



**Asia-Pacific
Economic Cooperation**

2020/EWG59/023
Agenda Item: 7dii

APEC Energy Resiliency Principle

Purpose: Information
Submitted by: ERTF Secretariat



59th Energy Working Group Meeting
26-27 August 2020

APEC Energy Resiliency Principle

I. Background and Purpose of the principle

1. Energy, ranging from oil, coal, natural gas to electricity, provides a basis for various social and economic activities. ^[1] Stable energy supply is essential to achieve sustainable development of all economies and regions.
2. In the Cebu Declaration, the Energy Ministers of Member Economies of the Asia-Pacific Economic Cooperation (APEC) affirmed the importance of energy resilience to promote energy security and achieve sustainable development in 2015 APEC Energy Ministerial Meeting with the theme of “Towards and Energy Resilient APEC community” held in Cebu, Philippines. Besides the Energy Ministers recognize importance of quality energy infrastructure, energy supply diversity, energy efficiency and energy access to promote energy resilience of the region.
3. The region has been continuously challenged with natural disasters, ranging from earthquakes, volcano eruptions, tsunamis, mass movements, hurricanes to heavy snows, posing massive risks and threats to human lives and economic security. Cyber-attack, terrorism and piracy and other manmade disasters besides pose risks and threats to global energy supply chains.
4. Energy resilience is the ability to secure stable energy supply by effectively dealing with disasters (both natural and manmade disasters). APEC member economies have shared and discussed the experiences and knowledge of each economy in its Energy Working Group (EWG) and Energy Resiliency Task Force (ERTF).
5. Since each economy is diverse in terms of geographical, environmental, economic, social and other situations, the impacts of disasters significantly differ among economies. Each economies need to investigate economy-specific circumstances and to consider tailored countermeasures in a holistic manner with all stakeholders involved.
6. In the Cebu Declaration, energy resiliency support APEC members to achieve energy security and sustainable development, which contains economic prosperity and environmental sustainability. Originated from the Cebu Declaration, EWG activities aim to promote the three E’s (economic growth, energy security and the environmental sustainability) and safety as a prerequisite (3E+S). Thus, activities to promote energy resiliency should be sufficiently in line with the 3E+S.
7. Other global disaster risk reduction initiatives including the Sendai Cooperation Initiative for Disaster Risk Reduction ^[2] provide important insights perspectives to improve energy

resiliency effectively. In addition to the EWG/ERTF discussions, the principle also refers to the other existing interregional initiatives.

II. Definition of energy resiliency

8. Energy resiliency, an important concept to promoting energy security and sustainable development and providing access, is the ability and quality that enables for energy systems to withstand extreme natural and manmade disasters and to recover and return to normal conditions in a timely and efficient manner and to build back better, thereby securing a stable energy supply to society and reducing negative impacts on human lives and economic activities from energy supply disruption.

III. Respect for diversity among economies, holistic approaches and multi-stakeholder processes

9. Member economies and related organizations should respect the diversity of efforts among member economies, holistic approaches from the supply-side to the demand-side, and multi-stakeholder processes with all relevant sectors including energy industries, industrial and general consumers, financial institutions, governments and other related organizations.
10. The principle covers a whole framework and a comprehensive set of factors and initiatives that contribute to improving energy resiliency to disasters. APEC member economies may select and implement the initiatives relevant to each economy's situation.

IV. Relevant stakeholders and their roles to enhance energy resiliency

11. **Governments** should implement initiatives including enacting, amending and abolishing energy-related regulations to support private actors in enhancing energy resiliency. Governments should besides establish standards and guidance so that energy supply industries and industrial energy consumers can formulate energy resiliency plans that may contain disaster prevention and reduction, restoration, building back better and information sharing.
12. **Energy supply industries** should implement initiatives including formulating and implementing energy resiliency plans, diversifying sources of energy supply in terms of fuel types, supplier types, geography and distribution. Energy supply industries should besides increase ratio of self-sufficient energy sources, technologies and facilities,

introduce grid system integration technologies of variable renewable energy (VRE), secure and store sufficient energy reserves and power generation equipment/facilities in case of disasters. Energy supply industries should further increase efficiency of water use in energy supply and utilization processes, ensure electric redundancy through flexible transmission and distribution systems with wide-area power interchanges, interconnections, loop-systems, multiple connections, double-tracking and power-grid stabilizers, and introduce demand response (DR) system to manage and control energy demand, and thereby well preparing and responding to disasters with all initiatives above.

13. **Industrial and general energy consumers** should implement initiatives including formulating and implementing energy resiliency plans, securing and storing additional energy reserves, and deploying distributed energy resource (DER) systems and technologies including in-house power generation, cogeneration, and micro-grid systems.
14. **Financial institutions** should implement initiatives including positively evaluating, investing and financing both public and private projects that contribute to enhancement of energy resiliency of member economies.

V. Common approaches among different stakeholders towards energy resiliency

(Energy resiliency plans)

15. Stakeholders should investigate and evaluate their energy-related situation, and formulate plans to deal with disasters. Stakeholders should review and amend the plans continuously taking recent technological advancement into consideration.

(Investment and financing to projects towards energy resiliency)

16. Stakeholders should actively invest and finance projects that contribute to enhancing energy resiliency in each economy. In addition to post-disaster response and recovery, prior investment to address underlying risk factors is essential in enhancing energy resiliency, as noted in the “Sendai Framework for Disaster Risk Reduction 2015-2030” adopted at the 3rd United Nations world conference on disaster risk reduction in 2015.
17. Stakeholders should appropriately evaluate contribution of invested and financed projects to energy resiliency in addition to projects’ profitability. From that perspective, indices and matrices to properly measure levels of contribution to energy resiliency should be established as well as building mechanisms for private companies to disclose relevant information to financial institutions.

(Proper asset management)

18. Stakeholders should introduce asset management systems to balance cost, risk and performance of energy resilient infrastructure. As the ISO 55000 explains, proper installation, management and renewable cycles of assets are critical in sustaining a stable energy supply and to attract various finance sources, thereby enhancing the energy resiliency of each economy.

(Emerging technologies adoption)

19. Stakeholders should fully consider and adopt cutting-edge energy technologies including more accurate weather and disaster forecasts and other base technologies including Artificial Intelligence (AI) and Internet of Things (IoT).
20. Stakeholders should collaborate to advance new technologies and to secure public and private investment and loans to those technologies towards developing a more resilient energy system.
21. Stakeholders should fully consider and take actions to maintain cyber security for energy systems when adopting new information communication technologies.

(Multi-stakeholder knowledge sharing)

22. Stakeholders should take voluntary measures at all levels. Effective efforts are encouraged to be shared among stakeholders both within economies as well as globally.

VI. Follow-up actions based on the principle in EWG/ERTF

23. Establish detailed guidelines to support formulation of energy resiliency enhancement plans in APEC member economies. The guidelines would be different depending on stakeholder types, would include a set of indices to evaluate what kind of initiatives could better improve energy resiliency, and would include a set of existing best practices as references for member economies.
24. Develop tools to better evaluate risk and vulnerability to disasters. Mutually share experiences related to investment, plans and concrete measures on disaster prevention, response and recovery.
25. Offer training programs to support implementation of the principle, the guidelines and tools in member economies.

Reference

- [1] Energy Charter Treaty (1994), International Energy Charter (2015)
<https://www.energycharter.org/process/energy-charter-treaty-1994/energy-charter-treaty/>
- [2] Sendai Cooperation Initiative for Disaster Risk Reduction (3rd UN World Conference on Disaster Risk Reduction, 2015)
<https://www.un.org/press/en/2015/iha1361.doc.htm>
(Excerpt) Investment in disaster risk reduction from the long term perspective
Building resilience to disasters cannot be realized if only emergency response and recovery measures are taken at each occurrence of a disaster. Prior investment in disaster risk reduction, namely securing budget and taking measures toward disaster risk reduction from a long term perspective, is important. The necessary costs of such prior investment are less in sum than costs necessary for emergency response and recovery after the occurrence of a disaster, and are therefore cost effective. Also, prior investment in disaster risk reduction protects the achievement of development from disasters and thus contributes to sustainable development. In fact, Japan has a history of building a society that is resilient to disasters through prior investment in disaster risk reduction, which has supported Japan s economic development.
- [3] Sendai Framework for Disaster Risk Reduction 2015-2030 (United Nations General Assembly, 2015)
<https://www.undrr.org/>
- [4] APEC Guideline for Quality Electric Power Infrastructure (APEC EWG, 2016)
<https://www.apec.org/Publications/2016/12/APEC-Guideline-for-Quality-Electric-Power-Infrastructure>
- [5] The Equator Principles IV (Equator Principles Association, 2019)
<https://equator-principles.com/>