

Good Practices of Scaling Up Renewable Energy Deployment in Islands

International Workshop on Renewable Energy Development in Macaronesia
and West Africa
May 30 – 31, Praia, Cabo Verde

❖ About IRENA

❖ IRENA Engagement with Islands

❖ Good Practices of Scaling up RE

Deployment in Islands

About IRENA

MANDATE

To promote the widespread adoption and sustainable use of **all forms of renewable energy** worldwide

OBJECTIVE

To serve as a **network hub**, an **advisory resource** and an **authoritative, unified, global voice** for renewable energy

SCOPE

All renewable energy sources produced in a **sustainable manner**



BIOENERGY



GEOTHERMAL
ENERGY



HYDROPOWER



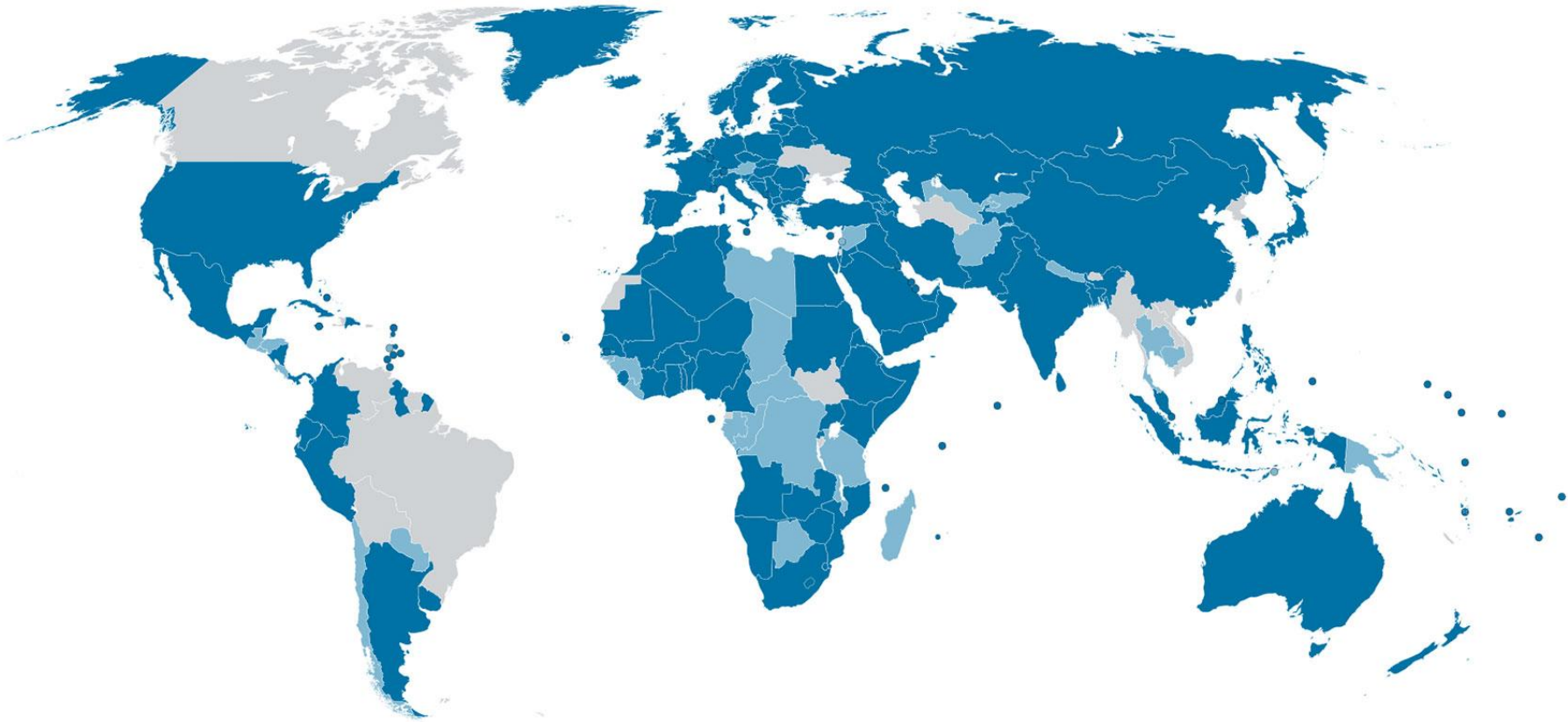
OCEAN
ENERGY



SOLAR
ENERGY

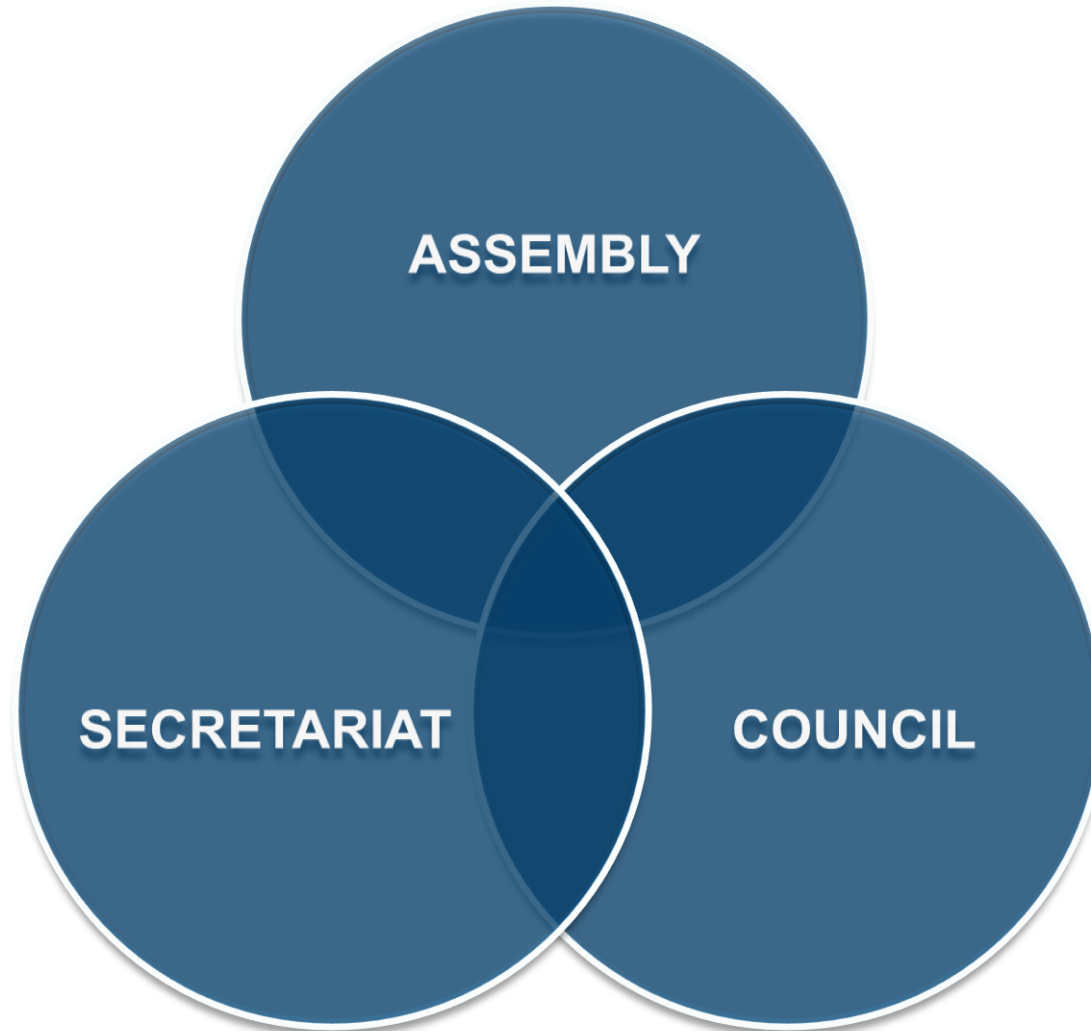


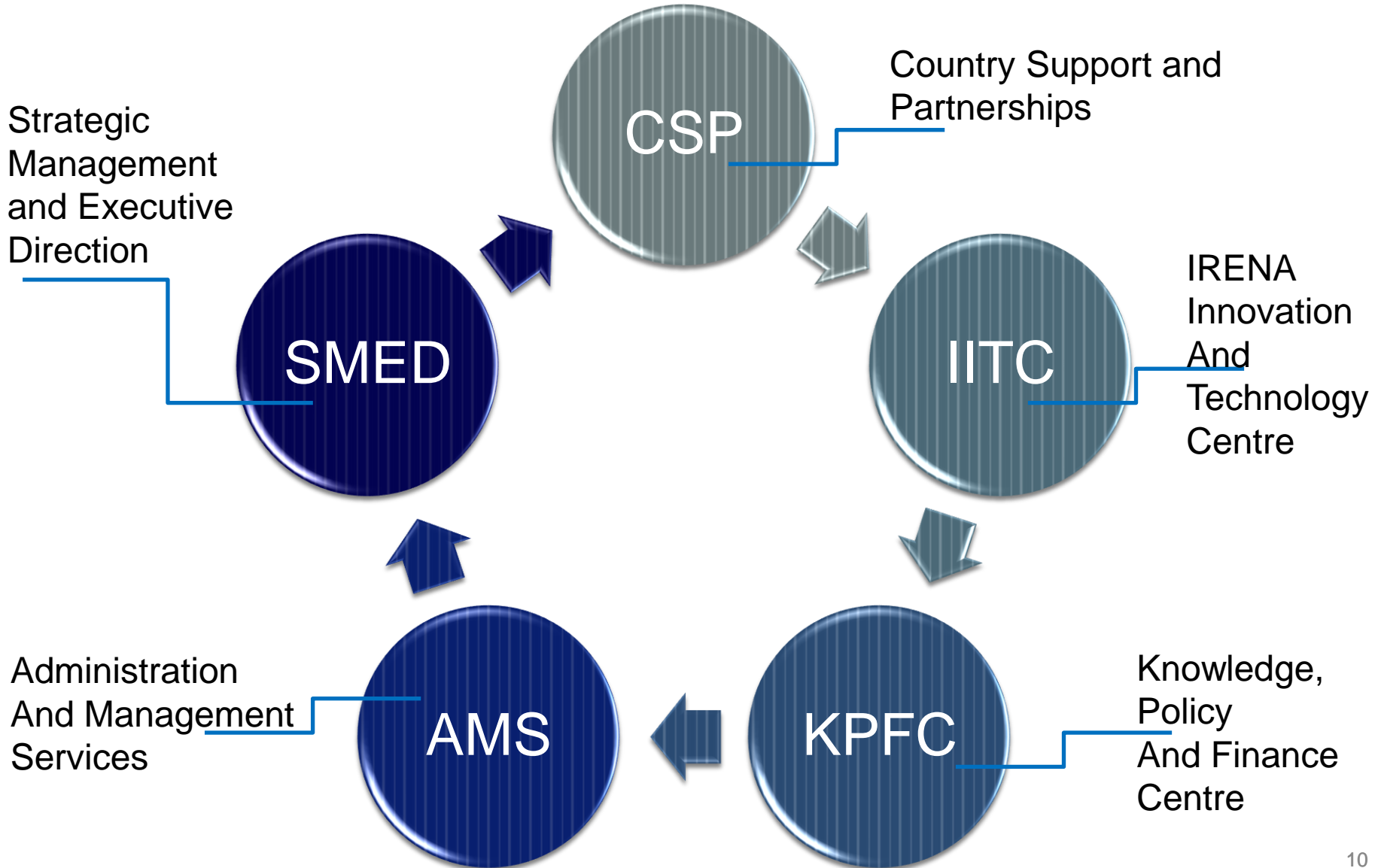
WIND
ENERGY



 **146 Members**

 **30 States in Accession**





IRENA's Engagement with Islands

Programmes



**GLOBAL
GEOTHERMAL
ALLIANCE**

Capacity Building



Knowledge Base

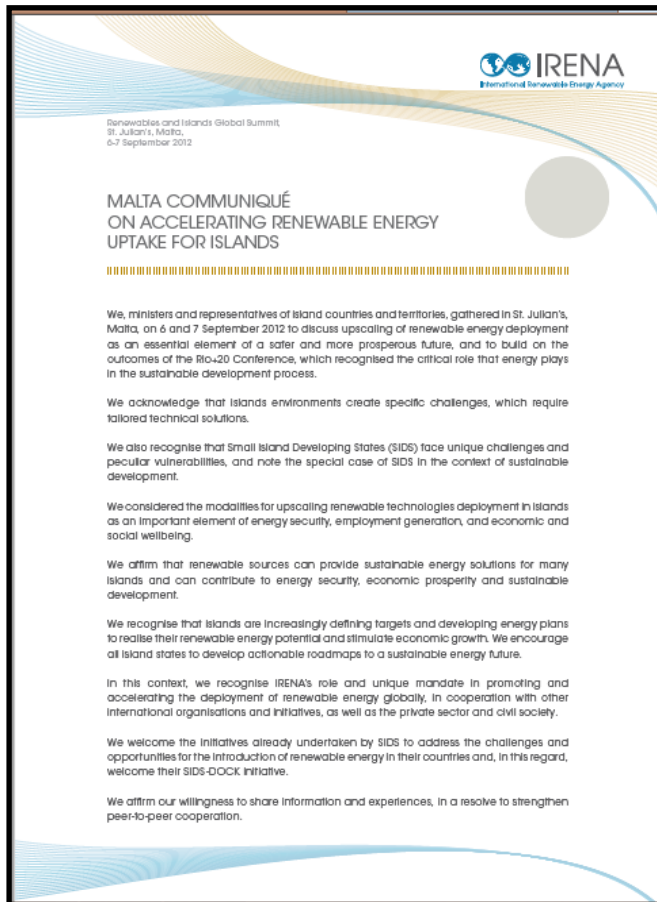


Products



A Transformative Initiative for Islands Energy Systems

Good Practices of Scaling Up RE Deployment in Islands



1. Global Renewable Energy Islands Network (GREIN)
2. Business case for RE deployment involving the private sector and civil society
3. Financing mechanism
4. Technology assessments and advisory on choices
5. Resource assessment through Global Atlas and undertake RRAs
6. Capacity building
7. Project guidelines
8. Methodologies for sustainable tourism, water management, transport.

VISION

SIDS Lighthouses Initiative

34 island states and island territories

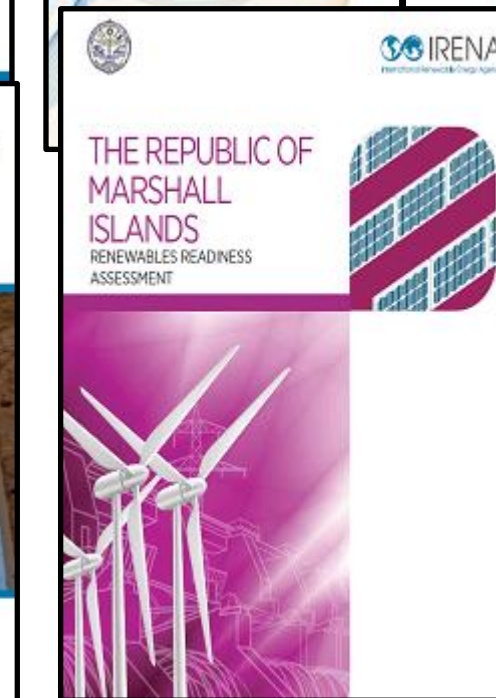


- **USD 500 million mobilized**
- **120MW of new renewable energy generation of which:**
 - **new solar PV (100MW),**
 - **new wind (20MW)**
 - **Significant quantities of small hydro, geothermal, and marine technology**
- **All participating SIDS develop renewable energy roadmaps**

ASSESSMENTS

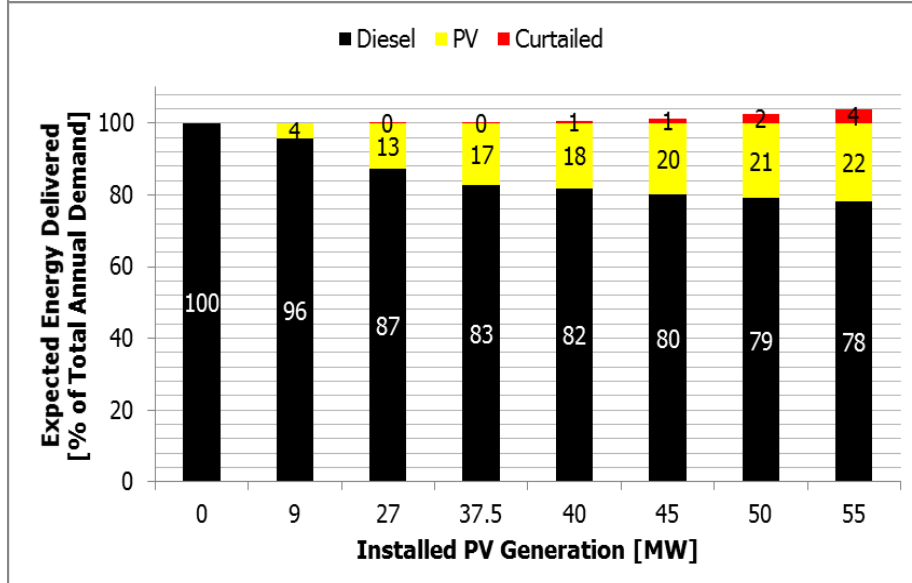
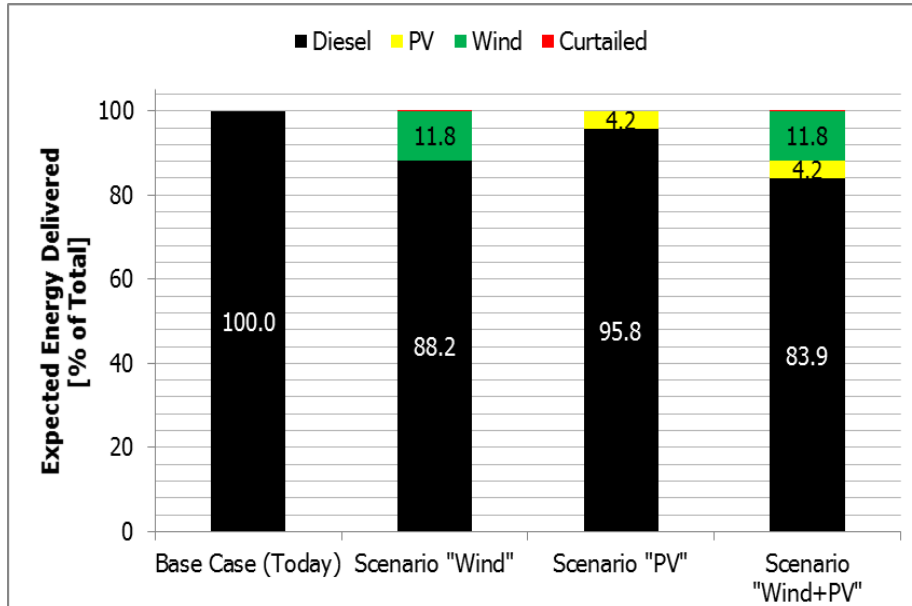
ASSESSMENTS

Identifying Pathways



Case Study

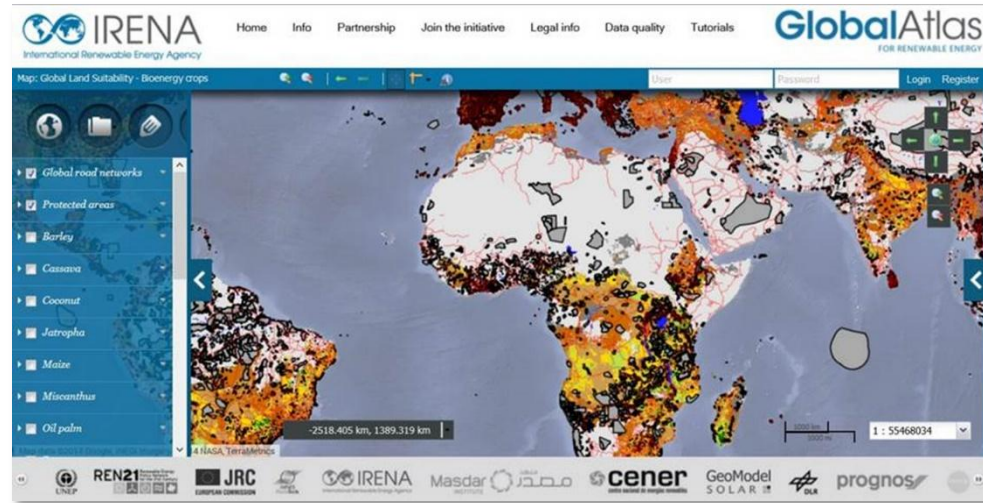
Antigua Grid Integration



- **Performance criteria fulfilled without major updates in the grid**
- **Changes in reserve allocation practices required**
- **Utility not willing to allocate contingency reserves**
- **Stability of the system relays on load shedding scheme**
- **Grid support functions provided by utility scale PV and wind are crucial:**
 - **Frequency range of operation of utility scale PV and wind must be the same from protection settings of diesel generators**
 - **Automatic generation control recommended**

- » Largest initiative to **assess renewable energy potential** on a global scale
- » Creates high-resolution **resource maps**
- » Includes **solar, wind, geothermal, bioenergy and ocean energy** resources (expanding to encompass **all renewable energy resources**)

Global Atlas FOR RENEWABLE ENERGY



DEVELOPMENT

Project Navigator

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

Scope

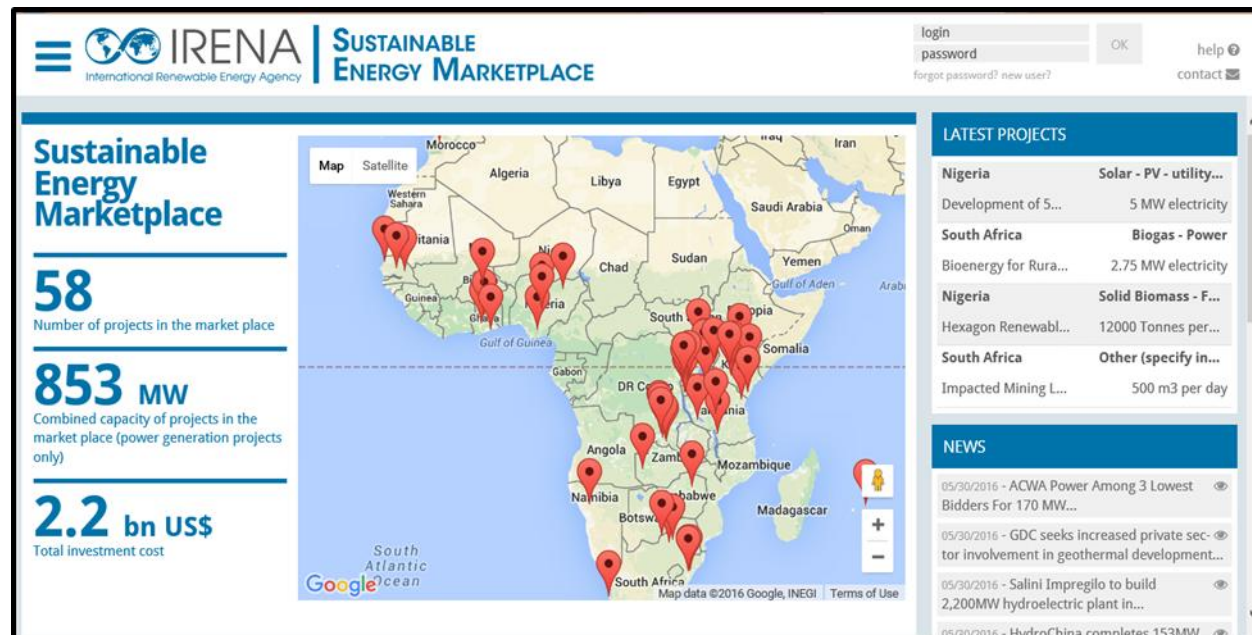
- » All RETs
- » Different finance types: grants, loans, equity
- » Project sizes: from individual use to utility scale projects
- » Global: all geographical regions



SUSTAINABLE ENERGY MARKETPLACE

Objective: to support **initiation, development** and **financing** of sustainable energy projects by:

- » Improving the transparency of the market
- » Offering IRENA's tools and databases for market players
- » Supporting projects at the development stage



Positioning of the Marketplace: Main stakeholders and their roles

PROJECT HOST COUNTRIES

- Promote project portfolios
- Promote enabling investment environments

PROJECT OWNERS

- Ensure visibility for projects
- Identify investors and advisors
- Share data

IRENA SUSTAINABLE ENERGY MARKETPLACE



FINANCIERS

- Originate deals
- Project development support
- Co-financiers
- Find relevant country data

SERVICES & TECHNOLOGIES

- Originate new customers
- Find partners in project development / financing consortia
- Find relevant country data

Totals:

- ✓ USD 144 m
- ✓ 15 projects
- ✓ 68 MW

Allocated to Islands so far:

- ✓ USD 66 m
- ✓ 6 projects
- ✓ 35 MW

Project selection announced in January of each year

Next cycle annual cycle opens November 2016

Country	Technology	Capacity (MW)	Loan (USDm)	Applicant Organisation	Cycle
Antigua and Barbuda	Wind and solar	4	15	Ministry of Health and the Environment	3
Cape Verde	Hybrid solar and wind	2	8	Associated Energy Developers	3
Cuba	Solar	10	15	Union Electrica	2
Maldives	Waste to energy	1	6	Ministry of Environment and Energy	1
Samoa	Bioenergy	3	7	Samoa Trust Estates Corporation	1
St. Vincent and the Grenadines	Geothermal	15	15	Ministry of National Security	2

**IMPLEMENTATION
OPERATION
MAINTENANCE**

Case Study: Tokelau islands

- Population ~ 1337
- 1 metre above sea level
- PV Capacity ~1 MW
- Budget ~ USD7 million funded by NZ, Tokelau and other sources
- NEP 2004 vision of 100% renewable energy
- 2005 & 2008 UNDP funded the assessments
- 2010 – Installation of 1MW PV solar system
- 2012 – to date – 100 % power generation from solar with battery storage



Case Study: Seychelles

- Population ~91, 650
 - RE Target – 15% by 2030
 - Port Victoria Wind Farm Project (8 x 750 kW wind turbines)
 - 3km of submarine cables connected to the wind turbines
 - Collaboration between Seychelles and UAE (Masdar)
 - Meets 8% of annual electricity demand
 - Offsets 5845 tons of CO² emissions
 - Operational since 2014
- Demonstrates feasibility of large-scale wind energy deployment in SIDS and in the Indian Ocean
 - Resource assessment and grid stability studies is critical



KNOWLEDGE SHARING CAPACITY BUILDING

- Home
- Resource Assessment
- Grid Integration
- Tourism
- SIDS Lighthouse Initiative
- Roadmaps
- Desalination
- Waste to Energy

About GREIN

IRENA, through GREIN, is pooling knowledge and sharing best practices to accelerate the uptake of clean and cost-effective renewable energy on islands and reduce reliance on costly fossil fuel. GREIN, has interest clusters on roadmaps, grid integration, tourism, resource assessment, waste-to-energy, and desalination.




Events

Martinique Conference on Island Energy Transitions: Pathways for Accelerated Up
29 Jul 2015



Tourism

IRENA, through GREIN, is showing the business case for renewables in island hotels. Options include solar hot water for showers, solar chillers and sea water cooling systems for air conditioning, and photovoltaic rooftops for electricity.



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Island Setting and Projects

Island lighthouses point the way for renewable energy transition on islands through a mix of political commitment, market opening, planning, capacity building and other supportive measures.



Roadmaps

Roadmaps define optimal pathways to achieve policy targets and quantify their implications. IRENA is assisting island countries in developing roadmaps for the transition to renewable energy. IRENA, through GREIN, is sharing roadmaps developed for islands around the world.



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Desalination

Many islands face a critical shortage of fresh water and so must desalinate seawater. GREIN is assessing renewable desalination at island scale.



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Waste to Energy

IRENA, through GREIN, is evaluating cost-effective options for islands to turn organic waste into locally generated electricity.



Resource Assessment

IRENA, through GREIN, is developing guidelines for wind resource measurement that islands can use to show the likely output and revenue from pilot wind power projects and get such projects financed.



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Grid Integration

IRENA, through GREIN, is sharing grid stability studies which show that islands can use a much higher share of renewable power while keeping service reliable. It also supports training to install and maintain renewable power property.



Case Study: Best Practices for Deploying Islands RE Desalination

1. Hokkaido Declaration was signed and issued by the Pacific Leaders and the Government of Japan in May 2009.
2. Launch of Pacific Environment Community Fund to undertake practical approaches to combat CC impacts.
3. Budget of USD66 million provided by Japan.
4. Solar power generation systems and seawater desalination plants or combination of both.
5. 29 plants of 1-100m³/day were contracted and built.

Republic of Palau

1. Technology – Photovoltaic – Reverse Osmosis Power plant
2. Application – Freshwater to the communities
3. Total capacity – 100 m³/day
4. System capacity – 150 liters per person/day
5. Status – Operational since 2013
6. System provider – Hitachi Plant Technologies Japan

Case Study: Saint Lucia

Sandals Regency La Toc Golf Resort & Spa

- Installed 38 flat plate solar water heaters
- Investment of ~USD57, 000
- Energy production ~147,241 kWh/annually.
- Hot water requirements ~ 98,199 kWh/annum,
- Estimated annual savings ~ US\$ 31,424.
- Payback period = 1.8 years
- Abated CO2 emissions ~ 277 tons.



Renewable Energy Learning Partnership



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IRENA COMMUNITY

Join the renewable energy conversation

00:00 02:32

News

IRENA Innovation Week Kicks off in Bonn

[read more](#)

Career Centre

Visit IREL's Career Centre to find internships in the renewable energy (RE) sector, RE job profiles and guidance on how to enter the sector.

[Read More](#)

Education Centre

Find courses, degree programmes, training guides and webinars that will set you ahead in your renewable energy career.

[read more](#)

Internship Opportunities

Wind Energy Intern
Institution: Sgurr Energy
Location: Hamburg, Germany

[read more](#)

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Sign up to receive bi-weekly updates on upcoming courses webinars and internship postings.

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Senior Programmes Officer, Technical Cooperation – Jennifer DeCesaro
JDeCesaro@irena.org

Programmes Officer, SIDS Lighthouses Initiative – Daniela Schmidt
Dschmidt@irena.org

Programmes Officer, Islands – Arieta Gonelevu Rakai
Arakai@irena.org