

Energy Efficiency Policy Workshop on PREE 12: Electrification and Energy Efficiency

Main output

On 15 October 2023, APERC successfully held the 7th Energy Efficiency Policy (EEP) Workshop alongside the **APEC 61st EGEEC and 59th EGNRENT Joint meeting** in Makati, Metro Manila, the Philippines; for the first time in four years, the APEC workshop was held in person, and this year, the focus of the theme is **electrification and energy efficiency with 28 participants from 10 APEC economies**. The workshop hosted speakers from different APEC economies, including Indonesia, Japan, Korea, the Philippines and the United States,. Participants shared their thoughts and discussed detailed issues.

The first panel focused on “**improving energy efficiency in the power sectors**”. The speakers discussed the importance of energy efficiency in the power sector to face the challenges of the power system with rapidly increasing variable renewable energy. The speakers also highlighted electrification, demand flexibility, and time of use (TOU) rate as the enablers to bridge the energy efficiency and renewable energy. However, smart grid infrastructure should be an essential investment for the intermittency of variable renewable energy.

The second panel focused on “**electrification and energy efficiency in end-use sectors**”, including industry, transportation and building sectors. The speakers shared what are the policy issues that should be considered for each sector when it comes to electrification and energy efficiency and also discussed how to set the energy efficiency for local communities under the electrification trend.

Key Findings

In the 7th EEP workshop, integrating electrification, energy efficiency, and demand flexibility to match the increasing variable renewable energy is the main theme. Some key findings discussed in the workshop are as follows:

- 1. Variable renewable energy supply and energy demand (especially in cooling demand) are increasing in several APEC economies which are impacted by variable weather conditions, which may lead to a potential negative effect on power grid stability.** Due to the stronger policy support for renewable energy, solar and wind supply are increasing rapidly and expect to become the dominating role of the future power system. However, the intermittency of variable renewable energy supply and rapidly rising cooling demand will impact the balancing of demand and supply of power systems. Demand response, high-efficiency power generators, and grid-level infrastructure are the key enablers to combat these potential impacts. Energy policymakers should have a systematic thinking route to design and develop the energy transition policy.

- 2. Emerging economies and advanced economies consider the different social needs to achieve the net-zero target; improving living standards is the first concern for most emerging economies.** Emerging economies are experiencing a rapidly increasing demand to meet the improvement for quality of life. However, energy-intensive regions, especially urban areas, generally have fewer renewable energy sources. As governments prioritize energy transition, the lack of power transmission infrastructure to tap into renewable energy from different regions becomes a major challenge. This issue is particularly evident in archipelagic economies such as the Philippines and Indonesia. Access to affordable energy is a priority for developing energy transition policies for developing economies. Therefore, energy efficiency and conservation are the most cost-effective ways to reach the net-zero target, and considering the improvement of living standards to energy efficiency and electrification program is critical to engage more stakeholders in the economy, such as clean cooking and electric vehicles. This means that in developing economies, reducing energy consumption is not the primary goal, as improving living standards may inherently increase energy demand. However, enhancing energy efficiency while raising living standards should be the top priority. On the other hand, developed economies may consider the rebound effect, which is increased energy usage because of the reduction of energy costs by adopting energy efficiency measures. Overcoming the rebound effect issues for advanced economies is vital. Leveraging the behavior change through more social-based engagement and campaigns could be a possible way to reduce energy consumption.
- 3. Electrification in building and transportation is much faster than in the industry due to the challenges in cost and engineering development.** Electrification technologies in the building sector, such as heat pumps and electric stoves, are relatively well-defined and cost-effective; technologies can improve energy efficiency and demand flexibility as well. The electric vehicle is also the rising cost-effective technology for decarbonization of the transportation sector, and they contribute more to energy intensity than the high-efficiency Internal Combustion Engine (ICE). However, the use of electrification technology in industrial processes in the Asia region is not well-defined, and one of the reasons for this situation is the technology for the high-temperature industrial processes is still under development , but the technical potential for industry electrification is still high. Consequently, this 7th EEP workshop concluded the electricity trend in the building and transportation sector is much faster than that in the industrial sector, especially in developing economies.

Please see the full report at the following link to explore more details:

<https://www.apec.org/publications/2024/03/energy-efficiency-policy-workshop-on-pree-12-electrification-and-energy-efficiency>