Session I: Renewable energy drivers and opportunities

Regional Workshop on Overcoming Critical Bottlenecks to Accelerate Renewable Energy Deployment in ASEAN+6 Countries

June 15, 2016

Drivers for renewable energy deployment

Global drivers for renewable energy deployment

ENVIRONMENT
Climate change
Local pollution

HUMAN DEVELOPMENT
Poverty alleviation
Access

ENERGY SECURITY
Trade balance improvement
Risk reduction

ECONOMIC GROWTH
GDP
Industrial development
Jobs

What are the key drivers for renewable energy development in your country?

Renewable energy resources

IRENA Global Atlas

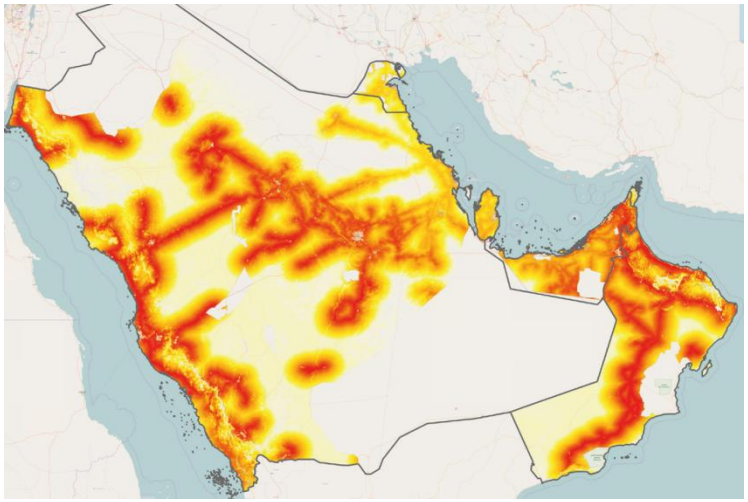
The Global Atlas facilitates access to renewable resource data, analysis and methods in order to accelerate the initiation and development of a broader range of renewable energy projects.

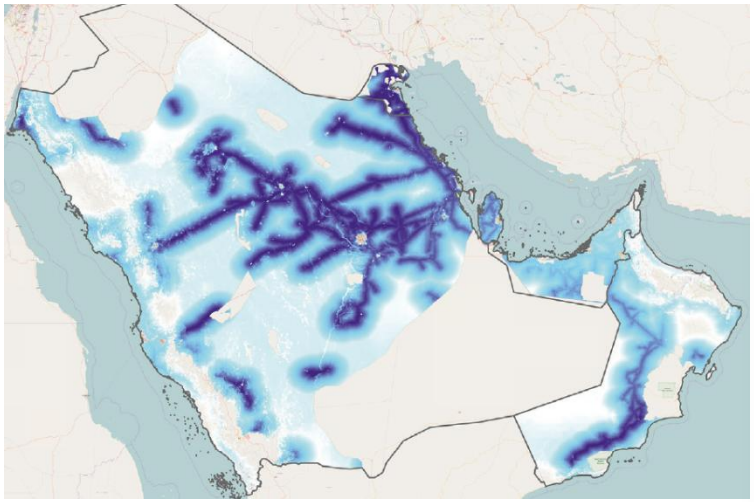
- Provide free resource data for all
- Shorten the project life cycle
- Optimize development and cut costs

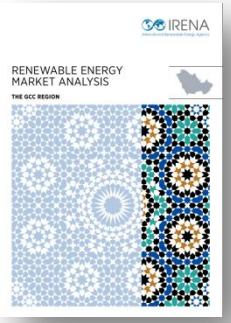
Suitability of renewable energy – Gulf Cooperation Council (GCC)

60% area has good suitability for PV
Developing just 1% yields **~ 470 GW**

56% area has good suitability for wind
Developing just 1% yields **~ 60 GW**



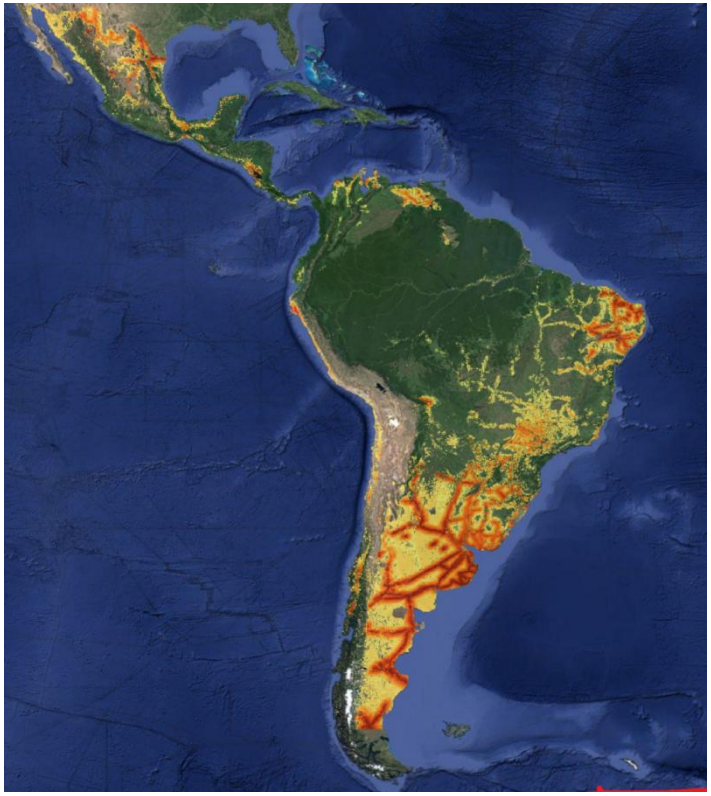




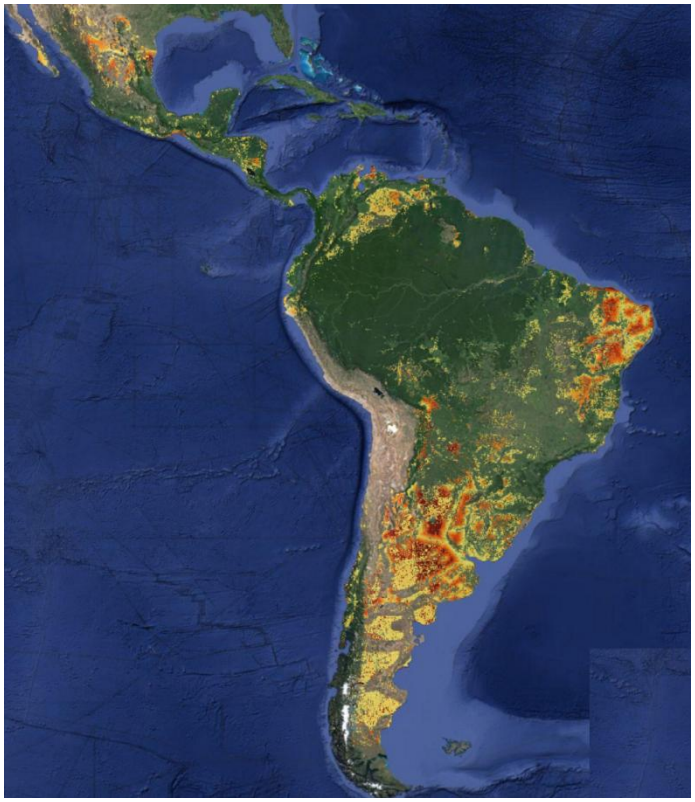
Source: IRENA's Renewable Energy Suitability Analysis methodology http://irena.masdar.ac.ae/?map=2146

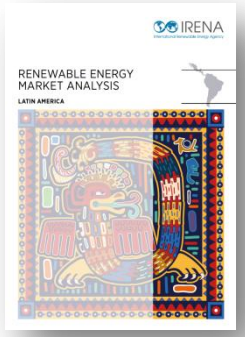
Suitability of renewable energy – Latin America

On-grid suitability analysis



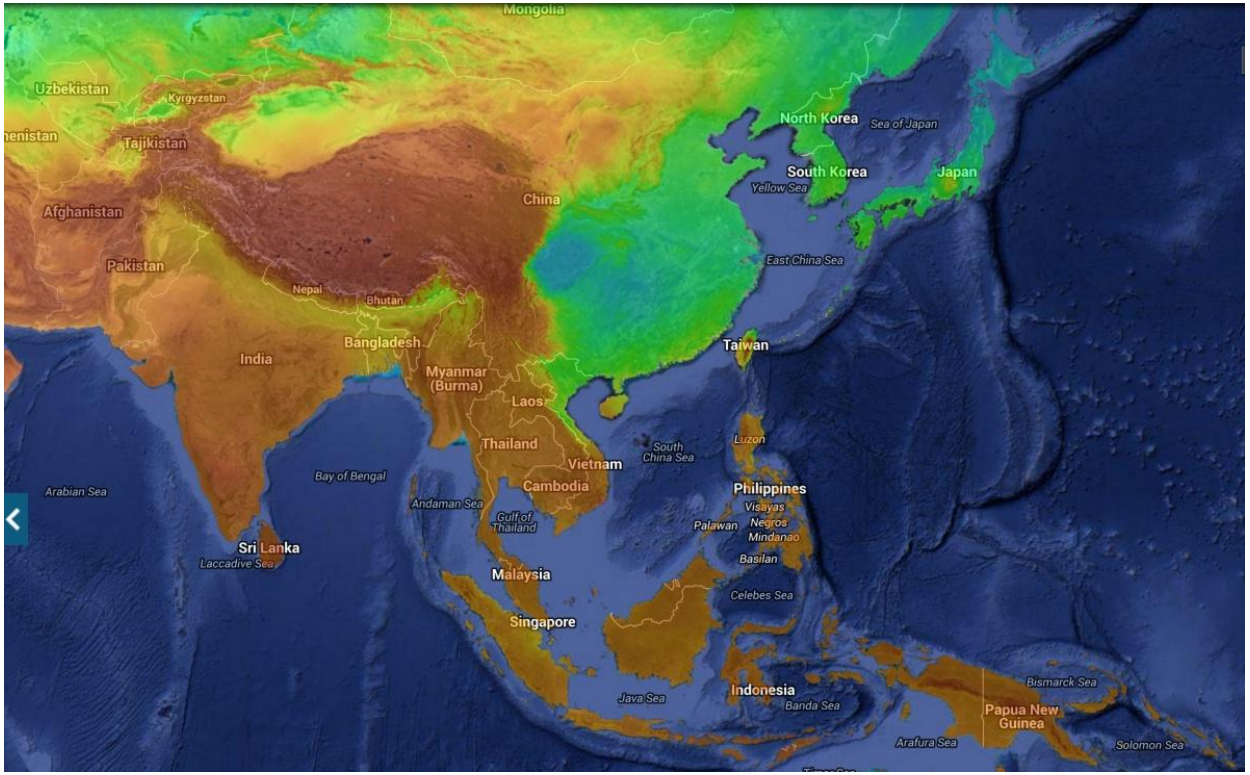
Off-grid suitability analysis





Source: IRENA's Renewable Energy Suitability Analysis methodology

Suitability of renewable energy – South-East Asia

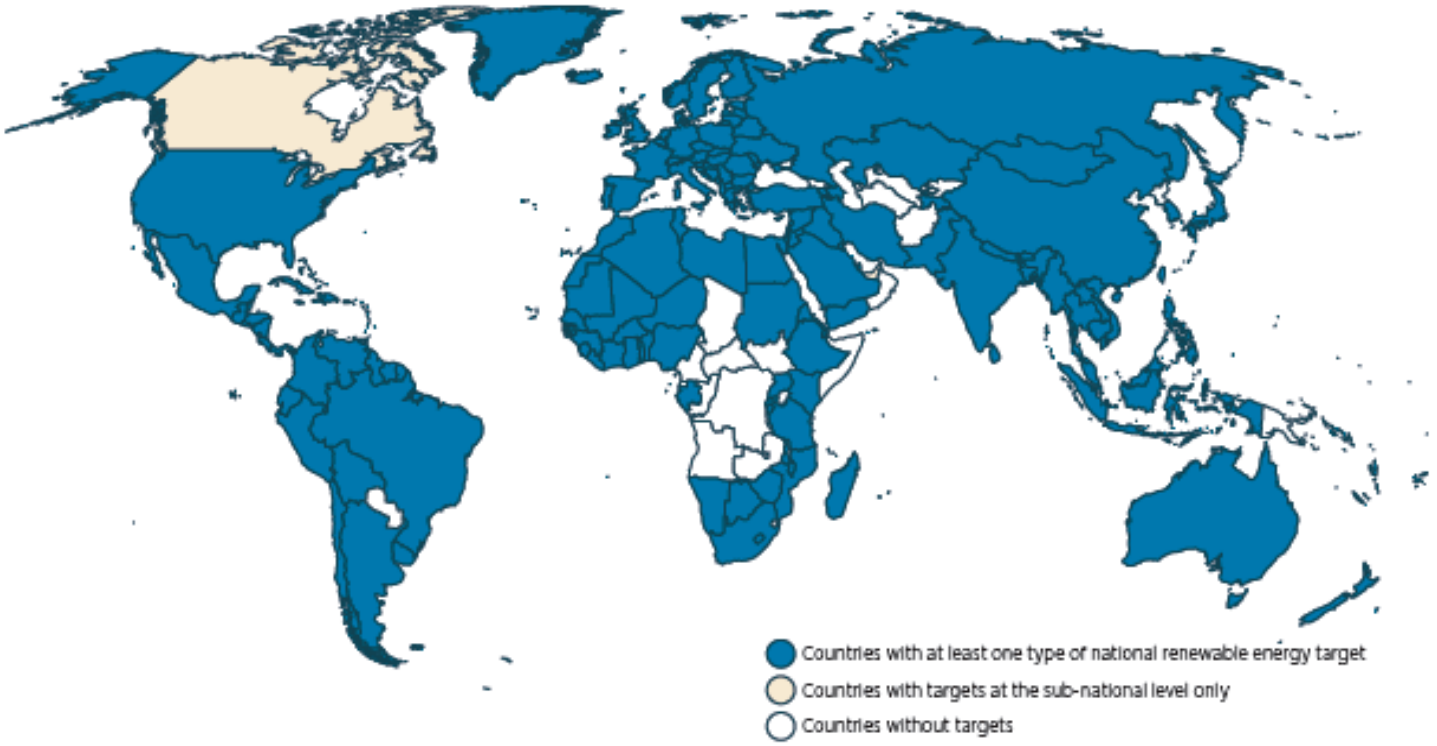


Source: IRENA's Global Atlas

Suitability maps will also be developed as part of the South-East Asia Regional Market Analysis

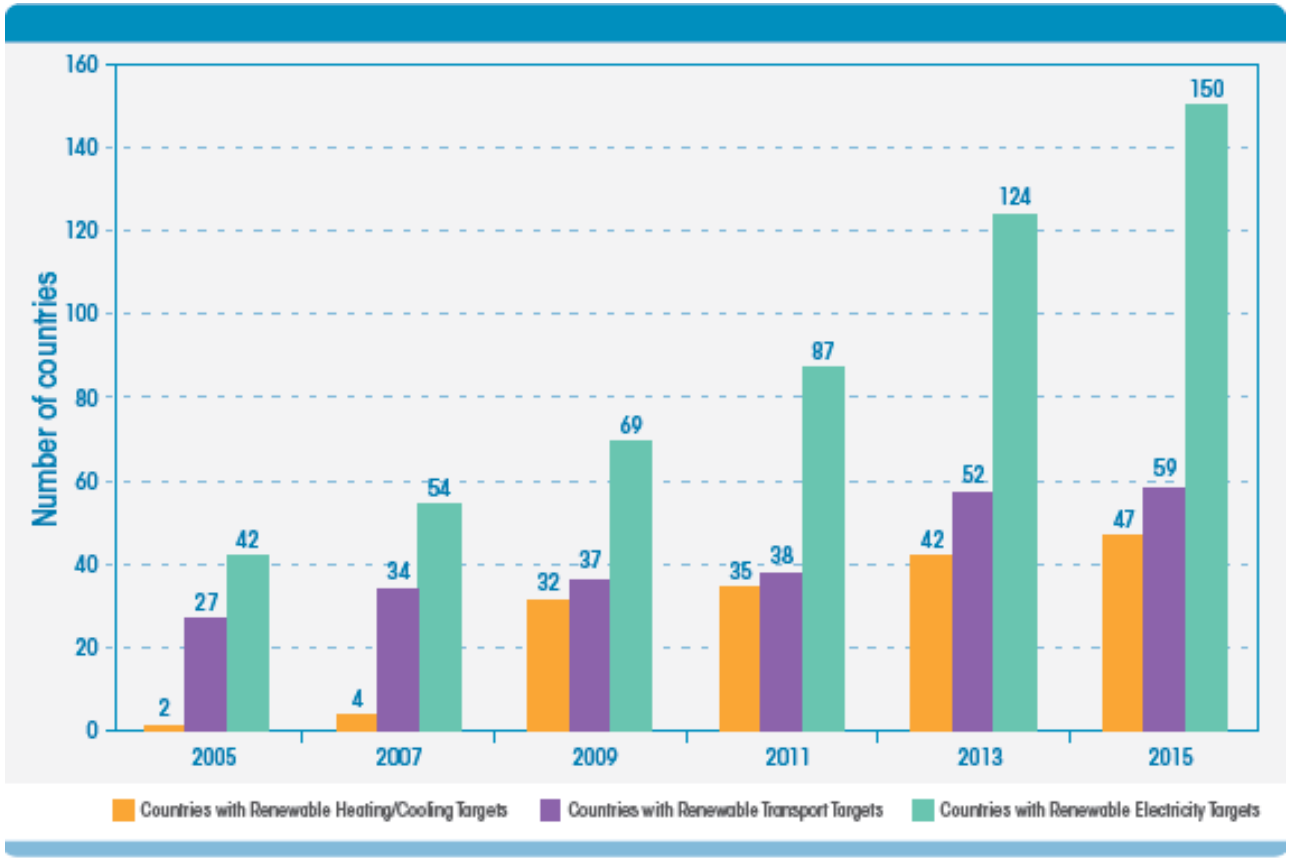
Renewable energy targets

Targets in the global renewable energy landscape – 2015



As of mid-2015, 164 countries have at least one type of RE target – including 131 targets in emerging and developing countries

Evolution of global RE targets by sector 2005-2015

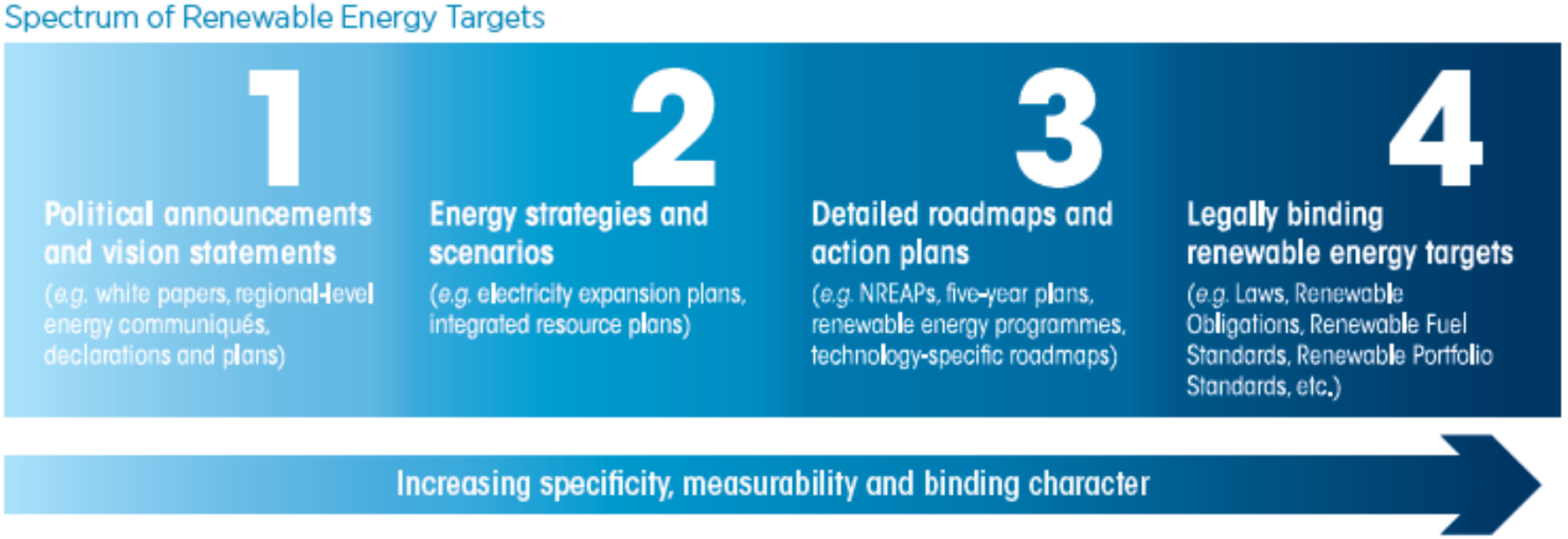


Source: IRENA based on REN21, 2005, 2007, 2009, 2011, 2013, 2014.

While renewable electricity targets are the most widespread type, heating/cooling and transport sector targets have increased significantly over the last decade

What are “renewable energy targets”?

The great diversity of renewable energy targets calls for definition and context



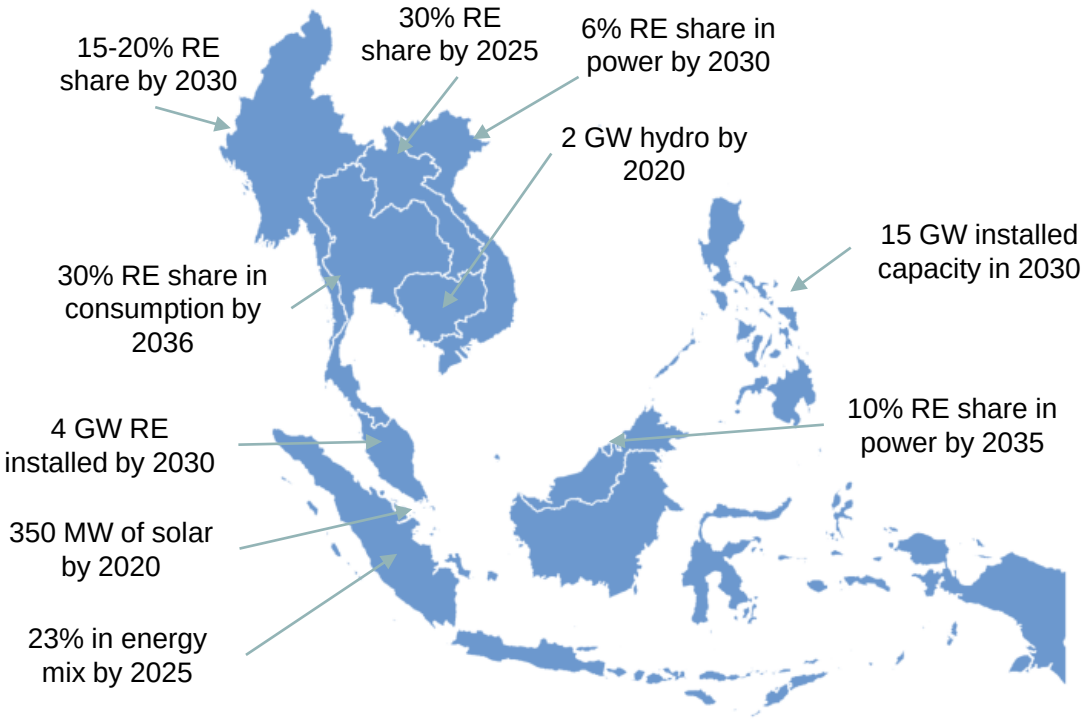
Renewable energy targets are numerical goals established by governments to achieve a specific amount of renewable energy production or consumption.

Key lessons for effective RE targets

- Effective targets are connected to high-level national priorities and backed by strong political commitment
- Stakeholder engagement strengthens ownership and feasibility of targets
- Targets ideally combine a long-term vision anchored in short-term concrete milestones to maintain momentum
- Metrics of renewable energy targets have important implications for implementation and monitoring
- Making targets mandatory matters – *Who* is obligated and *how* also matter
- Striking the right balance between ambition and realism is vital to the success of targets
- Targets alone are not enough. They need to be accompanied by a clear strategy and backed by specific policies and measures.

Renewable energy targets in ASEAN

- **All ASEAN countries have announced renewable energy targets**



Source of targets: ACE

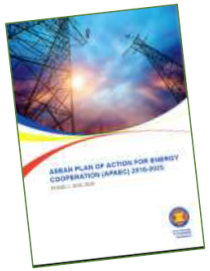
- **23% Share of Renewable Energy in the ASEAN Energy Mix by 2025, up from 9.1%**

ASEAN target

REGIONAL COMMITMENTS

One Community for Sustainable Energy

ASEAN Plan of Actions for Energy Cooperation (APAEC) 2016 - 2025



"Enhancing Energy Connectivity and Market Integration in ASEAN to Achieve Energy Security, Accessibility, Affordability and Sustainability for All"

23% Share of Renewable Energy in the ASEAN **Energy Mix (TPES)** by 2025

* Include large scale hydro

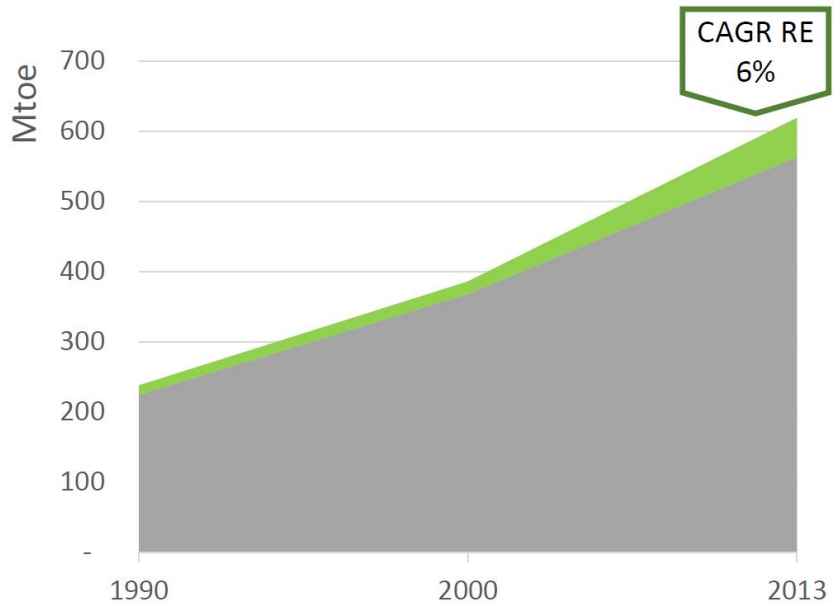
Seven Programme Areas

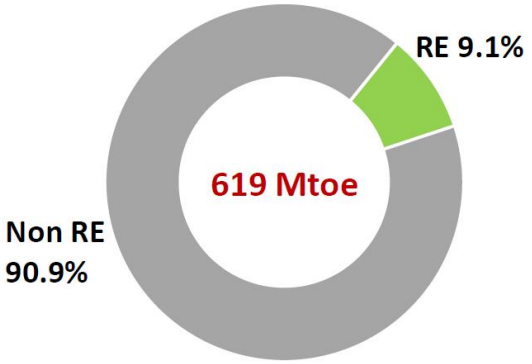
- ASEAN Power Grid
- Trans ASEAN Gas Pipeline
- Coal & Clean Coal Technology
- Energy Efficiency & Conservation
- Renewable Energy
- Regional Energy Policy & Planning
- Civilian Nuclear Energy

Where are we now?

WHERE ARE WE NOW? TPES

One Community for Sustainable Energy





Renewable Energy : **56 Mtoe**

32 % Hydropower | 19% Geothermal | 49% Others RE

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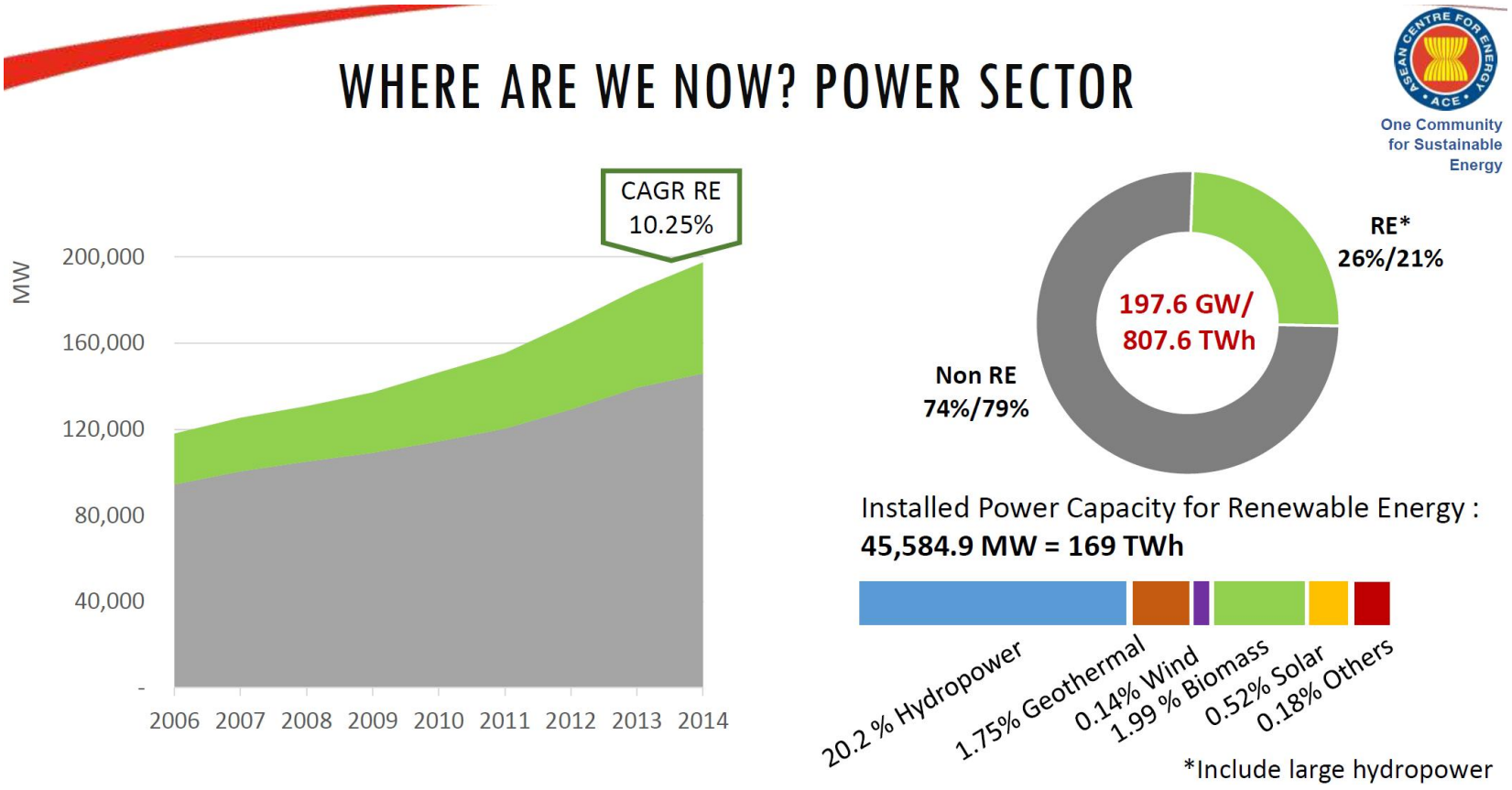
Sources : ACE Database, as of 2014.

Where are we now?



Main challenges

Market & Financial Mechanism Failure

- Price distortions from existing subsidies and unequal tax burdens between renewables and other energy sources;
- Lack of access to capital
  - High interest rate
  - Short-term loan
- Higher risks related to renewable energy projects and lower profitability prospects
- Failure of the market to value the public benefits of renewables, thus lack of incentive for RE development

Main challenges

RE Technological Development Constraint

- Renewable capital cost are relatively high, due to modules cost remain high for some Re technology;
- The intermittent nature of renewable energy sources poses significant challenges in integrating renewable-energy generation with existing electricity grids.
- Renewable electricity storage technologies, especially for solar and wind power remain a key challenge.

Main challenges

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Main challenges

Insufficient Capacity Building

- Insufficient capacity building- resulting low skill in renewable technology installation, operation, and maintenance;
- Some renewables need operating experience in regional climate conditions before performance can be optimized, i.e., the optimal spacing of wind turbines;
- Insufficient public education of a fully functioning renewable market, i.e., net-metering mechanism.
- Insufficient dissemination of renewable technology development, i.e., demonstration center.
- Even local electricity companies may be unfamiliar with renewables.

Main challenges

Supply of Biomass?

- Globally, 140 billion metric tons of biomass is generated every year from Agriculture;
- This volume of biomass is equivalent to approximately 50 billion tons of oil;
- However, there are some obstacles:
  - Availability of fuel in close proximity of biomass power plant
  - Transpiration, storing
  - Changes in fuel quality
  - Competition for biomass materials by other industries

Thank you