

THE SCIENCE, TECHNOLOGY AND INNOVATION ECOSYSTEM OF CAMBODIA





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The Science, Technology and Innovation Ecosystem of Cambodia



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FOREWORD

Science, technology and innovation (STI) will be pivotal for Cambodia to meet the ambitions of the Sustainable Development Goals, become an innovation-driven economy, and recover quickly from the COVID-19 pandemic. However, to fully harness the potential of STI and rebuild strategically, evidence-based policies that move beyond the economic imperative and drive inclusive, resilient and sustainable development are essential. Equally, policies that foster a nurturing environment that enables businesses, researchers and innovators to flourish will be fundamental to not leaving anyone behind.

This report on The Science, Technology and Innovation Ecosystem of Cambodia was produced by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in collaboration with the General Department of Science, Technology & Innovation (GDSTI) of the Ministry of Industry, Science, Technology & Innovation (MISTI) to support the formulation of national STI policies. It examines the current policy frameworks, key stakeholders, and the strengths and weaknesses of the national innovation system. Based on the assessment, the report recommends five policy strategies to be considered by policymakers: i) enhance the governance structure of the STI system, ii) develop the national STI workforce, iii) strengthen research capacity and quality, iv) increase collaboration and linkages between different actors, and v) foster an enabling environment for innovation.

Furthermore, this assessment also provides the analytical basis for Cambodia's Science, Technology & Innovation Roadmap 2030, which has been developed by the Ministry of Industry, Science, Technology & Innovation with the support of ESCAP. This Roadmap will guide government officials and other key stakeholders on the critical actions required to enhance national STI capabilities and nurture a dynamic innovation ecosystem. Multiple stakeholders have provided valuable insights to this work, including Directors-General from 18 ministries, directors and rectors of eight leading higher education institutions and research centres, executive directors of companies in various sectors, executives of three accelerator centres, and three international development partners.

This report is also a celebration of the fruitful partnership between ESCAP and the Ministry of Industry, Science, Technology & Innovation. The remarkable effort dedicated to this research and the National STI Roadmap 2030 was only made possible through the collaborative work of both institutions.

We hope that this report will be a valuable resource to advance the goal of creating a more prosperous, inclusive, resilient and sustainable future for Cambodia.

Armida Salsiah Alisjahbana

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Executive Secretary of United Nations Economic and
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This analytical report was drafted in 2020 to provide background information for the formulation of Cambodia's National Science, Technology and Innovation Roadmap 2030. The analysis incorporates insights and data gathered during the process of co-creating that Roadmap. The report benefited from the insights and perspectives shared by the following experts from MISTI that participated throughout the co-creation process:

- Mr. Try Sophal, Deputy Director General of the General Department of STI (GDSTI)
- Mr. Kry Nallis, Deputy General Director of GDSTI
- Mr. In Sambo, Deputy General Director of GDSTI
- Mr. Ke Bunthoeurn, Director of Department of Technology Transfer
- Ms. Seng Molika, Director of STI Data Management
- Ms. Ly Sokny, Director of STI Cooperation
- Mr. Cheat Sophal, Director of Policy Monitoring Inspection and Evaluation

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EXECUTIVE SUMMARY

Over the past two decades, until the economic shock brought by COVID-19, Cambodia exhibited strong economic performance and made great strides towards sustained and broad-based economic development and poverty reduction. This strong performance has been fostered by sensible public policies that ensure macroeconomic stability and an open economy.

Progress has been achieved in multiple sectors, and the economy is steadily industrializing and modernizing. Cambodia is one of the world's 10 largest rice exporters, doubling its exports of milled rice in the period 2013-2017. The share of the industrial sector in the gross domestic product had increased to 32.8 per cent by 2018. The service sector has also seen strong annual growth, especially via improved performance in domestic trade and transportation.

Cambodia's ambitious Vision 2050 seeks to build a prosperous but also socially inclusive and environmentally sustainable nation through the achievement of the Cambodia Sustainable Development Goals (CSDGs) by 2050.

Science, technology and innovation (STI) will be critical for Cambodia to achieve its vision and become an innovation-driven, high-income country by 2050. Consequently, the Royal Government of Cambodia has drafted significant policies to foster research, innovation and entrepreneurship. It has sought to promote science and technology in the Rectangular Strategy-Phase IV, the National Strategic Development Plan 2019-2023 and the Industrial Development Policy 2015-2025.

More recently, in 2019, the National Science, Technology and Innovation Policy 2020-2030 was adopted to build national capabilities in STI and to strengthen innovation capacity to respond to the fundamental needs of the nation.

In 2020, the Ministry of Industry, Science, Technology and Innovation (MISTI) was established to lead and coordinate STI initiatives that further develop national capacities in this area, support key stakeholders and create favourable framework conditions.

The Cambodian technology start-up ecosystem has progressed rapidly, with over 300 active technology start-ups currently operating at various stages of development. Private support for innovation is also growing, as more co-working spaces, incubators, local angel investors, private equity and venture capital funds appear in the market. Higher education institutions have begun to focus on promoting entrepreneurship and innovation, with some universities establishing their own incubation and start-up centres as well as industry linkage offices. The enactment of several laws, such as the Consumer Protection Law, the E-Commerce Law and the Competition Law, has helped to create more favourable conditions for entrepreneurship and risk-taking.

However, the National Innovation System of Cambodia is still underdeveloped. Cambodia ranked 101 out of 127 countries in the 2018 Global Innovation Index. It scored particularly low in terms of expenditure on education, tertiary enrolment and knowledge-intensive employment. While the new government structure for promoting STI can provide a strong basis for the development of the Cambodian National Innovation System, collaboration among stakeholders (within government and between government, the private sector and academia) is currently weak. The diffused responsibility for science and technology across 11 key ministries presents challenges for effective policy development and governance, and the mandate of MISTI as the main coordinating institution is still to be consolidated.

Awareness about innovation and science in Cambodia is still limited. Social norms related to gender relations continue to constrain the development of women's potential and hinder their empowerment in economic, social, public and political life. In addition, risk aversion in Cambodia constrains innovation. There is a limited scientific culture and a significant mismatch between education in science, technology, engineering and mathematics (STEM) and employment. Only a small percentage of students are studying science, engineering and agriculture - areas of study and skills considered to be key to foster the growth of the Cambodian economy. Furthermore, many small and medium-sized enterprises (SMEs) in Cambodia are still reluctant to formalize their statuses, remaining in the

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informal sector. And while framework conditions are improving, the norms and certification system is not fully operational, limiting enterprises' opportunities for entering international value chains.

To further strengthen the National Innovation System of Cambodia, the following policy strategies are recommended:

- **Enhance the governance of the STI system.** Consolidate the mandate of MISTI, clarifying the roles of MISTI and other stakeholders in regard to promoting STI; strengthen awareness and capacities of the Government to implement the STI Policy; and monitor and evaluate advances made in the promotion of STI.
- **Build human capital in STI.** Teaching STI from a very early age will help create a new generation of scientists and innovators. STEM skills will also need to be promoted in higher education. In addition, there is room for strengthening teaching and collaboration with the private sector in technical and vocational education and training institutions.
- **Strengthen research capacity and quality.** To support high quality research and development activities of national interest it will be critical to do the following: develop a national research agenda with the academic community and in close collaboration with the private sector; provide funding to support excellence in science; support the internationalization of research; and encourage collaboration with the private sector.
- **Increase collaboration and linkages between different actors.** To support innovation in SMEs and enhance their absorptive capacities, it will be critical to promote and sustain incubation and acceleration facilities, technological platforms open to the private sector and innovative clusters fostering collaboration.
- **Foster an enabling environment for innovation.** Supporting innovation capabilities and increasing the absorptive capacities of firms requires the financing and promotion of intermediary structures that nurture new firms (start-ups), support technology transfer, and foster domestic technologies. An enabling environment needs fostering institutions that provide technology and quality (i.e., norms and certification) services to firms. It also requires increasing access to finance for innovation activities, including through leveraging investments from the private sector, attracting funding from donors and incentivizing foreign direct investment that supports the building of domestic technological capabilities.

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