IRENA - Small Island Developing States (SIDS) Lighthouses

Roland Roesch
7. December 2015
The International Renewable Energy Agency

The global Voice, Advisory Resource and Knowledge Hub for renewable energy
Currently 144 member countries, 29 Signatories / States in Accession

Renewable energy can:

- Meet our goals for **secure**, **reliable** and **sustainable** energy
- Provide **electricity access** to 1.3 billion people
- Promote **economic development**
- At an **affordable cost**
Outline

1. SIDS Lighthouses Initiative
2. Renewables Readiness Assessments
3. Island Roadmaps
4. Grid Integration Studies
5. Project Navigator
7. REsource portal
1
SIDS LIGHTHOUSES INITIATIVE
Launched on 23 September 2014 at the Climate Summit

STRATEGIC OBJECTIVE:
• Enabling a sustainable energy transformation for people on the front line of climate change on small islands around the world
• Enhancing energy independence and economic prosperity on SIDS

MAIN ELEMENTS:
• Accelerated RE deployment in the power sector
• Well structured systems transitions
• Information Exchange
• Capacity Building

TARGETS by 2020:
• USD 500 mil mobilized
• 100 MW of new solar PV
• 20 MW of new wind
• Significant quantities of other RE technologies
• All participating SIDS have RE roadmaps
Progress since Climate Summit

**Martinique event 22-24 June 2015 with the Gov. of France**
- Focus RE resource assessment (wind, marine and geothermal)
- RE desalination, biomass and waste-to-energy systems
- Outcomes agreed in the [Martinique Action Plan (MAP)](#)

**Honolulu event 21-23 July 2015 with Gov. of the USA**

**Kuala Lumpur event 3-4 August with Gov. of Japan**

**Continued expansion of membership**

**Germany, Norway, New Zealand voluntary contributions**
SIDS Lighthouses Initiative status

27 SIDS and 18 development partners:

- Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Cape Verde, Cook Islands, Federated States of Micronesia, Fiji, Grenada, Guyana, Kiribati, Maldives, Republic of the Marshall Islands, Mauritius, Nauru, Niue, Palau, Saint Vincent & the Grenadines, Samoa, Sao Tome and Principe, Seychelles, Solomon Islands, Tonga, Trinidad and Tobago, Tuvalu, Vanuatu
- Carbon War Room, Clinton Climate Initiative, ENEL, European Union, France, Germany, Indian Ocean Commission, IRENA, Italy, Japan, New Zealand, Norway, SE4ALL, Rocky Mountain Institute, UNDP, United Arab Emirates, United States of America, World Bank Group
Process

Knowledge base

Establish energy baseline

Determine RE options

Understand RE impact

RE transition planning

RE project financing

RE project deployment

Create enabling policy environment

Design energy market mechanisms

Establish RE regulations

Institutional framework

Local capacity building

Regional & international cooperation
Objective:
- Assess the current situation in terms of enabling conditions for RE deployment
- Gather available information and identify information gaps
- Identify priority areas for action
- Involve government and private sector players

Approach: desktop review, phone interview plus 2-day visit when necessary

Quickscans progress
- Finalized the methodology
- Ran for Mauritius, Bahamas, Kiribati, Tonga, Samoa, Fiji, Cook Islands, FSM, Nauru, Palau, RMI, Solomon Islands, Tuvalu and Vanuatu.
- In the planning stage for others
2 RENEWABLES READINESS ASSESSMENTS
Objective:

- Comprehensive review of renewable energy development to improve understanding of the national energy sector
- Identification and analysis of key issues associated with the deployment of RE
- Present the opportunities for scaling up renewable energy development
- Discuss the specific issues to be addressed, and prepare specific policy recommendations
- Produce a portfolio of actionable initiatives to be developed

Status:

- **Ongoing SIDS:** Antigua and Barbuda, the Bahamas
- **Completed SIDS:** Kiribati, Grenada, Fiji, RMI, Vanuatu
Focus Areas

1. Grid Connected Renewables;
2. Off-Grid Renewables;
3. Institutional Strengthening including Policy, Legislation, Regulation, Plans and Capacity Building to support Renewable Energy Development;
4. Diesel Replacement for Power Generation;
5. Alternative Fuel for Transport (Land and Sea) and Efficient Vessels.
3

ISLAND ROADMAPS
Features of RE roadmaps for islands

• Country driven process, starting from the joint development of the TOR based on country needs

• Could focus on electricity only, or the whole energy sector of the country

• Could focus on the whole country, or on one specific island or group of islands

• Different quantitative tools, depending on approach, sectoral focus, data availability, etc. (e.g. HOMER, MESSAGE, in the future PLEXOS, complemented with PowerFactory when necessary)
RE roadmaps for islands

- Nauru Energy Road Map completed (with GIZ, SPC)
- Cyprus renewable energy roadmap completed
- Maldives renewable energy roadmap completed
- Mauritius ocean energy roadmap completed
- Ongoing Barbados and Kiribati
- Roadmap deployment support Cap Verde, Vanuatu (with GIZ)
GRID INTEGRATION STUDIES FOR VARIABLE RE
Technical Grid Integration Studies

Verification and planning technical tools to:

• Evaluate effort required to implement RE targets without affecting reliable and efficient operation
• Identify solutions / measures for potential technical problems

The complexity and the type of studies depends on the complexity of systems.

Typical outcome of a grid study

• Limits for VRE shares for reliable supply without additional major expansion measures
• Concepts for feasible technical solutions to support the reliable operation with shares beyond identified limits
• Required grid support functions / connection conditions from RE systems. Crucial for IPPs
• Identification of capacity building needs
Methodology for developing studies

1) Identify technical limits and necessary measures
2) Capacity building

Implementation and operation

1) Financing
2) Detailed design
3) Engineering and implementation

Benefits for member states

Workshops and trainings with experts

Access to specialized simulation software tools

Grid integration studies for member countries

Evaluation and planning
5
PROJECT NAVIGATOR
Welcome to the IRENA Project Navigator!

- To learn more about the renewable energy project development process and to develop bankable project proposals, please enter the Project Navigator.
- When looking for funding opportunities, browse the IRENA Financial Database using the Financial Navigator.
- If you are a project developer, you can create a workspace online and track your project development progress.

Choose from the Quick Access tiles below!

**Learning section**
- Learn about project development

**Start a project**
- Create a project workspace

**Financial Navigator**
- Find funding opportunities

**News**
- April, 2015
  2nd Project Navigator Workshop, Ulaanbaatar, Mongolia (TBC)
- April, 2015
  Launch of Technical Concept Guidelines for utility scale PV
Welcome to the IRENA Project Navigator!

- To learn more about the renewable energy project development process and to develop bankable project proposals, please enter the Project Navigator.
- When looking for funding opportunities, browse the IRENA Financial Database using the Financial Navigator.
- If you are a project developer, you can create a workspace online and track your project development progress.

Choose from the Quick Access tiles below!

Learning section

Learn about project development

Start a project

Create a project workspace

Financial Navigator

Find funding opportunities

Copyright © 2014 IRENA - International Renewable Energy Agency. All rights reserved. Terms and Conditions
Welcome to the IRENA Project Navigator!

- To learn more about the renewable energy project development process and to develop bankable project proposals, please enter the Project Navigator.
- When looking for funding opportunities, browse the IRENA Financial Database using the Financial Navigator.
- If you are a project developer, you can create a workspace online and track your project development progress.

Choose from the Quick Access tiles below!

- Learning section
- Start a project
- Financial Navigator

Copyright © 2014 IRENA - International Renewable Energy Agency. All rights reserved. Terms and Conditions
Welcome to the IRENA Project Navigator!

- To learn more about the renewable energy project development process and to develop bankable project proposals, please enter the Project Navigator.
- When looking for funding opportunities, browse the IRENA Financial Database using the Financial Navigator.
- If you are a project developer, you can create a workspace online and track your project development progress.

Choose from the Quick Access tiles below!

- Learning section
  - Learn about project development
- Start a project
  - Create a project workspace
- Financial Navigator
  - Find funding opportunities
Process Overview

FRONT END LOADING

FID (based on bankable information memorandum)

Early Stage Development
- Identify
- Screen
- Assess
- Select
- Pre-Development

Secondary Stage Development
- Development

Advanced Stage Development
- Execute
- Operate
- De-commissioning / Repowering

Clear Decision Check Points (incl. control questions)

Value Identification

Divergent Thinking

Convergent Thinking

Value Realisation
### Who will benefit from the IRENA Project Navigator?

<table>
<thead>
<tr>
<th>Member Countries</th>
<th>Project Developers</th>
<th>Municipalities</th>
<th>Academia</th>
<th>Financing Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Compliance with stakeholders requirements</td>
<td>• Best practices</td>
<td>• Capacity building</td>
<td>• RET project planning guidance</td>
<td>• Easier and faster project evaluation</td>
</tr>
<tr>
<td>• Higher quality of RET projects</td>
<td>• Identification of needs/gaps</td>
<td>• Spread social awareness</td>
<td>• Input for curriculum development</td>
<td>• Identification of bankable projects</td>
</tr>
<tr>
<td>• Lower implementation costs</td>
<td>• Easier and faster funding opportunities</td>
<td>• Decision-making and investment participation</td>
<td>• Capacity building</td>
<td></td>
</tr>
<tr>
<td>• Understandable administrative processes</td>
<td>• Higher quality of RET projects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Efficient administration</td>
<td>• Capacity building</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Capacity building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sources:**
- Cloudfront. July 5, 2013; http://dqbasmyouzti2.cloudfront.net/content/images/articles/coins-310x224.png
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

Online Tool

- Learning Section
  - General and technical guidelines
  - Case studies
- Start your own project
  - Systematic guidance
  - Tools, templates and examples
- Financial Navigator
  - Database of available RET funds

Visit us: irena.org/navigator
Contact us: navigator@irena.org
IRENA Project Navigator for islands

Cabo Verde Workshop

- Organisation of PV tender
- Formulation of PPA template
- Further capacity building
- Regional adaptation of the Navigator

Navigator for SIDS:

- Regional adaptation: Adjust to challenges and conditions of SIDS.
- Financial Navigator: Include local and regional banks in the database.
- Possibility to create synergy by bundling similar projects to overcome the added costs and risks. (future)

Visit us: irena.org/navigator
Contact us: navigator@irena.org
6 GLOBAL RENEWABLE ENERGY ISLANDS NETWORK (GREIN)
GREIN’s Six Interest Clusters:

Exchange of experiences and best practice between member country experts, supported by IRENA analytical work:

- Resource Assessment
- Technology Roadmaps
- Power Grid Integration
- Water Desalination Systems
- Waste-to-Energy Systems
- Tourist Sector Applications

www.irena.org/grein
7 RESOURCE PORTAL
REsource portal

*Interactive demonstration of the REsource portal*

http://www.irena.org/resource/

Data and statistics on: capacity, generation cost, investments, training opportunities

Country profiles

**GlobalAtlas** for renewable energy resources

http://irena.org/globalatlas/

Solar, wind, geothermal and biomass resource maps

Hydro power and ocean energy upcoming

Use as planning support tool
Thank You

www.irena.org

www.navigator.irena.org