

# **Technical Expert Meeting on mitigation focusing on cross-cutting issues in urban environment and land use**

## **IRENA's involvement in climate change activities**

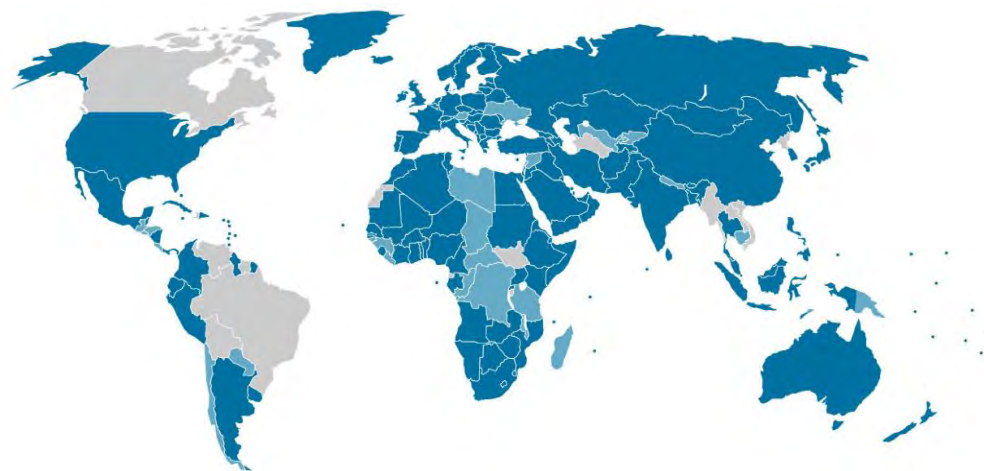
**Roland Roesch; IRENA Innovation and Technology Center**

# IRENA: Introduction & Overview

- Established in 2011
- Headquarters in Abu Dhabi, UAE
- IRENA Innovation and Technology Centre  
– Bonn, Germany
- Permanent Observer to the United Nations  
– New York



**Mandate: Assist countries  
to accelerate RE deployment**



 150 Members

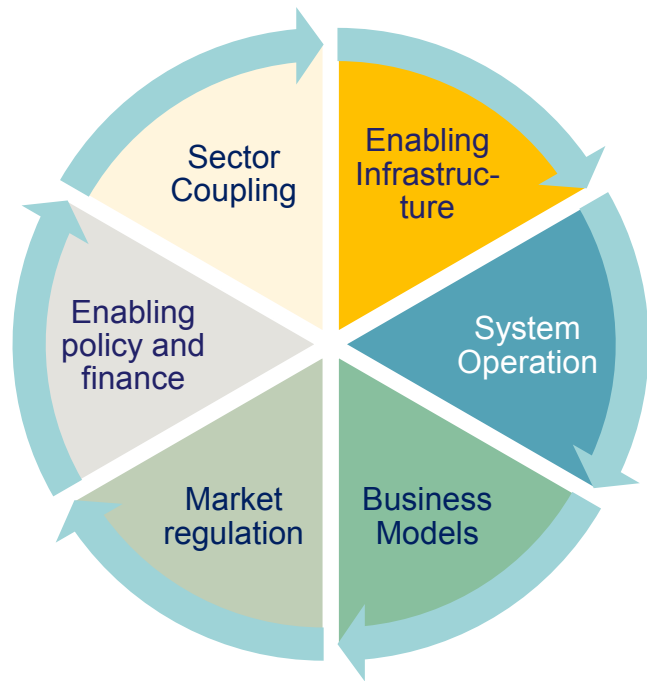
 30 States in Accession

# REmap – Roadmap for Renewable Energy future

- IRENA's **Global Renewable Energy Roadmap**
- Shows feasible, cost-effective ways to **increase renewable energy deployment** in world's energy mix by 2030 **in line with SDG7**
- **Support the G20** in determining pathways for operationalising Paris Agreement with decarbonisation scenarios analysis to 2050, report released in March 2017
- **REmap 3.0 report** coming in 2018
- Identifies concrete **technology options** for countries and sectors
- Assesses policy and investment **implications**
- Outlines **benefits** (economic, social, environmental)
- In cooperation with **70 countries**
- **30 publications to date and datasets**



# A different approach for climate change: Systemic innovation in renewable energy



- **IRENA Innovation Week**



- **Innovation Landscape Report**

- **Innovation Outlook Series**
- Forthcoming studies in Electric Vehicles & Thermal Storage



- **Technology Briefs:** Over 25 studies on RE technologies and its functionalities

# Support in countries to develop Quality Assurance to achieve optimal performance and mitigate environmental impact

- Engagement with countries in **workshops**



- **Studies** on QI for solar thermal, small wind, forthcoming  
QI for PV and grid connection codes



- Free **online platform** for Patents and Standards (INSPIRE) [www.irena.org/inspire](http://www.irena.org/inspire)



# Climate change action: Unlocking financing for RE projects

**RESOURCE**  
YOUR SOURCE FOR RENEWABLE ENERGY INFORMATION

Success stories  
Country profiles

**GlobalAtlas**  
FOR RENEWABLE ENERGY  
Site characterization



Assistance to  
financial closure  
and debt facility

Bankable project development  
guidelines



**IRENA ADFD**  
Supporting Energy Transition

Evaluate, technical assistance

**SUSTAINABLE  
ENERGY MARKETPLACE**

## The challenge of RET projects

- Failing to prove project bankability to funding institutions
- Insufficient knowledge on project proposal development
  - » Higher project development costs
  - » Higher risk of project failure

## Objectives

- Increase the bankability of projects by:
  - » Strengthening the project development base
  - » Enhancing the quality of project proposals
  - » Reducing costs and mitigating risks through proper planning and efficient use of funds
  - » Facilitating effective implementation



# Sustainable Energy Marketplace

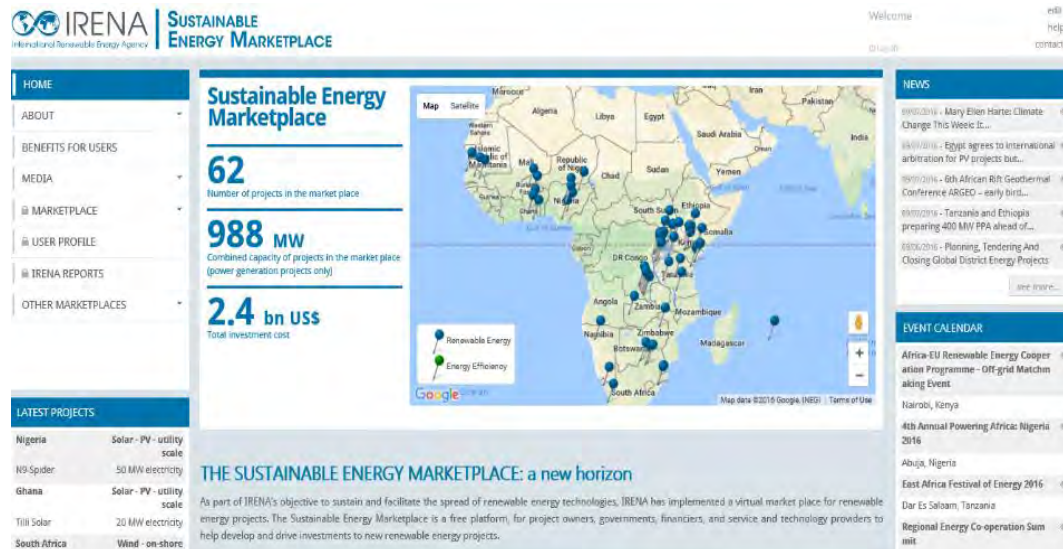
## Objective:

To scale up renewable energy and energy efficiency investments a virtual market place is created with the objective to support:

- initiation
- development
- financing of sustainable energy projects

## By:

- Improving the transparency of the market
- Offering relevant tools and databases for market players
- Supporting and facilitating projects in the development stage



**IRENA** | SUSTAINABLE ENERGY MARKETPLACE  
International Renewable Energy Agency

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OTHER MARKETPLACES

**Sustainable Energy Marketplace**

62  
Number of projects in the market place

988 MW  
Contained capacity of projects in the market place (power generation projects only)

2.4 bn US\$  
Total investment cost

Map | Satellite | Africa | Algeria | Libya | Egypt | Saudi Arabia | Yemen | Sudan | Chad | Republic of Niger | Mauritania | Mali | Burkina Faso | Nigeria | Ghana | Togo | Benin | Ivory Coast | Ghana | Ethiopia | South Africa | Mozambique | Zimbabwe | Botswana | Namibia | South Africa

Renewable Energy  
Energy Efficiency

Map data ©2016 Google, (NASA) | Terms of Use

**NEWS**

2016/06/16 - Mary Ellen Harte: Climate Change This Week: I...

2016/06/16 - Egitet agrees to international arbitration for PV projects but...

2016/06/16 - 6th African Rift Geothermal Conference ARGEO - early busi...

2016/06/16 - Tanzania and Ethiopia preparing 400 MW PPA ahead of...

2016/06/16 - Planning, Tendering And Closing Global District Energy Projects

[see more...](#)

**EVENT CALENDAR**

Africa-EU Renewable Energy Cooperation Programme - Off-grid Matchmaking Event

Nairobi, Kenya

4th Annual Powering Africa: Nigeria 2016

Abuja, Nigeria

East Africa Festival of Energy 2016

Dar Es Salaam, Tanzania

Regional Energy Co-operation Summit

**LATEST PROJECTS**

Nigeria	Solar - PV - utility scale
N3 Spider	50 MW electricity
Ghana	Solar - PV - utility scale
Till Solar	20 MW electricity
South Africa	Wind - on-shore

**THE SUSTAINABLE ENERGY MARKETPLACE: a new horizon**

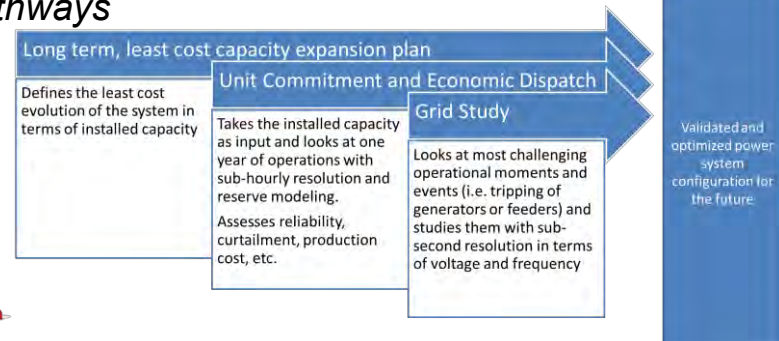
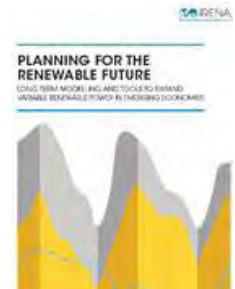
As part of IRENA's objective to sustain and facilitate the spread of renewable energy technologies, IRENA has implemented a virtual market place for renewable energy projects. The Sustainable Energy Marketplace is a free platform for project owners, governments, financiers, and service and technology providers to help develop and drive investments to new renewable energy projects.



# Planning for the energy transition- Power sector transformation

## Desired impact: Improved planning and knowledge for power sector transformation

- **Knowledge pathways to the power sector of the future:**
  - Enhance IRENA's PST knowledge framework – based on reports, case studies, and modelling tools – and apply it to guide countries along individual pathways to sector transformation
- **Flexibility toolkit for RE integration:**
  - Roll out storage evaluation framework; screen for country flexibility needs
- **Planning for the power system of the future: from capacity expansion to operations:**
  - Devise long-term planning concepts; production cost modeling to explore impacts on operation and reliability; perform technical support studies
- **The role of electric vehicles in the power sector transformation:**
  - Report and modeling work on EV role for VRE integration
- **Advisory service and workshops:**
  - Energy master planning and grid operation and expansion planning
  - Technical workshops to exchange best practices among planners and operators
  - Support corridor work (Africa, Central America, ASEAN)
  - Cost-benefit assessment of different EV deployment pathways



## Other Climate related work and publications

### **REthinking Energy: Renewable Energy and Climate Change (2015)**

- Released in November 2015, ahead of the 21st Conference of Parties (COP21) to the United Nations Framework Convention on Climate Change, held in Paris, France - looks at how the transition to renewables could help limit global warming

### **The True Cost of Fossil Fuels: Saving on the Externalities of Air Pollution and Climate Change (2016)**

- Quantifies air pollution and climate change externalities related to fossil fuels and the extent these can be reduced with higher uptake of renewables until 2030.

### **Climate and energy challenges for materials science (2015)**

### **Green House Gas impact of Bioenergy pathways (2016)**

- IRENA commissioned PBL Netherlands Environmental Assessment Agency to write a short technical background report on the greenhouse gas emission benefit and impacts of different bioenergy technology pathways - combining estimates of supply-chain emissions, direct and indirect land-use change emissions, and changes in carbon cycle dynamics, for various conventional and advanced bioenergy pathways.

### **Compendium on Green House Gas baselines and Monitoring: national-level mitigation actions**

# COMPENDIUM ON GREENHOUSE GAS BASELINES AND MONITORING

## NATIONAL-LEVEL MITIGATION ACTIONS



**United Nations**  
Framework Convention on  
Climate Change

**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (DFZ) GmbH



THINKING  
FOR  
TOMORROW



**IRENA**  
International Renewable Energy Agency



## Partners

- World Bank
- FAO
- UNDP
- IRENA
- WRI
- GIZ
- IEA
- Fundación Torcuato Di Tella
- Swedish Energy Agency



## IRENA's contribution to the compendium

- In the compendium IRENA included information about its REmap Programme which provides a tool and assessment methodology for assessing accelerating renewable energy uptake in countries
- The REmap Tool is an Excel-based accounting and analytical framework, which allows for the identification of renewable energy options in addition to existing energy plans up.
- In the REmap approach divides energy into supply sectors (power and district heat) and end-use consuming sectors (buildings/commercial, industry, transport),
- It assumes a technology options beyond a 'business as usual' scenario are considered for each sector, also allowing sector coupling.
- The analysis also includes calculations for carbon dioxide and air pollutant emissions, renewable energy capacity investments, and support needs for investment by technology, sector and country.
- The result is a perspective on technology choice for renewable energy, costs and benefits, which, when coupled with more expert-oriented longer-term energy planning or energy system models, can provide users with perspectives on renewable technology choice.

# Thank you!



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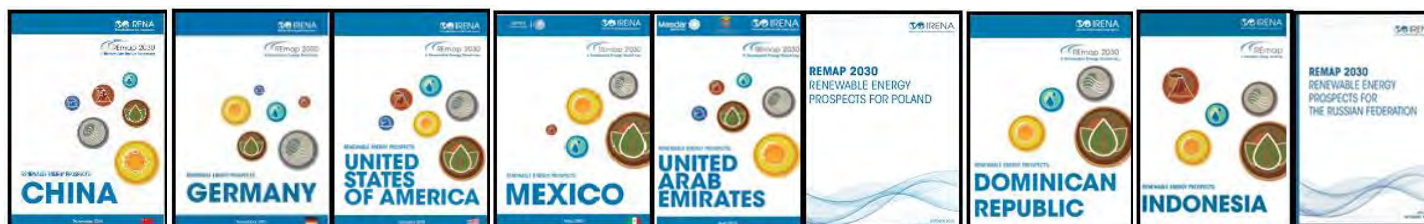
# REmap contributions to new RE policy making and climate change actions

- Applications for country and regional advice e.g. Africa (ACEC, AREI), ASEAN, EU, G20
  - Africa Renewable Energy Initiative: 2030 RE objective setting
  - European Commission: how to reach the 27% RE target and go beyond by 2030
  - ASEAN: how to realise the 25% RE target by 2025 (with ACE)
  - China: 13<sup>th</sup> Five Year Plan
  - US: NDC support
  - Mexico: RE objective setting
  - New reports for India, Indonesia, Russia, South Africa Q1 2017
- New features and advantages of the REmap tool
  - Recently expanded from 2030 to 2050
  - Low carbon solutions for all sectors
  - (RE + EE + CCS + Nuclear + non-energy use)
  - Covers all energy supply and demand on country level



To be released in 2017

- Priority is given to data quality: consistent with unique IRENA RE Statistics, Costing database, Technology Briefs & Outlooks, and energy data from 150 IRENA member countries



# Latest climate work – 2017 Decarbonisation study

Recently released report (*Perspectives for the energy transition: Investment needs for a low-carbon energy system*) with the support of **German G20 Presidency**

- Explore energy sector consequences of Paris Climate Agreement
- Expand and deploy established REmap and Econometric analysis methods and datasets from 2030 to 2050 to develop global scenarios
- Build on the G20 renewable energy toolkit and action plan



Two approaches - Bottom-up energy demand assessment tool and top down energy assessment considering Power and End use sectors for 2015, 2030, 2050.

- Development of a baseline (the “**Reference Case**” scenario) to 2050 based on national energy plans of the G20 countries; this provides a view of expected developments in energy demand and supply, and subsequently in greenhouse gas emissions to 2050.
- Development of a **decarbonisation scenario (the “REmap” Case)** that fulfils a carbon budget in line with the Paris Agreement to limit the global average surface temperature increase to below **2 degrees Celsius with a 66% probability**.
- Assessment of the additional potential (compared to the Reference Case) of low-carbon technologies, namely renewable energy, material and energy efficiency, and carbon capture and storage (CCS). Analysis of the cost, benefits and investment needs of the additional implementation of low carbon technologies required for the REmap Case.