

National Rio+20 Report for Lao PDR

**Ministry of Natural Resources and Environment
Vientiane**

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ABBREVIATIONS

ADB	Asian Development Bank
CBD	Convention on Biodiversity
CDM	Clean Development Mechanism
CEDAW	the Convention on the Elimination of All Forms of Discrimination Against Women
GEF	Global Environment Facility
GIZ	German Agency for Technical Cooperation
GMS	Great Mekong Sub-region
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
LWU	Lao Women Union
MAF	Ministry of Agriculture and Forestry
MDGs	Millennium Development Goals
MEAs	Multilateral Environment Agreements
MEM	Ministry of Energy and Mining
MONRE	Ministry of Natural Resources and Environment
MPH	Ministry of Public Health
MPI	Ministry of Planning and Investment
MPWT	Ministry of Public Work and Transport
NAMA	Nationally Appropriate Mitigation Action
NAPA	National Adaptation Programme of Action
NBCA	National Biodiversity Conservation Area
NBSAP	National Biodiversity Strategy and Action Plan
NGPES	National Growth and Poverty Eradication Strategy
NORAD	Norwegian Agency for Development Cooperation
NSEDP	National Socioeconomic Development Plan
REDD	Reducing Emissions from Deforestation and Forest Degradation
SFNSDS	Strategic Framework for National Sustainable Development Strategy

UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
WB	World Bank
WCS	Wildlife Conservation Society
WFP	World Food Programme
WREA	Water Resources and Environment Administration
WWF	World Wildlife Fund for Nature

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1. Introduction

1.1. Overview of Lao PDR

Lao PDR, in the heart of the Greater Mekong Sub-Region (GMS), is surrounded by Cambodia, Myanmar, Thailand, Viet Nam and the People's Republic of China. Compared to its neighbours, Lao PDR is smaller in size, with a lower population, and is rich in natural resources. This combination of favourable geographic location and abundant natural resources means that Lao PDR has great potential for rapid socioeconomic development, even as it must ensure protection of its productive environment and ecosystems in the long term.

Given its strategic location, Lao PDR aims to become a land link and centre of logistics for the GMS. In recent decades, the development of road networks and transport within the country has given rise to fairly rapid north-south and east-west economic corridors with international linkages. In addition, the Mekong River and its tributaries in Lao PDR provide rich water resources and ecosystems, with excellent potential for power generation, irrigation development and ecosystem conservation. Hydropower potential has been estimated at 18,000 MW; until now, however, only 25 percent of this potential has been used.

More than 35 years after the Indochina War, Lao PDR's development remains low, classifying it as a Least Developed Country (LDC). Gross Domestic Product (GDP) in 2010 stood at about US\$1,100 per capita for a population of about 6 million. Economic growth has been stable in the range of 6 to 7 percent annually. Major sources of revenue include agriculture and forestry, services such as tourism, and industries including mining and hydropower.

Although Lao PDR has strong ambitions for national development by 2020 and has witnessed relative progress, it continues to face a number of key challenges. These include a need for accelerated poverty reduction; maintaining sustainable economic growth; conservation of natural resources, biodiversity and ecosystems; and social development, including development of human resource and addressing of issues of unexploded ordnance (UXO). It also faces challenges in fulfilling its commitments to international conventions that it has ratified.

1.2. Background of Rio+20

Rio+20 will mark the global progress achieved since the United Nations Conference on Environment and Development (UNCED), or “Earth Summit,” held in Rio de Janeiro in 1992, and the World Summit on Sustainable Development, held in Johannesburg in 2002.

Critically, the 1992 Rio Declaration endorsed 27 principles for sustainable development and captured these in a plan of action known as Agenda 21, which was adopted by some 178 governments. Among these countries, Lao PDR endorsed Agenda 21 as well as ratified the important international conventions adopted at the Conference, such as the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (UNCBD) and the UN Convention to Combat Desertification (UNCCD).

As a follow-up to the 1992 Rio agreements, in 2002 governments adopted the Johannesburg Plan of Implementation (JPOI) at the World Summit there. This called upon countries to take immediate steps to make progress in the formulation and elaboration of National Sustainable Development Strategies (NSDS), and to begin their implementation by 2005.

Now, Rio+20 is scheduled from 20 to 22 June 2012 to secure renewed political commitment for sustainable development, assess progress to date and remaining gaps in implementation of outcomes of the previous Summits, and address new and emerging challenges. The Conference will focus on two themes: (a) the “green economy” in the context of sustainable development and poverty eradication, and (b) the institutional framework for sustainable development.

At both the 1992 and 2002 Summits, Lao PDR was active in sharing first its Country Status Report and then its Rio+10 National Report on efforts toward national implementation of relevant commitments. This Rio+20 National Report, developed by the Ministry of Natural Resources and Environment (MONRE), thus continues this examination of achievements and continuing challenges.

.3 Rio+20 Report

This report assesses the performance of Lao PDR toward sustainable development since the 1992 Earth Summit in Rio, updating and informing on progress, achievements and remaining challenges. It also reflects the country’s commitment to Rio+20, formally known as the United Nations Conference on Sustainable Development (UNCSD), and offers national perceptions on linkages between the green economy and poverty reduction.

The assessment is based on guiding questions suggested by the Division for Sustainable Development of the United Nations Department of Economic and Social Affairs, which serves as the secretary of the Conference. The guiding questions focused on assessment of integrated planning and decision making; implementation of Multilateral Environmental Agreements (MEAs); progress, achievements and challenges with regard to implementation of activities related to sustainable development; and perceptions of/movement on the green economy and institutional arrangements for sustainable development. In particular, the report intends to

The report also is based on actual performance, progress and parameters defined in the Strategic Framework for National Sustainable Development Strategy (NSDS) 2008, as a yardstick or reference for measurement and comparison.

The report was developed through literature reviews, two major multi-stakeholder workshops, and additional inputs from the United Nations Development Programme (UNDP). It comprises seven chapters: **Chapter 1** provides an overview of Lao PDR, background information about sustainable development overall, and the national movement toward sustainable development in brief. **Chapter 2** offers the brief context on sustainable development in Lao PDR, particularly its definition, principles and related information. **Chapter 3** discusses integrated planning and decision making for sustainable development in Lao PDR, while **Chapter 4** provides information on the progress of sustainable development in the country in terms of policies, institutions, human resource development, finances, data and information, technology transfer and international cooperation. **Chapter 5** raises and discusses the challenges and constraints for realizing sustainable development goals. **The green economy, considered a key instrument for sustainable development, is the focus of Chapter 6.** This chapter also provides a definition, guiding principles, institutions for effective green economy development, anticipated challenges, and alternative solutions and directions. **Lastly, Chapter 7** provides an institutional framework and options for sustainable development.

2. Sustainable Development in the Context of Lao PDR

Sustainable development in the context of Lao PDR is based on global definitions and principles, which were adapted to reflect national circumstances and capacities in the NSDS 2008.

The term “sustainable development” was introduced in 1987 by the Brundtland Commission, a high-level global entity intended to rally countries to work to pursue this goal together. It means “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” The principles of sustainable development are based on the 27 principles of the 1992 Rio Declaration, as outlined in Annex 1.

Based on this global context, in Lao PDR the Government’s vision for sustainable development was promulgated in the NSDS 2008, namely, “Achieving the sustainable well-being of all people of the Lao PDR through the simultaneous and integrated pursuit of a prosperous economy, equitable society and healthy environment.” Complementing the overarching national goal of graduation from LDC status by 2020, the NSDS focuses on four areas of sustainability: 1) sustainable economic development; 2) sustainable social well-being and development; 3) sustainable environmental and natural resource management; and 4) good governance (MPI and WREA. 2008).

In the context of this national definition, the NSDS also suggests relevant policy guiding principles:

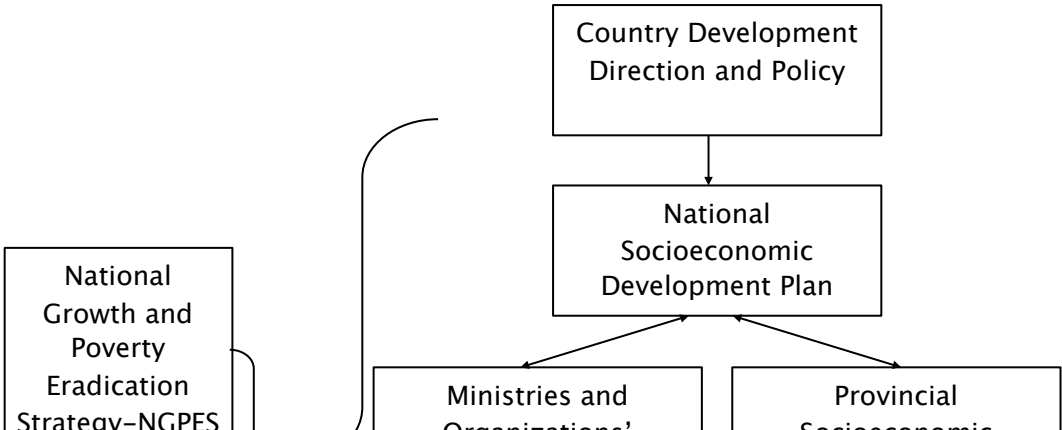
- 1) **Living within environmental limits:** Development activities and economic growth, which are essential for poverty reduction, must be subject to environmental limits.
- 2) **Intra- and inter-generational equity:** Protection of the most vulnerable and marginalized populations is necessary, without compromising the ability of future generations to meet their own needs.
- 3) **Participatory processes:** Involvement of non-Government actors, such as businesses, civil society, media and the public, should be encouraged.
- 4) **Policy integration:** Integration of economic, social and environmental considerations should be promoted, so that they are coherent and mutually reinforce each other by making full use of instruments for better regulation, such as balanced impact assessments and stakeholder consultations.
- 5) **Policy coherence:** Likewise, coherence between national and sectoral policies and among local, regional, national and global actions must be promoted.
- 6) **Using best available knowledge:** It must be ensured that policies are developed, assessed and implemented on the basis of the best available knowledge, and that they are economically sound and cost effective.
- 7) **Precautionary principles:** Where there is scientific uncertainty, implement evaluation procedures and take appropriate preventive action to avoid damage to human health or the environment.

3. Integrated Planning and Decision Making for Sustainable Development

Integrated planning is considered as an approach that can lead to sustainable development. Lao PDR has employed participatory planning and approaches for mainstreaming of sustainable development aspects into all development processes and strategies. For example, these approaches have underpinned not only the Country Development Direction and Long-Term Strategy of Socio Economic Development to the Year 2020, but also successive five-year National Socio Economic Development Plans (NSEDP 2001–2005, 2006–2010 and 2011–2015) and Sectoral Strategies.

Overall the Country Development Direction, Long-Term Strategy of Socio Economic Development and five-year National Socio Economic Development Plans is overarching policy and plan that incorporate sustainable aspects and define goals in the area of economy, social and environment. Bases on the overarching policy and plan; the strategies in the economic sector such as strategy on sustainable transport, renewable energy, tourism, trade, and mining are formulated to guide sustainability of economic development. As for social sector, for example strategy on education, public health and gender are formulated to ensure social sustainability; and environmental sustainability is included in the environment, forestry, biodiversity, climate change, disaster risk management strategy. In addition, other important strategies such as the National Growth and Poverty Eradication Strategy (NGPES) and the Strategic Framework for National Sustainable Development Strategy (SFNSDS) 2008 that incorporated sustainable development approaches and also implemented side by side with those overarching and sector strategy. The implementation of international environment-related Conventions, particularly MEAs, also are included these strategies. Figure and sub-sections below provides picture and more details information of these strategies.

The integrated planning and mainstreaming approach:



3.1. Long-Term Strategy of Socio Economic Development to the Year 2020 and National Socio Economic Development Plans 2001–2005 and 2006–2010

The Long-Term Strategy of Socio Economic Development to the Year 2020 represents the overriding guiding development policy in Lao PDR, defining broad goals, strategies and guiding principles for the country. This is supported by the five-year NSEDPs, which are rolling development plans that provide more detailed development strategies and frameworks for prioritizing the Government's expenditure programmes, expressed in its annual budgets.

As its primary long-term development goal, the Government aims to make substantive progress toward graduation from the ranks of LDCs by 2020. To realize this goal, it promotes and encourages the Lao people to actively ensure both protection and development of the nation. In so doing, it gives importance not only to economic development, but also to social development, protection of the country's natural resources, and national security.

Taking its guidance from the long-term national vision, the NSEDP 2001–2005 focused on core goals of socioeconomic development and national security. Yet it also integrated a remarkable initiative on the sustainability of natural resources, which paved the way for subsequent broader integration of sustainable development into national planning processes.

By the time of the NSEDP 2006–2010, some of the essential sustainable development principles were explicitly recognized. This five-year Plan stated

that national socioeconomic development must be balanced between economic growth, socio-cultural development and environmental preservation, while also working toward achievement of the global Millennium Development Goals for poverty reduction. Two further key policy documents arose from this NSEDP and are detailed in Sections 3.2 and 3.3: the NGPES emphasizes addressing poverty reduction through sustainable growth, pro-poor development and poverty-environment linkages, and the Strategic Framework for the NSDS.

.2 National Growth and Poverty Eradication Strategy (NGPES)

The NGPES adopted in 2004 is a national development programme aimed at enhancing growth and development and reducing poverty, particularly in the 47 poorest districts in the country. More broadly, it contributes to the overarching national development goal of progress toward graduation from LDC status by 2020. The NGPES offers an in-depth assessment of poverty nationwide with a focus on the poorest districts, as well as the environment for sustainable economic growth. Critically, it strategically identifies the sectors that are most important for poverty reduction and formulates national action plans for these sectors in response to poverty reduction priorities.

The NGPES thus focuses on four main sectors: (1) agriculture/forestry, (2) education, (3) health and (4) transport. It further identifies trade, tourism, manufacturing and energy as supporting sectors necessary for poverty reduction, – and environment, gender, population and capacity development as key crosscutting sectors. Other sectors it examines include drug control and UXO decontamination.

In detail, it prescribes priority strategies for addressing sectoral-specific aspects of poverty. For example, agriculture-related aspects are to be addressed according to the principles of sustainable resource utilization and land-use planning. These include: food security and food self-sufficiency; reduction in vulnerability; promotion of commodity production, especially for export; stabilization of shifting cultivation and eradication of poppy cultivation; conservation of the natural environment and protection of threatened species and habitats; maintenance of a healthy and productive forest cover as an integral part of the rural livelihood system, and generation of a sustainable stream of forest products; improvement of rural livelihoods; an increase in the value of outputs; and strengthening of rural communities to ensure increased earnings from value-added processing activities. In education, meanwhile, the strategic framework for long-term sectoral development rests on three major pillars, namely, (1) increasing equitable access; (2) improving quality and relevance; and (3) strengthening education management and improving

efficiency. Goals for the health sector include fair and equitable access to quality services and an emphasis on preventive health care, as well as achievement of the health-related Millennium Development Goals.

.2 Strategic Framework for National Sustainable Development Strategy 2008

The Strategic Framework for NSDS was prepared as part of the overall process of developing the NSDS, which provides a conceptual framework for the Government to better integrate sustainable development principles into national and sectoral development planning. Overall, the NSDS offers clearer definitions, principles, indicators and recommendations for moving toward sustainable development in the Lao context.

.3 National Environmental Strategy to 2020 and the Environment Action Plan 2006–2010

This long-term National Environment Strategy and Action Plan (NES-AP) aims to secure sustainable development and contribute to poverty eradication through proper environmental management and sustainable use of natural resources. To realize this objective, environmental management in Lao PDR should be implemented in a systematic, effective manner to ensure environmental protection and natural resource conservation. It also should be balanced with economic and social development and accompanied by national defense and public security, complemented by the development of appropriate policies, legislation, institutional and capacity development, education and awareness, financial mechanisms and opportunities for international cooperation.

Seven focused programmes are prioritized: (1) sustainable management and utilization of natural resources (land, water, forests, mineral resources and biodiversity); (2) promotion and enforcement of environmental and social impact assessments and environmental management of development projects; (3) institutional reform and improved capacities for environmental monitoring; (4) encouragement of private sector involvement in environmental protection, restoration, and sustainable use of natural resources; (5) promotion of investment in and establishment of financial mechanisms for environmental protection and management; (6) strengthening of regional and international cooperation; and (7) promotion of the use of clean technology and clean, organic or chemical-free products, along with goods and services that conform to high environmental quality standards.

.4 Forestry Strategy to 2020

Among sectoral strategies, the forestry strategy (FS) to the year 2020, developed in 2005, aims to promote sustainable forest resource management and use. In addition, it aims at protection of the environment, ecosystem and water resources, leading to a sustainable environment and sustainable development and improvement of the livelihood of the people of Lao PDR.

To realize these goals, it envisages that the forestry sector should comprise extensive and scientifically well-managed forests and forest resources, managed with the wider participation of society and international cooperation. Such resources would provide socioeconomic benefits to local communities; enhance environmental quality; and promote biodiversity, ecosystem and water resources conservation, as well as sustainable growth of the agriculture, industrial, ecotourism and hydropower sectors.

In line with this, nine key programmes of action were proposed: (1) land and forest use; (2) production forest; (3) non-timber forest products; (4) tree plantation development; (5) harvest/logging plans and royalties; (6) wood processing industry; (7) biodiversity conservation; (8) protection forest and watershed management; and (9) village land and forest management.

Implementing these programmes effectively is expected to stabilize forest cover at about 70 percent of total land by 2020; to ensure a sustainable flow of forest products for domestic consumption and export; to preserve important biodiversity and unique habitats; to conserve the environment, including soil, watersheds and climate; and ultimately, to contribute to improved livelihoods, revenue and foreign exchange earnings, thereby increasing direct and indirect employment.

.5 National Biodiversity Strategy to 2020 and Action Plan 2010

Formulation of the National Biodiversity Strategy and Action Plan (NBSAP) helps to outline the issues, goals and actions needed to protect biodiversity resources and ensure their sustainable use. At the same time, it contributes to implementation of the International Convention on Biological Diversity (CBD), which Lao PDR ratified in 1996. The goal of the NBSAP is to maintain biodiversity as a key to poverty reduction and to protection of the current asset base of the poor. To achieve this, the strategy suggests specific objectives, programmes and principles:

Objectives:

- 1) Identify important biological diversity components and improve the knowledge base
- 2) Manage biodiversity on a regional basis, using natural boundaries to facilitate the integration of conservation and utilization-oriented management
- 3) Plan and implement a biodiversity-specific human resource management programme
- 4) Increase public awareness of and encourage participation in sustainable management of biodiversity

- 5) Adjust national legislation and regulations and harmonize them with MEAs
- 6) Secure NBSAP implementation
- 7) Promote international cooperation driven by country needs

Programmes:

- 1) Scientific data and biodiversity knowledge development
- 2) Biodiversity management
- 3) Human resource development
- 4) Public awareness and involvement
- 5) Institutional and legal frameworks
- 6) NBSAP implementation
- 7) International cooperation

Principles to guide implementation of the strategy include:

- 1) Biodiversity is a national heritage and must presently be used in a sustainable manner and be conserved and protected for future generations
- 2) The NBSAP must be fully consistent with the Socio Economic Development Strategy up to the years 2010 and 2020 and with efforts to attract foreign investment
- 3) The NBSAP must be based on an analysis of the present status of the environment, but must also take into account the emerging trends of industrialization and modernization
- 4) The national development process must reflect ecological, economic, social, cultural and spiritual values of the local people
- 5) The sustainable use of biodiversity is a key element of livelihood strategies
- 6) The knowledge, innovations and practices of local people should be respected and their use and maintenance of biodiversity carried out with the support and involvement of their people
- 7) Biodiversity is best conserved in situ

- 8) The conservation and sustainable use of biodiversity resources require cooperation at all levels, namely, local, national, regional and global, and also a sharing of knowledge, costs and benefits
- 9) The NBSAP should address biodiversity depletion, improve the status of data and information, and provide a link between biodiversity and economic development
- 10) The formulation and implementation of policies and the establishment of a legal framework are necessary as effective measures against biodiversity depletion
- 11) Education and the raising of public awareness are essential in ensuring the conservation and sustainable use of biodiversity resources
- 12) The integration of conservation and development is one form of sustainable PA management

.6 Climate Change Strategy 2010 and NAPA 2009

To ensure sustainable development as well as implementation of the UNFCCC, Lao PDR developed a Climate Change Strategy (CCS) and National Adaptation Programme of Action (NAPA), with support from international development partners. Both documents provide information and ways forward, including guiding principles for implementation.

The CCS, endorsed in 2010, envisages securing a future where Lao PDR is capable of mitigating and adapting to changing climatic conditions in a way that promotes sustainable economic development, reduces poverty, protects public health and safety, and enhances the quality of the country's natural environment and livelihoods of all Lao people. The CCS focuses on both adaptation and mitigation, with strategic priority given to seven key areas: (1) agriculture and food security; (2) forestry and land use change; (3) water resources; (4) energy and transport; (5) industry; (6) urban development; and (7) public health.

It particularly aims to reinforce national sustainable development goals, including measures to achieve low-carbon economic growth, and to increase the resilience of key sectors of the national economy and natural resources to climate change and its impacts. Further, it intends to enhance cooperation, strong alliances and partnerships with national stakeholders and international partners to implement national development goals. To increase stakeholder willingness to take action, it aims to improve public awareness and understanding of various stakeholders about climate change, vulnerabilities and impacts, including greenhouse gas emission sources and their relative contributions, and of how climate change will affect the country's economy. Specific guiding principles include:

- 1) **Climate change mainstreaming as a core element:** Ensure that climate change adaptation and mitigation are incorporated as a priority into the 7th NSEDP 2011–2015, as well as into strategies, programmes and projects at all levels of Government, institutions, businesses and local communities, within the framework of sustainable development. Social and economic development and poverty eradication are intended as overriding priorities
- 2) **International partnerships:** Work with and seek support from international partners for capacity building and development and transfer of technology to support the implementation, adaptation and mitigation strategies and actions for low-carbon growth
- 3) **Capacity building as a pressing priority:** Build national capacities in Government agencies, technical institutions, the private sector and local communities to develop and implement climate change adaptation and mitigation for policies and actions
- 4) **Integrated solutions and co-benefits:** Develop and implement integrated adaptation and mitigation solutions that are low-cost, improve energy efficiency, promote cleaner production, build adaptation/mitigation synergy and generate economic, environmental and socioeconomic benefits
- 5) **Innovative financial instruments:** Elaborate appropriate financial packages to ensure optimal implementation of adaptation and mitigation action plans
- 6) **Awareness, education and community participation leading the way:** Increase public awareness and understanding of climate change impacts and the need for mindset transformation toward adaptation and mitigation, to mobilize communities to implement climate change adaptation and mitigation actions

Under NAPA, 45 priority project proposals are identified to implement adaptation activities in four main sectors: agriculture, forestry, water and water resources, and public health. Within these, a total of 12 top-priority project proposals were further selected. All priority projects are outlined below.

No.	Sector	Priority Projects
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1	Agriculture	<p>Priority One:</p> <ol style="list-style-type: none"> 1) Strengthen the capacity and knowledge of the National Disaster Management Committee (NDMC) 2) Promote secondary occupations and livelihood of farmers affected by disasters influenced by climate change <p>Priority Two:</p> <ol style="list-style-type: none"> 3) Improve land use planning in hazard-prone and -affected areas 4) Promote short-duration paddy and other cash crops in natural hazard-prone areas. 5) Strengthen technical capacities of local agricultural officers in natural hazard-prone areas 6) Improve and develop crop varieties and animal species that are better adapted to natural hazard-prone areas 7) Improve and construct crop and animal disease laboratories at central and local levels and build related capacity of technical staff 8) Train farmers on the processing and storing of human and animal food stuffs 9) Establish and strengthen farmers groups in natural hazard prone areas 10) Promote soil improvement using locally available organic fertilizer and existing agricultural waste 11) Develop appropriate bank erosion protection systems for agricultural land in flood prone areas 12) Promote integrated pest management (IPM) and use of herbal medicines in pest management and livestock treatment 13) Develop the capacity of technical staff in organic fertilizer research.
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2	Forestry	<p>Priority One:</p> <ol style="list-style-type: none"> 1) Continue the slash-and-burn eradication programme and permanent job creation programme 2) Strengthen capacities of village forestry volunteers in forest planting, caring and management techniques, as well as the use of village forests <p>Priority Two:</p> <ol style="list-style-type: none"> 3) Carry out surveys and identify and develop forest areas suitable for supporting seed production 4) Promote and establish tree nurseries to provide saplings to areas at high risk from flooding or drought 5) Raise public awareness on wildlife conservation and forest fire prevention 6) Set up and further strengthen technical capacities of forest fire management teams at provincial, district and village levels 7) Develop public awareness campaigns to disseminate information on forest and wildlife regulations and laws, and strengthen implementation of these regulations 8) Develop agro-forestry systems for watershed protection and erosion reduction in steep areas 9) Develop small reservoirs in upland areas in order to provide water for wildlife/aquatic animals and plants during the dry season 10) Develop a public awareness campaign on pest and disease outbreaks in wildlife caused by natural disasters, as well as on associated preventive measures 11) Develop an extension campaign on integrated forest plantation management for crop pest and disease control 12) Conduct research and select seeds of plant species suitable for flood- and drought-prone areas 13) Construct bush fire barriers/forest fire protection buffer zones in forest conservation areas 14) Build research capacity on wildlife pests/diseases and outbreaks of animal diseases
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<p>Water and water resources</p>	<p>Priority One:</p> <ol style="list-style-type: none"> 1) Raise awareness on water and water resource management 2) Map flood-prone areas 3) Establish an early warning system for flood-prone areas, and improve and expand meteorology and hydrology networks and weather monitoring systems 4) Strengthen institutional and human resource capacities related to water and water resource management 5) Survey underground water sources in drought-prone areas 6) Study, design and build multi-use reservoirs in drought-prone areas <p>Priority Two:</p> <ol style="list-style-type: none"> 7) Conserve and develop major watersheds 8) Build and improve flood protection barriers to protect existing irrigation systems 9) Improve and protect navigation channels and navigation signs 10) Repair/rehabilitate infrastructure and utilities damaged by floods in agricultural areas
<p>Public health</p>	<p>Priority One:</p> <ol style="list-style-type: none"> 1) Improve systems for the sustainable use of drinking water and sanitation, with community participation, in flood- and drought-prone areas 2) Improve knowledge and skills of engineers who design and build water and sanitation systems <p>Priority Two:</p> <ol style="list-style-type: none"> 3) Raise public awareness on sanitation in flood-prone areas 4) Improve and standardize the quality of drinking water 5) Expand epidemic disease diagnostic laboratories at regional and provincial levels, to provide disease epidemic information in a timely fashion to flood- and drought-affected areas 6) Improve prevention and treatment of water-borne diseases 7) Develop a timely and accurate reporting system for epidemic diseases 8) Improve the capacity of the epidemic disease surveillance system

.7 Sustainable Transport Strategy and Action Plan to 2020

The long-term Sustainable Transport Strategy and Action Plan, developed in 2009 through a consultative process, recognizes the growth of the transport sector and environmental, safety and health problems and risks that may arise

from transport developments. The strategy sets long- and short-term goals, strategies to realize these goals, and implementation measures. Goals include:

- 1) Reduce fatalities from road accidents to not more than 4 people per 10,000 vehicles by 2015 and 2 people per 10,000 vehicles by 2020
- 2) Reduce health risks from transport developments (respiratory diseases, high blood pressure)
- 3) Promote travel without the use of engine vehicles (walking, cycling), reaching 25 percent of total transport by 2015 and 30 percent by 2020
- 4) Promote public transport in urban areas (bus, taxi, tuktuk), reaching 15 percent of the total transport by 2015 and 30 percent by 2020
- 5) Stabilize transport by private car and pickup at 10 percent of total transport in both 2015 and 2020
- 6) Reduce motorbike transport to 50 percent of total transport by 2015 and 10 percent by 2020
- 7) Promote BRT in Vientiane capital
- 8) Encourage vehicle inspection of 75 percent of trucks, pickups, cars and tuktuks by 2015, and of 100 percent by 2020; for motorbikes, 50 percent should be inspected by 2015 and 80 percent by 2020
- 9) Encourage inspection of public transport vehicles such as buses, tuktuks, taxis and heavy trucks twice a year and of private cars at least once a year from now until 2020 Promote environmentally-friendly vehicles from now until 2020
- 10) Promote application of the UERO III standards on vehicle emissions by 2015 and 2020

To realize these targets, implementation of 10 areas of action is recommended:

- 1) Improved urban amphibian air quality management and control to ensure it is under permissible air quality standards
- 2) Promotion of research and development on alternative transport that optimizes and maximizes socioeconomic and environmental benefits, including public transport, alternative fuels, noise control equipment/materials and environmentally- friendly vehicles
- 3) Incorporation of transport facilities for vulnerable people such as women, children, people with disabilities and other groups;
- 4) Development and improvement of appropriate regulations, standards and guidelines for sustainable transport developments

- 5) Development and improvement of institutions and technical capacities for standards, inspections, coordination and implementation of strategies and plans
- 6) Promotion of enforcement of regulations on inspection and monitoring
- 7) Promotion of wide public participation in transport development, planning and feedback, including decision making for transport sustainability
- 8) Systematic and continuous increasing of awareness on sustainable transport
- 9) Improved financial mechanisms and encouragement of contributions from the wider society on development of a sustainable transport development fund
- 10) Promotion of international cooperation and seeking of technical and financial support from development partners and other international organizations for sustainable transport development

.8 National Disaster Management Plan 2012–2015

The National Disaster Management Plan 2012–2015 is under finalization; the final draft recognizes the disaster hazards that Lao PDR has been facing as well as potential future risks, and sets goals and strategies for the reduction of such risks.

In the earlier National Strategic Plan for Disaster Risk Management 2003, the Government already has focused its disaster management vision on four strategic and six specific objectives. The strategic objectives are (1) safeguarding sustainable development and reducing the impacts and damages caused by natural and manmade disasters; (2) shifting from relief to mitigation of disaster impacts on communities, society and the economy and to preparedness before a disaster strikes, with emphasis on hazards such as floods, drought, landslides and fires; (3) ensuring that disaster management is a joint responsibility of both the Government and the people, through building of community capacities; and (4) promoting sustainable protection of the environment and the country's natural wealth, including forests, land and water resources.

The specific objectives and actions are described as below:

(1) Ensuring that disaster risk reduction is a national and local priority. by (a) Formulate policies and legislation in support of disaster risk reduction; (b) Create and strengthen a national disaster risk reduction coordination mechanism or platform; (c) Integrate disaster risk reduction into national

development policies and planning; and (d) Allocate appropriate resources for DRR at the national, provincial and community levels.

(2) Strengthening sub-national and community-based disaster risk management. by (a) Decentralizing responsibilities and resources for DRR; (b) Promoting implementation of community-based DRR programmes; and (c) Developing a National Disaster Management Plan that supports activities at provincial, district and village levels.

(3) Identifying, assessing and monitoring hazard risks and enhance early warning. by (a) Conducting periodic national and local risk assessments to ensure that timely response mechanisms are developed; (b) Establishing and maintaining a disaster management information system; (c) Developing and maintaining a multi-hazard early warning system; (d) Collaborating with international and regional disaster risk reduction stakeholders; and (e) Establishing and operationalizing Emergency Operations Centres at national and sub-national levels.

(4) Using innovative knowledge and education to build a culture of safety and resilience. by (a) Establishing mechanisms for information exchange and networking; (b) Promoting disaster risk management education and training; (c) Promoting gender and cultural sensitivity training as integral components of disaster risk management; (d) Undertaking DRR technical and scientific research; and (e) promoting public awareness of hazards, risks and mitigation strategies.

(5) Mainstreaming DRR strategies into policies and programmes of relevant Government Ministries. by (a) Promoting food security to enhance community resilience; (b) Integrating DRR and response preparedness planning into all sectors of relevant Government Ministries; (c) Promoting appropriate structural and non-structural mitigation measures into national building codes; and (d) Developing innovative financial instruments for addressing disaster risks.

(6) Strengthen disaster preparedness for effective response at all levels. by (a) Strengthening national and sub-national capacities for preparedness and response; (b) Developing coordinated regional operational mechanisms for emergencies exceeding national coping capacities; (c) Preparing and periodically updating disaster preparedness and contingency planning; and (d) Establishing emergency funds at national and local levels.

.9 Renewable Energy Strategy to 2025

The Renewable Energy Strategy is another important effort of the Government aiming at sustainable development, particularly in term of self-reliant energy security; promotion of environmental sustainability, economic development and poverty reduction; and reduction of, rural-urban gaps in access and gender inequalities; The strategy, endorsed in 2010, recognizes that the long-term demand for renewable energy – micro hydro, solar, wind, biomass, biogas, biofuel, energy from solid waste, and thermal – and for environmental protection in the country is rising.

By 2025, it is envisioned that renewable energy will account for 30 percent of total energy produced, or 1,190 ktoe, an increase from 17 percent (473 ktoe) in 2020 and 5 percent (170 ktoe) in 2015. Further objectives are that 100 percent of the population will have access to electricity, 10 percent of imported fuel oil would be replaced by biofuel, and 10 percent of biofuel would be consumed in rural area. The strategy also aims to ensure the use throughout the country of B10 (10 percent biofuel, 90 percent diesel) and E10 (10 percent ethanol, 90 percent gasoline). A total of 240 MW of micro-hydro power would be installed, and 50,000 households nationwide would have access to biogas.

To realize these goals, the strategy calls for institutional arrangement and capacity strengthening, as well as measures for promotion and development., These measures include tax exemptions and reduction, promotion of investments, Clean Development Mechanism projects, research in renewable energy, awareness raising, technology transfer and establishment of a renewable energy fund. Related to this will be the need to find options and address challenges resulting from the loss of income in the Government budget due to tax exemptions and reduction, high investments and, potentially, low usage if imported fuel is cheaper than some types of renewable energy. Collaboration will be needed with other sectors, particularly natural resources and environment, agriculture and forestry, trade, finance, investment and technology.

.10 Ecotourism Strategy and Action Plan 2005–2010

The Ecotourism Strategy and Action Plan, formulated in 2004, aims to promote sustainable practices in the key tourism sector.

The strategy envisaged that by 2010 Lao PDR would become a renowned destination specializing in forms of sustainable tourism that benefit natural and cultural heritage conservation, local socioeconomic development and spread knowledge of the country's unique cultural heritage around the world. It was based on the following guiding principles:

(1) minimizing negative impacts of tourism on national nature and culture; (2) increasing awareness among all stakeholders of the importance of ethnic diversity and biodiversity conservation; (3) promoting responsible business practices, which work cooperatively with local authorities and people to support poverty alleviation and deliver conservation benefits; (4) providing a source of income to sustain, conserve and manage the Lao PDR protected area network and cultural heritage sites; (5) emphasizing the need for tourism zoning and visitor management plans for sites that will be developed as eco-destinations; (6) using environmental and social baseline data, as well as long-term monitoring programmes, to assess and minimize negative impacts of tourism; (7) maximizing the economic benefit of tourism for the national economy, especially local businesses and people living in and around the protected area network; (8) ensuring that tourism development does not exceed the social and environmental limits of acceptable change, as determined by researchers in cooperation with local residents; and (9) promoting local styles of architecture and infrastructure that are developed in harmony with the Lao culture and environment, that use local materials, that minimize energy consumption, and that conserve local plants and wildlife.

.11 Support for Multilateral Environmental Agreements

Lao PDR is a country that invests considerable effort and capacity in contributing to sustainable development through its involvement in and institutional arrangements for implementing international Conventions and incorporating sustainable aspects in national policies and planning processes.

Until now, Lao PDR has ratified and been a member of 10 international Conventions or Multilateral Environmental Agreements (MEAs). These include the World Heritage Convention (WHC), ratified by the Government in 1987; the UNFCCC, in 1995; the Convention on Biological Diversity (CBD) and UNCCD, in 1996; Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer, in 1998; Kyoto Protocol to the UNFCCC, in 2003; Cartagena Protocol on Bio-safety to the CBD, and Convention on International Trade in Endangered Species of Fauna and Flora (CITES), in 2004; and Stockholm Convention on Persistent Organic Pollutants (POPs), in 2006. Specific Government agencies responsible for implementation and reporting on these MEAs are outlined in Table 1.

Table 1: Ministries, Departments and Institutes Responsible for Implementation of MEAs

MEAs	Responsible Ministries	Focal Points
WHC (1987)	– Ministry of Information, Culture and Tourism (MICT) as focal point	Department of Museums and Archeology, MICT
UNFCCC (1995)	Ministry of Natural Resources and Environment (MONRE)	Department of National Disaster Management and Climate Change (NDMCC)
CBD (1996)	Ministry of Natural Resources and Environment (MONRE)	Department of Forest Resource Conservation (FRC)
UNCCD (1996)	Ministry of Agriculture and Forestry (MAF)	National Agriculture and Forestry Research Institute (NAFRI)/ Agriculture Land Use Research Centre (ALURC)
Vienna (1998)	Ministry of Natural Resources and Environment (MONRE)	Greater Mekong Sub-region Secretary Office (GMSSO)*
Montreal (1998)	Ministry of Natural Resources and Environment (MONRE)	Greater Mekong Sub-region Secretary Office (GMSSO)*
Kyoto Protocol (2003)	Ministry of Natural Resources and Environment (MONRE)	Department of National Disaster Management and Climate Change (NDMCC)
Cartagena (2004)	Ministry of Science and Technology (MST)	Science and Technology Research Institute
CITES (2004)	Ministry of Natural Resources and Environment (MONRE)	Department of Forest Resource Conservation (FRC)
POPs (2006)	Ministry of Natural Resources and Environment (MONRE)	Natural Resources and Environment Research Institute

Note: * GMSSO just merged with Lao National Mekong Commission; Vienna and Montreal is under MONRE, but it is not officially assigned to any department yet (as of May 2012).

Table 2: Report Status and Institutional Framework (as of February 2011)

Convention	Up-to-Date Report Under Convention	Status	Remarks
UNCBD	1 st NBSAP	Submitted in 2004	NBSAP was funded by UNDP and DANIDA implemented by MONRE
	2 nd and 3 rd	No report	
	4 th NR-APBT	Submitted in 2010	
	1 st NAP	Submitted in 2000	
	2 nd NAP	Submitted in 2002	
	3 rd NAP	Submitted in 2006	

UNCCD	4 th NAP	Under preparation since June 2010 and expected to be ready by the end of 2012	
UNFCCC	FNC	Submitted in 2000	SCN was implemented by DNDMCC of MONRE under TNA project, funded by UNDP/GEF
	NAPA	Submitted in 2009	NAPA was implemented by DNDMCC of MONRE under TNA project, funded by UNDP/GEF
	SNC	Under preparation since 2009 and expected to be ready during 2012	SCN is being implemented by DNDMCC of MONRE under TNA project, funded by UNDP/GEF
	TNA	Under implementation and expected to be completed by the end of 2012	TNA is implemented by DNDMCC of MONRE under TNA project, funded by UNEP/GEF
UNCBD, UNCCD, UNFCCC	NCSA	Submitted in 2009	

Source: Activity Implementation Report 2011. The Piloting Integrated Processes and Approaches to Facilitate National Reporting to the Rio Conventions. Rio_FRN project.

4 Progress, Achievement and Constraints

The progress and achievements were examined by using output-based approach which captured only the remarkable results in the area of economic, socials development and environment management against indicators defined in the strategic framework for national sustainable development strategy and MDGs's goals. In the economic area this report examined and observed results of the macroeconomic, poverty and other economic sectors such as trade, finance, transport, mining, tourism in each period, between 1990s and 2010. In the social area it focused on education, health, employment, gender; and the progress and achievement in the area environment sustainability focused on clean and safe environment, forest, land, water, biodiversity including waste management.

.1 Economic Development

.1.1 Macroeconomic Development

For 20 years, Lao PDR's economic growth has been mostly steady except financial crisis years, 1997–1998; averaging about 6.3 percent between 2001 and 2005, increased 0.4 percent compared to 1996–2000 (CPI, 2006). The growth achieved 7.9 percent annually between 2006 and 2010 (MPI 2011). GDP per capita increased from US\$ 211 in 1990 to US\$ 380 in 1995. The GDP per capita decreased to US\$350 in 2000 because of inflation before recovery and increased up to US\$ 573 in 2005/2006, US\$ 818 in 2007/2008 and then to US \$1,069 in 2009/2010 or increased 18 percent between 2006–2010 (MPI 2011). Growth has mostly resulted from increased Foreign Direct Investment in natural resource exploitation, as well as from agriculture and tourism. In addition, it also resulted from turning from self-sufficiency to commercialization and market orientation; the key sector in contributing to GDP such as agro-forestry gradually reduced while industry and service increased. The share of agriculture in GDP decreased from 51.9 percent in 2000 to 45.4 percent in 2005 (CPI 2006) and then 30.4 percent in 2010 (MPI 2011); the share of industry and construction sectors increased continuously from 22.4 percent in 2000 to 28.2 percent in 2005 (CPI 2006) and 26.1 percent in 2010 (MPI 2011). Similarly the share of services increased from 25.7 percent in 2000 to 26.4 percent in 2005 and then 37.2 percent in 2010 (MPI 2011).

Although economic growth is about stable; Laos's economy is still weak, relies on foreign assistance and natural resources, this causes the economy is easily affected from global and regional political turmoil, economic or financial crisis and degradation of natural resources. The GDP reached 58,282 billion LAK in fiscal year 2009–2010 or increased about double compare to 2004–2005 but it is still small amount compare to other country in the region.

.1.2 Trade Development

Progress and achievements in sustainable trade development have focused on steady growth of exports, diversification and increase of trading partners, exported commodity, structure, a trade balance between imports and exports, and sustainably sound and/or greener, cleaner products. However, the progress and achievements were more significant in the areas of diversification and increase of trading partners, steady growth of exports, diversity of exported commodity and improvement trade balance conditions.

Government policy on open up country and investment including favourable foreign trade policy have allowed the Lao PDR to gradually integrate into the regional and international economies; leading to diversify its markets. To date, Lao PDR has trade relations with more than 30 countries, and exports generally

have been growing steadily, which is far increase compare to the period when the trading partners or markets were only countries that share borders with Laos such as Thailand, Vietnam and China.

The exports, on average, grew steady; at a rate of about 7 percent per year between 2001 and 2005, which on average increased 1.6 percent per year compared to 1990 to 2000 (CPI 2006), 12 percent per year between 2006 and 2010(MPI 2011). The main exported commodity, previously or during 1990s was timber and wood products, now number of products such as coffee, electricity, clothing, minerals, timber and wood products, garments, corn, and beans are on export. Furthermore, there are also emerging products with potential such as tea, rubber, vegetables, fruits, oil plants and fragrant rice. Likewise, the structure of trading switch from timber and wood products (14 percent in 2005) to mining products (45.26 percent), garments (12.70 percent), electricity (9.97 percent), agriculture/NTFP¹ (9.06 percent) and coffee (2.25 percent) while wood products dropped to 4.90 percent in 2009 (MPI2011).

For years, Lao PDR has faced a major trade deficit. The average annual deficit between 2006 and 2010 was US\$184 million, or 16.2 percent of total exports, while the deficit was US\$0.92 billion, or 3.8 percent of total GDP, over these years. Nonetheless, this represents an improvement since 2001–2005, when the deficit stood at 10.8% of GDP (MPI 2011). Root causes for the issue can be traced to limited domestic production, as well as to openings for investment and trading moving faster than national capacity and readiness.

Meanwhile, greener and/or cleaner products are just emerging, although they are growing. So far, outstanding greener products, particularly certified and/or green-labeled products such as organic coffee or NTFPs, are being promoted in several sectors, including agriculture, forestry, handicrafts, environment, and renewable energy. A Clean Development Mechanism project operated by the Lao Beverage Company has reduced about 3,000 tCO₂e per year and earned more than US\$200,000 per year since 2008. However, Lao PDR continues to face a number of challenges and constraints in promoting green products overall, including access to markets and market information, incentives (tax exemptions, reduction), capacities, and access to technical and financial support.

However, in a period such as during 2001 to 2005, the growth rate was lower than the planned target of 8.6 percent per year. The average value of exports

¹ Non-Timber Forest Products

per capita was USD 86.7 in 2005, which remains far lower than that in other countries in the region (CPI 2006). The trade deficit is remained unsolved and last for today. Root causes for the issue can be traced to limited domestic production, as well as to openings for investment and trading moving faster than national capacity and readiness.

.1.3 Sustainable Financial Resources

Based on the strategic framework for sustainable development in Lao PDR, progress or achievements with regard to sustainable financial resources have focused on growth and distribution of national budget revenues, reductions in the budget deficit and aid dependency ratio (as a percentage of GNI), and establishment of funds for supporting environmental management and poverty reduction.

Annual budget revenues increased rapidly and steadily as a result of various Government efforts, including policies and measures on taxes as well as domestic and foreign investment. The total national revenue was estimated to be 38. Trillion LAK during 2006–2010 (MPI 2011); this increased from less than 15 trillion during 2001–2005 (CPI 2006). The funds established for the environment and poverty reduction include the Environmental Protection Fund, Forestry Development Fund, Poverty Reduction Fund, and a fund for the poor under Nayobay Bank. The Environmental Protection Fund (EFP), established in 2005, aims to support the budget for environmental management and protection, particularly in the areas of: (1) capacity building and human resources development; (2) monitoring of environmental and social impacts of development; (3) development of information on natural resources management; (4) biodiversity conservation and sustainable uses; (5) natural resources protection; and (6) enforcement to ensure that project developers properly mitigate all impacts.

Under the Forestry Development Fund, also established in 2005, the main objective is to conserve the Protection forests and Conservation forests, as well as to plant and afforest in order to protect the water resources and environment. In addition, protection and expansion of aquatic life and wildlife, support the information policies, laws and regulation, technical forestry, and other efforts relating to forestry resources are all emphasized.

Lastly, the Poverty Reduction Fund (PRF) was established in 2002 to support implementation of the five-year NSEDP and the Poverty Reduction Strategy Plan. The main sources of funding were the World Bank and the Swiss Agency for Development and Cooperation (SDC). PRF received a World Bank soft loan of US\$19.3 million to implement Phase I (2003–2007), which focused on participatory rural development projects in 1,984 villages situated in 21

districts across seven provinces. For the transitional period (2008–2011), PRF further gained a grant aid of US\$20 million from international organizations, including US\$15 million from the World Bank and US\$5 million from SDC, to implement 1,266 sub-projects associated with four sectors of healthcare, education, agriculture and public work.

The most constraint and challenge in this area is budget deficit. For five years, 2001 to 2005 the deficit was 7.82 trillion LAK (CPI 2006), this increased to 10.95 trillion in the period 2006–2010 (MPI, 2011). Most of the budget deficit (see also Section 4.1.1) has been covered by external loans and grants, with a lower proportion from domestic borrowings (MPI and WREA, 2008). During 2006–2010, however, only 3,982 billion LAK out of a total Government investment of 24,747 billion LAK was from domestic investment, while 20,765 billion LAK came from foreign investors; of this foreign investment, 58 percent was in the form of grants and 42 percent was loans (MPI 2011).

The established funds is still in early stage and mainly rely on international financial assistance, the poverty reduction fund is likely to terminate and or unclear after 2020 once Laos graduates from LCD status; these could be a risk in term funding sustainability.

.1.4 Food Security

Based on the strategic framework for sustainable development in Laos, progress or achievements with regard to food security focused on reducing the number of malnourished people (with data disaggregated by lowland/upland location and gender), level of agricultural land degradation, incidence of slash-and-burn cultivation, rice output (tonnes per year), agricultural growth rate, the food price index, forest and water resource preservation. In this regards, this reports observed that several progress and achievements in term of growth of agriculture sector, rice production and sufficiency.

Overall, food security has been improved for past 20 years; from shortage of rice in many areas to rice sufficient and commercialization and or export. Steady growth of agriculture and forestry sector which, on average, increase from 3.4 percent in the period of 2001–2005 to 4 percent in the period of 2006–2010. Annual paddy rice production on average increased from about 1.1 million tonnes in 1995 to 1.6 million tonnes in 2000 (NSC, 2005), up to 2.56 million tonnes in 2005 (CPI 2006) and then to 2.9 million in 2009 (MPI 2011).

However, food insecurity is still a serious problem. Past 15 years, the nutritional status of the Lao population has not significantly improved and over the last 10 years, there has been no improvement in the chronic malnutrition. According to results of the Comprehensive Food Security and Vulnerability Analysis (CFSVA) by the World Food Program (2006); 50 percent of rural children under the age

of five are chronically malnourished. Two-thirds of the rural population is food-insecure or vulnerable to food insecurity. The malnutrition was because of also the low dietary intake of fat; the main sources of fat and protein, wild meat and fish, are under threat. Floods and droughts are the biggest threats. These imply that the poor are extremely vulnerable to natural hazards and resources degradation as well as a changing climate in future (MPI and WREA 2008).

.1.5 Sustainable transport development

Progress or achievements on sustainable transport development in the context of the strategic framework for sustainable development in Lao PDR have focused on the percentage of people with adequate access to transport; the rate of illness as a result of road incidents; environmentally-friendly transport and/or energy; and resource savings and efficient transport.

Key progress toward sustainable development in the transport sector has included growth of transport sector, improvement of access road, road along economic corridors, the adoption of a national strategy and action plan on environmentally sustainable transport, improvement of public and environmentally friendly transport and initiatives on emissions reduction.,

Efforts for economic growth and international linkage as well as poverty reduction, improve transport, trading and turning Laos from land-lock to land-link country; leading to remarkable and continuous improvement of transport network and services. The road network increased by 4.6 percent annually between 2006 and 2009. Transport services reached 111.9 million tones, 210 million persons (MPI 2011). Access to road; in 2005, the total length of the road in Lao PDR increased to 33,861 km, from only 18,363 km in 1995 (NSC 2005). In 2010, the length of road reach 47,491 km; of which 83 km is concrete road, 614 km is asphalt, 6324 km is terred road, 17,556 km is graveled and 22,915 km is earthen road. In addition, economic corridors transport networks such as Vientiane to Nongkai, Thailand 1st Mekong Bridge or Friendship Bridge (Formal inauguration in 1994) and railway (2009) in central of Laos; Road. No. R3 (2003) linking China and Thailand, Road No.2E linking China and Vietnam through provinces in the north of Laos; Road No.9 including 2nd Mekong Friendship Bridge (2007) connects Mukdahan province (Thailand) and Savanakheth province (Laos), also serving linkage Vietnam and Thailand in the southern of Laos; Road No.12 including 3rd Mekong Bridge (2011) connects Nakhon Phanom (Thailand) and Khammouan province (Laos) in the southern of Laos and 4th Mekong Bridge (expected to be open in 2011, but as of June 2012 it has not been completed yet) connects Chiang Rai province (Thailand) and Bokeo province in the north of Laos.

The National Strategy and Action Plan on Environmentally Sustainable Transport, detailed in Section 2 above, mainstreamed a number of sustainable aspects with regard to transport in Lao PDR. Nevertheless, several challenges remain, including a need for broader synergy between fuel and emissions standards, which are regulated under different branches of the Government. In addition, while roads have reached all districts since 2005, only 14 percent of the road network is actually paved; road connections with villages, particularly in the wet season, is particularly difficult, while some national and provincial roads are deteriorating because of a lack of funds for maintenance, among other reasons.

Public transport remains basic and underdeveloped, with electric minibus and hybrid cars also just introduced recently but at a very small scale. In 2010, public transport (not including tuktuk) comprised only 2 percent of total transport, while cycling and walking stood at 6 percent and 19 percent respectively. Most transport is still by motorbike (60 percent) and private car (10 percent) (MPWT 2010).

In general, the number of road accidents has increased, in turn leading to increased fatalities and injuries. In 2000, 4,025 accidents killed 358 people and injured 4,242; by 2008, this had risen to 5,025 accidents, 616 fatalities and 8,985 injuries, representing a 72 percent increase in the numbers killed and a more than doubling of those injured. Although the number of fatalities per 10,000 vehicles decreased from 19 to 9 over the same period, the percentage of fatalities in each accident increased from about 8 percent to 12 percent. Costs related to road accidents were the equivalent of 2.7 percent of GDP, or US \$53.7 million (MPWT 2010), with a prediction that such costs may reach a total of US\$168 million by 2013.

Despite Laos improved the transport network with region; because of limited and young domestic production and trade including lower road standard, Laos is likely benefit lesser from the development compare to its neighbors and is encountering opportunity cost on road maintenance. In addition, overall, an enabling environment for greener transport remains to be developed, with particular action needed on tax exceptions and reduction for environmentally-friendly technology transfer and innovation. Strengthening this likewise is needed for more effective urban planning and integration of planning and systematic implementation.

.1.6 Tourism and Ecotourism Development

Based on the strategic framework for sustainable development in Lao PDR, progress or achievements in ecotourism in this context have focused on the

number of tourists arrivals, revenues generated from tourism industry overall, revenues from ecotourism and/or responsible tourism and community-based tourism (CBT), number of tourism-attraction conservation projects and state of the environment at tourism sites. In this regards and however, the key progress and achievements since 1990 are in the view of steady growth of tourist arrivals and revenues; policy, direction and management that promoting sustainability aspects in this sector.

With more favorable enabling policy, infrastructure and promotion namely open up policy, market mechanism and investment promotion including tourism marketing; tourists and revenues increased sharply for past 20 years, 1991 to 2010, with average annual foreign tourist arrivals rate of about 29.15 percent and 38.27 percent for revenues or 828,591 tourists and earned US\$ 117.75 million per year. The tourist arrivals increased from 14,400 in 1990 to 2,513,028 in 2010; revenues increased from about US\$ 2.25 million in 1991 to US\$ 381.67 million in 2010. Periodically number of tourists performed on the rise trend from 346,640 in 1995 to 737,208 in the 2000, the Visit Lao Year, then 1,095,315 in 2005 and then 2,008,363 in 2009. The revenues increased accompanying with increase of tourists from US\$ 24.74 million in 1995 to about US\$ 113.90 million in 2000, then 146.77million in 2005 and then US\$ 267.70 million in 2009 (LNTA 2010). Past 10 years, the total number of foreign tourists to Lao PDR increased by 9 percent annually between 2001 and 2005, , this growth has continued and even accelerated during 2006-2010 with an average growth of 15.8 percent compared to the earlier five-year period. Past 5 years, tourism sector becomes 2nd and or 3rd rank of export earnings, just after minerals which is first rank of export earnings between 2006-2010 (LNTA2010).

The socioeconomic development plan 2006-2010, tourism development strategy to 2020, ecotourism strategy 2010 including provincial tourism development sites management plans set a clear direction, policy and principle that tourism development in Laos should follow the sustainable and pro-poor practices as well as community-based and ecotourism with promotion focus on natural, cultural-heritage and historical tourism. In practice, although there is no precise information and assessment, it can be said that the majority of product development and marketing are in line with these policies.

However, in parallel with progress and achievement, challenges facing the tourism industry and ecotourism in Lao PDR remain, particularly preservation of natural, cultural and heritage, the key tourism resources from threats and appropriate marketing Laos as a well-known green tourism destination. This associates with management issues; products, marketing and information;

infrastructure and facilities; and external factors. The details of contracts and or weakness are as following:

Management:

- Unclear division of responsibilities among stakeholders, particularly management of tourism and ecotourism assets for example natural asset or heritage;
- Lack of integrated planning and decision making, including coordination, given that tourism is multi-sectoral; leading to number of tourism resources are being at risk due to increase of development projects; Lack of national experience and capacities in the ecotourism industry, especially among other stakeholders and rural communities;
- Financial constraints due to inadequate domestic and international funding, including limited access to favourable credit for investment.

Products, marketing and information:

- Lack of financial support for marketing and capacity in marketing. Budget allocation for product development and marketing is limited. It is also same for private sector is still small scales. So majority of development and marketing depend on foreign support through projects and programmes;
- Limited information and interpretation in relation to tourism sites;
- Lack of development and/or enhancement of unique and quality products.

Infrastructure and facilities:

- Inadequate infrastructure, leading to poor access to existing and potential tourism sites

External factors:

- Increase in world oil prices, global political and economic instability, natural disasters and infectious disease outbreak.

.1.7 Access to Energy and Growth of Renewable Energy

Based on the strategic framework for sustainable development in Lao PDR, progress or achievements on energy security in this context have focused on access to electrification, the emerging of renewable energy and share in total energy use.

Access to electricity was 33 percent in 2002/2003 and 66.1 percent in 2007/2008 (GOL and UNDP 2009). By 2010, electrification covered 98 percent of districts in the country, with 60.48 percent of households and 72 percent of

families having access to electricity – more than double the 2008 figures (MPI 2011). The national target aims to achieve 90 percent electrification across the country by 2020.

Renewable energy is growing steadily, and the share of total energy consumption also has increased. For example, energy from hydroelectricity had a share of 12 percent in 2009 (MEM 2011), up from 6 percent in 2002 (MPI and WREA 2008). However, apart from hydroelectricity, other renewable energy remains at an early stage of development. By 2009, only 25,000 households used solar energy, mostly for lighting. Only one pilot project has been developed on generating energy from rice husks, with a capacity of 160 kW; similarly, one project on generating energy from wood waste has begun, with a capacity of 48 kW. A total of 1,500 pits of biogas were accessible by 2,000 households, while only 25,000 ha of Jatropha has been planted, producing 150,000 litres of biofuel. No wind energy has been developed (MEM 2011).

Although the electrification increased significantly, giving recent status, Lao PDR is still one of the lowest levels of electrification in Asia (MPI and WREA 2008). More investment and favourable policy is needed for facilitating achievement of government targets that intended to increase share of renewable to total energy by 7 percent in 2015; 17 percent in 2020 and then 30 percent in 2020.

Constraining and challenging the electrification are geographic condition of the country which is mountainous and distribution or scattered settlement of communities which impact on the investment and effectiveness. In addition, there are also constraints relate to awareness among policymakers, consumers, suppliers and others; financial; legal/institutional; technical; and environmental and social impacts. These include:

Constraints relate to awareness:

- Lack of knowledge concerning opportunities, reliability and lifetime of technologies
- Lack of knowledge concerning positive impacts on the environment from renewable energy production
- Lack of information on availability and sustainability of resources, in particular with regard to biomass

Financial constraints:

- High capital investment costs and high costs of operation particularly electrification in rural area and renewable energy development
- Lack of suitable financing system at low interest rates

Legal/institutional constraints:

- Lack of coordination between Government agencies and the private sector, which hampers renewable energy development and promotion

Technical constraints:

Lack of local standards for renewable energy equipment and systems, given that renewable energy technologies are relatively new to the market

Environmental and social impacts:

- Lack of effective measures to prevent adverse social and environmental impacts of large-scale hydropower projects

.1.8 Mining Industry

Key progress and achievements of the sustainable mining industry in this context can be viewed in terms of contribution to GDP, job creation for local people, and compliance with environmental and social safeguards, including implementation of corporate social responsibility (CSR).

Between 2006 and 2010, the growth of this sector increased at an annual average of nearly 20 percent and contributed 9.5 percent² of the GDP, a sharp increase over the 3.1 percent³ recorded in 2005. Total investment in this period reached US\$2,545.3 million, a fivefold increase compared to 2001–2005 (MPI 2011). In 2006, 297 mining projects employed 7,708 labourers, representing 2 percent of total labour in the industry and construction sector, which includes mining (UNDP, 2009). By 2010, there were 154 mining companies with 269 projects (49 operating, 220 under survey) (MPI, 2011); 38,435 labourers accounted for 5.5 percent of total labour in industry and construction (MPI 2011).

The mining sector represents a priority for focused environmental management. In general, all mining employed Environmental and Social Impact Assessments and Environment Management and Monitoring Plans. Although there has been no formal study of compliance with environmental and social safeguards, informal perceptions indicate that most mining projects follow the requirements. A number of larger mining projects exercise CSR; in 2009, millions of US dollars from such projects contributed to the building of schools, disaster relief, and environmental protection through financing of the Environmental Protection Fund.

Amid this rapid development of the mining industry, the Government faces significant challenges in addressing environmental issues such as increased

² MPI, 2010: National Social Economic Implementation 2006–2010 and Plan for 2011–2015

³ Statistics Year Book 2006

pressure on water resources; water pollution; land contamination; hazardous chemicals; and impacts of improperly managed discharges on downstream areas. It is also critical to ensure the development and effective enforcement of legislation such as Environmental and Social Impact Assessments, labour laws, health and safety regulations, including CSR, and sustainable practices.

.2 Sustainable Social Well-being and Development

.2.1 Human Resource Development

Sustainable human resource development is evident in terms of Lao PDR's ranking in the global Human Development Index, investment in the education sector, enrolment and completion of primary school ratios, and literacy, which is a target of the second MDG.

Human resources represents a critical issue in Lao PDR, despite improvements in the country's Human Development Index (HDI) ranking , from 138th out of 187 countries in 1992 to 133rd out of 182 countries in 2009 (UNDP 2009). The HDI values increased slightly from 0.518 in 1995 to 0.566 in 2000, then 0.607 in 2005, 0.613 in 2006 and then 0.619 in 2007 (UNDP 2009).

The primary school completion rate has increased by about 2.38 percent on average from 47.7 percent in 1991 to 67 in 2008 (MPI 2011). However, the target is 95 percent for 2015, so if this growth rate is not accelerated or on average reaches at least 4 percent per year, the MDG target looks beyond reach.

School enrolment generally was on the rise of about 2.3 percent per year. Thenet enrolment rates in primary school was 58 percent in 1991 (MPI 2011), increased to80 percent in 2001 (UNDP, 2011) then to 84.2 percent during 2005/2006 and then to 89.2 percent during 2008 (MPI, 2011). Currently or during 2009/2010, the net enrolment rate was 93 percent (MPI, 2011). If the same growth rate continues, the target of 2015 which set for 98 percent can be achievable. In 2001 the literacy rate was 78.5 percent. By 2005, the adult literacy rate had increased to 84%, and illiteracy was eradicated in 2010 (MPI 2011).

Of cause those progress and achievements resulted from investment in education sector both soft and hard infrastructure which increased gradually from government, private and also international development partners. For example in 2002/2003 the Government allocated 11.4 percent of national revenues to the sector, increasing to 21.9 percent, or LAK 733.83 billion, during 2006/2007. Government also has approved an increase in staff salaries

in the education sector, which is higher than in other sectors. In addition, the improvements would also be because of economic and income improvements.

Despite these considerable achievements, human resource development in Lao PDR remains low compared to other countries in the region. Major constraints and challenges in the education sector include:

- **Policy:** Although the Government recognizes the importance of human resource development, specific policies, strategies, actions and investments are yet to be clearly developed
- **Education gap between rural/urban areas and poor/better-off people:** Rural and poor people still have limited opportunities to access quality education and professional development
- **Education quality:** Although the number of schools, teachers and other facilities have increased, quality of education remains a serious issue
- **Imbalance between human resources and job demands, including unsustainable planning:** Large numbers of university graduates and other school leavers are unemployed because of low and unmatched demand for employment. Facilitation of access to overseas job opportunities is limited.
- **ASEAN free labour market:** The introduction of the ASEAN free labour market in 2015 may cause losses by Lao people to access to jobs and opportunities, in part because of lack of skills or preparation for the situation as well as because of domestic labour protection measures.

.2.2 Public health

The key progress and achievements in the health sector focused on improvements in relation to life expectancy, death rate per 1,000 population, child and infant mortality rates per 1,000 live births, maternal deaths per 100,000 live births, and percentage of population with access to clean water and improved sanitation.

The life expectancy rate in Lao PDR is improving gradually. In 1995, life expectancy was at 50 years and increased to 59 years in 2000. It continues to increase to 63 years in 2005 (Lao PDR and UNDP 2009) and then 65 years in 2010 (MPI 2011). If such improvement is maintained, realizing the national life expectancy target of 70 years by 2020 will be realistic.

The Government prioritizes reducing child mortality (MDG4) and has achieved notable progress toward this goal. The Under-5 Mortality Rate declined from 170 to 98 per 1,000 between 1995 and 2005 (Lao PDR and United Nations 2008) and then to 75 per 1,000 in 2010 (MPH 2011), while the Infant Mortality Rate (IMR) fell from 104 to 70 over the same period (Lao PDR and United Nations 2008). By 2010, the IMR was down to 55 per 1,000 live births (MPH

2011). If this rate of reduction continues, the MDG mortality targets for 2015 (70/1,000 for under 5 and 45/1,000) are likely to be attainable (GOL and United Nations 2008).

Turning to maternal health (MDG5), the Government intends to reduce maternal deaths to 260 per 100,000 live births in 2015 (MPH 2011) and then 200 per 100,000 live births by 2020 (MPI and WREA, 2008). Based on the population censuses of 1995 and 2005 and the national MDG Report 2008, Lao PDR appears to have progressed in reducing maternal mortality. Between 1995 and 2005, maternal mortality reduced from 650 deaths per 100,000 live births to 405 per 100,000 live births (MPI and WREA, 2008). By 2008, this had fallen further, to fewer than 339 per 100,000 live births (MPH 2011). In overall, the reduction is about 4.5 percent per years and at least Laos needs to achieve the reduction rate to achieve the target in 2015 and 2020.

With regard to MDG6, on combating HIV/AIDS, malaria and other diseases; improvements can be noted base on the present situation. HIV prevalence in general remains low in Lao PDR, the infection rate of HIV of, for example service women⁴ was 0.9 percent in 2001, 2.02 percent in 2004 and 0.4 percent in 2008 (MPH 2011). The HIV epidemic continues to outpace the HIV and AIDS Response in Lao PDR. The total number of people living with HIV was estimated to be 9,000 people in 2011 and if the current efforts are maintained that number is expected to increase to 14,000 people in 2015. By the end of 2011, a total of 1,988 adults and children have access to antiretroviral treatment: this is only equivalent to 52.3% of estimated number of people in need of such a treatment.

The national death rates from malaria fell sharply, from 9 per 100,000 in 1990 to 0.4 in 2006 (Lao PDR and United Nations 2008). It is perceived that this achievement is because extensive campaign and provision of insecticide-treated bed nets which so far reached 1.6 million nets covering about 3.6 million people who are vulnerable to malaria (MPH 2011).

Progress also is notable in access to clean water and improved sanitation. Currently, 77 percent of people have access to clean water and 54 have access to sanitary toilets (MPI 2011). These figures of population access to clean water supply increased from 52 percent; 32 percent in the 1996 (UNEP and NORAD 2001) which cited from NSC 1998 and then 58 percent and 45 percent respectively in 2006 (NSC and UNICEF Lao PDR 2007).

⁴ "Service women" is an overall term used for women who works in small drink shops, nightclubs and or can be contacted by clients via other means; intentionally or unintentionally sell sex for money, in-kind and other purposes.

Despite these remarkable progresses and achievements are a number of remaining constraints and challenges. Among these, the Maternal Mortality Ratio remains prominent; it is one of the highest in the region, while both investment in maternal health and the proportion of women receiving antenatal care remain low. Likewise, access to clean water and sanitation are also still low and required for more efforts and investment.

The rapidly changing socio-economic environment Lao PDR is experiencing has resulted in the emergence of new health determinants with a potential to accelerate the spread of the epidemic. Addressing emerging vulnerabilities to HIV, other diseases transmission and reaching the off track MGD6 within the next 3 years requires renewed collective efforts from government agencies and development partners to adapt the existing diseases prevention and treatment models to the changing environment with the aim to increase quality and coverage of outreach services for key affected and vulnerable populations, to prioritize recognized cost effective interventions and engage in new partnerships with Community Based Organization and particularly Networks of People Living with HIV while considering financial sustainability with increase domestic contributions and diversification of sponsors.

.2.3 Labour and Employment

Job creation and opportunity represent an important parameter for sustainable development. In this context the main focus is on labour and employment or unemployment rates and improvements of skilled workers.

In 2005 the total Lao population was 5,621,982, of which people aged 10 years and above (i.e., working-age population) comprised 74.2 percent. The labour force participation rate stood at 66.6 percent or 2.7million people. However, unpaid family workers (1,149,906) and self-employed workers (1,260,671) represented some 88 percent of the total employment. Most working people (78.6 percent) were in the agricultural sector, with the remaining 21.4 percent in non-agricultural sectors in the period (MPI and WREA 2008).

Lao PDR faces considerable constraints and challenges in development of the labour forces and employment promotion at all levels, as summarized below:

- **Low quality of labour:** In general, quality of labour is low because of a low level of education and skills promotion. Nearly 45 percent of the Lao PDR working-age population has completed only primary education, while only 1.13 percent have graduated from a university (MPI and WREA, 2008)

- **Rapid development combined with a need for strengthened control and an open labour market:** The number of large development projects (dams, mining, road construction) is growing very fast, but low-skilled and unskilled Lao labourers are failing to take advantage of the opportunity, while the inflow of foreign labourers is increasing
- **Lack of enabling environment:** Challenges here involve the lack of policies on the promotion and protection of domestic labour, as well as a need for strengthened law enforcement and improved and expanded facilities. Market information, linkages and monitoring systems remain to be developed, as does coordination among relevant Ministries in promoting skills development plans to meet the needs of the demand side.

.2.4 Promote gender equality and empower women

Progress and achievements in the promotion of gender equality can be viewed overall in terms of education, particularly the ratio of boys to girls in primary, secondary and tertiary education; employment (share of women's wage employment in non-agricultural sectors); political representation (proportion of seats held by women in the National Assembly); and other factors (access to health and other public services, and reduced vulnerability to violence and abuse). In Lao PDR, such key progress and achievements for the promotion of gender equality are particularly significant with regard to education, political representation, and relevant institutions and policies.

Elimination of gender disparity in education in Lao PDR has made some progress. The number of girls per 100 boys in primary education has risen from 77 in 1991 to 86 in 2006. Over the same period, indices for lower secondary education improved from 66 percent to 78 percent, for upper secondary education from 56 to 74 percent, and for tertiary education from 49 to 62 percent (GOLand United Nations 2008).

With regard to political representation, in the second legislature elected in 1989, comprised with 75 members, of whom 5 were women (NA and UN 20 no date). By 2002 almost 23 percent of National Assembly members were women. This represented a high proportion compared both to other countries in the region and to industrialized countries (ADB, 2004). The 6th Legislature (2006–2011) has 115 Members, including 29 women or 25 percent (NA and UN 20 no date).

In terms of legislation, Lao PDR has been enforcing the Law on the Development and Protection of Women since 1994. Provisions on Domestic Violence and Trafficking in Women and Children also were promulgated in the same year. In

2002, a Gender Mainstreaming Strategy and Action Plan was developed (ADB 2004).

Institutionally, one of the most significant events has been the establishment of the Lao National Commission for the Advancement in Women (Lao NCAW) in 2006. Critically, in Lao PDR, many public organizations have had a Women's Union Unit or other responsible body for years; these provide an excellent opportunity for the Government to mainstream gender equality issues across sectors.

Despite the made progress on gender, Gender Inequality Index (GII) of Laos in 2011 was at 0.65 and ranked Laos at 88th out 138 countries. Social Institutions and Gender Index (SIGI) is at 0.259261 in 2012 and ranked Laos at 49th in 2012 (UNDP, 2012). These means Laos need more efforts, financially and technically for the improvement on the gender promotion and minimizing inequality. Particularly addressing the key remaining constraints and challenges which include gender disparities, particularly in employment; limited political representation at sub-national levels; and lack of relevant research. Traditional gender norms also persist. Such challenges include:

Gender disparities, particularly in employment: Many of these disparities arise as a result of the socioeconomic gap between women and men, which remains a priority challenge. This is further related to the low proportion of women in wage employment as an outgrowth of changes in girls' school enrolment. Both these rates have increased less than 1 percentage point per year – a very slow pace that will need to accelerate sharply to meet the MDG targets for the elimination of gender disparity at all levels of education by 2015 (GOL and United Nations 2008).

Limited political representation at sub-national levels: Although Lao PDR is advanced in term of seats held by women in the National Assembly, women's leadership at provincial, district and village levels and in Ministries remains limited.

Research and development: To achieve sustainability, multi-faceted gender issues require more in-depth research and monitoring. In turn, this can lead to better understanding at all levels of the dynamics that sustain and/or create gender inequalities. Lack of research currently hampers addressing of gender equality issues.

.2.5 Poverty Reduction

Recognizing poverty is a key root cause for environment degradation and hinders sustainable development; apart from increase efforts on general

socioeconomic development, , the government established the National Commission for Rural Development with Rural Development Programmes since 2001 and restructure in 2007, National Growth and Poverty Eradication Strategy (NGPES) and specific Poverty Reduction Fund (PRF) since 2003 including . These accumulative and synergy actions and efforts contributed significantly poverty reduction.

Laos could almost halve of the poverty between 1993 to date. The number of poor households fell from about 45 percent in 1992/1993 to 38.6 percent by 1997/1998, and then declined further to 33.5 percent in 2002/2003; 27.6 percent in 2007/2008; and 26 percent in 2010 (MPI 2011). This means 42.22 percent decreased for the period.

In addition, the economic growth has not always been accompanied by or been sufficient for poverty reduction. Gaps between urban and rural, including maintaining macroeconomic stability, along with social development and environmental preservation, all remain national challenges. For example, in 1992/1993 to 1997/1998, 2002/2003 and 2007/2008, the poverty rate between urban and rural was 26.5 percent versus 51.8 percent, 22.1 percent versus 42.5 percent, 19.7 percent versus 37.6 percent and 17.4 percent versus 31.7 percent respectively (MPI 2011). In addition, between 1992/1993 and 2002/2003, income inequality increased 4.4 percentage points, while the Gini coefficient rose from 28.6 to 35.7 (NGPES, LECS II, III). Malnutrition remains a particularly significant concern, with about 37 percent of children younger than age 5 years found to be underweight and about 40 percent stunted, indicating the depth of chronic malnutrition (MPI and WREA 2008, UNDP 2009).

.3 Sustainable Environment and Natural Resource Management

The Government, in parallel with MDG7, aims to ensure overall environmental sustainability. Key progress and or achievement in this regard, in general, have occurred in terms of development and implementation of environmental and environment-related policies, legislation, institutions and capacities. Specifically, the progress and or achievement can be also drawn from areas of a clean and safe environment, sustainable forest management, watershed development and management, sustainable land use and management, waste management, biodiversity conservation and climate change.

Overall Laos has almost all important strategies and actions in place guiding for protection of environment. As mentioned, those strategies and action plans include environment, forestry, biodiversity, land, climate change, disaster, ecotourism, renewable energy, sustainable transport strategy and or master plan. The details were already described in the chapter 3. So this can be

considered that Laos has about sufficient strategy for ensuring and guiding management for environment sustainability.

Legislatively, translated from environment protection law, a decree on social and environment impact assessments (ESIA) and agreement on environment standard are key important instruments pushing for achievement of sustainable practice and outcomes. In addition, Laos is also preparing decree on strategic environment assessment (SEA) which intends to address the impact at policy level. The social and environment impact assessment legislations include environment impact assessment regulation developed in 2002 and for more effectiveness, comprehensiveness and completeness, then upgraded to the decree on social impact assessment in 2010; the agreement on environment standard developed in 2010 is also another supporting instruments for the ESIA and also for general environmental quality monitoring and pollution control. In principle, all developments required for preparation and implementation of social and environment impact assessments and mitigation measures for avoiding, minimizing negative impacts and enhancing positive impacts on economic, social and environment. The Decree on SEA is under preparation; expectedly the decree will be presented to government and national assembly for approval in the end of 2012. Two main objectives of the decree (draft) are to ensure that policies, programmes, plans are designed and include mitigation measures for preventing and minimizing negative impacts effectively and contribution to sustainable national socioeconomic development.

Furthermore, other specific important progress and or achievements are also found in following areas:

.3.1 Clean and safe environment

Although studies, monitoring and data in relation to a clean and safe environment in Lao PDR are limited overall, substantive progress has occurred with the establishment of environmental standards, with agreement on these standards including both enforcement and consideration of the status of environmental quality. The agreement on the national environmental standards, formulated in 2010, a basis for water, soil, air and noise quality monitoring and pollution control covers a number of standards, including those for water quality, soil quality, ambient air quality, noise, general industrial wastewater discharge, wastewater discharge in urban areas, and air emission standards for industrial factories, other workplaces, and mobile sources.

Generally, environmental quality in the nine areas mentioned above is reported to be good and still favourable for sustainable development (WREA, 2010). At the same time, air and water quality in particular can be at risk, particularly in some intensively developed, crowded areas and major cities such as Vientiane

Capital. For example, the first monitoring of air quality in Lao PDR, in Vientiane in 2004, found concentration levels of total suspended particulates (TSP) ranging from 82µg/m³ to 296µg/m³. The national environment standards for TSP, for 24 hours and 1 year respectively, are 0.33 mg/m³ and 0.10 mg/m³, suggesting that TSP is indeed an issue (ADB 2006).

Likewise, PM₁₀ also appears to be an issue for Vientiane, ranging from 40µg/m³ to 179µg/m³, or 87µg/m³ on average. If these measurements are compared with the national environmental standard (a 24-hour standard of 0.12mg/m³), only 13 percent of the measurements are found to comply with the standard. Limited evidence further suggests that SO₂ is an issue, although NO₂ does not currently appear to be a problem in the capital (ADB 2006).

Harmful substances and hazardous wastes are also increasing in Vientiane as well as secondary towns across the country. In Vientiane, about 200 tonnes of solid waste per day were recorded in 2010, with about 45–50 tonnes of that from the hospital. Overall management of waste requires considerable strengthening (WREA 2009); although most provinces have landfill, only Vientiane has a sanitary landfill, with the rest serving as dump sites.

To address these challenges is likely to require improved financial support, capacity development and strategies, along with expanded pollution monitoring.

.3.2 Sustainable forest management

Progress and achievements on sustainable forest management can be viewed in terms of development of management instruments; establishment of forest protected areas, as well as protection and production forests; reforestation and afforestation; and reduction of shifting cultivation.

In this context, management instruments refer to legislation and policy or strategy and sustainable forest⁵ management mechanisms. A number of relevant laws and decrees, orders and guidelines are in place to support forest conservation, restoration and management of the forestry business. These include the Forest Law (revised 2007); Decree on Protection Forests (2010); Decree on Forest Seeds Sources (2010); Decree on the Management and Protection of Forest in Nakai–Nam Thurn Watershed Area (2010); Decree on Pharmaceutical Natural Resources (2003); Decree on Commercial Tree Planting and Environment Protection (2003); Decree on Sustainable Production Forest Management (2002); and Decree on the Management of Wildlife, Hunting and

⁵ Particularly protected areas, protection forests and production forest.

Fishing (1989). Also included are the Order of the Minister of MAF on Identification of Seeds Sources Forests (2006); Order of the Minister of MAF on Enhancement of Forest Management, Business and Wood Processing (2006); and expansion of protected areas as well as prohibitions of trading of endangered species of trees and NTFPs, including regulation of the Forest Fund (2009). These instruments provide objectives, guiding principles and ways of implementation that aim to address and or enhance various aspects of sustainable forest management particularly forest types, areas and boundary; species of flora and fauna; ecosystem that must be protected, preserved or allowed for use and consumption; harvesting and use that are not causing degradation and or exceed level or rate that forest resources and ecosystem can provide, regenerate or be recoverable.

The most important strategies for forest management include approval of the Tropical Forest Action Plan, in 1989, and the Forest Strategy to 2020, in 2005), whose key elements are presented in Section 2 above. In addition, the Government also formulated a programme for eradicating shifting cultivation and encouraging alternative livelihoods, in 1996. A certified forest management system applying Forest Steward Council (FSC) principles was introduced in Lao PDR in 1999–2000 in two production forests; thus far, this practice is now being implemented in areas under the Sustainable Forest Development (SUFORD) project. In addition, the REDD+ (Reducing Emissions from Deforestation and Forest Degradation) mechanism is being piloted in several protected areas namely Nam Et–Phou Louey, Nam Phui, Nam Kading, Se Pain and Xe Sap national Biodiversity Conservation Areas (NBCA), Nam Sam protected area and provincial protected area in Louang Prabang province with support from international partners and development organizations (MAF 2011).

For effective forest management, three types of forest were classified – conservation, production and protection – and by 1993 18 National Biodiversity Conservation Areas (NBCA) were established. Since then, two additional NBCAs and 2 wildlife corridors have been established. These increased the area of NBCAs to more than 14.3 percent of Lao PDR’s total land area (MAF 2005). In 2003 there were 106 production forests established, encompassing 3,207,000 (MAF 2005). A total of 51 sites were officially endorsed, and 11 sites comprising 716,357 ha are managed under a certified forest management system (MAF 2011). Also in 2003, 75 sites of protection forest were established, covering 517,000 ha (MAF 2005); 30 sites have since been added, leading to an increase in protection forest areas to 961,734 ha by 2010 (MAF 2011).

Meanwhile, the upland rice plantation area involved in forest encroachment has dramatically decreased, from 118,000 ha in 2000 to 14,400 ha in 2007 (WREA 2010). Shifting cultivation also has been stabilized (MPI 2011). At the same time, rehabilitated forest reached 2.23 million ha between 1975 to 2010 of which about 1.9 million ha was rehabilitated between 2006 and 2010 (MAF, 2011).

Despite lots of efforts have been made to sustain forest resource; number of problems, constraints remained unsolved; threatening and challenging for sustainability of forest resources and ecosystem in future. The major constraints and challenges for sustainable forest management include the decrease in forest quantity and quality; unsustainable forest harvesting practices; a need for more effective law enforcement; the persistence of poverty; lack of financial and human resources; and the continuing demand for wood, including conversion of forest land for other development projects.

Forest cover has decreased sharply while rehabilitation of forest is limited. The decrease was from 16.57 million ha, or approximately 70 percent of total land, in 1940, to 47 percent by 1992, 41.5 percent in 2002 and only 40.5 percent in 2010 or about 7 million ha of forest area was lost or converted. Over the same period, forest stocking, species densities and size structure also have decreased and become more fragmented (MAF 2005). To date the forest rehabilitation and or demarcation and protection for natural growth only achieved about 2.2 million ha (MAF2011).

Although the Government has sharply reduced the annual harvest of logs from a peak of 734,000m³ in 1999 to 150,000m³ in 2004/05 (MAF 2005), unsustainable forest harvesting practices persist, including illegal logging and harvesting of more than the recovery rate. In addition, only few out of hundred production forest sites apply sound sustainable practice following Forest Steward Council (FSC) principles.

Issues such as the need for strengthened law enforcement and for increased financial and human resources are likely to continue, given that budget allocations for forest management, capacity development and law enforcement are still limited and rely largely on international support.

Wood demand is expected to increase, with an more than 1 million cubic meters estimated to be harvested by 2020 if the level of sawn timber exports continues at the same time and if domestic consumption of timber and plywood increases to about 300,000 cubic meters a year or about 600,000 cubic meters round wood equivalent (MAF 2005). All this indicates continually rising pressures on forests, further threatening sustainable forest management.

In addition, with the proposed number of major development projects (hydropower, mining, infrastructure) also rising in the coming years, this implies that forest resources may well be at risk, with sustainable management a particular challenge.

According to these constraints and challenge, without serious actions, commitments and ownership of relevant organizations including support from international partners, sustainable forest resources management as well as preservation of existing forest of about 9.6 million ha and restoration of potential and or degraded forest 6.6 million to achieve 70 percent of forest cover by 2020 as targeted would be far to achieve.

.3.3 Watershed development and management

Key progress and achievements on watershed development and management are indicated in terms of legislative, policy and institutional applications of Integrated Water Resource Management (IWRM), private funding for watershed conservation, water use for hydropower, irrigation and so forth, and quality of water.

A law on water research was promulgated in 1996 and revised in 2007. In addition, other laws and regulations such as the Environment Protection Law (1999; under revision in 2011), Decree on Environment and Social Impact Assessment⁶ 2010, and Decree on Environmental Standards (2010) are also part of progress related to watershed management in Lao PDR.

The National Policy, Strategy and Action Plan on Water Resources 2011–2015, developed in 2010, provide key guidance and instruments for sustainable water resource management. In addition, the Environmental Strategy and Action Plan to 2020 encompass progress on water resource management.

Institutional arrangements for water resource management have been improved, with watershed management committees established in key areas such as Nam Ngum, Nam Thurn and Nam Kanding watershed. These watersheds are employing an IWRM approach and are financed by the Nam Turn–Hin Boun hydropower project at the amount of 1 percent of total revenue from electricity sales (MAF 2011).

As mentioned by MPI and WREA 2008, in general the discharge of rivers in Lao PDR is about 80 percent during the rainy season and 20 percent in the dry

⁶ EIA regulations have been issued since 2004; in 2010, these were revised and upgraded to a decree on ESIA..

season. For some rivers (Nam Xebangphay, Nam Xebanghieng, Nam Xedone), the dry-season flow is reduced even further, to around 10 to 15 percent of the annual flow.

Although Lao PDR possesses the largest per-capita volume of internal renewable water resources in the region, it has suffered from both severe droughts and floods in the past 15 years. In 2000, for example, 1,104km² in seven provinces were flooded, affecting 450,000 people. In addition, a changing climate may also affect the hydro-cycle as well as the variability of river flow, so floods and droughts could become even more serious in the future and pose mounting challenges for sustainable water management.

.3.4 Sustainable land use and management

As suggested in the Strategic Framework for the NSDS, the following indicators can indicate the progress and achievements in sustainable land use and management:

- Land under protection (percentage of total land)
- Crop yields (trends)
- Net farm income
- Soil loss reduction
- Change in biodiversity
- Number of households participating in sustainable land management (SLM) activities
- Number of functional institutions on sustainable land management
- UXO clearance

However, key progress and achievements in land use and management in Lao PDR have particularly occurred in the policy realm, particularly the formulation of a Master Plan on Land Use and Management. This Master Plan is an integrated planning tool that aims to address unsustainable land use practices, providing principles, guidelines and strategies to achieve sustainable land use and management goals.

Despite implementation of the Master Plan, however, there remain several major constraints and challenges faced by this sector. These include declining arable land for agriculture, arising from land degradation and conversion of agricultural land to construction and other land uses; land “grabbing;” and UXO contamination.

Although there is no specific survey on overall land degradation in Lao PDR, the reduction of forests, described in Section 4.3.2 above, serves as one relevant indicator. With regard to agricultural outputs, annual growth here too is

declining, estimated at less than 3 percent⁷ in 2003 (MPI and WREA 2008). In addition, a number of agricultural areas are being converted to other land use, especially construction and residential.

For Lao PDR, UXO represents one of the key constraints and challenges to sustainable land use and management, significantly affecting 15 of the 18 provinces in the country. It is estimated that UXO still contaminates nearly 50 percent of Lao PDR's total arable land. In 2002, 840 ha were cleared by UXO Lao and a total of 100,000 larger and smaller bombs, mines, and other UXO were removed and/or destroyed. In subsequent years up to 2009, annual clearance stood at only about 500–600 ha, illustrating the severity of the challenge to remove UXO and make land safe for access.

.3.5 Waste management

There are six main parameters for assessment of achievement or progress for solid waste management. These parameters, as suggested by the Strategic Framework for NSDS, are waste generation rate (%), recycling rate of municipal waste (%), rate of landfill (%), waste collection efficiency (%), number of sanitary landfills, and existence of a scientifically sound solid waste management system. Thus far, key progress and achievements in this area are represented by a private-sector initiative on solid waste management. Each province now has at least one waste collection company, handling with waste collection and disposal at landfills. With the involvement of the private sector, the rate of waste collection has increased from less than 40 percent in 2000 to more than 60 percent by 2010.

At the same time, the trend of waste generation is on the rise, while most provinces lack a standard landfill with proper management. Other challenges include a need for strengthened waste collection services and collection rates; low public awareness is exacerbated by common public and open dumping and burning.

.3.6 Biodiversity conservation

Various parameters have been suggested for the assessment of achievements or progress in biodiversity conservation. These include:

- 1) The ratio of area protected to maintain biological diversity to total surface area (%), including national, provincial and district data)
- 2) Change in status of threatened species
- 3) Change in species abundance and distribution

⁷ The arable land under cultivation is estimated to be 800,000ha (MPI, WREA, 2008)

- 4) Trends in genetic diversity of domesticated plants and animals
- 5) Connectivity and fragmentation of ecosystems
- 6) Health and well-being of people in biodiversity-dependent communities
- 7) Production of an annual report on policies, activities and plans for implementers
- 8) Local and private sector participation (%)
- 9) Number of staff working at national and provincial levels on behalf of biodiversity
- 10) Number of staff at implementing sector agencies on behalf of biodiversity
- 11) Number of students studying biodiversity at university level

Because there are insufficient data available on these parameters, this report focuses on biodiversity surveys and improved data, as well as on the Red List for endangered and protected species.

With scientific research supported by WCS, WWF, IUCN and international development partners, Lao PDR has gained more precise information with regard to numbers, species and status of wildlife. In 1996, for example, the scientific literature had recorded only about 210 fish species from Lao PDR; surveys conducted between 1996 and 1999 increased the number of Lao fish fauna to 480 species, of which 130 were new to science. The number of named fish species known from Lao PDR now totals about 500⁸.

As reported in the Biodiversity Strategy to 2020, there also exist an estimated 8,000–11,000 species of flowering plants in the country; 166 species of reptiles and amphibians; 700 species of birds; 90 species of bats; and more than 100 species of large mammals.

Challenges to biodiversity, including those related to management; arise primarily from population increases and the subsequent rising demand for land, forest resources and wildlife consumption. Key issues include:

- The domestic and international wildlife trade and unsustainable hunting for subsistence consumption as well as for domestic and international markets
- Loss of natural habitat for wildlife
- Slash-and-burn cultivation
- Unsustainable logging and excessive collection of non-timber forest products
- Proliferation of rubber and eucalyptus plantations

⁸ http://ns1.mrcmekong.org/Catch-Culture/vol15_3Dec09/number-of-species-found.htm

- Low public awareness and education about the importance of biodiversity at provincial and local levels
- Reform of relevant laws and restructuring of the committee for efficient and effective management of biodiversity, attended by all relevant public and private sectors stakeholders

.3.7 Climate change

Progress and achievements in the area of climate change can be seen in terms of policy and organizational development. Management, particularly of low emissions, increased carbon sequestration, implementation of Clean Development Mechanism projects, vulnerability and adaptive capacity data, and financial mechanisms for adaptation and mitigation likewise are critical. Most of Lao PDR's key progress and achievements fall in the area of policy, initiatives for the application of mechanisms on emission reduction, and implementation of adaptation programmes.

In the policy context, Lao PDR completed its Climate Change Strategy (CCS) in 2010 and its National Adaptation Programme of Action to Climate Change (NAPA) in 2009; a Draft Decree on Clean Development Mechanism was formulated in 2010. Details of both the CCS and NAPA are described in Section 3.6. The Draft Decree on Clean Development Mechanism has not yet been endorsed, but it is expected to provide direction for Clean Development Mechanism promotion, guidelines for implementation and facilitation of CDM on the ground.

Initiatives on the application of mechanisms for emission reductions include the Clean Development Mechanism, Nationally Appropriate Mitigations Actions (NAMA) and REDD+. Thus far, 10 projects⁹ approved by Lao Designated National Authority, of which 8 projects are at or after the validation and 2 projects registered at CDM executive board. The two projects registered at CDM executive board are the Beer Lao Factory (2008) and Xekaman 3 Hydropower project (2011) with certified emissions reductions (CERs) of about 3,338 tCO₂e/year and 499,481 tCO₂e/year respectively.

NAMA already started a feasibility study in the transport sector in 2009 with support from JICA; follow-up actions are anticipated in the coming years. The programme aims at improvement of transport network and development public

⁹ Six projects are hydropower, 1 each for Lao Brewery, Cement, Biogas, afforestation and reforestation.

transport in Vientiane Capital. If this project realized, approximately 191,080 tCO₂e would be reduced (MONRE 2011).

Other emissions reduction mechanisms such as REDD+ are also on the ground; as motioned in chapter 4.3.2 REDD+ mechanism is being piloted in 7 protected areas already.

To further cope with risks and impacts that may be posed by a changing climate, Lao PDR is conducting a vulnerability and adaptation assessment (V&A) under its Second National Communication. It also is implementing a Climate Change Adaptation Initiative (CCAI) and implementing some projects under NAPA.

The V&A covers the whole country but focuses only on the agriculture and water sectors. Results are not yet known; however, a previous study found that Lao PDR's agriculture, water and health sectors are all at risk from climate change. The CCAI, meanwhile, has focused more on research on how local people face and adapt to a changing climate, and on impacts in relation to droughts and floods in one southern province.

As for NAPA, a project on agricultural resilience is being implemented, supported by GEF/UNDP, with two projects on effective governance for small-scale rural infrastructure and disaster preparedness in a changing climate, also funded by GEF/UNDP, under preparation. In addition, the Government is implementing an ADB-supported project on capacity enhancement for coping with climate change, which started in 2010 and is expected to be completed in 2012.

5. Key Constraints and Challenges

Based on the above analysis, Lao PDR may be said to face the following overall key constraints and challenges to achieving sustainable development:

- **High poverty** remains the main barrier to achieving sustainable development in Lao PDR, affecting survival, livelihoods, and economic, environmental and social impacts alike
- **Low human resources and capacities** arise primarily from a lack of investment in the overall development of human resources, and specifically in the area of sustainable development. In addition, a need for strengthened quality of education hinders the mainstreaming of sustainable development in the sector and further constrains human resource development

- **Lack of core institutions**, with no specific responsible body for sustainable development, may lead to inefficient and ineffective sustainable development efforts in the medium and longer term
- **Lack of financing** encompasses a lack of strategic investment, again raising the risk of inefficient sustainable development
- **Lack of guidelines, research and development** on multi-faceted and more dynamic aspects of sustainable development, which may not only constrain sustainable practices but also can affect policies and programme planning and implementation
- **Degradation of environment and natural resources**. Development is often gives rise to opportunity costs for environmental and natural resources. If future financing, law enforcement, capacity and technology transfer and an integrated approach are not appropriately applied, natural resource could be at risk and/or unproductive, leading to a negative impact on sustainable development
- **Social and economic inequality and disparities** may worsen if serious action is not be taken to address these widening development gaps; in turn, such increases mean increased risks for sustainable development

6. Green Economy

.1 Green Economy in Lao PDR Context

The global discussions on the green economy are ongoing, and the term has not yet been clearly defined; a green economy can differ from one country to another. Similarly, in Lao PDR the green economy is in an initial stage of discussion on definition, principles and indicators, with no national consensus.

Based on lessons learned from past socioeconomic development and environmental management, however, it would appear that the green economy is a tool that can lead to sustainable development in the country. Moreover, this can offer a “triple bottom line” – job-rich, green and equitable economic growth, coupled with environmental protection and social inclusion. It also can offer key opportunities for communities and the private sector to take advantage of policies, incentives and markets that are sustainable.

As mentioned in the Lao government statement for the Rio+20 conference; Lao PDR supports the green economy and keen to apply as a tool for sustainable development. At the same time, however, it will be important to ensure that “going green” does not lead to green protectionism or limit growth, giving rise to new trade restrictions, new conditions for development assistance, and new

strategies forcing developing countries like Lao PDR to buy unaffordable technology from developed countries.

Although, the Green Economy is important for sustainable development, given current situation further research and capacity development will be needed to understand and put the green economy into practice in ways appropriate to the Lao context.

7 Institutional Arrangements for Sustainable Development

As noted above, Lao PDR has no specific body responsible for coordinating efforts toward sustainable development; the practice is more of a sectoral approach, keeping in mind the three pillars of social, economic and environmental sustainability. Lao PDR also lacks relevant financial and human resources, including research and guidelines on sustainable practices. Thus, most activities have been implemented on an ad hoc basis, with a need for strengthened strategic focus.

This sectoral approach currently applied in Lao PDR faces several constraints: For example, one sector's power to enforce and mainstream sustainable practices in other sectors is weak, while coordination is difficult. As at the global level, therefore, Lao PDR needs a specific body for such coordination. The possible structure of the national coordination body could consist of a steering committee, task force and coordinators from specific sectors. While the steering committee and sectoral coordinators would not necessarily work full-time on sustainable development, the taskforce would be required to function as a standing body implementing daily activities. This taskforce should be tasked by the Government specifically to ensure continuity and effectiveness of implementation. Based on the roles and mandates of relevant organizations and technical stakeholders consultation meetings, technically four possible organizations for coordination sustainable development were proposed and discussed; those organizations are the Central Party Office, the Government's Office, Ministry of Planning and Investment and National Assembly. The National Assembly and Government's Office are powerful in term of national budget allocation; the Central Party Office is leading organization that defines directions and policy of the country development; while Ministry of Planning and Investment play central roles in coordinating all government ministries and organization on translation of directions and policies as well as national socioeconomic development plan which compiles plans, programmes, projects that proposed by all government ministries and organization. Politically the Central Party Office, the Government's Office and National Assembly are more suitable while in practice, Ministry of Planning and Investment can be more

functional. So it is suggested that, if it has to be, the sustainable development should be located within the Ministry of Planning and Investment. However, the establishment of sustainable development committees and taskforce should be through an assessment and in participatory manners; the established committees should be powerful enough to mainstream and allocation budget for implementation while practical. It also needs to be in line with and or fit well with the existing government organization structure. In addition, the members of the committees should be from various organizations that relevant with sustainable development.

8 Conclusions and Recommendations for Sustainable Development

Lao PDR has implemented and made number of progress towards sustainable development, particularly integrated planning and decision making and or mainstreaming sustainable aspects in national socioeconomic development and sectors development plans and implementation; progress and achievements regarding to three pillars of sustainability namely economy, social and environment including poverty reduction. However, those are only a fundamental steps and achievements; to make sustainable more tangible and reality, Laos needs to address existing constraints in relation to finance, management, capacity, poverty and resource degradation; enhance readiness for handle with challenges and grasp opportunities on sustainable development.

The integrated planning and decision making and or mainstreaming sustainable aspects in the national socioeconomic and sectoral development plans particularly national socioeconomic development plan; national growth and poverty eradication, renewable energy, transport, ecotourism, environment, forestry, biodiversity, climate change, disaster management, education and public health strategy appear in various aspects and degrees depend on sectors. However, those sustainable aspects mainly associate steady growth of economy and GDP, human resources development, employment, poverty reduction, gender equality, literacy, basic education enrollment and completion, access to clean water and sanitation, combating HIV/AIDS, malaria and other diseases, sustainability of forest, biodiversity, land, river and air quality as well as MDG's goals. And the mainstreaming of these aspects is usually found in the directions, goals, objective, planned programmes and activities including implementation of the mentioned plans and strategies.

The progress and achievements regarding to three pillars of sustainability can be summarized as following:

Economically; big achievement are maintaining steady growth of the economy in the rate of 6 to 7 percent per year for decades. The national revenues or budget could cover national priority programmes and strategic development focuses; economic development gradually turned natural resource extraction-based to commercial and valued based economy and the income or GDP per capita increased about five times from 1990 to 2010; from about US\$ 200 in 1990 to US\$ 1,000 in 2010.

Socially; progress and achievements are observable in the area of gradual improvement of the Human Resource Development, education, public health, gender, poverty reduction. Human Resource Development improvement could be explained by Human Resource Development Index which increased from 0.518 in 1995 to 0.619 in 2007. In the education sector; primary school completion which increased from 47.7 percent in 1991 to 67 percent in 2008, enrollment increased from 58 percent in 1991 to 93 percent in 2010; reduced adult illiteracy from 78.5 percent in 2001 to about zero in 2010. As for health; life expectancy increased from 50 years old in 1995 to 65 years old in 2010; reduction of Under-5 Mortality Rate declined from 170 per 1,000 in 1995 to 75 per 1,000 in 2010; the Infant Mortality Rate (IMR) fell from 104 to 55 per 1,000 live births in 2010; maternal mortality reduced from 650 deaths per 100,000 live births in 1995 to 339 per 100,000 live births in 2008; controlling HIV/AIDS, malaria and other diseases to be in low rate; increase access to clean water from 51.8 percent in 2000 to 77 percent in 2008; access to sanitary toilets from 25 percent in 2000 to 54 percent in 2008 (MPI, 2011). Struggling for livelihood improvement and continuous decrease of poverty rate is also an indicator proving the progress and achievement; between 1992/1993 to 2010, about 42 percent of the poverty was reduced.

As for environment sustainability; the main progress and achievements are on the development and enforcement of environmental and related policies, laws and regulations particularly strategies and master plans on environment, forestry, biodiversity, land, climate change, disaster, ecotourism, renewable energy, sustainable transport; decree on social impact assessments and agreement on environment standard which are key element for achieving sustainable practice and outcomes. In addition, other important progress and or achievements are also found in term of maintaining overall environment quality and natural resources. Base on the existing strategies, overall Laos has almost all important strategies and actions in place guiding for protection of environment. Legislatively, the decree on social and environment impact assessments (ESIA) and agreement on national environment standard are key important instruments pushing for achievement of sustainable practice and outcomes. The draft of decree on strategic environment assessment (SEA) is

initiative for addressing the impact at policy level and contribution to sustainable national socioeconomic development. Furthermore, maintaining environmental quality and natural resources which generally and are good and favourable conditions at present can be implied and or a indicator of a success in relation to environmental quality and natural resources management.

In addition, the government put intentions and efforts seeking for directions and mechanisms for sustainable development such as green economy and organizational improvements for overseeing and directing sustainable development in the country.

Despite progress and achievement; there are several constraints and challenges that have hampered achieving the sustainable development in Laos, internally and externally. Internally those constraints and challenges include high poverty, low human resource and capacity, low access to basic service, lack of finance, lack of coordinating body and guidance. Externally, they are complexity and dynamics of the sustainable development theory including green economy. The internal and external constraints and challenges are summarized as followings:

Internal constraints and challenges:

- **Poverty:** high poverty has hindered development particularly in achieving sustainable development in Lao PDR. Eradicating poverty by 2015 as targeted is a big challenge given average poverty reduction rate about 2.3 percent per year for eighteen years, 1992/1993 to 2010 and current status poverty 26 percent. Achieving 2015 target; from 2010 to 2015, at least poverty reduction should not less than 5.2 percent per year on average and in this regard it requires efforts and investment more than double compare to previous period.
- **Low human resources and capacities:** given the HDI is low and slowly improved or 0.001 for twelve years, from 0.518 in 1995 to 0.619 in 2007 and still ranked 138 out of 187 countries in 2011. This indicates that a hardship of Laos to move sustainable development.
- **Lack of budget and budget allocation:** it is considered as core elements hindering sustainable development. Limited budgets caused insufficient budget allocation as well as ineffective mainstreaming and implementation of activities specifically for realizing sustainability.
- **Lack of core institutions,** with no specific responsible body for sustainable development, may lead to inefficient and ineffective sustainable development efforts in the medium and longer term
- **Lack of guidelines, research and development,** multi-faceted and more dynamic aspects of sustainable development; without guidance, good and sufficient information may not only constrain sustainable practices but also can affect policies and programme planning and implementation

- **Degradation of environment and natural resources.** Development is often gives rise to opportunity costs for environmental and natural resources. If future financing, law enforcement, capacity and technology transfer and an integrated approach are not appropriately applied, natural resource could be at risk and/or unproductive, leading to a negative impact on sustainable development
- **Social and economic inequality and disparities** may worsen if serious action is not be taken to address these widening development gaps; in turn, such increases mean increased risks for sustainable development

Internal constraints and challenges:

The complexity and dynamics of the sustainable development theory including green economy together with lack of research and good practices on appropriate model and application in Laos cause more hardship for sustainable development in the country. Research and demonstration or good model is needed.

However, for future it is clear that sustainable development is needed and required to be strengthened with good models and or practices. New mechanism such as green economy is also necessary, however, it requires to research, design properly and implementable in the context of Laos. In addition, more investment on human resources including institutional arrangement and a standing body to function regularly and continuously and research. In addition sustainable development can only be realized when economic, social and environmental considerations are effectively considered into all human activities.

To realize the sustainable development and green economy, it is clear that without stronger, more tangible and commitments from development partners it is impossible for Laos alone to implement. Lao government already put its efforts, set a position for sustainable development and intends to use green economy as a tool for achievement. So with technical and financial support from the development partners, Laos together with the development partners would make sustainability more evidently.

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Annex 1: 27 Principles of the 1992 Rio Declaration

Principle 1: Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Principle 2: States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Principle 3: The right to development must be fulfilled so as to equitably meet development and environmental needs of present and future generations.

Principle 4: In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Principle 5: All states and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.

Principle 6: The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.

Principle 7: States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Principle 8: To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

Principle 9: States should cooperate to strengthen endogenous capacity building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

Principle 10: Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Principle 11: States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular, developing countries.

Principle 12: States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing trans-boundary or global environmental problems should, as far as possible, be based on an international consensus.

Principle 13: States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

Principle 14: States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.

Principle 15: In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Principle 16: National authorities should endeavour to promote the internationalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

Principle 17: Environmental Impact Assessments, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

Principle 18: States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.

Principle 19: States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have significant adverse trans-boundary environmental effect and shall consult with those States at an early stage and in good faith.

Principle 20: Women have a vital role in environmental management and development. Their full participation is, therefore, essential to achieve sustainable development.

Principle 21: The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all.

Principle 22: Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognise and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

Principle 23: The environment and natural resources of people under oppression, domination and occupation shall be protected.

Principle 24: Warfare is inherently destructive of sustainable development. States shall, therefore, respect international law providing protection for the

environment in times of armed conflict and cooperate in its further development, as necessary.

Principle 25: Peace, development and environmental protection are interdependent and indivisible.

Principle 26: States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.

Principle 27: States and people shall cooperate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development.