

IRENA RE statistics

RE Statistics

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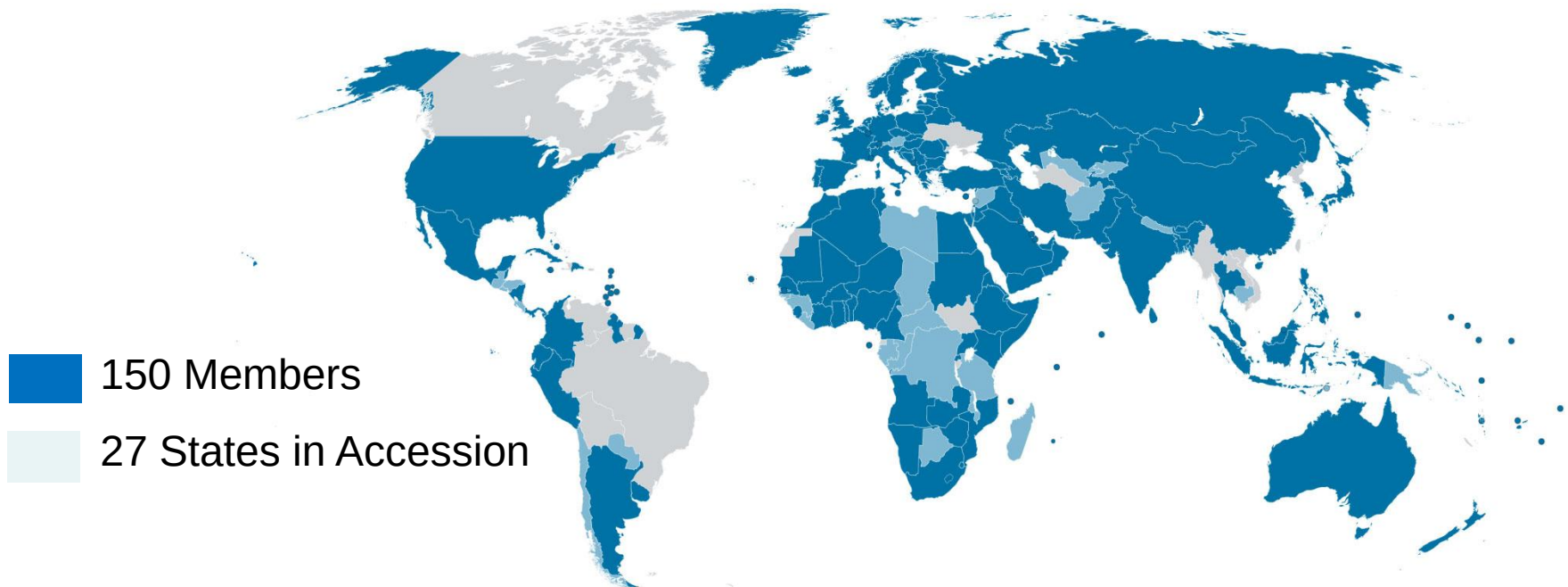
Tracking progress toward energy related SDGs in the Arab region
UN-ESCWA EGM, 24-25 January 2017 - Beirut, Lebanon

Outline

- Background
- IRENA Statistics: activities and updates
- Other Activities

Background - IRENA

- » Established in 2011
- » First global intergovernmental organisation headquartered in Middle East
- » Headquarters in Masdar City, Abu Dhabi, UAE
- » IRENA Innovation and Technology Centre – Bonn, Germany
- » Permanent Observer to the United Nations – New York



Background - RE data challenges

Renewable energy

- Thermal and non-thermal
- Great variation in scale
- Off-grid more common
- Many producers
- Biofuels very variable
- Considerable innovation

Nonrenewable energy

- Thermal energy
 - Often large-scale
 - Mostly grid-connected
 - Industrial/utility production
 - Fuels well specified
 - Stable technologies
-
- Less familiarity with measurement conventions
 - Hybrid systems, co-firing, accounting for heat

Background – RE data needs

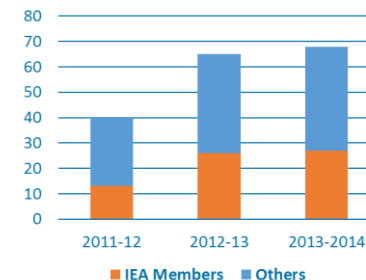
- Energy sector transformation (targets)
- Energy SDG: access; renewables; efficiency
- Market developments, investments, etc.
- Renewable energy is about more than just MW

IRENA RE Statistics

Data Collection

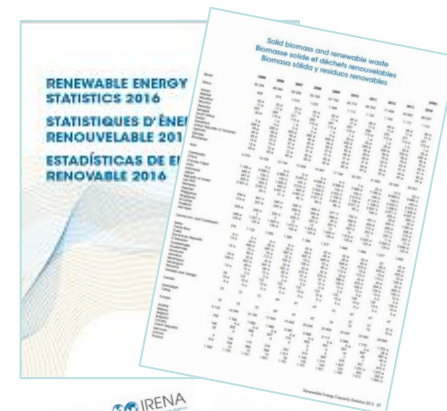
- 4th collection cycle underway
- Increasing response rate
- Coordinating with IEA, RCREEE, UN-ESCWA and others on timing and trainings

Number of countries returning IRENA questionnaire



Dissemination

- Statistical Yearbook (exp. June 2017)
- REsource dashboards
- Offline Excel-Tool also through REsource



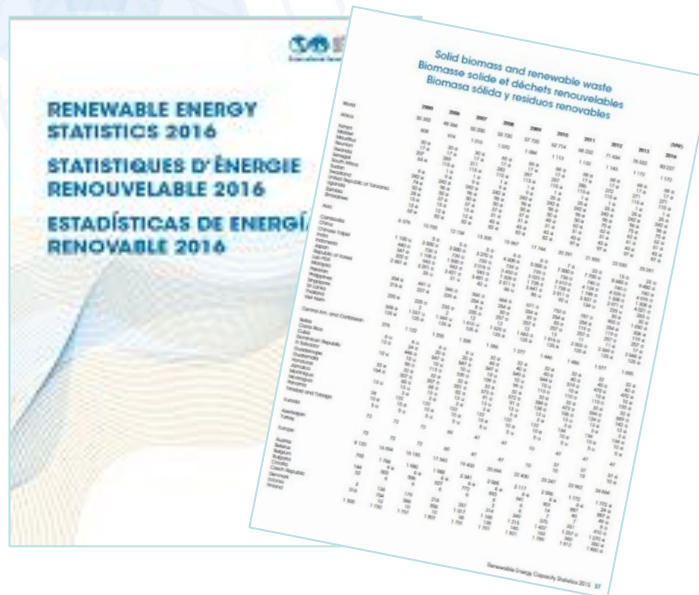
Capacity Building

- Capacity needs assessment tool
- Data collection guidance and pilot studies
- Trainings

Capacity needs assessment for renewable energy statistics



Upcoming: Middle East and Horn of Africa Renewable Energy Statistics Training, 20-22 February 2017 in Abu Dhabi, UAE

[illegible]

How it works

Renewable Electricity Capacity and Generation Statistics

1. Select required filters

Select indicators

Electricity capacity (MW)
Electricity generation (TWh)

Select technologies

Total renewable energy
Hydropower
Hydro V-S MW
Hydro 1-10 MW
Hydro 10+ MW
Mixed and pumped storage
Marine
Wind
Onshore wind energy
Offshore wind energy
Solar
Solar photovoltaic
Concentrated solar power
Biomass
Solid biofuels
Gaseous
Renewable municipal waste
Other solid fuels
Liquid biofuels

Select countries and areas

World
Africa
Algeria
Angola
Burkina Faso
Burundi
Cabo Verde
Cameroon
Central Asia
Chad
China
Colombia
Congo DR
Congo RC
Cote d'Ivoire
Dominican Republic
Egypt
Fiji
Ghana

2. Or click for quick selections & show data flags →

Select selected all

	Select	Deselect
World	☒	☐
Africa	☒	☐
Asia	☒	☐
C America + Caribb	☒	☐
Europe	☒	☐
N America	☒	☐
Oceania	☒	☐
S America	☒	☐
Indicators	☒	☐
Technologies	☒	☐
Years	☒	☐
Show data flags (X,Y,Z)	☐	☐

3. Select preference for sort order and run query

Select preferences for row sort order and performs query

Country/Area Indicators Technology

Country/Area Indicators Technology

Country/Area Indicators Technology

4. Results are displayed in the 'Query result sheet'

Query	Query result	

- RE statistics Yearbook 2016 (book and [online](#))
- REsource charts and tables ([online](#))
- Excel Data Tool ([download](#))

Feedback appreciated: statistics@irena.org

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Capacity Needs Assessment Tool


Capacity needs assessment for
renewable energy statistics



QUESTIONNAIRE FOR CAPACITY NEEDS ASSESSMENT

Instructions: For each of the following statements, use respondents whether they agree or disagree. Respondents should indicate the strength of their answer using a five point scale (strongly agree, agree, neutral, disagree, strongly disagree). For questions where respondents do not have an opinion or are not in a position to give an answer, do not tick any of the answer boxes.

Statement	Comments	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.1 There is a legal framework for the collection of renewable energy statistics.		☐	☐	☐	☐	☐
1.2 Major actors in the renewable energy sector are required to provide data if requested.		☐	☐	☐	☐	☐
1.3 There is a legal agency with a mandate to collect renewable energy statistics.		☐	☐	☐	☐	☐
1.4 There is a consultation process to facilitate data collection and review procedures.		☐	☐	☐	☐	☐
1.5 There is adequate funding for the collection of renewable energy statistics.		☐	☐	☐	☐	☐
1.6 The production of renewable energy statistics is monitored and evaluated.		☐	☐	☐	☐	☐
2.1 There are clear objectives for the collection of renewable energy statistics.		☐	☐	☐	☐	☐
2.2 Renewable energy statistics are used for policy monitoring.		☐	☐	☐	☐	☐

- Guide to help energy statisticians understand the various elements and processes involved in renewable energy data collection and management.
- Includes assessment tools that countries can use to identify areas for improvement and suggests priority actions.

Solid legal and
institutional
framework

Well defined
data
requirements

Sufficient skilled
personnel

Clear
methodologies
and processes

Appropriate
data collection
mechanisms

Analysis and
validation
procedures

Mechanism for
data
dissemination

Tool to identify potential areas for improvements and capacity building priorities

IRENA is developing guidance to assist countries in collecting renewable energy data on the ground including:

- Key survey questions
- Field estimation and measurement techniques
- Use of administrative and other data
- Data analysis methods



Initial modules focus on the following areas:

- Measuring small-scale biogas capacity and production (draft under review)
- Measuring non-household bioenergy use
- Off-grid solar PV system measurement and estimation methods

IRENA will also be conducting sample household surveys and biogas data collection studies in select countries to test and refine data collection methodologies.

Renewable Energy Statistics Training



IRENA organises national and regional trainings to build capacity for collecting, analyzing and disseminating renewable energy statistics.

Past regional trainings include:

- **Southern Africa Renewable Energy Statistics Training**, December 2015 in Mbabane, Swaziland.
- **UNECE/FAO-IRENA Bioenergy from the Forest Sector - Information Capacity Building Workshop**, 6-8 December 2016 in Budapest, Hungary,
- **East and Southeast Asia Renewable Energy Statistics Training Workshop**, 12-14 December 2016 in Bangkok, Thailand,

Upcoming training activities:

- **Middle East and Horn of Africa Renewable Energy Statistics Training**, February 2017 in Abu Dhabi, UAE.



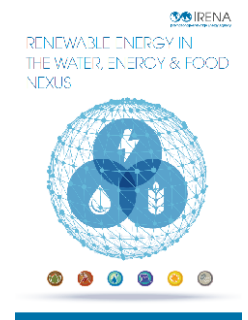
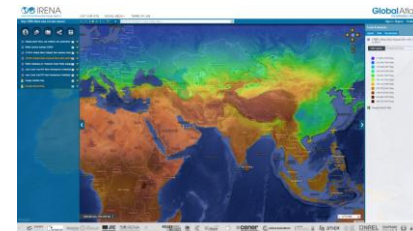
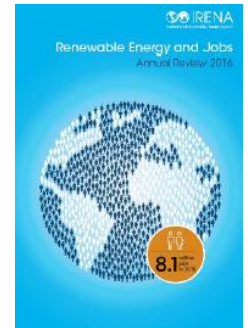


Further developments

- **Trade data:** Solar panels; solar lanterns; solar water heaters; biomass pellets
- **Census data:** Electricity access; clean cooking technologies
- **Estimation techniques:** Using census and household surveys for energy data
- **Energy content:** Examine calorific values

Other IRENA Activities

- **Jobs and socio-economic benefits**
- **Global Atlas**
- **Measuring the benefits**
- **Water-Food-Energy Nexus**





Questions?
Thank you!

REsource

e.g. renewable energy

search for data

RENEWABLE ENERGY TOPIC

- Capacity and Generation
- Remap Country Roadmaps
- Finance
- Cost
- Employment
- Targets
- Education
- Other
- 5 Years Anniversary

RELEVANT LINKS

- Methodology

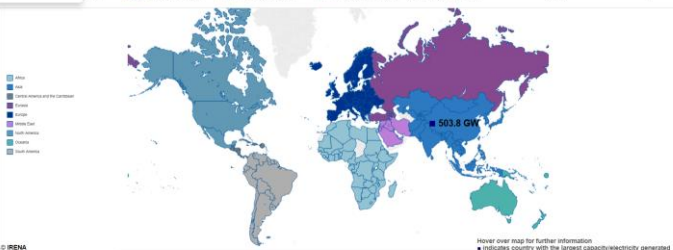
Featured Dashboard - Capacity and Generation

World Overview

This dashboard shows a global overview of the renewable energy installed capacity and electricity generated across regions. It displays progress over time for the selected

Global Overview on Renewable Energy Capacity & Electricity Generation

Region	Installed Capacity (MW)	% of World Total
Asia	779,947	39.7%
Central America and the Caribbean	11,580	0.6%
Eurasia	90,081	4.6%
North America	326,707	16.6%
Middle East	17,487	0.9%
Oceania	25,926	1.3%
South America	183,185	9.3%
Total	1,355,803	100%



tableau

Share Download Full Screen

e.g. renewable energy

search for data

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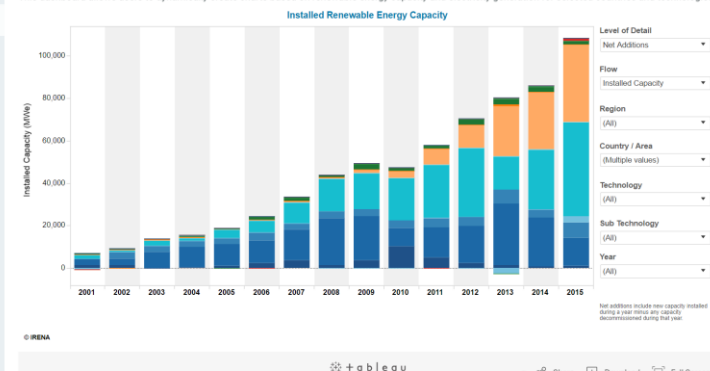
RELEVANT LINKS

- Methodology

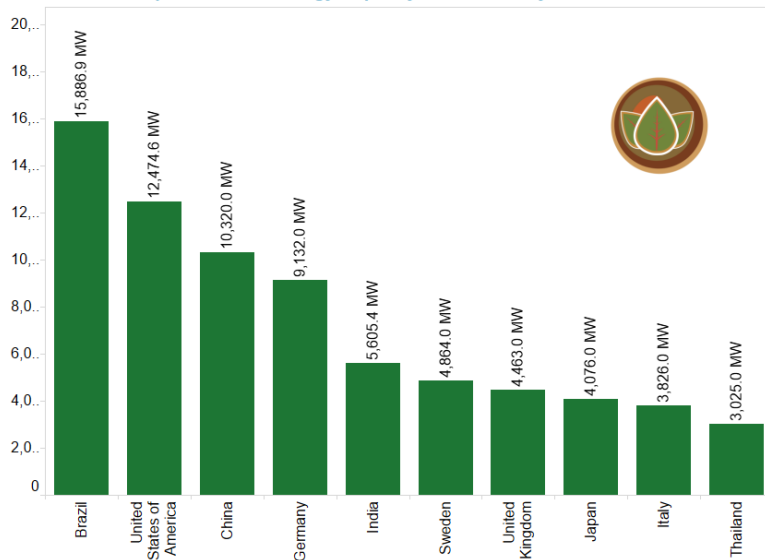
Featured Dashboard - Capacity and Generation

Statistics Time Series

This dashboard allows users to dynamically create charts based on renewable energy capacity and electricity generation for selected countries and technologies.



Top Renewable Energy Capacity and Electricity Generation



Flow

Installed Capacity

Top Countries / A...

Region

All

Technology

Bioenergy

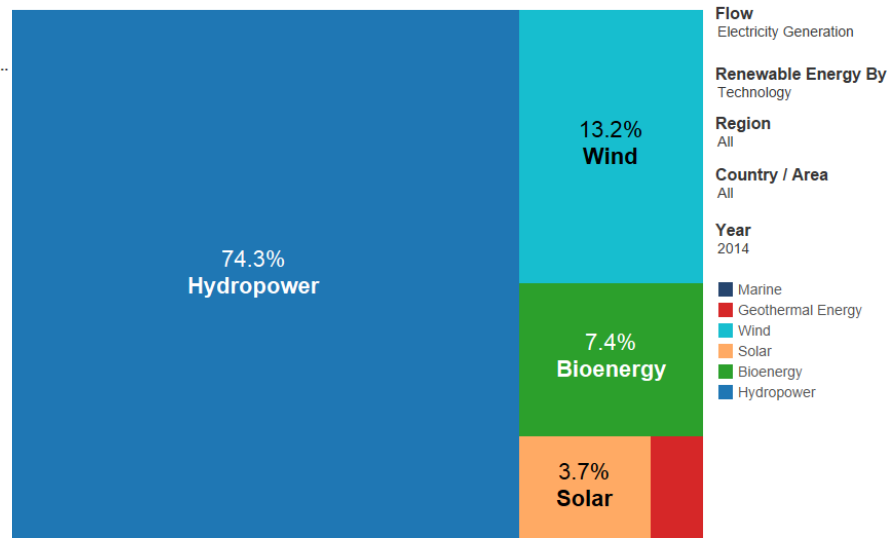
Sub Technology

All

Year

2015

Renewable Energy Technologies



Flow

Electricity Generation

Renewable Energy By Technology

Region

All

Country / Area

All

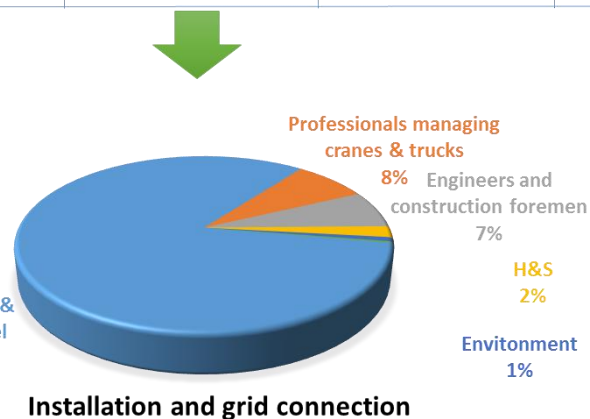
Year

2014

- Marine
- Geothermal Energy
- Wind
- Solar
- Bioenergy
- Hydropower

Solar PV value chain: jobs requirements

	Project planning	Manufacturing and procurement	Transport	Installation and Grid connection	Operation and maintenance	Decommissioning
						
Workforce for 50 MW	2,100 person-days	21,500 person-days	3,500 person-days per 1000 miles	39,400 person-days	20,500 person-days per year	5,200 person-days



Capacity	Good Practices
LEGAL AND INSTITUTIONAL FRAMEWORKS	• Develop an institutional framework for data collection and reporting that includes: clear division of roles and responsibilities; coordination mechanisms between key institutions; clear processes and timelines; • Adapt statistical acts to incorporate renewable energy statistics.
WELL-DEFINED DATA REQUIREMENTS	• Define data needs based on national priorities e.g. monitoring of: RE targets; short term market trends; policies; energy access; energy security etc.
SUFFICIENT SKILLED PERSONNEL	• Ensure the lead agency has staff dedicated to the collection of renewable energy data; • Provide renewable energy statistics training for staff and enumerators.
CLEAR METHODOLOGIES AND PROCESSES	• Reporting templates should use internationally agreed definitions and measurement units; • There should be a manual showing all calculations and estimation methods used for the production of RE statistics; • Enumerators should be equipped with guidance on how to collect data or make estimates in the field (including pictures and diagrams); • Changes in historical data, data sources, estimates and other adjustments should be recorded in an archive or statistical working system.
APPROPRIATE DATA COLLECTION MECHANISMS	• The main instruments for collecting RE data are: household surveys; enterprise surveys and administrative data. Given survey costs, options for using existing data collection activities should be explored before starting new data collection exercise; • Design a sample that takes into account characteristics of renewable energy e.g. regional availability of bioenergy resources.
ANALYSIS, REVIEW AND VALIDATION PROCEDURES	• Conduct automated and manual checks to validate data collected (e.g. whether data is complete, internally consistent and realistic); • Data should be peer reviewed prior to publication.
MECHANISMS FOR DATA DISSEMINATION	• Data should be made available to the public in an easily accessible format; • Statistics should be published on a regular schedule with minimal time lag.