APEC Sustainable Energy Center

APSEC Activity Updates

Jinlong Ma

Vice President, APEC Sustainable Energy Center

Professor, Tianjin University

The 54th Meeting of APEC Expert Group on New and Renewable Energy Technology
Virtual meeting hosted by the Philippines, November 10-11, 2020

APEC Sustainable Energy Center

Workshop on Energy Transition and Scaling-up Renewable Energy

APEC Self-Funded Project (EWG 04 2020S):

Innovative Approaches for Scaling-Up Renewable Energy Deployment in APEC Region

National Energy Administration of China (NEA) Funded Project:

1. Scaling-Up Renewable Energy by Using Smart Energy Microgrid Technology

2. Development and Practice of Smart Final Energy System and Distributed Energy

Workshop on Energy Transition and Scaling-up Renewable Energy

Dr. Hongpeng LIU, Director of Energy Division, United Nations Economic and Social Commission for Asia and the Pacific, Prof. Nedjib Djilali, Fellow of the Canadian Academy of Engineering, Dr. Yongping ZHAI, Chief of Energy Sector Group, Asian Development Bank, Secretariat of EGNRET and approximately **50 experts, scholars and researchers from 10 APEC economies and 2 European economies** participated in the workshop.

Workshop on Energy Transition and Scaling-up Renewable Energy

Asia-Pacific Economic Cooperation

APSEC Sustainable Energy Center

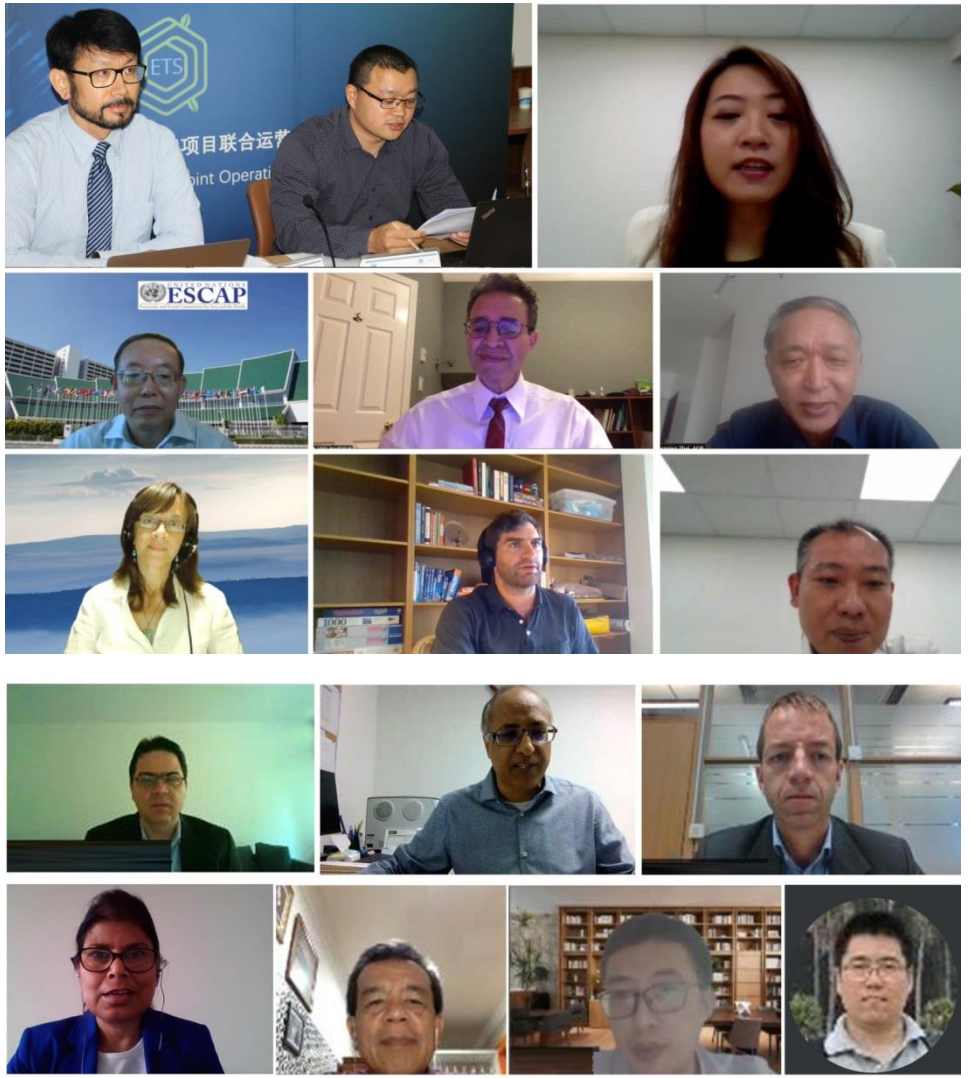
Agenda
Workshop on Energy Transition and Scaling-up Renewable Energy

Time/Date	Beijing Time (GMT+8)	10:00-16:40, September 18, 2020
	Pacific Time (GMT-8)	19:00-01:40, September 17, 2020
	Central European Summer Time (GMT+2)	04:00-10:40, September 18, 2020
Online Platform	**Platform: VOOV meeting** Software Download Address: https://www.voovmeeting.com Online Meeting ID: 138 637 598	
Test Run for the Online Platform Beijing Time (GMT+8): 09:40-10:00		
Chair: Dr. Yong SUN, Researcher of APEC Sustainable Energy Center (APSEC)		
Online Group Photo		
Opening Remarks (5 mins)	**Dr. Tarcy Sih-Ting Jhou,** Secretariat of Expert Group on New and Renewable Energy Technologies (EGNRET), APEC Energy Working Group (EWG), **APEC**	
Session I: Innovative Approaches of Scaling-up Renewable Energy Beijing Time (GMT+8): 10:05-12:10; Pacific Time (GMT-8): 19:05-21:10		
Presentations (105 mins)	1. **Dr. Hongpeng LIU,** Director, Energy Division, United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) **Topic:** Energy Transition and Scaling-up Renewable Energy to Achieve the SDGs	
	2. **Prof. Nedjib Djilali,** Fellow of the Canadian Academy of Engineering / Professor, Department of Mechanical Engineering, University of Victoria, **Canada** **Topic:** E-mobility: Status and Prospects of Fuel Cell and Battery Electric Vehicles	
	3. **Dr. Yongping ZHAI,** Chief of Energy Sector Group, Asian Development Bank (ADB) **Topic:** Renewable Energy Development in Asia, ADB Perspectives	
	4. **Prof. Stephanie A. Siehr,** Professor, Environmental and Energy Programs, University of San Francisco, **The United States** **Topic:** Measurement Framework for Effective Energy Transitions	
	5. **Mr. Brian Spak,** Group Leader of Grids and Renewable Integration, Commonwealth Scientific and Industrial Research Organisation (CSIRO), **Australia** **Topic:** Smart Grid and Renewable Energy Grid Integration in Australia	
	6. **Dr. Laurence Shin-Je Li,** Deputy Director of Energy Policy Promotion Group, Green Energy & Environment Research Labs, Industrial Technology Research Institute (ITRI), **Chinese Taipei** **Topic:** The Role of Renewable Energy in Chinese Taipei's Energy Transition	
	7. **Prof. Jinlong MA,** Vice President of APEC Sustainable Energy Center, **China** **Topic:** Innovative Approaches for Scaling-up Renewable Energy in APEC Region	

Asia-Pacific Economic Cooperation

APSEC Sustainable Energy Center

Panel Discussion (20 mins)	**Chair: Prof. Jinlong MA**, Vice President of APEC Sustainable Energy Center (APSEC)
REST Beijing Time (GMT+8): 12:10-14:10	
Test Run for the Online Platform Beijing Time (GMT+8) 14:10-14:30 Impacts of COVID-19 on Renewable Energy Development	
Session II: Roadmap and Practices of Energy Transition Beijing Time (GMT+8): 14:30-16:40; Central European Summer Time (GMT+2): 08:30-10:40	
Online Group Photo	
Presentations (105 mins)	8. **Dr. Ricardo Gorini,** Senior Programme Officer-Renewable Energy Roadmaps, International Renewable Energy Agency (IRENA) **Topic:** Insights from the IRENA Global Renewable Outlook 2050
	9. **Prof. Shobhakar Dhakal,** Dean of the School of Environment, Resources and Development, Asian Institute of Technology (AIT), **Thailand** **Topic:** Renewable Energy Development in Thailand
	10. **Mr. Sverre Alvik,** Programme Director, Energy Transition, DNV GL, **Norway** **Topic:** The Ongoing Energy Transition: Fast, but not Fast Enough
	11. **Dr. Anjana Das,** Senior Advisor, Sustainable Energy and Environment, Flemish Institute for Technological Research (VITO NV), **Belgium** **Topic:** Energy Transitions in Mexico and Viet Nam
	12. **Mr. Paul Butarbutar,** Executive Director, Indonesia Renewable Energy Society, **Indonesia** **Topic:** Renewable Energy Development in Indonesia: Barriers and Removals
	13. **Dr. Shunchao WANG,** Deputy Division Director, International Cooperation Division, International Business Department, Electric Power Planning & Engineering Institute (EPPEI), **China** **Topic:** Outlook of the Belt and Road Clean Energy Development
	14. **Dr. Yunfei MU,** Associate Professor, School of Electrical and Information Engineering, Tianjin University, **China** **Topic:** Research on Planning Technology of User-side Integrated Energy System
Panel Discussion (25 mins)	**Chair: Prof. Jinlong MA**, Vice President of APEC Sustainable Energy Center (APSEC)



APEC Self-Funded Project (EWG 04 2020S):

Innovative Approaches for Scaling-Up Renewable Energy Deployment in APEC Region

- **Proposing economy:** China
- **Co-sponsoring economy:** Hong Kong, China
- **Endorsed by EWG members:** 21 August 2020
- **Expected start/completion date:** 01/11/2020 - 30/04/2020

Project summary

- The project focuses on RE power generation and **aims to explore innovative approaches for scaling-up RE application** in APEC region, which **facilitates achieving the APEC RE goal.**
- Through review, investigation and stakeholder consultation, the project will assess the RE development from performance of energy system, sustainability and energy access perspectives.
- Barriers and drives for RE development will be analyzed, suggestions and recommendations on innovative approaches will be put forward through analysis of policy, technologies, business environment, case study, etc.
- **Research results will be synthesized in project report and shared**. Presentations on the findings will be made in EGs' meeting and APSEC's events for members to exchange experience and disseminate relevant know-how.

APEC Self-Funded Project (EWG 04 2020S):

Innovative Approaches for Scaling-Up Renewable Energy Deployment in APEC Region

APEC Sustainable Energy Center

■ Work plan:

- Nov. 2020 –Apr. 2021: information gathering, investigation and analysis.
- May. 2021: Call for comments on initial results at EGs' meeting/APSEC's events, collect feedbacks from member economies.
- May. 2021 – Dec. 2021: research into specific subjects, prepare research report; share and discuss the findings in EGs' meeting/APSEC's events, and collect feedback.
- Jan. 2022 – Feb. 2022: Revise draft research report.
- Mar. 2022 – Apr. 2022: Produce the final research report.

■ Draft Outline for Seeking comments from EGNRET members (11 Aug 2020)

Executive Summary
1. Introduction
1.1 Overview of energy development in APEC region
1.1.1 Energy development situation
1.1.2 RE development situation
1.2 Significances for scaling-up RE in APEC region
1.3 Outline of the of the main outcomes
1.3.1 Outline
1.3.2 Innovations and main outcomes
2. Approach and methodology of the project
2.1 Scope
2.2 Assessment of RE development
2.2.1 Performance of energy system
（1）Electricity development
（2）Sustainability
（3）Energy Access
2.2.2 Analytical framework of barriers and drives for RE development
（1）Key stakeholders of RE development
（2）Analysis framework
3. RE Development in APEC region
3.1 RE development
3.2 Energy Access
3.3 Gap analysis
4. RE Development Approaches
4.1 Regulation, policy and plan
（1）RE plans and targets
（2）Electricity target and plan
4.2 Resources and technology
（1）Local RE resources
（2）Technology availability: supply chain of technology
（3）Costs of technologies
4.3 Enable environment / infrastructure
（1）Government institutions setting-up and policy implementation
（2）Resources date information for RE project development
（3）Power system flexibility
（4）Power grid access: technical (grid code)
（5）Dispatching, network usage and curtailment
（6）Utility operation
（7）Electricity market establishment and operation
4.4 Capital and investment
（1）Fiscal and financial policy
（2）Investment in RE
（3）Investment condition
（4）RE project guidance and relevant permission
（5）RE projects tariff condition: PPA – FiT vs auction
4.5 Business environment
（1）Source of project finance: public and private sector, international aids
（2）Easy to do business
（3）International collaboration
4.6 Distributed generation microgrid
（1）National framework/program of distributed system/microgrid – off grid electrification
（2）Financial incentives for off-grid solutions
（3）Technical standard and quality of mini/micro-grid （including stand alone）
（4）Consumer affordability: for energy and connection/installation
（5）Policy to support low-income and low-volume and remote consumer
4.7 Promote energy access
5. Case studies
6. Summary and conclusion
7. References

APEC Self-Funded Project (EWG 04 2020S):

Innovative Approaches for Scaling-Up Renewable Energy Deployment in APEC Region

APEC Sustainable Energy Center

Feedback from Hong Kong, China (12 Aug 2020)

First and foremost, on behalf of Hong Kong China, we support your research on "Innovative Approaches for Scaling-up Renewable Energy Deployment in APEC Region" with a view to achieving our aspirational goal to double the share of renewable energy (RE) in APEC's overall mix by 2030.

To enrich your research, our views are listed below for your consideration.

1. Performance of Energy System in 2.2.1 should not be limited only to Electricity Development/Electricity Market Development, other energy sources like gas network (for use of heating, cooking, etc. in some areas) may contribute a significant amount of energy use.
2. Resilience should also be a key factor in the study
3. RE trading market will it be an element to be considered in the report for countries that have major constraints to get access to scale up its RE system
4. For the scaling up of RE, the double or triple handling of electricity generated from RE should be prevented
5. Safety/Safe Access could be an important aspect in considering of scaling up RE development
6. Grid stability should also be addressed when scaling up the RE system and how this can be overcome
7. Reliability and Storage for scaling up RE system should also be addressed
8. For cost analysis, cradle to grave cost analysis will be a good reference in the study
9. Environmental Effect for scaling up RE - this refer to the tackling of possible negative impact.

We are more than happy to share our views on scaling-up RE deployment to encourage more RE in APEC mix. Wishing you all the best in this project you have embarked upon.

Regards,

Jovian Cheung
SE/EEA1
Electricity and Energy Efficiency Branch
Electrical and Mechanical Services Department, HKSAR
(852) 2808 3254

APEC Self-Funded Project (EWG 04 2020S):

Innovative Approaches for Scaling-Up Renewable Energy Deployment in APEC Region

■ Feedback from Thailand (13 Aug 2020)

ETS Report Outline
Version: 1.0
APSEC
11August 2020

Innovative Approaches for Scaling-up Renewable Energy in APEC Region

带格式的: 段落间距段前: 1.5 行, 段后: 1.5 行

Executive Summary

1. Introduction

1.1 Overview of energy development in APEC region
1.1.1 Energy development situation
1.1.2 RE development situation
1.2 Significances for scaling-up RE in APEC region
1.3 Outline of the of the main outcomes
1.3.1 Outline
1.3.2 Innovations and main outcomes

批注 [a1]: Please clarify? What is the specific content under this topic?

2. Approach and methodology of the project

2.1 Scope of work?
~~2.1~~2.2 → Methodology
~~2.2~~2.3 → Assessment of RE development
~~2.2.1~~2.3.1 Performance of energy system
(1) Electricity development
(2) Sustainability
(3) Energy Access
~~2.2.2~~2.3.2 Analytical framework of barriers and drives for RE development
(1) Key stakeholders of RE development
(2) Analysis framework

3. RE Development in APEC region

3.1 RE development
3.2 Energy Access
3.3 Gap analysis

批注 [a2]: Is this topic different from topic 1.1.2 ?

4. RE Development Approaches
4.1 Regulation, policy and plan
(1) RE plans and targets
(2) Electricity target and plan

批注 [a3]: Is it for APEC Region or for each economy?

4.2 Resources and technology
(1) Local RE resources
(2) Technology availability: supply chain of technology
(3) Costs of technologies

4.3 Enable environment / infrastructure
(1) Government institutions setting-up and policy implementation
(2) Resources date information for RE project development
(3) Power system flexibility
(4) Power grid access: technical (grid code)
(5) Dispatching, network usage and curtailment
(6) Utility operation
(7) Electricity market establishment and operation

4.4 Capital and investment
(1) Fiscal and financial policy
(2) Investment in RE
(3) Investment condition
(4) RE project guidance and relevant permission
(5) RE projects tariff condition: PPA–FiT vs auction

4.5 Business environment
(1) Source of project finance: public and private sector, international aids
(2) Easy to do business
(3) International collaboration

4.6 Distributed generation microgrid
(1) National framework/program of distributed system/microgrid – off grid electrification (including stand-alone)
(2) Financial incentives for off-grid solutions
(3) Technical standard and quality of mini/micro-grid （including stand alone）
(4) Consumer affordability: for energy and connection/installation
(5) Policy to support low-income and low-volume and remote consumer

4.7 Promote energy access

5. Case studies

批注 [a4]: Please add the case of community based power plant? For example, business model, regulation and management system between investor and community etc.

6. Summary and conclusion

7. References

NEA Funded Project:

1. Scaling-Up Renewable Energy by Using Smart Energy Microgrid technology

- **Start/completion date:** 7/1/2019 - 9/30/2020

- **Project summary**

  - **Examining advanced concepts** of clean energy based smart energy micro-grid technology, main technical architecture, control and operation modes, relevant technical standards and key trends of technology development.
  - Review of system configurations and technical characteristics of the smart energy microgrid under different application environment: **industrial and commercial parks, islands, and remote areas.**
  - Examine internal and external factors affecting the applications of smart energy microgrid technology, including policies, incentives and relevant regulatory framework.
  - Likely commercial and business models for microgrid project development and operation.
  - Selected case studies under different application environment and background.
  - Assess the issues and recommendations on promoting RE based smart energy microgrid technology.

NEA Funded Project:

2. Development and Practice of Smart Final Energy System and Distributed Energy

- **Start/completion date:** 7/1/2020 - 12/31/2020

- **Project summary**

  - Investigate the current situation of final energy system, energy efficiency policy and final energy consumption structure of APEC economies.
  - Summarize and analyze the differences and problems of final energy technology and management, the mode and characteristics of final energy supply, as well as the latest development trends of technologies and policies related to smart final energy system.
  - Investigate the development status and development trend of distributed energy system of APEC economies.
  - Analyze the key technology and intelligent technology innovation of distributed energy system, as well as the characteristics and innovation practice experience in distributed energy system incentive policy and business model.
  - Summarizes the technical solutions and business models of smart final energy system, and analyzes the typical technical paths and development modes.

THANK YOU!