



**45th APEC EGNRET Meeting**

# **Definition of New and Renewable Energy**

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**Asia-Pacific  
Economic Cooperation  
EGNRET**

# Background of RE Doubling Goal



- The United Nations Secretary-General launched a pioneering new initiative, “**Sustainable Energy for All**” (SE4ALL), on 1 Nov 2011, to mobilize urgent global action: **Double the share of renewable energy in the global energy mix by 2030.**
- The International Renewable Energy Agency (IRENA) is the renewable energy hub of the SE4ALL initiative and supports SE4ALL partners, and thus can be a strategic partner.
- ***A doubling of the share of renewables worldwide does not mean a doubling in every country. (IRENA)***

# Background of RE Doubling Goal



## EWG 47 Summary: RE Doubling Goal

- The United States presented the proposed APEC aspirational **goal of doubling renewable energy by 2030**.
- **The EWG expressed broad support for the goal**, but noted that the goal is a collective target and requires refinements in the definition. **The EWG will revisit the goal every five years up to 2035**.
- The Lead Shepherd suggested development of a band of cost ranges for renewable energies to assess cost-competitiveness and track progress towards commercialization.
- The goal would need to work with other international agencies to make sure that APEC's viewpoints are expressed in the coming coordination of statistical definitions among international agencies such as IEA and IRENA.

Source: EWG 47 Summary (May 19-22, 2014 in Kuming, China)

# Background of RE Doubling Goal



## EMM 11 Declaration (Sep 2-3, 2014 in Beijing, China)

- Energy Ministers aspired to the goal of “doubling the share of renewables in the APEC energy mix, including in power generation, from 2010 levels by 2030.” To attain this target, member economies will enhance cooperation, promote innovation in renewable energy technologies, so as to reduce costs and improve the competitiveness and sustainability of renewable energy in the energy market.
- Energy Ministers instructed 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.

# Background of RE Doubling Goal



## 2014 APEC Leaders' Declaration

(Nov 10-11, 2014 in Beijing, China)

We endorse the Energy Ministers' aspirational **goal to double the share of renewables including in power generation by 2030 in APEC's energy mix.**



# Background of RE Doubling Goal



## EGNRET 40 Summary (April 2-5, 2013 in Ha Noi, Viet Nam)

### Further Action for RE in APEC

- EGNRET suggests APERC and EGEDA consider to propose an APEC funded project to establish a **common definition of different types of renewable energy** incorporating with current classification of renewable energies developed by EGEDA, IRENA, and IEA.
- EGNRET also suggests KSP may be a platform for uploading member economies' renewable energy data as a reference for further policy making of renewable energy in APEC region.

# RE Doubling Discussion in EGNRET 43



## ■ EGNRET 43: Nov 10-14 , 2014 in Chiang Mai, Thailand

- **Discussion on Role of EGNRET Toward the Doubling Renewable Energy Goal in APEC Region**
- **Major concern points from this discussion**
  - 1) Definition (especially for traditional biomass and large hydro)
  - 2) Monitor system and report mechanism
  - 3) Exchange or share of best practices
  - 4) Financial mechanism
  - 5) Cooperation with EGEDA, EGEE&C, APERC
  - 6) Communicate with IRENA, ASEAN, IEA
  - 7) Priority field or topic for new proposal
  - 8) Regular review and modify for the RE doubling goal
  - 9) TPES or TFEC for the RE share calculation

## Summary of the Discussion

1. EGNRET members exchanged the view on the definition of different renewable energy especial for **traditional biomass** and **large hydro**. EGNRET understands that each Economy has the different environmental situation, and concerns about the employment of different type of renewable energy. It is a little difficulty to use the same definition to cover all the APEC Region.
2. EGNRET members discussed about the **denominator in RE share calculation**. EGNRET understands that either **Total Primary Energy Supply (TPES)** or **Total Final Energy Consumption (TFEC)** is possible for the calculation. This will depend on what is our major concern in the promotion of renewable energy.

# RE Doubling Discussion in EGNRET 43



3. EGNRET will **expand the experience exchange or share of best practices** for each economy to access the enough technology to further promote the renewable energy.
4. More financial mechanisms are needed to be developed or provide for the private sector to make the contribution for the employment of RE.
5. The **monitor system and report mechanism** will be needed in the future.
6. EGNRET will continue work with **EGEDA, EGEE&C, and APERC** in the APEC Region.
7. EGNRET will also try to communicate with **IRENA, IEA, and ASEAN** to get the most useful information for push forward the doubling goal.

# RE Doubling Discussion in EGNRET 43

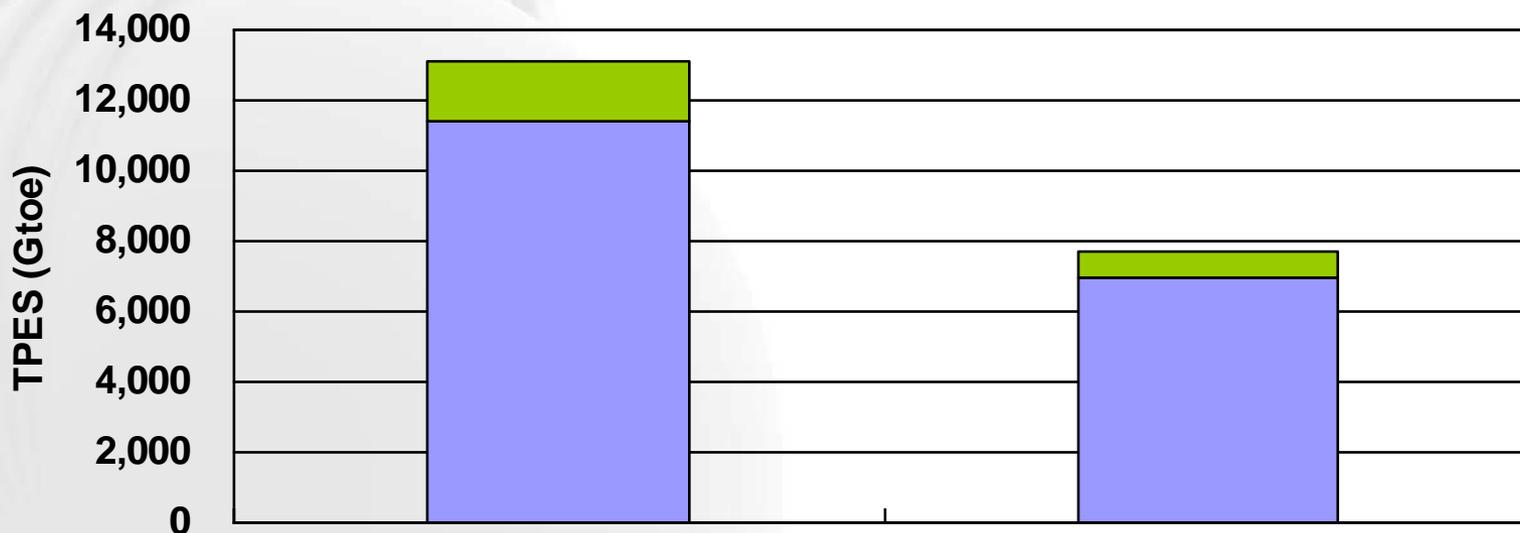


8. EGNRET will continue to discuss and look into the priority of different technology and/or strategy is required for all APEC Region or each Economy.
9. EGNRET also encourages each economy to submit the proposal based on the identified priority in order to remove the barrier and speed up the employment of renewable energy.
10. EGNRET understands the regular reviewing of this double goal is needed in order to make the necessary revise for the new technology development or variation of the environment.

# Renewable Energy in APEC (2011)



## Total Primary Energy Supply (TPES)

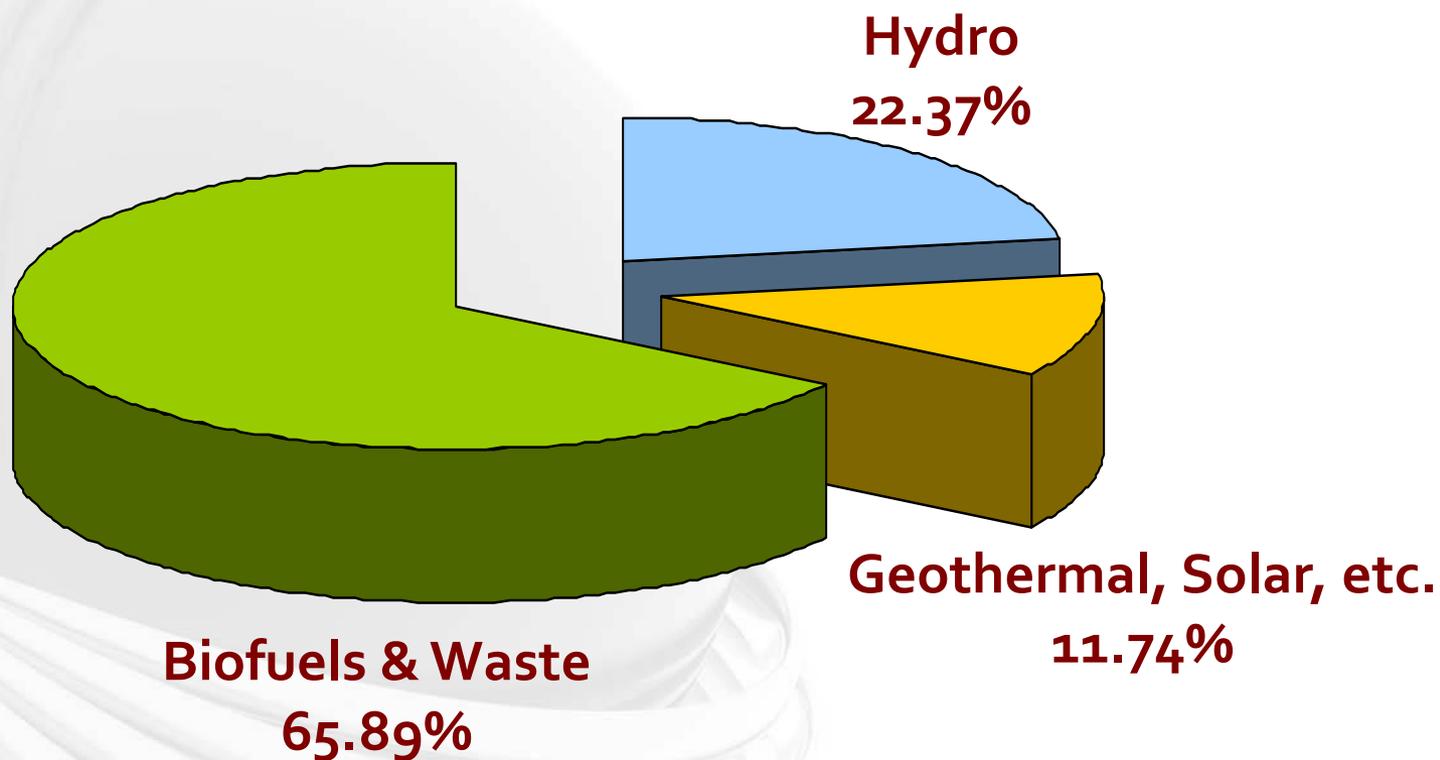


	World	APEC
Renewables	1,739.33 (13.26%)	708.33 (9.23%)
Total	13,113.38 Gtoe	7,671.51 Gtoe

Data source: IEA (2013)

# Renewable Energy in APEC (2011)

## APEC Renewable Energy in TPES

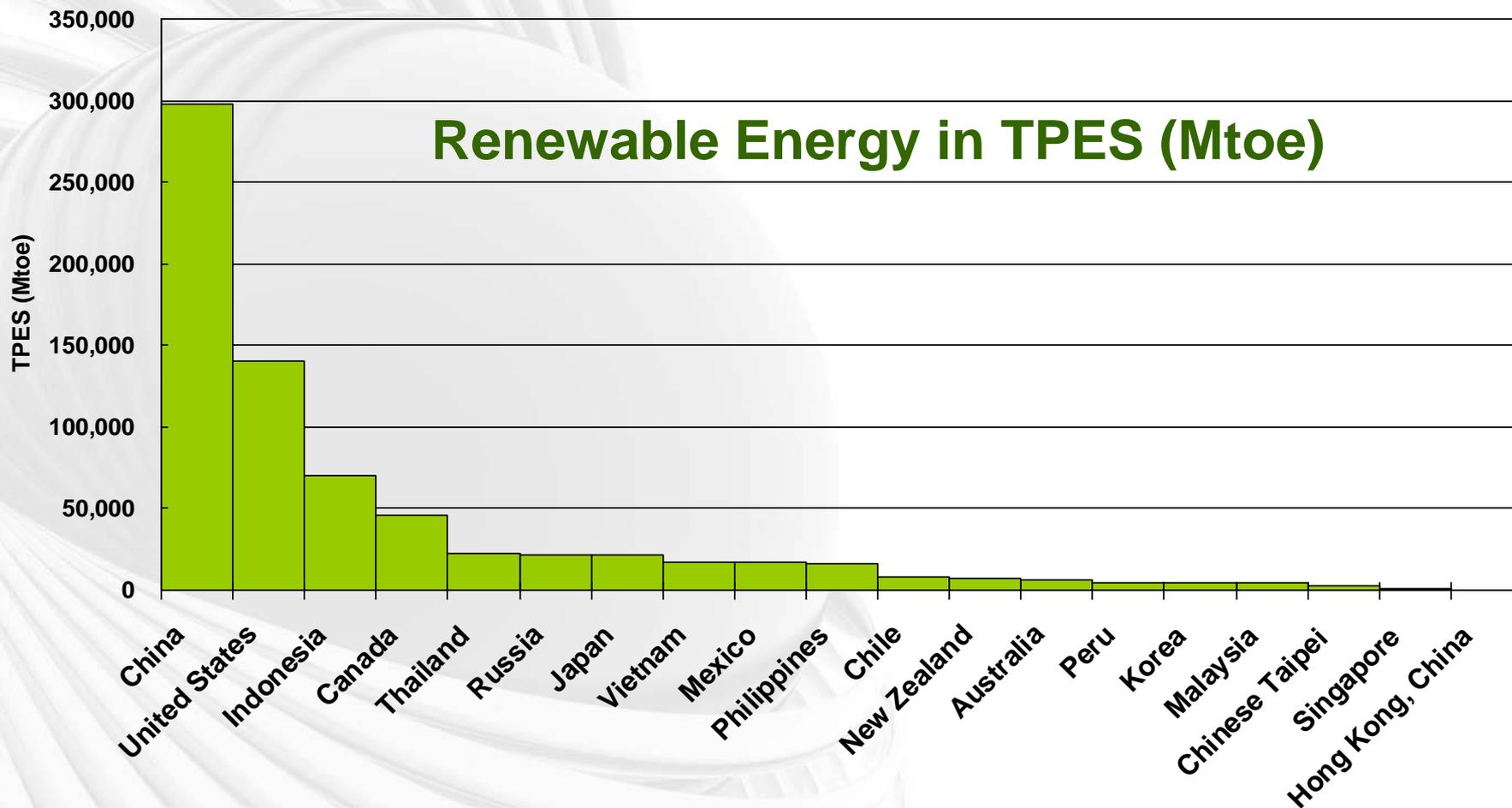


Data source: IEA (2013)

# Renewable Energy in APEC (2011)

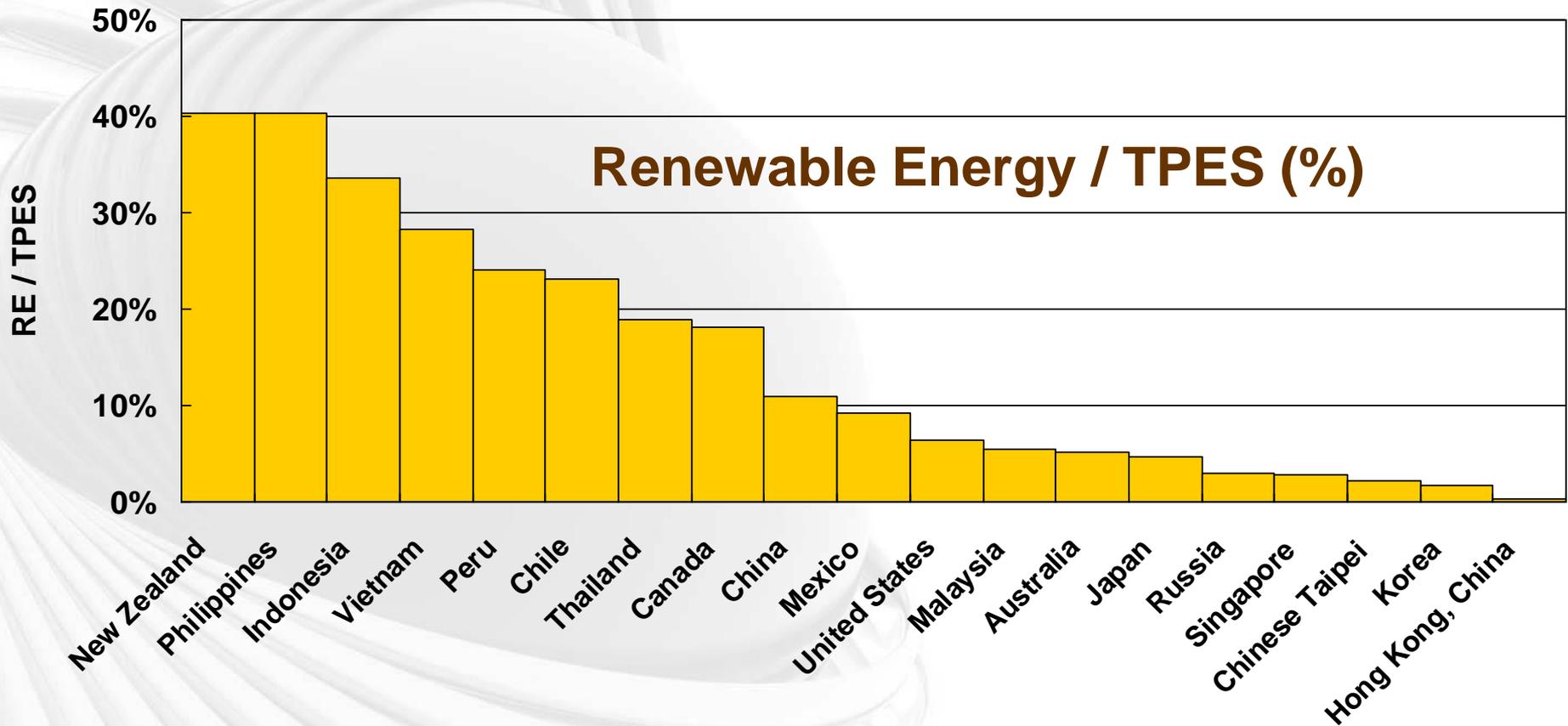


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Data source: IEA (2013)

# Renewable Energy in APEC (2011)



Data source: IEA (2013)

# Current FIT and RPS in Selected APEC Economies (2012)



Economy	FIT	RPS	Economy	FIT	RPS
Australia	•		Malaysia	•	•
Canada	•	•	Peru	•	
Chile		•	Philippines	•	•
China	•	•	Chinese Taipei	•	
Indonesia	•	•	Thailand	•	
Japan	•		United States	•	•
Korea		•			

**FIT: Feed-in Tariff**

**RPS: Renewable Portfolio Standards**

## Proposed APEC-IRENA Work Plan by USA

1. Planning for the global energy transition
2. Gateway to knowledge on renewable energy
3. Enabling investment and growth
4. Renewable energy access for sustainable livelihoods
5. Islands: lighthouses for renewable energy deployment
6. Regional action agenda

## Proposed APEC-IRENA Work Plan by USA

1. Planning for the global energy transition
2. Gateway to knowledge on renewable energy
3. Enabling investment and growth
4. Renewable energy access for sustainable livelihoods
5. Islands: lighthouses for renewable energy deployment
6. Regional action agenda

# Proposed APEC-IRENA Work Plan - 1



## 1. Planning for the global energy transition

<i>Objective</i>	<i>Impact</i>	<i>Component</i>
<i>Mainstreaming renewable energy options and strategies in energy plans</i>	<i>Established platform for cooperation and concerted action by stakeholders to accelerate deployment of renewable energy</i>	<i>SE4ALL Renewables Hub</i>
	<i>Comprehensive and acknowledged roadmap on options and action for doubling the share of renewable energy by 2030</i>	<i>REMAP2030</i>
	<i>Analytical and empirical framework for informed cross-sectoral policy and decision-making in resource-constrained environments</i>	<i>Water, Energy and Land Nexus</i>
	<i>Countries equipped with knowledge and expertise to implement an enabling policy framework to upscale renewable energy deployment</i>	<i>RRA and Advisory Services</i>

### Possible APEC-IRENA Activities

<b>Component</b>	<b>Proposed Activity</b>
REmap 2030 for APEC Region	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
Energy-water nexus project: phase 2	Collaborate on next phase of APEC energy-water nexus work through analytical study, identify best policy practices for policymakers on integrating RE using case studies and/or sector-level analysis Hold workshop to discuss results of study; invite IOs doing similar energy-water nexus work (e.g., CEM, ASEAN, Smart Villages Initiative, World Bank, ADB?)
RE Grid Integration	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
APEC Renewable Readiness Assessment	Conduct high-level Renewable Readiness Assessment (RRA) for APEC region based on REMap regional report

# Proposed APEC-IRENA Work Plan - 2



## 2. Gateway to knowledge on renewable energy

<i>Objective</i>	<i>Impact</i>	<i>Component</i>
<i>Renewable energy knowledge accessible</i>	<i>Solid foundations established for the most complete, up-to-date and freely accessible global renewable energy statistics database with high quality</i>	<i>Renewables Statistics</i>
	<i>Enhanced global awareness of renewable resource potentials and policy-makers enabled to make informed planning decisions</i>	<i>The Global Atlas</i>
	<i>Global reference repository of renewable energy policies, regulations and best practice</i>	<i>RE Policy and Best Practice</i>
	<i>Authoritative and comprehensive information and analysis of the true cost competitiveness of renewables globally to help shape national and global</i>	<i>Renewables: The True Costs</i>

### Possible APEC-IRENA Activities

<b>Component</b>	<b>Proposed Activity</b>
Renewables statistics for APEC region	Prepare report on most up-to-date RE statistics for Asia-Pacific region, including resource mapping for RE
	Provide training on RE statistical analysis
Renewables: true costs	Building upon recent IRENA studies, analyze RE costs, band of cost ranges, assess RE competitiveness in APEC region
	Hold workshop/webinars on findings
RE policy and best practices	Drawing upon IRENA databases, develop database on RE policies, regulations and best practices for Asia-Pacific region; brief to policymakers in region
Global Atlas report on APEC region	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



# Proposed APEC-IRENA Work Plan - 3

## 3. Enabling investment and growth

<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>Contribution to the global debate and increased awareness of policy options in a dynamic energy market</i>	<i>Policy assessment</i>
	<i>Enhanced global knowledge of policy options for opening energy markets to renewable energy investment</i>	<i>Regional Market Analysis</i>
	<i>Increasing investment in renewable energy by developing guidelines and approaches to optimal energy pricing frameworks and reforms required in current policies</i>	<i>Energy Pricing</i>
	<i>Enhanced understanding of risks and innovative mitigation options and tools to develop bankable projects to facilitate renewable energy investment</i>	<i>RE Finance</i>

### Possible APEC-IRENA Activities

<b>Component</b>	<b>Proposed Activity</b>
Regional Market Analysis	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
Policy Assessment	As part of above assessment, 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

# Proposed APEC-IRENA Work Plan - 4



Energy Pricing	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
RE finance	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 WB and other finance orgs
	Conduct capacity building training for entrepreneurs to develop viable projects to attract project financing

## 4. Renewable energy access for sustainable livelihoods

<i>Objective</i>	<i>Impact</i>	<i>Component</i>
<i>Contributing to sustainable livelihoods through access to renewable energy</i>	<i>Enabling conditions for renewable energy-based mini-grid deployment to shift the paradigm for universal energy access</i>	<i>Mini-grids</i>
	<i>Accelerated deployment of off-grid renewable energy solutions in isolated communities and urban areas</i>	<i>Off-grid for Niche Applications</i>
	<i>Increased renewable energy deployment through greater financial and technical assistance to SMEs</i>	<i>Capacity Building for Entrepreneurs</i>

## Possible APEC-IRENA Activities

<b>Component</b>	<b>Proposed Activity</b>
Mini-Grids/Off-grids	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



# Proposed APEC-IRENA Work Plan - 5

Capacity Building for Entrepreneurs	Conduct capacity building for entrepreneurs/SMEs, train on financing RE projects; support business incubation centers
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## 5. Islands: lighthouses for renewable energy deployment:

<i>Objective</i>	<i>Impact</i>	<i>Component</i>
<i>Island energy systems transformed through renewable energy</i>	<i>Improved knowledge of solutions and conditions for investment in renewable energy applications on islands</i>	<i>GREIN</i>
	<i>Strengthened partnerships to advance renewable energy deployment in SIDS</i>	<i>Partnerships in SIDS</i>
	<i>Improved capacities to meet national renewable energy targets and attract investments in SIDS</i>	<i>Building Capacity in Islands</i>

### Possible APEC-IRENA Activities

<b>Component</b>	<b>Proposed Activity</b>
RE grid integration/ Mini/off-grids solutions	Hold capacity building workshops/webinars on RE grid integration; mini-grids /off-grid solutions for islands
	Waste-to-energy workshop? (note a new EWG project submitted by China on this topic)



# Proposed APEC-IRENA Work Plan - 6

## 6. Regional action agenda

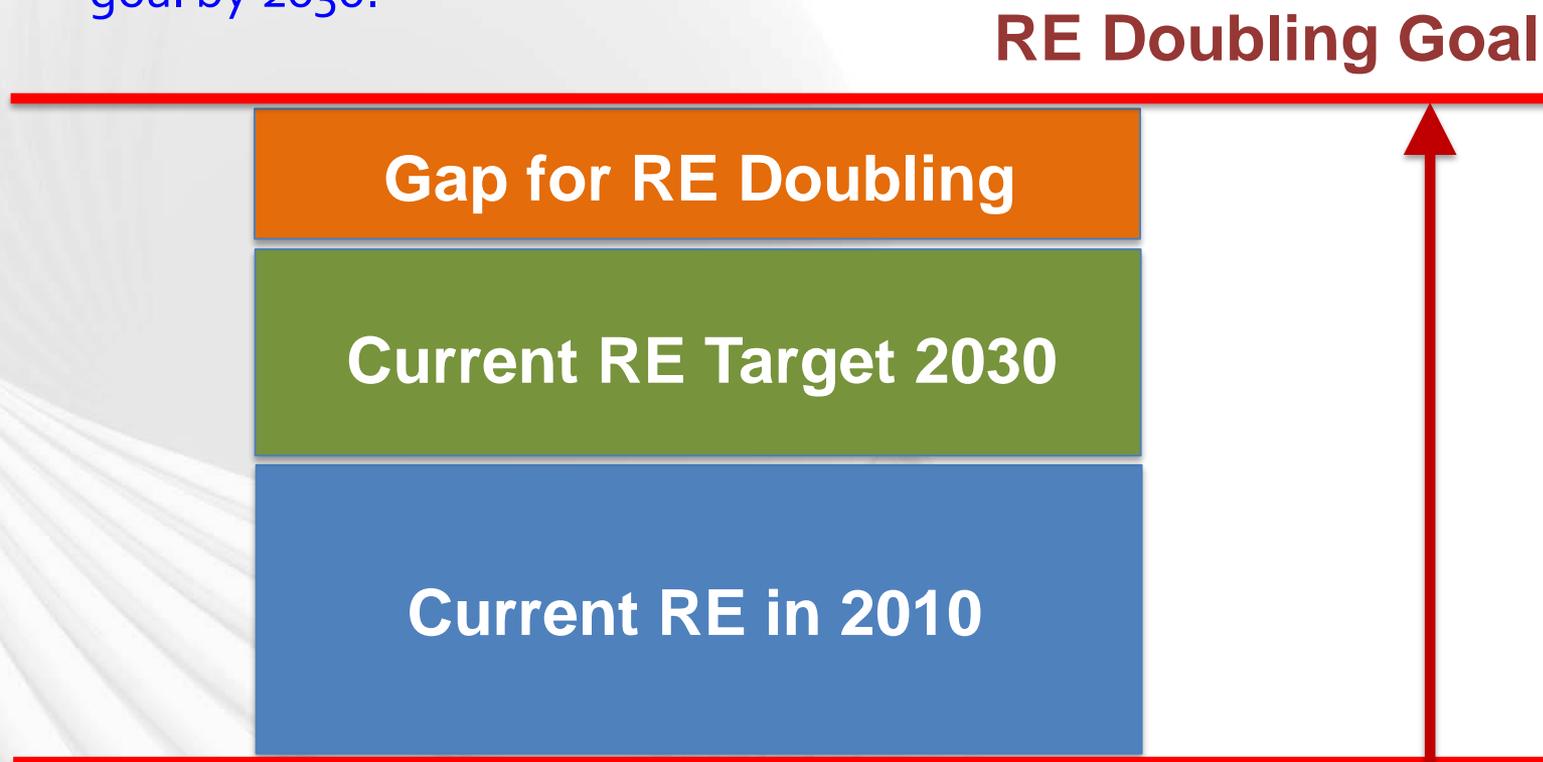
<i>Objective</i>	<i>Impact</i>	<i>Component</i>
<i>Regional integration with increased shares of renewables to meet energy needs</i>	<i>Effective regional frameworks of cooperation to increase the share of renewables in power grids</i>	<i>Emerging Regional Clean Energy Corridors</i>
<b>Possible APEC-IRENA Activities</b>		
<b>Component</b>	<b>Proposed Activity</b>	
Regional Clean Energy Corridors	Conduct regional workshop together with ASEAN on RE grid integration including all regional stakeholders	

### Filling the Gap to Reach the RE Doubling Goal

- 1) An **initiative** would be proposed to develop a **roadmap** toward the doubling RE goal, collaborated with IRENA and other APEC sub-groups.
  - The strategy could be planned as the former EGNRET's **APEC 21st Century Renewable Energy Development Initiative developed in 2000.**

### Filling the Gap to Reach the RE Doubling Goal

- 2) The projects related to “Fill the Gap to Reach the RE Doubling Goal” should be proposed for preparing the **roadmap** toward RE doubling goal by 2030.



# Filling the Gap to Reach the RE Doubling Goal

## 3) Others

- The monitor system and report mechanism will be also needed in the future.
- EGNRET will expand the experience exchange or share of best practices for each economy to access the enough technology to further promote the renewable energy.
- More financial mechanism is also needed to develop and provided for private sectors to make the contribution for the renewable energy employment.

# Definition of Renewable Energy



Asia-Pacific  
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## Energy in New and Renewable Questionnaire

Fuel Wood & Wood Waste	Hydro
Bagasse	Geothermal
Charcoal	Electricity
Other Biomass	Heat
Biogas	Solar
Industrial Waste	Photovoltaic
Municipal Solid Waste	Thermal
Liquid Biofuels	Electricity
Biogasoline	Heat
Bioethanol	Tide, Wave and Ocean
Bio-jet	Wind
Biodiesels	

Source: EGEDA (2015)

# Definition of Renewable Energy

□ To Capture more accurate & detailed information for NRE

□ To Harmonize with International Statistical Activities (IRENA, IEA, UN, etc.)

IRES	IEA	IRENA	APEC	APEC (draft proposal)
Geothermal heat	Geothermal energy (for heat)	Geothermal Energy (for heat)	<b>Geothermal Heat</b>	<b>Geothermal Heat</b>
Heat from concentrating solar thermal	Solar thermal	Solar Thermal (for heat)	<b>Solar Thermal Heat</b>	<b>Solar Thermal Heat</b>
	Solar thermal electricity	Solar Thermal for Electricity Generation	<b>Solar (Thermal Electricity)</b>	<b>Solar (Thermal Electricity)</b>
Municipal waste (renewable)	Municipal Waste - Renewable	Renewable Municipal Waste	<b>Municipal Solid Waste</b>	Municipal Waste - Renewable
Municipal waste (non-renewable)	Municipal waste (non-renewable)	other (non-renewable)		Municipal waste (non-renewable)
Wood pellets	Solid biofuels excluding charcoal	Wood and straw pellets/briquettes	<b>FireWood &amp; Wood waste</b>	Wood and straw pellets/briquettes
Other Fuelwood, wood residues and by-products		Fuelwood		Fuelwood
Other vegetal material and residues		Wood waste		Wood waste
		Rice husks	Rice husks	<b>Other Biomass</b>
	Straw		Straw	
Other vegetal and agricultural waste	Other vegetal and agricultural waste			
Other primary solid biomass	Other primary solid biomass			
Animal waste				
Black liquor		Black liquor		Black liquor
Bagasse		Bagasse	<b>Bagasse</b>	<b>Bagasse</b>
Charcoal	Charcoal	Charcoal	<b>Charcoal</b>	<b>Charcoal</b>

IRES: International Recommendations for Energy Statistics (United Nations Statistics Division)

Source: EGEDA (2015)

# Definition of Renewable Energy



Asia-Pacific  
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IRES	IEA	IRENA	APEC	APEC (draft proposal)
Landfill gas	Biogases	Landfill gas	<b>Biogas</b>	Landfill gas
Sew age sludge gas		Sew age sludge gas		Sew age sludge gas
Other biogases from anaerobic fermentation		Other biogases from anaerobic fermentation		Other biogases from anaerobic fermentation
Biogases from thermal processes		Biogases from thermal processes		Biogases from thermal processes
Biogasoline	Biogasoline	Conventional bioethanol	<b>Biogasoline</b>	<b>Biogasoline</b>
	Bioethanol	Advanced bioethanol	<b>Bioethanol</b>	<b>Bioethanol</b>
Biodiesels	Biodiesels	Advanced biodiesel	<b>Biodiesels</b>	<b>Biodiesels</b>
		Conventional biodiesel		
Bio jet kerosene	Bio jet kerosenes		<b>Bio jet kerosenes</b>	<b>Bio jet kerosenes</b>
Other liquid biofuels	Other liquid biofuels	Vegetable oil	<b>Liquid biofuels</b>	<b>Liquid biofuels</b>
Hydro electricity	Hydro	Hydro	<b>Hydro</b>	Hydro
	Hydro-1 MW	Hydro-1 MW		Hydro-1 MW
	Hydro 1-10 MW	Hydro 1-10 MW		Hydro 1-10 MW
	Hydro 10+ MW	Hydro 10+ MW		Hydro 10+ MW
	Pumped hydro	Pumped Hydro		Pumped Hydro

Source: EGEDA (2015)

# Definition of Renewable Energy



Asia-Pacific  
Economic Cooperation

IRES	IEA	IRENA	APEC	APEC (draft proposal)
Electricity from Geothermal	Geothermal (electricity)	Geothermal (electricity)	<b>Geothermal Electricity</b>	<b>Geothermal Electricity</b>
Electricity from solar photovoltaics	Solar photovoltaic	Solar Photovoltaic	<b>Solar (Photovoltaic)</b>	<b>Solar (Photovoltaic)</b>
Tidal electricity	Tide, Wave & Ocean	Tide, Wave & Ocean	<b>Tide, Wave &amp; Ocean</b>	<b>Tide, Wave &amp; Ocean</b>
Wave electricity				
Other marine electricity				
Wind electricity	Wind	Onshore Wind	<b>Wind</b>	Onshore Wind
		Offshore Wind		Offshore Wind
Industrial Waste (non-renewable)	Industrial waste (non-renewable)		<b>Industrial Waste</b>	<b>Industrial Waste</b>

Source: EGEDA (2015)

# TRADITIONAL BIOMASS ENERGY



Solid biomass including fuel wood, charcoal, agricultural and forest residues, and animal dung, that is typically used in rural areas of developing countries with traditional technologies such as **open fires** for cooking, kilns, and ovens for small-scale agricultural and industrial processing. Often the use of traditional biomass leads to high pollution levels, forest degradation, and deforestation.

Source: REN21 (2015)

# Concluding Remarks



- 1) EGNRET will continue work with EGEDA, EGEE&C, PPSTI, and APERC and APSEC in the APEC Region.
- 2) EGNRET will try to communicate with IRENA, IEA, and ASEAN to obtain the most useful information for push forward the doubling goal.
- 3) EGNRET will continue to discuss and look into the priority of different technology and/or strategy is required for all APEC Region or each Economy.
- 4) EGNRET will encourage each economy to submit the proposal based on the identified priority in order to remove the barrier and speed up the deployment of renewable energy.

# Thank you for your attention

## *Push forward the RE Doubling Goal*

