ADB

MAINSTREAMING CLIMATE CHANGE IN ADB'S OPERATIONS

Pacific Regional Department
CLIMATE CHANGE IMPLEMENTATION PLAN
Pacific Islands Region
[2009 – 2015]

Part 1: Main Report

Pacific Regional Department

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Asian Development Bank

ABBREVIATIONS

ADB	Asian Development Bank
APCF	Asia Pacific Carbon Fund
AusAID	Australian Agency for International Development
CCF	Climate Change Fund
CCIP	Climate Change Implementation Plan
CDM	Clean Development Mechanism
CEFPF	Clean Energy Financing Partnership Facility
CIF	Climate Investment Fund
CLIMAP	Climate Change Adaptation Project
COBP	Country Operations Business Plan
CPS	Country Partnership Strategy
CROP	Council of Regional Organizations in the Pacific
EE	Energy efficiency
EIRR	Economic Internal Rate of Return
ESCO	Energy Service Company
ENSO	El Niño-Southern Oscillation
EU	European Union
FIRR	Financial Internal Rate of Return
FCF	Future Carbon Fund
FSM	Federated States of Micronesia
GEF	Global Environment Facility
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
JBIC	Japanese Bank for International Cooperation
LDC	Least Developed Country
MDG	Millennium Development Goal
NAPA	National Adaptation Program of Action
NGO	Non-governmental Organization
NZAID	New Zealand Agency for International Development
PACC	Pacific Adaptation to Climate Change
PARD	Pacific Department of the Asian Development Bank
PCCR	Pacific Climate Change Roundtable
PDMC	Pacific Developing Member Country
PEF	Poverty and Environment Fund
PICCAP	Pacific Islands Climate Change Assistance Programme
PIC	Pacific Island Country
PIEPP	Pacific Islands Energy Policy and Plan
PNG	Papua New Guinea
PREGA	Promotion of Renewable Energy, Energy Efficiency, and Greenhouse Gas Abatement
PV	Photovoltaic
RE	Renewable energy
RETA	Regional Technical Assistance
ROBP	Regional Operations Business Plan
RSDD	Regional and Sustainable Development Department (of ADB)
RSID	Energy, Transport and Water Division (of RSDD)
SOPAC	Pacific Islands Applied Geoscience Commission
SPREP	Pacific Regional Environment Programme
SPSO	South Pacific Sub-regional Office
TA	Technical Assistance
UNFCCC	United Nations Framework Convention on Climate Change
WACC	Weighted Average Cost Of Capital
WPC	Weakly Performing Country

Contents

I. Executive Summary

1. This Climate Change Implementation Plan (CCIP) for the Pacific Regional Department (PARD) of the Asian Development Bank (ADB) describes the areas of focus for PARD's operations and identifies key gaps between country and ADB actions, as well as opportunities for scaling up ADB's assistance related to mitigation, adaptation and associated cross-cutting needs. This gap analysis points to recommended interventions in regional and country programs for additional technical assistance (TA) and financial assistance, including access to new climate funds and adoption of new financing mechanisms. These include multi-donor Climate Investment Funds (Clean Technology Fund and Strategic Climate Fund), ADB's Future Carbon Fund, and possibly a new Sustainable Fuel Credits mechanism to promote reduced petroleum consumption. The CCIP will evolve through periodic updates in order to effectively guide ongoing and future programs and TA and project design. Going forward, specific climate change interventions will continue to be incorporated into the Country Partnership Strategy (CPS) and Country Operations Business Plan (COBP) for each Pacific Developing Member Country (PDMC) and into the Regional Operations Business Plan (ROBP) for the Pacific region as a whole. TA and investment projects will be designed, taking into consideration regional and country variations in governance, institutional capacity, and geographic and local environmental conditions.

2. Island countries in the Pacific are already reporting the serious socio-economic, environmental, physical and cultural consequences of current and recent changes in climate. Increases in high sea-level events (e.g. storm surges), rainfall, extreme weather events, air and sea temperatures, water shortages and erosion will cause increasingly significant economic and related problems for all sectors of the island economies and society. In the absence of prompt and substantial reductions in global greenhouse gas (GHG) emissions these and new impacts will undoubtedly become even more serious in the future. As a result, international assistance is being mobilized for the Pacific, to support adaptation, mitigation and cross-cutting needs such as capacity building and technology transfer.

3. The Pacific region poses complex adaptation challenges due to the widely varying geography among countries, varying government capacity to diagnose problems and design appropriate solutions, and varying economic, social, and environmental conditions. All countries face the common threat of rising sea level, but other potential impacts vary across the region, requiring different adaptation measures from country to country. The region also faces a mitigation quandary due to its low greenhouse gas emissions baseline and other barriers which limit access to carbon finance. All countries are relatively small greenhouse gas emitters, and are heavily reliant on petroleum-based fuels for power generation and transport. While all of the countries can benefit from mitigation efforts, such as energy conservation and efficiency, each country will need to tailor solutions to local socio-economic conditions.

4. ADB's Pacific Developing Member Countries (PDMCs) have identified common areas of vulnerability related to climate change: coastal hazards, sea-level rise, coral bleaching, food and water supplies, health and climate-related natural disasters. These will have to be dealt with in addition to existing geophysical hazards, especially those associated with earthquakes and volcanic activity, and associated secondary hazards such as fires and tsunami. Since, as noted above, many of the consequences of climate change will vary from country to country, and within country, As a result, comprehensive and inclusive national strategies and action plans, supported by regional and international technical and financial assistance, are

required. Additional effort will be required to ensure the success of climate change related investments in weakly performing countries (WPCs) in the Pacific. ADB and other development assistance partners need to pay increased attention to ensuring an effective partnership approach and national ownership, to aid harmonization and alignment, use of an appropriate mix of aid instruments, avoiding activities that undermine national institutional building, the need for longer duration of in-country design missions and interventions, and the importance of building the government apparatus, including good governance.

5. Recognizing that climate change is a development issue, and not a stand-alone environment issue, ADB's recently revised and strengthened Pacific Strategy guides on-going and future climate change interventions, built around the three priorities of private sector development, infrastructure development, and good governance. Adaptation to climate change can be incorporated in all interventions, while mitigation opportunities exist primarily in infrastructure projects. Wherever possible, these projects should also take into account modifications that strengthen structures for all relevant geophysical hazards.

6. In 2005 PARD began to systematically incorporate adaptation issues into its portfolio, using its Guidelines on Adaptation Mainstreaming in Pacific Department Operations. ADB has already conducted an organization-wide portfolio review to identify "at risk" projects. In this respect PARD has also identified possible modifications that will climate-proof ongoing projects and build-in climate resilient design for new projects. Likewise, the PDMCs have begun to mainstream climate change considerations into national policies and planning processes, and have requested assistance from ADB to further and follow up on these efforts. PARD has responded positively with a commitment to provide a broad spectrum of assistance.

7. In terms of mitigation, assistance provided by ADB emphasizes energy conservation and efficiency (including supply- and demand-side measures), renewable energy deployment, reduction of GHG emissions from transport, solid waste, and wastewater treatment systems, and land use. In the near-term, energy conservation and efficiency improvements will remain the highest priority for mitigation related to petroleum consumption.

8. ADB maintains a valuable role in the region as a knowledge bank (to identify solutions to complex problems) and as a project bank (to finance and implement those solutions). ADB's comparative advantage is that it is one of the only donors in the region that provides TAs, grants, and loans, in combination with ready access to mitigation funds (e.g., the in-house Asia Pacific Carbon Fund) and adaptation funds (e.g., as an Implementing Agency of the Global Environment Facility, GEF). However, given limited financial and human resources, PARD should continue to identify and implement TA and investment projects that reflect ADB's comparative advantage. ADB/PARD should also maintain and expand its role in donor coordination and mobilization of co-financing.

9. Specific issues and gaps have been identified. Overall there is an urgent need for a decision-making processes for prioritization and resource allocation at the national level to reflect effects of climate change; there is low involvement of the private sector in adaptation, including investment, financial flows, and technology development and deployment; the donor field is overcrowded; there is an overemphasis on funding "soft" activities rather than investment projects; and overall there is a failure to capture the synergies between mitigation and adaptation. Key issues and gaps related to adaptation included inadequate integration of adaptation and disaster risk management at policy, planning and operational levels. In addition,

it is difficult to measure, report and verify proposed and implemented actions related to adaptation, such as technology transfer, financing and capacity building. There is also a lack of tools, guidelines, compilation of good practices and lessons learned, especially in relation to mainstreaming adaptation in national and sectoral policies and planning processes and inclusion in regulations and codes. Key mitigation-related issues and gaps are the continued reliance on petroleum for the majority of energy and transport requirements, leaving PDMCs vulnerable to oil price shocks, and the limited mobilization of carbon finance due to the low GHG emissions baseline and lack of capacity for project identification and development.

10. With reference to strategic responses by ADB, the key conclusions that arise from the gap analysis are:

- the recent and current support ADB is providing to its PDMCs provide an excellent foundation for increased assistance that is required to address their growing and diversifying needs; while the current portfolio of assistance is relevant to the needs of the PDMCs, it falls well short of what is required;
- in the future there should be much greater emphasis on adaptation, though increased assistance for mitigation and new assistance to capture the synergies between adaptation and mitigation, and between disaster risk reduction and climate change adaptation, are also a priority;
- the special circumstances of the PDMCs call for more emphasis on programmatic- as opposed to project-based assistance and on building both the absorptive and adaptive capacities of PDMCs;
- all the assistance provided to PDMCs in the future, regardless of the sector, should be reviewed from the perspective of ensuring that the assistance does not exacerbate climate-related risks and identifying specific opportunities to reduce all hazard related risks;
- the recent decision to strengthen the capacity of ADB's South Pacific Sub-regional Office (SPSO) is timely, but this may well be insufficient to meet the growing opportunities and needs for ADB to play a greater role in assisting its PDMCs to address climate-related issues;
- ADB must ensure that existing and new staff members with climate-related responsibilities in the Pacific are well aware of the special circumstances and specific climate and related challenges facing the PDMCs; staff members must ensure these are reflected appropriately in both preparatory, design and implementation activities; and
- the important role ADB is playing in donor coordination should be increased; ADB should also increase the level of joint programming to reduce climate and related risks to the Pacific and thereby enhance the sustainable development of its PDMCs.

11. In order to address the identified issues and gaps ADB, and specifically PARD, will continue to work within the recently strengthened Pacific Region Strategy, under which new activities will be formulated, taking into account the envelope of internal resources, availability of co-financing, and PDMC absorption capacity. As such, in the near-term PARD will focus on implementation of the current program as well as direct follow-on activities. New interventions will address the identified needs and gaps, and take into consideration governance issues as well as capacity constraints.

12. At project level the niche areas where ADB can assist its PDMCs to address climate change, and best complement the efforts of other development assistance partners, include the following interventions with respect to adaptation: (i) enhancing participation of the private sector in financing adaptation; (ii) support for best

practices in adaptation at the sectoral level; (iii) preparation and trialing of climate risk reduction tools for screening pipeline projects for PDMCs, thereby ensuring that all infrastructure and other relevant projects are climate proofed; (iv) ensuring climate-related risks and vulnerabilities are adequately reflected in the CPSs and COBPs of PDMCs; (v) preparing user friendly and relevant knowledge to support adaptation; (vi) assessing the implications of the current climate negotiations for adaptation in PDMCs; and (vii) preparing for migration as a result of climate change. In terms of mitigation, the niche areas are (i) clean energy; (ii) carbon finance; and (iii) biomass energy commercialization.

13. The areas in which ADB will focus its adaptation assistance should be seen as an integrated package, within which priority areas can be identified. Internally emphasis should be given to ensuring climate-related risks and vulnerabilities are adequately reflected in CPSs and COBPs and that all PARD pipeline projects are screened in relation to climate-related risks. However, a prerequisite for such efforts is the existence of user friendly and relevant knowledge to support adaptation. Only then will it be possible to provide the necessary assistance to ensure best practices in adaptation are implemented at the sectoral level.

II. Introduction

A. Objective of the CCIP-Pacific

1. The overarching objective of the Climate Change Implementation Plan (CCIP) for the Pacific Region is to ensure that climate change issues are mainstreamed into the operations of the Asian Development Bank (ADB) that relate to the Pacific region and to individual Pacific Developing Member Countries (PDMCs). Achievement of this objective will be facilitated by five key components of the CCIP, namely:

- a living roadmap for ADB's ongoing and future climate change activities in the region, including PDMCs;
- identification of gaps in ADB's climate change activities designed to address PDMC needs;
- direction for climate change adaptation and mitigation in each sector;
- operational entry points for the incorporation and mainstreaming of complementary and stand-alone adaptation and mitigation interventions; and
- identification of funding sources for scaling-up technical assistance (TA), loans, and grants related to addressing climate change.

2. The CCIP provides the context to subsequently define country-specific climate change action plans, including specific programs and projects, which can be integrated into the Country Partnership Strategy (CPS) of each PDMC as well as into relevant regional cooperation strategies (Figure 1). The CCIP will evolve through periodic updates in order to effectively guide ongoing and future programs and TA and project design.

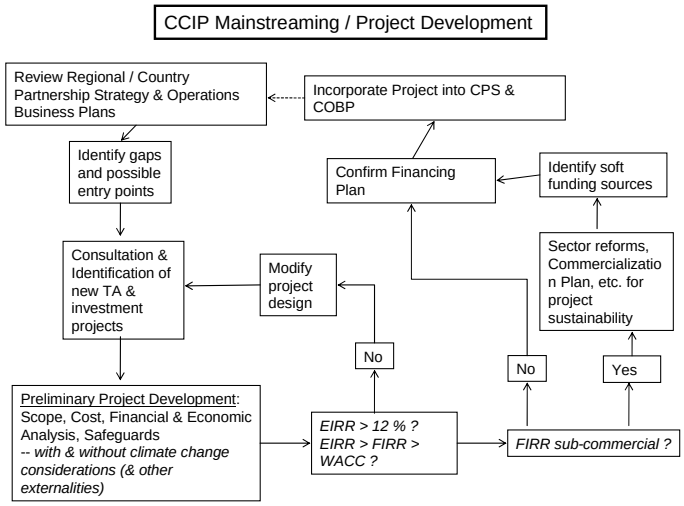

Figure 1. Mainstreaming climate change in ADB's Pacific Regional Department (PARD) operations at national and regional levels.

3. Overall, this CCIP will be used to guide ADB's resource allocation decisions, in response to the recent emergence of climate change as a major development challenge. Specifically, this CCIP identifies ADB's focus areas and identifies key gaps between country needs and ADB actions, as well as opportunities for scaling-up ADB's assistance related to adaptation, mitigation and associated cross-cutting needs. The gap analysis points to recommended interventions in regional and country programs for additional technical as well as financial assistance, including access to new climate funds and adoption of new financing mechanisms. These include, for example, multi-donor Climate Investment Funds (Clean Technology Fund

and Strategic Climate Fund), the ADB Future Carbon Fund, and possibly a new Sustainable Fuel Credits[1] mechanism to promote reduced petroleum consumption.

4. The CCIP includes sectoral guidance on adaptation and mitigation interventions, at both country and regional levels. In additional to guiding ADB's assistance to its PDMCs and the region as a whole, this information can be used to facilitate donor coordination.

The CCIP preparation process

5. PARD prepared a draft CCIP pursuant to guidance from PARD and the Regional and Sustainable Development Department, along with input from Resident Missions and sector specialists. Consultations with regional and country stakeholders were undertaken, principally in conjunction with ongoing program and project missions, after which the document was finalized for ADB internal approval.

B. Climate Change and Related Issues in the Region[2]

6. Island countries in the Pacific are already reporting the serious socio-economic and environmental of current and recent changes in climate. They have identified common areas of vulnerability[3]: coastal hazards, sea-level rise, coral bleaching, food and water supplies, health and climate-related natural disasters. Some areas of vulnerability were less common – e.g. tourism, cash crops and fisheries. The Pacific region as a whole poses complex challenges to addressing climate change. Geographic, social, and environmental conditions vary considerably from country to country, and often within a country. The region is characterized by a widely dispersed, small but rapidly growing population, sensitive terrestrial and marine ecosystems, naturally fragile, vulnerable and often extremely limited land and freshwater resources, exposure to a wide range of natural hazards, unsustainable resource use and increasing levels of pollution.

7. The large uncertainties in estimates of future climatic conditions for the small islands in the vast Pacific Ocean make it difficult for decision makers to be confident in assigning a high priority to reducing possible adverse impacts of climate change. For example, it is anticipated that rainfall amounts will change from by between -2.7% to +25.8% in the northern Pacific and by between -14% to +14.6% in the southern Pacific. Moreover, the Pacific Region is the center of activity for the El Niño-Southern Oscillation (ENSO), and hence already experiences large interannual variations in climate. An El Niño event has great impact on the wind, sea surface temperature, and precipitation patterns in the tropical Pacific and climatic effects throughout the Pacific Region. This makes it difficult to differentiate and quantify the consequences of the additional systematic changes in climate due to global warming.

8. While some impacts of climate change will be generally consistent across the Pacific, other consequences will vary from country to country, as well as within country. Therefore, comprehensive national strategies and action plans, supported by regional and international technical and financial assistance, are required. Since many of the consequences of climate change are inexorably linked, failing to prevent adverse impacts on a given economic sector can have adverse repercussions for other sectors, and for society at large. Most changes in climate affect more than one

[1] Proposed TA 41270 for Sustainable Fuel Partnership, submitted for President's approval in November 2008.

[2] Additional information, and the sources, are presented in Appendix 1.

[3] This and other technical terms are defined in the glossary (Appendix 2).

significant economic sector or aspect of human life, meaning that most initiatives to reduce the adverse impacts of climate change have the potential to benefit multiple sectors and many aspects of society. Moreover, there are possible beneficial synergies between adaptation and mitigation (Table 1). Realization of such synergies could balance trade-offs being made between the multiple objectives of development, mitigation and adaptation policies and practices.

9. The relatively small quantity of fossil fuel consumed in the region represents a miniscule fraction of global greenhouse gas (GHG) emissions.[4] Potential mitigation projects are small in size, comparatively high in transaction costs, geographically dispersed and often involve several owners.

10. In terms of external assistance to countries and the region the donor field is overcrowded and there is an urgent need for increased donor coordination, The exact amount of future investment and financial flows to address climate change in the Pacific is as yet unknown, due to uncertainties in characterizing impacts and hence identifying the most appropriate response options. However, it is certain that addressing climate change in the Pacific region will require significant shifts and an overall net increase in regional investment and financial flows. Additional effort will be required to ensure the success of climate change related investments in weakly performing countries (WPCs) in the Pacific.

11. Arguably, the Pacific region suffers the most from inefficiencies arising from the largely artificial and counter-productive distinction between disaster risk reduction and climate change adaptation. This separation occurs in many ways, including in relation to legal frameworks, the scientific knowledge base, regional and national policies and institutions, methodologies and funding mechanisms.[5] Especially in the short and medium term, most impacts of climate change will materialize through extreme events which often reach disaster proportions. Thus reducing disaster risk is a key no-regrets climate change adaptation strategy – regardless of whether or not global efforts are successful in arresting climate change, investing more in disaster risk reduction is a fail-proof way to avoid setbacks to the development agenda and at the same time reduce requests for humanitarian and crisis-related assistance. Achieving a convergence between disaster risk reduction and climate change adaptation will require strong national and regional coordination mechanisms that encourage systematic dialogue and information exchange between climate change and disaster reduction agencies, focal points and experts.

C. ADB Strategy for the Region

12. The ADB Pacific Strategy 2005-2009 provides a framework for operations in the 14 developing member countries of the region, and is built on the CPSs, Country Operations Business Plans (COBPs), the Pacific Region Environmental Strategy 2005-2009, and the Regional Operations Business Plan for the Pacific (2007 – 2010). The Pacific Region Environmental Strategy identifies the adverse impacts of

[4] A GHG emissions assessment prepared by the Pacific Islands Climate Change Assistance Programme (PICCAP, completed in 2000) demonstrated that forest growth provided a carbon "sink" such that the region had negative net GHG emissions.

[5] See ADB/RSES Background Paper on synergies between climate change adaptation and disaster risk management.

Table 1: Examples of Possible Synergies between Development, Mitigation, and Adaptation Activities

Sector	Water	Energy	Transport	Solid Waste	Land Use	Human Health	Tourism	Disaster Risk Management
Issue	Decreased water security	High reliance on imported fossil fuels; weak policy framework for energy development	Major source of emissions and low reliability	High volumes of solid waste	Unsustainable land use practices	Increased incidence of water- and vector-borne diseases	Requirement that tourism facilities and products be environment friendly is increasing	Selective attention to weather-related hazards introduces distortions into hazardscape reality
Mitigation	Increase energy efficiency of water treatment and distribution systems	Increased use of indigenous biomass energy (e.g., gasification of organic and solid wastes)	Shift from private to public transport reduces energy demand	Reduced emissions due to improved landfill design and operations	Biomass energy plantations Reforestation provides carbon "sinks"	Reduce energy consumption by health facilities, based on results of energy audits	Increased energy efficiency of resorts and other tourism operations	Land use plans and other regulatory instruments prevent infrastructure from being located in high-risk areas
Adaptation	Increased rainwater harvesting at household and community levels	Increased use of air conditioning to combat rising temperatures	Transport infra-structure designed for future climate; improved maintenance	Waste minimization and decreased littering and informal dumping	More flexible farming systems, tolerant to climate variability	Strengthened quarantine regulations and border surveillance	Increased use of air conditioning to combat rising temperatures	Integrate resistant design characteristics for geophysical hazards into "climate proofing" measures; develop education/awareness programs based on overall hazardscape
Synergy	Decreased reliance on centralized water supply system	Energy efficient building designs and codes favor natural ventilation	Increased use and reliability of public transport	Less waste to landfills and decreased impacts on natural ecosystems	Changes in land use do not increase emissions or vulnerability to climate change	Use of health care facilities less than for business as usual scenario, reducing emissions even further	Larger resorts invest in deep ocean cooling systems and/or geothermal heat pumps	Enhance existing disaster management structures, systems, practices and processes at regional, national and community levels
Outcome	Increased water security and decreased emissions	Lower net emissions due to decreased energy demand and greater use of renewable energy	More dependable and environmentally sound transport sector	Decreased emissions and enhanced resilience of natural ecosystems	Increased food security and decreased net emissions	More energy efficient and less stressed health sector	Emissions are reduced due to reduced energy consumption for air conditioning	Increased sustainability of adaptation and mitigation investments

climate change as one of eight critical environmental issues facing the region. The Strategy highlights that appropriate responses involve mainstreaming climate change adaptation strategies (or "climate proofing") into development strategies, in order to assess and address risks to the natural environment, infrastructure, and human development. It also acknowledges that these measures will involve additional costs to PDMCs.

13. A mid-term review of the Pacific Strategy was completed in 2008.[6] It highlighted that climate change is a development issue, not a stand-alone environment issue. As a result, the refined strategy guides on-going and future climate change interventions, built around the three priorities of private sector development, infrastructure development, and good governance. Adaptation can be incorporated in all interventions, with the incremental costs that might be financed by ADB being considered on a project-by-project basis. Mitigation opportunities exist primarily in infrastructure projects.

14. From 2003 PARD began to incorporate adaptation into its portfolio and has supported mitigation efforts beginning in the mid-1990s. Current and proposed programs include 16 TAs and investment projects with mitigation and/or adaptation components, comprising approximately $9 million of TA grants and $71.5 million in investments (see Appendix 3). In 2005, PARD adopted the Guidelines on Adaptation Mainstreaming in PARD Operations.[7] PARD has already identified possible modifications that will climate-proof ongoing projects and build-in climate resilient design for new projects (see Table 5 in Section IV). Likewise, the PDMCs have begun to mainstream climate change initiatives into national policies and planning processes, and have requested assistance from ADB to further and follow up on these efforts. PARD has responded positively, with a commitment to provide a broad spectrum of assistance.[8]

15. Going forward, specific climate change interventions will continue to be incorporated into the CPS and COBP for each PDMC and into the Regional Operations Business Plan (ROBP) for the Pacific as a region. The design of TA and projects will continue to take into consideration both regional and country variations in governance, institutional capacity, and geographic and local environmental conditions.

16. Adaptation assistance concentrates on national and municipal planning, investments in defensive measures, support for insurance and other risk-sharing instruments, and on "climate-proofing" projects. Assistance to strengthen disaster risk management continues to be a vital and closely related part of this support. Mitigation assistance emphasizes energy conservation and efficiency (including supply- and demand-side measures), renewable energy deployment, reduction of GHG emissions from transport, solid waste, and wastewater treatment systems, and land use. In the near-term, energy conservation and efficiency improvements will remain the highest priority for mitigation related to petroleum consumption.

17. ADB plays a valuable role as a knowledge bank, providing practical solutions to real world problems. To date this capability has not been used to its full potential in

[6] ADB. 2008. Working in Fragile Environments: A Mid-term Review of the Pacific Strategy (2005-2009). Manila.

[7] The Guidelines were prepared under TA 6064-REG which was implemented from early 2003 through early 2005.

[8] Letter from PARD Director General dated 3 June 2008 to the Honorable Elbuchel Sadang, Governor of the Republic of Palau in the Asian Development Bank. PARD has also approved recruitment a professional climate change specialist to be based at ADB's South Pacific Sub-regional Office (SPSO).

the Pacific region, for example in terms of sharing ADB's expertise in risk-based approaches to adaptation. As a result, ADB will increase its efforts to share good practice guidelines and lessons learned. ADB is also a project bank, providing finance and other assistance to implement solutions. In this respect ADB's comparative advantage is that it is one of the only donors in the region that provides TAs, grants, and loans, in combination with ready access to mitigation funds (e.g., the in-house Asia Pacific Carbon Fund) and adaptation funds (e.g., Poverty Environment Fund, Water Financing Partnership Facility and as an Implementing Agency of the Global Environment Facility (GEF)). Given its limited financial and human resources ADB/PARD will continue to identify and implement TA and investment projects that reflect this comparative advantage. PARD will also maintain and expand its role in donor coordination and mobilization of co-financing.

III Gap Analysis: Needs and Current Activities

A. Sector Assessment

18. Pacific Island Countries (PICs) recognize their commitment to sustainable development, including addressing the challenges of climate change, is a national responsibility. However, they also realize that this cannot be achieved without development partner support. Their key priority for responding to climate change is building resilience through adaptation to climate change, climate variability and extreme weather events, taking into account country-specific issues and particular community needs.[9] The regional priority on adaptation is also consistent with the overall limitations on GHG mitigation noted above. However, mitigating greenhouse gas emissions is also important nationally and for the region, this being driven primarily by imperatives for fuel economy, energy security, and employment, and to a lesser extent by the need to send a policy message to the international community.

19. Development assistance partners active in the region, and nationally, are focusing their climate-related support on adaptation (Appendix 4), again because most of their efforts are directed at facilitating the sustainable development of PICs. They too recognize that climate change threatens achievement of this goal. They also recognize that, even today, climate-related disasters and other extreme events can seriously undermine national, regional and donor efforts to improve the lives and livelihoods of people in the Pacific. Hence much of their climate-related assistance falls into the "adaptation now" category, by assisting countries to implement immediate, tangible, on-the-ground adaptation measures, by helping to strengthen the enabling environment for adaptation and by enhancing the adaptive capacity of countries, and the region as a whole.

Adaptation

20. Adaptation is of critical importance to PDMCs due to their high vulnerability to climate change and to the inevitability that such changes will occur despite the most committed mitigation efforts. The high vulnerability is primarily influenced by the anticipated nature of the regional and more local changes in climate, the high sensitivity of the Pacific's natural, economic and social systems to these changes and the generally low capacity of these systems to adapt, either autonomously[10] or as a result of human intervention. It is further exacerbated by the fact that adaptation

[9] *Pacific Islands Framework for Action on Climate Change 2006-2015*

[10] An involuntary response to a change in climate, brought on by ecological changes in natural systems or by market or welfare changes in human systems.

is not a high priority for national expenditure, in part because climate change is often seen by Governments as an environmental rather than a development issue. As a result, it is frequently given lower priority than allocating funds to such sectors as education and health. The necessity to make such choices and tradeoffs can be avoided when climate change considerations are fully mainstreamed in national development policies and planning processes. However, currently the especially large uncertainties in estimates of climatic conditions for small islands do make it difficult for decision makers to be confident in assigning a high priority to addressing climate change.

21. Gaps in data and in knowledge about island systems contribute significantly to the difficulty faced when identifying options for adaptation. Whilst global scenarios, such as those related to temperature increases and sea-level rise, are sufficient to assess the global actions required to address climate change, similar scenarios at the island scale are often so uncertain that adaptation assessments based on these scenarios frequently lack credibility with decision makers. Improved data and knowledge would therefore increase confidence in adaptation proposals.

22. All countries stress that adaptation should be based on an integrated and comprehensive approach, with local communities being involved at all stages of the development of an adaptation intervention. There is a need to engage civil society agency (micro-level non-governmental organizations (NGOs), community associations, micro-enterprise, civil defense and disaster response groups) in adaptation mainstreaming to reduce community vulnerability and ensure bottom-up ownership of risk management actions. Transformational adaptation projects need to be formulated with community buy-in to meet the needs of vulnerable populations and sectors in high-risk geo-climatic zones. These actions can be organically tied to adaptation and related investments by development assistance partners, since these groups are the direct and indirect beneficiaries.

23. Communities and countries in the Pacific Islands Region have already identified and implemented a range of both indigenous and imported coping practices that have helped reduce their vulnerability to extremes and variability in the current climate and sea conditions. These include growing resilient staple crops (e.g. yam and taro, compared with cassava), increasing crop diversity, use of forest food resources and practicing traditional food storage and preservation methods. However, climate-related hazards are escalating due to global warming, such that many traditional coping strategies are becoming ineffective. The blending of traditional environmental and adaptive (reactive and anticipatory) knowledge with contemporary adaptive knowledge (science and tools) can be an effective solution.

24. Interventions that continue to be effective need to be scaled up, as they represent part of a proactive approach to preparing for longer-term climatic change. Importantly, the overall experience with adaptation in the Pacific is relatively new, and limited. It is often associated with reacting to impacts already being experienced and as well as implementation of ‘hard’ solutions. These include sea walls and other structures. Often their ability to reduce vulnerability is unclear, even in the near term. Importantly, there is growing knowledge and experience with proactive responses and ‘soft options’, including those that can be undertaken at community level. These are often low cost and termed as ‘no regrets’ because they also assist the vulnerable to address existing threats to their livelihoods and quality of life.

25. Further adaptation-related assistance that regional and international partners might be in the best position to provide has been identified by PICs[11]. It includes:

- assisting with the design, financing and development of national adaptation measures;
- providing capacity building and training for the implementation of national adaptation measures
- mapping existing adaptation projects in the region to support co-ordination and limit duplication and promoting regional adaptation projects that involve local communities and promote livelihoods;
- facilitating regional exchange on best practices and lessons learned from adaptation activities that can be replicated within the Pacific Islands context; assist in accessing adaptation funds and the development of proposals including through the provision of advice on the drafting of project proposals;
- developing or enhancing Integrated Early Warning and Response Systems; and
- strengthening linkages with the Pacific Nature Conservation Roundtable process.

26. The above actions would also go a long way towards addressing the key needs and gaps for adaptation at national level. These are identified for each PDMC (Appendix 5). The needs are based on climate projections to 2050 and an assessment of the resulting climate-related risks in relation to air temperature, rainfall, sea level and weather and climate extremes. The consequential impacts are characterized for the key sectors: agriculture and food supply, tourism, water, climate-related disasters and human health and security. Adaptation needs are identified for each of the above sectors in each PDMC. Finally, these are referenced against ADB's current adaptation-related priorities in order to identify the specific adaptation interventions that align best with ADB's planned assistance to each of its PDMCs. The need for such assistance will be reflected in the CPS for each PDMC.

27. The adaptation opportunities identified in the above analysis highlight that adaptation is not a "stand alone" issue: it has clear synergies with important issues such as economic development, poverty reduction and disaster management strategies (see also Table 1). Adaptation needs to be integrated into all development planning, at both national and international levels. Adaptation also requires the capacity for both short- and long-term planning. Improved information management is vital, particularly with respect to the collection and storage of baseline information. Identifying and detailing tools for adaptation mainstreaming is crucial to implementation. High level political support for climate policy development needs to filter down to senior officials in line ministries, leading to adaptation implementation. Actions to identify and address shortfalls in institutional capacity and human resources are needed to ensure effective adaptation implementation. Such adaptation initiatives will require substantial funding, emphasizing that joint programming will be required in most instances. Other key needs and gaps related to adaptation are described in Appendix 5.

Mitigation

28. The Pacific region accounts for less than 1/10th of 1% of global GHG emissions, due primarily to its relatively small population, limited industrial activity, and under-developed energy services. A GHG emissions assessment prepared by the Pacific Islands Climate Change Assistance Programme (PICCAP), and completed in 2000[12], indicated that forest growth provided a carbon "sink" large enough to negate anthropogenic GHG emissions: emissions from fossil fuel use

[11] *Action Plan for the Implementation of the Framework for Action on Climate Change.*
[12] The study covered the Cook Islands, FSM, Fiji, Kiribati, Marshall Islands, Nauru, Samoa, Tuvalu and Vanuatu.

were estimated to be about 2.2 million tons of carbon dioxide equivalent per year (tons CO_2e/y), while total biomass emissions were estimated (based on "sparse data") at -9.6 million tons CO_2e/y, with a net sink of – 4.9 million tons CO_2e/y. The Pacific Region Environmental Strategy (2005-2009) noted that deforestation in Papua New Guinea (PNG) was occurring at a rate of about 80,000 hectares per year (ha/y) and that unsustainable logging was occurring in the Solomon Islands, suggesting that deforestation during the past several years may have resulted in positive GHG emissions. These uncertainties point to an obvious need for a comprehensive accounting of the emissions baseline. Relevant data should be available via national communications to the United Nations Framework Convention on Climate Change (UNFCCC), but there is no readily available reference for the PARD region. Assisting PDMCs to prepare their Second National Communications to the UNFCCC, and synthesizing this information, would be a logical area for PARD support.

29. In the Pacific GHG mitigation poses a special set of both challenges and opportunities. The majority (70%) of the region's population does not have access to electricity and modern energy services, varying from 10% to 100% at the national level.[13] Demographics result in energy markets which are thin, difficult to serve, and generally lacking in economies of scale (the so-called "diseconomies of scale"). Indigenous fossil fuel resources are essentially non-existent except for PNG and Timor-Leste, which have commercial hydrocarbon production dominated by natural gas. Hydropower resources are also limited, and are commercially exploitable mainly in the larger islands. Currently, renewable energy contributes only around 10% of commercial generation (ADB Pacific Region Environment Strategy, 2004). Imported petroleum fuels account for the bulk of power generation and transport use, accounting for about 90% of commercial energy consumption. Exposure to volatile crude oil prices has raised awareness about the need for improved energy security, which is becoming a significant driver for GHG mitigation efforts.

30. **National Policies and Plans.** As is the case with adaptation, mitigation is not a stand-alone issue. It must be approached in the overall development context, via national and sector planning. Such planning is fully consistent with the PARD strategic priority for better energy services and other infrastructure. High level political support for climate policy development needs to be mobilized and transferred through the ranks of line ministries to facilitate appropriate sectoral planning and implementation. Institutional capacity and human resources also need to be strengthened, as noted above in the discussion of the implications of the Pacific Strategy Mid-term Review.

31. The continued reliance on petroleum fuels for power generation and transport indicates a need for more comprehensive national policies and plans to reduce petroleum consumption via sector reforms, new incentives for conservation and efficiency, and new financing mechanisms.[14] Accurate baseline emissions data are needed to formulate GHG mitigation strategies as well as to facilitate carbon finance transactions; the current knowledge gap should be addressed on a near-term priority basis, preferably via development of holistic information management systems. Mitigation tools are readily available, i.e., in the form of policy advice and technology

[13] This average is skewed by PNG, with the largest population of PARD countries, but an electrification rate of only 10%; excluding PNG, about 50% of the population has access to electricity and modern energy services.

[14] Under TA 6477-REG, ADB is analyzing options for reducing petroleum consumption through efficiency and conservation measures, as well as through alternative purchasing contract mechanisms.

demonstration via past and ongoing technical assistance for renewable energy (RE) and energy efficiency (EE), such as the PICCAP study (see footnote 4).

32. PICs have identified numerous areas where regional and international partners can provide support.[15] The areas of most relevance to ADB are:

- prepare a regional review of existing energy and climate change-related legislation, plans and policies to ensure effective utilization of feasible renewable energy and energy efficiency technologies and applications for mitigating GHGs;
- facilitate cooperation between regional projects and policy frameworks;
- prepare and disseminate reports on the technical and financial sustainability of existing renewable energy and energy efficiency projects in mitigating GHG, provide technical assistance to improve their performance and enable local maintenance of new technologies and disseminate good practices and lessons learnt;
- assist with securing resources from international financial facilities to support both local and regional initiatives towards effective mitigation of GHG through renewable energy and energy efficiency initiatives;
- provide technical support to update or complete Greenhouse Gas Inventories in accordance with requirements for National Communications; and
- facilitate the involvement of PICs in implementing relevant international programs, as well as international and regional public/private partnerships in sustainable energy as they relate to climate change activities at the national and regional level, including through the Renewable Energy and Energy Efficiency Partnership activities.

33. Other key needs and gaps related to mitigation are described in Appendix 6.

B. Ongoing efforts to address climate change

34. With the support of technical organizations and donors, PDMCs have undertaken initiatives at regional, sub-regional and national levels to both slow the rate of climate change through GHG emissions reduction initiatives. PDMCs are also undertaking numerous initiatives to assess the likely adverse impacts of the anticipated changes in climate, as well as to identify and implement adaptation interventions.

35. **Regional and Multi-country Initiatives.** The *Pacific Islands Framework for Action on Climate Change* (2006-2015) was endorsed by Pacific leaders at the 36th Pacific Islands Forum held in 2005. The Framework builds on *The Pacific Islands Framework for Action on Climate Change, Climate Variability and Sea Level Rise 2000-2004* and has led to the *Action Plan for the Implementation of the Framework for Action on Climate Change* in which national activities are complemented by regional programming. The 2006-2015 timeframe of the Framework is consistent with the timeframes of the *Millennium Declaration, the Johannesburg Plan of Implementation* and the subsequent work of the United Nations Commission on Sustainable Development. In order to ensure appropriate coordination of activities under the Framework, the PCCR was reconstituted, with the Pacific Regional Environment Programme (SPREP) being called upon to convene regular meetings of the PCCR inclusive of all regional and international organizations, as well as civil society organizations, with active programs on climate change in the Pacific region.

[15] *Action Plan for the Implementation of the Framework for Action on Climate Change.*

36. The *Pacific Islands Disaster Risk Reduction and Disaster Management Framework for Action (2005 – 2015)* reflects the increased national and regional commitment to disaster risk reduction and disaster management on an 'all hazards' basis and in support of sustainable development. These commitments derive from the Pacific Forum Leaders decision in Madang 1995 and the Auckland Declaration in 2004. The Framework contributes to the implementation of the Mauritius Strategy and the global Hyogo Framework for Action on Disaster Risk Reduction and Disaster Management.

37. The two regional frameworks complement each other as well as several other regional frameworks and policies, including those related to energy, oceans, freshwater, HIV/AIDS and agriculture. A recent timely development is the increasing, though still inadequate, attention being given at policy and project levels to harmonizing and coordinating regional responses to climate change adaptation and disaster preparedness. Global warming is, and will likely continue to increase the frequency and intensity of severe weather events. It is therefore important that disaster risk reduction strategies be fully integrated with adaptation to climate change. Both are at the heart of effective poverty reduction and development agendas. As a result they must be integrated into development and poverty reduction instruments across agriculture, energy, health, water resources, urban development, forestry and environment sectors.

38. The *Pacific Islands Energy Policy and Plan* (PIEPP), developed by the Energy Working Group of the Council of Regional Organizations in the Pacific (CROP), helps coordinate the energy programs of regional organizations and development partners. [16] PIEPP provides a common framework for energy sector development in the region, but it is not intended to be a vehicle specifically for project identification and implementation. This is a significant gap that is addressed only in part by the recent and current regional renewable energy projects (see below). Regional co-operation in energy policy and planning can help to overcome the disadvantages faced by the region, particularly in relation to its small size, dispersed communities, fragmented markets, environmental vulnerability, and limited institutional and human capacity.

39. Key regional and integrated multi-country programs and projects are described in Appendix 4. The projects and programs are listed according to the relevant priorities in the *Pacific Islands Framework for Action on Climate Change 2006-2015.* They cover a wide range of preparations for, and responses to climate change, such as sea level and climate monitoring, climate prediction, capacity building for adaptation, demonstrating mainstreaming climate adaptation into development and planning, building stronger organizational systems incorporating international best practice into local disaster preparedness and response plans, promoting energy efficiency, energy program for poverty reduction, promotion of environmentally sustainable transport, and sustainable energy financing. It is apparent that the regional and multi-country assistance provided by donors is focused on some of the regional priorities (e.g. Scientific Information and Capacity, Communication, Coordination and Exchange; National Adaptation Measures; Building Adaptive Capacity; Renewable Energy and Energy Efficiency) while needs

[16] In 2004, the PIEPP became separate and distinct, but complimentary documents - the Pacific Islands Energy Policy (PIEP), and the Pacific Islands Energy Strategic Action Plan (PIESAP); the former to set the policy framework for the next decade, and the Plan recognized that it is to be working document to be reviewed at regular intervals by the Council of Regional Organizations of the Pacific Energy Working Group.

such as those related to information bases for mitigation policy, to early warning systems and to financial assistance for adaptation and mitigation are currently not being addressed through regional and sub-regional assistance programs. While some of these needs are best met through bi-lateral cooperation, the mismatch between regional priorities and assistance identified in Appendix 4 highlights important niche areas for ADB's regional operations in the Pacific. For example, supporting regional activities related to information bases for mitigation policy, to early warning systems and to funding adaptation and mitigation are all areas where ADB has a strong comparative advantage.

40. **National Initiatives.** PDMCs have implemented a large number of national activities on adaptation and mitigation, covering the spectrum from sectoral and national policies, programs and plans that address or reflect the threat of climate change through to community-based adaptation initiatives. Initially, climate-related initiatives focused on enabling activities to ensure compliance with international reporting requirements related to the UNFCCC. Subsequently, some project activities focused on building adaptive capacity and on assessing vulnerability to climate change and appropriate adaptation responses. Early mitigation efforts were primarily directed toward RE demonstration projects but have had limited success in terms of reducing reliance on petroleum imports.

41. National Adaptation Programs of Action (NAPA) are the key country-level documents guiding adaptation efforts in Least Developed Countries (LDCs), outlining sector vulnerabilities and identifying priority actions to increase resilience to climate change. All four Pacific LDCs - Kiribati, Samoa, Tuvalu, and Vanuatu - have prepared NAPAs, submitted them to the UNFCCC, and used them to frame adaptation activities at national level.

C. Donor Coordination and Continuity of Assistance

42. The Pacific at large is a relatively major and growing recipient of donor assistance to address climate and related issues, both nationally and regionally. As a contribution to donor coordination in the region, ADB and other development assistance partners[17] have undertaken an analysis of the relevant programs and projects. The summarized results (Appendix 7) suggest that more effort is required at regional, sub-regional and national levels maximize opportunities through improved donor coordination. An important benefit of such coordination could be an increase in joint programming and a reduction in project-based assistance, with greater attention being given to ensuring there is a good match between the assistance provided and the absorptive capacities at both national and regional levels.

43. While ADB has cooperated with other donors on a variety of projects, such joint operations in the Pacific have been very limited. Table 2 identifies several key existing and emerging opportunities for increased collaboration for addressing climate change.

Table 2: Current and Emerging Opportunities for Joint Programming

Agency	Climate-relevant Assistance Mechanisms		Possible Joint Programming Opportunities
	Adaptation	Mitigation	
ADB	GEF Implementing Agency Climate Change Fund Strategic Climate Fund		Contributing extensive knowledge of good practices and lessons

[17] UNDP. Australia, European Union, Japan and New Zealand.

	UNFCCC Adaptation Fund; Poverty Environment Fund; Water Financing Partnership Facility	Asia Pacific Carbon Fund; Future Carbon Fund; Clean Technology Fund; Clean Energy Financing Partnership Facility; Sustainable Fuel Credits Mechanism	learned, leading to practical solutions; providing finance and other assistance to implement solutions, through TAs, grants, and loans because of ready access to mitigation and adaptation funds, including as a GEF Implementing Agency
AusAID	Adaptation to Climate Change Initiative: $150 million over three years, with $35 million in 2008-09, with emphasis on PICs and East Timor; Small grant schemes in Fiji, Vanuatu, Samoa, Tonga and Solomon Islands; Pacific Islands Climate Prediction Project Coral Triangle Initiative – Pacific: $9M Global Adaptation Fund	International Forest Carbon Initiative: $200 million over five years, focusing on Indonesia and PNG	Major source of co- and direct-financing for regional and national projects related to both adaptation and mitigation, including strengthening the enabling environment and working at community level; increasing emphasis on programmatic approaches
European Union (EU)	Africa Caribbean Pacific-EU Facility for Natural Disaster Prevention - focus on capacity building to build resilience to natural disasters and to support sustainable development planning		Significant source of co- and direct-financing for regional and national projects related to both adaptation and mitigation, with emphasis on strengthening both absorptive and adaptive capacities
	Global Climate Change Alliance: €50 million to the Alliance over the period 2008-10; focuses on five areas: implementing concrete adaptation measures; reducing emissions from deforestation; helping poor countries take advantage from the global carbon market; helping poor countries to be better prepared for natural disasters, and integrating climate change into development cooperation and poverty reduction strategies.		
GEF	See Appendix 4		Ability to leverage significant funding for mitigation and, increasingly, for adaptation
Japan	In March 2008 JBIC established the Office for Climate Change, to further strengthen its assistance to developing countries in their efforts to address climate change.	A Framework Agreement for Implementation between JBIC and ADB) establishes the Accelerated Cofinancing Scheme for joint assistance to improve energy efficiency	Significant source of co-financing and more limited source of direct financing of for regional and national projects related to both adaptation and mitigation; emphasis on institutional strengthening and building knowledge and expertise
NZAID	Enhancing the capacity of communities to manage their environment, through co-funding support to the GEF Small Grants Program		Significant source of co- and direct financing, with focus on adaptation, including at community level; focus on addressing development challenges that will be exacerbated by climate

			change, as well as on disaster risk reduction, mitigation and preparedness
UNDP	UN Inter-Agency Climate Change Center will support the Pacific Region fro both existing and new initiatives to adopt integrated and sustainable human development oriented strategies to address climate change mitigation, adaptation to climate risks and other hazards; the proposed Centre will be located in Samoa.		Works with developing countries and vulnerable groups to scale up mitigation and adaptation actions in order to address the climate change challenge and achieve the MDGs; focus is on strategic planning and policy at national level, implementation of adaptation and mitigation actions and on mainstreaming climate change into core national development activities
		$250 million dollars per year in projects in energy efficiency, renewable energies, and sustainable transportation. MDG Carbon Facility: mechanism for the development and commercialization of emission reduction projects	
World Bank	Global Facility for Disaster Reduction and Recovery; Pilot Program for Climate Resilience - possibly $200 million globally	Forest Carbon Partnership Facility; Energy Sector Management Assistance Program Carbon Finance Unit: uses money contributed by governments and companies in Organization for Economic Cooperation and Development countries to purchase project-based greenhouse gas emission reductions in developing countries and countries with economies in transition; thus the Unit does not lend or grant resources to projects, but rather contracts to purchase emission reductions similar to a commercial transaction.	Adaptation is an emerging area of cooperation between the Bank and governments in the region; efforts to combat climate change are combined with the broader development and poverty alleviation agenda to foster more climate-resilient and sustainable economies; current focus is on highly vulnerable countries with little capacity to adapt; mitigation initiatives are designed to not only reduce greenhouse gas emissions but to also reduce dependence on fossil fuels; given its limited presence in the region, and the multiplicity of donor objectives in delivering aid to the region, the World Bank does not see itself as being in a position to lead a broad donor coordination effort, but does offer its convening power to the development partners and by pursuing implementation of a harmonization agenda

D. ADB's on-going efforts on climate change

44. ADB's first adaptation project in the Pacific was the Climate Change Adaptation Project (CLIMAP) for the Pacific (TA 6064-REG, covering Cook Islands and Federated States of Micronesia (FSM), funded by the Government of Canada). It was implemented from early 2003 through early 2005. The TA prepared case studies designed to demonstrate the practical benefits of a risk-based approach to adaptation. Key findings include: (i) a risk-based approach to adaptation is both

desirable and practicable; (ii) current and anticipated climate-related risks can be quantified in economic terms, and can help identify opportunities for immediate (i.e. proactive) "no regrets" adaptation; (iii) options to manage current and anticipated risks ("adaptation") can also be costed, thereby assisting with prioritization of adaptation measures; (iv) the incremental costs of adaptation can be determined, thereby helping to access funding from the GEF and other sources; (v) when the level of anticipated risk shows adaptation is required, due to high damage costs, adaptation will normally be cost effective; and (vi) retroactive adaptation costs are usually considerably higher than those for planned adaptation. These case studies laid the foundation for adaptation interventions under the new regional Pacific Adaptation to Climate Change (PACC) project described in Appendix 4. It is one of the few projects globally to access the GEF's Special Climate Change Fund.

45. Additional ADB/PARD actions undertaken with adaptation focus include:

- TA 6420-REG, Promoting Climate Change Adaptation in Asia and the Pacific is financed by ADB's Japan Special Fund and the Government of the United Kingdom; the TA is designed to help address: (i) the need to mainstream adaptation issues into investment planning; (ii) the need to develop a national capacity for adaptation; and (iii) the need to coordinate and strengthen international community responses for adaptation; the TA will contribute to participating governments adopting investment programs, plans, policies and other actions to adapt development to expected future climatic conditions;
- TA 6064-REG, the CLIMAP project noted above, resulted in publication of "*Climate Proofing – A Risk-based Approach to Adaptation"*, which is now used as guidance in climate change adaptation, not only for the Pacific, but also for other regions;
- The Coral Triangle Initiative – Pacific (TA 42703, approved in 2008) is currently ADB's single largest adaptation initiative ($1M from GEF and $9M from AUSAID's Global Adaptation Fund), building on the experience of the CLIMAP TA noted above; it will leverage significant additional resources; stage 1 will design a 4-year project to ensure conservation and sustainable management of coral reef ecosystems, and coastal and marine biological resources; the second stage investments will include adaptation measures for integrated watershed and coastal management, including marine protected areas;
- ADB's climate risk studies in ten PDMCs[18] have quantified the current and anticipated levels of climate-related risks (e.g. high rainfall events, drought, high sea levels, strong winds, and high air temperatures); these climate risk profiles provide a basis for climate change adaptation initiatives for various development sectors;
- mainstreaming climate change mitigation and adaptation in the CSPs of PDMCs, to ensure that climate change implications are incorporated in economic development policies and planning processes; for example, the CPS for Samoa (2008-2012) places considerable emphasis on taking climate change into account;
- undertaking a climate change risk and adaptation analysis, in the context of "climate proofing" the power sector development projects under consideration by the Fiji Electricity Authority; an analysis of current and possible future climate-related risks facing Fiji identified those of relevance to the proposed projects, along with appropriate adaptation interventions;
- incorporating climate change adaptation in infrastructure projects - e.g. Avatiu Harbor Development Project (Cook Islands), Highland Region Road Improvement Program (PNG), and Domestic Maritime Support Project (Solomon Islands); and
- preparation of climate change 'adaptation briefs' for planned ADB projects.

[18] Climate risk profiles have been prepared for Cook Islands, Fiji, FSM, Kiribati, RMI, Samoa, Tuvalu, Palau, Tonga and Vanuatu.

46. Assistance for mitigation dates back to at least 1995 when ADB funded a regional workshop on solar photovoltaic technology for power generation. Samoa was included in the RETA for Promotion of Renewable Energy, Energy Efficiency, and Greenhouse Gas Abatement (PREGA) beginning in 2001. Several TAs and loan projects for mitigation (or with a mitigation component) are underway or have been approved, primarily in the energy sector, which generally promote sector reforms, efficiency improvements, and renewable energy development. Examples include (i) TA 4674-FIJ: Preparing the Renewable Power Sector Project, (ii) Promoting Energy Efficiency in the Pacific (RETA 42078), (iii) TA 4932-PNG: Power Sector Development Plan, (iv) Samoa Power Sector Expansion Project, and (v) TA 7121-Samoa: Preparing the Afulilo Environmental Enhancement Project (see Appendix 3 for additional information). PARD's current program and project pipeline emphasizes energy conservation and efficiency measures as a high priority.

E. Gaps

47. The foregoing discussion (and list of assistance in Appendix 4) indicates that there is no shortage of ideas or donor funds for the region. In fact, the region may suffer from a syndrome of "too many solutions" without sufficient prioritization and holistic planning. Critical issues can be summarized as:

- efforts related to adaptation and disaster risk reduction have not been harmonized and integrated into policy, planning, and operational levels;
- tools, guidelines, and compilation of best practices and lessons learned are lacking;
- in the crowded donor space funding has been directed mainly to "soft" activities rather than physical investments;
- energy sector interventions have not routinely been designed on least-cost principles; some RE demonstration projects have been technology focused without due consideration to energy service applications; thus hardware solutions have sought out problems, rather than building solutions from a problem-solving starting point;
- there is limited or no private sector participation in mitigation, and limited opportunities and tools for private investment in adaptation measures;
- except for two projects noted in Appendix 5, carbon finance (e.g., through the PREGA) has not been mobilized; and
- there has been no systematic effort to exploit the beneficial synergies between adaptation and mitigation. Such synergies should be exploited as a means to balance the current trade-offs being made between the multiple objectives of development, mitigation and adaptation policies and initiatives.

48. When these critical issues are taken into account, along with the needs and current activities to address them, several important gaps can be identified. These are summarized in Table 3. In Table 4 the needs of PDMCs for assistance are summarized in the context of ADB's Pacific Strategy.

Table 3: Gap Analysis

Priority issues/needs	Ongoing activities/support	Areas/actions needing support to address gaps
General		
Development of decision-making processes for prioritization and resource allocation at the national level to reflect effects of climate change		The use of economic analysis in climate change decision making and the incorporation of climate change considerations into economic analyses, including addressing inter-temporal and inter-generational costs and benefits. Improve the climate and economic information bases for economic analyses related to climate change and strengthen the relevant policy analysis.
Overcrowded donor field, with emphasis on funding "soft" activities rather than investment projects	ADB is engaged in dialogue through PCCR and other agencies on improving donor coordination and on the prospect of creating regional climate change center. UNDP has proposed establishment of a climate change center in Samoa, and the Government of Samoa has [tentatively] allocated land next to SPREP.	PARD to continue dialogue through CROP, SPREP, etc. on improved donor coordination. ADB recommends taking a step back to analyze the need for such a regional center, and ensure that it is country-driven and self-financing rather than donor-driven with grant funding.
Need for improved coordination and financing of adaptation and mitigation		Support the institutions which coordinate, formulate and structure the finance for adaptation and mitigation investments; finance these investments, where appropriate.
Lack of synergy between mitigation and adaptation	ADB has systematically reviewed its portfolio to identify projects at risk, and recommend climate-proofing measures to be taken. Some synergies may result from this exercise.	Strengthening of regional and national policies and action plans to highlight the need for synergies such as those indicated in Table 1. Case studies demonstrating the practicalities, costs, benefits and removal of barriers related to achieving synergies between mitigation and adaptation.
Adaptation		
Low involvement of the private sector in adaptation, including investment, financial flows, and technology development and deployment.	ADB's Regional Partnerships for Climate Change Adaptation and Disaster Preparedness Project supports an assessment of the feasibility of a regional pooled catastrophe insurance scheme and its subsequent development. The World Bank is developing and affordable and cost-effective catastrophe risk financing strategies that would allow Pacific islands to mitigate the financial impact of natural disasters.	Assisting governments to devise policies, incentives and regulations to facilitate private sector involvement in adaptation. Working with insurance and other financial institutions to provide incentives for proactive climate risk management and risk reduction strategies in their agreements to insure businesses and individuals against general losses.
Inadequate integration of adaptation and disaster risk management at policy, planning and operational levels.	The World Bank project Sustainable Management through Reduced Risk from Disasters and Climate aims to improve sustainable development through reduced risks from disasters and climate variability in the Pacific Islands by increasing PIC's ability to	Harmonize policy frameworks, institutions, human viewpoints, methodologies and investment practices related to adaptation and disaster risk management in the Pacific, recognizing that neither disaster risk reduction nor

Priority issues/needs	Ongoing activities/support	Areas/actions needing support to address gaps
	prepare, mitigate and respond rapidly and effectively to the increasing hazards in the region, through improved access to information, good practices, and scaling-up of appropriate technologies and tools. ADB's Regional Partnerships for Climate Change Adaptation and Disaster Preparedness Project is designed to improve availability of geophysical information that supports greater resilience to climate impacts and shocks through improved decision-making on hazard exposure and risk minimization.	climate change adaptation is about disasters or climate change only, but rather about the multiple social, physical and economic factors that influence the magnitude of climate-related risks. Building capacity of private sector planners, architects, engineers and other practitioners to make more effective use of existing and upcoming information on climate-related risks.
Proposed and implemented actions related to adaptation, such as technology transfer, financing and capacity building, are difficult to measure, report and verify	No activities are specifically directed at ensuring actions related to adaptation are measurable, reportable and verifiable, despite the signals that the post-2012 climate regime will likely include such a requirement in order to secure donor assistance.	Studies to assess the extent to which development assistance to PICs for adaptation is at risk due to changing international agreements, and identify and implement appropriate risk reduction strategies, including building capacity in PICs to measure, report and verify adaptation investments.
Lack of tools, guidelines, compilation of good practices and lessons learned of relevance to PDMCs, and especially in relation to mainstreaming adaptation in national and sectoral policies and planning processes and inclusion in regulations and codes.	The number of adaptation projects in the region is increasing rapidly, with a growing focus on practical, on-the-ground interventions. While relevant knowledge and skills are being increased through these project-based initiatives, little effort is being made to capture these and ensure they are made available to other players.	Undertake a comprehensive needs assessment, reflecting the special circumstances of PICs, and compile and disseminate information on good practices and lessons learned in relation to the areas of greatest need; undertake this work in cooperation with other donors and sources of technical and policy relevant assistance as well as within existing regional frameworks for cooperation; ensure that key players in adaptation at both regional, national and community levels are equipped with the requisite knowledge and skills.
Mitigation		
Continued reliance on petroleum for majority of energy and transport requirements leaves PICs vulnerable to oil price shocks. International Energy Agency is anticipating that crude oil prices will remain firm around $60-70/barrel in the near term and increase over the long-term.	ADB providing assistance under TA 6477-REG to identify near-term options for conservation and efficiency improvement, and to obtain some degree of control over petroleum products pricing (e.g., via creative contract mechanisms)	More comprehensive national policies and plans to reduce petroleum consumption via sector reforms, new incentives for conservation and efficiency, and new financing mechanisms. Mitigation strategies should emphasize conservation and efficiency improvements on high-priority basis, revisit RE options (e.g. renewable fuels for power generation and transport and "hybrid" operations for power generation), and consider alternative fuels development to reduce demand for petroleum imports.
Limited mobilization of carbon finance due to low GHG emissions baseline and lack of capacity for	There has been limited donor support for CDM capacity building. TA 7121 in Samoa includes a CDM evaluation component for the proposed	Countries with low baseline emissions have inherent difficulty in qualifying projects for CDM.

Priority issues/needs	Ongoing activities/support	Areas/actions needing support to address gaps
project identification and development	hydropower rehabilitation project. Portfolio is reviewed systematically to identify candidate projects to be supported by the ADB Asia Pacific Carbon Fund.	Ongoing projects with EE component can be evaluated for CDM potential. ADB to review pipeline to identify potential emissions reductions and determine eligibility for CDM or other carbon market transactions, including Future Carbon Fund and Sustainable Fuel Credits. ADB to consider advisory TA for CDM capacity building, other carbon finance, and access to new climate funds.
Lack of private sector investment in mitigation projects (and adaptation projects as well)	ADB analysis "Swimming Against the Tide" provides recommendations for resolving governments' negative influence on private sector development. Clean Energy Funds and Energy Service Companies can be structured to mobilize private investment (e.g., TA 4994 in Samoa).	Policy dialogue and project scoping should explore options for private participation. Innovative financing may be required, possibly from ADB or external climate funds.

Table 4: Mainstreaming Climate Change

Pacific Strategy		Climate Change Actions to 2015		Potential Longer Term Actions
Strategic Objective	***Key Result Areas***	***Ongoing***	**Potential New Actions**	
1. Support a Conducive Environment for the Private Sector	(i) An effective institutional, legal, and regulatory environment (including for skills development in response to labor market demands). (ii) Improved financial services. (iii) Improved state-owned enterprise accountability and performance.	(a) Capacity building for clean energy funds and energy service companies (TA 4994 Samoa)	(a) Policy reform to ensure the fair pricing of alternative energy supplies (b) Capacity building for carbon finance transactions, including private sector and other non-government entities	(a) Private sector projects in biomass energy / cogeneration (non-food threatening)
2. Support Physical Economic and Social Infrastructure Development	(i) Better transport infrastructure. (ii) Improved energy infrastructure. (iii) Better rural infrastructure. (iv) More clean water and sanitation. (v) Improved climate proofing of infrastructure.	(a) Energy efficiency project development (RETA 42078) and follow-on investments co-financed with GEF (b) Supply side efficiency measures (RETA 6477) (c)Renewable energy (TA 4994 Samoa, TA 4932 PNG) (d) Climate proofing of infrastructure	(a) Additional follow-on EE projects co-financed with GEF and other sources (b) Support carbon finance transactions for on-going projects (c) Biogas recovery from wastewater treatment plants (e.g., proposed for Kinoya plant in Fiji, 2009)	(a) Energy recovery at waste facilities (b) Retrofit of diesel generators with RE systems for hybrid operations (c) Other clean energy applications
3. Good Governance	(i) Strengthened government transparency and accountability. (ii) Increased stakeholder participation and ownership in development programs. (iii) Increased public demand for good governance and for effective markets and services. (iv) Effective public, private, and development partner resource allocations for basic social services. (v) Strengthened capacity of Pacific developing member country governments to plan and manage for development results. (vi) Improved availability and dissemination of quality data and information on development	(a) Coral Triangle Initiative (TA 42073) (b) Regional Partnerships for Climate Change Adaptation and Disaster Preparedness (proposed RETA 41187) (b) Coordination/ networking of donor initiatives (led by SPSO) (c) Continue participation in the PCCR (d) Continue dialogue with regional organizations (CROP, SPREP)	(a) Community engagement in climate change planning (b) Support for best practice in adaptation at the sectoral level (c) Identification, preparation, and application of new risk reduction tools for project screening (d) Geographic information systems to support data management, update of GHG emissions inventories, planning, and project implementation (possibly integrated with climate change portal being developed	(a) Planning for the migration of at-risk communities

Pacific Strategy		Climate Change Actions to 2015		Potential Longer Term Actions
Strategic Objective	***Key Result Areas***	***Ongoing***	**Potential New Actions**	
	issues. (vii) Gender and environmental considerations mainstreamed into development planning and programs. (viii) Enhanced development partner coordination and harmonization. (ix) Improved service delivery and economic integration through enhanced regional cooperation.		through PCCR) (e) Mobilize new specialized funds to support adaptation activities (f) Preparation of National APA (g) Skills development for employment in new adaptation activities (h) Mobilize private sector participation in financing adaptation (i) Assessing the Implications of the Current Climate Negotiations for Adaptation in PDMCs (j) Support for best practice in adaptation, reflecting current and future climate risks along with development, humanitarian and crisis considerations	

Source: Asian Development Bank.

49. With reference to the strategic responses of ADB, the key conclusions that arise from the foregoing gap analysis are:

- the recent and current support ADB is providing to its PDMCs provide an excellent foundation for increased assistance that is required to address their growing and diversifying needs; while the current portfolio of assistance is relevant to the needs of the PDMCs, it falls well short of what is required;
- in the future there should be much greater emphasis on adaptation, though increased assistance for mitigation and new assistance to capture the synergies between adaptation and mitigation, and between disaster risk reduction and climate change adaptation, are also a priority;
- the special circumstances of the PDMCs call for more emphasis on programmatic- as opposed to project-based assistance and on building both the absorptive and adaptive capacities of PDMCs;
- all the assistance provided to PDMCs in the future, regardless of the sector, should be reviewed from the perspective of ensuring that the assistance does not exacerbate climate-related risks and identifying specific opportunities to reduce such risks;
- the recent decision to strengthen the capacity of the SPSO is timely, but this may well be insufficient to meet the growing opportunities and needs for ADB to play a greater role in assisting its PDMCs to address climate-related issues;
- ADB must ensure that existing and new staff members with climate-related responsibilities in the Pacific are well aware of the special circumstances and specific climate-related challenges facing the PDMCs; staff members must ensure these are reflected appropriately in both preparatory, design and implementation activities; and
- the important role ADB is playing in donor coordination should be increased; ADB should also increase the level of joint programming to reduce climate-related risks to the Pacific and thereby enhance the sustainable development of its PDMCs.

IV. Key Areas for ADB's Support

50. As noted above, PARD will work within the Pacific Region Strategy and new activities will be formulated, taking into account the envelope of internal resources, availability of co-financing, and PDMC absorption capacity. As such, in the near-term PARD will focus on implementation of the current program as well as direct follow-on activities. New interventions will address the needs identified above and take into consideration governance issues as well as capacity constraints.

51. Rather than working individually with PDMCs, ADB will seek to work collaboratively with other development assistance partners, often in joint programming. A review of past experiences and future prospects suggests that the key partners which will align best with ADB's activities in the Pacific are likely to be GEF, both the Australian and New Zealand Agencies for International Development and the European Union. The major future funding sources are likely to include the Asia Pacific Carbon Fund, the Clean Energy Financing Partnership Facility (CEFPF), the Global Facility for Disaster Reduction and Recovery, ADB's Climate Change Fund, Climate Investment Funds (Clean Technology Fund and Strategic Climate Fund), ADB's Future Carbon Fund, the GEF Priority on Adaptation (if replenished), the GEF Least Developed Countries Fund, the GEF Special Climate Change Fund (if replenished), the UNFCCC Adaptation Fund and possibly a new Sustainable Fuel Credits mechanism.

52. Careful attention will have to be given to the focus, amount and phasing of development assistance being provided to the PDMCs, not only in terms of climate-

related assistance, but also with respect to the overall portfolio. Countries will need to identify areas where absorptive capacities can be strengthened, and work with ADB to address these opportunities.

A. Adaptation

53. The following areas are proposed as the principal ADB responses to the need for climate change adaptation in the Pacific region. The proposed responses are based on an analysis of PDMC needs as well as reflecting ADB's comparative advantage and niche role relative to other donors. Concepts for regional assistance projects are presented in Table 5.

54. Climate adaptation activities implemented by ADB will start by supporting sustainable development, natural resource management, "no regrets" strategies and "soft" solutions that aim at reducing vulnerabilities to current hazards regardless of longer term climate change. Initiatives that first address current climate variability and favor "soft" natural resilience options rather than hard structural protection investments will maximize returns on adaptation investments and minimize the risk of maladaptation and other poor investment decisions.

55. **Private sector** adaptation mainstreaming is of importance, especially considering that public services in the Pacific are increasingly being privatized without the introduction of requisite risk management considerations. The need for such mainstreaming is reinforced by the private sector internationally giving increasing recognition to climate-related risks, as evidenced by the emergence around the world of several climate change investor groups to confront business losses attributed to climate change.

56. **Support for Best Practices in Adaptation at the Sectoral Level.** ADB will assist its PDMCs to incorporate measures to reduce climate-related risks in their sector strategies. Governments will be assisted to ensure that sector roadmaps at country level incorporate actions to identify and manage relevant climate-related risks, including disaster risks. The analysis presented in Appendix 5 shows that in most PDMCs the sectors where addressing climate-related risks is of highest priority are: (i) infrastructure and human settlement, including water supply and drainage infrastructure, transport infrastructure, including coastal roads and ports, and energy generation capacity, especially hydropower; (ii) human health services; and (iii) agriculture. PDMCs need assistance to develop the necessary policy, institutional, legal and investment responses for each of these sectors and for others that might be of special relevance due to national circumstances. In this context, CPSs and COBPs will include in their project portfolios the need for adaptation cost-benefit analyses to equip the ADB and its national stakeholders with knowledge products and data to help justify climate risk reduction and poverty alleviation measures at a time when funds for adaptation investments are severely constrained.

57. To improve the policy framework for such interventions, ADB will increase its focus on policy dialogue and policy reform processes. Policy dialogue is imperative to expand climate considerations outside of environment and energy ministries and ensure that climate considerations are part of development planning and not separate. The aim will be to ensure country ownership of the reform agenda, remove constraining policy instruments (e.g. perverse subsidies and absence of property rights) that encourage maladaptation and introduce and strengthen policy drivers in support of appropriate adaptation and climate risk management measures in key sectors. Although such interventions are typically in the domain of national governments, ADB can play a key role in fostering regulatory and legislation changes

at the country level. The private sector will also has an important role to play in influencing the policy reform process and urging implementation of appropriate changes.

58. As with all other development policy in the Pacific (e.g. economic, financial, gender, governance, social protection, ADB will work with its PDMCs to develop sector framework or programs for action to help strengthen policy implementation. Throughout the Pacific there is a typically a gap between the provision of policy advice and follow up through policy implementation, and not only in relation to environmental policy. ADB is committed to assisting its PDMCs to use "change management" and other corporate and developed country strategic approaches to help bridge the gap between the formulation and implementation of sector-based climate risk reduction strategies. This will include ensuring that policy advice is linked to policy needs and in turn to priority implementation.

59. **User Friendly and Relevant Knowledge to Support Adaptation.** While climate science has made substantial advances in recent years, and reliable information is increasingly available, it is essential that this knowledge is properly used in developing small and fragile countries like the PDMCs. To this end, there is need to package information in a user-friendly format, and improve communication flow at all levels: from government agencies to businesses; and from utilities to farmers in key climate sensitive sectors. Early warning and rapid information distribution systems are also key. The private sector, scientific community, academia, international agencies, national governments, and other development partners all have a role to play in strengthening existing capacities, and providing more accessible climate scenarios and meteorological services. Knowledge generation/sharing/transfer is more important in the Pacific Islands context, considering capacity constraints and the barriers resulting from the large uncertainties in projecting the changes in climate, the resulting impacts and the most effective and efficient response measures.

60. There is increasing demand within PDMCs for trend-reliable downscaled climate projections and impact assessments that will inform risk management activities and other adaptation initiatives in key development areas. High risk sectors and communities in the PDMCs are in urgent need of tangible adaptation actions to minimize climate-related risks. ADB is committed to providing assistance that avoids the common pitfall of down-scaled climate projections failing to provide useful information to policy and decision makers. In partnership with PDMCs, ADB prepare user friendly and authoritative syntheses of anticipated climate changes and impacts for priority sectors within its current and pipeline investment portfolio, to anticipate risks and requisite adaptive measures, including incremental adaptation investment costs. Such information will become a requirement for all of ADB's projects in the Pacific and will be used to ensure that all outputs and outcomes are climate proofed in a technically sound and cost effective manner, including to justify incremental adaptation investments for critical infrastructure.

61. As further support for adaptation related policy and decision making ADB will also assist with the preparation of national climate vulnerability and risk atlases covering key sectors such as water, forestry, agriculture fisheries, marine ecosystems, tourism and coastal zones. The atlases will be prepared using national and regional data bases in geographic information systems. In addition, ADB will assist each of its PDMCs to develop an adaptation cluster program to help visualize sectoral impacts at relevant temporal and spatial levels, enable the introduction of requisite risk reduction measures and help optimize resource use. ADB will also assist its member countries to combine traditional environmental and adaptive

(reactive and anticipatory) knowledge and practices with contemporary adaptive knowledge and practices.

62. **Screening of PARD Pipeline Projects.** PARD will apply effective screening tools developed by ADB and other players in order to identify and manage climate-related risks, including disaster risks, for ADB PDMC and Pacific regional projects in the pipeline. ADB has recently initiated an assessment of the climate-related risks for its current portfolio of projects. It is estimated that the increased incremental cost of "climate proofing" these projects could be 10-20% higher than current costs. Climate proofing interventions at the design stage may therefore require significant incremental financing. However, the additional cost will normally be much less than would be incurred by infrastructure of other assets over their lifetime if they were not climate proofed. The incremental costs of adaptation to be financed by ADB being considered on a project-by-project basis. Regular assessment of the risks facing the PARD project portfolio will allow the screening tools to be evaluated and refined over time. ADB procedures will be adjusted to ensure that climate-related risks, including disaster risks, are considered at the design stage of all future projects. This requirement will be incorporated into safeguard measures as well as in sector guidelines.

63. For existing infrastructure, each PDMC will be assisted to develop a portfolio of infrastructure portfolio at risk and assess the need for adaptive retro-fitting of existing stock to build resilience against expected climate impacts. For new developments PDMCs will be assisted to incorporate climate-resilient design engineering and development protocols in their plans, including stringent climate adaptive development guidelines (e.g., coastal setback guidelines & land variance policies) to reduce possible risks from climate change impacts, including extreme weather events.

64. **Assessing the Implications of the Current Climate Negotiations for Adaptation in PDMCs.** With respect to adaptation, the Bali Road Map, the Nairobi Work Program and the recent negotiations are focusing on three areas: national planning for adaptation, enhancing knowledge sharing, institutional frameworks, and streamlining and scaling up financial and technological support. A future agreement may well advance adaptation on two fronts: (i) proactively, by facilitating comprehensive national planning, including consideration of climate-related risks; and (ii) reactively, by assisting countries to cope with the risks that remain. An agreement will likely include delivering nationally appropriate commitments or actions in a measurable, reportable and verifiable manner. ADB will facilitate and assist the implementation of studies to assess the extent to which development assistance to PDMCs for adaptation is at risk due to changing international agreements, and identify and implement appropriate risk reduction strategies, including building capacity in PDMCs to measure, report and verify adaptation investments and other forms of assistance.

65. **Social Dimensions.** An important aspect of addressing the climate change challenge is dealing with adverse impacts on people. These impacts include heat waves, water-borne diseases from flooding, vector-borne diseases such as malaria and dengue fever, as well as injuries and other health impacts from extreme weather events. Vulnerability to these impacts will not only show high spatial variability, both between and within countries, but will also vary across socio-economic groups. In general, young and old people, the poor and women will suffer the most.

66. There will be increased pressure to support the many people in the Pacific region who may well face relocation, be it within their own island or country, or to a

more distant location. The link between climate change and migration is far from straightforward. There is a continuum of consequences, ranging from situations where climate change might have primacy in the decision to move to others where it is just one of a number of associated social, political and economic reasons for migration. More work is needed to identify likely climate change migration patterns and the reasons for these movements. The mix between temporary and permanent migration also needs further exploration.

67. The response by policymakers, civil society and multilateral institutions will need to be different depending on whether people move or stay. In some cases, communities might choose to stay and adapt to the effects of climate change, whereas in other cases they might choose or be forced to move. If people stay where they are, support will be needed for a range of measures including food security, social protection and health, disaster management, infrastructure, research and knowledge and institutional development. If people migrate to other areas, then support would be better focused on rehabilitation to support migrants during the moving process, and on improving the absorptive capacity of receiving areas. These will often be urban areas. In either case, support will tie in with sound development strategies, such as improving infrastructure and education, ensuring internally displaced people are protected, and developing regional cooperation to facilitate international migration.

68. ADB will have a role in these strategies, particularly in infrastructure development, education and regional cooperation, as they are consistent with the core operational areas in the Pacific Strategy. PARD will support the approach taken by domestic governments. It will explore creation of a fund to help soften the financial impact on countries that may be called upon to accommodate large numbers of people displaced by the consequences of climate change. Where national priorities signal the importance of adaptation, PARD will show leadership in financing activities that will reduce the need to migrate. ADB is already active in this area of assistance, including through the 'Small Grants for Promoting Climate Change Adaptation', the 'Poverty and Environment Fund', and the 'Water Financing Partnership Facility'. Where community and national preferences mean that people do migrate, PARD will consider options for providing the financing needed to improve the absorptive capacity of areas that receive migrants, to improve the skills and education of migrants, as well as to help with migrants' resettlement costs. The most direct way to help migrants is by financing their resettlement costs.

69. At national level the appropriate policy response will differ depending on whether people stay where they are or migrate. ADB will follow a government's lead on how best to address the issue of relocation. In some cases the national government might choose to concentrate on in-situ adaptation, allowing people to best cope with changes while continuing to live where they are. In other cases the government might signal that migration is an important part of the response to climate change. Through PARD, ADB will support communities to choose the best response to their national circumstances. ADB will also consider requests from PDMCs to contribute to efforts to improve the education and workplace skills of migrants to assist with their integration.

70. **Ensuring Climate-related Risks and Vulnerabilities are Adequately Reflected in Country Partnership Strategies and Business Plans.** When a CPS or COBP is prepared in the future, climate change adaptation needs, including prevention of climate-related disasters, will be considered and reflected in the documents. This will include updating and making use of the country-by-country adaptation assessments presented in Appendix 5. Current practices for country

environmental analysis and disaster risk assessment, which form an important part of CPS and COBP preparation, will be strengthened to include the identification and characterization of climate-related risks, including disaster risks, as well as an assessment of the most appropriate ways in which unacceptable risks can be managed. The recommended responses will reflect the harmonization of planning for climate change adaptation and disaster preparedness and response described in ADB's *Disaster and Emergency Assistance Policy Action Plan*, approved in 2008. Where appropriate, the CPS and COBP will also describe the ways in which the government will be assisted to devise policies, incentives and regulations to facilitate private sector and NGO involvement in adaptation, including working with insurance and other financial institutions to provide incentives for proactive climate risk management and risk reduction strategies in their agreements to insure businesses and individuals against general losses.

71. The CPS and COBP for each PDMC will include guidance and assistance on how best to structurally engage civil society agency (e.g. micro-level NGOs, community associations, micro-enterprise, civil defense and disaster response groups) in adaptation mainstreaming to reduce community vulnerability and ensure bottom-up ownership of risk management actions. They will also include capacity building activities that focus on the institutionalization of long-term state-driven adaptive policies and the implementation of livelihood-based adaptation pilots protecting PDMC marine and hard infrastructure assets, artisanal fisheries and subsistence agriculture. This will require formulation of community-based participatory adaptation frameworks in which transformational adaptation projects will be formulated with community buy-in, in order to meet the needs of vulnerable groups and sectors in high risk zones. In this respect, substantial roles for National Red Cross/Red Crescent Societies should be identified. These Societies are at the front line in civil defense and have a long and successful track record in risk management. Their involvement will help capture synergies between disaster risk reduction and climate change adaptation.

72. The foregoing paragraphs describe the areas in which ADB will focus its adaptation assistance in the Pacific. They should be seen as an integrated package, within which priority areas can be identified. Internally emphasis should be given to ensuring climate-related risks and vulnerabilities are adequately reflected in CPSs and COBPs and that all PARD pipeline projects are screened in relation to climate-related risks. However, a prerequisite for such efforts is the existence of user friendly and relevant knowledge to support adaptation. Only then will it be possible to provide the necessary assistance to ensure best practices in adaptation are implemented at the sectoral level.

B. Mitigation

73. **Energy Efficiency and Clean Energy.** PARD will continue to implement current TAs and projects which focus on energy policy and related sector reforms, and on energy conservation and efficiency (both demand and supply side). Short-term opportunities for demand side management are being actively considered. E.g. under TA 6477-REG and TA 42078-REG, options for efficiency improvements are being evaluated, including: improved efficiency of existing power generation units; more efficient lighting (such as replacement of incandescent bulbs with fluorescent bulbs); and improved efficiencies for refrigeration and air conditioning. New near-term projects will be identified and selected based on relevance to the Pacific Strategy

priorities, least-cost analyses, and relative GHG abatement cost.[19] In the near term, efficiency and conservation opportunities will normally be considered as the highest priority. Country-specific suggestions for inclusion in CPSs are presented in Appendix 6.

74. Potential longer-term actions could include a broad spectrum of projects with the following possibilities listed by approximate order of decreasing attractiveness and/or priority (subject to change based on details of specific project proposals):

- Passive solar water heating (relatively low-cost option for demand-side management)
- Integration of RE technologies with existing diesel generator sets for "hybrid" operation (including use of bio-diesel blends)
- Hydropower development (may be limited to larger islands)
- Combined cycle gas-fired power plants (limited to PNG and Timor-Leste)
- Energy recovery from solid waste and wastewater treatment facilities (biogas recovery, a good candidate for carbon finance)
- Solar photovoltaic (PV) and small-scale wind power, especially for off-grid applications
- Biomass energy/cogeneration, including commercial biofuels production including 1st generation technologies, for stationary power and transport applications
- Combined heat and power plants (cogeneration) for industrial applications; combined cooling, heat, and power plants for distributed generation, hot water supply, refrigeration and air conditioning at commercial and institutional facilities (hotels, schools, hospitals)
- Geothermal for direct use and baseload power operations (limited initially to PNG; Fiji, Solomon Islands, and Vanuatu may also have commercially exploitable resources).

75. Capital-intensive and pre-commercial technologies and systems (e.g., large-scale biofuels, geothermal power, and ocean energy) should be given low priority by ADB, but could be considered in cases where a private sponsor is willing to lead project development and the proposed initiatives do not crowd out other ADB activities.

76. ADB will continue policy dialogue with PDMC governments to establish and strengthen attractive financing schemes, especially those which encourage private sector development and participation (e.g., Clean Energy Funds and Energy Service Companies, which are included in the Samoa Power Sector Expansion Project). Technical and financial assistance can be supported by ADB's CEFPF and other funds.

77. **Sustainable Transport.** Transport projects comprise about 1/3 of the regional program for 2008-2010. Under its Sustainable Transport Initiative, ADB is geared to realign its investments to address congestion, safety, and local air quality issues. PARD will explore opportunities in mobility planning and public [urban] transport investments, where GHG emissions reductions can be built-in to new investments. Aviation and ocean shipping will remain a prominent feature of transport sector development within the region, while rail transport opportunities are limited to a few larger countries (e.g., Fiji and perhaps PNG). Investment opportunities in

[19] ADB guidelines for financial and economic analyses will apply to all projects, i.e., EIRR > 12%, and EIRR > FIRR > WACC criteria should not be waived. Where FIRR is estimated to be sub-commercial, concessional financing may be mobilized if there is a clear path to long-term commercial operations.

alternative and cleaner fuels appear to be limited (e.g., possible use of compressed natural gas as a transport fuel in PNG and Timor-Leste; biofuels development in Fiji).

78. **Urban Initiatives and Climate Change Mitigation**. ADB will support investments to reduce GHG emissions from transport, residential and commercial buildings, industry, and waste management, with near-term emphasis on energy conservation and efficiency, and energy recovery from solid waste and wastewater treatment facilities where clear "co-benefits" can be realized.[20] Energy conservation and efficiency measures in urban sector can be implemented through new financing mechanisms (e.g., clean energy funds and Energy Service Companies (ESCOs)[21]), and can be implemented via either energy sector investments or urban infrastructure investments.

79. **Forestry and Other Land Use.** Land use adjustments are an area where synergies between climate change mitigation efforts and adaptation measures may often be realized. A GHG emissions assessment prepared by the Pacific Islands Climate Change Assistance Programme (PICCAP, completed in 2000) demonstrated that forest growth provided a carbon “sink” such that the region had negative net GHG emissions.[22] Re-forestation of areas cleared by logging in PNG and the Solomon Islands represents potential opportunities for creation of carbon sinks as well as reducing the adverse impacts of climate change. ADB will consider engagement in the forestry sector on a limited basis, and will explore possibilities to obtain concessional financing for reducing emissions from deforestation in developing countries. Long-term reforestation activities, including biomass energy plantations, may be an optimum way to achieve reforestation, develop alternative energy and fuels, reduce GHG emissions and achieve sustainable land management despite changes in climate. A recent study prepared for the Pacific Islands Forum Secretariat estimates that about 1.9 million tons/year CO_2 equivalent in emissions reductions can be achieved from small-scale forestry projects in Fiji, PNG, and Tonga (see Appendix 6).

80. **Improving PDMC Access to Carbon Markets.** ADB will assist PDMCs to access carbon markets (e.g., CDM, ADB’s Asia Pacific Carbon Fund, ADB Future Carbon Fund, voluntary markets) and new climate investment funds to obtain the additional resources needed for implementing clean energy and other GHG mitigation projects. Appendix 6 provides additional information on prospective EE and RE activities which could qualify for CDM or other carbon market transactions.

81. **Catalyzing Private Sector Investments to Address Climate Change.** ADB will help PDMCs create an investment environment conducive to private and para-statal commercial investment that can reduce GHG emissions. Private sector development opportunities vary from sector to sector.

82. Proposed concepts for new TAs and investment projects are presented in Table 5.

[20] Significant benefits can be realized through expanded use of biomass digester-gasifier systems which can be deployed at household and village scale.

[21] In this context, ESCOs are broadly defined to include equipment suppliers, technology vendors, operations & maintenance contractors, local non-utility generators, etc., in addition to the “traditional” ESCOs which perform EE services under performance and shared savings contracts.

[22] The study noted that Fiji and Vanuatu had net negative emissions, while Samoa had net positive emissions due to deforestation.

V. Conclusion and next steps

83. The Pacific region remains vulnerable to impacts of climate change. Responses will be more effective if there are concerted efforts to ensure that currently committed and additional funding is used in a coordinated manner, based on a comprehensive understanding of priority needs and absorptive capacities. ADB is well positioned as one of the only donors in the region that provides TAs, grants, and loans, and the only regional GEF implementing agency. This allows it to analyze the complex problems at the regional, national, and local level, identify appropriate solutions based on the varied geographic, social, and environmental conditions and mobilize technical and financial assistance to implement solutions in a holistic manner.

84. PARD has already begun to mainstream climate change activities into its operations, and will continue to identify and implement appropriate solutions-based interventions. The CCIP will evolve through periodic updates in order to effectively guide ongoing and future programs, and TA and project design at the regional and project level. New TAs and projects will be identified through regional programming, and country-level CPS and COBP missions. PARD will focus its interventions on those areas where its comparative advantage can best be employed. PARD will maintain and expand its role in donor coordination and mobilization of cofinancing. The analyses of climate-related activities, donor assistance and opportunities for effective adaptation and mitigation investments provide a foundation for more effective donor coordination and cofinancing initiatives than have been possible to date.

85. This CCIP is a first step at guiding ADB's climate-related activities in the Pacific region. It will need to evolve, if only because the ongoing efforts related to donor harmonization will clarify ADB's niche role relative to other development assistance partners to PICs and the region as a whole. Moreover, the experience of reflecting the CCIP in CPSs and the ROBP will likely result in the need to revise the CCIP on a periodic basis.

Table 5: Summary of Initial Regional Project Concepts for Mitigation and Adaptation

Focus	Project Focus	Project Description	Key Components of Project	Tentative Cost and Source of Financing (if known)	Responsible Division	Remarks
Adaptation	Enhancing Participation of Private Sector in Financing Adaptation	Adaptation will require substantial funding. This project will facilitate the involvement of the private sector in funding relevant adaptation initiatives in PDMCs	(i) Assisting governments to devise policies, incentives and regulations to facilitate private sector involvement in adaptation; (ii) Working with insurance and other financial institutions active in the Pacific region to encourage them to provide incentives for proactive climate risk management and risk reduction strategies by their clients.	TBD Funding from ADB and Adaptation Funds entrusted to GEF	PARD	Regional
	Support for Best Practices in Adaptation at the Sectoral Level	This project will help address the lack of tools, guidelines, compilations of good practices and lessons learned, in sectoral policies and planning processes and inclusion in relevant regulations and codes.	(i) Undertake a comprehensive needs assessment for tools, guidelines and other support necessary to achieve best practice in the chosen countries and sectors; (ii) Compile and disseminate information on good practices and lessons learned in relation to the areas of greatest need; (iii) Take necessary steps to ensure that key players in adaptation in the chosen countries and sectors are equipped with the requisite knowledge and skills; (iv) provide assistance to countries to enhance policy dialogue and policy reform processes, including developing sector frameworks or programs for action to help strengthen policy implementation.	TBD Funding from ADB and Adaptation Funds entrusted to GEF Collaboration and/or co-financing from other development assistance partners	PARD	National
	Ensuring Climate-related Risks and Vulnerabilities are Adequately Reflected in CPSs and COBPs.	Technical assistance to ensure that, when CPsS and COBPs are prepared, climate change adaptation needs, including prevention of climate-	(i) Strengthen CPS and COBP to include the identification and characterization of climate-related risks, including disaster risks, as well as an assessment of the most appropriate ways in which unacceptable risks can be managed; (ii) Include recommended responses in the	TBD Funding from ADF	PARD	National

Focus	Project Focus	Project Description	Key Components of Project	Tentative Cost and Source of Financing (if known)	Responsible Division	Remarks
		related disasters, will be considered and reflected in the documents. This will include updating and making use of the country-by-country adaptation assessments	harmonization of planning for climate change adaptation and disaster preparedness and response; (iii) Identify the ways in which the government will be assisted to devise policies, incentives and regulations to facilitate private sector and NGO involvement in adaptation; (iv) Provide guidance and assistance on how best to engage civil society in adaptation mainstreaming, including National Red Cross/Red Crescent Societies.			
	User Friendly and Relevant Knowledge to Support Adaptation	Package information in a user-friendly format, and improve communication flow at all levels: from government agencies to businesses; and from utilities to farmers in key climate sensitive sectors.	(i) Prepare user friendly and authoritative syntheses of anticipated climate changes and impacts for priority sectors; (ii) Assist with the preparation of national climate vulnerability and risk atlases covering key sectors such as water, forestry, agriculture fisheries, marine ecosystems, tourism and coastal zones; (iii) Assist with development of adaptation cluster programs in each PDMC; (iv) Assist member countries to combine traditional environmental and adaptive knowledge and practices with contemporary adaptive knowledge and practices.	TBD Funding from ADB and Adaptation Funds entrusted to GEF Collaboration and/or co-financing from other development assistance partners	PARD	Regional National
	Preparation and trialing of climate risk reduction tools for screening PARD pipeline projects	PARD needs to apply effective screening tools for the identification and management of climate-related risks, including disaster risks, for ADB projects in the pipeline. This	Ensure that the special circumstances and needs of PICs are reflected in the following: (i) Design screening tools for the identification and management of climate-related risks, including disaster risks, for ADB projects in the pipeline; (ii) Design and test procedures for regular assessments of the risks facing the ADB project portfolio, allowing the screening tools to be evaluated	TBD Funding from ADB and Adaptation Funds entrusted to Global Environment Facility (GEF)	PARD	ADB Level

Focus	Project Focus	Project Description	Key Components of Project	Tentative Cost and Source of Financing (if known)	Responsible Division	Remarks
		project will design and test such tools and ensure their effect use in climate proofing country and regional projects in the Pacific.	and refined over time; (iii) Prepare recommendations for the change in ADB procedures to ensure that climate-related risks, including disaster risks, are considered at the design stage of all future projects.			
	Assessing the Implications of the Current Climate Negotiations for Adaptation in PDMCs.	This project will assess how best to ensure that PDMCs are able to maximize their access to adaptation fund in ways consistent with the likely outcomes of the current round of climate negotiations.	(i) Facilitate and assist in the implementation of studies to assess the ways in which the requirements related to development assistance to PDMCs for adaptation will me modified due to changing international agreements; (ii) identify, propose and implement appropriate risk reduction strategies, including building capacity in PDMCs to measure, report and verify adaptation investments and other forms of assistance.	TBD Funding from ADB Climate Change Fund	PARD	Regional
	Preparing for Migration as a Result of Climate Change	This project will undertake actions to reduce the adverse impacts on countries that may be called upon to accommodate large numbers of people displaced by the consequences of climate change.	(i) Assess the likely financial and related consequences for PDMCs that may be called upon to accommodate large numbers of people displaced by the consequences of climate change; (ii) Explore creation and operation of a fund to help reduce the identified financial and related impacts.	TBD Funding from ADB Climate Change Fund and possible new fund for climate migrants	PARD	ADB Level
Mitigation	Clean Energy Program	The project will assist relevant PDMCs to expand geographic scope of conservation, EE,	(i) Policy reforms to facilitate conservation and EE implementation on high-priority basis (ii) Identification of investment pipeline (iii) Creation and mobilization of Clean Energy Funds and ESCOs	TBD [~ $1 million for PPTA for items (i) – (iii), investment in funds and	PARD	Suggested for near-term inclusion in regional and country programs

Focus	Project Focus	Project Description	Key Components of Project	Tentative Cost and Source of Financing (if known)	Responsible Division	Remarks
		and other clean energy investments not covered in previous TAs and projects	(iv) Project Implementation by Clean Energy Funds and ESCOs	ESCOs to be determined] Grant support from CEFPF		
	Carbon Finance Program	Capacity building for carbon finance transactions through learning-by-doing	(i) Stakeholder identification and development of training curricula (ii) Identify candidate projects and prepare Project Design Documents (PDDs) for qualification as CDM projects (iii) Facilitate auction of carbon credits from the candidate CDM projects (iv) Establishment of Designated National Authority (v) Update greenhouse gas emissions inventory	TBD [~ $500,000] Grant support from ADB CDM Facility or CEFPF In-kind support from the Technical Support Facility	PARD + RSID	Scope TBD pending international agreement on Kyoto post-2012
	Biomass Energy Commercialization	Biomass-based power plants and liquid fuels are an option for replacement of imported petroleum. The project would identify opportunities for power/cogeneration as 1st priority and biofuels as 2nd priority	(i) Development of biomass-based power and cogeneration plants (ii) Policies and technical standards for development and blending (e.g., 10% ethanol blend and 5-20% biodiesel blending) (iii) Incentives for initial start-up and production (iv) Program for vehicle conversion and modification of diesel generator sets, including training of local mechanics and workshops (v) Public-private partnerships for power/cogeneration plants, biofuel production plants, blending, and distribution	TBD [~ $1 million PPTA for power / cogeneration plants + $1 million for other components Follow-on investment TBD pending private / commercial investment participation]	PARD + PSOD	Regional or National TA followed by national implementation projects Suggested as potential longer-term action May be possible to obtain grant support from CEFPF

V. Implementation Plan

Figure 1: CCIP Implementation Plan

Activities	Resources/References/Tools
CCIP consultations and management approval	Consultation draft of CCIP
Augmentation of CPS and COBP - modifications to ongoing projects, identification of new TAs and investment projects	Pacific Islands Framework for Action on Climate Change Pacific Islands Disaster Risk Reduction & Disaster Management Framework for Action
Implementation of new TAs and projects	Regional and Country Partnership Strategies and Operations Business Plans
Identify CDM candidates for ADB support	CDM Diagnostics Checklist, RSID staff and consultants
Identification of funding sources: e.g., APCF, GEF, ADB Future Carbon Fund, Climate Investment Funds, Special Adaptation Fund (GEF), voluntary carbon markets, etc.	Consultation with RSDD to identify appropriate support and funding sources
Nomination of candidate projects for CIF/Strategic Climate Fund	PARD and RSDD will confer on candidate projects