

# Strategic Priorities for Adoption of Emerging Technologies in the Energy Sector for Climate Change Mitigation

24 May 2022 (Virtual), Time: 12:45 – 13:45 (Thailand Time - GMT +7.0)

(Side event of the 78<sup>th</sup> session of the Economic and Social Commission for Asia and the Pacific (ESCAP))

## A. Summary of discussions

1. The side event brought together by over 100 participants from the Asia-Pacific region and provided a platform for experts, practitioners and participants from the member States to deliberate on strategies to facilitate transfer and adoption of emerging technologies in the energy sector for climate change mitigation. Key international and national experts deliberated on identifying regional priorities and exploring strategies for cross-border transfer and diffusion of emerging technologies among member States in the energy sector.
2. The event was jointly organized by the Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Government of India and the Asian and Pacific Centre for Transfer of Technology (APCTT) of ESCAP.
3. The topic of discussion is contemporary and relevant to Asia Pacific region, and has a special significance in the context of the theme of the 78th session of ESCAP which calls for a common agenda to advance sustainable development in Asia and the Pacific. In this context, energy and power is a priority sector for countries of the region to focus on reducing emissions and mitigating climate change impacts.
4. Managing the challenges in energy and power sector requires scaling up innovations, development of new solutions, and emerging technologies including the fourth industrial revolution (4IR) technologies such as artificial intelligence (AI), Internet of Things (IoT) and robotics, among others. These technologies can play a significant role in climate change mitigation and support sustainable development in the region.
5. In the case of developing countries, it is imperative for countries to strengthen the energy sector for meeting their development needs. It is essential for countries to provide access to electricity t at all times even if they are not connected to the grid.
6. Technology transfer becomes challenging when the technologies are far from real world conditions in terms of deployment and viability. Transfer of technology can be made more successful by showing its techno-economic viability and performance through demonstration projects.

7. Key priorities for enhancing commercialization and usage of emerging technologies in the energy sector comprise enabling policy instruments (e.g., such as grid integration, large scale public procurement, renewable portfolio obligation), subsidizing research and development (R&D), setting specifications and standards, large scale replications, production linked incentives, tax credits to manufacturing companies, among others.
8. Accelerated transfer of emerging technologies (e.g., like big data, artificial intelligence, machine learning machine learning and blockchain) in the energy sector is critical for the Asia-Pacific countries to mitigate the impacts of climate change. For example, digital technologies offer innovative applications in tracking emissions along the supply chains, predicting the impact of extreme weather events, enabling peer-to-peer energy trading, ensuring effective renewable energy grid integration, managing electric mobility and fleet optimization, predictive control of the systems among others.
9. For wider adoption of digital technologies in the energy sector, countries would require increased support in the areas of clean energy, clean finance, carbon markets and establishment of efficient value chains.
10. As new technologies are developed, it is important that they also feed in the ecosystem and thereby create employment opportunities and generate economic benefits.
11. Sifting completely to renewables quickly is not possible due to various technical and financial constraints. A viable option can be combined cycle power plant based generation and integration of various types and sizes of power plants with the grid using emerging technology solutions. Digitalization of the system usage of smart grids can ensure integration of renewable energy with conventional power plants.
12. Demand that different countries will have for emerging technologies in the energy sector will depend on factors such as the techno-economics of import, or of manufacturing in the country itself, or of creating an R&D base in the country. These considerations will be different for different countries and will depend on the scale.

## **B. General/Policy Recommendations**

1. Capacity building support for maintenance and servicing professionals as well as local entrepreneurs of renewable energy equipment like solar panels, solar lanterns, etc is essential for creating demand, particularly in the rural areas. Matchmaking events to connect innovators and inventors with investors could be an effective strategy for accelerating usage of emerging energy technologies.
2. Different types of technologies are at different stages of development, and hence it is necessary to examine the technologies which are at the laboratory and prototype scale to scale for commercialization.

3. Individual countries of the Asia-Pacific region have their own strategic needs which have to be identified for appropriate acquisition of energy technologies from other countries in the region. Appropriate mechanisms can be created for sharing such information for the benefit of countries.
4. For emerging priorities the focus may be around research and the development of technologies, technology identification and prioritization, and technology feasibility studies, and technology piloting.
5. Supporting countries with policy and regulatory frameworks is important to achieve the kind of appropriate energy mix that is required to minimize the constraints related to financial and technological feasibility.
6. Sustainable transport is a key area, and countries should examine and prioritize which low carbon transport would be most efficient for their country by conducting feasibility studies.
7. The small and medium industries, innovators and startups of the Asia-Pacific countries can be provided opportunities for collaboration and partnerships to scale up and commercialize their technological innovations across national boundaries.

**C. Recommendations for APCTT-ESCAP**

1. APCTT can create mechanisms or clearing houses for disseminating the best practices, showcasing the kind of technologies that are available, providing case studies of successes and viability of technologies.
2. The Centre can bring together countries to focus and work on developing standards for products based on new and emerging energy technologies.
3. It may be useful to look at developing capacity building programs for standardization for relevant stakeholders.