

## **Report of the Asia and the Pacific Regional Preparatory Meeting on “Science, Technology, and Innovation for Promoting Renewable Energy Technologies for Sustainable Development in Asia and Pacific” for the 2013 Annual Ministerial Meeting of the Economic and Social Council**

### *Summary*

As part of the preparation of the 2013 Annual Ministerial Review of the Economic and Social Council, a regional meeting was held on 13 March 2013, in Bangkok, Thailand on the theme “Science, Technology, and Innovation for promoting Renewable Energy Technologies for Sustainable Development in Asia and Pacific”. The meeting was hosted by the Royal Government of Thailand and co-organized by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the United Nations Department of Economic and Social Affairs (DESA).

The meeting brought together a diverse group of stakeholders from the region to discuss the role, benefits and challenges of renewable energy technologies in promoting sustainable energy for sustainable development in the region.

### **Key Policy Messages**

The following key messages emerged from the discussions:

#### **On promoting the role of renewable energy sources for energy security and sustainability:**

- **Achieving clean, sustainable, affordable and accessible energy, particularly for the poor is key to alleviate poverty and achieve sustainable development in Asia and the Pacific.**
- **Renewable energy is one of the most efficient and viable solutions to address sustainable energy and sustainable development challenges, especially in rural and inaccessible areas of many developing countries.**
- **Wider use and dissemination of renewable energy in many developing countries will require increasing national capacity as well as financial incentives to substitute conventional energy sources with renewable energy sources.**
- **Establishing renewable energy networks and centres of excellence on renewable energy technologies (RETs), both at the national and regional level, will help promote awareness and readiness for renewable energy and dissemination of RETs in developing countries.**

**On ensuring that science, technology and innovation (STI) policies and systems**

**promote the use and dissemination of renewable energy:**

- **STI can play an important role as means of implementation for sustainable energy and sustainable development, as long as it is driven by the needs of the poor and the critical objectives of sustainable and inclusive development.**
- **STI systems focused on renewable energy can help overcome some of the technological and economic challenges associated with integrating RETs in existing delivery mechanisms of energy services – for example, in integrating RETs with grid-based conventional power supply in rural areas**
- **STI agendas, in particular, should explicitly include achievable renewable energy targets.**
- **Policy and institutional frameworks promoting the use of RETs in key sectors of the economy contributing to sustainable development are critical to promote a wider dissemination of RETs at the national level.**
- **National STI policies promoting the use of renewable energy and RETs for sustainable development should also address the inter-linkages between energy, water and food security, in order to ensure a balanced approach to the three dimensions of sustainable development.**
- **Financial, fiscal, and regulatory incentives together with innovative financial mechanisms and an adequate regime for intellectual property rights are critical to foster the development, innovation, and commercialization of RETs**

**On improving the role of and partnerships with all relevant stakeholders :**

- **Building collaboration and partnerships among the broad range of stakeholders involved in the value-chain from development to commercialization of RETs – e.g. government agencies, research institutes, and venture capital – is critical to ensure RET adoption and adaptation at the national level;**
- **Promoting collaboration and partnerships with all relevant stakeholders in the RET value-chain through specific policy measures is also critical to create awareness and build national capacity to disseminate these technologies.**
- **Promoting private sector development in the renewable energy sector will also increase its role in furthering the use and diffusion of renewable energy at the national level.**

## **I. Introduction**

In July 2013, the Economic and Social Council will hold its Seventh Annual Ministerial Review in Geneva, Switzerland. The Review will focus on “Science, technology, and Innovation, and the potential of culture, for promoting sustainable development and achieving the MDGs”.

On 13 March 2013, a regional preparatory meeting for the Asia and Pacific region was hosted by the Royal Government of Thailand and co-organized by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nations Department of Economic and Social Affairs (UNDESA), and the Asian and Pacific Centre for Transfer of Technology (APCTT).

The meeting focused on “Science, Technology and Innovation for Promoting Renewable Energy Technologies for Sustainable Development in Asia and the Pacific”. It brought together a diverse group of regional stakeholders, including senior government representatives, experts from the United Nations system, academia, NGOs and private sector.

The meeting provided an important opportunity for stakeholders from 25 countries in the Asia and Pacific to share experiences and best practices and contribute to the preparation of the Annual Ministerial Review.

## **II. Proceedings of the regional preparatory meeting**

### **A. Opening session**

**Mr. Shun-ichi Murata, Deputy Executive Secretary, ESCAP** stressed that the Rio+20 Outcome Document rightly identified energy as a priority area. Access to clean, affordable and sustainable energy is critical to achieve the MDGs and socio-economic development and renewable energy and energy efficiency are key to to increase energy access. He noted that renewable energy development and consumption had grown rapidly in recent years, prompted by climate change concerns, increased cost of fossil fuel and need to increase energy security. It now counted for 13% of global primary energy consumption. Further development, utilization and commercialization of renewable energy, as well as energy security and sustainability would largely be driven by science, technology and innovation (STI). Strengthening national STI capacities is thus critical to expand the use of renewable energy. He noted that STI drivers were both external, (through technology transfer) and indigenous (advanced local R&D). Effective national STI systems in Asia and Pacific countries were essential to strengthen their innovation capacity and enable them to compete successfully in the global market. He pointed to the tremendous scope for exchanging knowledge, learning and experience within the region on effective national innovation systems that support development, transfer and adoption of renewable energy technologies and welcomed the Regional Consultation as an important opportunity to do so.

In his introductory remarks, **H.E. Néstor Osorio, President of the United Nations Economic and Social Council (ECOSOC)**, drew attention to the enormous global challenges that are putting into question the current development models and sustainable development across the globe, from climate change, to food insecurity, global warming, and natural disasters. The Rio+20 Outcome called for a new set of Sustainable Development Goals (SDGs) embedding a new economic approach that reconciles economic growth with social and environmental objectives. The Rio+20 Outcome identified STI as key elements to implement this approach and find viable and sustainable solutions to the developmental challenges of a post-2015 development agenda. It also stressed the role of the Council to provide a balanced integration of the three dimensions of sustainable development. The 2013 ECOSOC session was thus an opportunity for the Council to provide an effective platform for discussing concrete measures to operationalize the sustainable development agenda by identifying innovative solutions to persisting challenges. He added that “The Future We Want” recognized energy security and sustainability as a critical challenge for many countries, particularly the Least Developed and Small Islands Developing Countries, which lack the financial resources and infrastructure to access modern energy services. The AMR regional meeting was an opportunity to focus on the role of renewable energy and renewable energy technologies (RETs) in addressing these challenges.

**Mr. Thomas Stelzer, Assistant Secretary-General for Policy Coordination and Inter-Agency Affairs, UNDESA**, stressed that harnessing the full potential of STI as enablers for achieving the MDGs and sustainable development – as recognized by the Rio+20 Outcome - required linking the STI agenda more closely to sustainable development challenges. Access to modern energy services, in particular was key to address some of these challenges. He also stressed that increasing demand for fossil fuel-based energy and soaring energy prices had made energy security, sustainability and affordability, especially in poor rural and inaccessible areas, top sustainable development challenges. This called for a rethinking of the current global energy system. Renewable energy, in particular, could address many of these challenges. The Secretary-General’s initiative on “Sustainable Energy for All” indeed recognized energy efficiency and renewable energy as key strategies for achieving energy security. Maximizing the potential of renewable energy sources, however, comes with high socio-economic and cultural costs, which many developing countries cannot afford. STI systems better linked to sustainable development objectives were one way of addressing this challenge and make renewable energy technologies more affordable. There was a need to review current STI systems to ensure that they make the adoption and dissemination of renewable energy and energy efficiency possible for all countries.

In his welcoming address, **Dr. Prasert Sinsukprasert, Director of Planning Division, Department of Alternative Energy Development and Efficiency, Ministry of Energy of Thailand**, stressed the need to increase access to sustainable and cleaner energy at the local, national and regional levels to help countries reduce emissions and increase their energy security. Thailand had been successful in

attracting private sector investment in renewable energy through various financing schemes and tax incentives and had installed over 300 MW of power plants. Further progress towards a path of sustainable energy-based economy, however, required STI. He stressed that the AMR regional meeting was an important opportunity to develop concrete proposals for the region in this regard, as well as contribute to the 2013 ECOSOC Annual Ministerial Review and to the work of the High-Level Panel on the post-2015 Development Agenda.

In its key note address on “STI as a means of implementation for sustainable development in the post-2015 development agenda and for global partnership”, **Dr. Agus Rusyana Hoetman, Senior Adviser for Energy and Advanced Material, Ministry of Research and Technology of Indonesia**, drew attention to the diminishing world supply of traditional fossil fuel-based energy sources. Nonetheless, demand was growing rapidly in the Asia and Pacific region due to rapid industrialization, expanding transportation systems, population growth, and electrification of rural areas. Oil and coal were increasingly used as main energy sources, increasing carbon emissions, while renewable energy sources remain underutilized. He noted that continuing with business as usual, by 2020, energy demand in Asia and Pacific would be dominated by fossil fuel-based energy sources. It was thus critical for countries in the region to start focusing on alternative energy sources such as hydro power, geothermal, wind, solar energy and biomass fuel in their energy mix in order to be able to address sustainable development challenges. Biofuels and Biogas, in particular, were increasingly considered as potential new energy sources. Indonesia was a strong supporter of renewable energy with the objective to achieve more than 17%-25% of total energy use by 2025. STI, driven by appropriate local and national government interventions, were deemed critical to achieve this objective. In particular, institutional and human resources incentives, research grants, and other interventions to facilitate international collaboration and partnerships were deemed essential to develop research skills and capacity at the national and regional level to channel R&D efforts into development, adoption and utilization of renewable energy.

## **B. Session I: Science, Technology and Innovation (STI) as an Enabler for Promoting National and Regional Renewable Energy Technology (RET) Innovation Systems**

**Mr. Nazrul Islam, Joint Chief of Power Division, Ministry of Power, Energy and Mineral Resources of Bangladesh**, underscored the importance of STI as enabler for RETs, which can have a significant impact on the quality of life of most people but are not widely used. He reiterated the significance of events such as the Rio+20 Conference, the Secretary-General’s initiative “Sustainable Energy for All”, the International Year of Sustainable Energy for All, as well as the 2013 AMR regional consultation in Asia and the Pacific to promote a wider use of RETs. He focused on the experience of Bangladesh, a highly populated country with low energy consumption, about 265 kWh per capita, due to limited industrialization (only 47% of grid electricity is consumed by industrial sector), and primarily dependent on gas.

Bangladesh revised its power system master plan in 2010 to match a 7-8% of GDP growth. The Government objective was to increase the country's dependable power capacity, currently standing at 7500, to produce MW 39,000 MW by 2030. The Government also adopted a renewable energy policy in 2008 with a renewable energy target of 5% by 2015 and 10% by 2020 and a target to increase energy efficiency by 10% by 2015. Bangladesh successfully installed 1.5 million units of solar home systems (SHS) in rural areas, with Grameen Shakti as the leading NGO installing SHS in the country. Part of this success was the fact that the energy strategy has spelled out clear targets for renewable energy, addressing both demand and supply side. On the demand side, it aims at encouraging the business community to use renewable energy, especially in rural areas. Bangladesh had successfully implemented renewable energy programmes in rural areas (e.g. mini-grid, solar, etc.) through public-private partnerships – e.g. installation of solar home systems in rural area with the support by the Grameen Bank. He stressed that these and other good practices in the region could be shared and benefit other countries. It would thus be useful to establish a dedicated forum on renewable energy that would allow this exchange and promote renewable energy in the region.

**Mr. Rajiv Garg, Programme officer of UNEP**, pointed out that technology should be considered as a package including not only the hardware, but also technical skills, as well as institutional capacity to handle and modify technology as needed. He noted that each technology goes through a technology cycle. Innovation was critical to allow commercialization within this cycle, while the role of the Government was to facilitate the efficient deployment of technologies through standards, regulations and market access, and the role of business was to provide funding. The efficient deployment of RETs, in particular, required creating readiness for climate-friendly technology. This entailed capacity/readiness to adapt technology to local conditions and needs. It also required market transformation. This involved creating a conducive environment for climate-friendly technology development through favorable policy, regulations, and financial mechanisms and incentives for climate-friendly technology and disincentives for obsolete technologies. It also required effective networks and areas of excellence at the regional level, for instance, through South-South cooperation. UNEP supported all these dimensions. In particular, UNEP had recently created the Climate Technology Center and Network (CTCN), a consortium focused on creating readiness. CTNC in partnership with UNIDO will work with national agencies on technology transfer related issues. It will focus on technology transfer services, as well as capacity building at national levels on technology development and transfer.

**Mr Akash Bhavsar, managing Director, SkyQuest Technology Pvt Ltd, India**, stressed that only 16.7% of current global energy consumption in the region was from renewable energy sources and the rest from conventional sources, such as oil and natural gas. Shifting towards a green economy, environmentally and socially sustainable and locally rooted, was critical to make Asia and the Pacific self-sufficient. Green drivers were renewable energy, green buildings, clean transportation, water management, etc. He noted that renewable energy could

promote the achievement of all MDGs by improving household practices and providing income generation opportunities. In Asia and the Pacific, renewable energy technologies were used for a wide range of applications, especially to address specific power issues in remote communities –e.g. by providing off-grid and decentralized energy power systems. Other innovations, such as ocean energy, cellulosic ethanol, geo-thermal power were becoming popular. He stressed that bio mimicking by modeling nature-oriented technological innovations bear great potential to improve technology efficiency and their applications. He also underscored that shifting towards a renewable energy-driven economy would require capacity to generate good ideas/research; strong intellectual assets to transform ideas/research into products; and funding to invest in their development and commercialization. The government played a key role in creating an enabling environment for innovation– e.g. through appropriate IP systems, policies, institutions, financial mechanisms/incentives and market opportunities and public-private partnerships - to transform STI into commercially viable and sustainable RETs.

A number of points emerged from the debate that followed the round table discussion. Several participants stressed the need to focus on the impact of all sources of renewable energy in order to understand how R&D can help promote their balanced and sustainable use. For example, it was critical to address the inter-linkages between energy, water and food security needs. Other participants argued against setting RET targets at the global level, suggested by the Secretary-General's initiative "sustainable energy for all", as this was a national responsibility. Many stressed the importance of ensuring RET access to all countries in Asia and the Pacific as an effective way to meet the growing energy demand in the region. Promoting advanced fossil fuel technologies (clean coal, natural gas etc) was also critical, together with safe nuclear energy because of its huge potential in meeting energy demands. Some speakers stressed the need for RETs to reach the Pacific, still heavily reliant on fossil fuel. A number of speakers stressed the need to reduce costs and increase access to renewable energy, particularly in rural areas to meet basic needs through appropriate RETs. **APCTT** drew attention to its Renewable Energy Cooperation-Network for the Asia-Pacific (RECAP), which can provide support to member countries on technology information, choices of technologies, market information, as well as information on policies and institutional frameworks for promoting renewable energy in countries in the Asia-Pacific region. **Mr. Bhavsar** pointed to several examples of clean energy innovations already commercialized, such as smart-grid technologies, as optimal solutions for meeting energy demands. Waste to energy approaches such as municipal Solid Waste technologies, for example, held a huge potential for Asia-Pacific. He also noted that South-South cooperation was an important platform to mobilize technology.

### **C. Session II: Good Practices on Effective STI Policies to Promote Renewable Energy**

**Mr. Kim Changwan, Deputy Director, New and Renewable Energy Division, Ministry of Knowledge and Economy of the Republic of Korea (ROK)** gave an overview of ROK vision and strategy to become a leading country in green energy through technological innovation. He stressed that renewable energy was the new engine of growth. Energy financing mechanisms and institutional framework were equally important to promote this sector and public-private partnerships and government funded R&D projects played a particularly critical role in this regard. After highlighting some of ROK good practices in promoting this sector, Mr. Changwan pointed to Korea's Photovoltaic (PV) industry programme. With its complete value chain support through the innovative policies of the Korean government, it was one of the most successful Korean renewable energy programmes, which made Korean PV technologies highly competitive in the global market. In the wind energy sector, he drew attention to the unique arrangement between Korean small and medium enterprises (SMEs) and larger companies - where SMEs work on individual components in the manufacturing line while the larger companies focus on the finished products – as one of the factors that made this sector thriving.

**Mr. Bibek Bandyopadhyay, Adviser, Ministry of New and Renewable Energy, Government of India** stressed India's keenness to meet its growing energy demand in a sustainable way. India introduced a National Action Plan for Climate Change, with a specific target of reducing carbon emissions and increasing renewable energy commitments to 15% by 2020. In addition, the government also offers tax concessions and concessional customs and excise duty for RET development, as well as import duty on imported coal, which is used to fund green technologies. To date, renewable energy counts for 12.4% of the total installed energy capacity (about 210645 MW). If large hydropower is also considered, total contribution of renewable energy would be 32% of total installed capacity. Additional skills and financing will be needed to improve this ratio. He noted that India had one of the largest decentralized off-grid energy programmes in the world with the objective of achieving grid parity by 2022 by increasing domestic manufacturing capacity, manpower, R&D and by developing an ecosystem for the solar energy sector. Currently, more than 1000 villages were electrified under the Village Electrification Scheme, while around 1200 MW capacity solar plants have been commissioned. Mr. Bandyopadhyay also pointed to the tremendous job creation potential in the renewable energy sector.

**Mr. Md. Sabur Khan, president, and Mr. Nessar Maksud Khan, Senior vice President, Dhaka Chamber of Commerce and Industry (DCCI) of Bangladesh,** stressed that access to electricity, currently reaching 49% of the population, is a big challenge in the country. The government looked at renewable energy and the role of the private sector to find solutions to this challenge. He noted that funding will be key to promoting access to renewable energy sources. To date, Bangladesh installed national capacity was about 8304 MW, with 84% generated from natural gas. The country, however had installed 1.9 million solar home systems (SHS), with another 4 million on the way and the Government was targeting 340 MW of commercial



solar projects and 160 MW of social solar power projects. The Biogas programme was also advanced with 100,000 plants expected to be financed by 2016.

During the ensuing discussion, participants stressed the importance of mobilizing the private sector in developing and disseminating RETs. A number of participants underlined the important role of the government in ensuring that private sector involvement in the renewable energy sector leads to solutions benefiting the poor in remote areas. The government could also be a guarantor for companies providing services to these under-developed areas to secure their revenue. Others pointed to renewable energy solutions that can be self-sustained –e.g. solar and hydrogen energy systems, and waste-to-energy - where private companies supplying energy to poor rural areas would get paid directly by the consumers. These solutions would benefit both the private sector and the poor, without government’s intervention in the technology production, which would thus lower its costs. Some participants also stressed the importance of community-based programmes that attract ownership from local communities as essential for their sustainability.

#### **D. Session 3: Regional Perspectives and Requirements on Using STI to Promote Renewable Energy**

**Mr. Zhongying Wang, Deputy Director, Energy Research Institute, National Development and Reform Commission of the Government of China,** underscored the important role of renewable energy in promoting sustainable development and allowing technological catch-up in developing countries. While Rio+20 Outcome did not agree on a road map for green growth, he noted that many important measures could be taken at the national level to achieve this objective. Renewable energy could indeed replace fossil fuel and countries should not wait for cheaper renewable energy to start using it. STI could help reduce its costs significantly. China’s five-year plan for renewable energy linked STI to RETs to boost its production and achieve national targets. China solar and wind power ratio was still very small. China, however, had large potential for wind power and produced enough wind turbines for domestic use and export. China’s renewable energy targets aimed to achieve 200 GW of wind power and 50 GW of solar PV by 2020. Open market policy for wind power (through feed-in-tariff) and fossil fuel or carbon tax were also expected to reduce renewable energy costs and help China control fossil fuel consumption. The private sector and appropriate public-private partnerships models to promote green growth at the national level would also play a critical role.

**Mr. Michael Williams, Head of the APCTT (ESCAP),** stressed the important link between innovation and RETs. Innovation at all levels, including at the grassroots, was critical to promote renewable energy. He noted that the Asia-Pacific region was blessed with abundant solar energy resources and solar energy was the third faster growing energy source in the region. New and innovative technologies could make this source increasingly affordable and thus lead to its growing consumption in the region in place of fossil fuel, which would become increasingly scarce and costly. He

stressed that access to renewable energy could promote the achievement of many MDGs. Improving access, however, was a complex operation requiring action at various levels: government investment in STI to reduce production costs and increase efficiency; investment in higher education and communication to increase renewable energy awareness and capacity; market access for RETs; enterprise development; access to clean water and so on. In the Asia-Pacific region, in particular, human resources development would be critical to adapt existing RETs to local contexts. In this regard, he presented a number of successful case studies from Nepal (Biogas Sector Partnership) and the Philippines (Alliance for Mindanao Off-grid Renewable Energy). This information, together with other services was available in the Renewable Energy Cooperation-Network for Asia and the Pacific (RECAP).

In the ensuing discussions, participants underscored the issue of energy storage, especially for off-grid applications, as a challenge to a broader dissemination of renewable energy in the region. Others focused on the importance of technology transfer. They stressed the need for inter-regional mechanisms, including South-South cooperation and IP systems, to facilitate transfer of technologies that effectively address region-specific challenges and build on the abundant renewable energy sources in the region to help countries blessed with these sources to become suppliers. APCTT, in particular, stressed the need to increase regional skills to facilitate successful technology transfer. Others underscored the importance of having a balanced mix of RETs and not rely on a single source. The importance of promoting clean technologies (clean coal utilization, carbon capture technologies and so on) together with RETs was also highlighted. A number of participants reiterated that the green growth principles should be adapted to regional and national circumstances and adopted through national and not regional policies. On the issue of storage, drawing on the distinction between centralized and decentralized energy systems, APCTT underscored the need to ensure that storage becomes an integral part of off-grid decentralized systems to ensure their cost effectiveness.

#### **E. Session IV: Main Messages and Policy Recommendations to Be Transmitted to the 2013 ECOSOC Annual Ministerial Review Session**

**Dr. Surachai Sathitkunnarat, Director, policy Research and Management Department, National Science Technology and Innovation Policy Office, Ministry of Science and Technology of Thailand** reiterated the need to decouple energy and economic growth, moving away from dependence on oil and gas fired electricity towards a new and more cost-effective energy paradigm. Drawing from the experience of the Thailand National Framework for STI and Energy Research (Krabi initiative), he pointed to a number of good practices in this regard: national energy STI systems must be strong enough to absorb, adapt, develop, improve, manufacture and diffuse most energy technologies locally in order to achieve sustainable development; STI policies should be an integral part of the national innovation system and focus on substituting traditional energy sources with

renewable ones. He stressed that key factors for a successful energy STI system were R&D capacity, private sector involvement, technology transfer, human resources development, STI Infrastructure, and an enabling environment.

**Mr. Mohd Khairul Adib Bin Abdul Rahman, Undersecretary on Industry Division, Ministry of Science, Technology and Innovation of Malaysia**, drawing from key Malaysian policies (e.g. Green technology Policy 2009, National Policy on Climate Change 2009, Renewable Energy Act 2011, National Renewable Energy Policy and Action Plan 2010, and National Energy Efficiency Master Plan of the Energy Commission), stressed the need to improve both energy efficiency and renewable energy consumption as key criteria for sustainable energy. Strategic drivers in this regard were: legal and regulatory frameworks promoting efficiency; conducive business environment for RETs (e.g. energy performance contracting and green procurement); human capital development; enhanced R&D to diversify energy sources and build on indigenous technology (e.g. hybrids, energy storage, waste-to-energy); creating public awareness of and advocacy programs for energy efficiency and renewable energy in all sectors (e.g. transportation, private investment, etc.); prioritizing energy expenses in the national budget; and establishing clear and achievable national energy targets.

## **Conclusions and recommendations**

**Dr. Prasert Sinsukprasert, Director of Planning Division, Department of Alternative Energy Development and Efficiency, Ministry of Energy of Thailand** reiterated the key role of STI in enhancing renewable energy consumption, improving energy efficiency and lowering energy costs. STI were key instruments to achieve the sustainable development agenda and should continue to gain center stage.

In his closing remarks, **Mr. Thomas Stelzer, Assistant Secretary-General for Policy Coordination and Inter-Agency Affairs of UNDESA** highlighted several key messages that had emerged in the course of the discussions. Firstly, he underscored the centrality of renewable energy as one of the most efficient and viable solutions to promote energy security and sustainability in the region, especially for the poorest and most remote areas. Secondly, he stressed the essential role of national STI policies and systems, as well as R&D agendas, in expanding the use of renewable energy in all countries. Thirdly, he observed that despite considerable efforts made by a majority of countries in the region, many continue to have limited capacity and financial incentives to shift towards renewable energy-led economies. He noted that during the discussions participants shared useful experiences, initiatives and good practices in this regard. They constituted an important basis to promote effective national STI systems for sustainable development-driven RETs and to formulate regional measures to facilitate the transfer and dissemination of climate-friendly technologies. Mr. Stelzer encouraged all participants to remain engaged with ECOSOC through the 2013 Ministerial Review in July in Geneva, where Thailand will share the highlights of the meeting with the Council.

### **Recommendations:**

- 1.** Governments should support and promote private sector joint ventures to obtain RETs in order to increase their affordability and facilitate their dissemination in the region, especially in the poorest and most remote areas.
- 2.** Governments should strengthen collaboration between SMEs and larger corporations in the renewable energy sector as an effective way to develop and disseminate RETs.
- 3.** Governments should explore innovative financial mechanisms, both at the national and regional level, to fund the development, transfer and adoption of renewable energy technologies as critical to renewable energy use and diffusion in the region.
- 4.** The private sector must collaborate actively with the public enterprises, government nodal agencies and research institutions to gain access to knowledge and resources and work for the common goal of developing effective renewable energy technologies.
- 5.** There is a need to promote flexible Intellectual property rights (IPRs) in all countries in the region so that public sponsored research, knowledge, and technologies can be shared freely (without IPR requirements) and accelerate technology transfer in the renewable energy sector for the achievement of the MDGs
- 6.** Governments should focus on the use of renewable energy in the transport sector.
- 7.** Governments should put in place targeted policy interventions to develop effective and efficient energy storage devices for off-grid systems – e.g. increasing the life and efficiency of batteries in solar energy.
- 8.** There is a need to document cross-border technology transfer experiences both in public and private domains to inform policy makers on what technologies are being transferred to help design effective policies to scale-up existing technology transfer initiatives in the renewable energy sector.