

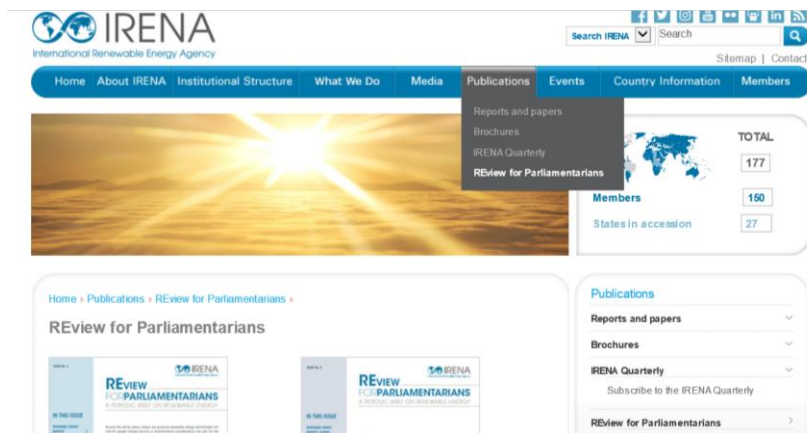
Overview of the IRENA Tools



2017 IRENA Legislators Forum
Abu Dhabi, 13 January 2017

Review for Parliamentarians

- » Periodic brief compiling information on latest knowledge, experience and best practices on RE for MPs
- » Special focus: solar energy; RE as a mitigation tool for climate change; job creation and declining costs
- » Launch: Oct 2015. 3rd issue: Oct 2016
- » Available in English, French and Spanish
- » Accessible from IRENA website homepage

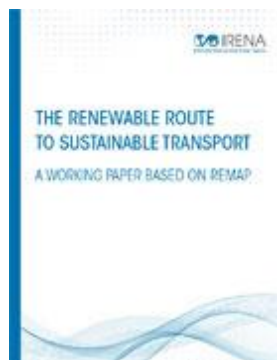


- » A range of analytical reports, on variety of topics relating to RE
- » Can be thematic, and/or with a regional or country focus



Planning for RE transition: REmap

- » IRENA's **Global Renewable Energy Roadmap**: shows feasible, cost-effective ways to **double renewables** in the world's energy mix by 2030, and examines how RE can support **SE4ALL objectives**



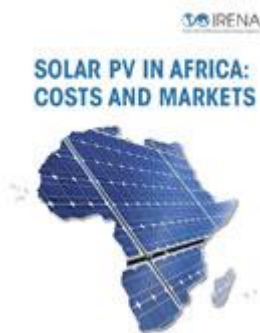
- » Analyses **options** for countries, sectors and technologies
- » Further information at: www.irena.org/remap

Technology trends

- » **IRENA Technology Briefs and Innovation Outlook series:** analyse the latest technology innovations and the emerging developments in RE technologies
- » Provide policy makers a basis for understanding the RE technologies and the role they can play in integrating and accelerating RE deployment



- » Series of reports to disseminate evidence on the **socio-economic benefits** of RE and identify **opportunities**
 - » *Renewable Energy Benefits: Measuring the Economics*
 - » Annual Reviews of **RE and Jobs**
 - » **RE costs** reports



» Analysis of specific policy instruments supporting RE deployment, and showcase of **best practices**:

» *Renewable Energy Target Setting*

» *Renewable Energy Auctions: A Guide to Design*, with a volume dedicated to policy makers, outlining key considerations for successful auction design



» **RE Market Analyses:** review of the status and trends in the RE development on a specific market, and of RE policies across all uses, to support continued expansion of RE



- » Development of Policy Briefs for 20 Latin American countries: provide an overview of the policies in place in the country under review, as well as hyperlinks to the legal instruments
- » Based on the information contained in the *IEA/IRENA Joint Global Renewable Energy Policies and Measures Database* and direct inputs from national experts



- » A country-validated global compilation of RE policy measures, with 2000 entries from over 120 countries. Available at: www.iea.org/policiesandmeasures/renewableenergy

Advanced search

| | | | |
|---|--|--|--|
| Countries <input type="checkbox"/> + Regions <input type="checkbox"/> + Countries | Policy Type <input type="checkbox"/> Economic Instruments <input type="checkbox"/> Information and Education <input type="checkbox"/> Policy Support <input type="checkbox"/> Regulatory Instruments <input type="checkbox"/> Research, Development and Deployment (RD&D) <input type="checkbox"/> Voluntary Approaches | Renewable Energy Policy Target <input type="checkbox"/> Bioenergy <input type="checkbox"/> Geothermal <input type="checkbox"/> Hydropower <input type="checkbox"/> Multiple Renewable Energy Sources <input type="checkbox"/> Ocean <input type="checkbox"/> Solar <input type="checkbox"/> Solar Thermal <input type="checkbox"/> Wind | Sector <input type="checkbox"/> Electricity <input type="checkbox"/> Framework Policy <input type="checkbox"/> Heating and Cooling <input type="checkbox"/> Multi-sectoral Policy <input type="checkbox"/> Transport |
| Effective between <input type="text" value="Select"/> and <input type="text" value="Select"/> | Jurisdiction <input type="checkbox"/> International <input type="checkbox"/> National <input type="checkbox"/> State/Regional <input type="checkbox"/> Municipal | Policy Status <input type="checkbox"/> Ended <input type="checkbox"/> In Force <input type="checkbox"/> Planned <input type="checkbox"/> Superseded <input type="checkbox"/> Under Review | Size of Plant <input type="checkbox"/> Large <input type="checkbox"/> Small |
| <input type="checkbox"/> Search only recently updated policies | | | |
| <input type="button" value="RESET"/> <input type="button" value="SEARCH"/> | | | |

- » Searchable by:

- » Policy type: e.g. Economic instruments > Fiscal/financial incentives > FIT or Policy support > Strategic planning
- » RE policy target: bioenergy; geothermal; hydropower; multiple RE sources; ocean; solar; solar thermal; wind
- » Sector: Electricity; Framework Policy; Heating and Cooling; Multi-sectoral Policy; Transport
- » Additional filters: international/national/state/regional/municipal; Policy status (ended, in force..)

Advanced search

Countries

- Brunei Darussalam
- Bulgaria
- Burkina Faso
- Burundi
- Canada
- Chile
- China
- Chinese Taipei
- Colombia
- Croatia

Policy Type

- + Policy Support
- Regulatory Instruments
 - Auditing
- Codes and standards
 - Building codes and standards
 - Product standards
 - Sectoral standards
 - Vehicle fuel-economy and emissions standards

Renewable Energy Policy Target

- + Bioenergy
- + Geothermal
- Hydropower
- + Multiple Renewable Energy Sources
- + Ocean
- + Solar
- + Solar Thermal
- + Wind

Sector

- Electricity
- Framework Policy
- Heating and Cooling
- Multi-sectoral Policy
- Transport

Effective between

Select and

Jurisdiction

- International
- National
- State/Regional
- Municipal

Policy Status

- Ended
- In Force
- Planned
- Superseded
- Under Review

Size of Plant

Search by keyword(s)

| TITLE | COUNTRY | YEAR | POLICY STATUS | POLICY TYPE | POLICY TARGET |
|---|---------|---------------------|---------------|--|---|
| Net metering (Regulation on Distributed Generation) 2014 | Chile | 2014 (Sept 6th) | In Force | Regulatory Instruments | Multiple RE Sources |
| Electrical Easement Act (N° 29,701) | Chile | 2013 | In Force | Regulatory Instruments | Multiple RE Sources>Power |
| Program for Rural and Social Energy (PERYS) | Chile | 2009 | In Force | Policy Support, Economic Instruments, Regulatory Instruments | Multiple RE Sources, Bioenergy, Wind, Solar>Solar photovoltaic, Solar Thermal>Solar heat |
| Regulatory Framework for Solar Water Thermal (Law 20,365) | Chile | 2009 | In Force | Regulatory Instruments>Codes and standards, Economic Instruments>Fiscal/financial incentives | Solar Thermal>Solar heat |
| Non-conventional renewable energy law (Law 20.257) | Chile | 2008 (amended 2013) | In Force | Regulatory Instruments, Regulatory Instruments>Obligation schemes | Bioenergy>Biomass for power, Geothermal, Multiple RE Sources, Ocean, Solar Thermal, Wind, Bioenergy, Hydropower |
| Law 19,657 on Geothermal Energy Concessions | Chile | 2000 | In Force | Regulatory Instruments>Codes and standards | Geothermal>Power |

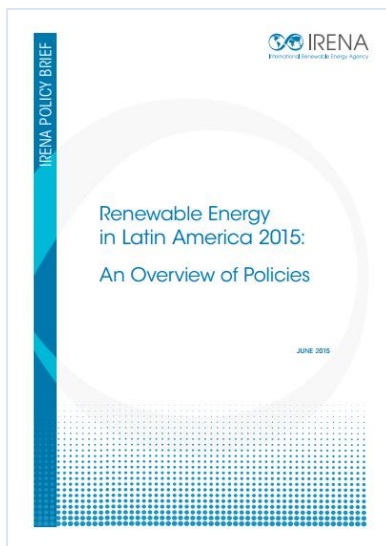
Law 19,657 on Geothermal Energy Concessions

| | |
|--------------------------------|---|
| Country: | Chile |
| Year: | 2000 |
| Policy status: | In Force |
| Jurisdiction: | National |
| Date Effective: | 2000 |
| Policy Type: | Regulatory Instruments>Codes and standards |
| Policy Target: | Geothermal>Power |
| Policy Sector: | Framework Policy |
| Size of Plant Targeted: | Small and Large |
| Agency: | Ministry of Energy |
| URL: | http://antiguo.minenergia.cl/minwww/opencms/08_Normativas/02_energias/renovables.html |
| Description: | <p>Law 19,657 establishes regulatory frameworks for geothermal exploration and exploitation, as well as standards for concession allocation and tenders.</p> <p>The Ministry of Energy is responsible for the application, control and enforcement of geothermal regulation frameworks and the management of auction and bidding processes. Public bidding for concession granting occurs every two to three years and is open to every Chilean person or corporate body organised under Chilean laws. The legislation regulates the relationships between the government and concession holders, landowners, mining properties or water exploitation rights when exploiting geothermal energy.</p> <p>In order to attract international investment in the geothermal energy sector, the Chilean government has enhanced the financial incentives contained in Law 19,657.</p> |
| Related policies: | Law 19,657 on Geothermal Energy Concessions |

Last modified: Mon, 04 Nov 2013 14:49:53 CET

Overview of RE Policies in Latin America

» Building on the Policy Briefs, IRENA published **Renewable Energy in Latin America: An Overview of Policies** in June 2015. The report analyses current policy status and trends, including over 300 renewable energy support schemes across four sectors: electricity, heat, transport and energy access, as well as some cross-cutting policies



2. Electricity

Electricity generation is the sector that has attracted most of the renewable energy policy and legislative developments in Latin America in many other regions. These include the enactment of renewable energy laws, the establishment of renewable electricity targets, regulatory instruments such as auctions, feed-in tariffs, quantity-based mechanisms and net metering, fiscal incentives and access provisions and finance facilities.

The existence of renewable energy laws providing a legal framework for the promotion of renewable energy generally offers an indication of the country's support for renewables. Currently, Argentina, Brazil, Chile, Colombia, Honduras, Mexico, Nicaragua, Panama, Peru and Uruguay have renewable energy laws, and Venezuela is developing one. It must be noted, however, that the lack of such specific legislation does not necessarily mean the absence of a robust support for renewables, as Brazil and Costa Rica clearly exemplify.

Most Latin American countries have one or more renewable resource-specific laws (e.g. geothermal law in Mexico, law including wind, Costa Rica, Ecuador, El Salvador, Guatemala and Paraguay).

Bolivia, Guyana and Suriname are currently the only countries without laws or programmes for renewable energy, although Bolivia is developing one. Even with the absence of specific laws promoting renewable energy, supporting measures for renewable energy may be built into general laws, such as the electricity law (as in Costa Rica) or the tax code, or a lower regulatory level, as norms, etc.

The setting of national renewable energy targets provides a clear indication regarding the level of renewable energy development and the strategy envisioned by governments. Targets have been identified in 19 Latin American countries as summarised in Table 2, with the majority relating to the electricity sector. Targets can be related to capacity (MW) or generation (MWh), farms, or in relation to renewable or absolute terms. Different types of targets (e.g. scope, technology or thermal) often coexist and overlap. For example, Guatemala has a target of 30% renewable electricity by 2015, and a

target of 4.2 GW of hydropower by 2022. Guatemala has set a long-term target of reaching 60% of electricity generation from renewable energy sources, including 500 MW of renewable capacity and building 1500 km of transmission lines to integrate renewable energy with the existing target of reaching at least 60% of electricity generation from renewable energy sources by 2022.

TARGETS
Renewable energy targets are numerical goals established by governments to achieve a specific amount of renewable energy production or consumption. Renewable energy targets can apply to the electricity, heating/cooling or transport sectors, or to the energy sector as a whole, and often include a specific time period or date by which the target is to be reached.¹¹

Auctions are the most popular regulatory instrument for the deployment of renewable energy in Latin America. Thirteen out of the 20 countries analysed have experience with renewable energy auctions, namely Argentina, Bolivia, Brazil, Chile, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru and Uruguay. Table 3 identifies 14 auctions in Latin America that were either renewable energy-specific, or in which one or more renewable energy technologies were eligible, providing information on the auction year, eligible technologies, amounts auctioned/awarded, and references to the original documents.

AUCTIONS
Auctions refer to competitive bidding processes that promote the provision for electricity from renewable energy sources. Auctions are a market-based mechanism for determining the price and quantity of renewable energy that will be purchased. The auctioned product can be either renewable energy (RE) or RE-backed products (RE-backed) where the RE-backed products are sold to the grid and the RE-backed products are sold to the grid. The government is able to make the process. The government operates the auction on the basis of the price and other criteria and signs a contract with the successful bidder. Auctions are being used with greater frequency in Latin America, including with power purchase agreement (PPA).¹²

¹¹ "Year" or "calendar" energy with renewable capacity considered.
¹² For an in-depth analysis of renewable energy auctions, see IRENA (2015).

3. Transport

Policies for the promotion of renewable energy sources in the transport sector in Latin America focus mainly on the use of biofuels, and are characterised by blending mandates and fiscal incentives.

Biofuel blending mandates are a type of regulation governed by blend and non-warehouse tax countries in Latin America have blending mandates in their legislation, seven of them active (see Table 6). National mandates can apply to the whole territory, as in Argentina, Brazil and Colombia, but rolled out gradually over different regions, as in Panama, or apply only to certain metropolitan areas, as in Mexico and Ecuador.

Most of the blending mandates have a local content requirement, whereby only locally produced fuel is allowed or required towards the mandate. Other countries, however, do not have such restrictions or, as in Costa Rica, establish area local and imported biofuels.

Fiscal incentives are an integral part of biofuels support policies in many Latin American countries, including Argentina, Brazil, Chile, Colombia, Honduras, Panama, Paraguay and Uruguay. The most common fiscal incentives for biofuels are tax exemptions. Exemptions from fuel taxes are available in Argentina, Chile, Colombia, Panama and Uruguay. Import tax exemptions have been enacted in Brazil, Honduras, Panama and Paraguay, while income tax exemptions can be found in Colombia, Honduras, Panama and Uruguay. Other tax exemptions include on capital tax, as in Argentina, Honduras and Uruguay, sales tax, as in Colombia and Paraguay, and others, as in Brazil, Honduras and Panama. Tax exemptions also may include exemptions from local taxes, as in Panama, or regional exemptions, as in Argentina.

BIOFUEL BLENDING MANDATES
Biofuel blending mandates establish a percentage of biofuel (ethanol or biodiesel) that must be blended with regular gasoline or diesel. Blending mandates usually identify who is responsible for the blending and at what point of the distribution chain it must be done. Blending mandates can be static or evolve over time, according to preset quantities or based on a set of indicators such as international fuel prices. National mandates can apply to the whole territory or certain regions or metropolitan areas.

Brazil and Paraguay provide fiscal incentives for non-ethanol biofuels, which can run on different mixes of gasoline and bioethanol. Panama provides tax credits on biofuel and Colombia allows eligible bio-fuel production plants to be declared tax-free zones. Fiscal incentives to promote export of biofuels include, for example, differential export taxes for biodiesel in Argentina or export tax credits in Brazil.

Biofuels also can be promoted through regulated biofuel prices, although if the price is too low, it may

TABLE 6: Biofuel blending mandates in Latin America

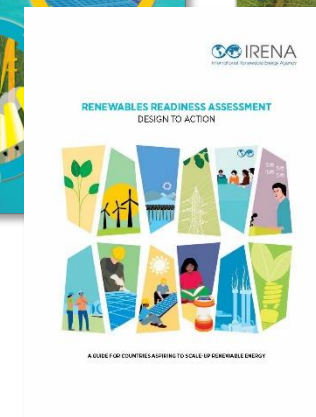
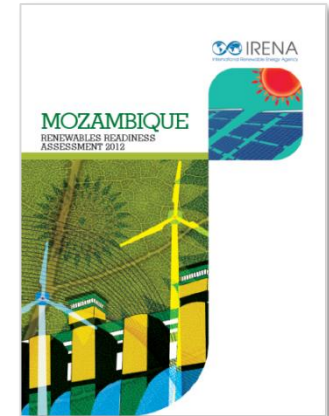
| | Argentina | Brazil | Colombia | Costa Rica | Ecuador | Guatemala ¹ | Honduras ² | Mexico ³ | Nicaragua ⁴ | Panama ⁵ | Peru | Uruguay |
|-----------|-----------|--------|----------|------------|---------|------------------------|-----------------------|---------------------|------------------------|---------------------|------|---------|
| Ethanol | 10% | 27% | 8-10% | 0-10% | 0% | 0% | 0% | 0% | 0% | 0% | 10% | 0% |
| Biodiesel | 10% | 7% | 10% | 0-5% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |

¹ Currently 0% and required "Ethanol (Guatemala) or Gasoline". Not implemented. ² Only in Guatemala, Honduras and Mexico. ³ For an in-depth analysis of renewable energy auctions, see IRENA (2015).

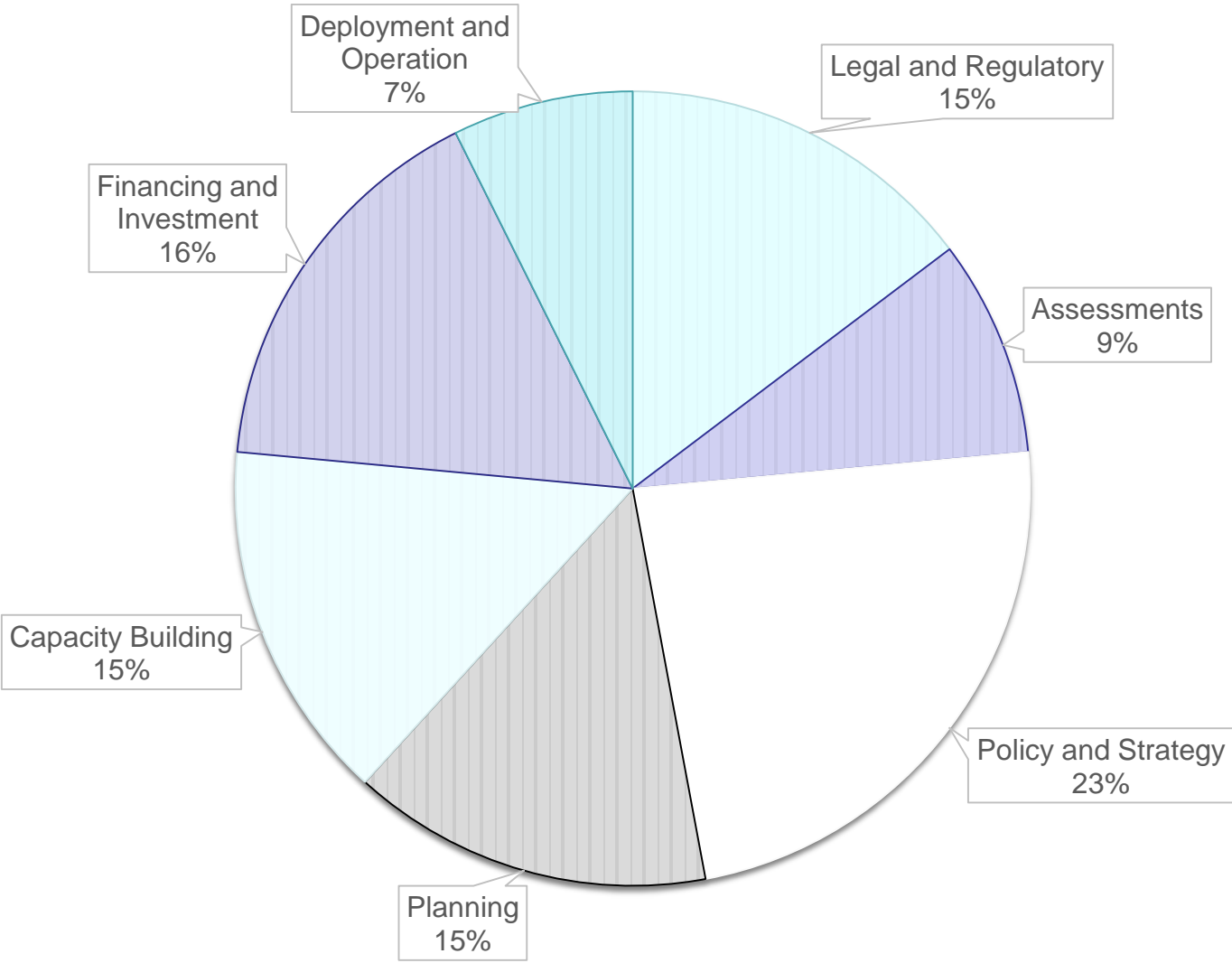
RRAs

Renewables Readiness Assessments

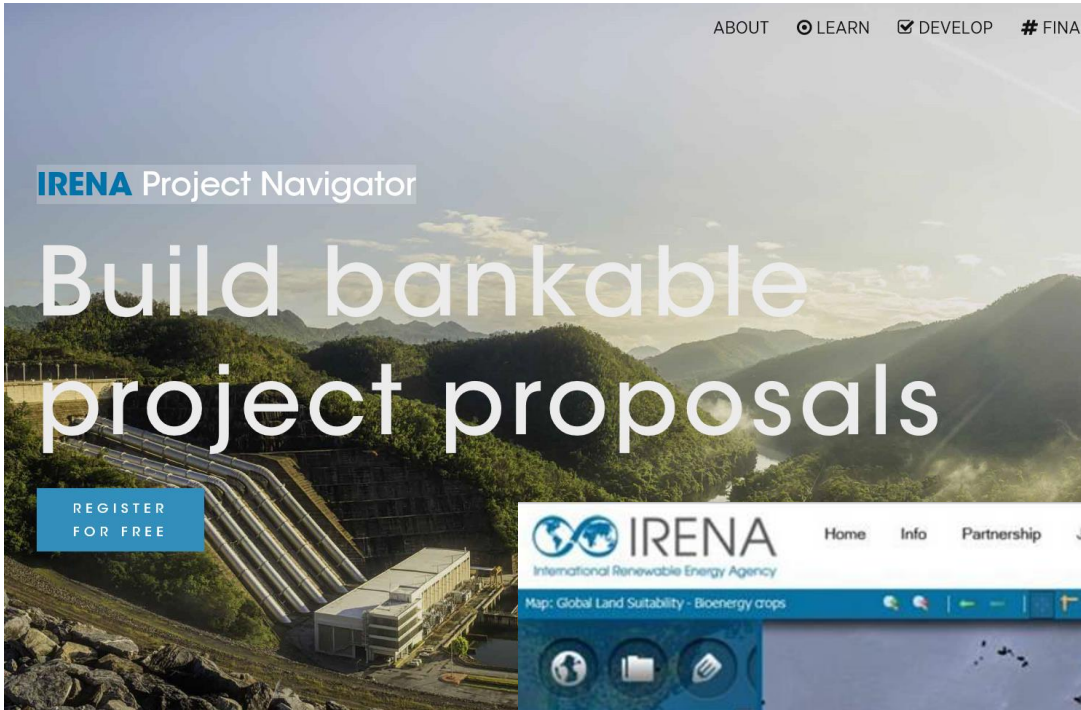
- » **Country-initiated and country-led process**, with IRENA as a facilitator
- » Brings together a **wide range of stakeholders**
- » Identifies **effective policies** and **short-to medium-term actions** for renewable energy deployment
- » Undertaken by **20+ countries**



Focus of RRA recommendations in Sub-Saharan Africa (2016)

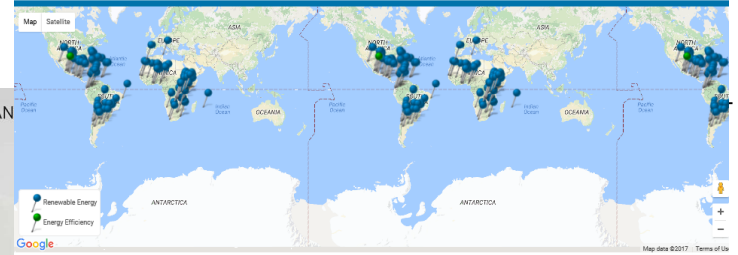


IRENA web platforms



ABOUT LEARN DEVELOP #FINAN

"We have real evidence of the increasing worldwide consensus that a sustainable energy future powered by renewables is within reach."
Adnan Z. Amin - Director General



ACCESS TO CARIBBEAN PORTAL ACCESS TO LATIN AMERICA PORTAL ACCESS TO AFRICA PORTAL

About the Marketplace

The Sustainable Energy Marketplace is a virtual platform that gathers all renewable energy actors and IRENA's expertise and work to pursue together the deployment of renewable energies in developing countries. The marketplace aims to scale up the existing global investment and support the channelling of public and private finance to meet the demand in the market. Project developers, financiers, service and technology suppliers can register and work together to realize projects and bring energy where it is still needed.

In order to support project development and financing IRENA will assess projects in more detail and cooperate closely with international financing institutions, donors, private sector advisors and service providers to actively facilitate the market. Market players can communicate with IRENA through the platform to indicate their specific needs and interests.

Benefits for Users

Project Owners

The market place provides the project owners with increased visibility for their projects among financiers and other market players. It also makes it easier to identify relevant financiers, advisors and service providers for specific needs in a timely manner, and helps to make more targeted and relevant contacts with them. Project owners will also benefit from IRENA's project assessments, done on a selective basis,

Financiers

The marketplace will provide the financiers with an easy channel to identify and screen a wide variety of renewable energy projects. It will show the general data and summary of projects meeting the specific criteria of an investor, and make it easy to contact owners to get more detailed information about potentially interesting projects. It will also make it easier for financiers to find market, policy and regulatory information.

IRENA International Renewable Energy Agency

Home Info Partnership Join the initiative Legal info Data quality Tutorials

GlobalAtlas FOR RENEWABLE ENERGY

Map: Global Land Suitability - Bioenergy crops

User Password Login Register

- Global road networks
- Protected areas
- Barley
- Cassava
- Coconut
- Jatropha
- Maize
- Miscanthus
- Oil palm

-2518.405 km, 1389.319 km

1 : 55468034

IRENA Masdar cener GeoModel SOLAR prognos

Learning section

Explore IRENA Project Navigator online resources and use materials to tackle some of most difficult challenges in renewable energy project development



Project Development Process
Address risks and inform decisions to develop a bankable renewable energy project



Technical Concept Guidelines
Access information, analysis and best practices covering the complete lifecycle of a renewable energy project



Templates
Obtain materials including models, checklist and forms for the development of a renewable energy project

Utility-scale Solar PV

Grid-connected solar PV power plants are a mainstream, competitive power source already offering some of the lowest generation costs, making them an attractive option for regions with vast solar resources



Using the left-side menu, you can browse through the IRENA Project Navigator structured project development process covering the lifecycle of a typical solar PV project.

You can also explore knowledge, tools and best practices that support the development of bankable utility-scale solar PV projects with the resources available on the right-side menu.

- Home
- Introduction
- Overview
- Identification
- Screening
- Assessment
- Selection
- Pre-development
- Development**
- Bankability and financial close guidelines
- Contracting approaches
- Contractual agreement guidelines
- Financial modelling guidelines
- Project risks mitigation
- Construction
- Operation & maintenance
- Decommissioning
- References

Project development process

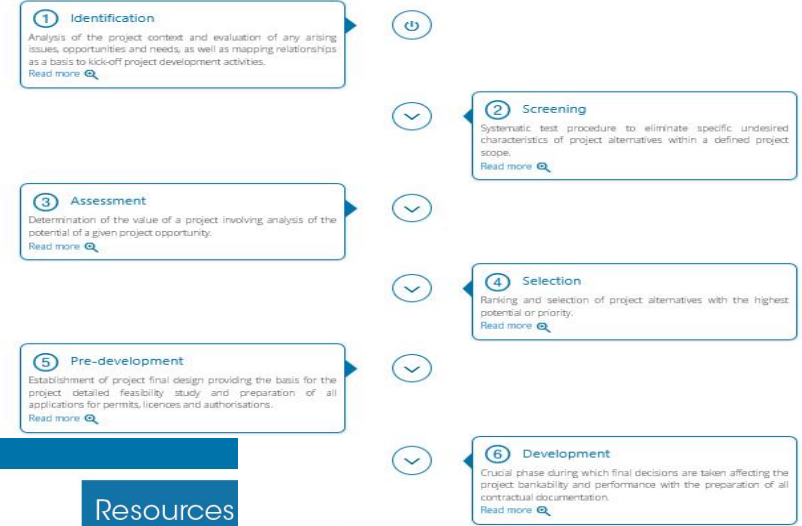
IRENA Project Navigator introduces a nine-step project lifecycle process designed to support the development of bankable renewable energy projects



Technical concepts

Project developers should clearly understand the technical and financial aspects of the project and should be able to create a design basis

IRENA Project Navigator project development phases



Resources

Templates

- Project Bankability Checklist
- Site Identification Form
- Site Screening Form
- Technical Assessment Matrix
- Meteorological Criteria Matrix
- Land Characteristics Criteria Matrix
- Infrastructure Criteria Matrix
- Environmental and Social Evaluation Matrix

Examples

- Solar PV Case Study - Italy

Links

- IRENA Sustainable Energy Marketplace
- IRENA Inspire
- IRENA Global Atlas
- IRENA/ADFD Financing Facility

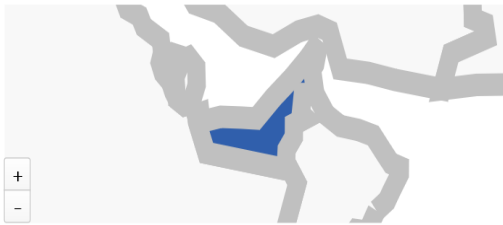
- **Knowledge hub accessible from www.irena.org/resource**
- **World's largest repository of publicly available information on RE**
- **Search** – Simple Google-like search
- **Country Profiles** – for finding country specific renewable energy information
- **Data & Statistics** – for exploring renewable energy statistics from various topics



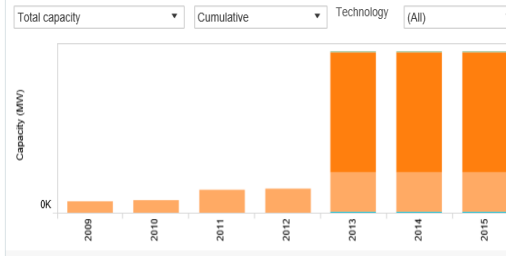


UNITED ARAB EMIRATES

Renewable Energy Policies



Renewable Power Capacity and Generation



News

UAE plans to invest \$163bn in renewable energy projects

Date: 12-Jan-2017

UAE to invest US\$163 billion in clean energy by 2050

Date: 11-Jan-2017

Sterling and Wilson wins EPC contract for 170 MW solar PV project in Morocco

Date: 25-Nov-2016

ACWA Power inks financial agreements for its 60.3 MW Mafraq solar PV project in Jordan

- Resource Assessment
- Energy Sector and Capacity
- Policy, Legal and Institutional Framework
- Finance, Market and Investment
- REmap 2030

RENEWABLE ENERGY

- Solar energy 4
- Wind energy 3
- Geothermal energy 1
- Hydropower 1
- Ocean energy 1

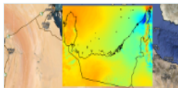
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SOURCE

- Global Atlas for Renewable Energy 4
- IRENA Homepage 1

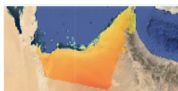
Showing 1 - 5 of 5 results on 1 pages

Page: 1 Prev Next



United Arab Emirates - national wind atlas

Date: 09-Jan-2017 Source: Global Atlas for Renewable Energy shows the United Arab Emirates (UAE) national wind atlas calculated by the Res



United Arab Emirates - national solar atlas

Date: 09-Jan-2017 Source: Global Atlas for Renewable Energy The UAE solar atlas was developed by the Research Center for Renewable Energy (ReCREMA) at Masdar Institute in Abu Dhabi. The UAE solar atlas utilizes satellite model to map the solar potential across the country. Estimated irradiance is sub-independent ground data. Direct normal irradiance (DNI), diffuse horizontal irradiance (GHI) are produced at a 3 km spatial resolution and in ...

- Resource Assessment
- Energy Sector and Capacity
- Policy, Legal and Institutional Framework
- Finance, Market and Investment
- REmap 2030

RENEWABLE ENERGY

- Solar energy 22
- Wind energy 12
- Bioenergy 6
- Hydropower 6
- Geothermal energy 1
- Ocean energy 1

Clear All

SOURCE

- IEA/IRENA Joint Policies and Measures Database 16
- REValue (Socio-economic Value of Renewable Energy) 7
- REmap 2030 3
- Data and Statistics 2

Clear All

Showing 1 - 10 of 28 results on 3 pages

Page: 1 Prev Next



REmap 2030, Renewable Energy Prospects: United Arab Emirates: Chapter (9.6) Solar water heating regulation

Date: 05-Mar-2015 Source: REmap 2030 action, and governance study would be a precursor. Renewable Energy Prospects: United Arab Emirates 41



REmap 2030, Renewable Energy Prospects: United Arab Emirates: Chapter (9.5) Feed-in-tariffs / distributed generation framework

Date: 05-Mar-2015 Source: REmap 2030 action, and governance study would be a precursor. Renewable Energy Prospects: United Arab Emirates 41



REmap 2030, Renewable Energy Prospects: United Arab Emirates, summary

Date: 05-Mar-2015 Source: REmap 2030 UNITED ARAB EMIRATES RENEWABLE ENERGY PROSPECTS: April 2015 EXECUTIVE SUMMARY Copyright IRENA 2015... for the United Arab Emirates, the REmap 2030 report, summary of findings and other supporting material... in the United Arab Emirates (UAE). In fact, a 10% share of renewable energy in the total energy mix -... for the United Arab Emirates, the REmap 2030 report, summary of findings and other supporting material



United Arab Emirates - Renewable Energy Education And Rd&D Strategy

Date: 09-Dec-2016 Source: IEA/IRENA Joint Policies and Measures Database http://www.epfl.ae Description: The UAE has established two graduate-level research universities dedicated to clean energy in partnership with leading international universities, as well as dedicated, associated commercial product/service R&D facilities. The projects are designed to create a supply of technical expertise in the market, as well as managed funding for R&D and commercialization efforts, with a heavy focus on renewable energy. The Masdar Institute, developed with the Massachusetts ...



United Arab Emirates - National Renewable Energy Resource Assessment And Mapping (Atlas)

Date: 09-Dec-2016 Source: IEA/IRENA Joint Policies and Measures Database over US 2 million Description: The UAE government has mandated the Research Center for Renewable Energy Mapping and Assessment at Masdar Institute, the graduate-level research university established in partnership with the Massachusetts Institute of

Thank you!



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