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# POSSIBLE APEC COLLABORATION WITH IRENA AND OTHER INTERNATIONAL ORGANIZATIONS TOWARD RENEWABLE ENERGY GOAL

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# 2015 APEC LEADERS' AND MINISTERS' GUIDANCE

## November 2015 Leaders' Meeting, Manila

*“We ... reaffirm our aspirational goals to reduce aggregate energy intensity by 45 percent by 2035 and double renewable energy in the regional energy mix by 2030 to achieve sustainable and resilient energy development within the Asia-Pacific.”*

## October 2015 APEC Energy Ministerial, Cebu

- At EMM-12 in Cebu, Energy Ministers reiterated the importance of renewable energy development and deployment to further progress toward the Leaders' goal, including in the context of **strengthening energy resilience** to natural disasters and climate change.
- Ministers also emphasized the need to increase energy access, particularly in remote communities, and noted the benefits of **microgrids, energy storage, and integration of renewables** into the grid along with greater energy efficiency.
- They strongly encouraged the acceleration of renewable energy projects to further progress toward the Leaders' renewable energy goal.

# RECENT EWG RENEWABLE ENERGY PROJECTS

**11 RE projects in implementation in 2015, 6 RE projects approved in 2015 Session 2\*, and 9 new RE projects submitted in 2016 Session 1**

- Solar Photovoltaic Installation and Best Practices
- PV Systems Installation on Islands
- Wind Energy Development Case Studies and Best Practices
- Biomass / Biofuels
- Green Energy Smart Farms
- Impediments in Financing Renewables
- Public-Private Dialogues in Trade and Investment of Renewables
- Safety in Using Renewable Energy

*\*2014 and 2015 project list in backup slides*

## WORKING WITH PARTNERS TOWARD DOUBLING RE GOAL

- “We reaffirm the UN “Sustainable Energy for All” initiative and **instruct the EWG through the EGNRET to develop the road map for the aspirational goal** of doubling the share of renewables in the APEC energy mix, including in power generation by 2030; and, to attain this goal, **cooperate with IRENA or other organizations** to conduct research on the economic benefits and cost-effectiveness of utilizing renewable energy and integrating it into power grids so as to support R&D, innovation and commercialization of clean energy technologies and to promote practical cooperation on renewable technologies, equipment and services among member economies.”

- 2014 Energy Ministers, Beijing

# SAMPLE INTERNATIONAL RESOURCES AVAILABLE

- Several international organizations are reviewing trends, analyzing RE technologies, assessing barriers to renewable energy development, and seeking way to accelerate its deployment, examples include:
  - IRENA: Policy roadmaps, RE grid/microgrid studies, RE resource maps, REMap regional report for SEAsia
  - Clean Energy Ministerial (CEM): Webinars, training, studies, workshops, expert advice, public-private engagement on mini-/off-grid solutions for islands/remote areas; mini-grid quality assurance; off-grid energy storage; policy de-risking of RE;
  - REN21: RE policies, targets, minigrid toolkit for Asia-Pacific, RE costs, interactive map on status of RE, global status report
  - World Bank: RE grid integration, RE financing/Investments/risk
  - IEA: RE market reports, global RE policies and measures database
  - ASEAN: RE and alternative power generation work stream

# APEC-IRENA WORK PLAN PROPOSAL

- To **leverage the expertise and resources** of international organizations, the U.S. proposed a draft APEC-IRENA work plan, presented at EGNRET 45, **to facilitate brainstorming on potential areas** for collaboration.
- The Work Plan was based on IRENA's initial draft work program for 2016-2017\* to **capitalize on efforts already underway** without requiring significant additional resources from IRENA to collaborate with APEC.
- The proposed areas for APEC-IRENA collaboration were meant for **discussion purposes only** to generate dialogue and ideas—not to be a prescriptive or exhaustive list for cooperation.
- This work plan has not been vetted by IRENA.

*\*Note, this draft work program has since been amended.*

**Proposed APEC-IRENA Work Plan**

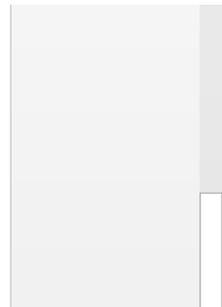
*\*Based on revised IRENA Work Program Themes and Program Components for 2016-2017 proposed at Jan16 Assembly Meeting (in gray)*

<b>I. Planning for the renewable energy transition</b>		
<b>Objective</b>	<b>Impact</b>	<b>Component</b>
<i>Countries successfully transform their energy systems to meet national targets and strategies to decrease global emissions and improve energy security</i>	<i>Informed global debate on the role of renewable in the energy sector transformation</i>	<i>REthinking Energy</i>
	<i>Increased knowledge on RE grid integration and strengthened dialogue between policy makers and the utilities. Power systems and national energy master plans that include large shares of renewables</i>	<i>Power system design for renewable energy integration</i>
	<i>REmap messages on the options and priorities for accelerated deployment of renewables influence national, regional and global decision makers.</i>	<i>Transforming Energy</i>
	<i>Increased, reliable and up to date knowledge on technology solutions to enable informed decision making</i>	<i>Technology status and outlook</i>
	<i>Accelerated deployment of geothermal energy worldwide</i>	<i>Global Geothermal Alliance</i>
	<i>National, sub regional and local stakeholders empowered with concrete advice to design and implement transformational change in the way energy is produced, distributed and consumed in sub national and city settings</i>	<i>Repowering cities</i>
<b>Possible APEC-IRENA Activities</b>		
<b>Component</b>	<b>Proposed Activity</b>	
<i>Transforming Energy</i>	<i>Pulling from ongoing REmap regional report for SE Asia, draft REmap report for Asia-Pacific region (perhaps APEC and ASEAN?) with recommendations for APEC Leaders' goal to double RE by 2030</i>	
<i>Power system design for RE integration</i>	<i>Building upon ongoing IRENA studies, participate in regional workshop on RE planning / grid integration / policy best practices; help develop roadmaps to facilitate RE integration in APEC region as part of goal to double renewables by 2030</i>	
<i>Technology status and outlook</i>	<i>Engage in IRENA workshops and studies on latest technological solutions</i>	
<i>Repowering cities</i>	<i>Participate in workshop on renewable energy production and distribution at the city level</i>	

<b>II. Enabling investment and growth</b>		
<b>Objective</b>	<b>Impact</b>	<b>Component</b>
<i>Improving policy frameworks and enabling market conditions for accelerated deployment of renewable energy</i>	<i>Informed decision making, and tools and data to strengthen the business case for renewable energy</i>	<i>Renewable energy costs</i>
	<i>Socio-economic information and messages empower policy makers and increased public awareness</i>	<i>Renewable energy benefits</i>
	<i>Empowered decision making on policy options in dynamic energy markets</i>	<i>Policy options to accelerate deployment</i>
	<i>Scale up of renewable energy investment and improved understanding of, and access to, financial structures and instruments</i>	<i>Financing renewables</i>
	<i>Enhanced project development activities and increased public and private financing for renewable energy projects in developing countries</i>	<i>Project facilitation</i>

**Possible APEC-IRENA Activities**

<b>Component</b>	<b>Proposed Activity</b>
<i>RE benefits / Policy options to accelerate deployment</i>	Hold workshop for policymakers on RE policy options, regulations, and best practices
	Hold capacity building training for policymakers on RE policies, grid connectivity, developing energy targets, and reducing policy barriers to investment
<i>Renewable energy costs</i>	Draft energy pricing analysis report for APEC region, analyze band of cost ranges for RE
	Help establish regional cost goals for renewable energy sources, building on current IRENA work
<i>Financing renewables</i>	Conduct regional market analysis of Asia-Pacific region, including assessment of RE investment
	Hold regional workshop to report on lessons learned and recommendations for RE investment; invite World Bank, ADB and/or other relevant players
	Conduct analysis for APEC region on RE financing/investment challenges, identify best practices for finance and investment and risk mitigation strategies
	Hold workshop on findings, recommendations and best practices for finance/investment, involve World Bank, ADB, and other finance orgs
	Conduct capacity building training for entrepreneurs to develop viable projects to attract project financing



<b>III. Renewable energy access for sustainable livelihoods</b>		
<b>Objective</b>	<b>Impact</b>	<b>Component</b>
<i>Improved livelihoods though access to renewable energy</i>	<i>Increased deployment of stand-alone and mini-grid renewable energy solutions</i>	<i><u>Decentralised solutions for access</u></i>
	<i>Accelerated deployment of renewable-based off-grid and mini-grid systems to improve access to energy in an affordable, reliable and sustainable manner</i>	<i>Applied decentralized solutions</i>
<b>Possible APEC-IRENA Activities</b>		
<b>Component</b>	<b>Proposed Activity</b>	
<i><u>Decentralised solutions for access</u></i>	Assess grid integration of renewables into smart grid for APEC region	
	Hold technical workshops for mini-/off-grid solutions, RE integration into mini-grids	
	Hold technical training for equipment installers (solar hot water, solar air conditioning, photovoltaics)	
	Hold workshop for policymakers on mini-/off-grid options, including value for energy resiliency, targets	
<i>Applied decentralized solutions</i>	Conduct capacity building for entrepreneurs/SMEs, train on financing RE projects; support business incubation centers	

<b>IV. Regional action agenda</b>		
<b>Objective</b>	<b>Impact</b>	<b>Component</b>
<i>Regional integration with increased shares of renewables to meet energy needs</i>	<i>Accelerated renewable power deployment in Southeast Asia and improved cross-border trade of renewable electricity aligned with the ongoing development of the ASEAN Power Grid</i>	<i>Emerging clean energy corridors</i>
	<i>Countries equipped with knowledge and expertise to create and implement an enabling policy framework to accelerate renewable energy deployment</i>	<i>Country support and advisory services</i>
<b>Possible APEC-IRENA Activities</b>		
<b>Component</b>	<b>Proposed Activity</b>	
<i>Emerging clean energy corridors / Country support and advisory services</i>	Regional Clean Energy Corridor for Asia-Pacific – Collaborate on regional workshop together with ASEAN related to RE grid integration including all regional stakeholders	

<b>V. Islands: lighthouses for renewable energy deployment:</b>		
<b>Objective</b>	<b>Impact</b>	<b>Component</b>
<i>Island energy systems transformed through renewable energy</i>	<i>Accelerated deployment of renewable energy in SIDS</i>	<i>SIDS Lighthouses</i>
	<i>Improved knowledge of solutions and conditions for investment in renewable energy applications on islands</i>	<i>Global Renewable Energy Islands Network (GREIN)</i>
	<i>Increased number of bankable renewable energy technology projects in SIDS</i>	<i>Enabling projects in Islands</i>
<b>Possible APEC-IRENA Activities</b>		
<b>Component</b>	<b>Proposed Activity</b>	
<i>SIDS/ GREIN/ Enabling projects in Islands</i>	Hold capacity building workshops/webinars on RE grid integration, including mini-grids /off-grid solutions for islands	

<b>VI. Gateway to Knowledge on Renewable Energy</b>		
<b>Objective</b>	<b>Impact</b>	<b>Component</b>
<i>Renewable energy knowledge accessible to all</i>	<i>Reliable, relevant and up to date global source of renewable energy statistics</i>	<i>RE Statistics</i>
	<i>Stakeholders possess information that facilitates assessment of renewable energy potential for support policy formulation and project development</i>	<i>The Global Atlas</i>
	<i>Accelerated adoption of quality assurance and standards for renewable energy</i>	<i>Quality assurance and standardisation</i>
	<i>Environmental and resource information and messages empower policy makers and increased public awareness</i>	<i>Enhancing environmental and resource sustainability</i>
	<i>REsource will become the central hub for renewable energy reports, statistics, or charts as a multilingual tool to enlarge IRENA's audience and increase the global awareness on renewable energy status and trends</i>	<i>Knowledge Hub</i>
	<i>Improved engagement with a wide range of stakeholders and increased awareness of the renewable energy business case</i>	<i>Multi-stakeholder engagement</i>
<b>Possible APEC-IRENA Activities</b>		
<b>Component</b>	<b>Proposed Activity</b>	
<i>RE Statistics</i>	Prepare report on most up-to-date RE statistics for Asia-Pacific region, including resource mapping for RE	
	Provide training on RE statistical analysis	
<i>The Global Atlas</i>	Using Global Atlas, develop resource maps for APEC region, draft analytical report with recommendations for doubling RE by 2030; brief at EWG meeting	
	Hold webinar on using Global Atlas for energy planners and policy-makers	
<i>Knowledge Hub / Multi-stakeholder engagement</i>	Drawing upon IRENA databases, develop database on RE policies, regulations and best practices for Asia-Pacific region; brief to policymakers in region	

# IRENA REMAP: ROADMAP FOR A RENEWABLE ENERGY FUTURE, 2016

- Examines prospects for doubling renewable energy by 2030 on a global scale, and suggests technology options and solutions to accelerate growth.
- Policymakers must take key actions including:
  - planning transition pathways for development of national plans and targets,
  - creating an enabling business environment, with energy prices that recover external costs;
  - ensuring the smooth integration of renewables into existing infrastructure;
  - creating and managing renewable energy knowledge; and
  - promoting continuous innovation.
- Five Key Action Areas:
  - Correct for market distortions to create a level playing field.
  - Introduce greater flexibility into energy systems and accommodate the variability of key RE sources.
  - Develop and deploy renewable heating and cooling solutions for urban development projects and industry.
  - Promote transport based on renewable power and biofuels.
  - Ensure the sustainable, affordable and reliable supply of bioenergy feedstocks.



# CLEAN ENERGY SOLUTIONS CENTER (CESC)



- The **Clean Energy Solutions Center** an initiative of the Clean Energy Ministerial, helps governments design and adopt policies and programs to support the deployment of clean energy technologies through two key services: **Ask an Expert** and **Training Webinars**. (<https://cleanenergysolutions.org>)
- The **Clean Energy Finance Solutions Center** helps governments mobilize clean energy investment through technical assistance and informational resources (<https://finance.cleanenergysolutions.org/>)
- **Ask an Expert:** A no-cost technical assistance resource for governments seeking policy information and advice from global policy experts.
  - Launched in 2011, assisted more than 250 requests from over 90 countries, island nations and regional organizations.
  - Over 55 global experts available to provide reliable, unbiased answers available within two days
  - Assistance includes development of strategies, regulations and standards, financial incentives and deployment programs.
  - Clean energy policy experts review drafts of measures and strategies, conduct research, share best practices from other countries, and provide consultations by phone and email.
- **Webinar Training:** Offers training webinars on renewable energy and other clean energy policy topics for policymakers around the world.

# SOLUTIONS CENTER ASK AN EXPERT EXAMPLES

- **APEC Energy Working Group:** e-learning course covering a breadth of issues across the renewable energy sector in the Asia-Pacific region  
(<http://www.leonardo-academy.org/totara/program/index.php?viewtype=program&categoryid=42>)
- **Malaysia:** assisted with geothermal tariff establishment, and feed-in tariff and tendering options for solar PV
- **Korea:** assisted with information on how to successfully meet and exceed renewable energy requirements subsequent to the recent implementation of a national renewable energy portfolio standard
- **Viet Nam:** in support of NDC action plan, reviewed renewable energy regulatory/policy frameworks and offered recommendations for policy reforms and finance mechanisms
- **Asia Development Bank:** provided assistance on renewable energy grid integration to various countries across the Asia region (workshop in Singapore)
- **South Pacific Islands:** assisted with renewable energy project finance models and power purchase agreements
- **Africa and Pacific Islands:** Capacity building for policymakers on setting renewable energy targets
- **Caribbean Community (CARICOM):** assisted with regional sustainable energy design – setting renewable energy targets and net-billing components (ratified March 2013)

# CESC – TRAINING WEBINARS EXAMPLES

- ***Financial Analysis with RETScreen*** (April 27, 2016)
- ***Policy Analysis with RETScreen*** (February 9, 2016)
- ***Renewable Energy Transition: The Future of Renewable Energy Policy*** (March 30, 2016)
- ***Greening the Grid: Implementing Renewable Energy Zones for Integrated Transmission and Generation Planning***: (December 1, 2015)
- ***Clean Energy in Island Settings*** (March 11, 2015)
- ***ASEAN Renewable Energy Guidelines*** (December 4, 2014)
- ***REN21 Renewables 2014 Global Status Report: Asia and the Pacific*** (September 15, 2012)
- ***Designing Successful Renewable Energy Targets in Africa: Key Principles and Insights*** (April 12, 2016)

# REN21 SAMPLE RESOURCES

- **REN21 Renewables Global Futures Report (GFR) 2015**

<http://www.ren21.net/future-of-renewables/global-futures-report>

- Renewable energy provided an estimated 19.1% of global final energy consumption in 2013, and growth in capacity and generation continued to expand in 2014.
- As of early 2015, at least 164 countries had renewable energy targets, and an estimated 145 countries had renewable energy support policies in place.
- As a region, East Asia has become the world's largest consumer and producer of renewable energy, as well as the largest investor in renewable technologies.
- By 2013, East Asia's total renewable power generating capacity was an estimated 457 GW (more than 29% of the global total).

- **REN21 Interactive Map on status of renewables worldwide:** provides information on global RE policies, targets, shares, and renewable energy markets.

<http://www.ren21.net/status-of-renewables/ren21-interactive-map>

# MINISTERS' GUIDANCE FOR EGNRET

- As instructed by Energy Ministers in Beijing, EGNRET has a very important role to develop the roadmap for achieving the Leaders' aspirational goal of doubling the share of renewables in APEC's energy mix, including through cooperation with IRENA or other organizations.
- By reviewing the body of work completed and ongoing through the EWG and that by relevant international organizations, EGNRET can assess gaps and priority areas in accelerating the development and deployment of renewable energy in the region.
- We welcome ideas on how best to engage international partners, such as those noted above, and leverage ongoing international work and resources to facilitate APEC's continued progress.

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# THANK YOU.

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# BACKUP SLIDES

# 11 RE PROJECTS IN IMPLEMENTATION IN 2015

- EWG-05-2014S - 2014 APEC Workshop on Biodiesel Application Experiences (Chinese Taipei)
- EWG-04-2014A - APEC Photovoltaic System Best Practices and Latest Development Comparative Study (PV-BPLD) (China)
- EWG 02 2014A - APEC Public - Private Dialogue on Addressing Impediments in Financing Renewable Energy (Viet Nam)
- EWG-14-2015A - Small and Medium PV System Database in the APEC Region (Thailand)
- EWG-18-2015A - A Comparative Study on Multi-Field Applications of Building-Mounted Photovoltaic (BMPV) in the APEC Region (China)
- EWG-05-2015A - Workshop on Experiences and Plans to Double Renewable Energy Utilization by 2030 in the APEC Region (USA)

# 11 RE PROJECTS IN IMPLEMENTATION IN 2015 (CONT'D)

- EWG-17-2015A - Renewable Energy Safety in APEC (Thailand)
- EWG-13-2015A - Promoting Renewable Power Generation with Fuel Cell Technologies (China)
- EWG-15-2015A - APEC Workshop on Promoting the Development of Wind Energy, Phase 2 – Public Private Partnership for Wind Energy Development (Vietnam)
- EWG-16-2015A - APEC Workshop on Promoting the Development of Biomass Energy (Vietnam)
- EWG-12-2015A - Ethanol Trade Development as Part of APEC's Renewable Fuel Strategy (USA)

## 6 NEW RE PROJECTS APPROVED IN 2015 SESSION 2

- EWG-3 - Long term reliability study of PV systems for installation on islands (Chinese Taipei)
- EWG-6 - Best Practices for Developing the Green Energy Smart Farm in the APEC Region
- EWG7 - Strategy for Large-Scale Implementation of Biogas Capture from Palm Oil Mill Effluent and Reuse for Renewable Electricity Generation (United States)
- EWG2 - APEC Public – Private Dialogue on Promoting Trade and Investment in Renewable and Clean Energy (Viet Nam)
- EWG5 - Case Studies on the Best Practices of Wind Energy Development in APEC Region (Viet Nam)
- EWG4 - Developing Solar-Powered Emergency Shelter Solutions (SPESS) as an Energy-Resilience Tool for Natural Disaster Relief in APEC Community (China)