

Government of Lao People's Democratic Republic

United Nations Development Programme

PROPOSAL FOR

**ENABLING ACTIVITIES FOR THE PREPARATION OF
THE LAO PDR'S SECOND NATIONAL
COMMUNICATION TO THE UNFCCC**

This proposed project will enable the Lao People's Democratic Republic (Lao PDR) to prepare its Second National Communication (SNC) to the Conference of the Parties (CoP) of the United Nations Framework Convention on Climate Change. The activities of the SNC formulation project are a continuation and an update of the work undertaken by the Lao PDR in preparing its First National Communication during 1997-2000. The project has four main outputs: (a) an inventory of greenhouse gases; (b) programmes containing measures to facilitate adequate adaptation to, and mitigation of, climate change; (c) programmes and plans that are considered relevant for the achievement of the objectives of the and (d) preparation of the SNC of Lao PDR. Besides the preparation of the SNC, the project will further increase the general awareness of climate change issues and build national capacity in the Lao PDR. The project will also facilitate the integration of climate change into the national development policies by strengthening cooperation between all relevant stakeholders.

14 Dec 2006

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Acronyms

APR	Annual Project Report
CCA	Common Country Assessment
CCEAP	Climate Change Enabling Activity Project
CDM	Clean Development Mechanism
CoP	Conference of the Parties
CP	Country Programme
DNA	Designated National Authority
FAO	UN Food and Agriculture Organization
FNC	First National Communication
FR	Financial Report
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gases
GPG	Good Practice Guidance
HACT	Harmonised Approach to Cash Transfer
HFCs	Hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
IR	Inception Report
IUCN	IUCN - World Conservation Union
JICA	Japan International Cooperation Agency
Lao PDR	Lao People's Democratic Republic
LDC	Least developed countries
LEAP	Long-range Energy Alternatives Planning System
LNMC	Lao National Mekong Committee
LUCF	Land Use Change and Forestry
LULUCF	Land Use, Land Use Change and Forestry
MAGICC	Model for the Assessment of Greenhouse Gas Induced Climate Change
MARKA-MACRO	Market Allocation Macro-Economic Model
MDGs	Millennium Development Goals
MYFF	Multi-Year Funding Framework
NAPA	National Adaptation Programme of Action to Climate Change
NBSAP	National Biodiversity Strategy and Action Plan
NCSA	National Capacity Needs Self-Assessment
NGPES	National Growth and Poverty Eradication Strategy
NSEDP	National Socio-Economic Development Plan
NGO	Non-Governmental Organisation
NMVOCs	Non-methane volatile organic compounds
PFCs	Perfluorocarbons
PRSP	Poverty Reduction Strategy Paper
QPR	Quarterly Progress Report
SBAA	Standard Basic Assistance Agreement
SCENGEN	A global and regional SCENario GENerator
SNC	Second National Communication
SRESA2	Special Report on Emissions Scenarios as Reference
SRESB1	Special Report on Emissions Scenarios as Policy
UNCBD	United Nations Convention on Biological Diversity
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNDP CO	UNDP Country Office
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention to Combat Desertification
V&A	Vulnerability and adaptation

1. Elaboration of the Narrative

1.1 Situation Analysis

The Lao People's Democratic Republic (Lao PDR) is a least developed country that still relies to a large extent on agriculture. Some 80% of the labour force is employed in agricultural activities, which contributes to more than half of GDP. Centrally planned until 1986, the country is in transition towards a market and incentive based economy.

Although the poverty rate decreased from 46% of the total population in 1992-93, it still averaged some 34% in 2004 (NSC 2006) for the country as a whole. Poverty rates in the northern regions are in excess of 50% of the population, while it represents only 12% of the residents of Vientiane. In the poorest northern province, only a quarter of the population is above the national poverty line, which is officially defined as "the lack of ability to fulfil basic human needs, such as: not having enough food, lack of adequate clothing, not capable of meeting educational expenses for one's self and other family members, and lack of access to transport routes." The National Statistics Centre has estimated that 76% of the total villages are poor. Other social and economic indicators compare unfavourably with neighbouring countries. Adult literacy rates averaged 73% in 2005. Access to clean water is at 67% for urban dwellers compared to 27% and 13% for rural dwellers with and without road access respectively. While the health indicators of the Lao PDR have improved over the past decade, they similarly lag behind regional standards: life expectancy remains low (63 years for female and 59 years for male) and, maternity and infant mortality rates remain high (405 per 100,000 births and 70 deaths per 1000 live infants respectively) (Census of Population and Housing, 2006).

The National Growth and Poverty Eradication Strategy (NGPES) recognises that dependence on dwindling natural resources is a primary coping strategy for the poor, thus making the population highly vulnerable to resource depletion and environmental degradation. In addition, natural resource based livelihoods are likely to be the most vulnerable to changing climatic conditions. The government of the Lao PDR also considers human resources development as a key catalyst towards poverty eradication. Increased technical and institutional capacity is a requisite enabling condition of economic growth.

The United Nations Common Country Assessment (CCA) of the Lao PDR has identified the strengthening of human resources and the sustainable use of natural resources as key issues. The United Nations Development Assistance Framework (UNDAF) of the Lao PDR 2007-2011 is organised around three core pillars: (1) poverty and food security, (2) the social sector, and (3) governance. The UNDAF recognises that the Lao PDR is highly dependent on natural resources for economic and social development. Environmental degradation and natural disasters, in particular, floods and droughts, pose threats especially to agricultural livelihoods and hinder the country's sustainable development.

The Lao PDR accessed the United Nations Framework Convention on Climate Change on 4 January 1995. As a party to the UNFCCC, the Lao PDR is required to periodically report to the Conference of Parties (COP) on greenhouse gas inventories, national measures to mitigate and facilitate adequate adaptation to climate change, and any other information relevant to the achievement of the objective of the Climate Change Convention. The country is also a signatory of the Kyoto Protocol, which it accessed on 6 January 2003, and may thus host Clean Development Mechanism project activities to mitigate greenhouse gases. As a developing country, the Lao PDR does not have any greenhouse gas reduction obligations.

With funding from the Global Environment Facility (GEF) and facilitation by the United Nations Development Programme (UNDP), the Lao PDR completed its First National Communication (FNC) in November 2000. Similarly, with funding from GEF and facilitation by UNDP, The Lao PDR is in

the process of preparing its National Adaptation Programme of Action to Climate Change (NAPA), which presents priority activities to adapt to the adverse effects of climate change.

1.2. Strategy

The project will assist the Lao People's Democratic Republic in preparing its Second National Communication (SNC) following the guidelines adopted by the Conference of Parties of the United Nations Framework Convention on Climate Change. As a Non Annex-I party, the Lao PDR is committed to meeting its reporting obligations under the UNFCCC. The proposed activities of the SNC project build upon the work undertaken under the CCEAP Phase I & II, which assisted the Lao PDR in preparing its First National Communication (FNC).

The project will help strengthen the country's technical and institutional capacity in implementing the UNFCCC by mainstreaming and prioritising climate change related issues. It will also assist in the incorporation of such issues in the general planning and development strategy formulation processes in the country identified by the Government of the Lao PDR and presented in the National Socio-Economic Development Plan (NSED), the government's key document for development integrating National Growth and Poverty Eradication Strategy (localised PRSP) and the Millennium Development Goals (MDGs). Other key strategies include National Biodiversity Strategy to 2020 and Action Plan to 2010 (NBSAP) and Forestry Strategy to 2020. In addition, the project is directly linked to UNDAF Goal 1: "By 2011, the livelihoods of the poor, vulnerable and food insecure populations are enhanced through sustainable development". Apart from these, the project is in line with UNDP MYFF Goal 3: Energy and environment for sustainable development and will also support two MDG goals namely Goal 1: Eradicate extreme poverty and hunger, and Goal 7: Ensuring environmental sustainability.

The project will focus on linkages between climate change and the need for a balance between economic growth, socio-cultural development and environmental protection. The SNC project will focus on the sectors with the highest GHG emissions (energy, land use change and forestry (LULUCF), agriculture, industrial processes, and waste), as well as the sectors identified in the NAPA as most vulnerable to climate change (agriculture, forestry, water and water resources, and public health). The project will seek to promote the integration of climate change concerns into national development policies and plans. The project will assist the Government of Lao PDR in implementing its National Growth and Poverty Eradication Strategy, including the goal of exiting the group of Least Developed Countries (LDC) by 2020. The government of Lao PDR recognises the need for efficient utilisation of human and natural resources to sustain economic growth.

The project will be implemented by the Government of Lao PDR (GoL) through the UNDP Lao PDR Country Office (CO) to promote capacity building, self-reliance and sustainability, ownership and internalisation of external inputs, and relevance of impacts. Experience from the Lao PDR's FNC, the National Adaptation Programme of Action to Climate Change (NAPA) and the National Capacity Self-Assessment (NCSA) will be valuable to address the potential gaps and constraints in the formulation of the SNC.

Local capacity built under CCEAP I & II, NAPA, and NCSA will be called upon to assist in the successful formulation of the SNC. Regional and international expertise will also be required to strengthen the institutional and technical capacity of stakeholders through on-the-task and hands-on training, seminars and workshops, as well as international cooperation.

1.3. Management Arrangements

The management arrangements for the preparation of the SNC will follow the standard project management arrangements for the UNDP Lao PDR supported projects. A new programme/project

institutional framework presented in the Appendix B, Section 5, will be finalised and agreed upon between the UNDP and the government of Lao PDR by the end of 2006.

1.4 Monitoring and Evaluation

Monitoring responsibilities and events

The monitoring and evaluation of the project will follow the GEF and UNDP guidelines for the M&E. A detailed schedule of project reviews will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Project Board Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

Day to day monitoring of implementation progress will be the responsibility of the Project Manager based on the project's Annual Work Plan and its indicators. The Project Team will inform the UNDP CO Project Assurance of any delays or difficulties faced during implementation through the standard UNDP procedures so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

Periodic monitoring of implementation progress will be undertaken by the UNDP CO through monthly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely manner to ensure smooth implementation of project activities.

Annual Monitoring will occur through the *Tripartite Review (TPR)*. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. The project Implementing Partner will prepare an Annual Project Report (APR) and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments.

The APR will be used as one of the basic documents for discussions in the TPR meeting. The project proponent will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The project Implementing Partner also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary.

Project Monitoring Reporting

The Project Manager in conjunction with the UNDP CO team will be responsible for the preparation and submission of the following reports that form part of the monitoring process.

(a) Inception Report (IR)

A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year Work Plan divided in quarterly timeframes detailing the activities and progress indicators that will guide implementation during the first year of the project. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation.

When finalized, the report will be circulated to project stakeholders for comments or queries. Prior to this circulation of the IR, the UNDP CO and UNDP-GEF's Regional Coordinating Unit will review the document.

(b) Quarterly Operational Progress Reports (QOPR)

Short reports outlining main updates in project progress with the focus on technical achievements will be provided quarterly to UNDP CO and the UNDP-GEF Regional Coordinating Unit by the project team.

(c) Annual Project Report (APR)

The APR is a UNDP requirement and part of UNDP's Country Office central oversight, monitoring and project management. It is a self-assessment report by project management to the UNDP CO and provides input to the country office reporting process, as well as forming a key input to the Tripartite Project Review (TPR). An APR will be prepared on an annual basis (normally by December of the year) prior to the TPR, to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work.

The format of the APR is flexible but should include the following:

- An analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome
- The constraints experienced in the progress towards results and the reasons for these
- The three (at most) major constraints to achievement of results
- AWP and other expenditure reports
- Lessons learned
- Clear recommendations for future orientation in addressing key problems in lack of progress

(d) Technical Reports

Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft reports list, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the project, and tentative due dates. Where necessary this reports list will be revised and updated, and included in subsequent APRs. Technical reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

Audit Clause

The Government will provide the Resident Representative with certified quarterly financial reports. An annual audit of the financial statements relating to the status of UNDP (including GEF) funds will be conducted by the legally recognised auditor according to the established procedures and international standards within the framework of Harmonised Approach to Cash Transfer (HACT).

1.5 Legal Context

This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of the Lao People's Democratic Republic and the United Nations Development Programme, signed by the parties 10 October 1988. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

UNDP acts in this Project as Implementing Agency of the Global Environment Facility (GEF), and all rights and privileges pertaining to UNDP as per the terms of the Standard Basic Assistance Agreement (SBAA) shall be extended mutatis mutandis to GEF.

The UNDP Resident Representative is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- a) Revision of, or addition to, any of the annexes to the Project Document;
- b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- d) Inclusion of additional annexes and attachments only as set out here in this Project Document.

2. Total Budget

Award ID: 00042082
Award Title: PIMS 2945 CC EA: Lao PDR Second National Communication to UNFCCC
Project ID: 00048165
Project Title: PIMS 2945 CC EA: Lao PDR Second National Communication to UNFCCC
Execution Agency: Science, Technology and Environment Agency (STEA)

OUTPUTS (and corresponding indicators)	RESPONSIBLE PARTY	PLANNED BUDGET						
		Source of Funds	Budget Code	Budget Description	Year 1 (US\$)	Year 2 (US\$)	Year 3 (US\$)	Total Budget (US\$)
1. National circumstances	STEA	GEF Trustee	71300	National consultants	9,000	3,000	0	12,000
				Sub-total	9,000	3,000	0	
2. National greenhouse gas inventories	STEA	GEF Trustee	71300	National consultants	20,000	10,000	10,000	88,000
			71200	International consultants	7,000	7,000	2,000	
			71600	Travel	5,000	5,000	2,000	
			72800	IT Equipment	5,000	0	0	
			74200	Audio visual & Print Prod Costs	1,000	1,000	4,000	
			72500	Supplies	1,000	1,000	1,000	
			74500	Miscellaneous	2,000	2,000	2,000	
				Sub-total	41,000	26,000	21,000	
3. Programmes containing measures to facilitate adequate adaptation to climate change	STEA	GEF Trustee	71300	National consultants	5,000	25,000	25,000	112,000
			71200	International consultants	0	15,000	15,000	
			71600	Travel	0	4,000	10,000	
			72800	IT Equipment	6,000	0	0	
			74200	Audio visual & Print Prod Costs	0	0	2,000	
			72500	Supplies	500	1,000	1,000	
			74500	Miscellaneous	500	1,000	1,000	
				Sub-total	12,000	46,000	54,000	
4. Programmes containing measures to mitigate climate change	STEA	GEF Trustee	71200	National consultant	0	10,000	5,000	56,000
			71600	International consultants	0	10,000	5,000	
			72800	Travel	0	2,000	10,000	
			74200	IT Equipment	0	3,000	0	
			72500	Audio visual & Print Prod Costs	0	2,000	5,000	
			74500	Supplies	0	1,000	1,000	
				Miscellaneous	0	1,000	1,000	
				Sub-total	0	29,000	27,000	

5. Other relevant information (research and systematic observation, technology transfer, education and public awareness, capacity building)	STEA	GEF Trustee	71300	National consultants	5,000	7,000	2,000	14,000
				Sub-total	5,000	7,000	2,000	
6. Constraints & gaps; related financial, technical, & capacity needs	STEA	GEF Trustee	71300 71600	National consultant(s)	3,000	3,000	3,000	9,000
				Sub-total	3,000	3,000	3,000	
7. Technical Assistance	STEA	GEF Trustee	71200	International consultants	3,000	4,000	4,000	11,000
				Sub-total	3,000	4,000	4,000	
8. Compilation, production of communication, its translation and dissemination	STEA	GEF Trustee	71300 74200 72500 74500	National consultants Audio visual & Print Prod Costs Supplies Miscellaneous	0 0 0 0	0 0 0 0	6,000 6,000 1,000 1,000	14,000
				Sub-total	0	0	14,000	
9. Project management	STEA	GEF Trustee	71400 71605 71300 73400 72400 74200 72500 74500	Service Contracts-Individuals Travel Local consultant Rental & Maint of other equip Communication Audio visual & Print Prod Costs Supplies Miscellaneous	3,000 2,000 10,000 5,000 1,000 1,000 1,000 1,000	3,000 4,000 10,000 2,500 2,000 1,000 1,000 2,500	3,000 2,000 10,000 2,500 2,000 2,000 1,000 2,500	75,000
					24,000	26,000	25,000	
10. Monitoring and reporting	STEA	GEF Trustee	74100 74500	Professional services Miscellaneous	3,000 1,000	3,000 1,000	5,000 1,000	14,000
				Sub-total	4,000	4,000	6,000	
					101,000	148,000	156,000	405,000

3. Appendices

Appendix A: Summary report of the self-assessment exercise

1. Description of the Process and Approach Adopted for the Stocktaking Exercise

The objectives of the stocktaking exercise are to: (1) review and assess work carried out under previous climate change enabling activities; (2) identify areas of synergies with other on-going enabling activities and other relevant international conventions; and (3) identify lessons learned from the FNC, including technical issues and process/arrangement experiences that could provide improved practises for the preparation of the SNC.

The stocktaking exercise was carried out by a multidisciplinary working group lead by the Science, Technology and Environment Agency (STEA) and included technical staff from the Ministry of Communication, Transport, Post and Construction (MCTPC); the Ministry of Energy and Mines (MEM); the Ministry of Agriculture and Forestry (MAF); the Ministry of Industry and Commerce (MOIC), the National Statistics Centre (NSC), the Ministry of Public Health (MOH), and the Lao National Mekong Committee (LNMC).

The stocktaking exercise consisted of the following main activities:

1. Survey of relevant reports and technical studies (GHG inventory, mitigation and vulnerability adaptation)
2. Survey of previous climate change related activities;
3. Identification of gaps in previous studies and activities and recommendation for new studies;
4. Prioritisation of activities for the SNC; and
5. Identification of links and synergies with related projects and programmes, and activities under other international conventions.

The stocktaking exercise was conducted through consultations with national stakeholders. Both individual interviews and group brainstorming sessions were conducted with members of relevant government and non-government organisations. The interviews used semi-structured questionnaires that included both closed and open-ended questions. Stakeholders were consulted on the following: (i) knowledge and understanding of climate change issues; (ii) severity of climate change impacts in the Lao PDR; (iii) sectoral impacts of climate change in the Lao PDR; (iv) integration of climate change into policies, strategies, plans or activities; (v) activities implemented to mitigate or adapt to climate change; and (vi) steps to be undertaken by government to address climate change issues in the Lao PDR. A total of 21 questionnaires were administered.

2. Main Outcomes of the Stocktaking Exercise

2.1 National Circumstances

With the exception of the basic geophysical features, the national circumstances of the Lao PDR have changed since the completion of the FNC in the year 2000. Development priorities, objectives and circumstances need to be updated to provide a more accurate background on the basis of which climate change and its impacts may be addressed.

Although the range of national statistics available has been expanded, there are still gaps in data availability and time series. In addition, uncertainties with regards to data collection methodologies and

data reliability remain. Increased coordination between stakeholders to be involved in the formulation of the SNC will be necessary to ensure smooth data exchange and availability.

Priorities:

1. Update all sectoral plans and studies relevant to the formulation of the SNC, including national development and poverty eradication plans and strategies;
2. Update information on the national circumstances, including geographical characteristics (climate, forests, land use, other environmental conditions, etc.), population (growth rates, distribution, density etc.), economy (energy, transport, industry, mining, tourism, agriculture, fisheries, waste, services etc.), education (including scientific and technical research);
3. Collect and analyse existing institutional arrangements for continuous preparation of national communications.

2.2 Greenhouse Gas Inventory

The FNC reported an inventory of GHG emissions by sources and removals by sinks prepared for the base year 1990. The Lao PDR's national greenhouse gas inventory covered four sectors: (1) energy, (2) land use change and forestry, (3) agriculture and (4) waste. A three-year average of activity data for the sectors of agriculture, and land use change and forestry, was calculated (1988, 1989, 1990), whereas data for the calendar year 1990 was used for the sectors of energy and waste. Industrial processes were not considered as the existing industrial plants such as cement plants and pulp and paper mill had not been built in 1990. Lack of data prevented the estimation of emissions for solvent and other product use. The greenhouse gases covered in the inventory were carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), carbon monoxide (CO) and nitrous oxides (NO_x). The inventory was conducted using activity data collected by government agencies, and when available, reports published by international organisations operating in the Lao PDR. No emission projections were conducted beyond the base year because of constraints related to data availability and uncertainties with regards to future development scenarios. Data availability, data reliability, and the absence of local emissions factors and the capacity and resources to develop them, remain major obstacles to the preparation of the national GHG inventory. These barriers include:

1. Absence of any national energy balance;
2. Absence of reliable time-series for agriculture, with significant yearly variations in production and systematic annual statistics reported only since 1995;
3. Data gaps in statistics for industrial processes, as the sector has only developed in recent years. Reporting and recording has not kept pace with industrial growth; absence of reliable data for an estimated 26,000 small medium enterprises;
4. Absence of reliable data on land use change and forestry, forest inventory, forest cover, and deforestation trends;
5. Absence of data in the waste sector (solid waste, domestic wastewater and human sewage), in particular outside of the capital city;
6. Absence of national emission factors, and low national capacity to develop them;
7. Absence of a national GHG emissions database and registry; GHG inventories conducted on an adhoc basis, i.e., for the purpose of national communications under the UFCCC;
8. Limited in-country human and technical resources for conducting greenhouse gas inventory.

Priorities:

1. Strengthen human, technical and institutional capacities to conduct a national GHG inventory;
2. Review the 1990 GHG inventory for gaps in methodologies and data;

3. Determine which key source categories are the major contributors to the GHG in terms of absolute levels and trends in emissions;
4. Select a methodology (tier) of the IPCC Guidelines that is relevant for the Lao PDR and a GHG inventory year; taking into consideration existing technical capacity and data constraints.
5. Estimate in units of mass, by sources and removals by sinks, anthropogenic emissions of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O);
6. Assess the level of uncertainty associated with inventory data;
7. Explore cost-effective ways to develop country-specific emission factors;
8. Explore opportunities and arrangements for data management systems for the preparation of national GHG inventories on a continuous basis.

2.3 Programmes Containing Measures to Facilitate Adequate Adaptation to Climate Change

The FNC did not discuss steps taken or envisaged by the Lao PDR to adapt to climate change. The formulation of the FNC constituted the first exposure of policy makers and government staff to climate change issues in the Lao PDR. At the time, it was argued that broader dissemination to raise awareness and additional capacity building would be required for the country to develop a national perspective on adaptation to climate change. A study specifically addressing vulnerability to climate change was conducted in January 2005 by the Asian Disaster Preparedness Centre (ADPC) and the World Conservation Union (IUCN). The study examined household vulnerability to floods and existing coping strategies in the southern province of Attapeu. The recommendations included building local capacity for assessing climate change risk and vulnerability.

The formulation of the National Adaptation Programme of Action to Climate Change (NAPA) constitutes the country's first attempt to assess the impacts of climate change on national development. The project started in 2004 and is expected to be completed by the end of the year 2006. The main objective of NAPA is to develop a country driven program of action for adaptation to address immediate and urgent needs related to current and projected adverse effects of climate change in the four key sectors of (1) agriculture, (2) forest, (3) water and water resources, and (4) public health. Since the Lao PDR relies on agricultural, forest and water resources, the negative impacts of climate change would hinder the social and economic development of the country. The preliminary findings of the Lao PDR's NAPA are as follows: (1) the country's adaptive capability to climate change is limited (2) there are gaps in information and knowledge with regards to vulnerability to climate change in the four priority sectors (3) there is limited national technical capacity and experience in adaptation to climate change.

While the Lao PDR's NAPA has conducted some sectoral vulnerability assessments, the current understanding of climate change effects, on the country remains limited, in particular, with regards to baselines climatologies and climate change scenarios. Thus, there is a need for using methods and tools which may provide better understanding of the country's vulnerability, including qualitative and predictive models, empirical studies, expert judgment etc. In addition, there are opportunities for downscaling global circulation models to regional circulation models used in conjunction with integrated models such as MAGICC-SCENGEN and PRECIS towards more accurate vulnerability assessments, than are yet available in the Lao PDR.

Priorities:

1. Strengthen human, technical and institutional capacities to conduct a climate change vulnerability assessment;
2. Compile and analyse the available record on climate-related disasters;
3. Generate appropriate (low-cost, user-friendly and flexible) climate change scenarios for the Lao PDR;

4. Carry out more advanced sectoral vulnerability and adaptation assessments in agriculture, forest, water and water resources, and human health, in particular using regional circulation models;
5. Identify additional long-term high priority adaptation strategies and measures, resulting from improved understanding of climate change effects on the country;

2.4 Programmes Containing Measures to Mitigate Climate Change

The FNC discussed greenhouse gas mitigation strategies for the Lao PDR in perspective with its national circumstances, and the capacity of its economy to undertake mitigation measures without negative impacts on growth. Mitigation options were identified based on the level of technology available in the country, national development goals and simplified cost-benefit analysis. The GHG mitigation strategy covered the following sectors: (1) energy, (2) transport, (3) agriculture, and (4) forestry. The FNC argued that the timeline and likelihood of the mitigation options being implemented was dependent on government priorities, costs constraints on the economy, technical capability, and donor funding.

Mitigation options for the energy sector were classified into three broad categories: energy conservation and efficiency, advanced or renewable energy sources, and structural changes in consumption. Although large hydropower appeared as a low cost electricity source, the cost of building a transmission and distribution network in an essentially mountainous country justified decentralised options using micro-hydro or renewable energy sources. In the transport sector, the FNC discussed the development and improvement of public transport to mitigate for the growth of privately owned vehicles. In the forestry sector, conservation and sustainable management of forest areas, and afforestation were mitigation options already set as government priorities. The FNC argued for wider participation at the grassroots level to promote village forest management and curb shifting cultivation.

In addition, the FNC presented six project concepts for GHG mitigation: (1) reducing CO₂ emissions through the use of Compact Fluorescent Lights (CFL) in government and the commercial sector, (2) disseminating Improved Cook Stoves (ICS) in rural areas, and (3) promoting biogas use, (4) decentralised energy supply through Solar Home Systems (SHS) in rural households, (5) small-scale hydropower in combination with electric Cook Stoves, and (6) adoption of four-stroke engine for two wheelers. However, the FNC did not carry out any estimates of future emission trends or quantify the greenhouse gas reduction potential of the proposed mitigation options.

As a signatory of the Kyoto Protocol, the Lao PDR may host Clean Development Mechanism project activities that mitigate greenhouse gases and provide national sustainable development benefits. STEA acts as the Designated National Authority and is in the process of developing assessment and approval procedures with the support of international organisations. As a developing country, Lao PDR is not required to meet any emission reduction targets. However, CDM project activities may result in both emission reductions and local social, environmental and economic benefits.

Priorities:

1. Increase awareness of stakeholders of appropriate mitigation technologies and practises;
2. Strengthen human, technical and institutional capacities to conduct a national mitigation assessment for key sources and sinks of GHGs;
3. Formulate and prioritise programmes containing measures to mitigate climate change.
4. Assess potential for Clean Development Mechanism project activities;
5. Develop a projection of GHG emissions for each of the sectors covered by the National GHG inventory and based on national developments plans and priorities, taking into account national sustainable development objectives;
6. Prepare a national GHG mitigation plan. In the later case of the energy sector, the mitigation plan will be in line with national energy plans, policies and priorities.

2.5 Other Information Considered Relevant to the Achievement of the Objective of the Convention

Priorities:

1. Increase the integration and mainstreaming of climate change issues into national development policies;
2. Increase the awareness of climate change issues among policy makers, non-government organisations, the private sector, academic institutions and the general public;
3. Improve regional and international transfers of appropriate adaptation and mitigation technologies;
4. Disseminate adaptation and mitigation technologies to a broad range of stakeholders.

2.6 Constraints and Gaps, and Related Financial, Technical and Capacity Needs

Priorities:

1. Assess constraints and gaps associated with the preparation of national communications on a continuous basis;
2. Compile information on financial resources and technical support provided by government and international institutions for activities relating to climate change;
3. Assess financial requirements for the implementation of activities to meet the objective of the Climate Change Convention, including the preparation and improvement of national communications on a continuous basis (Note: quoted from Paragraph 49, Page 28, Manual for the Guidelines on NC from non-Annex I Parties);
4. Propose adaptation and mitigation projects for financing (specific technologies to be used, materials/equipment required, techniques or practises).

3. Other findings from the self-assessment exercise

Institutional arrangements:

- Proper management arrangements, implementation procedures, and monitoring mechanisms help build accountability, transparency and participation.
- Cooperation with regional neighbours provides opportunities for exchanging information and experiences in the area of climate change, as do strengthened links with international research institutions which are able to provide advance scientific and technical expertise;
- There is a need to confirm and make official the institutionalisation of the frameworks set in line with the national communications preparation process, after the government approval of the National Communications Report;
- The duration of the preparation of the periodic national communications to the UNFCCC depends largely on the capability, commitment, and diligence of the relevant institutions that are responsible for, among others, monitoring/tracking the status of the implementation of climate change mitigation and adaptation strategies and plans, and in documenting and disseminating the required information.

Climate change awareness:

- Awareness raising of climate change at the highest policy-making levels may increase political willingness to tackle the issue. Low awareness levels limit the ability of policy-makers to take on a leadership role in climate related activities and hinder their ability to support climate change mainstreaming or to develop climate change policies;

- Climate change education and awareness raising needs to be broadened to the general public and affected communities so as to promote greater national support of the issue;

Participation and consultation:

- Broad participation of stakeholders from the early stages of consultation to project implementation contributes to national ownership and ensures future collaboration from involved institutions towards the preparation of national communications on a continuous basis;
- Transparent, participatory and simplified coordinating mechanisms are necessary to allow for the meaningful contributions of the largest variety of stakeholders;

Technical assistance and capacity building:

- Capacity building for local technical staff involved in climate-related activities is a prerequisite for successful project implementation as existing skills may be ill-adapted;
- Capacity building can be effective if it has immediate practical relevance and covers a broad range of methods and approaches, such as hands-on training, technical workshops, direct application of methods and tools learned;
- Substitution of local capacity by international capacity is unsustainable and financially costly;
- Technical support from experienced and specialised consultants is necessary to guide staff throughout the implementation process. These consultants need to be involved with staff in the implementation of planned activities and not just limit their support to planning tasks;
- Limited financial, technical, human and institutional resources constrain the formulation and implementation of mitigation and adaptation activities. Funding by international organisations remain necessary to the successful implementation of the UNFCCC and other climate change initiatives.
- In order to ensure sustainability and continuity of the national communications preparation process, the capacity of the relevant institutions involved should be continuously updated.

Institutions and Stakeholders Consulted

Name of institutions / stakeholders consulted	Stakeholder interests, official position or mandate	Reasons for inclusion	Role in the self-assessment process
Science, Technology and Environment Agency (STEA)	Focal point for GEF, UFCCC, UNCBD, UNCCD. Designated National Authority for CDM. Environmental Management and Policy-making.	Implementing Partner for FNC, NAPA, NCSA.	Preparation of SNC project proposal.
Ministry of Communication, Transport, Post and Construction (MCTPC)	Communications, public works and transport.	Flood management, transport management.	Consultation.
Ministry of Energy and Mines (MEM)	Energy and mining sectors, and national public electricity utility.	Implementation of GHG mitigation activities.	Consultation. Provision of data.
Ministry of Agriculture and Forestry (MAF)	Agricultural and forestry sectors. Protected areas.	Implementation of GHG mitigation activities, and adaptation to climate change.	Consultation. Provision of data.
Ministry of Industry and Commerce (MIC)	Industry and commerce.	Implementation of GHG mitigation activities.	Consultation. Provision of data.
National Statistics Centre (NSC)	National statistical information.	National data centre.	Consultation. Provision of data
Ministry of Public Health (MPH)	Health.	Implementation of climate change adaptation activities.	Consultation.
Netherlands Development Organisation (SNV)	International development non-government organisation.	Implementation of GHG mitigation activities. Advisor of CDM DNA.	Consultation.
Village Off-Grid Promotion & Support Office (VOPS)	Off-grid electrification using mainly renewable technologies.	Implementation of GHG mitigation activities.	Consultation.
World Conservation Union (IUCN)	International environmental non-governmental organisation.	Implementation of climate change adaptation activities.	Consultation.
Japan International Cooperation Agency (JICA)	Implementing body for Japanese international cooperation.	Implementation of GHG mitigation activities (energy, waste, agriculture). Preparation of technical studies and master plans.	Consultation. Provision of data.

Lao National Mekong Committee (LNMC)	Coordinates Mekong River Commission programmes at the national level.	Implementation of climate change adaptation activities.	Consultation.
Department of National Land Use Planning and Development	Land use planning and classification.	Formulation and implementation of guidelines regarding land use and management.	Consultation.
National University of Laos (NUoL)	National academic institution.	Education and research in GHG mitigation activities, and adaptation to climate change.	Consultation.
Ministry of Foreign Affairs (MFA)	Coordination between Lao government and international donors.	Oversees international cooperation.	Consultation.
National Tourism Administration (NTA)	Tourism.	Establishment and implementation of guidelines for tourism activities, including ecotourism.	Consultation.

Appendix B: Technical components of the project proposal

1. Background/Context

The Lao People's Democratic Republic is a landlocked country located in mainland Southeast Asia, between latitudes 14° and 22° N and longitudes 100° and 107° E. Covering an area of 236,800 km², the country stretches more than 1,700 km from its northern border with China to its southern border with Cambodia. Two-thirds of the country is covered with mountains ranging from a few hundred metres to 2,820 m. The mountainous topography makes for difficult communication, but combined with a rich network of rivers, provides significant hydropower potential. The Mekong River stretches some 1,856 km throughout the Lao PDR. The tropical climate is dominated by the monsoon and a wet season lasting from April to October. Average temperatures range from a minimum 25°C to a maximum 38°C. The northern part of the country is prone to drought, while the central and southern parts suffer from floods.

The Lao PDR belongs to the group of least developed countries, with a GDP per capita of US \$498 in 2005 and a poverty rate averaging 32% of the total population in 2004. It is ranked 133rd out of 177 according to the UNDP's Global Human Development Index (HDI) in 2005.

The country is endowed with significant energy resources. Energy use within the country is still dominated by the use of fuelwood which accounts for about 90% of total energy requirements. Hydropower is the most abundant and cost-effective energy source with a theoretical hydroelectric potential of about 26,500 MW excluding mainstream Mekong. Of this, about 18,000 MW is technically exploitable, with 12,500 MW found in the major Mekong sub-basins and the remainder in minor Mekong or non-Mekong basins. In addition, important lignite and coal deposits have also been discovered, and exploration for oil and gas is in progress. Less than 2% of the country's hydropower potential has been developed over the last 30 years, but under present GoL policy, the rate of development will accelerate to supply electricity to the rapidly growing economies of the region. Agreements for future hydropower exports are in place with Thailand, Vietnam and Cambodia. In addition to international supply commitments, domestic energy consumption is growing at 8% to 10% annually. So far, a total of 9 hydropower projects are currently operating in the country with the total capacity of 624.10 MW, and 4 others are under construction (Nam Theun 2- 1088 MW, Nam Ngum 2- 615 MW, Xekaman 3- 250 MW and Xexet 2- 76 MW). Export of electricity generated from hydropower plants was contributing about 20.77% to the country's GDP in 2005 (Lao National Committee for Energy, 2006).

Lao PDR had some of the densest forest in the world. In 1940, forests covered approximately 70% of the country's total land area, or 17 million ha. Since then the forest cover had declined being now around 41%. In June 2006, the government announced some new policies and regulations aiming to restore nation's forest back to 70% of the country by the year 2020 (Ministry of Agriculture and Forestry in the Vientiane Times, 2006).

In terms of agriculture, the country has total arable land of 5.9 million ha but only 1,048,000 ha are agricultural land. Rice farming remains the single most important economic activity employing more than 80% of the total labour force. It is revealed that approximately 2.6 tonnes of rice are produced per year. However, the difference in production capacity between lowland and mountainous areas is a major concern. Agriculture contributes to more than 50% of GDP. Rice farming is the single most important agricultural economic activity and accounts for 20% of GDP. Some 500,000 households rely on subsistence agriculture (UNDAF 2006-2011, 2006).

The Lao imports and exports have increased dramatically over the last few years and it is expected to continue accelerating over the next decade. In 2004-2005, the main imports include fuel and gas (21.50%), raw materials for industrial production (21.20%) and raw materials for garment production (11%). The export growth has been predominantly driven by electricity, garments, mining, timber and wood products. Mining, in particular, appears to grow very rapidly and is expected to contribute up to 10% of the country's GDP in 2006 which is significantly increased from a GDP contribution of only 2.4% in 2004. Gold, gypsum, tin and barite are the major mining products exported so far (Ministry of Industry and Commerce, 2006). Overall, the growth rate for industry sector is higher than other sector at an average of 11% per annum (Committee for Planning and Investment, 2006).

The data on wastes generated are poorly recorded across the country. However, in Vientiane Capital city alone (700,000 inhabitants), it is estimated that approximately 260 tonnes of garbage are produced daily and only 50% of which is collected for disposal at the city's dumpsite (Vientiane Times, 2006).

The Lao PDR is a signatory of both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. With funding from the Global Environment Facility (GEF) and facilitation by the United Nations Development Programme (UNDP), the Lao PDR completed its First National Communication (FNC) in November 2000. The country is in the process of preparing its National Adaptation Programme of Action to Climate Change (NAPA), which presents priority activities to adapt to the adverse effects of climate change.

2. Project Objectives

Project Development Objective

The project will strengthen the technical and institutional capacity to assist the Lao People's Democratic Republic in mainstreaming climate change concerns into sectoral and national development priorities, including the Sixth National Socio-economic Development Plan.

Project Immediate Objective

The project will enable the Lao People's Democratic Republic to prepare and submit its second national communication to the UNFCCC and meet its Convention obligations.

3. Project Strategy

See Project Strategy in Section 1.2., Page 6.

4. Project activities

4.1. National circumstances

With the exception of the basic geophysical features, the national circumstances of the Lao People's Democratic Republic have changed since the completion of the FNC in the year 2000. Development priorities, objectives and circumstances need to be updated to provide a more accurate background on the basis of which climate change and its impacts may be addressed.

The SNC will carry out a review of the statistical information, policies and strategies available for the sectors most vulnerable to climate change (agriculture, forest, water and water resources, and public health), as well as the sectors that are the highest emitters of GHGs (energy, land use change and forestry, agriculture, industrial processes, agriculture and waste). Demographic surveys, poverty assessments and

sectoral studies conducted since 2000 will provide new input to the section discussing national circumstances. Relevant plans, policies and studies include: the National Growth and Poverty Eradication Strategy, the Medium-Term Public Expenditure Framework, the Lao Expenditures and Consumption Surveys, the Participatory Poverty Assessments, the Study on Rural Electrification Project by Renewable Energy, the Master Plan Study on Small Hydro in Northern Lao PDR, Village Energy and Electricity Best Practise, the Master Plan Study on Integrated Agricultural Development, and the National Environment Strategy and Environmental Action Plan.

Activities:

1. Collect and analyse all national and sectoral strategies, plans and studies relevant to the formulation of the SNC, including national development and poverty eradication plans and strategies;
2. Update data and information on the national circumstances, including geographical characteristics (climate, forests, land use, other environmental conditions, etc.), population (growth rates, distribution, density etc.), economy (energy, transport, industry, mining, tourism, agriculture, fisheries, waste, services etc.), education (including scientific and technical research);
3. Collect and analyse information on specific needs and concerns arising from climate change impacts and/or the impact of the implementation of response measures.
4. Evaluate existing institutional arrangements and established an agreed set-up for continuous preparation of national communications to the UNFCCC;
5. Prepare draft National Circumstances chapter of the SNC based on outputs of the above-mentioned activities;
6. Conduct consultation of stakeholders on draft National Circumstances chapter and incorporate their comments and feedback in finalising it.

Outputs:

1. Description of national and regional development priorities, objectives and circumstances, on the basis of which the Lao PDR will address climate change and its adverse impacts;
2. Updated data and information on features of geography, climate and economy which may affect the Lao PDRs ability to mitigate and adapt to climate change;
3. Information regarding specific needs and concerns arising from the adverse impacts of climate change and the implementation of response measures;
4. National Circumstances chapter prepared.
5. Established institutional arrangement for the continuous preparation of national communications to the UNFCCC.

4.2. Output 2. Greenhouse gas inventory

The FNC reported an inventory of GHG emissions by sources and removals by sinks prepared for the base year 1990. The Lao PDR's national greenhouse gas inventory covered four sectors: (1) energy, (2) land use change and forestry, (3) agriculture and (4) waste. A three-year average of activity data for the sectors of agriculture, and land use change and forestry, was calculated (1988, 1989, 1990), whereas data for the calendar year 1990 was used for the sectors of energy and waste. Industrial processes were not considered as the existing plants, such as cement plants and pulp and paper mill had not been built in 1990. Lack of data prevented the estimation of emissions for solvent and other product use. The greenhouse gases covered in the inventory were carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), carbon monoxide (CO) and nitrous oxides (NO_x). The inventory was conducted using activity data collected by government agencies, and when available, reports published by international organisations operating in the Lao PDR.

As in many least developed member countries, there was a total absence of national emission factors and little capacity to develop country specific data, which lead to the use of IPCC default values in the inventory conducted by the FNC. For the year 1990, it was estimated that the Lao PDR was a net carbon sink with a removal of 121,641 Gg of CO₂-equivalent. Agriculture accounted for 81% of the country's methane emissions. Total national fossil fuel based emissions represented only 415 Gg of CO₂-equivalent. No emission projections were conducted beyond the base year because of constraints related to data availability and uncertainties with regards to future development scenarios.

Since the first national greenhouse gas inventory was conducted in 1990, there have been some relative improvements in the collection and dissemination of national statistical data. Overall, for the base year of 2000, activity data is expected to be more consistent and readily available than for the year 1990.

The estimation and reporting of the national GHG inventory will be conducted in accordance with the revised 1996 IPCC guidelines, following the IPCC Good Practice Guidance (GPG) and Uncertainty Management in National GHG Inventories, and the Good Practice Guidance on Land Use, Land-Use Change and Forestry.

The inventory will follow the main stages as recommended in the Workbook of the revised 1996 IPCC guidelines: (1) planning the inventory (review of reporting instructions, identification of priority sources/sinks and priority GHGs), (2) using IPCC default methods and data, (3) using the IPCC workbook and worksheets, (4) providing documentation, (5) reporting finer level of details when available. It will be conducted using Tier 1 methodology, which represents the minimum or default methodology, and is the more accurate for emission estimates. Tiers 2 and 3 methodologies will only be used in specific cases where more detailed data and statistics are available. There is no existing national methodology for emission estimates and greenhouse gas inventory. IPCC default emission factors and regional factors will be used, as there are no country-specific emission factors and activity data for the Lao PDR.

In addition, the inventory will be conducted for the following five sectors: (1) energy (fossil fuel combustion activities, biomass emissions), (2) industry (cement, food and beverages, pulp and paper), (3) agriculture (domestic livestock, rice cultivation, grassland burning, agricultural residue burning, agricultural soils), (4) waste (solid waste, domestic/commercial wastewater, industrial wastewater, human sewage) and (5) land use change and forestry (change in forest/wood biomass, forest/land use change). In contrast with the FNC, the SNC will cover industrial processes as this sector has experienced significant development since 1990. The inventory will estimate in units of mass, by sources and removals by sinks, anthropogenic emissions of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). When appropriate and conditional on data availability, information will be provided on emissions by sources for carbon monoxide (CO) and nitrogen oxides (NO_x);

The project will establish a multidisciplinary working group with technical staff from relevant government agencies. This working group will be responsible for conducting the inventory and has been divided into sectoral inventory teams. The main members of the sectoral inventory teams will comprise the following and other agencies as relevant: (1) energy (Science, Technology, Environment Agency; Ministry of Communication, Transport, Post and Construction; Ministry of Energy and Mines; Ministry of Agriculture and Forestry; Ministry of Industry and Commerce, National Statistics Centre etc.), (2) land use change and forestry (Science, Technology, Environment Agency ; Ministry of Agriculture and Forestry; Ministry of Communication, Transport, Post and Construction; National Statistics Centre etc.), (3) agriculture (Science, Technology, Environment Agency; Ministry of Agriculture and Forestry; National Statistics Centre etc.), (4) industrial processes (Science, Technology, Environment Agency; Ministry of Industry and Commerce; Ministry of Energy and Mines; National Statistics Centre etc.), (5) waste (Science, Technology, Environment Agency; Ministry of Communication, Transport, Post and

Construction; Ministry of Industry and Commerce; Ministry of Public Health etc.). These institutional arrangements will provide the basis for the preparation of national communications under the UNFCCC on a continuous basis.

Activities:

1. Establish sectoral working groups in energy, industry, agriculture, waste, and land use change and forestry (LULUCF);
2. Train members of the technical working group in IPCC methodologies for conducting national GHG inventories. Extensive and comprehensive technical training and support will be required as few members of the working group have prior experience conducting a national GHG inventory. Essential supporting materials and IPCC references will be translated into the Lao language;
3. Review the 1990 GHG inventory, taking into consideration data gaps and areas needing improvement identified in the stock-taking exercise;
4. Review reporting instructions for GHG inventory;
5. Identify and analyse key source categories and priority GHGs;
6. Collect activity data and statistics from national sources to fill inventory data gaps;
7. Undertake national GHG inventory for the year 2000 and estimate emission trends to the year 2020;
8. Conduct an uncertainty assessment with regards to emission factors and activity data, as well as the reliability of existing statistics;
9. Explore opportunities with other stakeholders for strengthening data management systems within and outside the government to increase accuracy with regards to the preparation of future national GHG inventories on a continuous basis;
10. Explore cost-effective programmes to develop country-specific emission factors for improvements to future national GHG inventory exercises.
11. Prepare the draft technical report for the national GHG inventory and circulate to all relevant stakeholders. Local and national workshops will be organised to collect stakeholder comments and feedback and incorporated, where relevant in the finalisation of the National GHG Inventory;
12. Finalise the results of the national GHG inventory, as a separate technical output with detailed references and methodologies, for dissemination to all relevant stakeholders to further raise the awareness of the national GHG status and climate change issues.

Outputs:

1. A national inventory of anthropogenic emissions by sources and removals by sinks for CO₂, CH₄ and N₂O, and conditional on data availability for CO and NO_x;
2. Technical appendices to the inventory, discussing inventory procedures, methodologies and levels of uncertainty;
3. Increased national ability to conduct a GHG inventory, including strengthened human, technical and institutional capacity;
4. Recommendations on the improvement and strengthening of national data collection and management for future GHG inventories.

4.3. Output 3. Programmes containing measures to facilitate adequate adaptation to climate change

The FNC did not discuss steps taken or envisaged by the Lao PDR to adapt to climate change. The formulation of the FNC constituted the first exposure of policy makers and government staff to climate change issues in the Lao PDR. At the time, it was argued that broader dissemination to raise awareness

and additional capacity building would be required for the country to develop a national perspective on adaptation to climate change.

The formulation of the National Adaptation Programme of Action to Climate Change (NAPA) constitutes the country's first attempt to assess the impacts of climate change on national development. The project started in 2005 and is expected to be completed by the end of the year 2006. The main objective of NAPA is to quickly develop priority activities for adaptation to climate change in the four sectors of (1) agriculture, (2) forest, (3) water and water resources, and (4) public health. Since the Lao PDR relies on agricultural, forest and water resources, the negative impacts of climate change would hinder the social and economic development of the country. The preliminary findings of the Lao PDR's NAPA are as follows: (1) the country's adaptive capability to climate change is limited (2) there are gaps in information and knowledge with regards to vulnerability to climate change in the four priority sectors (3) there is limited national technical capacity and experience in adaptation to climate change.

The priority activities for adaptation to climate change that have been initially identified include: adaptation to flood and drought in agriculture, stabilisation of slash and burn in forest areas, development of water resources and irrigation networks, and improvement of drinking water quality. These priority activities have been selected according to four indicators: (1) severity of potential climate change impacts, (2) poverty reduction, (3) synergies with other multilateral environmental agreements, and (4) economic efficiency.

Furthermore, a total of seven adaptation projects for implementation have been identified to date: (1) capacity strengthening of the national committee on flood and drought, (2) establishment of refuge areas for farmers suffering from natural disasters, (3) land use planning for areas affected by natural disasters, (4) promotion of fast growing species among farmers, (5) development of animal and plant species resilient to natural disasters, (6) establishment of national laboratory for animal and plant disease control, and (7) promotion of techniques for preserving food for human and animal consumption.

Activities:

The SNC will follow the guidelines of the UNFCCC to provide information on steps taken or envisaged towards formulating, implementing national programmes containing measures to facilitate adequate adaptation to climate change. The activities of this component will address the crucial gaps and needs concerning vulnerability and adaptation assessments, which are yet to be undertaken in the Lao PDR. Climate change vulnerability and adaptation assessments will be undertaken for the key sectors of agriculture, forest, water and water resources, and human health.

1. Train members of the technical working group, who were originally involved in the formulation of the NAPA, in vulnerability and adaptation assessment methodologies, including IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptation. Extensive and comprehensive technical training will be required as few members of the working group have prior experience in vulnerability and adaptation assessment. Essential supporting materials and IPCC references will be translated into the Lao language;
2. Generate appropriate (low-cost, user-friendly and flexible) climate change scenarios for the Lao PDR, using integrated models such as MAGICC (Model for the Assessment of Greenhouse-gas Induced Climate Change) in conjunction with SCENGEN (Scenario Generator) in vulnerability and adaptation;
3. Compile and analyse the available record on climate-related disasters;
4. Carry out more advanced sectoral vulnerability and adaptation assessments in agriculture, forest, watershed and water, and human health, in particular using global circulation models;

5. Identify long-term priority adaptation strategies and measures, resulting from improved understanding of climate change effects on the country;
6. Discuss uncertainties in emission and climate change scenarios in vulnerability and adaptation assessments;
7. Identify national needs for adaptation technologies and the transfer of these technologies from other countries;
8. Synthesise information and prepare a long term adaptation strategies and measures, based on NAPA and V&A assessment
9. The draft technical report of the V&A assessment of the Lao PDR to climate change will be circulated to all relevant stakeholders. Local and national workshops will be organised to collect stakeholder comments and feedback;
10. The final findings of the V&A assessment will be disseminated to all relevant stakeholders to further raise the awareness of climate change issues.

Outputs:

1. Improved national technical and institutional capacity for vulnerability and adaptation assessments, building upon the capacity and experiences of the NAPA;
2. Increased awareness of all stakeholders to vulnerabilities to climate change and to the need for adaptation;
3. Increased stakeholder participation in vulnerability and adaptation assessments;
4. Analysis of records of climate-related disasters;
5. Improved understanding of the vulnerability of key sectors to climate change and of appropriate adaptation measures to climate change for these sectors;
6. Recommendations on long-term priority adaptation strategies, policies and measures;
7. A long-term adaptation strategy building on NAPA;
8. Improved integration and mainstreaming of adaptation to climate change in national development policies.

4.4. Output 4. Programmes containing measures to mitigate climate change

The FNC discussed greenhouse gas mitigation strategies for the Lao PDR in perspective with its national circumstances, and the capacity of its economy to undertake mitigation measures without negative impacts on growth. Mitigation options were identified based on the level of technology available in the country, national development goals and simplified cost-benefit analysis. The GHG mitigation strategy covered the following sectors: (1) energy, (2) transport, (3) agriculture, and (4) forestry. The FNC argued that the timeline and likelihood of the mitigation options being implemented was dependent on government priorities, costs constraints on the economy, technical capability, and donor funding.

Mitigation options for the energy sector were classified into three broad categories: energy conservation and efficiency, advanced or renewable energy sources, and structural changes in consumption. Although large hydropower appeared as a low cost electricity source, the cost of building a transmission and distribution network in an essentially mountainous country justified decentralised options using micro-hydro or other renewable energy sources. In the transport sector, the FNC discussed the development and improvement of public transport to mitigate for the growth of privately owned vehicles. In the forestry sector, conservation and sustainable management of forest areas, and afforestation were mitigation options already set as government priorities. The FNC argued for wider participation at the grassroots level to promote village forest management and curb shifting cultivation.

In addition, the FNC presented six project concepts for GHG mitigation: (1) reducing CO₂ emissions through the use of Compact Fluorescent Lights (CFL) in government and the commercial sector, (2) disseminating Improved Cook stoves (ICS) in rural areas, and (3) promoting biogas use, (4) decentralised energy supply through Solar Home Systems (SHS) in rural households, (5) small-scale hydropower in combination with electric cook stoves, and (6) adoption of four-stroke engine for two wheelers. However, the FNC did not carry out any estimates of future emission trends or quantify the greenhouse gas reduction potential of the proposed mitigation options.

As a signatory of the Kyoto Protocol, the Lao PDR may host Clean Development Mechanism project activities that mitigate greenhouse gases and provide national sustainable development benefits. STEA acts as the Designated National Authority and is in the process of developing assessment and approval procedures with the support of international organisations. As a developing country, the Lao PDR is not required to meet any emission reduction targets. However, CDM project activities may result in both emission reductions and local social, environmental and economic benefits. Although a number of CDM projects are currently in the exploratory phase, the formulation of the SNC provides further opportunities for assessing the country's general potential for mitigating greenhouse gases, and specific potential for the development of CDM projects.

The SNC will provide information on steps taken or envisaged towards formulating and implementing national programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks. The Climate Change Convention commits Parties to develop programmes and measures that will result in the mitigation of human-induced climate change. Such measures may either reduce the increase in greenhouse emissions (abatement) or increase terrestrial storage of carbon (sequestration).

The SNC will conduct a mitigation assessment, which will generate information on the potential costs, benefits and impacts of implementing technologies and practises to mitigate climate change. This mitigation assessment will provide policy makers with the basis for the formulation and prioritisation of mitigation programmes and will strengthen national sustainable development policies. The mitigation assessment will make use of either bottom-up models or top-down models and simulations for mitigation scenarios and projections. Since the FNC did not make use of any modelling software, extensive and comprehensive training of the staff involved in the mitigation assessment will be conducted so as to quickly build their technical skills. Modelling tools should be carefully chosen to meet national development circumstances, existing technical capacity and practical considerations for feasible mitigation alternatives. Models to be considered include LEAP (Long-range Energy Alternatives Planning system), ETO (Energy Technology Optimisation), STAIR (Services, Transport, Agriculture, Industry and Residential energy model), and MARKAL-MACRO (Market Allocation Macro-Economic Model). Data availability and information gaps will further determine the modelling tools used in the mitigation assessment.

Activities:

1. Train members of the technical working group, including members who originally worked on the FNC, in mitigation assessment/evaluation methodologies, including the use of mitigation analysis tools. Extensive and comprehensive training will be required as few members of the working group have prior experience in mitigation assessment. Essential supporting materials and IPCC references will be translated into the Lao language;
2. Review previous work and studies on mitigation and renewable energy development, including the FNC, and strategies for power generation, and off-grid electrification using renewable energy.
3. Based on the results from the GHG inventory, develop a baseline scenario for GHG emission by sources and removal by sinks;
4. Conduct a climate change mitigation assessment using bottom-up or top-down modelling tools;

5. Identify and screen mitigation options for reduction potential and cost;
6. Identify national needs for mitigation technologies and the transfer of these technologies from other countries;
7. Assess potential for accessing funding through the Clean Development Mechanism and identify potential CDM projects;
8. Identify barriers to climate change mitigation and propose improvements to the national regulatory framework with regards to barriers to climate change mitigation;
9. Develop a projection of GHG emission by sources and removal by sinks under different mitigation scenarios, taking into account national sustainable development objectives;
10. Update the national GHG mitigation plan;
11. The draft technical report of the mitigation assessment and mitigation plan of the Lao PDR will be circulated to all relevant stakeholders. Local and national workshops will be organised to collect stakeholder comments and feedback;
12. The final findings of the mitigation assessment will be disseminated to all relevant stakeholders to further raise the awareness of climate change issues.

Outputs:

1. Mitigation options for key sources and sinks of GHGs prioritised according to economic (costs and benefits), social, environmental and technological benefits;
2. Baseline projections of GHGs by sources and sinks;
3. Projection of GHGs by sources and sinks under different mitigation scenarios;
4. Increased technical and institutional capacity to conduct a mitigation assessment;
5. Increased awareness of stakeholders of mitigation technologies and ancillary benefits;
6. Updated the National GHG mitigation plan.

4.5. Output 5. Other information considered relevant to the achievement of the objective of the Convention

In accordance with the Climate Change Convention, the SNC will provide information on steps taken to integrate climate change considerations into relevant social, economic and environmental policies, on activities related to the transfer of environmentally sound technologies, and on information, training and public awareness of climate change.

Activities:

1. Assess the level of integration of climate change issues into national development policy making and planning processes;
2. Formulate recommendations to increase the integration and mainstreaming of climate change into social, economic and environmental policies;
3. Assess the level of awareness of climate change among policy makers, non-government organisations, research institutions, and relevant private sector entities;
4. Identify needs for awareness, training and education programmes on climate change issues;
5. Assess and establish suitable institutional arrangements for the transfer of mitigation and adaptation technologies;
6. Formulate recommendations for the development of mechanisms to improve regional and international transfer of appropriate technologies, and their dissemination to a broad range of stakeholders.
7. Explore opportunities and recommend measures for promoting climate change information sharing and exchange with neighbouring countries and other international networks;
8. Draft technical report on other information considered relevant to the achievement of the objective of the Convention to be included in the SNC.

Outputs:

1. Increased integration of climate change into national development policies;
2. Increased public awareness and understanding of climate change;
3. Proposals for programmes in education, training and public awareness of climate change;
4. Improved institutions for the transfer of mitigation and adaptation technologies;
5. Improved regional and international cooperation for transfers of appropriate technologies;
6. Improved regional and international cooperation for climate change information sharing and exchange.

4.6. Output 6. Constraints and gaps, and related financial, technical and capacity needs

The SNC will provide information on constraints, gaps, and related financial, technical and capacity needs, associated with the implementation of activities, measures and programmes envisaged under the Climate Change Convention, including the improvement of future national communications.

Activities:

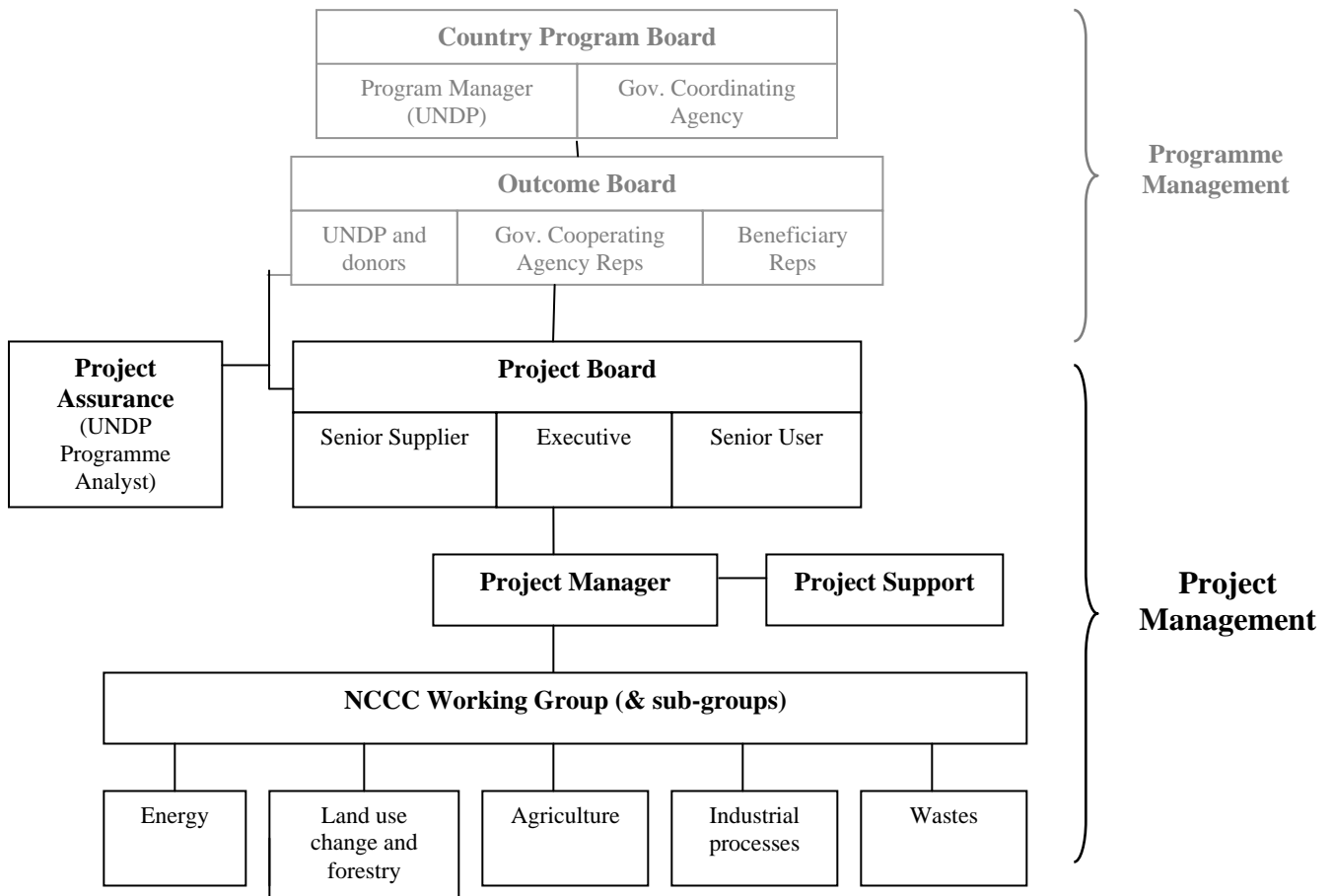
1. Assess constraints and gaps associated with the preparation of the SNC;
2. Formulate recommendations to improve the preparation of national communications on a continuous basis;
3. Compile information on financial resources and technical support provided by government and international institutions for activities relating to climate change;
4. Assess financial requirements for activities to adapt to climate change and to mitigate GHG emissions;
5. Assess status of mitigation project profiles proposed in the FNC and NAPA, and determine barriers to their implementation;
6. Based on the vulnerability and adaptation assessment and the national GHG mitigation plan, propose a list of projects for financing (specific technologies to be used, materials/equipment required, techniques or practises);
7. Draft technical report on constraints and gaps, related financial, technical and capacity needs to be included in the SNC.

Outputs:

1. Recommendations on improvements of national communications.
2. Estimated financial requirements for the implementation of the National Programme of Adaptation to Climate Change and of prioritised GHG mitigation measures.
3. Project profiles for financing to adapt to climate change.
4. Project profiles for financing to reduce emissions by sources and enhancing removals by sinks.

5. Institutional Framework for Project Implementation

The management arrangements for the preparation of the SNC will follow the standard project management arrangements for the UNDP Lao PDR supported projects. A new programme/project institutional framework will be finalised and agreed upon between the UNDP and the government of Lao PDR by the end of 2006. The proposed new structure is presented below:



To support the sustainability of the climate change work in Lao PDR, to ensure effective implementation and utilise the existing capacity on climate change in the Lao PDR, the institutional framework for the SNC project will be based on the structures and individuals involved in the CCEAP project Lao/95/G31 and the NAPA project.

To promote capacity building, self-reliance and sustainability, ownership and internalisation of external inputs, and relevance of impacts, the project will be nationally driven and implementation led by appointed government officials. The national execution is based on the willingness of the government to assume management responsibilities for the project. The key principles for national execution are: (a) use of government rules and procedures when consistent with internationally recognised practises, to ensure integration with and relevance to national programmes and structures; (b) government accountability for the effective use of UNDP resources through adequate financial reporting and the achievement of project objectives; (c) adherence to UNDP regulations and rules, when the UNDP LAO PDR office provides support services. It is advised that this structure is included in the proposal for discussion until it is finalised later this year.

The institutional framework will consist of the following entities:

Science Technology and Environment Agency (STEA). STEA is the UNFCCC and GEF Focal Point for the Lao PDR and is to be designated as an Implementing Partner for the project. STEA will be accountable for the delivery of the project outputs and the achievements of the project objectives. STEA will be responsible for the planning and overall management of the project activities, including reporting, accounting, monitoring and evaluation, and use of resources.

Project Board. The Project Board is the group responsible for making executive management decisions for the project when guidance is required by the Project Manager, including approval of project revisions. Project assurance reviews by this group are made at designated decision points during the running of a project, or as necessary when raised by the Project Manager. This group is consulted by the Project Manager for decisions when project tolerances have been exceeded. The group contains three roles: an Executive to chair the group (representative of an Implementing Partner), a Senior Supplier (representatives of UNDP or Donors) to provide guidance during regarding the technical feasibility of the project, and a Senior Beneficiary (government or civil society) to ensure the realisation of project benefits from the perspective of project beneficiaries. Members of the Project Board are to be reviewed and approved during the Local Project Appraisal Committee (LPAC).

Project Assurance. The responsibility of project assurance is to support the Project Board and the Outcome Board by carrying out objective and independent project oversight and monitoring functions. This role will be a responsibility of a UNDP Programme Analyst.

Project Manager. The Project Manager is responsible for day-to-day management and decision-making for the project as well as ensuring that the project outputs and results are delivered as planned. The Implementing Partner, in this case STEA, will appoint the Project Manager. The Project Manager's roles include but not limited to: determining when, where, and how activities take place; ensure that the project stays on track; inform all stakeholders on progress; resolve impasses and conflicts among all stakeholders.

Project Support. Project support comprises of administrative staff and possible advisors. Project support based at STEA will be in charge of day-to-day project implementation and ensure that the project outputs are achieved as planned. Project support staff will work under the direct supervision of the Project Manager.

Working Groups. The project will establish multidisciplinary working groups with technical staff from relevant government agencies. These working groups will be responsible for carrying out technical aspects of the project with support from the international technical advisors. There will be five groups: (1) energy (2) land use change and forestry (3) agriculture (4) industrial processes and (5) waste. The sectoral working groups will operate under the direct supervision of the individual Sectoral Working Group Team Leader and Project Manager.

UNDP Lao PDR CO. To facilitate the implementation of the project, the UNDP Lao PDR CO will provide support services to the project in accordance with UNDP procedures as requested. These services may include sub-contract arrangements and the procurement of goods and services.

6. Assessing project impact

The project will contribute towards the achievement of national sustainable development objectives by identifying GHG mitigation options as well as adaptation measures for climate change. The SNC will

provide the basis for the formulation of a national climate change strategy and the integration of climate change issues into national development plans and sectoral plans. The major impacts of the SNC may be divided into two categories: (1) mainstreaming of climate change issues into the national sustainable development agenda, including greenhouse gas mitigation and climate change adaptation activities; (2) awareness raising of climate change issues of policy-makers and other relevant stakeholders. The impacts of the SNC are likely to materialise beyond the timeframe of the SNC preparation. At the onset of the project, assessment indicators will be developed following stakeholder consultations. These indicators will broadly cover sustainable development aspects (social, economic, environmental).

As a least developed party to the UNFCCC, the Lao PDR is entitled to full financing for the preparation of its national communications. The sustainability of the national communication process will depend on national execution and ownership of the project, technical and institutional capacities built, political willingness and leadership, and coordination and cooperation among organisations involved.

A practical framework to assess capacity development as a result of the preparation of the SNC will be developed after the project launch. UNDP's scorecard approach for assessing country capacity will provide the basis for this framework, which will cover: (i) capacity to formulate and implement policies, legislations, and plans; (ii) capacity to mobilise and manage resources for implementation of climate change activities; (iii) capacity to build consensus and partnerships among all stakeholders; (iv) capacity to access and use climate change related information; (v) capacity to monitor and evaluate project implementation; and (vi) capacity to contribute to international climate change negotiations.

The project will be monitored and evaluated following UNDP/GEF guidelines and procedures on reporting, monitoring and evaluation. The Implementing Partner (STEa) and the Project Manager will be responsible for monitoring project implementation on a continuous basis. The Project Manager, with the support of the working groups, is expected to prepare quarterly and annual work plans, as well as quarterly progress reports (QPR). The QPRs will provide a summary of project status, including output delivery, and explain variances from the work plan. Annual project reports (APR) will provide an in-depth summary of work-in-progress, measuring performance against both implementation and impact indicators. A project terminal report, to be finalised by completion of the project, will detail achievements and lessons learned.

The project will be subjected to a Tripartite Project Review (TPR) at least once a year with participation of all stakeholders involved in the project implementation (representatives of the Government, STEa and UNDP). Upon the completion of the project, a final project review meeting will be organised.

Financial Reports (FR) will be prepared by STEa and submitted to UNDP on a quarterly basis in accordance with the Guidelines for National Execution.

The project is subject to an annual financial audit as per international standards within the framework of the UNDP Harmonised Approach to Cash Transfer (HACT) and UNDP/GEF requirements. The audit will be conducted by an external auditor hired directly by UNDP Lao PDR. The audit report will be an integral part of the monitoring and evaluation process and its comments shall be taken into account in the annual progress review and evaluation of the project.

7. Budget

The total cost of this project proposed for GEF funding is US\$405,000. Details of the proposed budget are provided below (in US\$1,000).

Activity	Estimated Budget	Total
I. NATIONAL CIRCUMSTANCES		17
Development priorities, objectives and circumstances, etc.	14	
Existing arrangements for preparing communications continuously	3	
II. NATIONAL GHG INVENTORIES		100
National GHG Inventories	71	
Cost-effective programs to develop country-specific emission factors	3.5	
Arrangements to collect and archive data for continuous inventory preparation	5	
Level of uncertainty associated with the inventory data	20.5	
III. GENERAL DESCRIPTION OF STEPS		161
Steps towards formulating programs to facilitate adequate adaptation	15	
Vulnerability to adverse effects of climate change & on adaptation	59	
Evaluation of strategies & measures for adapting to climate change	31.5	
Policy frameworks for developing and implementing adaptation strategies	5.5	
Steps for formulating programs to mitigate climate change	50	
IV. OTHER RELEVANT INFORMATION		19.5
Integrating climate change considerations into social, economic and environmental policies and actions	4.5	
Transfer of, and access to ESTs, development of endogenous capacities; enabling environments	3.5	
Climate Change research and systematic observation	2	
Climate Change education, training and public awareness	3	
Capacity Building Activities, Options and Priorities	2	
Efforts to promote information sharing and networking	4.5	
V. CONSTRAINTS & GAPS; RELATED FINANCIAL, TECHNICAL, & CAPACITY NEEDS		7.5
Constraints, gaps and needs, and activities for overcoming gaps, etc.	1	
Financial resources & technical support for preparing communications provided by various sources	1	
Financial resources and technical support provided by various sources	1	
Projects proposed for financing or in preparation for arranging support	2	
Opportunities, barriers for implementation of adaptation measures	1	
Country-specific technology needs and assistance received	1.5	
VI. COMPILATION, PRODUCTION OF COMMUNICATION, INCLUDING EXECUTIVE SUMMARY & ITS TRANSLATION		15
VII. PROJECT MANAGEMENT (BASED ON 3 YEARS DURATION)		75
VIII. MONITORING AND REPORTING		10
TOTAL		405

8. Detailed Work Plan

Outputs/activities	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. National Circumstances												
1.1. Collect and analyse all sectoral strategies, plans and studies relevant to the formulation of the SNC, including national development plans and strategies	x	x										
1.2. Update data and information on the national circumstances, including geographical characteristics, economy and education	x	x										
1.3. Collect and analyse information on specific needs and concerns arising from climate change impacts and/or the impact of the implementation of response measures	x	x	x									
1.4. Evaluate existing institutional arrangements and established an agreed set-up for continuous preparation of national communications to the UNFCCC	x	x	x									
1.5. Prepare draft National Circumstances chapter of the SNC based on outputs of activities 1.1, 1.2, 1.3 and 1.4			x		x							
1.6 Conduct consultation of stakeholders on draft National Circumstances chapter and incorporate comments and feedback in finalising it						x						
2. GHG Inventory												
2.1. Establish sectoral working groups in energy, industry, agriculture, waste, and land use change and forestry (LULUCF)	x											
2.2. Conduct training for the working group members on the use of the revised 1996 IPCC Guidelines, Good Practice Guidance (GPG), and GPG for LULUCF		x	x									
2.3. Review the 1990 GHG inventory, taking into consideration data gaps and areas needing improvement identified in the stock-taking exercise		x	x									
2.4. Review reporting instructions for greenhouse gas inventory		x	x									
2.5. Identify and analyse key source categories and priority GHGs			x	x								
2.6. Collect activity data and statistics from national sources to fill inventory data gaps			x	x								
2.7. Undertake national GHG inventory for the year 2000 and estimate emission trends to the year 2020				x	x	x	x					
2.8. Conduct an uncertainty assessment with regards to emission factors and activity data						x	x					
2.9. Explore opportunities for strengthening data management systems						x	x					

Outputs/activities	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
within and outside the government to increase accuracy for the preparation of national GHG inventories on a continuous basis												
2.10 Explore cost-effective programmes to develop country-specific emission factors for improvements to future national GHG inventory exercises							x					
2.11. Prepare the draft technical report for the national GHG inventory and circulate to all relevant stakeholders. Organise consultation workshops to present and discuss the results of the GHG inventory								x				
2.12. Finalise the results of the national GHG inventory as a separate technical output with detailed references and methodologies for dissemination to all relevant stakeholders to further raise their awareness									x			
3. Programmes Containing Measures to Facilitate Adequate Adaptation to Climate Change												
3.1. Conduct training for the working group members on methods and tools for conducting vulnerability and adaptation assessment				x	x							
3.2. Generate appropriate climate change scenarios for the Lao PDR, using integrated models such as MAGICC and SCENGEN						x	x	x				
3.3. Compile and analyse available records on climate-related disasters							x	x				
3.4. Carry out more advanced sectoral vulnerability and adaptation assessments in agriculture, forest, water and water resources, and human health using global circulation models							x	x				
3.5. Identify long-term priority adaptation strategies and measures, resulting from improved understanding of climate change effects on the country							x	x				
3.6. Discuss uncertainties in emission and climate change scenarios in V&A assessments							x	x				
3.7. Identify national needs for adaptation technologies and the transfer of these technologies from other countries							x	x				
3.8. Synthesise information and prepare a long term adaptation strategies and measures based on NAPA and V&A assessment							x	x				
3.9. Draft technical report of the V&A assessment for the Lao PDR and circulate it to relevant stakeholders. Organise consultation workshops to discuss the results of V&A and the draft national adaptation plan and its mainstreaming									x			
3.10. Finalise V&A assessment and the national adaptation plan, and disseminate results									x			

Outputs/activities	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
4. Programmes Containing Measures to Mitigate Climate Change												
4.1. Conduct training for the working group members on the use of appropriate methods and tools for mitigation analyses and assessment (LEAP, ETO, STAIR, MARKAL-MACRO etc.)					x	x	x					
4.2. Review previous work and studies on mitigation and renewable energy development, including the FNC, and strategies for power generation, and off-grid electrification using renewable energy						x	x	x				
4.3. Based on the results from the GHG inventory, develop a baseline scenario for GHG emission by sources and removal by sinks							x	x				
4.4. Conduct a climate change mitigation assessment using modelling tools							x	x				
4.5. Identify and screen mitigation options for reduction potential and cost							x	x				
4.6. Identify national needs for mitigation technology and the transfer of these technologies from other countries								x				
4.7. Assess potential for accessing funding through the Clean Development Mechanism and identify potential CDM projects								x				
4.8. Identify barriers to climate change mitigation and propose improvements to the national regulatory framework with regards to barriers to climate change mitigation								x				
4.9. Develop a projection of GHG emission by sources and removal by sinks under different mitigation scenarios, taking into account national sustainable development objectives								x	x			
4.10. Update the national GHG mitigation plan									x			
4.11. Draft technical report of the mitigation assessment and mitigation plan of the Lao PDR. Organise consultation workshops to circulate and discuss the national GHG mitigation plan										x		
4.12. Finalise the national GHG mitigation assessment and mitigation plan. Disseminate these to relevant stakeholders to further raise their awareness										x		
5. Other Information Considered Relevant to Achievement of the Objective of the Convention												
5.1. Assess the level of integration of climate change issues into national development policies					x	x						
5.2. Formulate recommendations to increase the mainstreaming for climate change into social, economic and environmental policies						x						
5.3. Assess the level of awareness of climate change among policy makers, non-government organisations, research institutions, and relevant private sector entities						x						

Outputs/activities	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5.4. Identify needs for awareness, training and education programmes on climate change issues						x						
5.5. Assess and establish suitable institutional arrangements for the transfer of mitigation and adaptation technologies							x	x				
5.6. Formulate recommendations for the development of mechanisms to improve regional and international transfer of appropriate technologies and their dissemination to a broad range of stakeholders							x	x				
5.7. Explore opportunities and recommend measures for promoting climate change information sharing and exchange with neighbouring countries and other international networks							x	x				
5.8. Draft technical report on other information considered relevant to the achievement of the objective of the Convention to be included in the SNC							x	x				
6. Constraints and Gaps and Related Financial, Technical and Capacity Needs												
6.1. Assess constraints and gaps associated with the preparation of the SNC									x	x		
6.2. Formulate recommendations to improve the preparation of national communications on a continuous basis									x	x		
6.3. Compile information on financial resources and technical support provided by government and international institutions for activities related to climate change										x		
6.4. Assess financial requirements for activities to adapt to climate change and to mitigate GHG emissions										x		
6.5. Assess status of mitigation project profiles proposed in the FNC and determine barriers to their implementation										x		
6.6. Based on the vulnerability and adaptation assessment and the national GHG mitigation plan, propose a list of projects for financing										x		
6.7. Draft technical report on constraints and gaps, related financial, technical and capacity needs to be included in the SNC										x		
7. Preparation and submission of the SNC												
7.1. Prepare and translate a draft second national communication and circulate it for feedback											x	x
7.2. Organise workshops to review and discuss the draft SNC											x	x
7.3. Finalise the SNC, obtain government endorsement, and submit SNC												x

Appendix C: Generic Terms of Reference

I - Project Board

The primary responsibilities of the Project Board are to:

- Lay down policies defining the functions, responsibilities and delegation of powers for the core Project Team and the NCCC Working Group;
- Facilitate coordination of project activities across institutions and ensure that the government and UNDP inputs to the project are forthcoming in a timely and effective manner;
- Review and approve the project activities and budget as set out in the Annual Work Plan for their adherence to the national policies and the work plan set in the project document;
- Provide guidance on the issues brought to its notice by the Project Manager, UNDP Project Assurance and other cooperating institutions;
- Provide general advises regarding efficient and timely execution of the project.

A composition of the Project Board would be:

1. Science Technology and Environment Agency (Chair)
2. A representative of UNDP
3. A limited number of representatives from the relevant government ministries. The ministries to be considered include such as Ministry of Agriculture and Forestry, Ministry of Industry and Commerce, Ministry of Communication, Transport, Post and Construction, Ministry of Public Health, Committee for Planning and Cooperation, Lao National Mekong Committee, Ministry of Labour and Social Welfare and Ministry of Energy and Mines.

II – Project Manager (PM)

Project Manager will be appointed according to the implementation guidelines for the UNDP-supported projects in Lao PDR. Project Manager is responsible for the day-to-day management of the project.

Main responsibilities of the PM include:

- Manage day-to-day issues and make the decision for the project
- Overseeing project implementation with systems put in place for sound management of all project subcontracts and financial disbursements
- Overseeing project implementation to ensure that the project achieves its objectives and delivers outputs as planned
- Preparing detailed work plans and identifying resource requirements, responsibilities, task outlines, and performance evaluation criteria
- Prepare quarterly and annual progress reports
- Resolve impasses and conflicts among stakeholders at the project level
- Initiate remedial action to remove impediments in the progress of project activities that were not envisaged earlier

III – National Communication on Climate Change (NCCC) Working Group and the Sectoral Working Groups

The Working Group will be responsible for preparing the SNC and in the future, coordinating the implementation of SNC activities. Existing members of the Technical Working Group of the CCEAP project Lao/95/G31 and NAPA Working Groups will form the basis for the NCCC.

The NCCC Working Group will be multi-disciplinary, composed of individuals from a variety of sectors and government agencies in order to ensure that the SNC is comprehensive and covers the social, economic and environmental aspects of sustainable development. This NCCC Working Group will be responsible for carrying out all technical aspects of the project and has been divided into

sectoral teams: (1) energy, (2) land use change and forestry, (3) agriculture, (4) industrial processes, and (5) waste. The sectoral working groups operate under the direct supervision of the individual Sectoral Working Group Team Leaders who will lead the team and ensure the delivery of outputs. The Project Manager will facilitate the work of the working groups.

The NCCC and the sectoral working groups could include following government organisations:

- Science Technology and Environment Agency
 - Department of Environment
 - Environment Research Institute
 - Technology Research Institute
- Ministry of Commerce and Industry
 - Department of Industry
- Ministry of Agriculture and Forestry
 - Department of Forestry
 - Department of Meteorology and Hydrology
 - Department of Agriculture
 - Department of Irrigation
- Ministry of Energy and Mines
 - Department of Electricity
 - Department of Geology and Mining
- Ministry of Communication, Transport, Post and Construction
 - Department of Urban Planning and Housing
 - Department of Transportation
- Ministry of Public Health
- Ministry of Foreign Affairs
- Ministry of Labour and Social Welfare
- Lao National Mekong Committee.
- Department of National Land Use Planning and Development
- National Tourism Authority
- National University of Lao PDR
- National Statistic Centre
- Other agencies and organisations as necessary

With the support of international and local consultants, the main responsibilities of the Sectoral Working Groups are:

GHG Inventory

1. Participate in training on the use of the revised 1996 IPCC Guidelines, GPG, and GPG for LULUCF;
2. Review the 1990 GHG inventory, taking into consideration data gaps and areas needing improvement identified in the stock-taking exercise;
3. Review reporting instructions for greenhouse gas inventory;
4. Identify and analyse key source categories and priority GHGs;
5. Collect activity data and statistics from national sources to fill inventory data gaps;
6. Undertake national GHG inventory for the selected year (preferably for the year 2000)
7. Conduct an uncertainty assessment with regards to emission factors and activity data;
8. Explore opportunities for strengthening data management systems for the preparation of national GHG inventories on a continuous basis;
9. Explore cost-effective programmes to develop country-specific emission factors
10. Finalise the GHG inventory.

Vulnerability and Adaptation

1. Participate in training on methods and tools for conducting vulnerability and adaptation assessment;
2. Generate appropriate climate change scenarios for Lao PDR, using integrated models such as MAGICC and SCENGEN;
3. Compile and analyse available records on climate-related disasters;
4. Identify long-term priority adaptation strategies and measures, based on NAPA and V&A assessment;
5. Discuss uncertainties in emission and climate change scenarios in V&A assessments;
6. Synthesise information and prepare a national adaptation plan of action building on NAPA. The national adaptation plan will discuss resource mobilisation and budget, implementation arrangements and timeframe/milestones for adaptation to climate change;
7. Finalise V&A assessment and the national adaptation plan;

Mitigation

1. Review previous work and studies on mitigation and renewable energy development;
2. Participate in training on the use of appropriate methods and tools for mitigation analyses and assessment (LEAP, ETO, STAIR, MARKAL-MACRO etc.);
3. Based on the results from the GHG inventory, develop a baseline scenario for GHG emission by sources and removal by sinks;
4. Conduct a climate change mitigation assessment using modelling tools;
5. Identify and screen mitigation options for reduction potential and cost;
6. Identify barriers to mitigation and propose improvements to the national regulatory framework;
7. Develop a projection of GHG emission by sources and removal by sinks under different mitigation scenarios, taking into account national sustainable development objectives;
8. Finalise a national GHG mitigation plan

Other Information

1. Assess the level of integration of climate change issues into national development policies;
2. Formulate recommendations to increase the mainstreaming for climate change into social, economic and environmental policies;
3. Assess the level of awareness of climate change among policy makers, non-government organisations, research institutions, and relevant private sector entities;
4. Identify needs for awareness, training and education programmes;
5. Identify national needs for adaptation and mitigation technologies;
6. Assess institutional arrangements for the transfer of mitigation and adaptation technologies;
7. Formulate recommendations for the development of mechanisms to improve regional and international transfer of appropriate technologies and their dissemination.

IV - International Technical Advisors

Individual international Technical Advisors specialised in each component of the national communications under the UNFCCC will be recruited to provide training and guidance to the GHG inventory, vulnerability and adaptation, mitigation and other activities that will be carried out as part of the SNC formulation.

Reporting to the Project Manager, the international Technical Advisors will be responsible for delivering technical inputs under their specialisation area including the followings:

- Planning, designing and carrying out training workshops on specific technical components/output
- Assisting the project team in preparing work plan for the specific technical component/output
- Assisting the project team in delivering the work according to the workplan for the specific technical component/output and preparing the related reports

- Providing recommendations or suggestions on specific information exchange activities and/or regional cooperation with other countries, particularly LDCs;
- Review the draft SNC.

Qualifications:

- Postgraduate degree in natural and/or environmental sciences/management/engineering;
- Strong experience and background in climate change, with specialised technical skills required for individual component of SNC under his/her responsibility;
- Knowledge of the UNFCCC and National Communications and related obligations would be an asset;
- Experience of GEF-funded development projects in Southeast Asia would be an asset;
- Familiarity of relevant national & international, public & private institutions and knowledge of Lao PDR would be an asset
- Excellent communication and interpersonal skills
- Results-oriented, sound judgment, flexibility and adaptability, cultural sensitivity
- Fluency in English;

V - Local/National Consultant(s)

National consultant(s) will be recruited to work full-time with the Project Team and the Working Groups, as well as providing support to the international Technical Advisors when required. The National Consultant(s) will assist in the review of literature/documents, preparation of GHG inventory, vulnerability and mitigation assessments and SNC, among others.

Reporting to the Project Manager, the local climate change consultant will:

- Provide assistance and support to the project team, Working Groups, and international Technical Advisors in project activities (mainly technical issues);
- Assist in planning, organising and conducting of trainings and workshops in Lao language;
- Provide translation when needed by the project
- Prepare the work plan and technical reports in Lao language;
- Assist in work carried out for specific technical areas/outputs of SNC project;

Qualifications:

- Postgraduate degree or equivalent in relevant natural/environmental science or engineering field;
- A minimum of 2 years work experience in climate change or environmental related projects
- Familiarity with the UNFCCC policies and processes would be an asset;
- Experience in GEF-funded development projects would be an asset;
- High level of English proficiency both written and spoken.
- Excellence in communication and interpersonal skills. Results-oriented, sound judgment, flexibility and adaptability
- Willingness to work with government counterparts and in a team with different cultural background

Generic terms of reference for scoping and implementing the V&A component of the Second National Communication

These generic terms of reference for the preparation of the V&A studies identify the basic set of activities that the V&A expert/consultant will be responsible for under the supervision of the Project Manager. It is important to note that these generic terms of reference do not intend to limit the work of the expert but to guide countries on the general profile of the V&A expert and on the activities generally expected to be carried out.

Profile of the V&A expert/consultant

The V&A expert should be very knowledgeable and with hands-on experiences on V&A issues, have a solid understanding of the gaps and needs for developing/improving vulnerability assessments, and have technical expertise in the formulation of adaptation options. The V&A expert should be able to scope technical studies in the V&A area and design an implementation strategy to carry out the different V&A activities within the framework of the National Communication. He/She should also have a solid understanding of the institutional arrangements and resources required to carry out the V&A work.

Although the NC project document already provides the framework for the V&A studies, the expert should be able to advise on any adjustments if needed, both at the organizational and technical levels, for a successful implementation of the V&A studies.

Activities

In general, the V&A expert/consultant should be responsible for ensuring that the following set of activities is carried out. Emphasis on different activities will depend on the scope of the work already described in the SNC project document and/or on the specific activities the V&A expert would be assigned to.

Policy and institutional issues

1. Identify the key policy issues the V&A study of the SNC project aims to address, e.g.,
 - a. to scope the scale of risks associated with projected climate change;
 - b. to aid in the identification of priorities for adaptation;
 - c. to support the development of a national adaptation strategy.
2. Identify the expected output of the V&A study of the SNC project on the basis of the project document, e.g.,
 - a. impacts assessment at the sectoral level for the given priorities identified in the project document;
 - b. a national adaptation strategy, including policies, programs and projects.
3. Develop a clear strategy to link the V&A outputs to national development planning. This would include, among others:
 - a. assessment of institutional arrangements/stakeholders engagement required to facilitate linking the outcome of the V&A studies to sectoral or national planning;
 - b. framework for assessing how the above linkage can be monitored and measured in the short and long terms, for instance through the development of practical indicators.

Technical issues

Scope of the V&A study

4. Elaborate on the scope (geographic, thematic, sectoral coverage, time horizon) of the V&A study, e.g.,
 - a. designing a strategy to build on but advance what was done within NAPA project;
 - b. elaborating on the scope of studies to address sectors/regions not covered by NAPA, sectors/regions identified as sensitive/vulnerable to climate change, as per the SNC project proposal;
 - c. preparing a detailed work plan for each of the study to be carried out, including a strategy to involve the relevant stakeholders, timeline, etc.;
 - d. designing a strategy, as applicable, to link the V&A studies with previous and ongoing related projects/activities (e.g., land degradation, biodiversity, international waters.)

Methodological framework

5. Elaborate on the overall methodological framework for the V&A study as per the project document and in consultation with the Project Manager. In doing so, the V&A expert should ensure that:
 - a. The proposed methodological framework is the most appropriate given the policy questions to be addressed, the characteristics of the study (e.g., sectoral focus, spatial and temporal scales, stakeholders involved, and data requirement, etc.), and data availability;
 - b. In-country expertise required for such a methodological framework is available. If needed, the V&A expert should develop a strategy to address technical capacity gaps. For instance, by exploring the possibility of applying another framework in which more in-country expertise exists, or by designing a training/technical backstopping strategy, etc.

Scenarios development

6. Identify the types of scenarios required to conduct the V&A assessment, e.g., climate, socio-economic, adaptive capacity, technology, land-use and land-cover.
7. Identify the temporal and spatial resolution needed for these scenarios (e.g., national, sub-national, watershed, community, farm level, multi-decadal average, annual, monthly, daily, mean conditions, extreme events, etc.). In doing so, the expert should justify the choices.
8. Develop the strategies for developing such scenarios, e.g., model-based, expert judgment, etc.

In the preparation of the scenarios development strategy, the expert should assess the feasibility of the scenario needs and the methods for developing these scenarios, given the characteristics of the studies, and data availability. For instance, the expert would be expected to advice on alternative options to running regional climate models or other resource intensive and time consuming exercises. The V&A expert would also assess whether there is enough in-country expertise to develop such scenarios and/or identify options to address the needs for additional expertise.

Sectoral assessment (to be considered by each of the sectors to be covered in the V&A study)

9. Elaborate on the methods and tools, as per the project document, chosen to undertake sectoral assessments, e.g., numerical models, elicitation of expert views, stakeholder consultations,

focus groups, etc. In doing so, the expert will advise on any adjustments needed to the options identified in the project document.

10. Provide justifications for the selection of the methods/tools considering the research questions, characteristics of the study, and requirements of data and technical expertise of these methods/tools.
11. Assess in-country expertise required to apply the selected methods/tools and prepare training/technical backstopping strategy as required.
12. Develop a strategy to integrate findings from sectoral assessment, as needed. For instance, by applying an integrated model, synthesizing sectoral information, etc.

Technical assistance needs

13. Develop a technical backstopping/training strategy to strengthen the national capacity needed to carry out the different V&A studies. This would include details on the type of support needed (training courses on particular methodological frameworks/tools, guidance material, technical documents and good practice) and the, timeline for such support.

Appendix D: Endorsement letters

- GEF Operational Focal Point
- UNFCCC Focal Point

SIGNATURE PAGE

Country: Lao PDR

UNDAF Outcome(s)/Indicator(s): By 2011, the livelihoods of poor, vulnerable and food insecure populations are enhanced through sustainable development (within the MDG framework)
(Link to UNDAF outcome., If no UNDAF, leave blank)

Expected Outcome(s)/Indicator (s): Improved and equitable access to land, markets and social and economic services, environmentally sustainable utilization of natural resources
(CP outcomes linked t the SRF/MYFF goal and service line)

Expected Output(s)/Indicator(s): Enhanced management capacity of the Government in meeting its international environmental obligations through strengthened implementation of multilateral environmental agreements and related national policies and legislation.
(CP outcomes linked t the SRF/MYFF goal and service line)

Implementing partner: Science Technology and Environment Agency (STEA)
(designated institution/Executing agency)

Other Partners: UNDP Lao PDR
(formerly implementing agencies)

Programme Period: 2007-2009
 Programme Component: Energy and environment for sustainable development
 Project Title: PIMS 2948 CC EA: Lao PDR Second National Communication on Climate Change (SNC)
 Project ID: 00048165
 Project Duration: 3 years
 Management Arrangement: NEX

Budget US\$ 405,000
 General Management Support Fee
 Total budget: US\$ 405,000
 Allocated resources:
 • Government (in-kind) US\$156,600
 • Regular
 • Other:
 ○ Donor
 ○ Donor
 • In kind contributions
 Unfunded budget:

Agreed by:	Signature	Date	Name/Title
STEA	_____	_____	Mr Noulin SINBANDHIT Vice President
UNDP Lao PDR	_____	_____	Ms Sonam Yanchen Rana Resident Representative