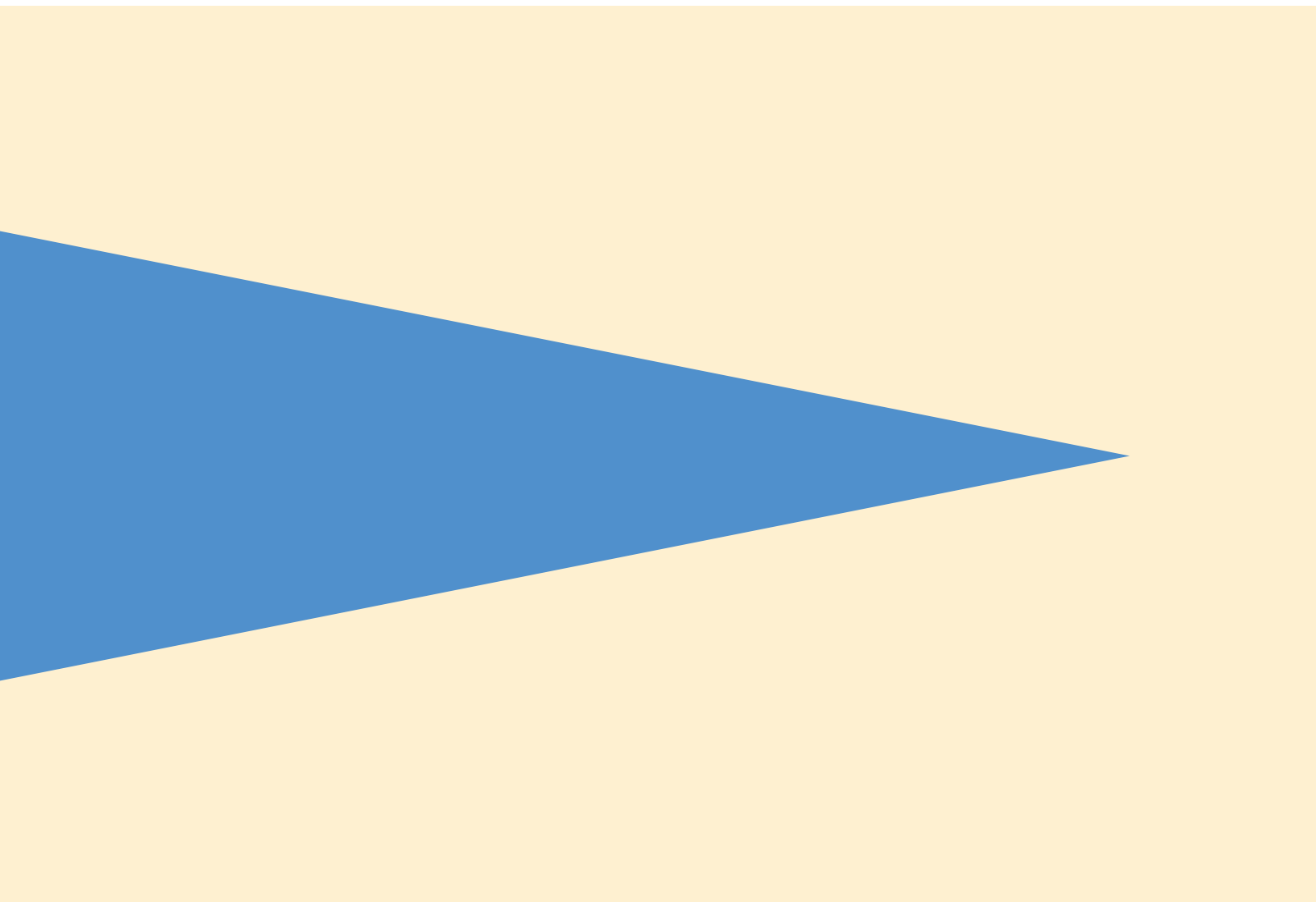
United Nations Framework Convention on Climate Change

NATIONAL ECONOMIC,
ENVIRONMENT AND DEVELOPMENT STUDY
FOR CLIMATE CHANGE

INITIAL SUMMARY REPORT

UNFCCC



"Developed countries will need to provide fast-track funding on the order of at least 10 billion USD a year through 2012 to enable developing countries to immediately plan and launch low emission growth and adaptation strategies and to build internal capacity. At the same time, developed countries will need to indicate how they intend to raise predictable and sustainable long-term financing and what their longer-term commitments will be."

Yvo de Boer, Executive Secretary
United Nations Framework Convention on Climate Change

UNFCCC
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ACRONYMS AND ABBREVIATIONS

AF	Adaptation Fund
BAU	Business As Usual
CDM	Clean Development Mechanism
CO_2	Carbon Dioxide
COP	Conference of the Parties
EPA	Environmental Protection Agency
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
ICCTF	Indonesian Climate Change Trust Fund
INC	Initial National Communication
IPCC	Intergovernmental Panel on Climate Change
LCDFF	Low-Carbon Development Financing Facility
LULUCF	Land Use, Land-Use Change And Forestry
NAPA	National Adaptation Programme Of Action
NCCC	National Committee on Climate Change
NCCPPA	National Climate Change Policy and Plan of Action
NCCS	National Climate Change Strategy
NEEDS	National Economic, Environment and Development Study
NGO	Non-Governmental Organization
Non-Annex I Parties	Parties not included in Annex I to the Convention
ODA	Official Development Assistance
REDD	Reducing Emissions From Deforestation And Forest Degradation
SBI	Subsidiary Body for Implementation
SCCF	Special Climate Change Fund
SFGPR	Strategic Framework for Growth and Poverty Reduction
UNFCCC	United Nations Framework Convention on Climate Change

I. EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Subsidiary Body for Implementation, in its consideration of the fourth review of the financial mechanism of the Convention at its twenty-eighth session in June 2008, requested the secretariat to provide information to non-Annex I Parties on the assessment of financing needs to implement mitigation and adaptation measures. In response to this mandate, the secretariat established the National Economic, Environment and Development Study (NEEDS) for Climate Change. The following countries have requested assistance from the secretariat of UNFCCC and to conduct this study: Costa Rica, Egypt, Ghana, Indonesia, Jordan, Lebanon, Maldives, Mali, Nigeria, Pakistan and the Philippines[1].

The outcomes of the NEEDS are expected to provide useful inputs to the discussions by Parties to determine the financing requirements of non-Annex I Parties to implement mitigation and adaptation measures to address climate change. Participating countries are also providing information on financial and policy instruments available to support these measures.

The present report provides a summary of the initial inputs received from the first seven case studies under NEEDS. A full report is expected to be released in the first half of 2010 once all participating countries submit their final inputs.

1.2 OBJECTIVE

The purpose of this study is to facilitate the identification of priority mitigation and adaptation measures by the participating countries, in line with their national sustainable development strategies, and how these measures can be effectively supported financially by public and private sector funding, multilateral initiatives, carbon markets and other sources of funding or investment.

Therefore, the main objectives of the NEEDS are to support the participating countries in:

1. Selecting key sectors for climate change mitigation and adaptation measures, on the basis of priorities identified in the national communications and in national development plans;
2. Assessing the financing required and received to implement mitigation and adaptation measures in the key sectors selected in 1. above and identifying appropriate financial and regulatory instruments to support these measures;
3. Raising awareness and facilitating informed consensus among government agencies on the policy actions required to mobilize finance and investment in mitigation and adaptation measures.

1.3 KEY OUTCOMES

1.3.1 COSTS

- Estimates of the cost of implementing measures under abatement scenarios at the 2020 and 2050 time horizons and, in one instance, at a 2030 time horizon were provided, either economy wide or by priority sector. Key priority sectors addressed by participants included: energy; forestry; agriculture; water and health.
- Overall total costs for implementing priority adaptation and mitigation measures ranged from approximately USD 721.13 million by 2030 to USD 6.8 billion by 2012, as reported by some countries.
- In one case, the average annual abatement cost of all potential measures until 2030 amounted to EUR 12.84 billion.
- Differences in the level of funding allocated were dependant on the countries unique climate change context, identified vulnerabilities, scope of activities planned, as well as how developed existing climate change policies, instruments and mechanisms were at present (for example, national climate change strategies).
- Indonesia invests 0.9 to 1.9% of the country's total budget; Costa Rica has contributed USD 400 million since mid 1990s to reduce deforestation; The Philippines provided USD 1.576 billion for climate change activities from 2004 – 2008.

[1] Only seven countries provided their initial findings at the time of publishing this report: Costa Rica, Egypt, Ghana, Indonesia, Mali, Pakistan and Philippines.

1.3.2 FINANCIAL INSTRUMENTS

- While the financial mechanism under the Convention was noted as a potential financing source to support climate change mitigation and adaptation, countries stated that the level of financing is believed to be variable or difficult to rely on for short and long term planning in the current situation, given that the financial mechanism relies on voluntary contributions from developed countries.
- Although countries participating in the NEEDS identified international financial support as the crucial component for implementing effective mitigation and adaptation measures, their national budgets continued to provide significant sources of financing at the local level in the absence of strong and predictable flows of international funds, stretching national economies to limits that threaten to compromise sustainable development.
- Countries varied with regards to the level of national/local funding mobilised. Limited national investments in climate change activities in the majority of the participating countries reflect the financial vulnerability created by climate change in the developing world.
- The major sources of external funding mentioned by countries as actual or potential sources of funding included United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP), Global Environment Facility (GEF), Funds under the Convention, Clean Development Mechanism, Adaptation Fund, Special Climate Change Fund, multilateral agencies like the World Bank, the Asian Development Bank, the African Development Bank, the Arab and regional development funds, and the European Community; as well as bilateral agencies like the Swedish International Development Cooperation Agency and the United States Agency for International Development.
- Some countries reported good examples of innovative in-country initiatives, like the Indonesian Low-Carbon Development Fund. This fund aims to manage the public and private sources of funding that support low-carbon development, by leveraging private funding.

1.3.3 POLICY INSTRUMENTS

- Participating countries recommended that sector-specific and legislative reform at the national level be encouraged in order to promote public and private sector partnerships and enhance private sector involvement. For example, Ghana suggests the introduction of climate sensitive building codes as an example of such legislative measures while design criteria for urban planning and spatial zoning of human settlements are suggested by Costa Rica. Other policy instruments identified by participants included taxes on fossil fuels and research and development subsidies for technological change.

1.3.4 INSTITUTIONS

- Several participants in the NEEDS have identified high-level cross-sectoral commitment as a key ingredient to facilitate the integration of climate change priorities into their development strategies. Consequently, the establishment of national committees on climate change is a priority in countries where such mechanisms do not already exist, as is the case reported by Egypt.
- Countries have recognized the urgent need to mainstream climate change activities into national development plans. For example, Indonesia has a National Action Plan on Climate Change that acts as a roadmap for mitigation actions and intends to incorporate more robust climate change policy into the forthcoming Medium Term development plan (2009 – 2014).
- In the case of Mali, although still in the process of developing a specific national climate change strategy, its Strategic Framework for Growth and Poverty Reduction supports implementation of National Environmental Protection Policy. This framework is regarded as the institutional tool for explicitly integrating climate change activities into the country's national development priorities in the future.
- Capacity and information constraints must be addressed to enable progress in climate change mitigation and adaptation. Some countries have recommended the establishment of an independent national committee for scientific and technological advice. Such a facility could act as a think tank for governments to define and prioritize climate change needs and ascertain the availability of policy instruments to meet those needs.

II. BACKGROUND: PROCESSES AND METHODOLOGIES

2.1 CONTEXT

In the current context of global climate change, developing countries are presented with a timely opportunity to evaluate and develop strategic options to address climate change without compromising their economic growth and sustainable development objectives. NEEDS was built upon existing information at the country level, such as country case studies, national communications and national and sectoral development plans. In addition, regional, bilateral and multilateral institutions have contributed to the body of knowledge on which the NEEDS are based.

At a national level, non-Annex I Parties involved in NEEDS have submitted their initial national communications and are in the process of completing their second national communications. Costa Rica is the only country among those considered in this report that has already completed its second national communication.

Mali is the only country participating in the NEEDS that is classified as a least developed country and therefore prepared a National Adaptation Plan of Action (NAPA). NAPAs focus on identifying priority adaptation programmes and projects and urgent and immediate needs to address adaptation. NAPAs are also focused on inputs at the grass-roots or community level.

The NEEDS capitalizes on these significant resources to identify the financing needs to implement adaptation and mitigation measures in key sectors. It is intended to focus predominantly on facilitating consensus among government agencies with regard to policy actions in order to mobilize finance and investment and stimulate subsequent implementation of identified measures. The link between national development plans and financing instruments is underlined throughout the process. The NEEDS attempts to identify linkages with financial and regulatory instruments that will support the implementation of priority measures.

The timing of the NEEDS, in the lead up to COP 15 in Copenhagen, allows Parties to review important lessons learned about in-country adaptation and mitigation efforts and apply these lessons to the future mobilization of resources.

2.2 PROCESSES AND METHODOLOGIES

The processes of and methodologies applied in the NEEDS were designed to ensure country ownership and robustness of analysis. A country-driven process was promoted in order to facilitate national consensus on adaptation and mitigation priorities across national development strategies and the countries' needs with regard to climate change.

In meeting the objectives of the study, the process applied by each country included dialogue with national stakeholders and experts. Generally, countries first took stock of their Greenhouse Gas (GHG) inventories and any previous adaptation and mitigation work completed in the country; this was followed by extensive consultations with national stakeholders and experts in order to assess the financial needs for priority adaptation and mitigation measures. Both high-level and sector-level (technical) stakeholders and experts were consulted. Collaboration and cooperation between key government agencies and key stakeholders was ensured and prioritized throughout the NEEDS process.

Figure II-1. **The NEEDS Process**

TABLE II-1 provides a summary of the methods and processes used by each country in implementing their NEEDS as well as the key sectors identified. Each country had the opportunity to tailor the methods used in their own study based on existing methodologies and data available, with a view to promoting country ownership. For example, Ghana establishedl interagency technical teams to identify priority sectors and existing sources of information/data available, as well as to define its process/ methodologies for the NEEDS. The country's financial needs were discussed largely with regard to mitigation during the workshop owing to the ongoing adaptation-focused initiatives being undertaken by the World Bank. However, information ultimately provided by Ghana covered both mitigation and adaptation costs.

Mitigation was the primary focus of NEEDS by Costa Rica and Indonesia. Conversely, Mali emphasized the importance to focus its study on adaptation measures, while Egypt and Pakistan conducted an assessment that covered both mitigation and adaptation. The Philippines conducted a financial flow analysis to review the adequacy of funds to meet the country's priority mitigation and adaptation needs.

Table II-1. **Country-specific approaches to the NEEDS**

	Focus		
Country	**Sectors**	**Area**	**Country-specific methodologies**
Costa Rica	Energy, Industrial processes, Agriculture, Land-use change and forestry, Waste management	Mitigation	The focus of the NEEDS in Costa Rica centered on an in-depth analysis and review of specific sectors and projects directed to mitigation. The analysis focused on the following main components: scope of the mitigation assessment, identification of technologies and processes with the highest mitigation potential, evaluation of impacts and costs of different policies and technologies, and the identification of the most suitable set of policies and programmes to promote mitigation in a cost-effective manner.
Egypt	Energy, Agriculture, Industrial processes, Water and coasts	Adaptation Mitigation	Focus of the study was on identification of detailed adaptation and mitigation actions and the costs associated with implementing these actions for priority sectors.
Ghana	Energy (including transport), Forestry, Health , Agriculture	Adaptation Mitigation	Workshop groups that analysed relevant available information; potential methods (by sector) to complete the NEEDS; as well as relevant institutions. Methods included review and validation of existing information, and holding of workshops and national forums.
Indonesia	Forestry, Energy	Mitigation	Technical scoping meetings aimed at identifying the focus of the NEEDS in Indonesia, and drawing up the conceptual framework of and establishing the methodology for the study. Given the time and resource constraints, it was deemed appropriate to focus on mitigation rather than covering both mitigation and adaptation. Three study streams were established and asked to look at separate components of mitigation financing: (i) financial availability, (ii) financial delivery mechanisms, and (iii) financial requirements for mitigation measures.
Mali	Agriculture, Forestry, Energy, Industrial processes	Adaptation Mitigation	Working groups analyzed adaptation and mitigation actions and costs associated with implementing action that can be integrated into the national development strategy. While the heath sector is considered a key sector for climate change adaptation, it was not an area of focus in this study owing to the lack of available data.
Pakistan	Agriculture, Water and coasts, Energy, Industrial processes, Land-use change and forestry, Waste	Adaptation Mitigation	Clear guidelines for climate change policy recognized as imperative to address adaptation and mitigation. Adaptation has priority over mitigation.
Philippines	Financial flow analysis – see explanation in the next column.		Approaches taken focused on the following: (1) Documenting the historic and current financial flows into the country for climate change mitigation and adaptation purposes, the channels through which they flow(ed) and the sectors that receive(d) them; (2) Reviewing whether the flows are adequate and meet the country's priority needs. Assessment conducted by the Philippine Inter-Agency Committee on Climate Change and other key stakeholders.

Abbreviation: NEEDS = National Economic, Environment and Development Study.

III. SYNTHESIS OF THE COUNTRIES' FINDINGS

3.1 COSTS OF ADDRESSING CLIMATE CHANGE

The costs of implementing priority mitigation and adaptation measures presented here are based on the information provided by seven of the 11 participating countries (see TABLE III-2). Estimates of the cost of implementing measures under abatement scenarios for 2020 and 2050 time horizons and, in one instance, at a 2030 time horizon (Indonesia) were provided. The costs reported were either economy wide or by priority sector. Key priority sectors addressed by participants included: energy, forestry, agriculture, water and health.

The approach to the provision of information on costs differed between countries in terms of the sectors addressed and the overall focus of the cost estimates. In terms of focal areas, the costs of mitigation and adaptation were addressed by Egypt, Ghana and Mali, while Indonesia estimated the cost of mitigation only. Costa Rica provided a range of cost estimates per t CO_2 eq reduction. Analysis for abatement efforts in Costa Rica focused on the energy and agriculture sectors. The Philippines' Alternative Budget Instrument provided estimates of the additional budget required in different sectors. In terms of the sectors addressed, a sectoral approach to the estimation of costs was adopted by Egypt, Ghana and Mali, while Indonesia's costing was economy wide.

The majority of the countries examined a range of options/measures that could be implemented and the costs associated with their implementation. The process of identification of the range of options through involvement of planning ministries was used to engage development policy planners and helped lay the foundation for integrating climate change related measures into national development planning. Mali examined the costs of implementing adaptation and mitigation options under its Social and Economic Development Programme; and Egypt, which developed a 20-year programme of adaptation and mitigation costs, in line with its five-year national development plans.

Overall, where sectoral costs were provided, agriculture was the most frequently identified sector, warranting expenditures of up to USD 0.56 billion by 2020 and USD 1.30 billion by 2050[2]; while the coasts and sea shore regions of Egypt were associated with the highest sectoral cost for adaptation and mitigation measures (USD 0.62 billion by 2050).

3.2 FINANCIAL AND POLICY INSTRUMENTS

The availability of financial and policy instruments to mobilize the resources needed to integrate climate change priorities into development policy planning was considered by each of the countries participating in the NEEDS (see TABLE III-3). This information is summarized below, commencing with a review of the existing and potential scale of these instruments at the national and regional/international levels. This is followed by an examination of how financial mechanisms have been used, or have the potential to be used, to leverage public funds to mobilize private investment in the participating countries.

3.2.1 EXISTING AND POTENTIAL NATIONAL FINANCIAL INSTRUMENTS

Some countries participating in NEEDS identified their national budgets as the major source of financing for climate change adaptation and mitigation at the national level. Indonesia invests 0.9 to 1.9% of the country's total budget; Costa Rica has contributed USD 400 million since mid 1990s to reduce deforestation; The Philippines provided USD 1.576 billion for climate change activities from 2004 – 2008. However, several countries noted that the level of contribution from their national budgets is low and, in some cases, no specific budget is allocated to climate change activities. In such cases, climate change activities are not mainstreamed into national development plans, thus inhibiting the sustained allocation of resources to them and limiting financial support to project-based contributions. Costa Rica reported that taxes on fossil fuels have been used to support the development of renewable energy and to reduce deforestation. Meanwhile, Pakistan identified the Clean Development Mechanism as the main financial instrument currently applied in the country to support climate change adaptation and mitigation at the national level.

[2] Calculated based on figures from Egypt, Ghana, Mali; Figures are for adaptation costs only, as cost of mitigation in agriculture was not specified. Please refer to the report of these countries for a detailed break down of these figures.

Table III-2. **Summary of mitigation and adaptation costs by country (United States dollars)**

Country	Cost of mitigation	Cost of adaptation	Total cost
Costa Rica	Cost/t CO_2 eq reduction ranged from USD –150 to USD 20.	Options in the biodiversity and water resources sectors are being evaluated.	US$400 million invested to reduce deforestation since mid-90s.
Egypt	Depending on the specific combination of mitigation measures adopted, costs could range from 15 – 90 billion in 2020 and from 45 – 270 billion in 2050.	**Observation and control of climate change:** 0.09 billion by 2020; 0.21 billion by 2050 **Land and agriculture:** 0.21 billion by 2020; 0.95 billion by 2050 **Water:** 2.1 billion by 2020; 2.2 billion by 2050 **Coasts and sea shore regions:** 0.33 billion by 2020; 0.62 billion by 2050 **Socio-economic studies:** 0.02 billion by 2020; 0.03 billion by 2050 **Capacity building, enlightening and training:** 0.02 billion by 2020; 0.05 billion by 2050	**Total cost of adaptation:** 2.72 billion by 2020; 4.01 billion by 2050
Ghana	**Energy:** 309 million by 2020 and 314 million by 2050; **Forestry:** 3.9 million by 2020 and 81.1 million by 2050; **Transport:** 6.58 million by 2020 and 6.55 million by 2050	**Health:** 350 million by 2020 and 352 million by 2050 **Controlling malaria:** 7.6 million by 2020 and 7.54 million by 2050; **Agriculture:** 334.24 million by 2020 and 336.30 million by 2050	Not specified
Indonesia	The average annual cost of abatement, including all potential mitigation measures until 2030, is EUR 12.84 billion.	Not applicable	Not specified
Mali	Cost of abatement in 2000 estimated to be 5.95 XOF per kilogram of CO_2 (which equals to about USD 13 per ton of CO_2 eq). This is estimated to rise to 7.07 XOF per kilogram by 2025 (equal to about USD 16 per ton of CO_2 eq) **Forestry:** Average cost of establishing plantations likely to increase from around 715 billion XOF (USD 1.59 billion) in 2000, to 5508 billion XOF (USD 12.24 billion) in 2020 and 16826 billion (USD 37.39 billion) in 2050.	**Agriculture:** Cost of water management expected to increase from 1.3 billion XOF (USD 2.88 million) in 2000, to 3.4 billion (USD 7.55 million) in 2020 and 5.2 billion (USD 11.55 million) in 2050. Cost of replacing a proportion of chemical fertilizers with organic manure will vary from 1.2 billion XOF (USD 2.49 million) in 2020 to around 3.0 billion (USD 6.67 million) in both 2020 and 2050.	Cost of implementing mitigation and adaptation measures under Mali's development strategy from 2008 till 2012 is approximately 3082 billion XOF (equal to USD 6.8 billion). The cost of implementing all identified priority mitigation and adaptation measures is estimated at approximately 26102 billion XOF from 2008 to 2012 (equal to USD 60 billion)
Pakistan	No cost estimates available at present, but they will be developed under the National Economic, Environment and Development Study.		
Philippines	An Alternative Budget Initiative identified proposed activities for promoting sustainable development and meeting the challenges of climate change, and provided estimates of the additional budget required in different sectors; however, exact costs of measures were not provided.		

In addition to the funding currently provided by internal and external sources, countries indicated that they look at the national government as an important source of increased financial support for climate change activities in the absence of predictable external funding, despite the strain on other sustainable development priorities. However, there is still room for further work to specify the level of support required and the means in which the government would be able to allocate additional funds.[3]

Tax revenue, national health insurance levies, banking and private sector investments, and economic incentives were other potential national instruments identified. Further analysis will be required relating to these instruments and the costs associated with initiating these resources to be able to determine the potential of these instruments in supporting climate change measures. For example, Costa Rica reported that the sources of financing for mitigation efforts have been mainly taxes (on fossil fuels) and foreign debt, while the international cooperation played a positive but minor role.

3.2.2 EXISTING AND POTENTIAL REGIONAL AND INTERNATIONAL SOURCES OF FUNDING

There are four international financial sources currently and/or potentially accessed by countries involved in NEEDS: (1) multilateral development agencies; (2) bilateral development agencies; (3) financial mechanisms of the Convention, including the GEF Trust Fund, SCCF, the Least Developed Countries Fund and Adaptation Fund; and (4) ODA.

Although the levels of financing received by countries involved in NEEDS have largely been identified through the current assessment process, it was suggested that further analysis of the effectiveness of this financing in meeting their requirements will have to be pursued. Nonetheless, the Philippines, for example, undertook a detailed review of finances received, the mechanisms for financing, the sectors financed, and whether the funding received was meeting the country's priorities. A summary of the Philippines' key findings is presented in Box III-1. It was noted that, although national investment was higher than the international funds received, the level of national investment is insufficient to address the increased needs to address climate change.

Box III-1. Financial flows for mitigation and adaptation projects in the Philippines

The Philippines' NEEDS focused on documenting the country's historic and current financial flows for climate change mitigation and adaptation projects and identifying whether the flows are adequate to meet the country's priority needs. The key findings of this NEEDS may be summarized as follows.

(a) Multilateral agencies and donor countries have most greatly influenced the direction of adaptation work in the Philippines.

(b) It is believed that the adequacy and reliability of the financing from developed countries under the Convention cannot be established owing to the limited funds received from the financial mechanism of the Convention.

(c) External financial flows are perceived to be limited.

(d) External flows from bilateral and multilateral sources are described as limited compared with the budgetary allocations of the national Government. From 2004 to 2008, the Philippine Government provided USD 1.576 billion for climate change programmes, while external multilateral and bilateral sources provided USD 0.559 billion in grants and USD 0.397 billion in loans. It could also be argued that the Government funding is actually even higher, as loans are internally provisioned resources that have to be repaid.

(e) While Government funding is high compared with external funding, the budgetary resources set aside by the Philippine Government for climate change are not adequate and amount to just 0.9 to 1.9 per cent of the country's total budget. Furthermore, while the total budget for climate change activities increased from 2004 to 2007, it dropped almost by half in 2008.

(f) The funding received through international development assistance (i.e. multilateral and bilateral sources, official development assistance and the financial mechanism under the Convention and Government allocations is believed to be insufficient to meet the country's needs.

[3] Egypt stated that the government commitment required to implement its adaptation and mitigation measures is expected to require a 20 per cent increase in the annual budget allocation between 2011 and 2035.

Table III-3. **Existing and prospective financial instruments to mobilize resources to integrate climate change priorities into development policy planning, by country**

	National instruments		Regional and international instruments	
Country	**Existing**	**Prospective**	**Existing**	**Prospective**
Costa Rica	USD 400 million to reduce deforestation since mid 1990s. Financed mainly from taxes (on fossil fuels) and foreign debt.	Policy instruments such as taxes on fossil fuels and economic incentives such as research and development subsidies for technological change; creation of National Climate Change Trust Fund, a financial instrument that would allow policy actions to be effectively coordinated and budgeted for.	International cooperation has played a positive but minor role.	International carbon markets in relation to land-use change and forestry projects; mechanisms that financial reward projects related to forest conservation and reducing emissions from deforestation and forest degradation in developing countries; diverse insurance instruments; support from international development and private financial organizations.
Egypt	National budget	State- provided finance depending on available funds – requires increase in existing government contribution by 20% a year during plan period; private sector funds.	Multilateral and bilateral financial mechanisms under the Convention; Arab and regional development funds.	Multilateral financial mechanisms under the Convention; World Bank funds (e.g. Carbon Trust Fund); Adaptation Fund under the Kyoto Protocol for vulnerable countries; international fund for technology transfer.
Ghana	No specific budget allocated to climate change mitigation or adaptation from domestic resources; no private sector involvement in climate change projects.	Tax revenue (indirect, direct and international taxes), national health insurance levies, import exemptions, and banking and private sector investments.	ODA; bilateral agencies in Netherlands, Japan and the European Union for climate change adaptation: United Nations Development Programme, World Bank, Danida, United Nations Environment Programme (Climate Change and Development – Adapting by Reducing Vulnerability) and UNFCCC; funds under the Convention: GEF Trust Fund, Clean Development Mechanism and Special Climate Change Fund.	Increase in ODA through grants directly to the Government; multilateral and bilateral development agencies; private sector incentives to initiate climate change initiatives; foreign direct investment in mitigation and adaptation; Adaptation Fund.

Table III-3. **Existing and prospective financial instruments to mobilize resources to integrate climate change priorities into development policy planning, by country** (continued)

	National instruments		Regional and international instruments	
Country	**Existing**	**Prospective**	**Existing**	**Prospective**
Indonesia	Not specified	Resources may come from the Indonesian Government itself.	Not specified	Bilateral and multilateral development agencies; specialized financial assistance for climate change activities from multilateral and bilateral sources; philanthropic organizations.
Mali	The National Bank of Agricultural Development of Mali, the Bank of Mali for Solidarity (decentralized financial systems) and the State budget.	State intervention, banking sector investment, micro finance, funding from non-governmental organizations.	Multilateral and bilateral: African Development Bank, Canada, European Commission, France, Millennium Challenge Corporation, Netherlands, Swedish International Development Cooperation Agency, United States Agency for International Development, and World Bank all have programs that are engaged in sectors that are related to climate change that have been identified as having synergies with measures identified in this study.	Financial and technical partners (bilateral and multilateral cooperation); funds allocated to Sahel region.
Pakistan	Clean Development Mechanism currently the only financial and policy instrument used in Pakistan;			
Philippines	Governmental budgetary appropriations or disbursements – budgetary resources set aside by the Philippine Government for climate change amount to 0.9 to 1.9% of the country's total budget.	Not specified	GEF, World Bank, Asian Development Bank and European Community; approx. USD 1 billion in grants for direct climate change mitigation and adaptation since 1992.	Nationwide funding and grants targeted as opposed to localized; spatial limits of projects reduced.

Abbreviation: Clean Development Mechanism = Clean Development Mechanism, GEF = Global Environment Facility, ODA = official development assistance.

3.2.3 POTENTIAL REGIONAL AND INTERNATIONAL INITIATIVES

Potential international financing for climate change was closely aligned to the existing funding sources reported by countries, namely the financial mechanism under the Convention, ODA, MDAs and BDAs (see Box III-2 and Box III-3 for example). While the financial mechanism under the Convention was noted as a relevant financing source to support climate change mitigation and adaptation, countries stated that the level of financing is believed to be variable due to the voluntary nature of contributions from developed countries.

Similarly, and although financial sources to support mitigation and adaptation were identified by the participating countries, the potential to leverage these funds to increase investment will require further analysis. There was also a recognized need to increase FDI in mitigation and adaptation, though no approaches or policy tools were suggested.

Box III-2. Nationwide funding for mitigation and adaptation versus local projects

The Philippines reports that projects targeting small areas are an outcome of the limited resources available. According to the Philippines, a consideration of historical evidence highlights the fact that what is envisioned as a pilot project or case study that should enable national uptake very rarely moves beyond the location in which the project was initially implemented. This is primarily due to a limited financial capacity to extend the scope of these pilot projects. Dealing with issues such as resource conservation, water management, and greenhouse gas emissions requires cooperation across multiples spatial levels, as well as coordination between agencies funding/implementing such projects on the group.

Box III-3. Opportunities to leverage funds to integrate climate change priorities into development plans

Ghana has proposed that development partners must increase official development assistance through grants directly to governments and through multilateral and bilateral agencies in order to ensure that climate change issues remain an integral part of the development agenda. The country's Ministry of Finance and Economic Planning will be the main budgeting and implementation institution for climate changes funds, working closely with the Environmental Protection Agency, National Development Planning Commission as well as regional coordinating councils. The mainstreaming process seeks to target policy formulation, planning, budgeting, implementation and monitoring and evaluation. It is recommended that the private sector also be given incentives to initiate climate change initiatives. Foreign direct investment in mitigation and adaptation should also be encouraged.

3.2.4 FINANCIAL MECHANISM TO LEVERAGE PUBLIC FUNDS TO MOBILIZE PRIVATE INVESTMENT

Countries have reported that their experience in utilizing resources accessed from the financial mechanism of the Convention to leverage private investment is limited. Countries recognize that tools are required to mobilize private investment, particularly to support mitigation efforts. While it was suggested that low-emission development requires private investment and increased involvement in market mechanisms, it was also recognized that high start-up costs often deter the private sector from taking part in mitigation efforts. Furthermore, it is believed that the recent global financial crisis has resulted in a preference for short-term rather than long-term investments. An approach to mobilize private investment is presented in Box III-4.

Box III-4. Mobilizing private investment in mitigation efforts

The Indonesian Low-Carbon Development Fund is an initiative that aims to manage the public and private sources of funding which support low-carbon development. It is an innovative way of leveraging private funding and aims explicitly to: (a) coordinate private funding to deliver large-scale capital investments; and (b) increase confidence in its Government's commitment to long-term efforts to mitigate climate change. In its initial phase, the trust fund would effectively be a grant-making unit for central government agencies, with a mandate specific to climate change.

3.3 POLICY INSTRUMENTS

Countries reported that national policy instruments with few specific local or regional policy instruments are available. National-level policy has been identified as a critical building block in providing an enabling environment for the implementation of activities to support climate change adaptation and mitigation (Box III-5).

A national climate change policy embedded within an overriding National Development Plan has been adopted by Costa Rica while Ghana, Indonesia and Pakistan are currently developing a similar approach. This is necessary to ensure that climate change activities at a national level receive direct and specific budget allocation.

Mali has an established policy framework, the Strategic Framework for Growth and Poverty Reduction, which supports the implementation of the objectives of the country's National Environmental Protection Policy. This policy is aimed at achieving sustainable economic and social development by ensuring food security, decreasing pollution and reducing the degradation of natural resources and desertification. The framework, meanwhile, is identified as having the potential to integrate climate change priorities into national development plans. While this approach differs from those of other countries that have adopted a national climate change policy couched within their national development plan, the approach will nevertheless result in the same outcome, namely climate change actions aligned to the national priorities of growth and poverty reduction.

One of the gaps identified is the apparent lack of policies and initiatives to promote private sector investment, be it through private sector incentives or private-public sector partnerships as stated by Egypt and Ghana (Table III-4).

Box III-5. **The link between climate change policy and national development plans**

Indonesia took a number of actions have since been taken to address this issue, including the launching of the National Action Plan on Climate Change, the establishment of the National Council on Climate Change, the establishment of Indonesia's Climate Change Trust Fund and the drawing-up of a roadmap for mitigation actions. Consequently, Indonesia's Medium-term Development Plan 2009 – 2014 will reflect a more robust climate change policy in the country through the integration of climate change priorities into development planning both nationally and locally.

Table III-4. **Existing and prospective national policy instruments and initiatives to implement climate change activities, by country**

	National policy instruments and initiatives	
Country	**Existing**	**Prospective**
Costa Rica	The National Climate Change Strategy is the central policy instrument and was integrated into the National Development Plan for 2006 – 2010.	The National Climate Change Strategy will stand as a long-term policy programme. Egypt
Egypt	Not specified	Sectoral and legislative reform at national level to encourage public-private partnership;
Ghana	The second national communication is under preparation and focuses on the development of a National Climate Change Policy. National guidelines on clean development mechanism (Clean Development Mechanism) project approval have been developed to assist in the assessment of how Clean Development Mechanism projects contribute to sustainable development.	Project under implementation to mainstream climate change activities into national policy. The private sector should be given incentives to initiate climate change initiatives and foreign direct investment in mitigation actions. To ensure sustainability, legislation, laws and by-laws (building codes, etc.) to be enacted for both for the protection of climate change activities and to act as incentives to foreign investors interested in climate change activities.
Indonesia	National Action Plan on Climate Change, and roadmap for mitigation actions.	The Medium-term Development Plan 2009 – 2014 to reflect a more robust climate change policy.
Mali	The different mechanisms to address priority measures have been sorted by interventions needed from the State, banking sector, micro-finance agencies, technical and financial partners (through bilateral and multilateral cooperation), NGOs and local communities.	SFGPR, supported by the Social and Economic Development Programme and the Agricultural Orientation Law, constitutes the institutional potential for integrating climate change activities into the country's national development priorities. The Government is preparing a national plan and strategic policy reform programme.
Pakistan	The Government is currently developing a National Climate Change Policy and Plan of Action. It is expected that various financial and policy instruments will be identified and adopted under this policy as well as an action plan to address issues related to climate change.	Not specified
Philippines	A number of established policies and strategies are in place to promote mitigation of climate change and advocate sustainable development.	Not specified

3.4 INSTITUTIONAL FRAMEWORK

All participating countries have an established climate change committee, unit or department (TABLE III-5). The role of this committee/unit/department includes formulating policy and strategies (and, in some cases, formulating programmes) as well as coordinating policy implementation. However, the implementation of climate change programmes remains the responsibility of sectoral agencies.

Countries participating in NEEDS recognized the need to enhance the coordination of their climate change programmes to ensure that their climate change activities are aligned with their development targets. The existing and prospective institutional frameworks outlined by the countries for achieving this coordination differ; however, there are similarities in the themes presented. Mainstreaming climate change activities, increasing access to information and ensuring cross-sectoral coordination are identified as critical to the development of institutions that can integrate climate change priorities into development. Case studies of the different approaches that countries pursue to achieve this integration are outlined in BOX III-6.

Box III-6. Proposed approaches to integrate climate change priorities into development planning

Indonesia: Establishing a Climate Change Trust Fund

Indonesia has recognized the need for a coordinated approach to managing climate change activities and ensuring that finances received from different funds/agencies target the country's priorities. To address this issue, the Government has established the Indonesian Climate Change Trust Fund (ICCTF), intended to co-finance investments in adaptation and mitigation activities. Initially, the resources of the Fund will consist of grants from bilateral and multilateral development partners. The proposed overall objective of the Fund is to promote coordinated national action in response to climate change in Indonesia. The specific objectives of ICCTF are:

(1) To align official development assistance for climate change activities more closely with the development priorities defined by the Government;
(2) To improve the targeting of investments in climate change using decentralized structures;
(3) To improve access to financing for priority investments in climate change from existing sources of funding;
(4) To prepare a comprehensive policy framework for mitigation and adaptation;
(5) To facilitate private sector investment in climate change activities.

Costa Rica: Coordination through cross-sectoral implementation plans

Costa Rica is engaged in strategies to address climate change as a cross-sectoral development issue. The country's National Climate Change Strategy (NCCS) was integrated into its National Development Plan for 2006 – 2010. Several government agencies are involved in the implementation of national plans and programmes containing aspects of climate change; for example, water resource planning, conservation of biodiversity, environmental quality and public health, territorial planning, and energy efficiency. Costa Rica has recognized that the institutionalization of its NCCS will require a cross-sectoral implementation plan to ensure coordination across sectors.

Ghana: A National Mainstreaming Project.

A national project is under way in Ghana that seeks to mainstream climate change activities into its national policy, thus enabling a budget to be allocated to climate change activities directly. However, Ghana has recognized that, with climate change activities mainstreamed into national policy, the Government will have to evaluate financing options to meet extra demand (see section 3.2 for further details).

These different approaches outlined by the countries to achieve the coordination of their climate change activities reflect, in part, the institutions currently in place and their history of involvement in the climate change agenda. Overall, the need to coordinate activities across all sectors has been recognized, in conjunction with ensuring that climate change activities contribute to the identification of development priorities. Currently, this is being achieved with the help of overarching institutional mechanisms (such as coordinating bodies or committees), the development of cross-sectoral implementation plans, and the mainstreaming of climate change activities into national development plans.

While the above-mentioned measures ensure that climate change issues and development priorities are aligned, the institutional modifications required to enable improved access to funding have not yet been explored. Indonesia has started to tackle this issue through the creation of an ICCTF, which will ensure that funds received through multilateral and bilateral channels target the country's needs and which supports a coordinated approach to climate change mitigation and adaptation. Costa Rica is evaluating whether to create a similar fund.

Table III-5. **Existing and prospective institutional arrangements to support climate change mitigation and adaptation, by country**

	Institutional arrangements	
Country	**Existing**	**Prospective**
Costa Rica	Several government agencies involved in national plans and programmes regarding water resource planning, conservation of biodiversity, environmental quality and public health, territorial planning, and energy efficiency.	Institutionalization of National Strategy on Climate Change requires cross-sectoral implementation plan. Currently, the coordination and consultation process with public, private and civil society actors is focused on the creation of action plans for all strategic components. In addition, the country is evaluating whether to create a National Climate Change Trust Fund to ensure that policy actions can be coordinated and budgeted for effectively.
Egypt	Established a climate change unit in 1992 as the focal point for activities under the Convention and its Kyoto Protocol. Unit coordinates and integrates all national and international climate change activities. Unit recently upgraded to become Central Department of Climate Change. National Committee on Climate Change (NCCC) supervises development of climate change policies. In 2005, the designated national authority for the clean development mechanism established.	Recognized the need to step-up efforts to address adaptation. Opportunity to establish an independent national committee for scientific and technological advice to assist, in addition to existing bodies, top-level decision makers. Plans to establish a national research entity dealing exclusively with aspects of climate change: science, impacts and abatement, and networking with research institutes.
Ghana	No national institutional framework through which funds for climate change activities can be channeled. The Ministry of Environment hosts an NCCC, which is mandated to review policies and programmes that will both complement the national development priorities and contribute to reducing greenhouse gas emissions and increasing carbon sinks. The Ministry of Environment is the focal point for the country's climate change activities. The Environmental Protection Agency coordinates all climate change issues in Ghana. Since 1997, a special Conventions and Projects Implementation Department has been established within the Agency to act as the 'desk' for implementation of measures related to climate change.	The Ministry of Finance and Economic Planning will be the main institution responsible for the budgeting and implementation of funds for climate change activities. Once the project to ensure that climate change priorities are mainstreamed into national policy is compete, it can then allocate funds for national programmes. This institutional arrangement provides an important framework to ensure the sustainability of climate change programmes on the national agenda. Recommendation that, to the extent possible, work on the NEEDS should be institutionalized in order to facilitate and ensure continuity of such work in the future.

Table III-5. **Existing and prospective institutional arrangements to support climate change mitigation and adaptation, by country** (continued)

	Institutional arrangements	
Country	**Existing**	**Prospective**
Indonesia	National Council on Climate Change, chaired by the country's President and consisting of an Operating Secretariat and seven thematic Executive Working Groups responsible for: (1) mitigation, (2) adaptation, (3) technology transfer, (4) the financial mechanism, (5) land use, land-use change and forestry, (6) the post-2012 programme, and (7) the Science Basis and Climate Data Inventory. Council has the primary responsibility for formulating national policy, strategies and programmes as well as for coordinating all implementation of policy related to climate change control, covering mitigation, adaptation, technology transfer and financing activities. Implementation of climate change programmes remains the responsibility of sectoral agencies and regional governments.	Government has recognized the importance of effectively managing the multiple sources of financing for mitigation and has evaluated options to support the management of this financing. Indonesian Climate Change Trust Fund established to co-finance investments in adaptation and mitigation, and promote coordinated national action in response to climate change. Will be establishing a Low-Carbon Development Financing Facility under the Ministry of Finance, with the aim of developing a mechanism to manage public and private funding in support of low-carbon development. Facility expected to leverage private funding, ensure coordination of funds and demonstrate the Government's commitment to efforts to mitigate climate change.
Mali	Not specified	The future creation of the National Committee on climate change should boost integration of climate change in the national development priorities.
Pakistan	Prime Minister's Committee on Climate Change established in 2005. Ministry of Environment currently developing a National Climate Change Policy and Plan of Action, in collaboration with the Planning Commission. Planning Commission preparing national plans covering all socio-economic sectors, and monitoring and evaluating the implementation of major development projects and programmes. Report by the Task Force on Climate Change, established by the Planning Commission in October 2008 to facilitate formulation of climate change policy, imminent.	Not specified
Philippines	Inter-Agency Committee on Climate Change established in 1991 to provide the Government with technical support on matters concerning climate change. National Action Plan on Climate Change created in 1997.	The Philippines recently passed the Climate Change Act of 2009 creating the Climate Change Commission. The Commission is chaired by the President and will absorb the work of Interagency Committee on Climate Change. The aim of the Commission is to mainstream climate change into the formulation of government policy by setting up a National Framework Strategy and Program on Climate Change. It will also coordinate, monitor and evaluate the government's programs and actions to mitigate and adapt to the effects of climate change.


SISTEMA DE COMBUSTIÓN
SISTEMA DE COMBUSTIÓN

IV. COUNTRY REPORTS

Summary reports for each of the seven countries participating in the NEEDS that are under consideration in this report are presented in this section. This information was provided by the participating countries to the secretariat as a summary of the progress made to date through their activities under the NEEDS.

In general, the work completed by the countries for the NEEDS focused on the status of their GHG emissions and adaptation, projections and mitigation scenarios; the cost of implementing the needed mitigation and adaptation measures; and the policy and financial approaches to aid implementation of these measures. In the case of the Philippines, it provided information on its assessment of the historic and current financial flows into the country for the purpose of climate change mitigation and adaptation as well as the channels through which the funds flowed and the sectors that received) them, noting at the same time whether the flows are adequate and meet the country's priority needs.

Overall, while the briefs presented below all follow a similar format as far as possible, it is important to recognize the differences in approaches and experience by each country, which has enriched the implementation of the NEEDS.

4.1 COUNTRY PROFILE: COSTA RICA

4.1.1 OVERVIEW

4.1.1.1 NATIONAL DEVELOPMENT PLANS AND PRIORITIES IN THE CONTEXT OF CLIMATE CHANGE

Climate change is a priority in Costa Rica's national policy. The country has been actively involved in UNFCCC initiatives since the mid 1990s, particularly in projects that generate carbon credits, and has more recently developed several mitigation projects under the Clean Development Mechanism. The country's national climate change strategy consists of six strategic areas (mitigation, adaptation, metrics, capacity building, public awareness and education, and financing), with the common goal of mainstreaming climate change policy in line with the national strategies for achieving long-term competitiveness and sustainable development.

A key target is to achieve carbon neutrality by 2021, by strengthening efforts to achieve an economy that is less fossil-fuel-intensive and to reduce GHG emissions. These efforts are part of a broader approach based on sustainable development, integrated within the Peace with Nature Initiative. This initiative, based on the country's historical tradition of conservation and protection of natural resources, is aimed at creating suitable conditions for sustainable development, and integrating the environment (natural capital) into the long-term equation of economic growth and human development.

4.1.1.2 STATUS OF GREENHOUSE GAS EMISSIONS, PROJECTIONS AND MITIGATION SCENARIOS

GHG emissions have increased in Costa Rica in recent years, owing largely to the growth in energy consumption and agricultural production. The main source of emissions is the combustion of fossil fuels to satisfy the demand for energy in the transport sector. Transportation activities account for 75 per cent of the total energy-related emissions and 34 per cent of the country's total emissions. Meanwhile, activities related to agriculture and cattle production, and waste generation account for 37 and 11 per cent of total national emissions, respectively. On the other hand, land-use change and forestry contributes to removing the equivalent to about 30 per cent of the country's total emissions. TABLE IV-6 illustrates the main sources of GHG emissions in Costa Rica.

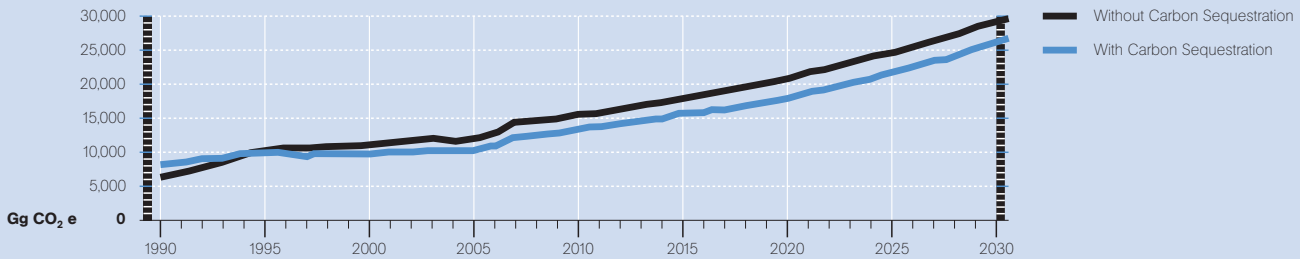
Projections of GHG emissions under a BAU scenario, based on an average annual rate of GDP growth of 4 per cent, indicate that Costa Rica's total net emissions (including carbon sequestration from forestry and REDD activities) will reach 17,975 Gg CO_2 eq in 2020 and continue increasing up to 26,158 Gg CO_2 eq by 2030 (see FIGURE IV-2). The energy sector's contribution to these emissions will continue to grow, more than offsetting the relative reduction in emissions from the agriculture, industrial processes and waste management sectors.

Abatement efforts will focus on the energy and agriculture sectors. Currently, the country is evaluating different mitigation options, with alternative scenarios and contributions from each sector. For instance, if the target is to stabilize the country's emissions at 2005 levels by 2021, this requires emissions to be reduced by 52 per cent in the energy sector and by 100 per cent in the industrial processes sector (see FIGURE IV-3).

Table IV-6. **Greenhouse gas emissions in Costa Rica, by sector**

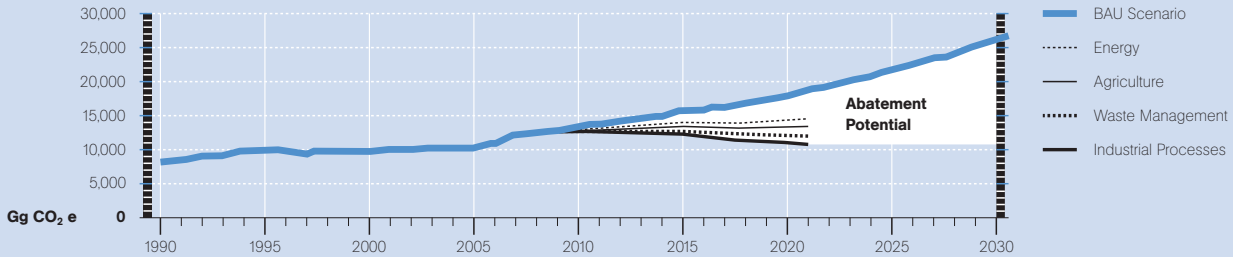
Sector	Emissions (Gg CO_2 eq) 2000	2005
Energy	4,805.6	5,688.6
Industrial processes	449.8	672.5
Agriculture	4,608.6	4,603.9
Land-use change and forestry	– 3,160.5	– 3,506.7
Waste management	1,236.9	1,320.9
Total	7,940.5	8,779.2

Figure IV-2. **Historic and projected greenhouse gas emissions in Costa Rica[a]**



Source: Instituto Meteorológico Nacional.
[a] Projections after 2005.

Figure IV-3. **Projected reduction in greenhouse gas emissions in Costa Rica by 2021, by sector**



Source: Instituto Meteorológico Nacional.
Abbreviation: BAU = business as usual.

4.1.2 KEY FINDINGS

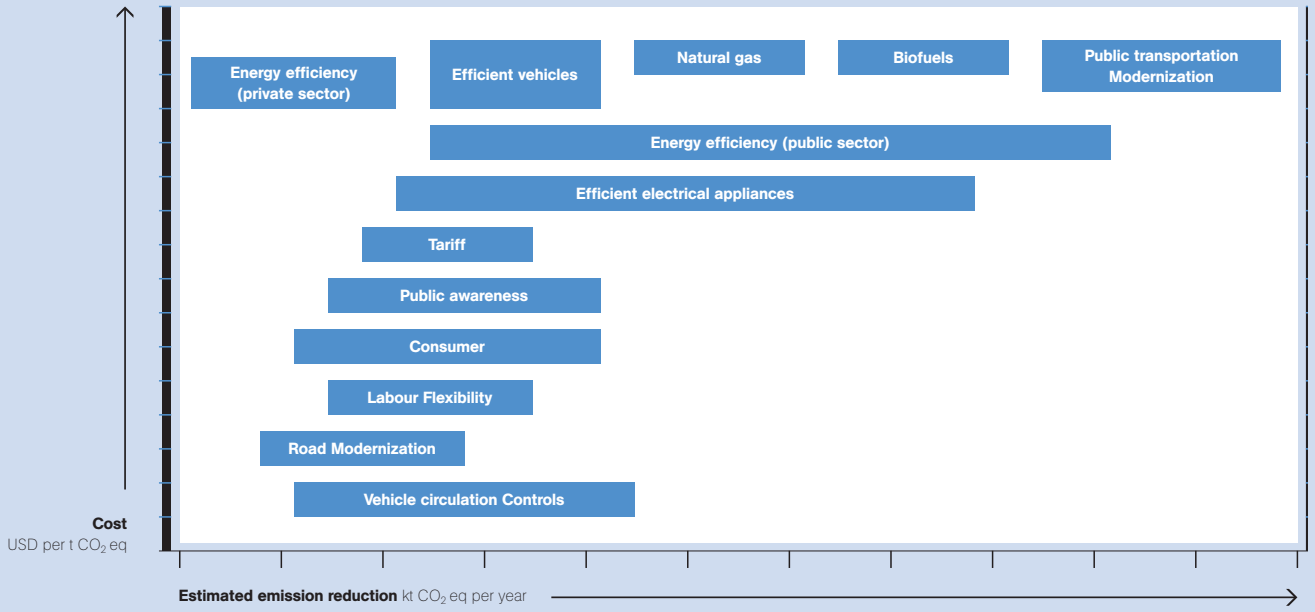
4.1.2.1 COST OF IMPLEMENTING PRIORITY MITIGATION AND ADAPTATION MEASURES

Potential mitigation activities for the energy and transport sectors are currently under investigation, with the corresponding potential for emission reductions shown in FIGURE IV-4. Estimated costs of abatement projects in the energy and transport sectors have been produced by Costa Rica. The cost/t CO_2 eq reduction ranges from USD −150 to USD 20. Several options in the biodiversity and water resources sectors are currently being evaluated in order to establish the potential cost of adaptation measures.

4.1.2.2 FINANCIAL AND POLICY INSTRUMENTS TO SUPPORT THE IMPLEMENTATION OF PRIORITY MITIGATION MEASURES

Costa Rica has invested USD 400 million in reducing deforestation since the mid 1990s. In addition, more than 90 per cent of the country's electricity is generated from renewable sources. The sources of finance for these efforts have been mainly taxes (on fossil fuels) and foreign debt. International cooperation has played a positive but minor role. The Government has allocated more resources for proactive adaptation and mitigation planning in order to reduce the country's vulnerability and avoid emergency and recovery expenditures. Additionally, design criteria for urban planning, infrastructure building, codes for house building, and spatial zoning of human settlements have been incorporated into the country's general vulnerability and risk mitigation strategy.

Figure IV-4. **Mitigation initiatives in the energy and transport sectors in Costa Rica and their emission reduction potential for 2021**



Source: Dirección Sectorial de Energía.

International carbon markets will be an important source of financing if transactions for LULUCF projects (where Costa Rica has a comparative advantage) become more relevant. Forestry conservation and REDD-related projects have great potential to finance mitigation measures. Policy instruments to protect natural barriers and ecosystems that contribute to resilience (such as taxes on fossil fuels) and economic incentives (such as research and development subsidies for technological change) should also be incorporated. Diversified insurance instruments are not well developed in Costa Rica. In this regard, support from international development and private financial organizations would be beneficial.

Costa Rica is currently evaluating whether to create a National Climate Change Trust Fund, which could be funded with local and international, public and private funds. This type of financial instrument would allow policy actions to be effectively coordinated and budgeted for. The country is engaged in various strategies that address climate change as a cross-sectoral development issue. Costa Rica's NCCS is the central policy instrument, integrated into its National Development Plan for 2006 – 2010, which will stand as a long-term policy programme. Several government agencies are involved in national plans and programmes regarding water resource planning, conservation of biodiversity, environmental quality and public health, territorial planning, and energy efficiency, among other efforts related to sustainable development, closely related to the country's climate change priorities. The institutionalization of the country's NCCS requires a cross-sectoral implementation plan. Currently, the coordination and consultation process with public, private and civil society actors is focused on the creation of action plans for all strategic components. In addition, details of the country's carbon neutrality standards are being discussed.

4.1.3 LESSONS LEARNED

In Costa Rica, climate change policy is a priority in its national development plan, because of its potential implications for competitiveness, economic growth and human development. Forest conservation, environmental services' payments, and REDD activities have significant potential for expansion, with competitive abatement costs. Many actions are required in the energy sector, related mainly to the modernization of public transport.

Cost varies depending on the initiative, with many measures generating net mitigation benefits (negative costs) and important emission reductions. The economy's energy productivity must increase, with more efficient processes, upgraded technologies, reduction of waste and investment in renewable energy sources. Preliminary estimates of abatement costs indicate the need for a radical change in public policy and business strategy. Significant investment is needed to reduce emissions and achieve carbon neutrality by 2021, which requires both public and private action. The creation of a carbon-neutral business environment is a government responsibility, but demands innovation and funding from private companies. Many mitigation options have upfront costs; hence, the creation of targeted financial instruments is required. In addition, mitigation planning, together with effective emergency response strategies and mechanisms, should have proper financing and be closely coordinated with key actors in the public and private sectors and the community.

4.2 COUNTRY PROFILE: EGYPT

4.2.1 OVERVIEW

4.2.1.1 NATIONAL DEVELOPMENT PLANS AND PRIORITIES IN THE CONTEXT OF CLIMATE CHANGE

To enhance adaptation planning and the development of mitigation strategies in Egypt, it is important to: improve scientific capacity; apply a bottom-up approach; develop community-based measures by involving stakeholders in adaptation planning; and increase public awareness and the adaptive capacity of the community. Identified priorities include: establishing a national programme for integrated coastal zone management; improving the current crop pattern; developing a crop calendar adapted to the projected climate changes; improving on-farm irrigation systems; and developing a special funding programme for adaptation and risk reduction activities specific to the coastal zone and agriculture sectors.

Egypt's Strategy for Energy Supply and Use incorporates the main policies and measures that have the potential to meet the country's long-term challenges, including ensuring the security of energy supplies and the sustainability of current energy use as well as abating GHG emissions. Actions to reduce GHG emissions from the energy sector are prioritized in Egypt's mid-term strategy [is there a time period for strategy?], including using renewable energy, increasing energy efficiency, using lower-carbon fuels, adopting nuclear power and improving transportation fleets.

4.2.1.2 STATUS OF GREENHOUSE GAS EMISSIONS, PROJECTIONS AND MITIGATION SCENARIOS

Egypt's energy sector is heavily reliant on hydrocarbons and, with continued social and economic development, this reliance is expected to continue increasing. The growth in the consumption of hydrocarbons from 2006/2007 – 2026/2027 was estimated according to three different scenarios. The base scenario used considered starting a nuclear power programme in conjunction with grid-connected wind farms and increased energy efficiency.

Egypt's NEEDS identified 10 priority mitigation programmes in the energy sector. These programmes include large-scale grid-connected wind farms, integrated solar power plants, expanded use of domestic solar water heating units, expanded use of photovoltaic systems, expanded use of energy-efficient lighting, construction of nuclear power plants, construction of gas-fired combined-cycle power plants and gas-fired steam thermal power plants, and the renewal of aging taxi vehicles in the Greater Cairo region.

4.2.1.3 VULNERABILITY ASSESSMENT AND ADAPTATION SCENARIOS

The northern coast of Egypt and the Nile Delta are vulnerable to the impacts of climate change, especially sea level rise, owing to their high population density and concentration of agricultural activities. Climate change impacts were modeled for 2020 and 2050 ('worst case' scenario), indicating severe loss of land and damage to crop production in the absence of adaptation measures (see TABLE IV-7).

4.2.2 KEY FINDINGS

4.2.2.1 COST OF IMPLEMENTING PRIORITY MITIGATION AND ADAPTATION MEASURES

With regard to Egypt's planning of mitigation measures, the projected cost of implementing the optimum mitigation measures is USD 90 billion and USD 270 billion in 2020 and 2050, respectively. Depending on the specific combination of mitigation measures adopted, the cost could range from USD 15 – 90 billion in 2020 and from USD 45 – 270 billion in 2050. A summary of Egypt's proposed adaptation programmes and the corresponding funding requirements is provided in TABLE IV-8.

Table IV-7. **Total area of land in Egypt affected and percentage of the Nile Delta affected under the 'worst case' and 'incorporating adaptation measures' climate change scenarios**

	2025		2050		2075		2100	
	A1F1	A1M1	A1F1	A1M1	A1F1	A1M1	A1F1	A1M1
Total land area affected (km^2)	701.00	152.86	766.50	256.27	2,348.00	450.00	2,938.00	761.40
Area of Nile Delta affected (%)	2.80	0.61	3.10	1.03	9.40	1.80	11.75	3.01

Abbreviation: A1F1 = 'worst case' scenario, A1M1 = 'incorporating adaptation measures' scenario.

Table IV-8. **Estimated cost of Egypt's adaptation actions and programmes for 2020 and 2050**

	Finance required (USD million)	
Programmes	**in 2000**	**in 2005**
1. Observation and control of climate change	90.0	210.0
2. Land and agricultural production	210.8	948.0
3. Water	2,055.0	2,150.0
4. Coasts and sea shore regions	330.0	620.0
5. Socio-economic studies	16.0	28.0
6. Capacity building, enlightenment and training	17.0	51.0
Total finance required	2,718.8	4,007.0

4.2.2.2 FINANCIAL AND POLICY INSTRUMENTS

A number of local, national, regional and international financial and policy instruments address climate change impacts in Egypt. These are:

- The national budget;
- International cooperation (bilateral and multilateral);
- The financial mechanism of the Convention (Climate Change focal area of GEF trust fund);
- The Adaptation Fund;
- The Clean Development Mechanism;
- Other funds established by the World Bank.

Other financial and policy instruments to consider are: funding under the Convention for vulnerable countries from the Adaptation Fund of the Kyoto Protocol; funding from the proposed international fund for technology transfer; and sector-specific and legislative reform at the national level to encourage public-private partnerships and enhanced private sector involvement.

4.2.2.3 EXISTING AND POTENTIAL INSTITUTIONAL ARRANGEMENTS TO SUPPORT INTEGRATION OF CLIMATE CHANGE PRIORITIES INTO NATIONAL DEVELOPMENT PLANS

Egypt's Department of Climate Change coordinates all national and international climate change activities. Egypt also has an NCCC and a Clean Development Mechanism designated national authority. Both are headed by the Minister of Environment and include high-level representatives from relevant sectors and the scientific community. To assist the country in dealing with the increasing challenge of climate change, it would be advisable for Egypt to establish an independent national committee for scientific and technological advice to assist top-level decision makers. In addition, a national research entity dealing specifically with climate change science, impacts, abatement, and networking with research institutes relevant to climate change issues should be established. This research facility would also act as a think tank for the Government to define and prioritize needs related to climate change and ascertain the availability of policy instruments to meet those needs.

4.2.3 LESSONS LEARNED

4.2.3.1 CHALLENGES AND OPPORTUNITIES

Some of the challenges and opportunities for Egypt are: to extend the NEEDS to cover other sectors; to establish a virtual centre of excellence for climate change information, networked with other relevant databases in different sectors and regions; to mainstream climate change activities into its national action plans; to increase public awareness; and to foster climate change monitoring and observation systems.

4.2.3.2 POSSIBLE NEXT STEPS

- The development of an NCCS
- The development of a NAPA and national low-carbon economy plan
- The establishment of a strong system for disseminating information on climate change and its impacts on agriculture

4.3 COUNTRY PROFILE: GHANA

4.3.1 OVERVIEW

4.3.1.1 NATIONAL DEVELOPMENT PLANS AND PRIORITIES IN THE CONTEXT OF CLIMATE CHANGE

Two major principles underpin Ghana's long-term goals with regard to sustainable development: to establish and maintain a robust built and natural environment that sustains productive economic activities and pleasant living conditions for both present and future generations; and to establish an environmentally conscious society that exercises self-discipline at all times with regard to individual and common behaviour towards the environment. Consequently, environmental objectives are embedded in Ghana's national targets, including:

- To halve the current levels of chemical and particulate air pollution by 2020;
- To stop and reverse deforestation and desertification by 2020;
- To achieve sustainable exploitation and protection of forest resources;
- To substantially increase the use of renewable energy sources;
- To substantially decrease the use of chemical fertilizers;
- To improve water and air quality.

4.3.1.2 STATUS OF GREENHOUSE GAS EMISSIONS, PROJECTIONS AND MITIGATION SCENARIOS

Ghana's GHG inventory indicated that CO_2 accounts for the largest share of the country's GHG emissions by source, with methane and nitrous oxide also contributing to the national total. The main emission sources are agriculture, combustion of biomass, human waste, land-use change and forestry, and grassland conversion. Conversely, removals from forested and afforested lands currently offset the country's total CO_2 emissions. The energy sector is the largest source of emissions in Ghana. The GHG emission projections indicate that emissions will increase from 7,278 to 118,405 Gg CO_2 eq between 1994 and 2020, to 234,135 Gg CO_2 eq by 2030, and then to 519,826 Gg CO_2 eq by 2050. With regard to mitigation, four abatement scenarios were applied in order to evaluate the different levels of emission reduction and costs of abatement. The results are presented in Table IV-9.

4.3.1.3 VULNERABILITY AND ADAPTATION ASSESSMENT

An assessment of Ghana's vulnerability to climate change and an analysis of the corresponding adaptation measures needed were conducted for key sectors. Major findings included a temperature rise of about 1°C over a 30-year period and reductions in rainfall and run-off by approximately 20 and 30 per cent, respectively. The agriculture sector is most vulnerable to increases in temperature. A vulnerability assessment for the coastal zone indicated that a total of 1,110 km^2 land area could be lost as result of a 1 m rise in sea level by 2100.

4.3.2 KEY FINDINGS

4.3.2.1 COST OF IMPLEMENTING PRIORITY MITIGATION AND ADAPTATION MEASURES

Energy and forestry are the key sectors for mitigation in Ghana. The country's INC (2000) indicated that its energy sector requires USD 309 million in 2020 and USD 314 million in 2050 in additional investments per year for energy-efficient equipment to reduce emissions by 5 per cent. Required additional investment in the forestry sector, aimed primarily at reforestation to increase GHG sinks, amounts to USD 3.9 million per year by 2020 and USD 81.1 million per year by 2050. The transport subsector, responsible for consumption of 60 per cent of all petroleum consumed in Ghana, requires additional investment of USD 6.58 million per year in 2020 and USD 6.55 million per year by 2050.

The incremental cost of adaptation in the health sector is estimated at USD 350 million per year by 2020. This figure may increase to USD 352 million per year by 2050. Controlling malaria will cost, per year, approximately USD 7.6 million in 2020 and USD 7.54 million in 2050. The agriculture sector will require, per year, approximately USD 334.24 million in 2020 and USD 336.30 million in 2050.

The costs of implementing priority adaptation and mitigation measures in Ghana are summarized by sector in Table IV-10.

Table IV-9. **Cost of reducing emissions under different abatement scenarios in Ghana**

Abatement scenario	Emission reduction (Gg CO_2)	Cost (USD/Gg)
I	494 506	33.22
II	700 044	27 701.56
III	712 515	6 932.22
IV	543 778	9 448.86

Table IV-10. **Finance required for priority mitigation and adaptation measures, by sector, in Ghana**

	Finance required per year (USD million)	
Sector	in 2020	in 2050
Energy	309.00	314.00
Transport	6.58	6.55
Forestry	3.90	81.10
Health	350.00	352.00
Health – controlling malaria	7.60	7.54
Agriculture	334.24	336.30

4.3.2.2 FINANCIAL AND POLICY INSTRUMENTS

Tax revenue, national health insurance levies, import exemptions, and banking and private sector investments are the primary sources of domestic financial resources in Ghana. However, currently there are no specific domestic or private sector budget allocations for climate change mitigation or adaptation activities. Rather, ODA is provided via grants and multilateral agencies and is commonly used for on-ground sector-specific projects. Agencies and funds under the Convention, such as United Nations Development Programme, World Bank, Danida, United Nations Environment Programme (Climate Change and Development – Adapting by Reducing Vulnerability), UNFCCC, GEF, Clean Development Mechanism, Adaptation Fund and SCCF, are other important sources of funding for adaptation and mitigation projects in Ghana.

A national project to mainstream climate change priorities into national policy is under way, with a view to climate change activities receiving a specific budget allocation. The private sector requires incentives to initiate climate change activities, and FDI in mitigation and adaptation should be encouraged.

4.3.2.3 EXISTING AND POTENTIAL INSTITUTIONAL ARRANGEMENTS TO SUPPORT INTEGRATION OF CLIMATE CHANGE PRIORITIES INTO NATIONAL DEVELOPMENT PLANS

Ghana's EPA coordinates all climate change issues. EPA, together with the country's National Development Planning Commission and Regional Coordinating Councils, is coordinating cross-sectoral mainstreaming activities with other key agencies and stakeholders. The mainstreaming process targets policy formulation, planning, budgeting, implementation, monitoring and evaluation. The Ministry of Finance and Economic Planning is responsible for budgeting and allocation of climate change funds. Once Ghana's climate change priorities have been mainstreamed into its national policy, the Ministry can then allocate funds for national programmes. Despite these advancements, currently there is no national institutional framework to manage investment in climate change activities.

4.3.3 LESSONS LEARNED

4.3.3.1 CHALLENGES AND OPPORTUNITIES

Ghana's main challenges in implementing its proposed national communication strategies and achieving its national targets include:

- To integrate environmental considerations into decision-making on development, at the national and subnational levels;
- To increase access to information on, and improve understanding of, environmental issues;
- To establish an appropriate institutional framework and mechanisms to facilitate integration of environmental considerations into development plans;
- To encourage the adoption of more effective management practices and technology;
- To ensure compliance with environmental standards and regulations;
- To apply the 'polluter pays' principle in order to prevent reckless environmental destruction.

4.4 COUNTRY PROFILE: INDONESIA

4.4.1 OVERVIEW

4.4.1.1 NATIONAL DEVELOPMENT PLANS AND PRIORITIES IN THE CONTEXT OF CLIMATE CHANGE

Indonesia is vulnerable to the impacts of climate change owing to its physical setting and archipelagic structure. Despite this, climate change mitigation and adaptation are not currently included in the nine national development priorities in the country's Medium-term Development Plan (2004 – 2009). This policy shortfall in addressing climate change has been recognized by the Indonesian Government. In response, a series of initiatives have been launched, including a National Action Plan on Climate Change, the creation of a National Council on Climate Change, the operation of its Indonesian Climate Change Trust Fund and the development of a roadmap for mitigation actions. Solid national leadership and an active international role have enabled Indonesia to foster widespread national awareness and understanding of the importance of integrating climate change priorities into its development plans nationally and locally. In 2008, the National Council on Climate Change, chaired by the President of Indonesia, was established to serve as the national focal point for climate change activities. It has primary responsibility for formulating national policies and programmes and coordinating their implementation, including mitigation, adaptation, technology transfer and financing activities.

4.4.1.2 STATUS OF GREENHOUSE GAS EMISSIONS, PROJECTIONS AND MITIGATION SCENARIOS

In Indonesia, the forestry sector is overwhelmingly the largest contributor of GHG emissions (85 per cent), followed remotely by the energy sector (9 per cent). At present, however, emissions from the forestry sector are largely and increasingly controllable thanks to the increased enforcement of laws against illegal logging. Nevertheless, there is room for improvement. Emission projections for 2020 compared with the current level of emissions, as in 2005, are shown in TABLE IV-11. Emissions from the energy sector are expected to more than double from 2005 to 2020, while small increases are expected in the emissions from the agriculture and forestry sectors. Unfortunately, there is no projection for emissions from the forestry sector, as the emission factors remain uncertain.

Under a BAU scenario, Indonesia's GHG emissions will continue to increase. It is projected that Indonesia will emit up to 3.6 Gt CO_2 eq in 2030. Furthermore, under three different scenarios of GDP growth, emissions are then projected to increase to between 5 Gt CO_2 eq and 6 Gt CO_2 eq by 2050 (see FIGURE IV-5). An abatement scenario (see FIGURE IV-6) identified ample opportunity for Indonesia to implement low or no-cost options to reduce its emissions. Increasing energy efficiency in energy-intensive industries has the greatest potential for making cost-effective emission reductions, followed by the reduction of emissions from deforestation and the degradation of forests, and the use of hydro and geothermal technologies for electricity.

Table IV-11. Current and projected emissions in Indonesia, by sector

Sector	Emissions in 2005 (Gg)	Projected emissions for 2020 (Gg)
Energy	275.37	275.37
Agriculture	226.92	253.44
Forestry	2,563.00	–
Waste	34.51	40.07
Total	3,099.80	–

Source: United States Environmental Protection Agency, 2006.

Figure IV-5. **Emission projections for 2030 to 2005 in Indonesia**

2005 – 2030

- Emissions projections based on bottom up analysis published in interim DNPI report

2030 – 2050

- **Scenario 1 (lower bound):** Emissions growth rate from 2030 based on expected growth rate between 2005 – 2020 (1.6%); period of low-moderate GDP growth
- **Scenario 2 (medium bound):** Emissions growth rate from 2030 based on expected growth rate of entire DNPI report 2005 – 2030 (2%)
- **Scenarion 3 (high bound):** Emissions growth rate based of emissions from 2020 – 2030 (2.5%); period of moderate-high GDP growth

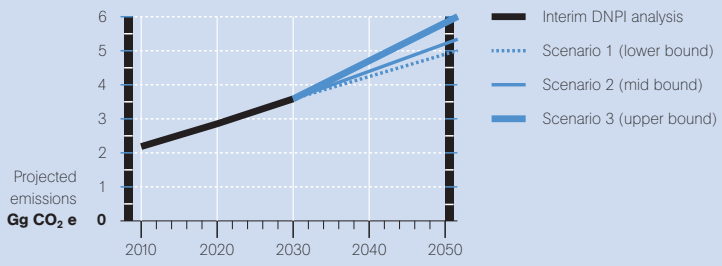
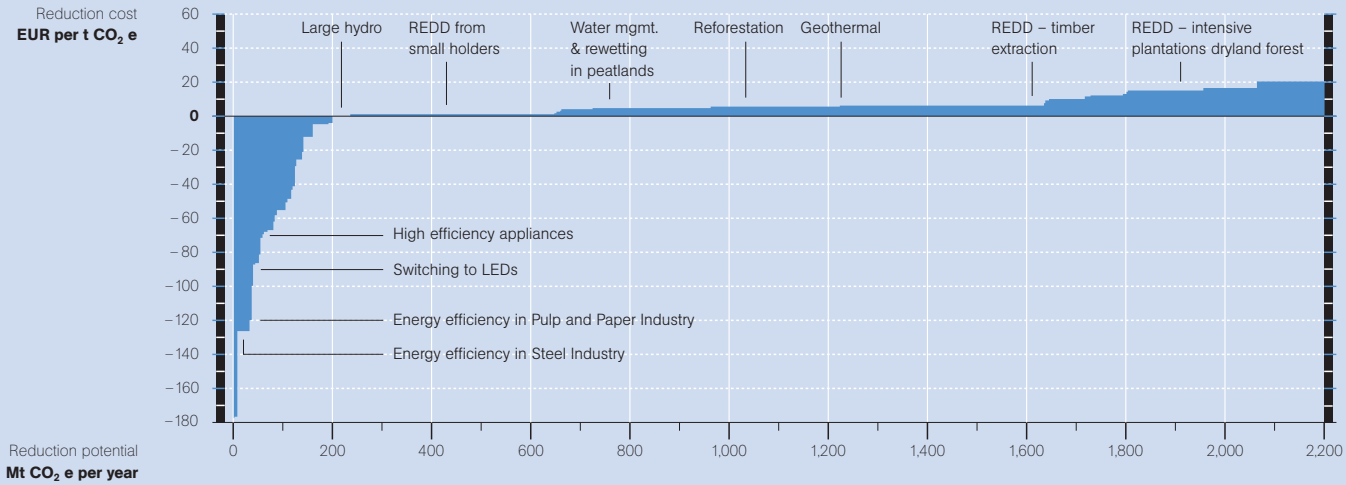


Figure IV-6. **Abatement scenario for Indonesia**



4.4.2 KEY FINDINGS

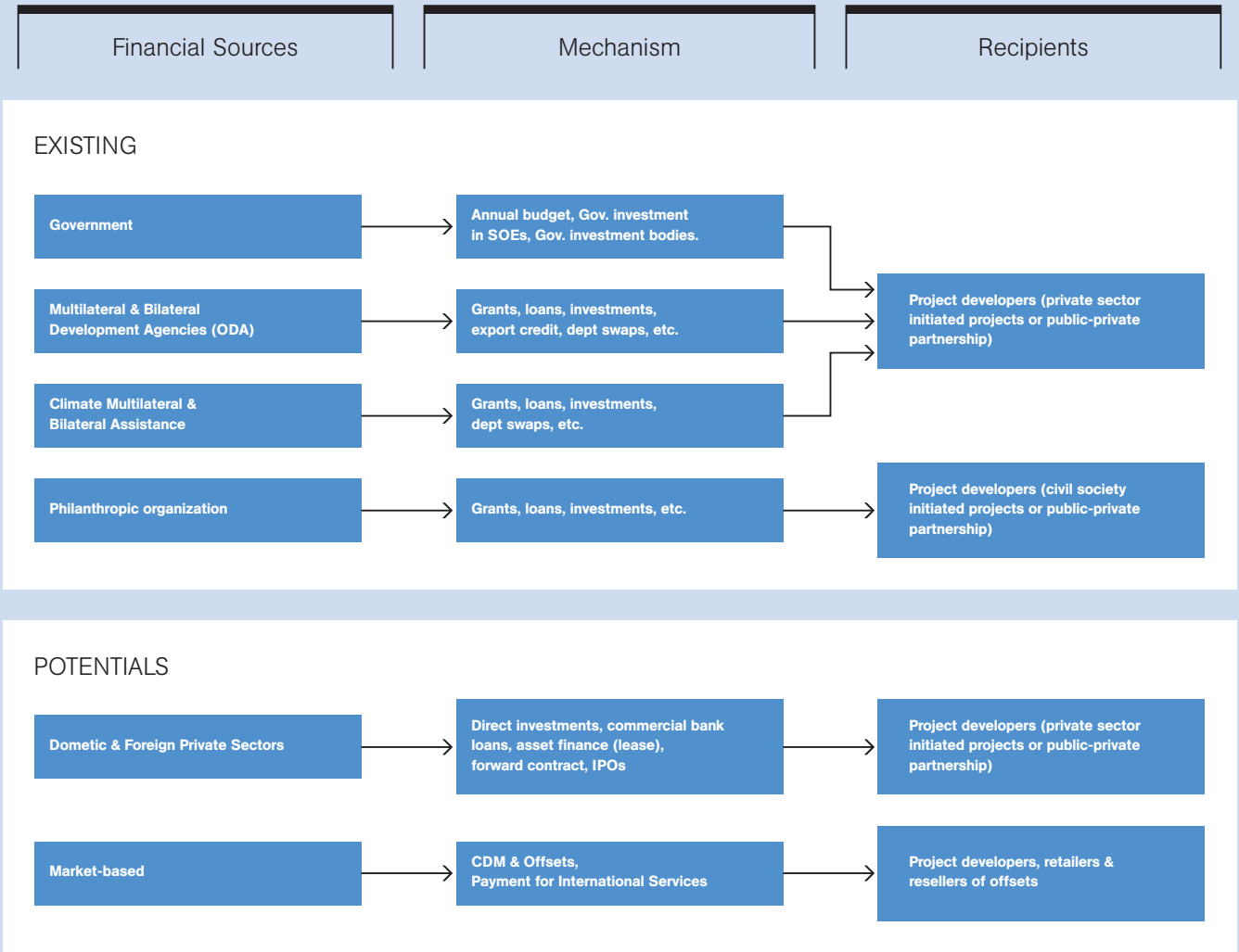
4.4.2.1 COST OF IMPLEMENTING PRIORITY MITIGATION MEASURES

The average annual cost of the potential mitigation measures proposed until 2030 is EUR 12.84 billion, equivalent to approximately 5.6 per cent of Indonesia's GDP in 2005. However, from 2010 onwards, this annual cost of abatement is expected to account for 0.9 per cent of the country's projected GDP in 2030 due to Indonesia's rapidly increasing GDP.

4.4.2.2 FINANCIAL AND POLICY INSTRUMENTS TO SUPPORT IMPLEMENTATION OF PRIORITY MITIGATION MEASURES

As shown in FIGURE IV-7, in-country recipients of the financial flows in Indonesia include private project developers as well as retailers and resellers of carbon credits. For the public financing sources, the mechanisms to deliver such financial flows include the annual government budget, grants, loans, investments, export credits and debt swaps. For the private financing sources, the mechanisms include direct investment, commercial bank loans, asset financing (leases), forward contracts, the Clean Development Mechanism and other carbon credit mechanisms.

Figure IV-7. **Summary of existing and potential financial sources, mechanisms and recipients, with regard to financing for mitigation in Indonesia**



Recognizing the importance of effectively managing the multiple sources of financing for mitigation, the Indonesian Government has evaluated options to support the management of this financing, including:

- The establishment of its ICCTF;
- The establishment of an Low-Carbon Development Financing Facility under the Ministry of Finance;
- The establishment of a Special Purpose Mutual Fund;
- The establishment of a public services company.

LCDFF and ICCTF are considered the most viable options. The intention of ICCTF is to co-finance investments in adaptation and mitigation to promote coordinated national action in response to climate change. The aim of LCDFF, meanwhile, is to develop a mechanism to manage public and private funding in support of low-carbon development. LCDFF is expected to leverage private funding, ensure the coordination of funds and demonstrate the Government's commitment to efforts to mitigate climate change.

There is often a reluctance to invest in climate change mitigation because the development of low-carbon infrastructure requires significant investment up front. Policy instruments and regulatory frameworks to support climate change mitigation can take a number of forms, including tax differentiation, depreciation, import tax breaks, subsidies, tax treatment of carbon market revenue, emission fees or user charges, risk guarantees and transport sector charges. Currently, no specific tax policy instruments have been applied to products related to carbon finance. However, several specific tax exemptions exist for certain areas of investment, for example Government Regulations 1/2007 and 62/2008, which provide tax incentives for several industries.

4.4.3 LESSONS LEARNED

A number of key challenges must be addressed in order to achieve low-carbon development in Indonesia. These are:

- The mainstreaming of climate change priorities into the national development plans: Climate change and the economy are perceived as unrelated concepts in Indonesia, especially by the capital market and the banking community. This inhibits the pursuance of low-carbon development and the implementation of financial instruments to support such development.
- The coordination of government multilateral and bilateral funding: Coordination is imperative to reduce overlap and to target funding to priority mitigation areas. ICCTF aims to address this issue; however, there is a recognized need to ensure that this mechanism can work in an efficient and accountable manner.
- The generation of alternative funding through private sources and market mechanisms: High start-up costs often deter the private sector from investing in mitigation efforts. The Indonesian LCDFF aims to address this issue. In addition, Indonesia must develop the capacity, and monitoring and reporting mechanisms, to optimize the country's potential in the carbon market.
- The development of policy instruments and regulatory frameworks that support low-carbon development: Tax policy instruments are required for products related to carbon finance.

4.5 COUNTRY PROFILE: MALI

4.5.1 OVERVIEW

4.5.1.1 NATIONAL DEVELOPMENT PLANS AND PRIORITIES IN THE CONTEXT OF CLIMATE CHANGE

Mali's economy is dependent upon the country's natural resources. However, population growth and climate hazards, characterized mainly by repeated drought, have resulted in the overexploitation and deterioration of these resources. As a result, preserving the integrity of the natural environment in Mali has considerable economic repercussions. The country's major goals are:

- To include climate change in all sectoral policies and in development planning at all levels (national, regional and local);
- To reduce desertification and the silting of riverbeds, including the Niger river;
- To protect fauna and aquatic species.

Mali's Strategic Framework for Growth and Poverty Reduction (SFGPR) supports the implementation of the objectives of its National Environmental Protection Policy. The objective of this Policy is to achieve sustainable economic and social development by ensuring food security, reducing pollution, reducing the degradation of natural resources, and preventing further desertification. In 2007, 19 project ideas were developed as part of the country's National Adaptation Programmes of Action (NAPA). These projects were in compliance with the specifications of Mali's SFGPR and its Rural Development Strategy, and aligned to the provisions of post-Rio conventions.

4.5.1.2 STATUS OF GREENHOUSE GAS EMISSIONS, PROJECTIONS AND MITIGATION SCENARIOS

In the sectors of focus under this study the GHG emissions in 1995, were reported as follows: agriculture (7572.67 CO_2 eq Gg), energy (968.41 CO_2 eq Gg), waste (115.3 CO_2 eq Gg) and change in land farming and forestry (– 9748.14 CO_2 eq Gg). In total, when considering the identified sectors Mali has on net negative emissions of 1081.95 CO_2 eq Gg. Emission projections for Mali from 1995 to 2050 are shown in FIGURE IV-8.

Projections for the reduction of GHG emissions from the energy sector are presented in FIGURE IV-9, indicating a reduction of more than 60 per cent by 2020 and more than 90 per cent by 2050. Projections for the reduction in GHG emissions from the agriculture and forestry sectors indicate 60 and 40 per cent reductions by 2020 and 2050, respectively, compared to business as usual projections.

4.5.1.3 ASSESSMENT OF ADAPTATION SCENARIOS

Adaptation options were identified by Mali in the development of its initial national communication and updated as part of its NAPA. The climate change scenarios developed in its NAPA have allowed an effective and comprehensive assessment of the potential impacts of climate change on Mali, at the level of different localities, in the sectors of agriculture (millet, sorghum, maize and cotton) and water resources. The priority sectors for adaptation include agriculture, forestry, biodiversity and health.

Figure IV-8. **Emission projections for the energy sector in Mali, 1995 – 2050**

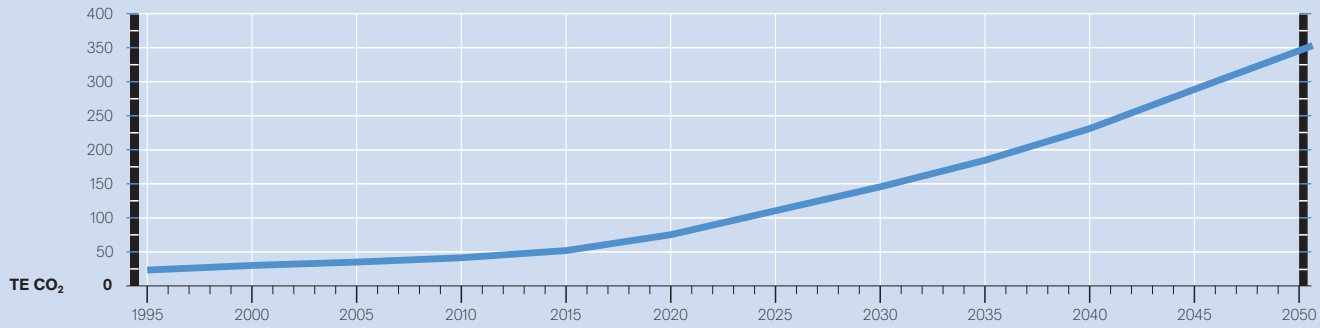
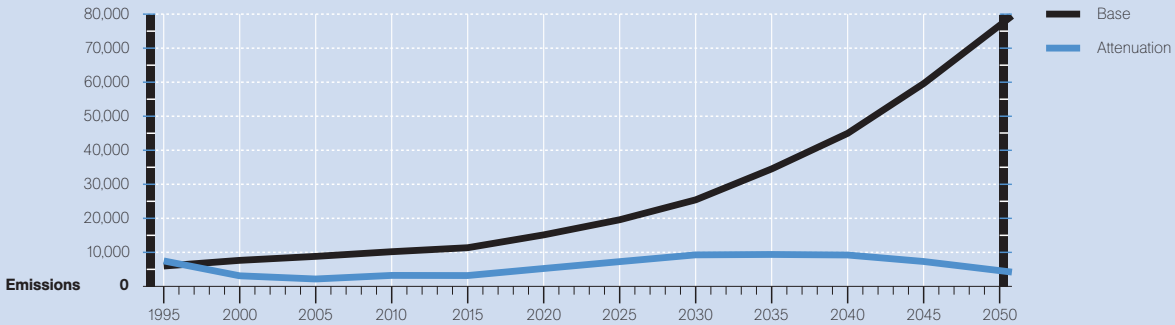


Figure IV-9. **Projected reduction in greenhouse gas emissions from the energy sector in Mali, 1995 – 2050**



4.5.2 KEY FINDINGS

4.5.2.1 COST OF IMPLEMENTING PRIORITY MITIGATION AND ADAPTATION MEASURES

Mali's cost analysis demonstrates the cost of abatement in 2000 to be 5.95 XOF[4] per kilogram of CO_2 (about USD 13 per ton of CO_2 equivalent). This value is estimated to increase to 7.07 XOF (about USD 16 per ton of CO_2 equivalent) by 2025.

In the forestry sector, the average cost of establishing plantations is 779,000 XOF/ha (USD 1,731 per hector). Costs are likely to increase from around 715 billion XOF (USD 1.59 billion) in 2000, to 5,508 billion (USD 12.24 billion) in 2020 and 16,826 billion (USD 37.39 billion) in 2050. In the agriculture sector, the cost of water management is expected to increase from 1.3 billion XOF (USD 2.88 million) in 2000, to 3.4 billion XOF (USD 7.55 million) in 2020 and 5.2 billion XOF (USD 11.55 million) in 2050. The cost of replacing a proportion of chemical fertilizer with organic manure will vary from 1.2 billion XOF (USD 2.49 million) in 2000 to around 3.0 billion XOF (USD 6.67 million) in both 2020 and 2050.

Overall, the cost of implementing the adaptation/mitigation measures under the country's SEDP framework is approximately 3,082 XOF (USD 6.8 billion) from 2008 to 2012; whereas the cost of implementing all priority mitigation and adaptation measures in Mali is estimated at approximately 26,102 billion XOF (USD 60 billion) for the same period.

4.5.2.2 FINANCIAL AND POLICY INSTRUMENTS

Financial mechanisms include state intervention (e.g. by the banking sector), micro finance, financial and technical partners (bilateral and multilateral cooperation) and NGOs. Identified sources of financial support include the National Bank of Agricultural Development of Mali (invests 45 billion XOF (USD 100 million), 90 per cent of which goes to the rural sector), decentralized financial systems (investing 1.8 billion XOF (USD 4 million)), the State (the National Fund of Agricultural Development in the context of the Agricultural Orientation Law invests at least 20 per cent of the state budget) and funds within the framework of financial and technical partners.

4.5.2.3 EXISTING AND POTENTIAL INSTITUTIONAL ARRANGEMENTS TO SUPPORT INTEGRATION OF CLIMATE CHANGE PRIORITIES INTO NATIONAL DEVELOPMENT PLANS

Mali's SFGPR, supported by its Social and Economic Development Programme (SEDP) and the Agricultural Orientation Law, constitutes the institutional potential for integrating climate change into the national development priorities. The country's actions to achieve the United Nations Millennium Development Goals constitute an additional opportunity to do so.

4.5.3 LESSONS LEARNED

The country's SEDP and Agricultural Orientation Law constitute opportunities to integrate climate change into Mali's national development priorities. Translation of these policy guidelines into action at the local level, and the implementation of adaptation programmes at the community level are ongoing challenges for the country requiring certain level of community ownership in order to be successful. In addition, establishing an National Committee on Climate Change will give impetus to the integration of climate change into the country's national development priorities.

[4] The exchange rate of four hundred and fifty (450) Communaute Financiere Africaine franc (XOF), the currency in Mali, to one (1) US dollar was used.

4.6 COUNTRY PROFILE: PAKISTAN

4.6.1 OVERVIEW

4.6.1.1 NATIONAL DEVELOPMENT PLANS AND PRIORITIES IN THE CONTEXT OF CLIMATE CHANGE

Pakistan's climate is arid/semi-arid with rivers predominantly fed by the Himalayan glaciers, which are reported to be receding rapidly as a result of global warming. Its economy is largely agrarian and, hence, highly climate sensitive; the country faces the risk of increased variability in monsoon rains, floods and droughts. As a result, water resources, food and energy security, industry, development of infrastructure and socio-economic growth will all be vulnerable to climate change. The Government of Pakistan's Vision for 2030, published in 2007, highlighted these issues and advocated a developed, industrialized and prosperous Pakistan through sustainable development in a resource-constrained economy. The country's Medium-term Development Framework (2005 – 2010) provides guidance on meeting the objectives of Vision 2030.

The Global Change Impact Studies Centre, established by the Government in 2003, is dedicated to climate change research in tandem with capacity-building activities, both independently and in partnership with other relevant organizations. Current research is focused on climate change projections, impact assessments in key socio-economic sectors, and adaptation and mitigation measures.

4.6.1.2 STATUS OF GREENHOUSE GAS EMISSIONS, PROJECTIONS AND MITIGATION SCENARIOS

Pakistan contributes 0.8 per cent of the total global GHG emissions, with per capita emissions at approximately one third of the world's average. In 1994, total GHG emissions reported in Pakistan's INC were 182 Mt CO_2 eq. The corresponding emissions in 2008 have been estimated at 310 Mt CO_2 eq. The estimations from Pakistan's 1994 and 2008 GHG inventories are summarized in Table IV-12.

As part of the NEEDS, a systematic effort is currently under way to project GHG emissions for the coming decades under the BAU scenario as well as under specific policy scenarios. Preliminary projections for over the next four decades under the BAU scenario have been carried out under the assumption that growth in GHG emissions, relative to GDP growth, will remain the same as in the period 1994 – 2008 (see Table IV-13). These projections indicate that total GHG emissions will double by 2020 (compared with emissions in 2008) and increase by a factor of 14 by 2050. At present, no abatement scenarios exist for the 2020 or 2050 time horizons; this work is currently under way as part of the NEEDS.

4.6.1.3 VULNERABILITY AND ADAPTATION ASSESS AND SCENARIOS

Research is currently under way at the Global Change Impact Studies Centre in Islamabad to develop climate change scenarios for various areas of Pakistan. This work makes use of the outputs of various General Circulation Models, downscaling these data using Regional Climate Models. Selected Watershed and Crop Simulation Models are being used concurrently to assess the impacts of changes in temperature and precipitation on glacial melting, river flows and the productivity of major crops. While the value of discrete adaptation measures will also be considered, detailed vulnerability and adaptation assessments for the 2020 and 2050 time horizons are outstanding. This will, however, be addressed through the current NEEDS.

Table IV-12. **Comparison of estimates in Pakistan's 1994 and 2008 greenhouse gas inventories**

	1994	2008	Average annual growth rate (%)
Greenhouse gas emissions from all sectors			
Total emissions (Mt CO_2 eq)	181.7	309.4	3.9
Emissions per capita (kg CO_2 eq)	1,541.0	1,922.0	1.6
Emissions per USD 1000 of GDP as at 2008 (kg CO_2 eq)	2,209.0	1,942.0	– 0.9
Greenhouse gas emissions from the fuel sector			
Total emissions (Mt CO_2 eq)	78.9	152.1	4.8
Emissions per capita (kg CO_2 eq)	669.0	945.0	2.5
Emissions per USD 1000 of GDP as at 2008 (kg CO_2 eq)	959.0	955.0	–
Population and GDP			
Population (million)	117.9	161.0	2.2
Gross domestic product (USD billion at 2007 – 2008 prices)	82.3	159.3	4.8

Source: PAEC-ASAD, 2009.
Abbreviation: GDP = gross domestic product.

Table IV-13. **Projected greenhouse gas emissions in Pakistan by sector for 2020 and 2050 under a business as usual scenario**

	Emissions (Mt CO_2 eq)		
Sector	**2008**	**2020**	**2050**
Energy	157	358	2,685
Agriculture	120	245	1,395
Industrial processes	18	26	67
Land-use, land-use change and forestry	9	14	38
Waste	6	7	15
Total national emissions	310	650	4,200

4.6.2 KEY FINDINGS

4.6.2.1 COST OF IMPLEMENTING PRIORITY MITIGATION AND ADAPTATION MEASURES

No estimates of the cost of mitigation or adaptation measures at the 2020 and 2050 time horizons are currently available. Under the NEEDS, in conjunction with detailed vulnerability and adaptation assessments, these estimates will be developed.

4.6.2.2 FINANCIAL AND POLICY INSTRUMENTS

The Clean Development Mechanism is currently the only financial and policy instrument used in Pakistan. The Ministry of Environment recently granted host country approval to 21 Clean Development Mechanism projects, which underlines that this effort needs to be substantially increased. Moreover, 60 Clean Development Mechanism projects are currently at various stages of completion. The Government is presently developing an NCCPPA. It is expected that various financial and policy instruments will be identified and adopted under this policy.

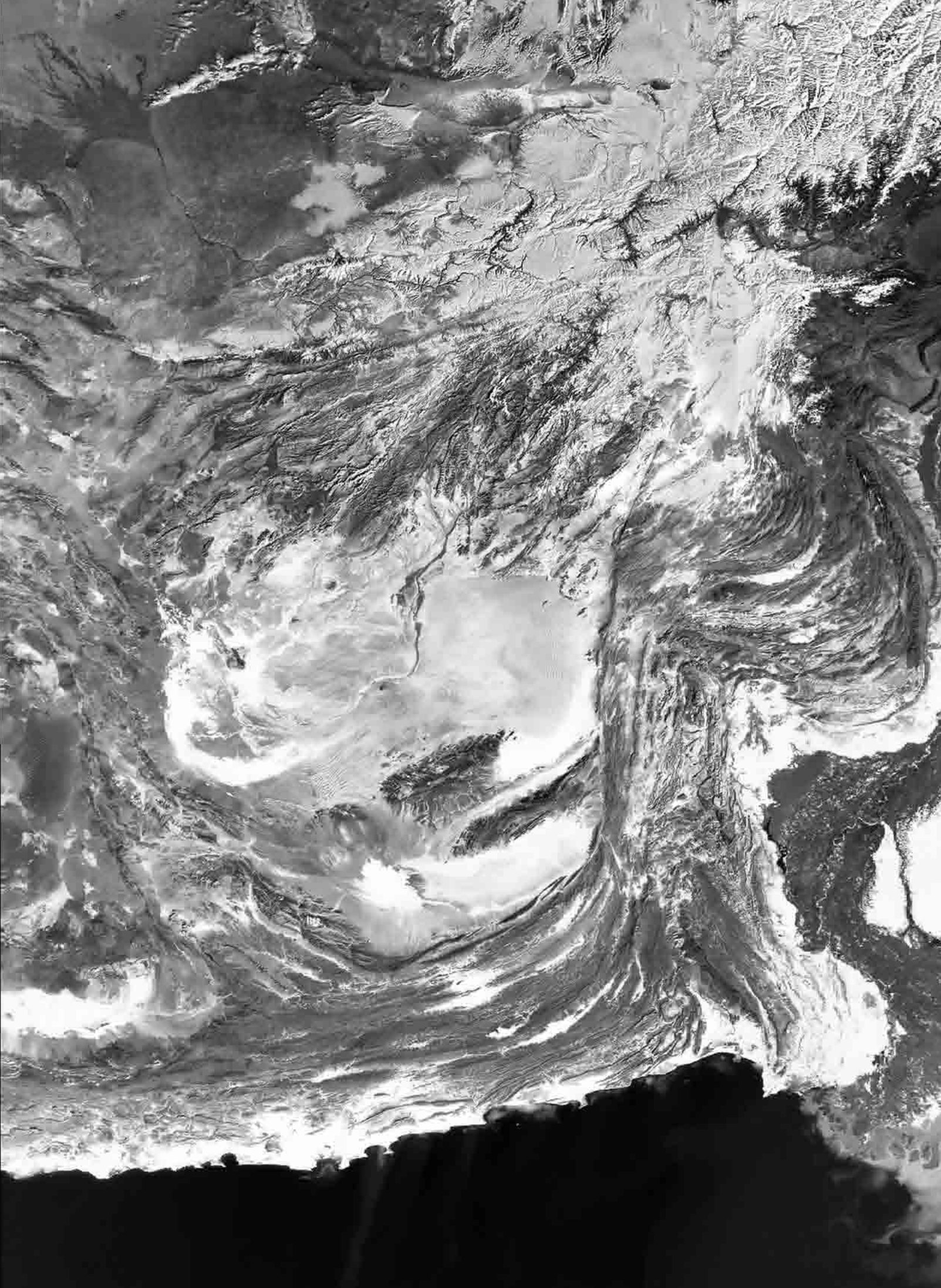
4.6.2.3 EXISTING AND POTENTIAL INSTITUTIONAL ARRANGEMENTS TO SUPPORT INTEGRATION OF CLIMATE CHANGE PRIORITIES INTO NATIONAL DEVELOPMENT PLANS

The need to address climate change as a priority was addressed by the formulation of the Prime Minister's Committee on Climate Change in 2005. The Government is currently in the process of developing a comprehensive National Climate Change Policy and Plan of Action. The Ministry of Environment is pursuing this effort in close collaboration with the Planning Commission, which is responsible for preparing national plans covering all socio-economic sectors, and monitoring and evaluating the implementation of major development projects and programmes. A report from the Task Force on Climate Change, established by the Planning Commission in October 2008 to facilitate formulation of national climate change policy, is due to be released shortly.

4.6.3 LESSONS LEARNED

Undertaking the NEEDS in Pakistan has highlighted the need to substantially enhance the capacity of various organizations in the country to deal with its extreme vulnerability to climate change. Considerable potential exists for mitigation efforts through measures such as improving efficiency, conserving energy, reducing losses in transmission and distribution, converting from high-carbon to low-carbon fuels, shifting to renewable sources of energy, increasing use of nuclear power, and using advanced technologies for GHG reduction.

Furthermore, in order to effectively address climate change by implementing various adaptation and mitigation measures, Pakistan needs significant international support, in terms of both technology transfer and financial assistance. The need to deliver the NCCPPA has also become more pressing in recent months.



4.7 COUNTRY PROFILE: THE PHILIPPINES

4.7.1 OVERVIEW

4.7.1.1 NATIONAL DEVELOPMENT PLANS AND PRIORITIES IN THE CONTEXT OF CLIMATE CHANGE

The Philippines has taken a pioneering role in addressing climate change issues. In 1991, the Philippine Government established Inter-Agency Committee on Climate Change, comprising 15 government agencies and representatives of NGOs, to provide technical support on matters concerning climate change. Furthermore, despite being a non-Annex I Party with no obligations to do so, the Philippines has formulated and started to implement mitigation measures to limit its GHG emissions. In 1997, it was one of the first countries in the world to create a National Action Plan on Climate Change. In developing the country's climate policy, the Government has recognized the importance of a balanced approach that includes both mitigation and adaptation.

4.7.1.2 STATUS OF GREENHOUSE GAS EMISSIONS

The Philippines is currently in the process of completing its second national communications, and, based on the initial assessment, the country's emission from the energy sector has increased by about 32% from 1994 – 2000. Meanwhile, the contribution of land use change and forestry (LUCF) is found to be a net sink of about 21 k tons CO_2 e. This is higher than previous studies due to the lower deforestation rate from 1990 to 2000 as well as the slight increase in carbon sequestration of the various terrestrial ecosystems in the country. Once completed, further information on the status of GHG emissions in the country will be available.

4.7.1.3 VULNERABILITY AND ADAPTATION ASSESSMENT

The Philippines has identified four priority areas for vulnerability and adaptation assessment: agriculture and food security; watershed (forestry and biodiversity); coastal zones, and human health. Analyses demonstrate the differing and variable impacts of climate change; for example, in some regions water is scarce (results indicate increased deficits by 2025), while other regions may have surplus water. Sea-level rise and flooding are identified as the greatest threats to coastal zone areas.

4.7.2 KEY FINDINGS

4.7.2.1 COSTS OF IMPLEMENTING PRIORITY MITIGATION AND ADAPTATION MEASURES

The Philippines' Alternative Budget Initiative has identified proposed activities to promote sustainable development and meet the challenges of climate change, and has provided estimates of the additional budget required in different sectors.

4.7.2.2 FINANCIAL INSTRUMENTS

Financial flows that directly meet the challenges of climate change in the Philippines include government budgetary allocations or disbursements, and external grants or loans. External financial flows come from the GEF, multilateral and bilateral agencies, and donor countries.

Approximately USD 1 billion in grants directly for climate change mitigation and adaptation projects has been received since 1992. Multilateral agencies have provided over half of the financing for mitigation projects and have accounted for a significant proportion (66 per cent) of the total grants for adaptation (see TABLE IV-14). Bilateral grants contributed 20 per cent of the total grants for adaptation while the GEF contributed 12 per cent, suggesting that multilateral agencies and donor countries have most greatly influenced the direction of adaptation work in the country. The adequacy and reliability of financing from developed countries under the Convention cannot be established owing to the limited funds received from the UNFCCC vehicles (i.e. the GEF).

Overall, external financial resources specific to addressing climate change are insufficient to fund the adaptation and mitigation measures required in the country. Only a few developed countries are in compliance with the 0.7 per cent of gross national product target commitment for ODA. Furthermore, external flows from bilateral and multilateral sources are limited compared with the Philippine Government's budgetary allocations. From 2004 to 2008, the Government provided USD 1.576 billion for climate change programmes, while external multilateral and bilateral sources provided USD 0.559 billion in grants and USD 0.397 billion in loans. It is also possible to argue that the government funding is actually even higher, as loans are internally provisioned resources that have to be repaid.

While government funds for climate change activities are high in the Philippines compared with external funding, they only constitute between 0.9 and 1.9 per cent of the country's total budget. The need for more extensive external funding is even more apparent considering that the total government budget for climate change activities, after increasing from 2004 to 2007, dropped almost by half in 2008. The agriculture sector's share of the budget also declined from 47 per cent to just 2 per cent over that period. The increase in the share of the budget allocated to disaster management from 2003 to 2008 did not represent proactive efforts to mitigate the expected damage from and risk of natural disasters; rather, it merely reflected post-disaster relief and rehabilitation expenditure. In addition, while the only other sector to have received an increased share of the budget from 2007 to the present is forestry, the disbursement of budget allocations for particular activities, such as reforestation or community-based management, is said to be subject to the discretion of the country's President, and the non-use of these funds would result in savings which could be used by the Government. Furthermore, these budgetary allocations do not cover particular priority actions that would climate-proof critical socio-economic activities, and shield the most vulnerable groups from current and future climate risks.

4.7.2.3 EXISTING AND POTENTIAL INSTITUTIONAL ARRANGEMENTS TO SUPPORT INTEGRATION OF CLIMATE CHANGE PRIORITIES INTO NATIONAL DEVELOPMENT PLANS

IACCC provides technical support on matters concerning climate change. To date, there has been no assessment of whether the priority projects supported by external grants cover most, if not all, of the country's strategic actions for mitigating the adverse impacts of climate change and enabling adaptation.

4.7.3 LESSONS LEARNED

4.7.3.1 CHALLENGES AND OPPORTUNITIES

The strategic actions outlined by the Philippines' Alternative Budget Initiative provide an opportunity to evaluate the impact of externally funded projects in advancing the country's climate change agenda. However, it is recognized that, in addition to these initial priority actions, greater political will and resources will be imperative if the longer-term strategic goals for adapting to climate change are to be realized.

Table IV-14. **Comparative flows of loans and grants for climate change measures in the Philippines, by source (1992 – 2019; historical and projected) (United States dollars)**

	Direct		Indirect		
Source	Grants	Loans	Grants	Loans	Total
Total for Adaptation	236,965,554	658,168,000	954,245,942	841,636,926	2,691,016,422
Multilateral	169,520,960	350,538 000	638,654,348	678,607,163	–
Bilateral	54,371,231	307,630,000	281,547,134	163,029,763	–
GEF	12,948,363	–	32,492,126	–	–
Other	125,000	–	1,552,334	–	–
Total for Mitigation	656,956,100	330,552,274	–	–	987,508,374
Multilateral	599,590,954	220,030,150	–	–	–
Bilateral	47,294,000	110,522,124	–	–	–
GEF	10,071,146	–	–	–	–
Other	–	–	–	–	–
Total for Adaptation and Mitigation	91,625,997	9,345,512	156,014,991	238,007,999	494,994,499
Multilateral	11,636,979	–	114,276,991	238,007,999	–
Bilateral	79,989,018	9,345,512	41,738,000	–	–
GEF	–	–	–	–	–
Other	–	–	–	–	–
Total for Relief	121,551,174	2,040,424	–	–	123,591,598
Multilateral	32,274,099	2,040,424	–	–	–
Bilateral	65,775,669	–	–	–	–
Other	23,501,406	–	–	–	–
Total for all Sources	1,107,098,825	1,000,106,210	1,110,260,933	1,079,644,925	–
	2,107,205,035		2,189,905,858		4,297,110,893

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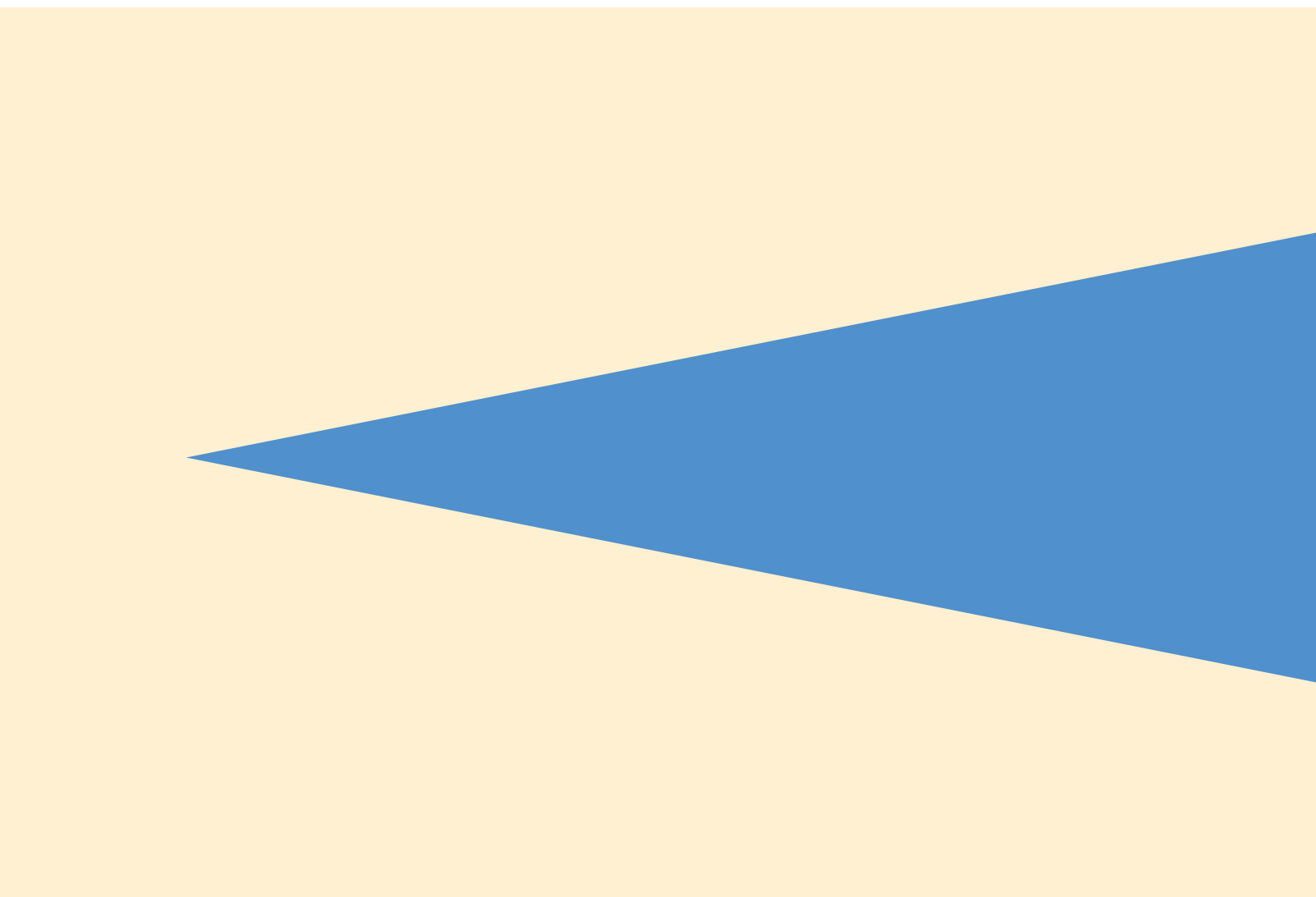

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