

LAO PEOPLE'S DEMOCRATIC REPUBLIC¹⁹

A. Current status of science and technology

There are two main actors involved in science and technology (S&T) development in Lao People's Democratic Republic: governmental institutions and the industry. At the apex of governmental institutions are the National Authority for Science and Technology (NAST) for the nation and the Provincial Department for Science and Technology (PDST) for the provinces. There is also a National Science Council (NSC), various ministries, universities and research institutes. The country has not yet established any national-level research institute: research institutes are available only at NAST and under some of the ministries.

NAST was reorganized on 24 December 2007 from the erstwhile Science, Technology and Environment Agency and functions at the central level, under the Prime Minister's Office. It acts as a secretary to the government and manages at macro level on S&T, intellectual property (IP), standardization and metrology throughout the country. NAST, headed by a Minister from the Prime Minister's Office, consists of four technical departments, three research institutes and the Cabinet Office.

Some of the important accomplishments of NAST are:

- Established research institutes and information centres on S&T centrally and in some provinces;
- Undertook research activities, and disseminated results of research and provided information to the public;
- Organized technical training and workshops to upgrade knowledge of governmental officials at both local and national level;
- Created some legislations relating to the management and promotion of science, technology and innovation (STI), such as the law on IP, the law on standardization and the policy on information and communication technology (ICT);
- Completed Phase I of the implementation of an "e-government project" (set up national and local centres for e-governance, installed linkage networks by using fibre optics and WiMax system, and installed ICT equipment to train government staff on information technology).

PDST, a governmental institution at local level, acts as a secretary to the provincial governor and a leader of NAST and directly manages on S&T, IP, standardization and metrology in the provinces. It is a young institution and has low capacities and limited budget. PDST is yet to carry out its functions actively.

NSC was established in 2002 as a technical institution, belonging to the Prime Minister's Office. NSC's main mandates are to provide advice on social and natural research activities, and to consider and certify results of research carried out in the country.

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Like NSTA, NSC too is chaired by a Minister in the Prime Minister's Office, who is the Chairperson of NAST. Members of NSC are drawn from different public and private sector entities. The Council is yet to start active functions.

Some sectoral ministries have established institutes, centres and councils relating to the research, development, application and management of S&T for serving their own activities. Many activities, including pilot projects, have been undertaken by these ministries and some important results achieved.

The country has three universities – National University, Luangprabang University and Champasack University. National University has produced a number of scientists, technologists and researchers. Luangprabang University and Champasack University are still young and in the process of building and developing infrastructure and human resources.

The industrial units in Lao People's Democratic Republic fall into four categories: state-run enterprises; private enterprises; joint enterprises; and collective enterprises. Most business units are involved in technology application, rather than S&T research. Computer is a basic technology that most business units are employing. Application of modern technologies, which are mostly imported, is very limited among business units that have low investment, such as small and medium enterprises (SMEs).

1. Strengths

- The country has policies, regulations and laws concerning the management and promotion of STI;
- The government is focused on the improvement of organizational structure and development of capacity and skills of staff related to the management and promotion of STI; and
- Many sectors have carried out and reached some achievements from activities concerning the research, development, management and promotion of STI.

2. Weaknesses

- Institutions responsible for the management and promotion of S&T are limited in experience, skills and resources to undertake their tasks, including collaboration with external agencies;
- Governmental policies and regulations and legislations on the management and promotion of STI are not strongly supported and implemented in society;
- Coordination mechanism among the public and private sectors at both national and local level is not well established;
- Research activities that have been carried out have not met fully the demands of society as well as that of industrial development;
- Most of the modern technologies used in the country are imported;
- Budget and funding to support the implementation of STI activities are limited;
- Public awareness on STI is limited; and
- Linkages between university, research institutes and the industry are still weak.

3. Opportunities

- STI issues are recognized as main factors in contributing to socio-economic development;
- The number of staff and activities related to the management and promotion of S&T in the country are expanding steadily; and
- The government strongly supports cooperation with institutions and individuals both inside and outside the country.

4. Threats

- Knowledge and understanding of the society on the role and importance of STI are limited;
- The quantity and quality of staff working for the management and promotion of STI are limited; and
- Budget and funding to support and promote STI activities are limited.

B. S&T policies to strengthen National Innovation System

Some policy measures that could be adopted to strengthen the National Innovation System in Lao People's Democratic Republic are:

- Encourage universities and research institutes to work closely with the industry through: provision of training, consultancy and testing services; exchange of staff/ students; and sandwich courses, where students spend part of the course time in working with enterprises;
- Improve systematically research institutes and universities, including promoting their facilities and equipping them with modern materials and tools for research;
- Establish a National Science and Technology Research Institute that covers all existing research institutes;
- Develop an appropriate collaborative research centre in close cooperation with the National University for improving the capability of S&T research aiming to promote production and industrial development;
- Establish a National Science and Technology Council, which should be chaired by the Prime Minister;
- Establish a Council of Science and Technology in each of the sectoral ministries to function as an advisory committee to the ministry;
- Mobilize funds from the private sector and attract international assistance for S&T development;
- Mobilize foreign financial resources for setting up some educational institutes and upgrade qualified scientists in different levels, particularly in Master's and Doctoral degrees;
- Attract international organizations for contributing to human resources development, both in quantity and quality, technology transfer, information network and joint research activities;
- Promote different incentive schemes for scientists in S&T development;

- Reduce taxation or exempt tax for companies including enterprises and manufacturers applying new technology, and exempt import tax for the acquisition of materials for the purpose of research and development (R&D) by research institutes;
- Draw up a National Strategy on Science and Technology up to the year 2020;
- Improve and develop IP infrastructure for facilitating R&D;
- Improve information and telecommunication infrastructure ensuring the capability of linking to the information network between institutes, universities and the industry in the country and abroad;
- Increase knowledge and continuing professional competence of S&T personnel of the public sector through providing training on creating innovation capability among researchers;
- Create more employment opportunities for researchers; and
- Strengthen linkages among the research institutes, universities and industries.

MYANMAR²⁰

A. Profile

Myanmar is located in the Indo-Chinese Peninsula, with China to the North-East, Lao People's Democratic Republic to the East, Thailand to the South-East, Bangladesh to the West and India to the North-West. The Andaman Sea defines Myanmar's southern periphery and the Bay of Bengal is on its South-West. Myanmar has an area of 261,228 sq. miles and a population of over 54 million. The capital of the country is Naypyidaw. Myanmar's natural resources include teak, oil, natural gas, minerals, gems and marine resources. The major exports of the country are rice, teak, beans and pulses, rubber, coffee, minerals, gems and marine products.

B. Science and technology in Myanmar

With the aim of enhancing successful implementation of science and technology (S&T) development programmes, the State Law and Order Restoration Council established the Ministry of Science and Technology (MOST) on 2 October 1996. MOST is the premier agency mandated for S&T development in Myanmar. It has the following objectives:

- To carry out research and development (R&D) programmes;
- To strengthen the national economy;
- To enhance production in industrial and agricultural sectors;
- To produce and nurture human resources; and
- To conduct applied research.

MOST has two basic functions: development of S&T human resources and S&T research and development (R&D). For S&T human resources development, MOST has two

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