

# GREIN

GLOBAL RENEWABLE ENERGY ISLANDS NETWORK



Supporting Island Transitions to  
a Renewable Energy Future

## Introduction: Why GREIN Is Needed

Costly fossil fuel imports from distant locations can burden island budgets and inhibit investment in socioeconomic development. Indigenous renewable energy resources can reduce these expensive imports and create important business and employment opportunities. And islands facing similar challenges can benefit by pooling knowledge and best practices for successfully overcoming them.

In recognition of this, Ministers and other participants from 48 countries, gathered in St. Julian's, Malta on 6-7 September 2012, and issued the Malta Communique on Accelerating Renewable Energy Uptake for Islands. They called on IRENA to establish a global Renewable Energy Islands Network (GREIN) as a platform for pooling knowledge, sharing best practices, and seeking innovative solutions for accelerated uptake of clean and cost-effective renewable energy technologies on islands. Such a network should help to achieve the aspirations expressed in the Barbados Declaration on Achieving Sustainable Energy for All in Small Island Developing States (SIDS) 2012, Outcomes of the Rio+20 Conference 2012, and the Abu Dhabi Communique on accelerating renewable energy uptake for the Pacific Islands 2012. The information provided by such a network should be of value not only to islands but also to virtual islands far from transmission grids, which share the burden of high costs for energy from distant sources which renewable energy may displace.

## Designing the System: How GREIN Will Work

To provide a useful platform for sharing knowledge and best practices, GREIN will invite island stakeholders to participate in distinctive clusters of activity that relate to their particular interests. Some of the clusters will be organized around renewable energy technologies of particular interest to islands, such as assessments of resource potential for these technologies. Other clusters will be organized around businesses or services of particular interest to islands, such as tourism, waste disposal or water desalination. Still other clusters may be organized around institutional objectives, such as a development of a checklist for financing and building renewable energy projects on islands or effective integration of renewable energy technologies on island micro-grids.

Each island will be invited to indicate interest in one or two of the following proposed activity clusters, and also to indicate if they have best practices to share on any of the proposed clusters:

- 1) **Resource Assessment** for Islands
- 2) **Readiness Assessment** for Islands
- 3) **Technology Deployment Roadmaps** for Islands
- 4) **Project Development Checklist** for Islands
- 5) **Power Grid Integration** on Islands
- 6) **Water Desalination** Systems on Islands
- 7) **Waste-to-Energy** Systems on Islands
- 8) **Tourist Industry** Applications on Islands

Once five or more islands have indicated interest in an activity cluster, the cluster will be activated. It is anticipated that participants in each cluster will exercise leadership in carrying out their program of activity, within the parameters of the IRENA work programme and available funding, according to what they deem most interesting and important, with IRENA providing secretariat and expert support as they may solicit. It is also anticipated that each cluster's participants may designate a cluster leader to plan and guide their activity – taking the concept of distributed leadership. Clusters will meet in person or virtually, in such times and places as participants decide. Cluster leaders would be invited to report periodically on the progress of their work to IRENA and its Members. IRENA would also invite the clusters to contribute to a new virtual knowledge sharing platform, continuously updated, to document their best practices for accelerating renewable energy deployment on islands. The information and activities of the interest clusters would complement existing networks and initiatives on islands.

It is anticipated that Network members will include not only experts in a variety of renewable energy technologies, but also experts on electricity minigrids, regulation, business, finance, and tourism. GREIN membership will draw from both interested island states and member states with islands. It may also include representatives of regional renewable energy networks, development agencies, multilateral financing institutions, and industry associations or fora that are working to promote renewable energy on islands. Cooperation, support and expert advice would be invited from a variety of interested island-focused organizations such as the Alliance of Small Island States (AOSIS), the Caribbean Community (CARICOM), the Eurelectric Network of Experts on Islands, the Indian Ocean Commission, ISLE-PACT, the Pacific Islands Forum, the Secretariat for Pacific Community (SPC), and the Small Island Developing States (SIDS-DOCK), as well as the Sustainable Energy for All (SE4ALL) initiative and interested non-governmental organizations.

## GREIN INTEREST CLUSTERS

### Renewable Energy Resource Assessment for Islands

- Geothermal
- Marine
- Wind
- Solar
- Hydro
- Bioenergy

Islands present current RE resource assessments (for geothermal, marine, wind, solar, hydro and/or bioenergy). IRENA works with islands to review available resource assessments, assess gaps in resource assessments, prepare a strategy to improve resource assessments, and procure financing for detailed measurement of wind, solar, hydro-power, geothermal, marine and bioenergy/waste-to-energy resources.

### Renewable Energy Readiness Assessment for Islands

- Actions to accelerate technology deployment
- Develop recommendations applicable to range of islands
- Advice on follow-up deployment activities

Islands present their current policies, technology solutions and business models for accelerating deployment of renewable energy. IRENA conducts RRAs for selected islands, focusing on concrete actions to accelerate renewable energy deployment. IRENA establishes Knowledge Platform to help islands share best practices for deploying renewable energy as RRAs develop them over time for different groups of islands in similar situations.

### RE Technology Deployment Roadmaps for Islands

- Power sector (mini-grids with generation from renewables)
- Transport sector (biofuels from crops or cooking oil)
- Building sector (solar cooling and water heating for hotels)

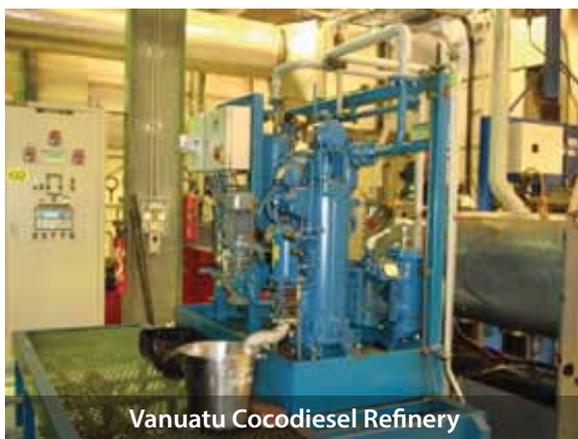
Islands present their current strategies for expanding RE in power, transport and building sectors and water and food production. IRENA develops roadmaps for expansion of renewable energy on interested Islands, based upon cost-effective opportunities for meeting projected needs for energy services in various sectors. IRENA organizes capacity building workshops to help islands implement the roadmaps with cost-effective RE technologies.

### RE Project Development Checklist for Islands

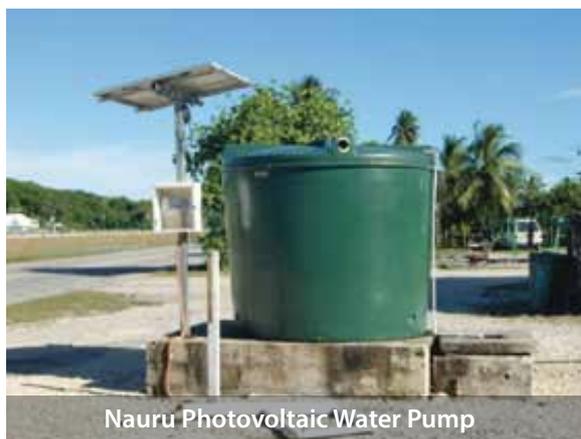
- Identify cost-effective projects
- Assess project feasibility
- Perform conceptual and detailed design studies
- Obtain investment financing
- Successful Installation
- Operation and Maintenance
- Decommissioning

Islands present portfolios of RE projects they wish to implement. IRENA develops checklist for identifying, financing, building and operating RE projects on islands. Taking account of legal, engineering, environmental, commercial and organisational issues, the checklist will cover all stages of RE project development on islands: identification, feasibility, conceptual and detailed design, financial investment decision, installation, operation and maintenance, and decommissioning. IRENA organizes capacity building workshops to help islands understand the checklist with relation to specific planned projects.





Vanuatu Cocodiesel Refinery



Nauru Photovoltaic Water Pump

## Renewable Energy Power Grid Integration on Islands

- Displace costly diesel fuel for electricity generation
- Apply baseload renewables (hydro, marine, geothermal)
- Integrate intermittent renewables (wind, solar)

Islands present plans for expanding the share of RE on their grids. IRENA helps different types of islands determine the share of renewable power that can be integrated onto their grids, as a function of the types of renewable resources available and the status of grid development, including assessment of how the share may increase over time, while keeping power grids stable and electric service reliable.

## Renewable Energy Water Desalination Systems on Islands

- Water is expensive to bring in from overseas
- Islands thus a natural market for high-cost desalination
- Solar energy provides the indigenous resource

Islands share best practices for the use of RE in desalination. IRENA Knowledge Platform includes these best practices. IRENA may develop a concise technology brief on key features of RE use for desalination and best practices for such applications. IRENA organizes capacity building workshops to help islands apply best practices for RE use in planned desalination projects.

## Renewable Energy Waste-to-Energy Systems on Islands

- Tourist industry generates large quantities of waste, which is costly to ship away
- Cost savings in waste disposal reduce new generating cost

Islands share best practices for conversion of waste to energy. IRENA Knowledge Platform includes these best practices. IRENA may develop a concise technology brief on key features of waste-to-energy systems, factors affecting their costs and benefits, and best practices for putting them in place. IRENA organizes capacity building workshops to help islands apply these practices.

## Renewable Energy Tourist Industry Applications on Islands

- Hotels are energy-intensive (air conditioning, showers)
- Renewables are cost-effective (hybrid cooling systems, solar hot water heating)

Islands share best practices for the use of renewable energy to supply the services required by an active island tourist industry, including electricity for hotel appliances and equipment, water heating for showers, air conditioning for rooms, and transport. IRENA Knowledge Platform includes these best practices. IRENA may perform an analytic study of the feasible share of renewables in providing such services for tourism on islands. IRENA works with Sustainable Tourism Alliance and similar forums to conduct assessments of RE technologies with hotels.

The International Renewable Energy Agency (IRENA) promotes the accelerated adoption and sustainable use of all forms of renewable energy. IRENA's founding members were inspired by the opportunities offered by renewable energy to enable sustainable development while addressing issues of energy access, security and volatility. Established in 2009, the intergovernmental organisation provides a global networking hub, advisory resource and unified voice for renewable energy.