

**INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION
ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)**

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Contribution by ESCAP

**to the CSTD 2022-2023 priority theme on “Technology and innovation for cleaner
and more productive and competitive production”**

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PRIORITY THEME 1: Technology and innovation for cleaner and more productive and competitive production

United Nations Commission on Science and Technology for Development (CSTD)

To Whom it May Concern,

As you are aware, the [CSTD 25th annual session](#) selected “Technology and innovation for cleaner and more productive and competitive production” as one of the priority themes for its 26th session (2022-23 period). This priority theme is directly relevant to SDG 9 on industry, innovation and infrastructure.

As highlighted by the [Technology and Innovation Report 2021](#), We live in a time of rapid technological change, at the height of the digital transformation and the early stages of the Industry 4.0 revolution. These technological waves have great potential to bring about the transformations needed to achieve the SDGs, reduce poverty, tackle climate change and put the world on a sustainable path. They also offer a window of opportunity for developing countries to catch up technologically and narrow global divides. Critical areas for innovation in this new technological revolution are renewable energy technologies and frontier technologies for sustainable production and consumption. Innovation in these areas could help diversify economies and create higher-wage jobs while protecting the planet.

This priority theme will examine national strategies and policies related to green technology and green innovation, and the role of international cooperation, including triangular and South-South cooperation, in supporting developing countries to benefit from windows of opportunity for developing, using, adopting and adapting these frontier technologies in production processes for catching up economically and technologically.

Questions to be addressed include: What countries should do to take advantage of this window of opportunity? How could the international community support developing countries in this regard?

The CSTD secretariat is in the process of drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel meeting from 25 to 27 October 2022. In this context, we would like to solicit input from the CSTD members on this theme. We would be grateful if you could kindly answer the following questions based on your experience in your country or region.

1. What are some specific examples (from the public and private sectors) of green technology and innovation for cleaner and more productive and competitive production in your member countries? Please include contact, website, link to reports and any other relevant information concerning these projects and initiatives.
2. What are the national strategies, policies, and laws concerning green technology and innovation for cleaner and more productive and competitive production in your member countries or region?

China: China’s Development Guidelines during the 14th period of the Five-Year Plan established the specific task of “strengthening legal and policy guarantees for green development.” The National Development and Reform Commission (NDRC) and the Ministry for Science and Technology (MOST) have enacted the “Guidance on Building a Market-Oriented Green Technology Innovation System” in 2020.¹

In 2021, China's industry ministry unveiled a five-year plan aimed at the green development of its industrial sectors, vowing to lower carbon emissions and pollutants and to promote emerging industries so as to meet a carbon peak commitment by 2030.²

¹<https://www.frontiersin.org/articles/10.3389/fenvs.2021.799794/full#:~:text=China's%20Development%20Guidelines%20during%20the,enacted%20the%20%E2%80%9CGuidance%20on%20Building>

² <https://www.reuters.com/markets/commodities/china-releases-five-year-green-development-plan-industrial-sectors-2021-12-03/>

India: The Ministry of Power of the Government of India recently issued the revised consolidated Guidelines and Standards for EV charging infrastructure on January 14, 2022. The Government of India has undertaken multiple initiatives to promote the manufacturing and adoption of electric vehicles in the country. With the considerable expansion in the public EV charging infrastructure, the electric vehicles have started penetrating the Indian market.³

Malaysia: The Green Technology Master Plan Malaysia 2017-2030 outlines the strategic plans for green technology development to create a low-carbon and resource efficient economy. This document sets out the immediate course for the country to embark on a green growth journey. It lays the foundation for the cultivation of mindset and behavioural change, to inculcate green lifestyle among the rakyat. This Master Plan is essential to facilitate the Transformasi Nasional 2050, or TN50 which is an initiative to position Malaysia amongst the top countries in the world in economic development, citizen well-being and innovation by the year 2050.⁴

Thailand: The Bio-Circular-Green Economy (BCG) Committee convened on 13 January 2021 approved the 2021-2026 BCG Strategic Plan which consists of the following strategies:⁵

- Strategy 1: Promoting sustainability of biological resources through balancing conservation and utilization.
- Strategy 2: Strengthening communities and grassroots economy by employing resource capital, creativity, technology, biodiversity and cultural diversity to create value to products and services, enabling the communities to move up the value chain.
- Strategy 3: Upgrading and promoting sustainable competitiveness of Thai BCG industries with knowledge, technology and innovation focusing on green manufacturing.
- Strategy 4: Building resilience to global changes.

The BCG Strategic Plan will focus on 4 sectors, namely 1) food and agriculture, 2) medical and wellness, 3) bioenergy, biomaterial and biochemical, and 4) tourism and creative economy. It will also emphasize on utilizing biodiversity and cultural diversity as a basis for developing the nation and improving people's quality of life.

Viet Nam: in 2021, Viet Nam adopted the National Green Growth Strategy for 2021-2030 period, vision to 2050. The overall goal of the strategy is to contribute to accelerating the process of restructuring the economy in association with growth model transformation in order to achieve economic prosperity, environmental sustainability, and social equality. It also aims to facilitate transition to a green and carbon neutral economy and contribute to reducing global warming. The Government will strive to reduce greenhouse gas emissions per GDP by at least 15 percent by 2030 and at least 30 percent by 2050 compared to 2014. The Government expects to raise the rate of renewable energy in total primary energy supply is expected to 15-20 percent and the forest coverage rate to 42 percent over the next decade. By 2030, at least 95 percent of urban solid waste will be collected and treated in accordance with regulations.⁶

³ <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1799464>

⁴ <https://www.malaysia.gov.my/portal/content/30920>

⁵ <https://www.nstda.or.th/thaibioeconomy/138-bio-circular-green-economy-to-be-declared-a-national-agenda.html>

⁶ <https://moit.gov.vn/en/news/energy/national-green-growth-strategy-for-2021-2030-adopted.html>

3. What are the key industries that are pioneering green innovation in your member countries or region? List the key actors in the national ecosystem of innovation related to green innovation in your member countries or region (firms, universities, financial institutions, regulators)? What are the key networks of the ecosystem in your region (including online networks, innovation hubs, forums, etc.)?

Textile, Readymade garments (RMG): The readymade garments sector of Bangladesh has brought a break through renovation in sustainable industry environment management. Bangladesh has the highest number of green RMG factories around the world, at most 90 LEED (Leadership in Energy and Environmental Design) green factories certified by USGBC (U.S. Green Building Council) and 250 more factories are registered with the USGBC for LEED certification.⁷

Electric vehicles: EV production is overwhelmingly concentrated in China, which hosts over 90 percent of investment for both original equipment manufacturers and components with financial boosts such as subsidies and tax exemptions, and other encouragements such as license-plate and parking-priority systems. There is also ample state backing for industry, including R&D support and subsidies for EV-charging infrastructure. China is home to multiple EV companies crossing the one billion mark—Byton, NIO, NIU, WM Motors, and Youxia to name but a few. India is running second to China in terms of investment with activity from emerging brands such as Ather, Ola Electric, Hero Electric, and Revolt tapping into India's robust 15-million-units-a-year two-wheeler market.⁸

Selected Networks/Platforms

Green Innovation Centres for the Agriculture and Food Sector <https://snrd-asia.org/green-innovation-centres-for-the-agriculture-and-food-sector-india/>

Malaysian Green Technology and Climate Change Corporation (MGTC) <https://www.mgtc.gov.my/>

Green Technology Center <https://gtck.re.kr/eng/index.do>

National Innovation Agency (NIA), Thailand <https://www.nia.or.th/>

Blue Planet <https://blueplanet.asia/>

Green Finance & Development Center (GFDC) <https://greenfdc.org/>

4. What are the challenges that governments in your region (or from your member countries) have faced or may face in promoting green technology and innovation in your country to contribute to national development priorities and accelerate the progress towards the SDGs?
 - In the promotion of green technology policy, often the challenges are insufficient financial allocation, limited knowledge and skills, lack of strong political will and inadequate private sector participation due to lack of incentives. The case study from Malaysia showed that how the political will, adequate financing, supportive policy ecosystem and hand holding support through an end-to-end innovation and commercialization facilitation platform

⁷ Bhattacharja, P., et.al. (2019). Green industry development in Bangladesh – challenges and prospects, *Asia-Pacific Tech Monitor*, Vol. 36, No. 4, Jul-Sep 2019. https://apctt.org/sites/default/files/2020-05/19Jul-Sep_tm_final.pdf

⁸ <https://www.mckinsey.com/featured-insights/future-of-asia/seizing-green-business-growth-for-asias-energy-players>

resulted in remarkable success and achievements and exceeded the initial targets set for commercialization.⁹

- Member States are facing many water-related challenges such as, untreated wastewater, lack of access to safe drinking water, and lack of safely managed sanitation compounded by uncertain climate factors. Therefore, innovative financing and impact investment strategies in water and sanitation must be explored.¹⁰
 - Integrating circular economy and green economy can help to achieve sustainable development while addressing multiples challenges such as: lack of investment, socioeconomic issues and time delayed in developing new policies.¹¹
5. What should governments, the private sector, organized civil society, and other stakeholders do so that developing countries can benefit from these technologies?

Deliberations at regional meetings and consultations of the Asian and Pacific Centre for Transfer of Technology (APCTT), a regional institution of ESCAP during the past three to four years have resulted in several recommendations for member States to promote and harness benefits from green and clean technologies.

- Policy makers should foster systematic innovation by guiding change of consumption habits, technology improvements, investments in infrastructure and capacity building and increased incentive in marketplace.
- Towards a circular economy, there is a need to design sustainable products, empower consumers and public buyers, extend the product life, consider product as a resource, returning of the waste.
- In terms of commercializing inclusive Innovations, policy makers should carefully review the main building blocks: consumer behaviour, business models and manufacturing processes at their local concept.
- Relevant policies should be designed and implemented to better guide and support SMEs in their efforts to reduce GHG emissions. Key strategies for SMEs are adoption of technology (e.g. renewable energy, energy efficiency), standards, carbon pricing, finance, tax deduction, etc.
- Low carbon CO2 value chain technologies deserve attention from policy makers as they could help SMEs resist the risks posed by climate change.
- Learning from the successful policies that benefited SMEs of the past, policy makers can design similar policies such as easing restrictions that bar them from procuring RE,

⁹ https://apctt.org/sites/default/files/2020-07/Final_GC_Report.pdf

¹⁰ https://apctt.org/sites/default/files/2020-08/GC_Report_2018.pdf

¹¹ Main conclusions and recommendations of the International Conference on Circular Economy and Technology Transfer for Small and Medium Sized Enterprises, 23 September 2020, BITEC, Bangkok, Thailand, APCTT-ESCAP. <https://apctt.org/events/international-conference-circular-economy-and-technology-transfer-small-and-medium-sized>

providing risk guarantees, supporting R&D in renewable energy to reduce technology costs.

- In order to adequately utilize green technology, policymakers must work with local communities in order to identify problems and develop sustainable solutions. For example, a multi-stakeholder planning approach to water management projects has been deployed in Pakistan and Cambodia in partnership with the Stockholm Environment Institute. The projects involve policy planners, engineers, and social scientists (rather than only hydro-engineering experts) in the planning process in order to address the many dimensions of water security, covering social, economic, environment and institutional issues.¹²
 - SMEs are the backbone of economies in Asia and the Pacific. Supporting the commercialisation of green technologies may require support to selected SMEs that have the potential for innovation. In addition to financing aspects, comprehensive support must be extended to these SMEs including advice on intellectual property rights (IPRs), market analysis and mentoring throughout the commercialization process.¹³
 - The use of certifications, eco-labelling, standards and green public procurement are other important areas for supporting the green economy. These are powerful instruments for supporting the switch to more environmentally sound technologies (ESTs).
 - Green technology should be commercialized according to green maturity of market which shall determine its successful commercialization. Green certification is a good policy instrument to boost the green maturity of companies.¹⁴
6. What are some examples of international cooperation mechanisms, projects, programmes or strategies, including triangular and South-South cooperation, in green technology and innovation that your organization contribute or is part of?
7. What actions can the international community, including the CSTD, take to help developing countries take advantage of green technology and innovation for cleaner and more productive and competitive production?

Several key recommendations have emerged out of the regional meetings of Asian and Pacific Centre for Transfer of Technology (APCTT) held in the past few years to help member States benefit from green technologies. They include:

- Create regional knowledge networks for cross-border knowledge transfers among countries in the Asia Pacific region, especially in the transfer and commercialization of green technologies.
- Facilitate South-South Collaboration in the areas of green technology research, development, technology transfers and commercialization in member states.

¹² https://apctt.org/sites/default/files/2020-08/GC_Report_2018.pdf

¹³ https://apctt.org/sites/default/files/2020-07/Final_GC_Report.pdf

¹⁴ Oh, Deokkyo (2019). Enhancing development and commercialization of green technologies in the Republic of Korea, *Asia-Pacific Tech Monitor*, Vol. 36, No. 4, Jul-Sep 2019. https://apctt.org/sites/default/files/2020-05/19Jul-Sep_tm_final.pdf

- Develop case studies and business models on green technology transfer and commercialization and design capacity building programmes targeting start-ups, business incubators and technology promotion agencies in member States.
 - Design and implement capacity building programmes on a wide range of topics including, but not limited to, preparing robust business proposals for green technology start-ups, intellectual property rights, technology valuation, financing, accounting and business ethics.
 - Capacity-building for policymakers to enhance awareness on the subsidies and incentives for encouraging private sector participation as well as to establish an effective regulatory ecosystem for cross-border trade of green technologies and products. Countries can learn from experiences, best practices and even failures from other countries while designing new policy instruments and/or creating new strategies for promoting green technology innovation and commercialization.
 - Organize business-to-business meetings between technology providers and seekers in the area of green technologies for accelerating technology diffusion. APCTT can act as a mentor, especially for technology transfers to least developed countries (LDCs) in the Asia Pacific region.
 - Organize capacity building activities on financing aspects of innovation with possible focus on green technologies in cooperation with public and private financial institutions.
8. Could you suggest some contact persons of the nodal agency responsible for projects/policies and international collaboration in this context as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area? We might contact them directly for further input or invite some of them as speakers for the CSTD inter-sessional panel and annual session.
9. Do you have any documentation, references, technological assessments, future studies or reports on the priority theme in your country or region?

Please send your responses and any further inputs on the theme to the CSTD secretariat (stdev@unctad.org) by 31 July 2022. We look forward to receiving your valuable input.

Sincere Regards,

CSTD secretariat