are quality assurance tools, the UNDP Database is an information resource, and CRiSTAL is a software tool to assist in project design.

The three guides all describe a very similar process of analysis and design, the main differences being related to terminology and order of presentation. UNDP lists five steps in the design process, while USAID and the ADB have six steps, although the ADB's final "step" is actually simply a description of a software support tool. In all three cases, Step 4 represents the conclusion of the design and formulation process, described by UNDP as "Formulating an adaptation strategy", by USAID as "Selecting course of action", and by the ADB as "Building and characterizing scenarios". Preceding this step, all three guides describe essentially the same process, and all emphasize that the "steps" should not be viewed as consecutive, but rather as representing activities to be carried out in parallel.

Both the USAID and UNDP documents emphasize the need to think of designing adaptation measures (i.e. "climate-proofing") in the context of the project cycle. This implies that a set of tools required to climate-proof a programme like MFF needs to be integrated with the basic steps of project design and implementation, as shown below in Figure 1.

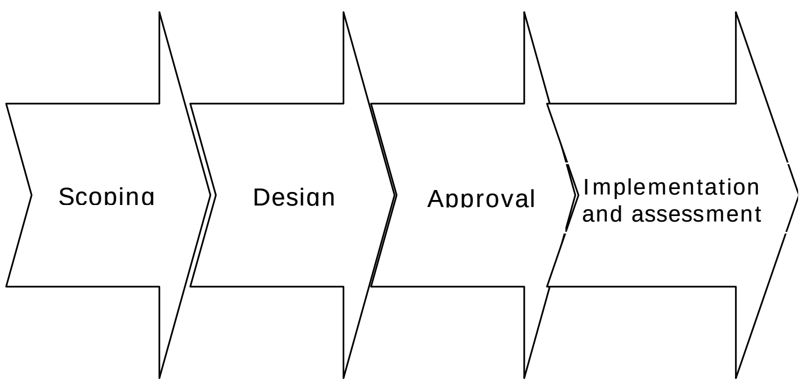


Figure 1: The project cycle

The types of tools that might be useful at each stage of the project cycle are shown below in Figure 2, below.

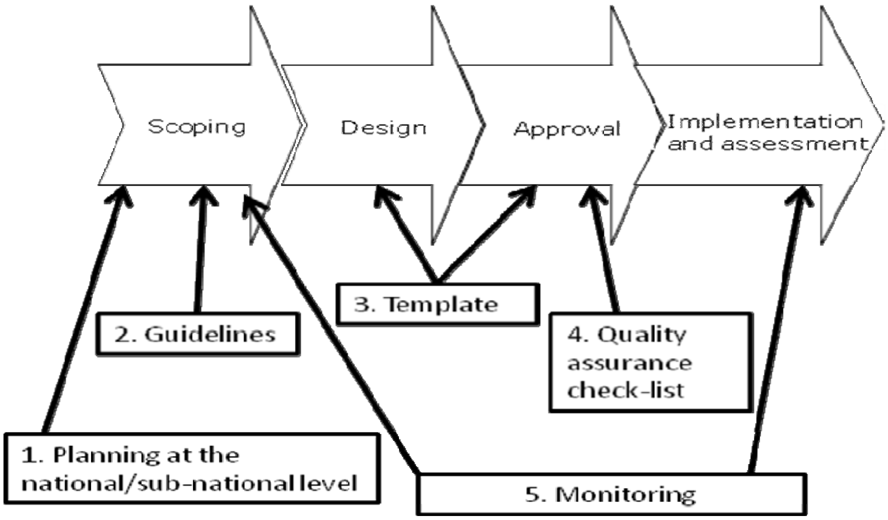


Figure 2: Tools matched to different stages of the project cycle

SECTION 3: TOOLS FOR USE BY THE MFF

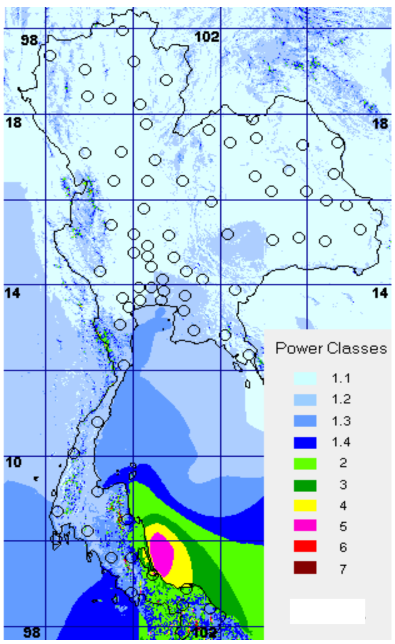
3.1: Tool 1 (Scoping phase): Planning at the national/sub-national level

Because the impacts of climate change are spatially heterogeneous, the projected climate impacts at a national or sub-national level need to be understood in order to ensure effective and efficient climate proofing at the project level. For example, on coastlines that are particularly exposed to major storms or cyclones, special attention needs to be paid to the issue of storm surges, sea-water intrusions, etc. By understanding the distribution of climate-related risks, it is less likely that major risks will be overlooked, or conversely that resources are wasted on risks that are unlikely to be experienced.

A few examples will illustrate the point.

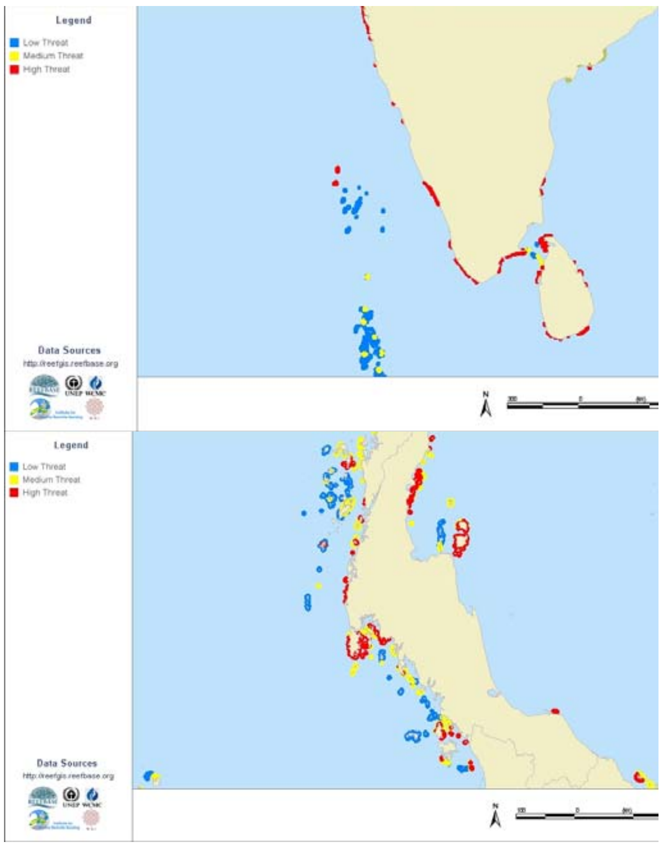
1. Sri Lanka's INC provides estimates of areas likely to be inundated due to sea-level rise. These estimates are quite variable. For example, a rise of 30cm in mean sea-level will not cause any inundation in the area of Ahungalle and Induruwa marshlands, and a rise of 1 meter would only inundate about 0.5km^2 in each location. In contrast, in the area of Negombo Lagoon, 12 km2 would be inundated with a 30cm rise, and nearly double that amount with a 1 metre rise. Consequently, the extent to which MFF projects would need to accommodate the impacts of sea-level rise would obviously differ greatly depending on their location.

2. Coastal wind speeds differ greatly between Thailand's Andaman Sea and Gulf of Thailand coasts, and also with location long these coasts, as shown in the map below.



Although the pattern of wind speeds can be expected to shift with the impacts of climate change, existing information can nevertheless be used to predict that projects in the south of the Gulf of Thailand coast need to pay far more attention to the impacts of storm surges than do projects in the north of the Andaman coast.

3. Coral reefs are potentially able to accumulate vertically at a rate of up to 40cm per 100 years, which is sufficient to offset rates of sea level rise anticipated by most models. However, this is only true for healthy coral reefs. Those which are already stressed or damaged will not be able to match rates of sea-level rise. Therefore, artificial sea defenses in areas behind healthy reefs will be of less significance than for areas behind damaged or unhealthy reefs. The two maps below show 2002 assessments for overall reef damage in southern India, the Maldives and Sri Lanka, and for Thailand.



Thus, the first level of planning must occur at the national or sub-national level, depending on the geographic focus selected for MFF interventions. Using information derived from the INC, NAPA, on-line databases and scientific papers, the MFF National Strategy must identify geographic variation in climate risks as the basis for more detailed planning and assessment of climate-related vulnerabilities at the local level (see tool 2). The responsibility for undertaking this national/sub-national level planning lies with the NCB, and will be used by project proponents to help them design their projects and by the NCB and MFF Secretariat to check that proposals address locally relevant climate risks.

3.2: Tool 2 (Scoping phase): Guidance to MFF project proponents

In order to introduce potential partners to the concepts and process of climate-proofing, guidance will be integrated into the overall MFF guidance document currently under preparation. The guidance will deal with the necessary steps required to analyze climate-related risks and the types of interventions that might be taken to address these risks. Annex 1 provides a draft of the CCA guidance to be integrated into the SGF guidance document. A similar document will be developed for the larger projects, and this too will incorporate similar guidance.

This tool will be generated by the MFF Secretariat, in collaboration with UNEP and UNDP, for use by the NCB and project proponents.

3.3: Tool 3 (Design phase): Template to ensure climate-proofing has been integrated

The proposal template, currently under preparation, will include specific sections dealing with climate-proofing which must be completed, and which will demonstrate that the necessary steps in the design of a climate-proofed proposal have been undertaken. This will include a section for baseline values of the monitoring tool (see 3.5, below). Annex 2A provides the current template for SGF projects incorporating CCA issues, while Annex 2B provides similar information for the initial outline of a template for the larger projects.

This tool will be generated by the MFF Secretariat, in collaboration with UNEP and UNDP, for use by the NCB and project proponents.

3.4: Tool 4 (Approval phase): Quality assurance check-list

In order to confirm that the climate-proofing process has been effectively undertaken, a check-list will be provided to the MFF Secretariat and NCBs to all quick and easy confirmation that climate-proofing has been undertaken. Annex 3 provides a checklist for use with SGF projects. A similar checklist will be developed for application to larger projects.

This tool will be generated by the MFF Secretariat, in collaboration with UNEP and UNDP, for use by the NCB.

3.5: Tool 5 (Design and Implementation and Assessment phases): Monitoring tools

MFF projects are designed to change something, to have an impact on some state or condition. Exactly what needs to be changed will vary quite substantially among projects, and will often be difficult to define.

In a business setting, the project goal is usually financial profit and it is usually pretty easy to evaluate how much money a company is making or losing. For a health project, it is relatively easy to measure the health status of a particular population and to track changes over time to measure the success of a given intervention.

But for MFF projects, what practical and meaningful measures of project impact are available? Although there has been much effort placed on developing methods of measuring project impact, few have proven useful, practical, or cost-effective. Indicators need to be relevant to the local stakeholders, to represent something with which they can readily identify. "Scientific" indicators rarely meet these needs – they are often obscure, and data collection may be difficult and time consuming. For this reason, such indicators are often viewed by those in the field as useless and, worse, as distracting them from getting the "real" work to be done.

MFF project monitoring should *not* require the collection of huge amounts of data, and should *not* be complicated. However, monitoring **should** be an integral part of project design and management. As project designers determine what they want to achieve, and how they want to achieve it, they need to define what conditions constitute success, and to establish the baseline information against which progress can be measured. Therefore, monitoring starts **before project design is complete!**

For the purposes of MFF projects, a low-cost, practical monitoring system has been developed from similar concepts in other fields. It is based on data that are collected through simple techniques, directly related to project interventions, and readily interpreted by project staff. It is sensitive to changes over short periods of time and throughout a project site. Importantly, it allows comparisons of performance among projects at different sites, and can therefore be used to **measure overall progress of the MFF programme**. It can be used either as a completely independent measurement of project success, or as a complement to other methods. This approach is termed the "Problem Reduction Assessment" (PrRA).

<u>Challenges to Implementing "traditional" Indicator Approaches</u>

Three major challenges must be faced when implementing "traditional" indicator approaches to measuring field development project success.

Indicators are often not sufficiently sensitive over the short time frames relevant to project managers.

Many development projects have a very limited funding span. Even when a project lasts longer, project managers still need to assess their progress over shorter time intervals in order to make informed management decisions. Many quantitative indicators, especially those of a biological nature, change slowly over time. There are often substantial lag times between some activity, such as overhunting of predators, and the cascading biological effects that may show up in bird censuses or tree plots. Furthermore, many biological indicators, such as the population of a given species or the nutrient levels in a stream, have naturally occurring fluctuations that can make it difficult to interpret the causes of short-term changes.

The data required for many indicators are relatively difficult and expensive to collect.

For example, measurements of species abundance require complex census or survey data. Measurements of changes in habitat area often require landscape data collected through aerial photography or satellite imagery and analyzed by computer-based Geographic Information Systems (GIS). Measurements of changes in habitat condition require careful assessments of populations of indicator species through regular censuses or surveys along with mathematical and statistical analyses of the data. And, changes in ecosystem functioning require careful sampling and sophisticated analyses to assess variables, such as the amount of sediment in stream water or the species composition of different pollinators. All of these techniques require specially trained personnel and equipment resources that tend to be expensive or even unavailable.

Most indicator approaches are hard to implement as a part of everyday project activities.

As a rule, project teams are overworked merely trying to carry out project activities and maintain relations with community members, donors, and their organizations' constituencies. As a result, even where teams want to do monitoring, it often becomes the "marginal" activity that is abandoned when other, more immediate crises arise.

Currently two simple, participatory methods are being assessed for use by every MFF project. These are:

1. PrRA (Problem Reduction Assessment)

This is an adaptation of the Threats Reduction Assessment developed by various partners of USAID for their Biodiversity Support Programme. The PrRa is described in Annex 4A.

2. VERA (Vulnerability Exposure Reduction Analysis)

This is an adaptation of UNDP/GEF's Vulnerability Reduction Analysis, used in the GEF-funded Community-based Adaptation Programme. VERA is described in Annex 4B.

A decision on which if these (or an alternative) will be used for the MFF will be made by the MFF Secretariat, based on inputs received from the NCBs. Once the decision is made, detailed guidance will be added to the SGF and larger project guidance material.

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DRAFT
APPROACH UNDER FINALIZATION

Annex 1

Mangroves for the Future (MFF)

Operational Guidelines for Implementation of MFF Country Programs

SECTION 2: “Small Grants Facility (SGF) Projects”

The intended users of this document are the National Coordinating Bodies (NCB), UNDP Country Offices (UNDP CO), IUCN Country Offices (IUCN CO), National Institutions, local authorities, universities, NGO/CBO’s and staff/consultants involved with the MFF.

External organizations should also follow these guidelines closely when preparing SGF project proposals.

CONTENTS

1. Aims of the Small Grants Facility (SGF)

The major aim of the SGF is to finance small projects to support local community action for the restoration and management of coastal ecosystems and their use on a sustainable basis. Apart from providing direct environmental and livelihood benefits locally, SGF projects will also offer tangible 'models' to inspire policy-making and give voice to local disadvantaged players, especially women. Thus, SGF projects should also contribute concrete measures to ensure participation, gender equity and secure livelihoods for marginalized groups, at least at a demonstration scale. In this way, SGF projects will help in linking the household and community level to the dynamics of policy and decision-making about coastal area planning and investments.

SGF projects aim to encourage strategic and tailor-made locally led interventions, especially via outreach to and support for local NGOs, which are often best positioned to work with local communities and have a good understanding of local ecological and social-institutional conditions.

At the operational level, the SGF aims to:

- Receive, manage and allocate funds from and to various sources.
- Provide for the quick disbursement of funds to NGOs, CBOs and other approved organizations.
- Process applications in an effective and efficient manner.
- Operate transparently and accountably, in line with donor requirements and with the governance structure and partnership arrangements specified for MFF.
- Provide technical support to project applicants and project grantees and facilitate exchange of information, field experiences and best practices.
- Implement efficient monitoring and evaluation procedures.
- Report regularly on progress of the small grants project portfolio to RSC (via the MFF Secretariat).

The NCB's will accept proposals in two rounds, or calls. For the first round of proposals, the call will be made in February/ March 2008 and each MFF Focal Country will be allotted a sum of USD 100,000 for SGF projects. After the first round, disbursement of additional funds to each country from the SGF will be based on a performance assessment of the first-round projects. The allocation of funds, and timing of the second round of SGF projects, will be decided by the RSC.

2. Eligibility Criteria for SGF Project Proposals

The following eligibility criteria will be used when appraising SGF project proposals. The appraisals will be arranged by the NCB, with the assistance of the in-country secretariat support of the UNDP or IUCN country office concerned. The criteria on which SGF project proposals will be judged are provided below.

Basic criteria

1. The SGF will have two categories of project funding:
   - small (< US$ 10,000)
   - medium (< US$ 25,000)
2. Project proposals should be prepared and submitted to the NCB according to the application format and request for information. For medium grants (USD 10,000 to 25,000) the NCB may first request a pre-proposal or concept paper, depending on the experience of the project proposer, or the nature of the project. This decision is at the discretion of the NCB.

3. SGF project proposals with a budget request of less than US $10,000 may be prepared in the local language without the need for translation into English[1].
4. The maximum financial assistance provided by the SGF will be USD 25,000 per project. There is no project minimum.
5. The maximum period for a SGF project will normally be 18 months, and exceptionally 2 years.
6. Only after successful completion of a project (approved final technical and financial report), can the grantee apply for a second SGF project.
7. The SGF project proposal must be based on a participatory approach; it should show that the project (a) will not adversely affect the positions of the various stakeholders, (b) it seeks to harmonise with the needs, views, expertise and experience of local stakeholders and associate them with the management and (c) it is based, whenever possible, on a participatory approach.
8. Project proposals must explicitly integrate gender issues and/or address gender related concerns.
9. Funding will only be provided for projects in the priority coastal areas for MFF in each focal country (Sri Lanka, India, Indonesia, Thailand, Maldives and Seychelles) according to geographical selection by each NCB, based on the MFF National Strategy and Action Plan.

Technical criteria

The SGF will support small-scale coastal restoration and management efforts, prioritised, designed and where possible implemented, by the local communities or small scale business.

SGF will support projects which:

1. Promote innovative community based coastal rehabilitation projects.
2. Build local capacity to implement sustainable development strategies, creating ‘local ownership’.
3. Create public awareness on environmental issues as an integral part of the project.
4. Address livelihood, incomes, and equality and gender concerns.
5. Demonstrate potential for replication or scaling-up, and co-financing.
6. Create an impact on policy at National/State/District level.

Country-specific criteria

These Guidelines provide the overall framework for implementing the Small Grants Facility in the six MFF Focal Countries. As the body responsible for administering the SGF in each country, the NCB can further specify any additional ‘country-specific’ modes of operation, criteria and priority themes that may be desirable. The information and analyses resulting from MFF preparatory actions and the National MFF Strategy designed by the NCB’s will lead to the identification of high priority areas for coastal management in each country. The SGF projects will target thematic and geographical areas which have been identified as priorities by the NCB’s. These national priorities may be elaborated further in later versions of these Guidelines, and by the NCBs when calling for SGF project proposals.

Eligibility of Applicants

Proposals can be submitted by national/local NGO’s, CBO’s, research and scientific institutes, small scale businesses and enterprises which meet the following criteria:

1. Have been registered, preferably for a minimal of 2 years[2]

[1] In order to avoid local NGOs & CBOs hiring expensive consultants to formulate English language proposals, small proposals can be accepted in local languages. During the appraisal process, the proposal can be translated into English by the local secretariat.

2. Demonstrate a proven, or otherwise strong potential capacity to implement community-based projects in the fields[3] of coastal rehabilitation, conservation and/or sustainable use of natural resources[4]
3. Have a proven record of working with local communities in a participatory way.
4. Have scientific or professional credibility, as recognised by the peer review process.
5. Can demonstrate experience in project management and financial administration[5]

Limitations on Eligibility

The SGF will NOT grant financial support to:

- International consultancy firms.
- Scientific (not activity-related) research activities.
- Purchase of land.
- Travelling expenses for NGOs to participate in conferences and courses, unless it can be justified as a vital and integral contribution to the activities of the project.
- Costs related to participation in international courses and training that are organised outside the region.
- Foreign (expatriate) consultants (priority must be given to local consultants); exceptions should be referred to the MFF Secretariat for a decision.
- Purchase of equipment such as computers, vehicles, motor bikes, boats, office furniture, unless they can be justified as a vital and crucial tools for implementation of the project activities.

3. Examples of Appropriate SGF Projects

Some examples of appropriate SGF projects, by general subject area, are as follows:

- **Rehabilitation of natural resources that benefit coastal fisheries**, for instance through replanting of mangroves & coastal forest, rehabilitation of coastal wetlands, rehabilitation and protection of coral reefs, sea grass beds
- **Development of community management plans** for participatory sustainable coastal zone fisheries at village/district level.
- **Livelihoods projects** such as eco-enterprises or eco-tourism. Diversification of livelihoods and provision of (additional) income to coastal communities. Projects should target women as direct beneficiaries.
- **Community-based re-establishment of coastal buffer zones such as beach/coastal forest and sand dunes.**

[2] Copy of registration certificate to be included with the application
[3] This does not necessarily apply for projects on policy related issues, education and awareness raising and capacity building.
[4] Organisations working on coastal rehabilitation are especially encouraged to submit project proposals. Organisations not yet working in coastal areas should ensure presence of project staff in the coastal area for a substantial part of the project duration and indicate this clearly and in concrete terms in their proposal.

[5] The project proposal should clearly indicate the applicant's track record in project management and financial administration..

- **Initiatives for regeneration of mangroves and other coastal vegetation**, for instance through reforestation, or natural regeneration by means of enabling favourable hydrological conditions, temporarily preventing access to or use of healthy mangroves or degraded areas that can be regenerated while providing alternative sources of income to the communities depending on these natural resources. Establishment of nurseries, preparation of seedlings, etc.
- **Policy related activities**: activities related to influence policy and decision makers with respect to (enforcement of) coastal zone management regulations and policies, land use planning, enhanced local participation/consultation and conservation and sustainable management of coastal ecosystems, especially in the identified priority areas.
- **Education and public awareness rising**: public campaigns, workshops, environmental exhibitions, public planting events, village meetings, production of education materials (brochures, posters, leaflets, billboards), school campaigns, documentary film, etc. on coastal ecosystems and linkage with coastal livelihoods, gender, protection and sustainable management of natural resources, enhancement of traditional knowledge.
- **Capacity Building and technical exchange**: Capacity building, technical advice and training workshops related to above themes. Field and exchange study visits, networking, partnerships, local participation in decision making, etc. Highest priority to the use of available local expertise.

4. Guidance on design and management of projects

This section would include information on, for example, project scoping, logical framework analysis, gender analysis, etc. It would also contain a section on adaptation to climate change, as follows:

The IPCC defines vulnerability to climate change as being the degree to which individuals and systems are susceptible to or unable to cope with the adverse effects of climate change, including climate variability and extremes.

Exposure to climate-related hazards cannot realistically be modified (other than through "drastic" measures such as re-location of communities), therefore "climate-proofing" involves reducing sensitivity (or increasing resilience) and improving adaptation measures.

In practice, it is rather difficult to implement adaptation measures because of the nature of the impacts of climate change, i.e., their incremental nature. For example, if it is predicted that sea-levels will be 20cm higher in 2050 (a conservative figure from various models), it makes little sense to implement measures to address a 20cm sea-level rise today – local stakeholders will not see the need for such measures, and any community support will quickly be eroded as the measures are seen as being unnecessary. Conversely, implementing measures to deal with a 2cm sea-level rise, which might be seen as being justified by local stakeholders, will cease to be effective within the next 5-10 years, undermining confidence of those local stakeholders in adaptation measures. Consequently, "climate-proofing" usually involves increasing the "**adaptive capacity**" of communities or other social groupings to deal with the impacts of climate change. Increased adaptive capacity implies both increased resilience (reduced sensitivity) and an ability to implement socially and economically appropriate adaptation measures.

Individual interventions supported through the MFF, and indeed the programme as a whole, need to ensure that the increased investments and efforts in coastal ecosystem management supported by the programme address the issue of increasing adaptive capacity to deal with the likely impacts of climate change. Furthermore, increasing adaptive capacity needs to be an integral part of each MFF intervention, not an "add-on".

The process for climate-proofing MFF interventions involves a 5-step process.

STEP 1: ASSESS CURRENT VULNERABILITY

Step 1 involves screening a current or proposed intervention to determine if it might be affected by climate variability or climate change. This entails a two-part assessment – first, what do climate data and models say about changes in climate variability and climate change in the geographical area covered by the project (this information, available from UNFCCC Initial Communications and/or National Action Plans for Adaptation, should be incorporated into the MFF National Strategy); and second, how will these potential changes in climate impact the relevant sectors in the MFF intervention. These two steps will rely on readily available information and expert opinion to assess potential changes in climate parameters and climate impacts.

It is necessary to determine which ecosystems and livelihood activities would likely be impacted by the various types of short- or long-term climate variability events. It is also necessary to identify maladaptations (interventions that create or exacerbate a problem).

STEP 2: IDENTIFY ADAPTATION OPTIONS

Step 2 identifies options for incorporating into the project activities that respond to vulnerabilities identified in Step 1. This involves compiling an initial list of adaptation options and applying a stakeholder participation process to review, refine and finalize the list of adaptations.

The basic steps in the process are:

- Compile a list of potential project interventions (using information from other projects and/or local and expert opinion)
- Hold meetings with decision-makers and stakeholders to discuss climate impacts and adaptation options.
- Consult with national and international experts on climate change adaptations. The list of adaptations developed from stakeholder meetings should be compiled and shared with experts to obtain their help in reviewing stakeholder adaptations and to identify gaps in the list. Experts may also be able to share information on adaptation assessments conducted in other countries or regions that could be germane to Step 3.

STEP 3: CONDUCT ANALYSIS and SELECT COURSE OF ACTION

The purpose of this step is to evaluate each of the adaptation options included on the final list in Step 2. Options should be evaluated for their effectiveness at building resilience to climatic changes identified in Step 1. This analysis also must give consideration to the project's timeframe and budget as well as to the requirements for implementing different adaptation options. Several factors or criteria are considered in the analysis:

Cost – cost to implement adaptation options
Effectiveness –benefits, damages mitigated, costs avoided, and lives saved are different specifications of "effectiveness"
Acceptability to local stakeholders – in Step 2 all adaptations would have been identified as feasible but not all will be equally attractive to all stakeholders for political, economic, social, or cultural reasons
Timeframe for implementing the adaptation
Institutional capacity – how much additional capacity building and knowledge transfer is required for the adaptation option to be implemented

STEP 4: IMPLEMENT ADAPTATIONS

Once adaptation options are selected, the next step is implementation as a part of the implementation of the overall project. The implementation plan will typically include the following components:

- Identification of the specific tasks,
- Work planning (scheduling)
- Definition of roles of implementing partners
- Resource requirements

STEP 5: MANAGE AND MONITOR THE ADAPTATIONS

As adaptation options are implemented, their results should be monitored (see Section 7), with findings being fed back into the project management process. This is to ensure that the project 1) delivers the intended benefits and/or 2) avoids adverse outcomes.

5. Operation of the Small Grants Facility

Administration, Oversight and Execution

The SGF will be administered by the MFF Secretariat, based on decisions made by the MFF Regional Steering Committee (RSC). The National Coordinating Body (NCB) in each focal country will have oversight over the selection process and supervision of SGF projects in-country.

In each focal country, SGF projects will operate under direct execution by the UNDP or IUCN country office (CO) concerned, at the instruction of the MFF Secretariat based on a Letter of Agreement signed between the UNDP CO or IUCN CO and MFF/IUCN ARO.

Proposals (and Pre-proposals):

The call for SGF projects will be made by the National Coordinating Bodies in consultation with the MFF Secretariat. The project proponents are expected to provide information about their organization, using the form provided in *Annex 1*.

If requested by the NCB, interested organizations should first submit a project pre-proposal (=concept paper) in the format given in *Annex 2*. After an initial review by the NCB's, selected organizations will be requested to submit a full project proposal to the NCB, using the application form in *Annex 3*. The pre-proposal stage may be omitted in the case of organizations with a good track record of project implementation.

Request for submission of a full proposal, however, will NOT guarantee that the proposal will be funded.

SGF Project Approval Process

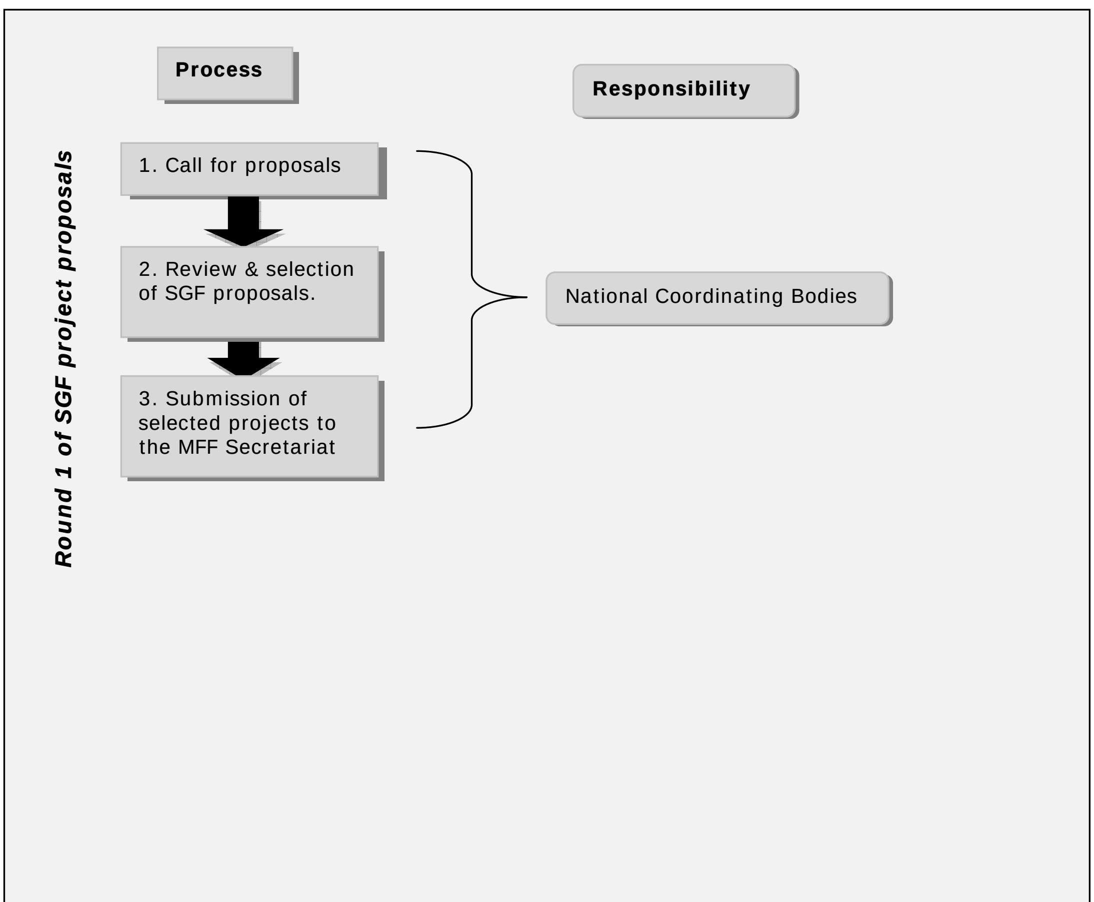
Implementing organizations are expected to comply with the guidelines provided and submit their proposals in the format provided in *Annex 3*. All SGF project proposals should be submitted to the National coordinating Body in their respective country. As mentioned earlier, project proposals that have a total budget of USD 10,000 or less can be submitted in the local language. SGF project proposals with a budget exceeding USD 10,000 (maximum USD 25,000) must be submitted in English. The NCB may contact the proposing body for additional information and clarification, as required.

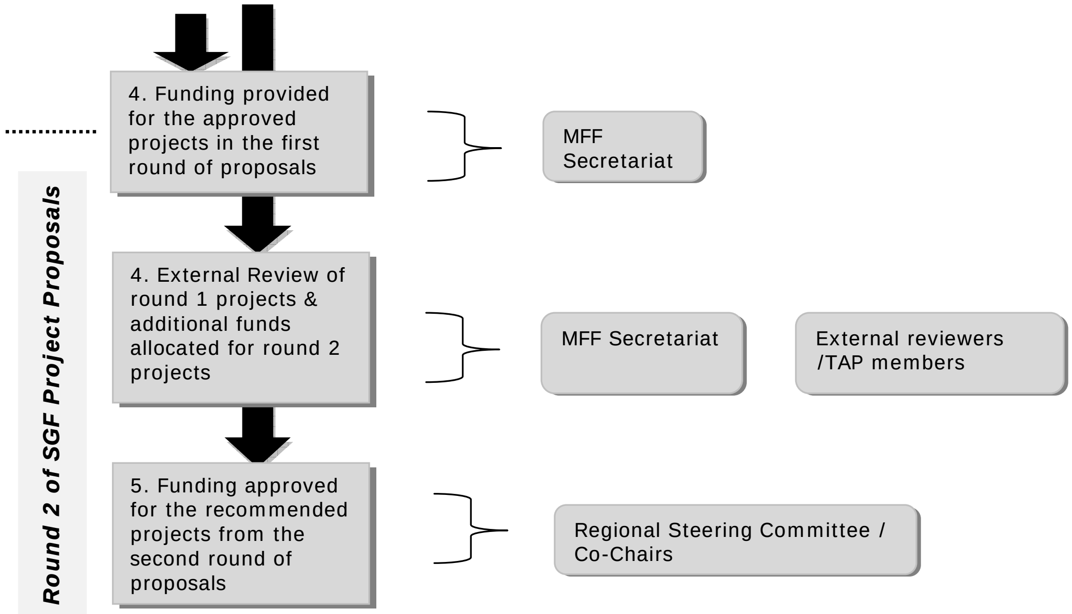
There will be two rounds of calls for SGF project proposals. For the first round of proposals, each country will be allocated an initial budget of USD 100,000. For the second round, disbursements from the SGF will be performance based and each country may not receive the same amount of funding.

For the first round of proposals:
Each NCB will review the proposals based on the criteria provided and select the best projects. The total cost of the selected projects must not exceed USD 100,000. The proposals approved by the NCB's will be submitted to the MFF Secretariat. The Secretariat, if satisfied with the quality of proposals, will provide the funds requested through the UNDP or IUCN county office concerned. If necessary, the Secretariat and the NCB's may ask the project proponents to modify their proposal to better fit the criteria listed in these Guidelines, or to improve the likelihood of successful implementation, cost-effectiveness, etc.

For the second round of proposals:
As in the first round, each NCB will review the proposals received and submit the selected proposals to the MFF Secretariat. The Secretariat will arrange for an external review of the proposals (independent of either NCB or the Secretariat). The proposals recommended by the external reviewers will be submitted to the RSC/ RSC co-chairs for a final decision on budgetary allocation.

Figure 1: Diagram illustrating the approval process for SGF project proposals





6. SGF Reporting and Communications

Overall Responsibilities
The MFF National Programme Officer (= MFF in-country Coordinator) has lead responsibility for communications regarding in-country SGF projects. The National Programme Officer, jointly with the Head of Unit/MFF focal point in UNDP CO or IUCN CO, will report on technical, administrative and financial issues to the NCB and MFF Secretariat. Updates on progress, plus any substantive issues will be advised to IUCN ARO/UNDP RCB and the RSC co-chairs by the MFF Secretariat.

Financial and Technical reporting:
The technical and financial reports prepared by the project grant recipients will form the basis for requesting funds from the SGF to UNDP CO or IUCN CO. The reports will be checked and verified by the Programme Officer, in consultation with the CO and NCB as required, then forwarded to the MFF Secretariat, which will then authorize further payments for the project.

Progress and Final Reporting Schedule
Each SGF project will provide two progress reports and a final report. Templates for progress and final reports are provided in *Annex 4* and *Annex 5*.

In the case of projects with a time scale of 12 months, the two progress report will be submitted 4 months and 8 months from the start of project implementation.

In the case of projects lasting 18 months, the two progress reports shall be submitted 6 months and 12 months after implementation begins.

Grants Disbursement Schedule

After the NCB has approved proposals for funding, followed by the signing of a Memorandum of Agreement (MOA) by the grant recipients and UNDP CO or IUCN CO, the schedule of payments will be as follows:

- 40% of the budget total on signing the MOA with UNDP or IUCN CO
- 50% on acceptance of the first progress report
- 10% on acceptance of the final report

7.Monitoring

This will contain guidance on an overall approach to monitoring of MFF projects, incorporating monitoring of interventions designed to address adaptation to climate change (to be finalized).

8. Audits

An SGF project financial audit may be carried out according to the requirements of the UNDP CO or IUCN CO that signs the MOA with the project grantee.

Annex 2.A: SGF Templates

Annex 2.A.1: SGF Project Proposals - Information on the proposing organization

NOTE: Please, fill in this form and send it with the pre - proposal

1. Project Title:
2. Name of organisation:
3. Address Details

Mailing address:

Telephone:
Fax:
E-mail (if applicable):
Can you be reached through the email of another organisation if necessary?
Website (if applicable)
Visiting address:

4. Mission and goals of your organisation:

5. Registration Status (including registration number):
6. Date of creation:
7. Staff:
- Number of paid staff
- Number of voluntaries
- Number of female staff (excluding secretarial and other support staff)

8. Contact person and project personnel:
- Contact person (name, professional background, and current function within NGO)
- Project personnel (for each member of the project personnel, indicate: name, professional background, and current function within NGO; for persons who do not currently work for the NGO, indicate in addition current employer, address, and function for this employer).

9. Requested financial assistance in USD:
10. Account number:
11. Bank address (including SWIFT-address or TELEX-number for payments):

12. Other projects already implemented or currently being implemented by your organisation in fields relevant to the programme (do not list proposed projects):

For each project indicate: project title, period of implementation, project leader, function of project leader in NGO, budget, donor, contact person within donor agency, and e-mail/fax of this contact person.

Other experiences (relief programmes or other involvements after tsunami for example)?

13. Please indicate here if your organisation is actively involved in a network. If so, please specify which network, since when you are a member and what your role is in this network.

14. Please indicate here any necessary capacity building or training needs of your organisation.

15. References / referees

Please indicate here the name, function, address, telephone and e-mail of persons who can be contacted for reference information. (Please only indicate persons who are NOT involved in your organisation).

Annex 2.A.2: Pre-proposals for Small Grant Facility Projects:

Before submitting a full project proposal, interested NGOs, CBOs and other eligible organisations may prefer to first submit a pre-proposal, or concept note; or a pre-proposal may be requested by the NCB. This gives the NCB and in-country secretariat the opportunity to assess if the project concept fits the MFF SGF criteria sufficiently well to suggest that the proposers should submit a full SGF project proposal.

Please note that an invitation to submit a full project proposal is not a guarantee that it will be financially supported by the Small Grants Facility

The following information should be provided (maximum 1 – 2 pages, excluding the "information on implementing organisations").

Project title:

Requested amount:

Project duration:

Geographic area of the proposed project (including geographical coordinates):

Project concept:

Where did the idea for the project originate from?
What is the problem to be solved / the situation to be improved?
What are the main causes of this problem/situation?
What current problems are likely to be worsened due to the impacts of climate change?
Which of these causes will the project address and what is the rationale behind this choice?
Are there other organisations working on the same/similar problems in the project area?
Summarise the planned project objectives, main activities, main results and outputs / deliverables?
Who will be the main beneficiaries of the project?
What indicators will be used to determine the project's success?

Relevance to the MFF criteria

How will the project relate to the MFF Programmes of work?
In what way does the project contribute to the restoration, sustainable management or conservation of coastal ecosystems?
What measures are envisaged to address the likely impacts of climate change?

Management structure:

How will the project be managed?
Other partners to be involved?

Budget: Approximate cost of the project?

Annex 2.A.3: Template for SGF Project Proposals

Proposal Summary Sheet (Should be attached with each proposal)

1. Date of Proposal Submission
2. Project Title: Should reflect the nature of the activities
3. Project Site: Exact location (village, province etc), District/State, Country
4. Project Scale : National/ regional
5. Implementation agencies: Name of Organization
6. Implementing Partners, if any:
7. Authorized representatives from Implementing Agency/ies: Name and designation of at least 1 person from the implementing agencies authorized to represent any transactions
8. Project Objective:
9. Project start date: DD/MM/YY
10. Project duration: In months, not exceeding 24 months
11. Total project Cost:
12. Other donors/ co financing if any:
13. Brief Project description (with outputs)

Full Proposal Template: The whole document should not exceed 12 pages.

1 **Project Summary**: a brief statement of the problem, objectives, activities, expected results and success criteria for the projects

2 Introduction
- 2.1 **Rationale of the project**: Main problem, Issues to be considered
- 2.2 **Context:** Geographical context: basic geographical data, climate, altitude, main ecological and socio-economic characteristics, maps; policy context: relationship to national policies; community context; analysis of the likely impacts of climate change
- 2.3 Description of project Area including map

3 Project Description (*)
- 3.1 **Main Objective**: Main Objective/s: the long-term target that the project will contribute to; and how does it contribute to MFF PoW's;
- 3.2 **Immediate Objectives**: The objectives that the projects can achieve in its duration.
- 3.3 **Outputs**: The expected outputs of each planned activity; including those to address the likely impacts of climate change
- 3.4 **Activities**: The activities that will help to achieve the objectives

3.5 **Time Frame**: Time required for each activity; the project should start immediately after the contract is signed. If there is special seasonal requirement (for example monsoon (it should be clearly expressed here

4 Proponent Description
- 4.1 Organization Background:
- 4.2 Capacity
- 4.3 Prior experience in the related projects

5 Target group and local community participation:
- 5.1 **Target group beneficiaries**, that would be benefitting from the expected results; highlight the livelihood benefits
- 5.2 **Livelihood linkages**: How does project contribute to sustainable livelihood? (If not covered in 4.1)
- 5.3 **Local participation** : Participation of local stakeholders including women and specific disadvantaged group if any in the project planning and implementation
- 5.4 **Gender Issues**: How are gender issues and differences taken into account and integrated into projects? Special attention should be paid to differences between men and women with respect to: access to and use of resources, means of production and credit, generation and use of income, participation in decision making.
- 5.5 **Adaptation to Climate Change**: What activities will ensure that the likely impacts of climate change and climate variability will not undermine interventions to address other problems?

6 Project Management, Monitoring and Evaluation
- 6.1 **Management:** How will the project be managed (institutional structure, other organisations involved?) If other organizations are involved, describe the responsibility of each partner and how they will work together to achieve the project objectives.
- 6.2 **Indicators:** What are the indicators for monitoring and evaluation of the project activities by your organisation (these should be directly derived from the expected results mentioned under 3.3; they should also include the “Problem Reduction Assessment”)?
- 6.3 **Methodology:** How and when will the internal monitoring and evaluation take place?
- 6.4 Attach the “Problem Reduction Assessment” baseline forms

7 **Continuation of project activities :** Exit strategy/ Phase-out mechanism and how project results will be sustained after the funding ends?

8 **Budget****: Create a detailed budget (see table below). Also list any contributions from the project proposers and partners, even if these are only in-kind.

* Project Description:

For project description, please use the following table in Logical Framework form:

Main Objective:
Immediate Objectives: 1.0 One of the Immediate Objectives that the project will achieve.
Output 1.1: One of the outputs that contributes to achievement of Objective 1
Activity 1.1.1 : One of the activities that contributes to output 1.1.
Activity 1.1.2 : Another activity that contributes to output 1.
……………
…………….
Output 1.2: Another output that contributes to achievement of Objective 1
Activity 1.2.1: One of the activities that contributes to output 1.2.
Activity 1.2.2 : Another activity that contributes to output 1.2
…………….
…………….
Immediate Objectives: 2.0 One of the Immediate Objectives that the project will achieve.
Output 2.1: One of the outputs that contributes to achievement of Objective 2
Activity 2.1.1: One of the activities that contributes to output 1.1.
Activity 2.1.2: Another activity that contributes to output 1.
………
…………
Output 2.2: Another output that contributes to achievement of Objective 1
Activity 2.2.1: One of the activities that contributes to output 1.2.
Activity 2.2.2: Another activity that contributes to output 1.2

Time frame (Example)

Activities	------------------------------------ 2008-------------------------------												-----------2009----------				
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	…	…
Activity 1.1.1																	
Activity 1.1.2																	

Activity 1.2.1																	
Activity 1.2.2																	

****Budget Note**: Please use the following table to show the total cost and amount requested from MFF

Budget Item	Total cost	Amount requested from MFF	Amount from proponent	Amount from other partners
Activity 1.1.1				
Activity 1.1.2				

Activity 1.2.1				
Activity 1.2.2				
Activity 1.1.1				

Annex 2.A.4: Format for Progress report:

1. Progress towards outputs:

Note:

The length of this report should not exceed 5 pages.
Please tick one of the boxes to show the status of your outputs
The progress report should be cumulative, for example the second progress report should cover the project period from the date of commencement up to that date and not the period from first progress report.

List the outputs and activities that your organization was supposed to achieve during this period, and give the progress status.

List of Objectives and Activities	Achieved	Progressing as expected	Progressing with minor delays	Progressing with major delays
Output 1.1				
Acitivity 1.1.1				
Activity 1.1.2				

Output 1.2				
Activity 1.2.1				
Activity 1.2.2				
-----------				

2. Comments on Progress towards outputs and objectives:
Here indicate the project progress in general, reasons for delays and how you will overcome that. Mention if there are any differences between the planned activities and actual activities and give the reasons for that.

3. Involvement of communities, local governments and other relevant stakeholders
List the number of meetings and consultations held during this period. Describe briefly the feedback from stakeholders and how that was incorporated in the projects.

4. Constraints and Challenges:
List, if there are any constraints and challenges that are affecting the progress towards outputs. How are you going to solve them?

5. Any change in context or any major events?

Annex 2.A.5: Format for Final technical report:

Notes: 1. The length of this technical report should be about 10 pages. If you want to submit additional information, please add them in annexes.
2. The report should take into account all the outputs and impacts for the entire project period completed so far and not just from the last progress report.

1. Important details

Project Title:
Project Number:
Project duration: (Start Date and End date)
Project Budget:
Budget provided by MFF:
Name of Organization:
Contact Details: (Including telephone number and email address)
Report Submitted by: Name and Position
Date of Report Submission:

2. A brief background of the project

Not more than one page: Summarize the context and the problem in your project area.

3. Summary of Project Outputs/Results and Impacts

(Not more than 2 pages)

4. Achievement of Objectives and Outputs

Complete the table below. Were the project's stated objectives and outputs achieved, not achieved or partially achieved? Mention the indicators used to assess the achievements. Give the reasons for partial or no achievement.

Objectives and Outputs	Status A= Achieved, N= Not achieved, P= Partially Achieved	Indicators: Change in Indicators to support your assessment	Reason for Partial/ Not Achieved Status
Objective 1 (State your objectives)			
Output 1.1 (State your outputs)			
Output 1.2			
……………			
Objective 2			
Output 1.1			
Output 1.2			
……………			

Also, attach the final and any intermediate "Problem Reduction Assessment" forms.

5. Comments on Objectives and Outputs:

Use this section to elaborate on:

1. The extent to which the achievement of outputs and objectives have contributed to meeting the overall long-term objective of the project.
2. To elaborate more on the circumstances that resulted in partial/ non achievement.
3. To elaborate on unforeseen challenges and opportunities, if any and they were addressed.
4. To reflect on the logical links between objectives, results and activities (carrying out the planned activities may not always lead to achieving the stated outputs and achieving the outputs does not guarantee that the objectives are met).

6. Summary of Activities completed:
Outline the activities completed, including those to address the likely impacts of climate change and climate variability. Were their any changes in the planned activities and the actual activities? If yes, please explain. Was it necessary to undertake any activities that were not planned?
Explain if there were any major delays

7. Major constraints and challenges
Please mention if there were any constraints and challenges in completing activities. Also mention if there were any positive or negative changes in circumstances that affected the activities or outputs/outcomes (example: political in/stability, natural, presence of other organizations doing similar works that you had not foreseen etc.)

8. Lessons learnt
Please outline the lessons learnt from this project. The lessons learnt should reflect both technical lessons and the management lessons. If you were to do this project again, what would you improve?

9. Policy recommendations, if any
For specific recommendations to policy makers.

Annex 2B: Template for large projects

PROJECT PREPARATION PROCESS FOR LARGE PROJECTS

The Process (revised)

Large projects for MFF funding or co-financing, are defined as projects with budgets that exceed USD 50,000, up to a maximum of USD 300,000 per project.

The MFF National Strategies for India, Indonesia, Maldives, Seychelles, Sri Lanka and Thailand, together with main findings and recommendations from the preparatory studies, contracted in 2007, and reporting by April 2008, will provide the basis for identifying priorities for national and regional MFF large projects.

Project proposals will be prepared based on agreed Guidelines for Project Formulation, supported by a Template for the Project Description. A Regional Forum in late April 2008 will provide the venue to present and discuss the preparatory study reports and National Strategies. The presentation/discussion sessions will be followed by a working session to finalise the "Guidelines for MFF Project Formulation". A draft of this document will be prepared jointly by UNDP, UNEP, IUCN and MFF, with advice and contributions from the other MFF partners, as appropriate.

However, in order to enable the project development process to move forward between now and April 2008, a rapid, generic prioritization of project selection and design criteria has been prepared below, for discussion at RSC-2.

Then, in early 2008 - a more detailed analysis of Project Identification criteria, with special emphasis on climate change adaptation (CCA) and other cross-cutting issues (livelihoods, gender, governance, etc.), will be prepared (see Annex 1 to this document for proposals concerning CCA criteria). These criteria will be supported by recommendations on the most appropriate project support tools. Potential tools will be screened by the MFF Secretariat with assistance from UNDP/UNEP and advised to the NCBs. These tools will support aspects of project design, implementation and monitoring. (For example, a check-list on climate proofing, indicator-based monitoring tools, guidelines on PRA, livelihoods).

The NCB's can, in each focal country, announce a call for project proposals, or contact individual institutions, NGOs or agencies known to have the capability and interest to prepare proposals. It is also likely, that organizations will contact the NCBs regarding proposals that they have prepared, or wish to prepare.

Criteria for Thematic/Subject Area Selection

The thematic or subject-area criteria to follow as the basis for MFF project identification are the 15 PoWs contained in the MFF Plan for Action (UNDP/IUCN, 2006). Project objectives should clearly support one or more of the PoWs, either directly, or in a strong cross-cutting manner. Project outputs and expected outcomes should address at least two (preferably more) of the Actions/Outputs listed under the 15 PoWs.

It is also important to remember that the MFF has grouped these PoWs into actions that support Knowledge, strengthen Empowerment, or enhance Governance, so the project outputs/expected outcomes should clearly relate to at least one of these “pillars”.

The project Actions/Outputs can, however, be modified, or added to (from those listed under the PoWs), provided the modifications are necessary or intended to make the project objective more achievable.

An additional preference (not a criterion) is that the MFF project proposed will build on previous or existing projects/other interventions, by adding-value or expanding on them.

Criteria for Geographical Area/Site Selection

As general guidelines, the following should be considered:

- The physical features of the coastal location (these should fit with the MFF categories, estuaries, lagoons, wetlands, sand dunes, etc.), and preferably there should be spatial mapping/planning data available.
- The location should be large enough to be important at the ecosystem level, containing significant coastal habitats and resources and/or biodiversity with the need to improve their sustainable management, i.e. the location has been, or is being affected by negative human impacts.
- One or more of the following concerns feature in the selected location: there are coastal protection, or rehabilitation, needs; there are climate change risks; or other coastal community resilience issues.
- There are opportunities at site level to improve local livelihoods (e.g. additional or alternative livelihood potential can be demonstrated) and strengthen local empowerment.
- There is evidence of good local authority cooperation with other local stakeholders and of local authority interest in the project.
- Local community organizations already exist (e.g. CBOs/NGOs operate), or there is good potential to develop local structures and engage civil society in the project.
- There is interest or potential to involve other stakeholders in at least a supporting role (e.g. NGOs, university groups, private sector).
- Participation by women’s groups and opportunities for women can be identified and promoted in the selected location.
- The MFF project can build on or add value to existing projects/other interventions in the selected area, or similar areas.

Criteria for Project Organisational and Institutional Arrangements

As the guiding principles of the MFF are that it is a multi-sectoral and partnership-based initiative, these principles should be reflected strongly in the project design. These important criteria relate particularly to project organization (including project management arrangements) and the involvement of institutional partners and other stakeholders.

- Two or more partners should be involved in the proposed project, with the lead partner clearly indicated and working and communication arrangements between the partners explained clearly.

- As far as possible, a balance should be reached in the project design, whereby two or more partner groups representing government, non government, private sector and local community/stakeholders can participate in the project to mutual benefit.

- The project's organization should relate to, and support, the National ICZM programmes (as defined in PoW 11).

Annex 2.B.1: Criteria dealing with the likely impacts of climate change and climate variability (see MFF Guidance document for further explanations)

- **The problem analysis** is consistent with national or sub-national projections of the likely impacts of climate change and climate variability, as described in the MFF National Strategies

- **Context**: The climate-related problems already encountered or likely to be encountered at the local level (defined by the project system boundary) are clearly described. The likely climate-driven impacts on the system without adaptation should be described.

- **Baseline analysis**: The likely future trends in the absence of a MFF project are clearly described

- **Project strategy**: For each of the climate-related problems described in the information provided on Context, one or more project Outputs describe results that are designed to overcome the problem in a sustainable manner.

- **Monitoring**: The baseline forms of the "Problem Reduction Assessment" include questions relating to impacts of climate change and climate variability; and additional quantitative indicators are preferably included.

- **Stakeholder involvement**: Activities are included to raise awareness among stakeholders of the likely impacts of climate change and climate variability, the need to address these impacts, and measures to do so

Annex 3: Project Quality Assurance Tool, incorporating CCA

1. Small Grants

MFF Quality Assurance Checklist (including adaptation to CC):
Project Review Sheet

checklist template last updated 3/4/2008

Project Title

Project Site

Implementing agencies

1. Rationale and Problem Statement				**Y/N**	**Comments**
1.1	Rationale and Problem Statement	1.1.1	Explanation of the problems being addressed		
			Number of Completed Elements		
			Number of Targeted Elements	**0**	
2. Context				**Y/N**	**Comments**
2.1	Geographic context	2.1.1	Basic geographic data provided, including climate, altitude, main ecological and socio-economic characteristics		
		2.1.2	Maps are provided that clearly show physical system boundary		

		2.1.3	Policy context is described, including links to national policies		
		2.1.4	Likely impacts of climate change are described		
			Number of Completed Elements		
			Number of Targeted Elements	**0**	
3. Expected Goal, Objectives and Outcomes of Final Project				**Y/N**	**Comments**
3.1	Objective	3.1.1	The project has one clear objective that is clearly linked to one or more MFF POWs		
3.2	Intermediate objectives (Outcomes)	3.2.1	The project has clear described Outcomes that are feasible within the timeframe of the project		
		3.2.2	The Outcomes describe changed conditions that will lead to the Objective		
3.3	Outputs/Activities	3.3.1	The Outputs are described, are feasible, and will contribute to the defined Outcome		
		3.3.2	Outputs are described that address the likely impacts of climate change		
		3.3.3	Activities leading to each Output are described		
			Number of Completed Elements		
			Number of Targeted Elements	**0**	
4. Target Group and Local Community Participation				**Y/N**	**Comments**
4.1	Target Group Beneficiaries	4.1.1	Target group beneficiaries are described and livelihood benefits defined		
4.2	Local participation	4.2.1	The roles of local stakeholders are described		

				Y/N	Comments
		4.2.2	The roles of women and disadvantaged groups are specifically defined		
4.3	Gender Issues	4.3.1	A description is provided of how gender issues will be addressed, especially relating to access to resources		
4.4	Adaptation to Climate Change	4.4.1	Activities are described that address CCA		
			Number of Completed Elements		
			Number of Targeted Elements		
5. Management Arrangements				**Y/N**	**Comments**
5.1	Roles and Responsibilities	5.1.1	Information included on Applicant Institution		
		5.1.2	Roles of each participating organization are described		
			Number of Completed Elements		
			Number of Targeted Elements	**0**	
6. Monitoring				**Y/N**	**Comments**
6.1	Monitoring	6.1.1	Problem Reduction Assessment baseline forms provided		
		6.1.2	Additional indicators described		
			Number of Completed Elements		
			Number of Targeted Elements	**0**	
Quality Assurance Summary					
Number of Completed Elements					
Number of Targeted Elements					

Total Quality Score (out of 100)		
	Date	**Comments**
Completed by:		

2. Large projects (Note: The checklist will be amended when the Large Project template is completed)

MFF Quality Assurance Checklist (including adaptation to CC):

Project Review Sheet

checklist template last updated 3/4/2008

Project Title

Project Site

Implementing agencies

1. Rationale and Problem Statement				**Y/N**	**Comments**
1.1	Rationale and Problem Statement	1.1.1	Explanation of the problems being addressed		
			Number of Completed Elements		
			Number of Targeted Elements	**0**	

1. Context				**Y/N**	**Comments**
2.1	Geographic context	2.1.1	Basic geographic data provided, including climate, altitude, main ecological and socio-economic characteristics		
		2.1.2	Maps are provided that clearly show physical system boundary		
		2.1.3	Policy context is described, including links to national policies		
		2.1.4	Likely impacts of climate change are described		

			Number of Completed Elements		
			Number of Targeted Elements	**0**	
3. Expected Goal, Objectives and Outcomes of Final Project				**Y/N**	**Comments**
3.1	Objective	3.1.1	The project has one clear objective that is clearly linked to one or more MFF POWs		
3.2	Intermediate objectives (Outcomes)	3.2.1	The project has clear described Outcomes that are feasible within the timeframe of the project		
		3.2.2	The Outcomes describe changed conditions that will lead to the Objective		
3.3	Outputs/Activities	3.3.1	The Outputs are described, are feasible, and will contribute to the defined Outcome		
		3.3.2	Outputs are described that address the likely impacts of climate change		
		3.3.3	Activities leading to each Output are described		
			Number of Completed Elements		
			Number of Targeted Elements	**0**	
4. Target Group and Local Community Participation				**Y/N**	**Comments**
4.1	Target Group Beneficiaries	4.1.1	Target group beneficiaries are described and livelihood benefits defined		
4.2	Local participation	4.2.1	The roles of local stakeholders are described		
		4.2.2	The roles of women and disadvantaged groups are specifically defined		
4.3	Gender Issues	4.3.1	A description is provided of how		

			gender issues will be addressed, especially relating to access to resources		
4.4	Adaptation to Climate Change	4.4.1	Activities are described that address CCA		
			Number of Completed Elements		
			Number of Targeted Elements		
5. Management Arrangements				**Y/N**	**Comments**
5.1	Roles and Responsibilities	5.1.1	Information included on Applicant Institution		
		5.1.2	Roles of each participating organization are described		
			Number of Completed Elements		
			Number of Targeted Elements	**0**	
6. Monitoring				**Y/N**	**Comments**
6.1	Monitoring	6.1.1	Problem Reduction Assessment baseline forms provided		
		6.1.2	Additional indicators described		
			Number of Completed Elements		
			Number of Targeted Elements	**0**	
Quality Assurance Summary					
Number of Completed Elements					
Number of Targeted Elements					
Total Quality Score (out of 100)					
				Date	**Comments**
	Completed by:				

Annex 4A: The Problem Reduction Assessment

Traditional project monitoring efforts focus on the biological state of a particular site, but often ignore all the other factors—including threats— that influence the biology itself. Yet MFF projects are designed to identify problems that affect livelihoods and biodiversity at a project site and then develop interventions that explicitly address these problems.

Rather than monitoring the target condition, as in traditional biological indicator-based monitoring, the PrRA approach to measuring project success monitors the threats themselves. By measuring threats, you get an indirect measurement of project success. The basic concept is that if you can identify all the problems affecting livelihoods and biodiversity of project site, then you can assess your progress in achieving conservation by monitoring the degree to which these problems are reduced. The PrRA approach to measuring project success is based on two key assumptions.

All problems affecting livelihoods and biodiversity at a given site can be identified.

At any given point in time, you can determine all the direct problems affecting livelihoods and biodiversity values that exist at your project site. You can also separate the effects of different threats and rank them in terms of the area they affect, intensity, and urgency.

Changes in all problems can be measured or estimated.

You can systematically, either quantitatively or qualitatively, assess the degree of reduction of all threats at any given time.

Calculating the Problem Reduction Assessment Index

When you use the PrRA approach, you come up with a **Problem Reduction Assessment Index**
(PrRA Index). This index is the result of identifying problems, ranking them according to specific criteria, and assessing progress in reducing each of them. You can then use the information to estimate the degree to which the problems were reduced relative to a clear definition of total reduction, or elimination, of the problems.

Implementing the PrRA approach and calculating a **PrRA Index** involves 10 steps. Step 1 through Step 6 should be undertaken at the start of your project to create a baseline dataset before your project begins.

When you use the PrRA approach more than once during the life cycle of a project, you can then compare your progress in reducing problems…both individually and across the entire set of threats being assessed.

Learning by Example
In this section, we explain the 9 steps to calculating the **PrRA Index.** The example uses a hypothetical coastal site. We use the **PrRA Worksheet** throughout this section to illustrate the steps for the assessment. You'll see the progression of completing the worksheets as you go through the 9 steps.

Step 1: Define the Project Area in Space and Time

You begin the assessment by defining the exact area where you are implementing your project. It is important also to define the specific results that the project is targeting because these initial measurements will create a baseline.

Furthermore, you need to establish the specific start and end dates for the assessment period. In our example, the specific results that the project is targeting are increased incomes for a fishing community and increased fish stocks. The project assessment period begins during project design, in June 2008 and ends in June 2010, when the project team analyzed their progress. This information goes in the top section of the worksheet, along with the date and by whom the worksheet was completed. At the bottom of the worksheet, you should include a sketch map of the site to complete the description, as we have done in our example.

PrRA Worksheet/Side A

Site Name: XXX Fishing village and off-shore reefs	
Site Description: A village consisting predominantly of fisher-folk, with off-shore reefs and seagrass beds	
Assessment period: June 2008 To June 2010	Completed on: July 2008
Completed by:	

Problems		Criteria rankings		Total ranking	% of problem reduced	Raw score
		Intensity	Urgency			
A						
B						
C						
D						
E						
F						
G						
Total						

PrPA Index Formula	Total raw score		Total ranking		Convert to percentage				PrPA Index
PrPA Index Calculation		÷		=		x	100	=	%

Step 2: Develop a List of All Problems

The next step involves identifying all the problems affecting livelihoods and the biological resources of the site as of the start date of the assessment period.

You should list separately a problem that originates from different actors. For example, we distinguish between local people fishing for their own needs *(subsistence)* and external fishing vessels that may be fishing for commercial sale *(commercial).* This list goes under the column headed **PROBLEMS** in the worksheet.

One of the most difficult aspects of accurately calculating a **PrRA INDEX** lies in identifying all the problems affecting the site, and in evaluating the extent to which each problem has been addressed. Identifying the problems can best be accomplished during project design. Identify all the important problems, but avoid including every conceivable problem. As an absurd case, we point out to teams that a project can artificially inflate its **PrRA INDEX** by declaring “Invasions by Martians” as the most critical problem and then claiming success in eliminating this problem when no Martians have appeared by the end of the evaluation period. This “index padding” will not, however, help you achieve your conservation goals.

PrRA Worksheet/Side A

Site Name: XXX Fishing village and off-shore reefs	
Site Description: A village consisting predominantly of fisher-folk, with off-shore reefs and seagrass beds	
Assessment period: June 2008 To June 2010	**Completed on**: July 2008
Completed by:	

Problems		Criteria rankings		Total ranking	% of problem reduced	Raw score
		Intensity	Urgency			
A	Reduction in fish stocks					
B	Lack of alternative sources of income					
C	Loss of crops to flooding					
D	Destruction of property due to storm surges					
E	Access to capital					
F						
G						
Total						

PrPA Index Formula	Total raw score		Total ranking		Convert to percentage				PrPA Index
PrPA Index Calculation		÷		=		x	100	=	%

Step 3: Define the Problems and What 100% Reduction Means for Each

On the second page of the worksheet **(SIDE B),** write a clear and precise definition of each problem and explain what 100% reduction (elimination) means. For example, 100% reduction for loss of crops due to flooding might be: *No loss of crops due to flooding at the end of the assessment period and physical protection measures in place.* For a fishing threat it might be: *No fishing of grouper in the community no-take zone.*

PrPA Worksheet/Side B

Explanation of Problems	
A	**Problem:** Stocks of most desirable fish species have been falling in recent years, with small average
	size of catch and more effort per unit catch required
	100% Reduction: Catches and catch per unit effort relatively constant year-on-year, average size
	of fish returns to historical levels
B	**Problem:** There are few alternatives to fishing as a source of income for the villagers
	100% Reduction: Each villager has an annual income of at least $400 and there are at least six
	choices of activities that can earn income in the village
C	**Problem:** At least once every two years there is a major loss of crops to flooding, resulting in the
	need to buy food, and every year there are some losses
	100% Reduction: There are no significant losses of crops to flooding and physical measures are in
	place to prevent flood damage to agricultural fields
D	**Problem:** Every year, one or more families suffer significant damage to their house or their
	fishing boat due to storms surges
	100% Reduction: Storms cause no damage to houses or boats and measures are in place to
	protect property from storm surges
E	**Problem:** When repairs need to be made, or new investments, for example, in boats, insufficient
	capital is available and access to loans is impossible
	100% Reduction: Whenever repairs or new investments need to be made, families have access
	to sufficient capital
F	**Problem**
	100% Reduction
G	**Problem**
	100% Reduction

Step 4: Rank Each Threat for Intensity

For this step, rank the problems for the first criterion, **INTENSITY,** which is defined as follows:

Intensity—the impact or severity of the problem. Within the overall project site, will the problem cause major hardship to the stakeholders or will it cause only minor inconveniences?

When ranking the problems at your own site, assign the largest number to the most intense problem and continue on down through the ranking to #1 for the least intense problem. Avoid assigning the same number to more than one problem. This procedure works best when you rank problems as precisely and cleanly as possible, giving each a distinct whole number. If you have trouble deciding how to rank the problems just by thinking about them, try writing each one on a separate piece of paper, rearranging the pieces in ranking order until you are satisfied with the results.

Note that in our example, reduction in fish stocks is ranked highest (#5) for intensity and access to capital the lowest (#1).

When you have finished ranking the problems, record the numbers under the column headed **INTENSITY** and add up the total for the column.

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PrRA Worksheet/Side A

Site Name: XXX Fishing village and off-shore reefs	
Site Description: A village consisting predominantly of fisher-folk, with off-shore reefs and seagrass beds	
Assessment period: June 2008 To June 2010	**Completed on**: July 2008
Completed by:	

Problems		Criteria rankings		Total ranking	% of problem reduced	Raw score
		Intensity	Urgency			
A	Reduction in fish stocks	5				
B	Lack of alternative sources of income	3				
C	Loss of crops to flooding	4				
D	Destruction of property due to storm surges	2				
E	Access to capital	1				
F						
G						
Total		15				

PrPA Index Formula	Total raw score		Total ranking		Convert to percentage					PrPA Index
PrPA Index Calculation		÷		=		x	100	=		%

Step 5: Rank Each Threat for Urgency

Again, for this step, follow the instructions in Step 4, but rank the threats for the second criterion, **URGENCY,** defined as follows:

Urgency—the immediacy of the problem. Is it a current problem? Will it occur only 25 years from now?

When assessing your own site, assign the highest number to the problem that you consider to be most urgent and continue on down to a ranking of #1 for the least urgent problem. Again, avoid assigning the same number to more than one problem.

As we have already seen, in our example, reduction of fish stocks was the greatest problem in terms of intensity, or the impact and severity of the resulting consequences. On this criterion of **URGENCY,** the project team found loss of crops due to flooding to be the greatest problem because it is a clear and present danger to the livelihoods of the villagers at the site, whereas they can continue for some time to harvest fish, despite the reduction in stocks. So, loss of crops due to flooding was ranked highest for urgency, at #5.

Add the total of Urgency rankings, which should be the same as the total for Area.

PrRA Worksheet/Side A

Site Name: XXX Fishing village and off-shore reefs	
Site Description: A village consisting predominantly of fisher-folk, with off-shore reefs and seagrass beds	
Assessment period: June 2008 To June 2010	**Completed on**: July 2008
Completed by:	

Problems		Criteria rankings		Total ranking	% of problem reduced	Raw score
		Intensity	Urgency			
A	Reduction in fish stocks	5	3			
B	Lack of alternative sources of income	3	2			
C	Loss of crops to flooding	4	5			
D	Destruction of property due to storm surges	2	4			
E	Access to capital	1	1			
F						
G						
Total		15	15			

PrPA Index Formula	Total raw score		Total ranking		Convert to percentage				PrPA Index
PrPA Index Calculation		÷		=		x	100	=	%

Step 6: Add Up the Ranking Scores

In this step, you add the two rankings (**INTENSITY** + **URGENCY**) across the columns to arrive at a total ranking for each of the problems you identified. Write these total rankings in the column headed **TOTAL RANKING.** Note that in the TRA approach, we do not weight the columns differently—that is, we do not consider either of our criteria to be more important than the other.

Next, add up the numbers in the **TOTAL RANKING** column to determine the combined total ranking. Make sure that this number is the same as the number you get if you add up the two column totals for **INTENSITY** and **URGENCY.**

Actually, it's a good idea at this step to check all your addition for Steps 4 through 6 before proceeding to the next step. In our example, the ranking columns for the two criteria each total 15 and the total ranking is 30. The arithmetic is correct and we can go on to Step 7.

PrRA Worksheet/Side A

Site Name: XXX Fishing village and off-shore reefs	
Site Description: A village consisting predominantly of fisher-folk, with off-shore reefs and seagrass beds	
Assessment period: June 2008 To June 2010	**Completed on**: July 2008
Completed by:	

Problems		Criteria rankings		Total ranking	% of problem reduced	Raw score
		Intensity	Urgency			
A	Reduction in fish stocks	5	3	8		
B	Lack of alternative sources of income	3	2	5		
C	Loss of crops to flooding	4	5	9		
D	Destruction of property due to storm surges	2	4	6		
E	Access to capital	1	1	2		
F						
G						
Total		15	15	30		

PrPA Index Formula	Total raw score		Total ranking		Convert to percentage				PrPA Index
PrPA Index Calculation		÷		=		x	100	=	%

Step 7: Determine the Degree to Which Each Threat Has Been Reduced

As of the end date of the assessment period, determine the degree to which each problem has been reduced, based on your definition of 100% problem reduction from Step 3. Just as determining which problems to include is a difficult but critical step, so is evaluating problem reduction. There are many ways that you can do this, using either quantitative or qualitative methods. What matters most is that you choose the most accurate, reliable, cost-effective, feasible, and appropriate method given your time and resource constraints. The information you come up with should be as measurable, precise, consistent, and sensitive as possible.

To take one example, a **quantitative measurement** of success in reducing the problem of loss of mangroves might involve technologically sophisticated approaches such as using satellite or aerial photography images in conjunction with a computer-based GIS to measure the area of mangroves over time. This method would be useful providing that you have the GIS tools available. In other situations, less elaborate quantitative measurements would suffice, such as measuring the areas of shrimp ponds built in former mangrove areas.

A **qualitative measurement** might consist of interviewing residents and estimating the amount of mangroves they know of that has been cleared.

Or, to measure your success in reducing the problem of cyanide fishing on a coral reef, you could use transects to quantitatively survey reefs for evidence of cyanide damage, or you could use a qualitative measurement to assess the amount of cyanide bought in the region, assuming that there is no underground market, cyanide is used only for fishing, and fishermen use it as soon as they buy it.

Regardless of the way you calculate the degree to which each problem has been reduced, it should always be expressed as a percentage that represents the portion of the original problem, as identified at the start of the project that has been eliminated.

In our example, the project team qualitatively determined the degree to which the five problems were reduced since the beginning of the project. For example, they gave loss of crops due to flooding a score of 80 because, the community had enthusiastically embraced new zoning designed to reduce the threat, had changed some of their cultural practices, and built levees along the river. On the other hand, lack of alternative sources of income was reduced by only 10% because the project was successful in diversifying incomes for only a small handful of residents.

When you have completed your determination of the degree of problem reduced, record these percentages in the column headed **% PROBLEM REDUCED.** Because each problem is assessed independently, there is no total for this column.

PrRA Worksheet/Side A

Site Name: XXX Fishing village and off-shore reefs	
Site Description: A village consisting predominantly of fisher-folk, with off-shore reefs and seagrass beds	
Assessment period: June 2008 To June 2010	**Completed on**: July 2008
Completed by:	

Problems		Criteria rankings		Total ranking	% of problem reduced	Raw score
		Intensity	Urgency			
A	Reduction in fish stocks	5	3	8	50	
B	Lack of alternative sources of income	3	2	5	10	
C	Loss of crops to flooding	4	5	9	80	
D	Destruction of property due to storm surges	2	4	6	60	
E	Access to capital	1	1	2	30	
F						
G						
Total		15	15	30		

PrPA Index Formula	Total raw score		Total ranking		Convert to percentage				PrPA Index
PrPA Index Calculation		÷		=		x	100	=	%

Step 8: Calculate Raw Scores

The next step is to calculate the raw score for each problem. To do this, multiply the **TOTAL RANKING** for each problem by the **% PROBLEM REDUCED** determined in Step 7.

Remember to use the percentage in decimal form when you do this calculation. For example, convert 10% to 0.1 before multiplying it by 5 to get the **RAW SCORE** of 0.5 for lack of alternative sources of income.

When you have done this calculation for all of the problems listed, record the results in the column headed **RAW SCORE.** Then add the numbers in the column to determine the **TOTAL RAW SCORE,** which, in this example, is 16.3. While this raw score does not carry any specific significance on its own, it is critical to the final calculation of the **PrRA INDEX,** which you will complete in Step 9.

PrRA Worksheet/Side A

Site Name: XXX Fishing village and off-shore reefs	
Site Description: A village consisting predominantly of fisher-folk, with off-shore reefs and seagrass beds	
Assessment period: June 2008 To June 2010	**Completed on**: July 2008
Completed by:	

Problems		Criteria rankings		Total ranking	% of problem reduced	Raw score
		Intensity	Urgency			
A	Reduction in fish stocks	5	3	8	50	4
B	Lack of alternative sources of income	3	2	5	10	0.5
C	Loss of crops to flooding	4	5	9	80	7.2
D	Destruction of property due to storm surges	2	4	6	60	3.6
E	Access to capital	1	1	2	30	0.6
F						
G						
Total		15	15	30		16.3

PrPA Index Formula	Total raw score		Total ranking		Convert to percentage				PrPA Index
PrPA Index Calculation		÷		=		x	100	=	%

Step 9: Calculate the TRA Index

Using two of the totals you determined in previous steps, you can complete the assessment by calculating the final **PrRA INDEX.** To do this, you divide the **TOTAL RAW SCORE** (from Step 8) by the **TOTAL RANKING** (from Step 6).

Follow the arrows in the worksheet to transfer your **TOTAL RANKING** and **TOTAL RAW SCORE** into the indicated spaces in the area for calculating the formula. Then complete the calculations and write in your **PrRA INDEX.** Remember to convert your decimal back into a percentage. In our example, 0.54 is expressed as 54%.

PrRA Worksheet/Side A

Site Name: XXX Fishing village and off-shore reefs	
Site Description: A village consisting predominantly of fisher-folk, with off-shore reefs and seagrass beds	
Assessment period: June 2008 To June 2010	**Completed on**: July 2008
Completed by:	

Problems		Criteria rankings		Total ranking	% of problem reduced	Raw score
		Intensity	Urgency			
A	Reduction in fish stocks	5	3	8	50	4
B	Lack of alternative sources of income	3	2	5	10	0.5
C	Loss of crops to flooding	4	5	9	80	7.2
D	Destruction of property due to storm surges	2	4	6	60	3.6
E	Access to capital	1	1	2	30	0.6
F						
G						
Total		15	15	30		16.3

PrPA Index Formula	Total raw score		Total ranking		Convert to percentage				PrPA Index
PrPA Index Calculation	16.3	÷	30	=	0.54	x	100	=	54%

Annex 4B: The Vulnerability Exposure Reduction Analysis

The Vulnerability Exposure Reduction Assessment (VERA) represents a simple, quick, participatory approach to monitoring changes in the vulnerability of communities and the ecosystems on why they depend to external impacts, including the impacts of climate change. It is highly flexible and can be modified to suit virtually any situation and has the added of advantage of allowing progress to be measured in a comparable way across many interventions, thus allowing monitoring of the programme as a whole.

Although VERA has many advantages, it is not perfect. One short-coming is that it is based on subjective assessments which are subject to bias. Therefore VERA should be used in conjunction with other, objective indicators to measure overall project performance.

Vulnerability exposure needs to be measured before the project starts in order to set a baseline against which progress can be measured. Therefore, VERA will be conducted at least twice in the project cycle – at the beginning and at the end of the project. Additional, intermediate measures are useful, especially if the project continues over several years. Thus, vulnerability exposure assessment should be viewed as an integral part of project design and implementation, rather than a separate, additional burden on project teams.

The Structure of VERA

VERA is comprised of indicators based on open-ended, perception-based questions in seven categories, which in turn aggregate to serve as indicators of adaptive capacity. Local stakeholders will answer all questions on a 1 to 10 scale, generating qualitative data to be recorded on the sides of the H-form, in addition to the simple numerical score. A simple average is used to convert participant's answers into a VERA score that will be comparable across MFF projects. **The key quantitative output of VERA is the percentage change from the baseline score.** The seven VERA indicator categories and examples of locally relevant questions are outlined below.

Indicator	Sample Question	Logic
1. Vulnerability of livelihood/welfare to external risks.	**How severe is the present impact of (<u>specified risk</u>) on your livelihoods and welfare)?** <u>Example</u>: *How severe is the present impact of storm surges on farming in your community? (The choice of "storm surge" and "farming" would have already been dictated by the development of the project concept in this example).* <u>Example:</u> *How severe an impact do declining fish stocks have on your livelihoods?*	• Addresses present development issues – including all external risks to the community. • Prepares community for following questions by grounding that discussion in a framework that relates it to present impacts.
2. Efficacy of coping mechanisms.	**How effective are your mechanisms for dealing with (specified risk) presently?**	• During the first VERA meeting, this question describes baseline adaptation to external risks. During

	Example: *What does the community currently do to limit the damage caused by cyclones, and how effective are these measures offsetting damage and reducing mortality?* Example: *How does the community currently mobilize capital for new investments and infrastructure?*	subsequent meetings, it will assess progress against that baseline. • As above, grounds community in present practices, preparing them to think about how changing conditions might impact those practices.
3. Vulnerability of livelihood/welfare to developing risks.	**How severe would the impacts of (the specified risk) be on your livelihoods and welfare)?** Example: *How severe would the impact of doubled frequency of meningitis epidemic years be on the health of your community?*	• Once present context of external risks has been discussed, this question focuses the community on their perceptions of likely impacts of the risks. • This question is based on "likely" impacts on sectors identified in project target. • Allows the community to begin to consider long-term viability of livelihood practices in the face of external risks, leading to the following question.
4. Ability of the community to respond to developing external risks.	**To what degree is the community prepared to address (the specified external risk), through (project intervention and current coping mechanisms) without a diminution in livelihood or wellbeing?** Example: *Will the community be able to address doubled soil salinity without a decrease in livelihoods or wellbeing?*	• This question compliments the previous one by focusing the community on potential actions to respond to external risks. • During the first VERA meeting, this question will measure baseline adaptive capacity. During subsequent VERA meetings, as answers to this question improve, this question measures progress against that baseline, influenced by the project intervention.
5. Magnitude of barriers (institutional, policy, technological, financial, etc) barriers.	**What are the barriers to overcoming external risks, and how surmountable are they?** Example: *What stands in the way of more widespread use of drip irrigation, and how difficult will it be to overcome these barriers?*	• This question will qualify the above question, and focus it onto the needs of the community in successfully making progress against external risks. • This question will identify policy barriers, forming useful lessons for the country and global programmes. • This question will also measure unintended consequences, unexpected setbacks, and other barriers that were not identified during the project scoping phase.
6. Ability and willingness of the	**To what degree do you think that (project intervention)**	• This question measures project sustainability and ownership,

community to sustain the project intervention	**will continue after the project concludes?** <u>Example</u>: *Will the community be able to continue stabilizing erosive hillsides with improved grasses after the conclusion of the project?*	essential if the benefits derived from the project are to be sustained.
7. Ability and capacity of community to continue the process, and to carry it beyond the specific project focus	**To what degree will the community be able to go further in decreasing their vulnerability to (external risks)?** <u>Example</u>: *To what degree is the community able and willing to take other measures to adapt to sea-level rise beyond the measures taken by this project?*	• This question measures adaptive capacity more directly than other questions, as it seeks to determine to what extent communities will continue to adapt, and to what extent they feel that they are able to do so.

Implementing VERA

VERA will be measured in stakeholder meetings. A representative of the NCB who has been trained in the conduct of VERA will be present to guide the process. VERA is a highly participatory process, and should show sensitivity to gender, ethnicity, livelihood, and other social dynamics among the stakeholders. This is crucial, because the product of VERA – both in terms of the quantitative index described below and in terms of the qualitative data elicited in the process – is a large amount of data which will guide project design, implementation, and eventual lessons learned.

The stakeholder meetings in which VERA will be conducted will be preceded by awareness raising activities for the project's target stakeholder community, establishing a scientifically grounded consensus as to the character of established and ongoing socio-economic and environmental problems faced by the community, including problems related to climate variability. These activities should also focus on impacts of external factors, including climate variability and change. This will serve as the basis for VERA discussions, establishing an objective baseline of vulnerability, giving context to VERA, and establishing the context necessary for VERA discussions. These activities will normally take place as the first part of the first VERA stakeholder meeting, and smoothly transition into measurement of the VERA indicators. These activities should be highly context dependent, taking into account differing levels of education and literacy. However, the outcome in all cases will be a stakeholder body with a clear and common understanding of the risks that the project will seek to address.

The H-form

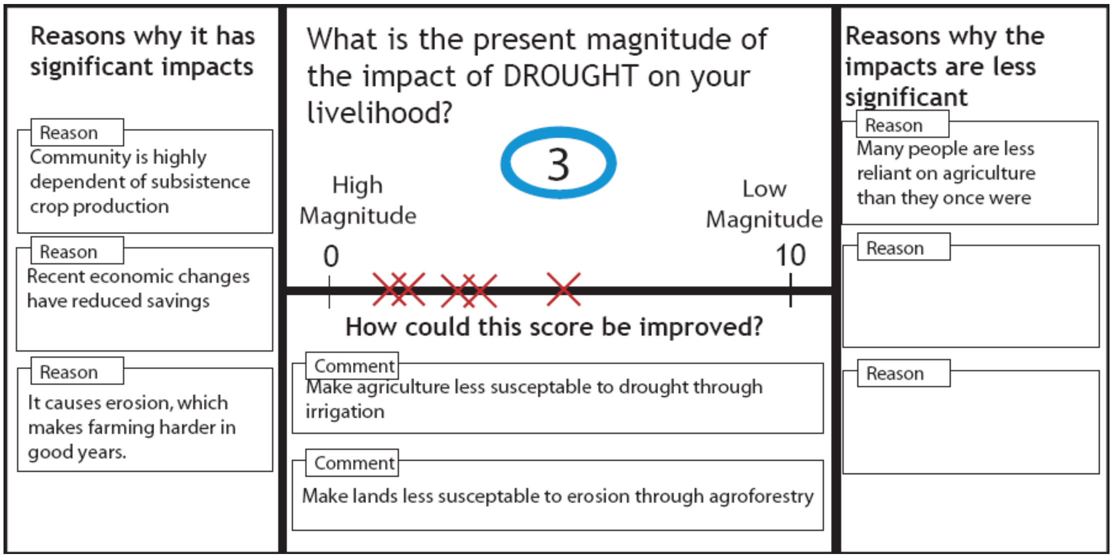
The main tool to be used in conducting VERA is the "H-form." The H-form is a tool for participatory evaluation, designed to develop a numerical score for a given question, as well as qualitative information giving the reasoning behind the resultant score. It is normally done on a large piece of paper or a flipchart, though potential modifications include individual H-forms for all participants or for groups of participants, or a single small H-form on a clipboard, used by the meeting facilitator.

Figure A1: Sample blank H-form

The following is a generic procedure for using the H-form:

1. Sketch the H-form on a large sheet of paper or on a page of a flip chart.
2. Working with the participants, define the focus of the indicator-based question based on the project focus, and write it across the top of the middle upper section. The questions will be formulated in such a way as to be answerable on a scale of 1-10.
3. Ask participants to rank their answer to the question on a scale of 1 to 10. 10 is always favourable, whereas 1 is always unfavourable. For example, if the question is "what is the magnitude of the impact of drought on your livelihood," then an answer of 1 would mean that drought is a very serious problem while 10 would mean that drought is not a problem. Depending on the size of the group, time constraints, or other factors, participants should come forward and place an X on the H-form.

   NOTE: Those facilitating the VERA meeting should be highly sensitive to community power dynamics and differing levels of literacy, and this methodology should be modified accordingly to ensure equal voice to all participants.
4. Facilitate a group discussion in which you ask the participants for their reasons behind their scores. On the right and left hand sides of the H-form, jot down participants reasons for their favourable and unfavourable perceptions in the fields indicated.
5. Depending on the degree of agreement within the group, guide the group to arrive on a consensus score, or simply average the community responses. This is the final score. The choice of whether to use a consensus-based approach or a simple average should depend upon community and group dynamics, and be guided by the local experience of the NGO, who are in turn selected by the NCCs in part for their experience with community projects.
6. Lastly, ask the participants how the score might be improved, recording their replies in the central lower part of the form.


Reasons why it has significant impacts

Reason: Community is highly dependent of subsistence crop production

Reason: Recent economic changes have reduced savings

Reason: It causes erosion, which makes farming harder in good years.

What is the present magnitude of the impact of DROUGHT on your livelihood?

3

High Magnitude 0

Low Magnitude 10

How could this score be improved?

Comment: Make agriculture less susceptable to drought through irrigation

Comment: Make lands less susceptable to erosion through agroforestry

Reasons why the impacts are less significant

Reason: Many people are less reliant on agriculture than they once were

Reason

Reason

Figure A2: Sample filled-in H-form

While the numerical values are the important output of the H-form for the calculation of VERA, the qualitative information recorded on the H-form provides an important record of stakeholder perspectives and opinions. **These data should guide project design** and serve as a building block for project reporting and development of case studies and lessons learned.

Calculating the Final VERA Score, Measuring Percentage Change

The final VERA score from any one VERA meeting is simply the average of the scores of the questions posed in each of the seven categories. In itself, the score is meaningless, as two different communities with objectively identical adaptive capacities might arrive at different scores based on the numbers chosen. Therefore, the final VERA scores – upon which programme-wide M&E will rely – will be comprised of a percentage change from an initial VERA score with a subsequent measurement.

Thus, as adaptive capacity increases through project interventions, VERA index scores are expected to increase. By converting the difference between baseline and subsequent scores into a percentage, a VERA percentage score is arrived upon.