



GOVERNMENT OF THE
LAO PEOPLE'S DEMOCRATIC REPUBLIC



INTERNATIONAL ATOMIC
ENERGY AGENCY

COUNTRY PROGRAMME FRAMEWORK 2014-2018

On behalf of the Government of the
Lao People's Democratic Republic

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LIST OF ACRONYMS

ADB	Asian Development Bank
AIDS	Acquired Immune Deficiency Syndrome
BSS	Basic Safety Standards
CCA	Common Country Assessment
CCS	Country Cooperation Strategy
CLV	Lao-Vietnam-Cambodia
CPF	Country Programme Framework
DCA	Department of Civil Aviation
DoT	Department of Transportation
DPs	Development Partners
FAO	Food and Agriculture Organization of the United Nations
FY	Fiscal year
GDP	Gross Domestic Product
GMS	Greater Mekong Sub-region
HIV	Human Immunodeficiency Virus
HRD	Human Resource Development
IAEA	International Atomic Energy Agency
ICC	Immunization Coordination Committee
ICT	Information and Communication Technology
IMR	Infant mortality rate
LDC	Least developing country
MAF	Ministry of Agriculture and Forestry
MDGs	Millennium Development Goals
MEM	Ministry of Energy and Mining
MMR	Maternal mortality ratio
MoF	Ministry of Finance
MoFA	Ministry of Foreign Affairs
MoH	Ministry of Health
MoJ	Ministry of Justice
MoPS	Ministry of Public Security
MoPWT	Ministry of Public Works and Transport
MoST	Ministry of Science and Technology
MoNRE	Ministry of Natural Resources and Environment
NA	National Assembly
NAFRI	National Agriculture & Forestry Research Institute
NCLE N	National Centre for Laboratory and Epidemiology
NDC	Non Communicable Disease
NEIDCO	National Emerging Infectious Disease Coordination Office
NGO	Nongovernmental organisation
NHSDP	National Health Sector Development Plan
NREI	Natural Resources and Environment Institute
NSEDP	National Socio-Economic Development Plan
NSRC	Nuclear Safety and Radiation Control
NST	Nuclear Science and Technology
QA/QC/QM	Quality Assurance/Quality Control/ Quality Management
R&D	Research and Development
RCA	Regional Cooperation Agreement
SASS	State Authority Social Security
SIM-RW	System Information Management for Radioactive Waste
SIT	Sterile Insect Techniques
TCDC	Technical Cooperation Developing Country
TCP	Technical Cooperation Programme
TSOs	Technical Support Organizations
TWG	Technical working group
UN	United Nations
UNAIDS	Joint United Nations Program on HIV/AIDS
UNCT	United Nations Country Team
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNODC	United Nations Office for Drugs and Crimes
USAID	United States Agency for International Development
UXO	Unexploded Ordnance
WB	World Bank
WFP	United Nations World Food Programme
WHO	World Health Organization

EXECUTIVE SUMMARY

The Country Programme Framework (CPF) described in this document constitutes the frame of reference for the short term and medium-term planning of technical cooperation (TC) between the Lao People's Democratic Republic (Lao PDR) and the International Atomic Energy Agency (IAEA) for the period 2014–2018. This is the first CPF for Lao PDR.

Consistent with recommendations of the IAEA Board of Governors, the Medium Term Strategy of the IAEA 2012-2017, the Strategy for Technical Cooperation and the objectives of Country Programme Frameworks, the present document identifies the sectorial priorities for socio-economic development and provides a basis for the conception and formulation of sound technical cooperation projects that meet the quality and sustainability criteria required by the IAEA.

This CPF has been developed, following broad and in-depth consultations between the IAEA and the competent authorities of Lao PDR, on the basis of a thorough assessment of what nuclear science and technology can contribute to the realization of Lao PDR's national development objectives. The main national stakeholders in the relevant major sectors and lead technical institutions including Academia, Health, Agriculture, Environment and Energy were involved in the CPF consultations.

The CPF incorporates legislative and institutional frameworks, regional, multilateral and bilateral partnerships, and relevant international legal instruments. Ultimately, this will enable transparency, efficiency and sustainability of government cooperation with the IAEA in support of Lao PDR's sustainable development, in the context of the Southeast Asian region as well as globally. The Government is committed to having a strong TC programme with the IAEA and to maximizing the benefits of utilization of nuclear techniques by means of optimizing its participation in all IAEA activities relevant to the needs and interests of the country. The Government is also committed to ensuring adequate local support in terms of the financial, technical and human resources required for the smooth implementation of the TC projects and activities deriving from the present CPF.

The programme covered in this document will concentrate on Human Health, Food and Agriculture, Environmental Protection, Water Resources Management, Sustainable Energy Development, Industry, Radiation and Waste Safety, and Nuclear Security. In line with Lao PDR's 7th Five-Year National Socio Economic Development Plan (2011-2015), the 7th Five-Year National Health Sector Development Plan (2011-2015), the United Nations Development Assistance Framework (2012-2015), the WHO Country Cooperation Strategy Action Plan (2012-2015), and the Millennium Development Goals for 2015, the Lao PDR CPF will place high importance on human resources development in strengthening the national capacity in major areas of peaceful applications of nuclear science and technology.

This CPF will promote, to the fullest possible extent, the utilization of radiation-based facilities and related expertise that is been built in Lao PDR to support the socio-economic development of the country as well as to integrate nuclear techniques into the national development plan. Such integration will enhance the relevance of nuclear sciences and applications, and thereby promote advocacy and potentially build partnerships with various stakeholders, by increasing their contribution towards achieving national development goals including, but not limited to, the Millennium Development Goals (MDGs). This CPF will also assist Lao PDR in establishing an Atomic Energy Commission, or an equivalent entity, as well as national nuclear institutions promoting socio-economic development in the above-mentioned areas.

Future programmes under the present CPF are organised into three categories, namely, (a) the **near-term** programme, (b) the **medium-term** programme, and (c) **general support activities**.

Near-term Programme

The near-term programme will concentrate on identified high priority needs. The top priorities are focused on capacity-building in **human health, food and agriculture** and **radiation and waste safety**. In **human health**, the objective is to provide services and training in nuclear applications for diagnostic, therapeutic and palliative uses with a view to tackling cancer and infectious diseases. The focus will remain on efforts to build an adequate core group of professionals for cancer management by strengthening radio-diagnostic and therapy facilities/centres, as well as establishing a national capability for education and training in medical physics, nuclear medicine and radiation oncology. In **food and agriculture**, the objective is to develop capabilities enabling the introduction of nuclear applications in agriculture, and to support measures aimed at increasing the quality of food and agricultural production, as well as to enhance adaptation capabilities of food crops to climatic stress conditions. These activities are aimed at contributing to national food security and the protection of the environment. Another focus is to mitigate the effects of climate change through land and water management practices, including soil and water conservation. In **radiation and waste safety**, the top priority is to assist the competent authorities in accelerating the process of establishing and enhancing the national radiation safety infrastructure through addressing identified gaps to achieving and sustaining compliance with the requirements of the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (BSS).

In addition to the priorities that will be addressed by the anticipated national programmes, other areas will be covered through initial capacity-building initiatives under regional projects. Priority areas in this group include **environmental protection, energy planning, industrial applications**, and **nuclear security**. In **environmental protection**, the focus will be on studying the dispersion of pollutants in the environment, using appropriate nuclear and related analytical techniques, in line with and in support of the national environmental protection programmes. To build sustainable capacity in water resources management in-depth applications of isotope hydrology will be promoted to study groundwater resources, as well as to address issues related to climate change around the Mekong River. In **energy planning**, attention will be given to building national capacity to carry out studies on energy planning and economics and to advise the government on long-term energy development strategies. In the area of **industrial applications**, the focus will be on introducing the use of new radioisotope-based technologies and methodologies to improve product safety, reliability and quality. The priority in **nuclear security** is on establishing an appropriate national infrastructure. The risk that nuclear or other radioactive material could be used in malicious acts is a national concern and is regarded as a serious threat to international peace and security.

Medium-term Programme

The medium-term programme under this CPF will place greater emphasis on human resources capacity building, skills retention, quality management, as well as building economic competitiveness. Enhanced IAEA technical cooperation is expected to make a significant contribution to national planned programmes aimed at maximizing crop productivity through improvement of crop and food quality, as well as water utilization initiatives. Nuclear science and technology-related activities will promote available nuclear services and products to the public and potential end-users as well as focus on disseminating the results obtained through the different projects to gain stakeholders recognition and public acceptance.

Along the same line, the medium-term programme will continue on and proceed with technical cooperation from the foundations set in the near-term programme. As Lao PDR continues to develop capacity, the scope of technical cooperation will become broader and with possible additional areas being covered.

In **human health**, it is envisaged that additional support will be needed in addressing skill shortages in both nuclear medicine and radiotherapy. Moreover, the improvement of existing cancer treatment centres in local hospitals, as well as the development of various medical facilities related to diagnosis and therapy will be considered. In the area of **food and agriculture**, the focus will remain on the improvement of crop and livestock productions, application of sterile-insect techniques, post-harvest product quality assurance, food quality and safety, and the mitigation and adaptation of crop production to climate change. In **radiation and waste safety**, the Agency will continue to assist the Government in establishing essential elements of the national radiation safety infrastructure, fully addressing requirements of occupational and public exposure control. . In the area of **environmental protection**, increased support will be needed for using nuclear techniques to monitor, inspect and evaluate the environmental impact of industrial activities. The need for energy modelling and properly accounting for the energy mix in the country is of paramount importance to realizing a **sustainable energy plan** framework. The **industry** sector will also begin to explore the use of radiation technologies, as well as digital Non Destructive Evaluation and radiotracer techniques. Lastly, support to capacity building will be pursued in **water resource management**, in particular in isotope hydrology for assessing groundwater resources.

General Support Activities

The focus of the general support activities is to strengthen the national capability in the area of nuclear science and technology with particular emphasis on the activities relating to the priorities identified in this CPF. The assistance of the Agency will remain, as necessary, within the limits of the TC resources available for the implementation of activities in which nuclear technologies are involved. In addition to any complementary support that can be meaningfully provided under the regional and/or interregional mechanisms to the priority areas identified under the Near Term Programme and the Medium Term Programme, the general support activities will include assistance in increasing local capacities in the field of nuclear instrumentation and maintenance of equipment, particularly medical equipment, to support the sustainable development of nuclear science and technology in Lao PDR. Training and technical development in nuclear instrumentation will continue within the scope of the CPF, especially with regard to maintenance and repair. This will help reduce maintenance and repair costs and, in the long run, promote self-reliance and sustainability.

Cross-cutting all the priority areas identified in the CPF are the crucial aspects of capacity building, human resources development, nuclear knowledge management, quality management, and information & communication technologies (ICT). All projects will take these aspects into account as essential elements of self-reliance and sustainability of nuclear applications and technologies within Lao PDR. Human resources development will remain the highest priority in all domains of nuclear science applications. It is important to note that the IAEA provides technical cooperation, not only through national programmes, but through regional programmes, in various areas of human resource development with respect to nuclear technology. Training of young professionals in nuclear sciences and applications will continue to be a priority for the period covered by the CPF, although the specific training needs might not always coincide with the objectives of dedicated and active TC national projects. As such, the possibility for training young scientists and researchers should continue to be an available option since human capacity development is instrumental to nuclear knowledge formation, preservation, and advancement.

I. INTRODUCTION

The objective of the Country Programme Framework (CPF) is to establish a mutual understanding between the Government and the IAEA on future programming. The present CPF, covering the period 2014-2018, identifies areas for cooperation between the Government and the IAEA under the TC programme on the basis of the defined national needs, priorities and interests for peaceful application of nuclear science and technology in key areas relevant to the socio-economic development of the country. This document is in line with Lao PDR's 7th Five-Year National Socio Economic Development Plans (7th NSEDP) (2011-2015), the 7th Five-Year National Health Sector Development Plan (7th NHSDP) (2011-2015), the United Nations Development Assistance Framework (UNDAF) (2012-2015), the WHO Country Cooperation Strategy (CCS) action plan (2012-2015), and the Millennium Development Goals (MDG) (until 2015).

The CPF outlines a strategy for the IAEA technical cooperation efforts in supporting the current socio-economic development goals of the Government. It assists in developing nuclear science and technology linked with the national development objectives and priorities, as well as in facilitating the impact and sustainability of IAEA technical cooperation in the country. The overall aims are to create awareness, enhance the contribution of peaceful applications of nuclear techniques in Lao PDR, and create and sustain an environment for the safe application of these technologies.

The CPF is intended to be a concise working document that should be revised if and when critical circumstances change, rather than a rigid document locking either party into a plan which may no longer serve mutual needs. The primary target audiences for the CPF are those institutions and partners who are directly involved in the IAEA TC Programme and may also serve as a useful source of information for higher levels of management within government institutions. The endorsement of the CPF Document by the relevant Government bodies of Lao PDR and the IAEA, while not legally binding, demonstrates common commitment and shared responsibility to implement the TC programme.

The CPF serves two closely related purposes regarding future TC programming between Lao PDR and the IAEA on the peaceful application of nuclear science and technology. First, the development of the CPF stimulates, on the one hand, clear communication between the national decision makers involved in defining the country's development priorities and, on the other hand, those who are responsible for the management of the IAEA TC programme. Future programming under the CPF would focus on selected areas of development that are of high priority to the Government, and where technology available through assistance provided by the IAEA could make a significant contribution. It should be underlined that the identification of these selected areas provides opportunities for establishing high quality projects.

The second function served by the CPF is to record the agreement reached between the contracting parties, to be used as a frame of reference in the preparation and appraisal of Government project requests. The mutual endorsement of the CPF by the Government and the IAEA allows for the document to be revisited if, and when, circumstances change. The CPF process is dynamic and therefore the present document will be reviewed when deemed necessary, but no later than in 2017.

The programming plans outlined below follow numerous consultations between the relevant national authorities and staff members of the IAEA. They are consistent with the Government's priorities with regards to the utilization of nuclear techniques for the socio-economic development of Lao PDR.

The planning opportunities defined in this CPF document will concentrate on areas of particular importance that have been identified in the fields of (see Figure 3):

1. Human Health
2. Food and Agriculture
3. Environmental Protection
4. Water Resources Management
5. Sustainable Energy Development
6. Industry
7. Radiation and Nuclear Safety
8. Nuclear Security

I.1 Country profile

Geography

Located in Southeast Asia, northeast of Thailand, west of Vietnam, Lao PDR is a landlocked country with a total area of 236,800 km² (land: 230,800 km² and water: 6,000 km²), with borders with Myanmar (235 km) and China (423 km to the northwest), Cambodia (541 km to the south), Thailand (1,754 km to the west), and Vietnam (2,130 km to the east). It has waterways of 4,600 km (primarily on the Mekong River and its tributaries; 2,900 additional km are intermittently navigable by craft drawing less than 0.5 m according to 2012 estimates). Lao PDR enjoys tropical monsoons during the rainy season (May to November), followed by a dry season (December to April), and terrain of mostly rugged mountains; some plains and plateaus. The country has natural resources of timber, hydropower, gypsum, tin, gold, and gemstones.

Demographic Structure

It is estimated that the population of Lao PDR will be 6.9 million by 2015. The majority of the population is young, with 50% of the total population under the age of 20. When classified by age group, according to 2011 estimates, those aged 0-14 years numbered approximately 2.38 million (of whom 1.17 million are female); those aged 15-64 years number approximately 3.76 million (of whom 1.89 million are female); and those aged over 65 years number approximately 237,000 (of whom 127,000 are female).

There are 17 provinces (khoueng) in Lao PDR: Attapu, Bokeo, Bolikhamxai, Champasak, Houaphan, Khammouan, Louangnamtha, Louangphabang, Oudomxai, Phongsali, Salavan, Savannakhet, Vientiane, Xaignabouli, Xekong, Xiangkhouang, and Xaysomboun in addition to the Vientiane prefecture (kamphengnakhon) that includes the capital city Vientiane (NakhonLuangViangchan). Other large cities include LuangPrabang, Savannakhet and Pakse.

I.2 Economy

Since the late 1980s, the government's economic policy has shifted from a planned economy, towards a market-oriented economic system in which laws and regulations have been drawn-up and widely enforced.

Accordingly, economic growth has reduced official poverty rates from 46% in 1992 to 26% in 2010. Economic growth exceeded 7% per year during 2008-11. Lao PDR's GDP relies mainly on three sectors: 27.8% agriculture, 34.8% industry, and 37.4% services (2011 estimates). The GDP real growth rate increased significantly over the past years from 7.6% in 2009 to 7.9% in 2010 and 8.3% in 2011. Subsequently, the GDP per capita (PPP) increased from USD 2,400 in 2009 to USD 2,500 in 2010 and \$2,700 in 2011.

The economy has benefited from high levels of foreign investment in hydropower, mining, and construction. Electricity is available in urban areas and in many rural districts. Lao PDR is also planning to further increase provision of electricity to neighbouring countries such as China, Thailand and Vietnam, as well as to produce and export coal which will accelerate the country's economic growth. Nonetheless, the country remains dependent on imports of alternative energy sources such as petroleum and natural gas.

Lao PDR has a wide range of agricultural products such as sweet potatoes, vegetables, corn, coffee, sugarcane, tobacco, cotton, tea, peanuts, rice, cassava (manioc), as well as livestock consisting mainly of water buffalo, pigs, cattle, and poultry. The country has an industrial production growth rate of 17.7% (2010 est.) in areas such as mining (copper, tin, gold, and gypsum), timber, electric power, agricultural processing, rubber, construction, garments, cement, and tourism.

In addition to the above, the central geographic location of Lao PDR in the Sub-Mekong Region, linking ASEAN and China, ASEAN and Korea, and ASEAN and Japan, will enable it to construct a cross-border service centre connecting it with other regions.

Lao PDR is a country with a developing infrastructure, particularly in rural areas with a rudimentary, but improving, road system and limited external and internal land-line telecommunications.

I.3 Nuclear Sector Institutions

Lao PDR has no nuclear power reactors or nuclear fuel cycle facilities. However, nuclear techniques have been used in the medical as well as industrial fields. The establishment of a functional regulatory infrastructure for radiation safety and the control of radioactive sources is essential for the application of nuclear technology promoting socio-economic development.

Accordingly, Lao PDR presented 3 projects under the 2014-2015 TC cycle establishing, among other things, a basic National Radiation Safety Infrastructure. The assistance that will be provided by the IAEA under these projects will enable the development of mechanisms ensuring the quality and safety of both diagnostic radiology services and food and agriculture. Moreover, it will help establish the necessary laboratory facilities and equipment, train technical staff, and develop supporting facilities.

II. NATIONAL DEVELOPMENT PRIORITIES AND ACTIVITIES RELEVANT TO THE AGENCY'S TECHNICAL COOPERATION PROGRAMME

II.1 National Development Strategy and Priorities

The 7th Five Year National Socio-Economic Development Plan (7th NSEDP) 2011-2015, including the achievement of the Millennium Development Goals (MDGs) by 2015, are Lao PDR's priority national development goals. The 7th NSEDP provides a significant framework for poverty reduction, as well as a foundation for the future industrialisation and modernisation of the country, aimed at promoting equitable growth and helping the country to graduate from Least Developed Country (LDC) status by 2020.

The 7th NSEDP aims at implementing the 9th Party Congress Resolution "Boukthalu – breakthrough strategy" which consists of the following four dynamic objectives: (1) achievement in imagination; (2) achievement in human resource development; (3) achievement in mechanism, regime, and administrative system; (4) achievement in poverty reduction by attracting more sources of funds, promoting special policy, and constructing basic infrastructure in focal areas. It is regarded as a measure for achieving socio-economic development, industrialization and modernization towards the year 2020, and assisting in widening and deepening regional and international integration.

The overall targets of the 7th NSEDP are as follows:

1. Maintain economic growth in a stable and progressive manner at more than 8% per year, GDP per capita estimation for 2014 is approximately USD 2,500 per person per year;
2. Achieve the MDGs (including poverty reduction) and fulfil integration with the ASEAN Community by 2015, acquire modern technologies and infrastructures, and establish a diverse economic foundation to help the country graduate from LDC status by 2020;
3. Ensure sustainable development by integrating economic development with socio-cultural development and environmental protection;
4. Ensure political stability, fairness, and order in the society; maintain public security; and support regional and international integration.

Some of the main directions of the 7th NSEDP are:

(i) developing a strong and stable macroeconomic foundation to ensure strong growth; (ii) boosting structural changes in the economic and labour sectors through industrialisation and modernisation; (iii) applying modern scientific and technological methods aimed at reducing poverty; (iv) protecting and sustaining the environment, conserving forest cover and water, regenerating natural resources to utilise them more effectively and sustainably, planning for mitigating effects of climate change, raising the efficiency of the production process, working on comparative advantages of different economic sectors; (v) reducing the risk of unexploded ordnance (UXO), promoting better health and hygiene-consciousness; (vi) strengthening the public administration from the top to the grass roots level, promoting democracy through the rule of law, promoting industrialisation and modernisation, as well as encouraging SMEs, cooperative enterprises and household enterprises to utilise newer technologies aimed at improving their productivity and increasing their effectiveness.

The 7th NSEDP (2011-2015) also set several targets to be achieved on the economic and social levels as well as with respect to natural resource, environment and international integration. Some of the main targets are: GDP per capita will be about USD 1,700 at current prices (exchange rate at 8,500kip/1USD) by 2015, reduction of the poverty rate to below 19% of the total population and household poverty rate to below 10% of the total households in 2015, increasing international trade to GDP ratio from 83% in 2010 to 100% in 2015, full integration into the ASEAN Community by 2015. A detailed list of the targets can be found in Table I.

Recognizing the importance of science and technology for promoting socio-economic development, the government of Lao PDR has devoted more attention to Research and Development (R&D) in the context of which the application of science and technology to promote the peaceful uses of nuclear energy is considered. In accordance with the rights and duties under Decree No. 309 of the Prime Minister of Lao PDR, the Ministry of Science and Technology (MoST) is one of the main ministries to focus on Research and Development in line with meeting Lao PDR's national development goals, as well as identify the medium-term strategic objectives and key activities to be implemented. These include the establishment of a regulatory authority, radiation safety and security management, and the promotion of peaceful uses of nuclear technology activities in the following areas: expansion of nuclear medical treatment facilities, expansion of the use of nuclear technology for the preservation of food, promotion of agricultural products, protection of the environment, management of water resources, as well as nuclear applications in industry.

The national activities relevant to the IAEA's TC programme touch upon various development areas/sectors and are formulated according to the 7th Five-Year National Health Sector Development Plan (7th NHSDP) (2011-2015). The current CPF is using the time range of 2014-2018, thereby the 7th NHSDP is used as the basis for the development of nuclear science and technology priority programmes in the area of human health. The implementation of the national development priorities requires the consolidation of efforts and strong international support. Therefore, the Government is considering essential technical cooperation with the IAEA in several areas where nuclear science and technology may contribute to fill the scientific gap.

The national development programmes for the medium-term plans of both the 7th NSEDP and 7th NHSDP for the period 2011-2015 consist of ten priorities:

1. Education
2. Health
3. Poverty Eradication
4. Food Security
5. Infrastructure
6. Investment and Trade Climate
7. Energy
8. Environment and Disaster Management
9. Reduce the impact of UXO (Unexploded Ordnances)
10. Forest and Land Use Management and Development

The Government is strongly committed to achieving the MDGs by 2015. In doing so the 7th NSEDP (2011-2015) focuses on the strategies that correspond to the achievement of these goals. Moreover, Lao PDR has established a framework of innovative options to assist the government in accelerating initiatives, interventions and technologies to achieve the MDGs, as well as a national monitoring system to ensure that the MDGs are achieved by 2015. The indicators of MDGs have moved towards the 2015 targets with the greatest achievements thus far being the reduction of income poverty; increase in primary school net

enrolment; reduction in child mortality; action against tuberculosis and malaria; and access to safe drinking water and basic sanitation in urban areas.

The traditional 8 MDGs that pertain to Lao PDR are as follows:

(Table II contains the targets under each goal)

Goal 1: Eradicate extreme poverty and hunger

Goal 2: Achieve universal primary education

Goal 3: Promote gender equality and empower women

Goal 4: Reduce child mortality

Goal 5: Improve maternal health

Goal 6: Combat HIV-AIDS, malaria and other diseases

Goal 7: Ensure environmental sustainability

Goal 8: Develop a global partnership for development

Uniquely for Lao PDR, there is a country-specific MDG on the reduction of UXO(unexploded ordnances) impacts by 2020.

Goal 9: Reduce the impact of UXO

Lao PDR has placed special prominence to MDG 9 in respect to the long-term negative impact of unexploded ordnances (UXO) on the development potential of affected communities by providing enhanced assistance to UXO clearance, survivor assistance, and risk education. This ninth MDG will further function as a multiplier to MDGs 1-7 by providing increased access to assets and services for improved livelihoods.

The 7th Five Year Plan (7th NSEDP) indicates that the achievement of MDGs should become an indicator of the national development plan. These goals are expected to be achieved by the year 2021.

Further to the MDGs that are until 2015, the Rio+20 Conference (June 2012) introduced an intergovernmental process, to develop a set of Sustainable Development Goals (SDGs) which is open to all stakeholders. The SDGs will build upon the MDGs and converge with the post 2015 development agenda. Even though the specific SDGs have not been yet defined, the SDGs are expected to be used similarly to the MDGs as a valuable basis for decision making, especially at the national level for formulating national development policy.

Taking into account the national development priorities of Lao PDR that are aligned with the MDGs, nuclear science and technology (NST) can contribute to various areas such as human health, food and agriculture, environmental protection, sustainable energy development, industry, radiation safety, nuclear security and water management. The following introduces the development areas which the IAEA Technical Cooperation Programme could contribute, outlining the basic fields of technical expertise.

Human Health

Lao PDR places emphasis on the development of health including non-communicable diseases, with preventive approaches (not only curative), through the improvement of public health and the environment and the overall achievement of the MDGs by 2015.

The Government of Lao PDR has placed importance on both Communicable and Non-communicable diseases. In line with the 7th NHSDP and the Government's action plan, and due to the increasing number of cases of Non Communicable Diseases (NCD), the Ministry of Health has prioritized a programme to control NCD's including cancer, diabetes mellitus, and cardiovascular diseases. In this context some salient points are highlighted from the 7th NHSDP:

1. Create basic material and technological health infrastructure in order to bring the country out of the LDC status by 2020;
2. Expand and strengthen the health system in order to meet the needs of the people, especially the poor and vulnerable, in synergy with the rapid industrialization and modernization of the country;
3. Contribute to eradicating poverty and improving the Lao people's quality of life, while aiming to achieve the five health-related MDGs.

Nuclear science and technology can specifically support the Government's action plan in the health sector in the following areas of radiation-based applications:

- Nuclear Medicine and Diagnostic Imaging;
- Applied Radiation Biology and Radiotherapy;
- Dosimetry and Medical Radiation Physics;
- Nutritional and Health-Related Environmental Studies.

Food and Agriculture

In food security and agricultural revitalization, achieving food self-sufficiency is a top priority. A specific aim is to increase the competitiveness of agriculture, as well as address issues related to increasing farmers' income and natural resources sustainability in order to be able to achieve the target of increase in GDP growth by at least 3% per year in the agricultural and forestry sectors by 2015.

Nuclear science and technology in this field can support the Government's action plan with regard to the following:

- Land area development and spatial planning of agriculture: development of new agricultural land areas, including the utilization of marginal and abandoned land areas;
- Agricultural productivity and conservation of soil and water resources for sustainable crop and livestock production systems;
- Soil quality and soil resilience against impacts of climate change and variability;
- Plant breeding in developing crops with greater resilience to climate change;
- Livestock breeding through the efficient use of locally available feed resources, adequate management practices and breeding programmes for indigenous and upgraded animals, and diagnostic tools and prophylactic measures for the control and prevention of animal and zoonotic diseases;
- Sterile Insect Techniques for pest control;
- Sanitary and phytosanitary applications of irradiation on the basis of international standards;

- Radionuclide levels in foodstuffs;
- Laboratory practices and analytical procedures for food contaminants and residues, including pesticides and veterinary drugs;
- Food traceability and authenticity.

Environmental Protection

In environment and disaster management emphasis is placed on the conservation and utilization of the environment to support economic growth and sustainable welfare. This can only be successfully achieved if accompanied by the management and mitigation of disaster risks as well as the effects of climate change.

Key priorities of the Government's action plan in this sector, related to the dispersion of pollutants, using nuclear techniques and utilizing natural resources, are outlined below:

- Detoxification and disinfection of different kinds of industrial effluents by applying nuclear techniques (e.g. ionizing and non-ionizing radiation);
- Transboundary air quality monitoring and relation to climate change parameters;
- Pesticide and chemical fertilizer residue analysis in the environment;
- Treatment of industrial effluents by nuclear and related techniques;
- Biodegradation of chemical pollutants using potential microbial strains along with nuclear approaches;
- Establishment of stationary national air monitoring network and an early notification air pollution network;
- Determination of trace metals in the environment;
- Greenhouse gas emissions and soil carbon sequestration in both productive and marginal lands.

Sustainable Energy Development

Energy security at the national level has increasingly become an issue of concern for the Lao PDR Government. An important step towards accomplishing this goal is to have a sound mid- to long-term energy plan that will ensure continuity of national growth through institutional restructuring and broad optimization of energy sources.

The current energy supply and management system within Lao PDR remains fragmented and, therefore, in need of integration to enable increased efficiency in the utilization of energy resources. The country needs a sustainable energy plan, providing guiding principles, direction and priorities, while optimizing the utilization of resources. From the national perspective, it is timely to strengthen the capacity of concerned institutions while developing the national plan for sustainable energy development including, training of personnel in this field and using energy modelling tools. Assistance in energy planning will focus on the following areas:

- Providing comprehensive, up-to-date information and expertise on methodology used in the assessment of options for sustainable energy development,
- Building capacity and national capability to perform mid-to long-term analyses of needs for energy production and electricity generation,
- Planning for energy investment, and
- Formulating policy for the protection of environment in the context of viable energy options of and their economic implications.

Industry

The 7th NSEDP places emphasis on building capacity of the industrial and commercial sectors to be able to compete at the domestic market as well as for export, thus promoting industrialization and modernization.

The 2015 targets set by the 7th NSEDP, aim at greater economic integration at both regional and international levels, and more specifically Lao PDR's accession to the WTO. In this context, the Lao PDR Government places high priority on the application of new technologies and the development of human resource capabilities. Accordingly, Lao PDR will focus on developing both the processing and handcraft industries which have been expanding at an average rate of 13% per annum. Considering that industries in wood processing, garments, food and beverage processing, production of construction materials, and other products of daily use, currently make up 24% of the national GDP, investment in this field is imperative. In parallel, consideration could be given to projects supporting modernization of facilities involved in the production and/or processing of, amongst other things, garments, sugar, steel, rubber, paper, crops, and coffee.

Specifically, nuclear science and technology can support the Government in the following areas:

- Radiation processing technology and Non-Destructive Evaluation technologies;
- Radiation techniques and radiotracers for industrial process management.

Water Resources Management

The Lao PDR National Water Resources Strategy 2020 and Action Plan 2011-2015 have outlined a strategy that aims to address the increasing water resources management needs of the country. Focus has been placed on having a water resources inventory and modelling, groundwater resources management, and assessing the effects of climate change to water supply.

Most of the water use in Lao PDR occurs in the agricultural sector such as irrigation, fisheries, plantations and livestock watering. In addition, water is used for hydro-power with the potential to produce 23,000 megawatts of electricity. Only 5% of that capacity potential has been exploited. The plentiful supply of water in Lao PDR, especially in the rainy season, provides good conditions for water transport, industrial development and water supply. Sixty percent of the Lao PDR urban population and 51% of the rural population has access to clean water.

There are some problems related to waste and polluted water in major urban areas from varied community use (residential density, hotels, hospitals and entertainment centres). In addition there is water pollution from the agricultural and industrial sectors, including mineral exploitation.

The programme emphasizes the application of relevant nuclear techniques to support water resources management and in particular water conservation, as well as the study of groundwater resources development and management, and matters related to climate change around the Mekong River.

Nuclear science and technology can support the Government by using isotope hydrology to identify the source of recharge, estimating groundwater dynamics (residence time and rate of replenishment), identifying nuclear and non-nuclear contaminants and tracing their pathways in the environment.

II.2 Technology Requirements

The nuclear science-based technologies required for national activities in the areas indicated above are:

1. Irradiation technology for food preservation, medical product sterilization, genetic mutation, latex processing, area-wide blowfly pest management;
2. Radioisotopes and radiopharmaceuticals production technology;
3. Isotope hydrology technology for management of water resources;
4. Nuclear and related techniques for natural hazards and environmental monitoring;
5. Radiation technologies for industrial and industrially related applications, etc.

The application of these technologies in respective areas through TC projects is expected to have significant impact on national economy, improved health care and better quality of life. In addition, it will contribute to better perception, among the public, of the benefits that can be derived from Agency assistance.

III. ASSISTANCE PROVIDED BY OTHER INTERNATIONAL ORGANIZATIONS AND DONORPARTIES

The overall goal of the UN System in Lao PDR is to support the efforts of the Government to apply the principles of the Millennium Declaration and to achieve the Millennium Development Goals (MDGs) with equity. This will be realized by ensuring alignment between the MDGs, national development priorities, and the UN System's strategic areas of cooperation.

The United Nations Development Assistance Framework (UNDAF), which is the UN System's coherent and collective response for addressing development cooperation with Lao PDR, elaborates on what and how results will be achieved over the next five years for the people of Lao PDR, particularly for the most vulnerable, deprived, and marginalized groups.

The UNDAF Action Plan 2012-2015 for Lao PDR was signed on 4 July 2012 by the Lao PDR Government and the UN Resident Coordinator. Other signatories to the Action Plan also include UN resident and non-resident representatives of Agencies.

The UNDAF Action Plan marks a strong commitment by the United Nations to assist Lao PDR in promoting equitable growth, enabling all segments of the population to equally enjoy development gains. The 4-year plan focuses on 10 targeted outcomes under six key priority areas: Governance, Inclusive and Equitable Growth, Human Development, Natural Resource Management, Unexploded Ordnance and Gender.

The Action Plan has been developed with a results-based focus, so as to strengthen the impact of development work supported by the United Nations. Preparations to develop the new framework began in early 2010 and have included a number of strategic consultations between the UN and the Government since then. In Lao PDR, the United Nations Development Program (UNDP) is actively engaged to ensure that national development will benefit the whole population. The UNDP objectives include support for sustainable growth which increases economic and social opportunities resulting in benefits for all, but without harming the environment. The UNDP also promotes peace and security as a critical element of this pattern of development. The aim is to increase human development, achieve the Millennium Development Goals (MDGs) and lift the country out of the ranks of Least Developed Countries (LDCs) by 2020. The UNDP Human Development Report 2013 ranked Lao PDR at 138 out of 187 countries, similar to the report of the previous year.

With regards to agricultural cooperation projects, Lao PDR's National Agriculture and Forestry Research Institute (NAFRI) works closely with a number of international donors, research organizations and universities. There are two regional centres under NAFRI; the Northern Agriculture and Forestry Research Centre (NAFReC) and Southern Agriculture and Forestry Research Centre (SAFReC). These centres conduct two types of activities:

1. Commodity based Research Centres:

- Rice and Commercial Crops Research Centre (RRCRC)
- Horticulture Research Centre (HRC)
- Forestry Research Centre (FRC)
- Livestock Research Centre (LRC)
- Living Aquatic Resources Research Centre (LARReC)

2. Non-commodity based Research Centres (NCAC):

- Agriculture and Forestry Policy Research Centre (AFPRC)

In 2006, Lao PDR had 87 projects, which received funding and international grants. Lao PDR also received bilateral development assistance from Vietnam, France, Japan, Sweden, Australia, and Switzerland. This assistance, which amounted to with 96 million US dollars, covered 21 projects for both the National Agricultural and Forestry Extension Service (NAFES) and NAFRI activities.

The Food and Agriculture Organization of the United Nations (FAO) together with ASEAN + 3 (Japan, Korea and China), provided assistance to 23 projects under multilateral agreements. The projects covered by FAO focused on technical assistance and human resource development. UNDP also provided assistance for human resource development and the development strategy for ecological management. The Asian Development Bank (ADB) supported projects on irrigation, construction, forestry, and commodity promotion and animal production, while the World Bank (WB) and the International Fund for Agricultural Development (IFAD) focused on rural development projects.

In 2012, the World Health Organization (WHO) celebrated its 50-year presence in Lao PDR. The Government has been working together with the WHO to improve the health of its people throughout the country. The WHO Country Cooperation Strategy (CCS) for Lao PDR is for 2012–2015, and is fully aligned with the 7th NHSDP and the UNDAF Action Plan (2012-2015).

In addition within Lao PDR, the United Nations Convention to Combat Desertification (UNCCD) is working on soil management, and the FAO in Area-Wide Integrated Pest Management (AW-IPM) and the control of Transboundary Animal Diseases (TAD). The United Nations Industrial Development Organization (UNIDO) is working on wastewater and chemicals treatment using e-beam and radiation technologies, and the WHO is working with the IAEA Programme for Action on Cancer Therapy (PACT) in cancer management.

Further cooperation in development activities can be foreseen with the Consultative Group on International Agricultural Research (CGIAR) in agriculture in such areas as the Global Rice Science Partnership (GRiSP) through the International Rice Research Institute (IRRI). Cooperation could also be pursued with the United Nations Children's Fund (UNICEF) and Scaling Up Nutrition (SUN) in nutritional interventions, as well as in groundwater management with the Global Environment Facility (GEF) and the United Nations Environment Programme (UNEP).

IV. OVERVIEW OF PAST AND PRESENT TECHNICAL COOPERATION ACTIVITIES IN THE COUNTRY

Lao PDR joined the IAEA as a Member State in November 2011, launching its first IAEA national TC programme for the 2014-2015 TC Cycle.

The Revised Supplementary Agreement concerning the Provision of Technical Assistance by the IAEA was signed by the Government of Lao PDR in January 2014.

V. ENVISIONED COUNTRY PROGRAMME OUTLINE

Pursuant to recommendations by the IAEA Board of Governors, the Strategy for Technical Cooperation and the objectives of Country Programme Frameworks, future programme planning is presented in three categories.

The first category, referred to as the Near-Term Core Programme, includes activities considered to be of the highest priority with potential for significant impact and for which the bulk of resources for the implementation of the TC Programme for Lao PDR will be allocated.

The second category, under the Medium-Term Core Programme, includes those activities, which are projected to become the next set of core projects. Support for these activities will be concentrated primarily on building those components of infrastructure and technical capacity, including human resources development that are expected to be required for the next set of core activities and which require a significant lead time. Support for appropriate feasibility studies can also be included in this category.

The third category refers to General Support Activities.

Government development plans aim at accelerating growth and reducing poverty. The Government considers nuclear science and technology as an important component of the national policy in science and technology, which contributes to the country's development goals. In this context, a strategy has been established, and priority areas have been identified, to facilitate the development and utilization of nuclear science and technology with a view to bringing tangible social and economic benefits to the country.

During the process of development of the Lao PDR's CPF, all relevant national stakeholders were invited to share their views regarding the planning opportunities to be considered and to align the plans with their prioritized national and sectoral thematic programmes. The future Technical Cooperation programming between the IAEA and Lao PDR will follow a phased approach, with emphasis on the safe and sustainable application of nuclear techniques to support national development priorities. Following sequential steps enables the programme to remain focused on identified objectives, while being responsive to possible events that may affect projects, by making necessary adjustments in a timely and effective manner.

Based on the needs identified and priorities defined in this CPF, in line with the goals outlined in the 7th NSEDP (2011-2015), specific technical cooperation projects will be formulated and considered for IAEA's support. The usual IAEA procedures and quality criteria for the approval of technical cooperation projects will be followed. Implementation of the projects that will emanate from this CPF depends strongly on Governmental support of the national programme in the respective priority areas, particularly in terms of infrastructure, staffing, and local funding, which are the pre-conditions of national TC projects and should be made available in line with the agreed work plan.

V.1. The Near-term Programme

The focus of the near-term programme is outlined in accordance with the national development priorities described in Chapter II of the CPF and classified under the following programme areas:

Top near-term programmatic priorities which are being addressed through the National TC Programme for Lao PDR are in:

- human health
- food and agriculture
- radiation safety

Other near-term programmatic priorities, which are being addressed through the Asia and the Pacific Regional TC Programmes, are in:

- legislative assistance
- environmental protection
- sustainable energy development
- industrial applications
- nuclear security

As a cross-cutting issue in all programme focus areas, the aspect of human resource development continues to be an important requirement for ensuring sustainability. This may include capacity building for scientific and technical staff in linking the results of research and development to the end users and public.

The detailed elaboration of each programme focus and activity area is presented in the following sections.

1. Programme Focus: Human Health

In human health, the focus will be on building an adequate core of professionals for cancer management, with the aim of expanding accessibility to cancer care, through strengthening radio diagnostic and therapy facilities/centres. This will include upgrading the existing facilities, as well as implementing a QA/QC programme and establishing a national capability for education in diagnostic radiology, whereas education in medical physics, nuclear medicine and radiation oncology would need to be addressed in the mid- to long-term perspective. The recommendations made by the fact-finding mission conducted by the IAEA in April 2012 and the joint IAEA-WHO imPACT review mission of April 2014 served as a basis for drawing up future projects and, in particular, for expanding and consolidating the medical infrastructure to combat cancer in the public hospitals of the country. Additional recommendations have been made by the imPACT review mission to support the development of a radiotherapy service in Lao PDR. In the longer term, the resources for managing cancer will also have to be more efficiently distributed to local communities as well as geographically, so that local needs can be met more easily by bringing care close to the patients. The longer-term goal would involve increased capacities, which would include nuclear medicine diagnosis, and the establishment of a new nuclear medicine centre. To support the improvement and expansion of cancer diagnosis, upgrading both the skills of medical personnel and existing equipment in diagnostic radiology will be needed. As there is a need for mobilising extra-budgetary resources from partners and securing government cost-sharing to support long-term training and the purchase of new

equipment, Lao PDR may request IAEA support to develop resource mobilization strategies to support radiation medicine interventions aligned with national cancer control strategies. Additionally, near-term future support will include advisory assistance to optimize the utilization of the existing diagnostic radiology infrastructure, training of professionals and assistance to improve QA/QC and safety at the workplace. The priority areas to be focused on are:

- Quality Assurance in Radiation Medicine;
- Education and training of nuclear medicine physicians and medical physicists working in nuclear medicine and of medical physicists working in radiation oncology as well as radiation oncologists in both the public and private sectors;
- Quality Assurance in the detection of non-communicable diseases through diagnostic radiology;
- Medical Physics training in diagnostic radiology;
- Establishing local protocols for quality assurance in diagnostic radiology.

A national TC project LAO6001 - Establishing the Quality and Safety of Diagnostic Radiology Services, has been approved for 2 years (2014-2015) with the objective to improve human health conditions in Lao PDR through enhanced medical diagnosis of patients and the establishment of a quality management and safety programme in diagnostic radiology practice.

2. Programme Focus: Food and Agriculture

In food and agriculture, the near-term priority will be the introduction of nuclear technology for agricultural development with the aim of contributing to increasing the quality of food and agricultural production, and to enhancing the adaptation capabilities of food crops to climatic stress conditions. The immediate need for this sector will be capacity building in the areas of human resources as well as the development of laboratory and research facilities. This is necessary in order to conduct research and apply appropriate nuclear technologies that will aim at improving and increasing crop production. The measures will help ensure food security, thus contributing to meeting both the MDGs by 2015 and the strategic goals of the 7th NSEDP. Under the near-term programme, projects aimed mainly at improving crop/plant production and increasing agricultural yields will be supported. In the utilization of nuclear techniques for crop improvement, priority will be given to: i) elucidating soil/water relationships, ii) enhancing efficiency of crops irrigation, and iii) assessing soil erosion rates and improve conservation measures.

Furthermore, activities particularly focused on mutation breeding of rice will be supported. Moreover, due consideration will be given to mitigating climate change effects, land and water management practices, as well as soil and water conservation measures that enhance soil resilience and crop adaptability to climate change.

The priority areas to be focused on are:

- Increasing rice production and the development of climate resilient rice varieties through conventional breeding and application of nuclear techniques and biotechnology;
- Increasing and diversifying crop productivity through soil and water management;
- Initiating the utilization and development of bio-fertilizers and organic wastes using soil and water conservation measures to improve land productivity for crop/animal production and enhancing soil resilience against climate change impacts;
- Development of soil and water management practices including improved irrigation scheduling through tracer techniques to ensure the sustainability of natural resources in the agricultural sector.

A national TC project LAO5001 - Enhancing Food Security through Best Fit Soil-Water Nutrient Management Practices with Mutation Induction for Drought Resistant Rice, has been approved for 2 years (2014-2015) with the objective to improve food security through enhanced rice production, utilizing technology packages based on best fit soil-water-nutrient management practices and improved varieties through mutation breeding in Lao PDR.

3. Programme Focus: Radiation Safety

Ensuring adequate level of radiation safety for the protection of workers, patients, the public and the environment, in line with the international standards, as well as promoting safety culture is entirely a national responsibility, having direct impact on country's socio-economic development in all sectors covered by this CPF. This responsibility is extended to ensuring sustainability of the system. In the short- to medium term programme, IAEA assistance in establishing national legislative framework for peaceful uses of atomic energy, and strengthening radiation safety and nuclear security infrastructures for effective regulatory control of radiation sources and practices in all areas involving their use and or existence, will remain the top priority. Issues pertaining to nuclear security are discussed in Section 7 below.

It is expected that in the short-term, enabling legislation for peaceful uses of atomic energy (the Act) will be promulgated. The legislation will be in line with the Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (BSS, General Safety Requirements, Part 3), the Governmental, Legal and Regulatory Framework for Safety (GSR Part 1), the Code of Conduct on the Safety and Security of Radioactive Sources (CoC), and the Guidance on Import and Export of Radioactive Sources (GIERS).

Furthermore, in recognizing these priorities, it is expected that prompt action will be taken at the national level to implement the Act. Specifically, institutional framework will be set up, in accordance with the Act, to establish an effectively independent regulatory body, separated from any national agency having a stake in the promotion of nuclear and/or radiation-based technology.

To stimulate this process, priority in assistance, using existing and new IAEA TC modalities of delivery, will be on:

- providing advice and expertise in preparing and reviewing the draft Act ;
- supporting training of legal specialists on enabling legislation pertaining to radiation safety and nuclear security (ref. Section 7 below);
- development of technical capabilities of the regulatory body, including staff training, the provision of reference material and essential equipment;
- providing expertise to expedite the commencement of routine regulatory work such as development of regulations and safety guides, setting out provisions for authorization, review, assessment and enforcement;
- facilitating Government's acceptance of and adherence to international instruments pertinent to radiation safety and nuclear security;
- supporting national activities to ensure radiation safety of personnel occupationally exposed to ionizing radiation.

It is noted that a TC National Project on:Establishing a National Radiation Safety Infrastructure (LAO9001)has been approved for 4 years from 2014-2017. The project is aimed at addressing priority activities in setting up and rendering operational a regulatory body (Thematic Safety Area 1). It also incorporates activities for occupational exposure control (Thematic Safety Area 2).

The following are the other near-term programmatic priorities for Lao PDR which are being implemented (or planned to be implemented) through the regional approach.

4. Programme Focus:Environmental Protection

In the field of environment, the aim is to study dispersion of pollutants in the environment using appropriate nuclear and related analytical techniques in support of the national development programmes, as well as to identify, develop and utilize natural resources, in particular water resources. During the last 10 years, environmental protection and monitoring has been rendered necessary because of deforestation, urbanization and rapid industrialization. It is also essential that Lao PDR employs integrated soil-water-plant nutrient techniques to protect the environment and sustain crop production to achieve food security goals, especially for those citizens living in marginalised areas of the country.

The priority areas to be focused on are:

- Monitoring of air quality and assessment of policies adopted for reduction of short-lived climate forces;
- Characterization and source identification in particulate air pollution;
- Baseline data and monitoring of pesticide residues in environmental samples;
- Control of microbiological hazards by radiation, detoxification and disinfection of different kinds of industrial effluents by applying nuclear techniques (e.g. ionizing and non-ionizing radiation).

The IAEA's assistance will include human capacity building, targeted support for the introduction of new nuclear techniques, as well as support for establishing a regulatory infrastructure, referred to in Section 3 above, incorporating protection of the environment.

5. Programme Focus:Sustainable Energy Development

Energy demand is closely linked to economic growth. As an energy-independent state, Lao PDR intends to expand energy exports to other countries of the Southeast Asian region and will need to develop a comprehensive energy strategy, taking into account the rapid economic and population growth of the region. Increasing domestic energy demand within the country should also be considered.

The current energy supply and management system in Lao PDR needs more integration to enable efficient utilization of the country's energy resources. The Government seeks to optimize the use of energy resources and energy technology to ensure the development of a Sustainable Energy Development Plan that minimizes hazardous environmental impacts. In order to effectively implement such an energy plan, it is essential for relevant national institutions to strengthen their capacities in energy planning and energy modelling by training qualified staff and acquiring state of the art hardware and ICT equipment.

Priority assistance in this area will focus on providing expertise for the preparation of Sustainable Energy Development Plan, building capacity for energy planning, as well as supporting public information on viable options of energy generation, consistent with the national Plan.

6. Programme Focus: Industry

In the area of industrial applications of radioisotopes and radiation technologies, the focus will be on introducing new technologies which have been proven to have high and visible impacts on the socio-economic development of countries, and which could also attract public and private investments through partnerships. This is particularly important for the increased use of radiation technology applications such as radiotracers, nucleonic measurement systems, radiation processing and non-destructive testing.

Priority areas in this field will be on:

- Establishment and implementation of a human resources programme on radiation technologies for industrial applications (radiotracers, nucleonic measurement systems, radiation processing and non-destructive testing) in various industries (wood-processing including forestry, food production, sediment management, etc.);
- Development of radiation-based applications;
- Exploration of the possibility of using radiation technology for flue gas and wastewater treatment.

7. Programme Focus: Nuclear Security

The risk that nuclear or other radioactive materials could be used in malicious acts remains high and is regarded as a serious threat to international peace and security. It is well recognized that the responsibility for nuclear security rests entirely with each State and that appropriate and effective national systems for nuclear security are vital in facilitating the peaceful use of nuclear energy and enhancing global efforts to combat nuclear terrorism. Lao PDR is committed to enforcing relevant nuclear security measures to prevent malicious uses of nuclear or radioactive materials. In the near-term, as a first step, the development of human resources in the field of nuclear security becomes a priority, followed by the introduction and fostering of nuclear security culture into all role-player programmes.

The IAEA assists States in carrying out their responsibilities for nuclear security through the implementation of the Agency's Nuclear Security Plan 2014 to 2017, approved by the Board of Governors and managed and implemented by the IAEA Division of Nuclear Security. This plan aims to achieve improved security worldwide for nuclear and other radioactive materials in use, storage and transport and of their associated facilities, as well as the implementation of relevant international legal instruments related to nuclear security. The objective is to support the development of sustainable security infrastructures and to help improve aspects of nuclear security, such as physical protection capabilities at facilities housing nuclear and other radioactive material, and the detection and response capabilities throughout the country.

The Nuclear Security Fund (NSF) is the established funding resource for the implementation of the Agency's Nuclear Security Plan. Assistance for establishing and enhancing nuclear security infrastructure in a country can be requested directly from the IAEA Division of Nuclear Security.

Priority areas to be focused on are:

- Adopting joint Lao DPR – IAEA Integrated Nuclear Security Support Plan;
- Accepting and adhering to international instruments related to nuclear security (also ref. Section 3 above);
- Training of customs and border control officers;
- Provision of essential radiation monitoring equipment for border controls;
- Joining the IAEA database on illicit trafficking in radioactive and nuclear material and nuclear terrorism.

V.2. The Medium-term Programme

Some of the activities planned for implementation under the near-term programme will need to be extended and pursued with IAEA support under the medium-term programme. In addition to priority areas identified to be addressed during the medium term, efforts will continue to carry out activities that have been initiated under the near-term and need additional time to be accomplished. The following sections present the priority areas of activities identified under the medium-term programme and have been segmented without particular prioritization.

1. Human Health

In human health, it is envisaged that additional support will be needed to address skill shortages in both nuclear medicine and radiotherapy. The improvement of existing cancer treatment centres in different local hospitals, as well as the establishment of new centres bringing cancer care to patients in eastern regions should be continued. Accordingly, the national capability to upgrade and modernize various medical facilities related to diagnostics and therapy should be sought. Human resource development will continue to be given high priority in the context of the cooperation between the Government and the Agency throughout the medium-term programme. Joint efforts will essentially support institutions that have been subject to a considerable loss of personnel, but where the application of nuclear technology is essential for social and economic development.

2. Food and Agriculture

In food and agriculture, the focus will continue to be on crop improvement using mutation induction, together with soil/water/fertilizer as well as increased meat and milk production through better nutrition, reproduction and health approaches and capacity building. This will ultimately contribute to participation in the national programme for food self-sufficiency. In the medium-term, the focus will be placed on the development of rice and other staple crops with higher yield and resistance to biotic and abiotic stresses; quality control and assurance in utilization of pesticides; production and application of bio-fertilizers; efficient management of irrigation water to enhance crop productivity under water limited conditions, using nuclear techniques; application of the sterile insect technique as part of an area-wide integrated pest management programme; good preservation using irradiation technology and improvement of crop genotypes with high water and nutrient use efficiency for water-scarce environments. Furthermore, the application of nuclear technology in food and agriculture will enable the mitigation of and adaptation to climate change, sustainable agricultural production (economically feasible, socially acceptable and environmentally sound) and the safe use of nuclear techniques and technologies. The CPF will also support Lao PDR in addressing the effect of climate change on water, energy, agriculture, health and environmental sectors, as well as natural disasters.

3. Radiation Safety

The establishment of a viable national radiation safety infrastructure will remain a key factor for sustainable peaceful applications of nuclear science and technology in Lao PDR. In the mid-term, the Agency support will be necessary to assist the Government in establishing the required level of compliance with BSS in essential elements of the national infrastructure for radiation safety. Support in providing, where appropriate, opportunities for post-graduate education in radiation protection to young specialists designated to assume positions in this field, will be part of the IAEA assistance. Occupational radiation protection aspects will continue to be addressed. Assistance is expected to continue in the area of Medical Exposure Control

(Thematic Safety Area 3), and to be initiated in the area of Public Radiation Protection and Waste Safety (Thematic Safety Area 4). TCDC, as well as cooperation with other national and regional partners, will be sought for mutual benefits.

The priority areas to be focused on are:

- Human resource development for radiation safety at post-graduate and specialized levels;
- Development of regulations, authorization, inspection and enforcement practices, as well as related safety documentation and records;
- QA/QC using self-assessment methodology. Ensuring the safe and secure use of radioactive sources by improving regulatory oversight of radiation safety and the security of sources in licensee institutions;
- Strengthening occupational exposure control by ensuring radiation monitoring of all personnel occupationally exposed to radiation.

4. Environmental Protection

Based on country conditions, there should be a reasonable and efficient approach to the use of natural resources to ensure that the balance is maintained between socio-economic developments and environmental protection. Protection from the impact of climate change, and ensuring protection of forests, land, mineral resources and water resources will remain a challenge to the Government.

There is a need to develop both the infrastructure and human capabilities to strengthen the national environmental management system, as well as to improve laws and regulations on environmental conservation and pollution control. There is also the need for effective monitoring, inspection and evaluation of the environmental management system for industrial projects, the development of solutions to dispose of garbage and toxic material in urban areas and the promotion of scientific research, the construction of library networks and raising awareness about the environment in the society.

The priority areas to be focused on are:

- Environmental radioactivity monitoring;
- Application of nuclear techniques for controlling microbial hazards in water environments;
- Treatment of industrial effluents by nuclear and related techniques;
- Biodegradation of chemical pollutants, using potential microbial strains along with nuclear approaches;
- Development of nuclear analytical techniques in environmental monitoring, food and quality control, in view of nuclear power programme pursued in the region;
- Establishment of a stationary national air monitoring network and an early notification air pollution network.

5. Sustainable Energy Development

The contributions of the energy and mining sectors will increase the amount of energy supply, energy consumption, energy resource management, sustainable energy plan frameworks and training of personnel in the energy and mining sectors.

The priority areas to be focused on are:

- Enhancing human resource capacity (in both quality and quantity) for energy planning;

- Developing regulations and procedures in energy and mining activities;
- Collection of information on nuclear technology for energy production.

6. Industry including Waste Technology

The industry sector will continue using radioisotopes and radiation technologies. The focus will be on introducing new technologies which have been proven to have visible impact on the socio-economic development of the country, and which can attract public and private investments through partnerships. This is particularly important for the increased application of radiation-based technologies such as radiotracers, nucleonic measurement systems, radiation processing and non-destructive testing.

The priority areas to be focused on are:

- Human resources development in radiation technologies for industrial applications (radiotracers, nucleonic measurement systems, radiation processing and non-destructive testing) in various fields (wood industry including forestry, food industry, sediment management, etc.);
- Developing industrial applications of radiation technologies in most strategic industries;
- Planning activities for a comprehensive radioactive waste management system;
- Development of a national strategy for radioactive waste management methodology, including treatment, conditioning, disposal and development of System Information Management for Radioactive Waste (SIM-RW) and for associated R&D programmes.

7. Nuclear Security

Human resource development, with particular emphasis on construction management, will be a focus in the nuclear security area including the enforcement of nuclear security regulations and nuclear security culture.

The focus will continue to be on the implementation of the national Integrated Nuclear Security Support Plan (INSSP) in conjunction with and assistance provided by the Division of Nuclear Security.

8. Water Resources Management

Water resources management will be looked at from various areas and utilities such as irrigation, hydro-power, navigation, fisheries, urban water supply and rural water supply. Irrigation contributes to the achievement of self-sufficiency in food, increases the production of agricultural commodities, and reduces shifting cultivation. Hydropower contributes to fulfilling the economic goals of the country, increases availability of electricity, and improves the quality of life in rural areas. Navigation contributes to economic and social goals through improved transport, particularly between the neighbouring countries of Thailand, Myanmar and China. Urban water supply meets the needs of the industry, as well as of the urban population. Rural water supply and sanitation improvements are essential to the goals of increasing health and living standards of rural communities, as well as to the promotion of tourism. Drainage, solid waste and sewage disposal are needed, principally in urban areas, to provide for industry and development.

The programmes aimed at preserving water resources, weather forecasting, and hydrology will be fundamental in achieving a successful water resource management strategy, including the promotion of the efficient use of the resource by upgrading legal and regulatory standards. Furthermore, the programmes will establish meteorological stations to forecast natural occurrences that could result in disasters and set up equipment to monitor the weather, thus providing quality information to policymakers in a timely manner. Another element will be to develop the use of early-warning systems to forecast weather conditions/floods,

drought, and other disasters, as well as to improve and upgrade weather forecast and hydrology network and earthquake alert stations throughout the country. Lastly, the rehabilitation and improvement of hydrologic stations throughout the country, key for commercial agricultural production, will enable adaptation to climate change and facilitate the process of industrialization and modernization.

The priority areas to be focused on are:

- Development of isotope methods for the protection of groundwater resources, including the development of analytical methodologies for assessment of radionuclides in groundwater resources in Lao PDR;
- Investigation, monitoring and management of climate change impact on groundwater resources of Lao PDR through isotopic techniques;
- Water quality monitoring and mitigation of Arsenic and other trace element contaminants in groundwater;
- Isotope monitoring, in precipitation networks, by developing isotope fingerprints for water and climate studies;
- Monitoring of isotopic composition of large rivers from headwaters to deltas.

Medium-term assistance of the IAEA to support the above-mentioned national priorities will be provided, under approved TC projects, in the form of expertise, human capacity building and guidance, as well as provision of essential equipment to develop new and/or upgrade existing facilities.

Due consideration will be given to Government commitment through cost-sharing, as well as to other extra-budgetary contributions to specific projects.

V.3. General Support Activities

Technical Cooperation Approach

In addition to the core programme, and notwithstanding the fact that the Agency's support is meant to complement the Government's efforts and responsibility for sustaining nuclear technology-related projects in the country, technical cooperation from the Agency is, at times, essential for the continuation of on-going activities. Human resource development will continue to be given top priority in the context of cooperation between the Government and the Agency. More specifically, the bulk of the required support activities could be undertaken within the framework of RCAⁱ programmes and other regional technical cooperation projects. The IAEA's assistance will support national efforts designed to further develop human resources, while at the same time, promoting the use of new learning/training tools and methodologies such as Information and Communication Technology (ICT) and e-learning. Specific assistance will be provided to some institutions in the form of mentorship, to advise them on the successful introduction of potential nuclear techniques addressing developmental problems. It is envisaged that IAEA support will assist the Government in playing a more active role in the participation of relevant regional projects.

One of the important official mandates of the Ministry of Science and Technology (MOST) is to promote and facilitate R&D in this area. The MOST will be the main government agency mandated to support the IAEA TC Programme. Additionally, in several sectors including food and agriculture, health and energy, partnerships with other ministries, universities, hospitals, and R&D institutes have been established.

The focus of general support activities will be on strengthening the national capability in the area of nuclear science and technology. Within the Technical Cooperation approach of General Support Activities the TC Programme will work in increasing local capacities in the field of nuclear instrumentation and maintenance of equipment, particularly medical equipment, to support the sustainable development of nuclear science and technology in Lao PDR. Training and technical development in nuclear instrumentation will continue within the scope of the Country Programme Framework, especially with regard to maintenance and repair, thereby helping reduce maintenance and repair costs and, in the long run, promoting self-reliance and sustainability.

ⁱ Only after Lao PDR becomes a Party to the RCA (Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology)

Annex 1 – List of Resource Institutions

Nuclear Sector Institutions

The establishment of a functional regulatory infrastructure for radiation protection and the control of radioactive sources is a prerequisite for the IAEA to assist the country in promoting a socio-economic development programme involving the application of nuclear techniques. Although Lao PDR has no nuclear power reactors or nuclear fuel cycle facilities, nuclear techniques have been used in the medical field as well as industry.

Lao PDR is at the starting stage of using nuclear techniques and radiation safety monitoring vis-à-vis planning and designing projects, under the IAEA 2014-2015 TC cycle, which enable the establishment of a basic National Radiation Safety Infrastructure in Lao PDR, and establish the quality and safety of diagnostic radiology services, as well as of food safety and agriculture. At the present time, Lao PDR has very limited resources in the area of nuclear activities. However, through active collaboration with the IAEA, it is planning to establish a number of service providing centres equipped with the required laboratory facilities and equipment, as well as trained specialists..

The following is a list of the Nuclear Institutions and their roles:

1. National Agriculture and Forestry Research Institute (NAFRI), Ministry of Agriculture and Forestry

Role: Lead institute on Agriculture and Forestry in Lao PDR, in particular, with respect to land studies, land use planning and land management, as well as the management of plant breeding, and research and development of technologies, methods, models and systems of agriculture and forestry.

2. Research Institute of Education Science, Ministry of Education and Sports

Role: Lead institute on education and teaching curriculums.

3. Economic Research Institute for Trade, Ministry of Industry and Commerce

Role: Main Institute for advising on economic and trade affairs.

4. Law Research Institute, Ministry of Justice

Role: Lead institute to study and research all relevant legislations in the country, including the transition of traditional customary law (soft law) to hard law, as well as support of implementation of the country's legislation.

5. National Economic Research Institute, Ministry of Planning and Investment

Role: Provides research based policy recommendations and advocacy.

6. Tropical Disease Analysis Center (Christophe Mérieux Lao Center), Ministry of Public Health

Role: Laboratory service providing virus analysis on diseases such as HIV/AIDS, Hepatitis, etc for all hospitals.

7. Drugs and Food Testing Center, Ministry of Public Health

Role: Laboratory service for analysis and certification of food and medical safety.

8. Traditional Medicine Research Institute, Ministry of Public Health

Role: Institute for the study and research of traditional herbs.

9. Biotechnology and Ecology Institute, Ministry of Science and Technology

Role: Institute for the research and analysis of new biotechnologies, including the study of radiation sources.

10. Institute of Natural Resources and Environment, Ministry of Natural Resources and Environment (MONRE)

Role: Institute for research and analysis of water and environment quality.

11. Renewable Energy and New Materials Institute, Ministry of Science and Technology

Role: Research and analysis on bio-energy, alternative energy, technology machines and new materials.

12. National Institute of Public Health (NIOPH), Ministry of Public Health

Role: Institute for training trainers on human health, including the establishment of a teaching curriculum for the University of Health Science, as well as laboratory services for analysing tropical diseases for all hospitals.

Source: Unofficial data collecting and translating by Science Management Division, Department of Science, MOST (March 2013)

Annex 2 – Resource Estimates and Forecast

		€	
1.	Historical reference figure for approved national programme (average of e.g.; 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008), as an indicative planning figure ⁱⁱ for the period of coverage.		NA
	Estimated Government cash contribution ⁱⁱⁱ for the planning period	€	0
	Estimated Government in-kind contribution ^{iv} for the planning period	€	0
2.	Preliminary estimates for the agreed programme/projects reflected in the CPF		+ 145,820 + 144,380 + 109,800 = 400,000 (2 years 2014-2015)
	Title		
1	Agreed programme/projects reflected in the CPF (2014-2015).		400,000€
2	Preliminary estimates for the proposed programme/projects reflected in the CPF (2015-2016).		500,000€
3	Preliminary estimates for the proposed programme/projects reflected in the CPF (2017-2018)		550,000€

ⁱⁱ The country indicative planning figure does not obligate the Agency to provide such funding, nor does it suggest the expectation of continued levels of Agency funding. The sole purpose is to assist planning and prioritization of the country framework.

ⁱⁱⁱ The indicative government cash contribution does not commit the government to the stated amount, but indicates the intent and likelihood of such support.

^{iv} In-kind contributions represent the value assigned to non-cash contributions such as providing experts, training courses, and infrastructure. Planning for in-kind contribution can also include bilateral trade and intergovernmental cooperation agreements in the respective programme area.

Annex 3 –Planof Action

CPF Referenced Planning Opportunity	Proposed Action	Action Party	Expected Output	Time Frame
Human Health	To improve medical diagnosis of patients through the establishment of a quality management and safety programme in diagnostic radiology practice	MoH IAEA	<ol style="list-style-type: none"> 1. Trained staff to support QA/QC programmes and techniques 2. Establishment of QA/QC procedures 	2014-2018
Agriculture	To promote the rice crop grown production by using technology packages based on mutation induction, mutant varieties and best fit soil-water nutrient management practices in the different regions of Laos	MAF NAFRI IAEA	<ol style="list-style-type: none"> 1. Upland and lowland rice production systems with enhanced nutrient use efficiency 2. Improved soil, crop and nutrient management practices for optimizing nutrient and water use efficiencies, and improving soil fertility and quality developed 3. Capacity building to use isotopic and nuclear techniques for quantifying nutrient 	2014-2018
Environmental Protection	To study dispersion of pollutants in the environment using appropriate nuclear and related analytical techniques in support of the national development programmes.	MoNRE MoPS IAEA	<ol style="list-style-type: none"> 1. Monitoring of air quality and assessment of policies adopted for reduction of short-lived climate forcers; 2. Characterization and source identification of particulate air pollution in the Asian region; 3. Monitoring of food quality in terms of health and environmental factors; 4. Baseline data and monitoring of pesticide residues in the environmental samples; 5. Detoxification and disinfection of different kinds of industrial effluents applying nuclear techniques (e.g., by ionizing and non-ionizing radiation); 6. Control of microbiological hazards by radiation. 	2014-2018
Water Resources Management	To identify natural resources, in particular water resources, to protect these resources against pollution.	MoNRE IAEA	<ol style="list-style-type: none"> 1. Sustainable groundwater resource 2. Capacity building to use isotopic and nuclear techniques 	2014-2018

<p>Water Resources Management</p>	<p>To identify natural resources, in particular water resources, to protect these resources against pollution.</p>		<p>for water use efficiencies</p> <ol style="list-style-type: none"> 3. Strengthening of a national isotope hydrology based capability for planning and management of groundwater resources in coastal area; 4. Assessment of trends in freshwater quality using environmental isotopes and chemical techniques for improved resource management; 5. Applying isotope techniques to investigate groundwater dynamics and recharge rate for sustainable groundwater resource management; 6. Establishing monitoring network and model study to assess saline water intrusion in groundwater around Mekong river of Lao PDR due to climate change; 7. Providing water supply and sanitation facilities in arsenic affected and saline prone areas. 	<p>2014-2018</p>
<p>Sustainable Energy Development</p>	<p>To study energy resources to design a Sustainable Energy Development able to satisfy the future energy demand, with low energy related environmental impacts.</p>	<p>MEM IAEA</p>	<ol style="list-style-type: none"> 1. Enhancing the using water and other natural resources effectively and economically, to ensure sustainability of the environment; 2. Enhancing the human resource capacity (in both quality and quantity) especially in 3. the field of energy and mining sectors; 4. Applying the use of new technology in conducting surveys, exploration and processing mines; 5. Supporting the improvements of policies, laws, regulations, coordination mechanisms and procedures. 	<p>2014-2018</p>
<p>Industry</p>		<p>IAEA</p>	<ol style="list-style-type: none"> 1. Establishing modern management system for 	<p>2014-2018</p>

Industry	Capacity building, research and development in the area of radioisotopes and radiation technologies applications	IAEA	<p>operational, regulatory and project management organization;</p> <ol style="list-style-type: none"> 2. Developing essential legislative and regulatory infrastructures for establishing the regulatory body; 3. Developing an integrated national HRD programme for the operational, regulatory and TSO personnel; 4. Developing national stakeholder management programme and formulating strategic plan for public information and stakeholder involvement; 5. Human resource development on radiation technologies for the introduction of nuclear applications with particular emphasis on local industries such as wood, etc. but also forestry as an industrial resource 6. Establishment of appropriate organization and management system for managing the pre-project and project activities; 7. Establishment and implementation an integrated Management System including QA/QM in the existing organization; 8. Establishment and implementation of a human resources programme on radiation technologies for industrial applications (radiotracers, nucleonic measurement systems, radiation processing and non-destructive testing) in various fields (wood industry including forestry, food industry, sediment management, etc.) 	2014-2018
Radiation Safety	Establishing a viable	MOST MoH MoJ MoPS MoPWT	<ol style="list-style-type: none"> 1. Establishment of Nuclear Law 2. Infrastructure for core regulatory functions in place 	2014-2018

	national infrastructure for radiation safety and radiation protection to meet the IAEA Safety Thematic Areas 1 and 2	DCA DoT MoNRE NREI IAEA	<ol style="list-style-type: none"> 3. Capacity-built for occupational exposure 4. Emergency preparedness and response plan in place 5. Infrastructure for safe management of radioactive waste 	2014-2018
Nuclear Security	To ensure security of the use of radioactive sources and materials, radiation and nuclear equipment and facilities in order to gain public confidence for the application of nuclear science and technology in different fields.	MOST MoF (Customs) MoPS MoH MoPWT MoFA IAEA	<ol style="list-style-type: none"> 1. Combating of illicit trafficking in radioactive and nuclear material and nuclear terrorism; 2. Promotion of peaceful applications of nuclear science and technology. 	2014-2018

Annex 4 – Compilation of Treaties under the Auspices of the International Atomic Energy Agency

<u>Multilateral Agreements</u>	In Force	Status
Agreement on the Privileges and Immunities of the IAEA		Non-Party
Vienna Convention on Civil Liability for Nuclear Damage		Non-Party
Optional Protocol Concerning the Compulsory Settlement of Disputes		Non-Party
Convention on the Physical Protection of Nuclear Material	2010-10-29	accession: 2010-09-29
Amendment to the Convention on the Physical Protection of Nuclear Material		Non-Party
Convention on Early Notification of a Nuclear Accident	2013-06-09	accession: 2013-05-10
Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency	2013-06-09	accession: 2013-05-10
Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention		Non-Party
Convention on Nuclear Safety		Non-Party
Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management		Non-Party
Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage		Non-Party
Convention on Supplementary Compensation for Nuclear Damage		Non-Party
Revised Supplementary Agreement Concerning the Provision of Technical Assistance by the IAEA (RSA)		Signature: 2014-01-16
Fifth Agreement to Extend the 1987 Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology (RCA)		Non-Party
African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA) - Fourth Extension		Non-Party
Co-operation Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean (ARCAL)		Non-Party
Co-operative Agreement for Arab States in Asia for Research, Development and Training Related to Nuclear Science and Technology (ARASIA) - First Extension		Non-Party

<u>Safeguards Agreements</u>		
Agreement between the Lao People's Democratic Republic and the International Atomic Energy Agency for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons	2001-04-05	Signature: 1991-11-22

<u>International Organizations</u>			
United Nations (UN)			Member
International Atomic Energy Agency (IAEA)			Member
Organization for the Prohibition of Chemical Weapons(OPCW)			Member
Comprehensive Test Ban Treaty Organization Preparatory Commission			Member

<u>Chemical & Biological</u>			
Nuclear Non-proliferation Treaty (NPT)			State Party
Comprehensive Nuclear Test Ban Treaty (CTBT)			State Party
Partial Test Ban Treaty (PTBT)			State Party
IAEA Safeguards Agreement			Yes (INFCIRC 917)
Convention on the Physical Protection of Nuclear Material			State Party
Southeast Asian Nuclear-Weapon-Free-Zone (SEANWFZ) Treaty (Bangkok Treaty)			State Party

<u>Counter Terrorism Conventions & Obligations</u>			
Security Council resolution 1373 (2001)6			Report submitted 02/25/02
Security Council resolution 1267 (1999) and 1455 (2003)7			Report submitted 07/10/03
Suppression of the Financing of Terrorism			State Party
Suppression of Terrorist Bombings			State Party
Against the Taking of Hostages			State Party

Table I. Targets of the 7th Five Year Socio-Economic Development Plan 2011- 2015

Area	Targets
<p style="text-align: center;">Economic</p>	<ul style="list-style-type: none"> • It is estimated that by 2015, the GDP per capita will be about USD 1,700 at current prices (exchange rate at 8,500kip/1USD). • The agriculture and forestry sector is slated to grow at least 3% annually, encompassing 23% of the GDP by 2015; the industrial sector to grow at 15% annually, encompassing 39% of the GDP; and the services sector to grow at 6.5% annually, encompassing 38% of the GDP. • Increasing average export value by 18% and increasing imports by 5% per annum; manufacturing industry and handicraft sectors to grow by a maximum 13% per annum and to account for 15% of the GDP; • Increasing total investment (state and private, combined) to 32%, import to 50% and export to 35% by 2015; • Ensuring the environmental sustainability of aforementioned growth rates by adhering to set Implementing targeted rice production of 4 million tonnes, on a total area of 1.04 million hectares, with an average productivity of 450-500 kilogram of rice per person, per year in order to ensure the energy supply of 2,400-2,500 kilo calories per person, per day; • Expanding livestock to reach 4-5% per year, of which water buffaloes 2-3% and pigs and poultry 6%; • Developing current irrigation systems into agro-irrigation by utilizing machinery and electricity, covering 60-70% of the flat and mountainous cultivation areas or 50% of the rice, commercial grains and fruit trees cultivation area; • Attempting the construction of eight electricity power plants with a capacity of 2,862 megawatts; attempting to expand a 22 kv medium power grid and off grid to rural areas that still lack electricity, in order to ensure access to electricity by 2015 to 80% of total household ; • Attempting to complete the link between the North-Middle and South power grids with 115 kv in order to balance the supply of electricity needs; • Attempting to complete the linkage of power grids with neighbouring countries, especially Thailand and Vietnam 500 kv; • Attempting to complete the production of 75% of geographical-mining maps with a ratio of 1/200,000, and attempt to explore and process important minerals such as copper plate 86,200 tons per year, copper powder 298,000 tons per year, gold bar 6 tons per year, coal 728,000 tons per year, gypsum 6000,000 tons per year; • Constructing and expanding roads to link the different regions to achieve 100% connectivity in 2015;

	<ul style="list-style-type: none"> • Supplying clean water to 67% of the total population in cities; • Expanding networks and telecommunication services in rural areas to cover 90% of total national households; • Expanding data bases and national statistic indices to be in line with the national development situation.
Social	<ul style="list-style-type: none"> • By 2015, it is expected that Lao's population will reach 6.9 million people with an expansion rate of 2% per year; • Attempting the reduction of the poverty rate to below 19% of the total population and household poverty rate to below 10% of the total households in 2015; • Increasing net enrolment ratio in primary education to 98% by the year 2015; • Increasing the rate of students who continuously study from year 1 to year 5 to 95% and increasing literacy rate of people in 15-24 age group to 99%; • Reducing child mortality rate (< 5 years) to 70 per 1,000 live births; • Reducing infant mortality rate (< 1 year) to 45 per 1,000 live births; • Reducing underweight rate of children under 5 years to less than 20% and stunting to 34%; • Reducing maternal mortality to 260 per 100,000 live births; • Increasing clean water usage rate to 80% and toilet usage rate to 60% of the total population; • Controlling malaria, tuberculosis and HIV/AIDS according to the MDGs targets. • By 2015, increasing life expectancy to 68 years (male: 66; female: 70); • Maintaining the unemployment rate under 2%; • Attempting to increase the number of women in high ranking positions to more than 15%, increasing the number of women members of the National Assembly (NA) to more than 30% and increasing the rate of female workers to 40%; • Effectively implementing the 2nd national strategy on the pathway to security by reducing the number of injuries and deaths caused by UXO; • Attempting to improve the quality of life of Lao people, as well as attempting to achieve the MDGs.
	<ul style="list-style-type: none"> • Developing and protecting forestry to cover 65% of the total land area; and building Lao PDR as one of the greener countries in the world; • Completing land allocation; identifying development zones and land use areas, especially areas with forest cover, i.e.

<p>Natural Resources and Environment</p>	<p>conservation areas, production forests, protected forests, and watersheds;</p> <ul style="list-style-type: none"> • Participating in the campaign against global warming, climate change and pollution; • Participating in the preservation of mineral resources (preserving mine areas of more than 65% of the total area of mines), preserving land, water and air; • Ensuring high alert in preventing natural disasters, particularly, forest fires, droughts, floods and river bank and mountain erosion; • Ensuring water resource management at the Mekong River basin and other important Mekong River branch basins; • Ensuring environmental protection in cities, communities (villages), and national highways, public places based on the principle of “green, clean and beautiful”.
<p>International Integration</p>	<ul style="list-style-type: none"> • Increasing international trade to GDP ratio from 83% in 2010 to 100% or more in 2015 • Achieving full integration into the ASEAN Community by 2015, which is constituted of the three Community pillars: Security, Economic and Socio-Cultural; Tightened drug policies by 2015 • Becoming a member of the World Trade Organisation • Achieving the Greater Mekong Sub-region (GMS) Cooperation Plan and triangle development Lao-Vietnam-Cambodia (CLV) Cooperation Plan • Contributing to the establishment of a drug-free ASEAN by 2015 • Participating in GMS cooperation, as well as in the ASEAN international commission; cooperation with Mekong sub-regional countries: GMS, CLV, and CLMV

Table II Millennium Development Goals/targets for 2015:

Goals	Targets
Goal 1: Eradicate extreme poverty and hunger	Target 1a: Reduce by half the proportion of people living on less than a dollar a day 1.1 Proportion of population below \$1 (PPP) per day 1.2 Poverty gap ratio 1.3 Share of poorest quintile in national consumption Target 1b: Achieve full and productive employment and decent work for all, including women and young people 1.4 Growth rate of GDP per person employed 1.5 Employment-to-population ratio 1.6 Proportion of employed people living below \$1 (PPP) per day 1.7 Proportion of own-account and contributing family workers in total employment Target 1c: Reduce by half the proportion of people who suffer from hunger 1.8 Prevalence of underweight children under-five years of age 1.9 Proportion of population below minimum level of dietary energy consumption
Goal 2: Achieve universal primary education	Target 2a: Ensure that all boys and girls complete a full course of primary schooling 2.1 Net enrolment ratio in primary education 2.2 Proportion of pupils starting grade 1 who reach last grade of primary 2.3 Literacy rate of 15-24 year-olds, women and men
Goal 3: Promote gender equality and empower women	Target 3a: Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015 3.1 Ratios of girls to boys in primary, secondary and tertiary education 3.2 Share of women in wage employment in the non-agricultural sector 3.3 Proportion of seats held by women in national parliament
Goal 4: Reduce child mortality	Target 4a: Reduce by two thirds the mortality rate among children under five 4.1 Under-five mortality rate 4.2 Infant mortality rate 4.3 Proportion of 1 year-old children immunized against measles
Goal 5: Improve maternal health	Target 5a: Reduce by three quarters the maternal mortality ratio 5.1 Maternal mortality ratio 5.2 Proportion of births attended by skilled health personnel Target 5b: Achieve, by 2015, universal access to reproductive health 5.3 Contraceptive prevalence rate 5.4 Adolescent birth rate 5.5 Antenatal care coverage (at least one visit and at least four visits) 5.6 Unmet need for family planning
Goal 6: Combat HIV-AIDS, malaria and	Target 6a: Halt and begin to reverse the spread of HIV/AIDS 6.1 HIV prevalence among population aged 15-24 years 6.2 Condom use at last high-risk sex 6.3 Proportion of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS 6.4 Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years

<p>otherdiseases</p>	<p>Target 6b: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it 6.5 Proportion of population with advanced HIV infection with access to antiretroviral drugs Target 6c: Halt and begin to reverse the incidence of malaria and other major diseases 6.6 Incidence and death rates associated with malaria 6.7 Proportion of children under 5 sleeping under insecticide-treated bed nets 6.8 Proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs 6.9 Incidence, prevalence and death rates associated with tuberculosis 6.10 Proportion of tuberculosis cases detected and cured under directly observed treatment short course</p>
<p>Goal 7: Ensure environmental sustainability</p>	<p>Target 7a: Integrate the principles of sustainable development into country policies and programs; reverse loss of environmental resources Target 7b: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss 7.1 Proportion of land area covered by forest 7.2 CO2 emissions, total, per capita and per \$1 GDP (PPP) 7.3 Consumption of ozone-depleting substances 7.4 Proportion of fish stocks within safe biological limits 7.5 Proportion of total water resources used 7.6 Proportion of terrestrial and marine areas protected 7.7 Proportion of species threatened with extinction Target 7c: Reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation 7.8 Proportion of population using an improved drinking water source 7.9 Proportion of population using an improved sanitation facility Target 7d: Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020 7.10 Proportion of urban population living in slums</p>
<p>Goal 8: Develop a global partnership for development</p>	<p>Target 8a: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system Target 8b: Address the special needs of the least developed countries Target 8c: Address the special needs of landlocked developing countries and small islands developing States (through the Programme of Action for the Sustainable Development of Small Island Developing States and the outcome of the twenty-second special session of the General Assembly) Target 8d: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term</p>
<p>Goal 9: Reduce the impact of UXO</p>	<p>Target 9a: Ensure the complete clearance of UXO (unexploded ordnances) from priority / high value agricultural land by 2020 9.1 Number of hectares released from UXO contamination Target 9b: Reduce substantially the number of casualties as a result of UXO incidents 9.2 Number of casualties reported as a result of UXO incidents Target 9c: Ensure that the medical and rehabilitation needs of all UXO survivors are met in line with treaty obligations under the Convention on Cluster Munitions 9.3 Provision of proper assistance to UXO survivors</p>

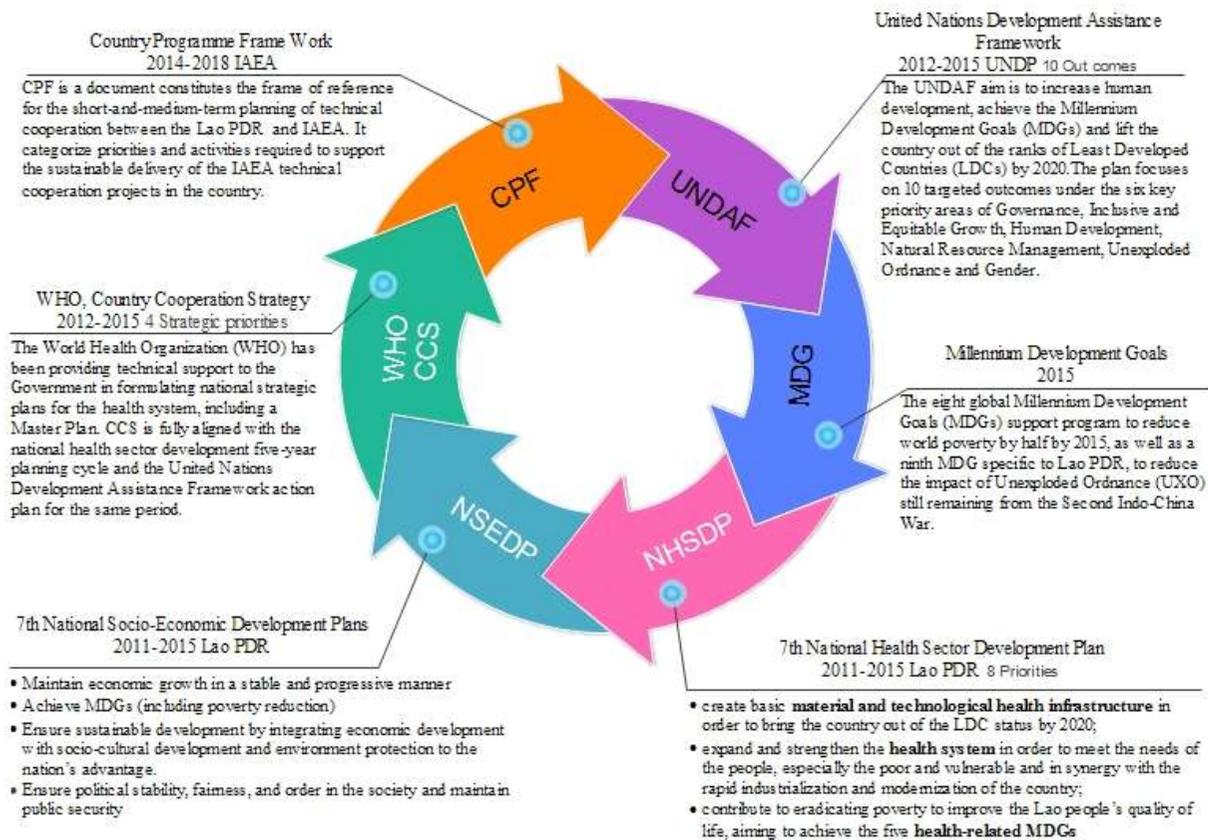


Figure 1.Origins of participation in the development of the national planning system of Lao PDR.

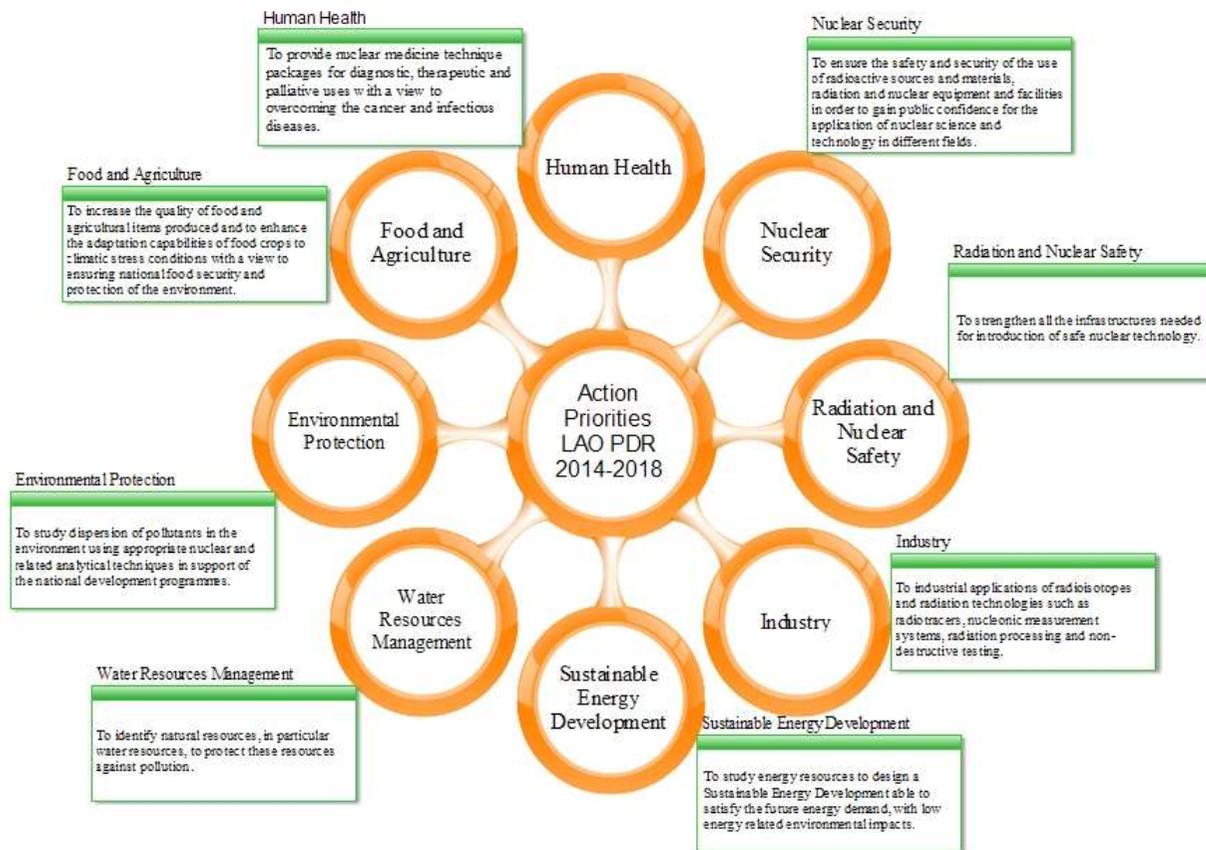


Figure 2. Action priorities resulting from development of the national planning system of Lao PDR.

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Table II Millennium Development Goals/targets for 2015

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