

IRENA SUPPORT FOR CAPITAL MOBILIZATION FOR THE DEPLOYMENT OF RENEWABLE ENERGY IN SIDS

SIDS Global Business Network Forum 2018

Balaclava, Mauritius

21-22 May, 2018



Contents

- SIDS Lighthouses Overview
- Support to Mobilize Funds
- Preliminary support
- Role of NDCs
- Capital mobilization



SMALL ISLAND DEVELOPING STATES IN THE LIGHTHOUSES INITIATIVE



- PACIFIC:**
1. Cook Islands
 2. Federated States of Micronesia
 3. Fiji
 4. Kiribati
 5. Republic of the Marshall Islands
 6. Nauru
 7. New Caledonia
 8. Niue
 9. Palau
 10. Papua New Guinea
 11. Samoa
 12. Solomon Islands
 13. Tonga
 14. Tuvalu
 15. Vanuatu

SIDS LIGHTHOUSES INITIATIVE WAS LAUNCHED ON 23 SEPTEMBER 2014 AT THE CLIMATE SUMMIT WITH 55 PARTNERS: 36 SIDS AND 19 DEVELOPMENT PARTNERS

Other partners:

European Union, France, Germany, Italy, Japan, New Zealand, Kingdom of Norway, United Arab Emirates, United States of America, Indian Ocean Commission, International Renewable Energy Agency (IRENA), Association of the Overseas Countries and Territories of the European Union, United Nations Development Programme, World Bank, Enel, Clean Energy Solutions Center, Clinton Climate Initiative, Rocky Mountain Institute—Carbon War Room, Sustainable Energy for All (SEforALL)

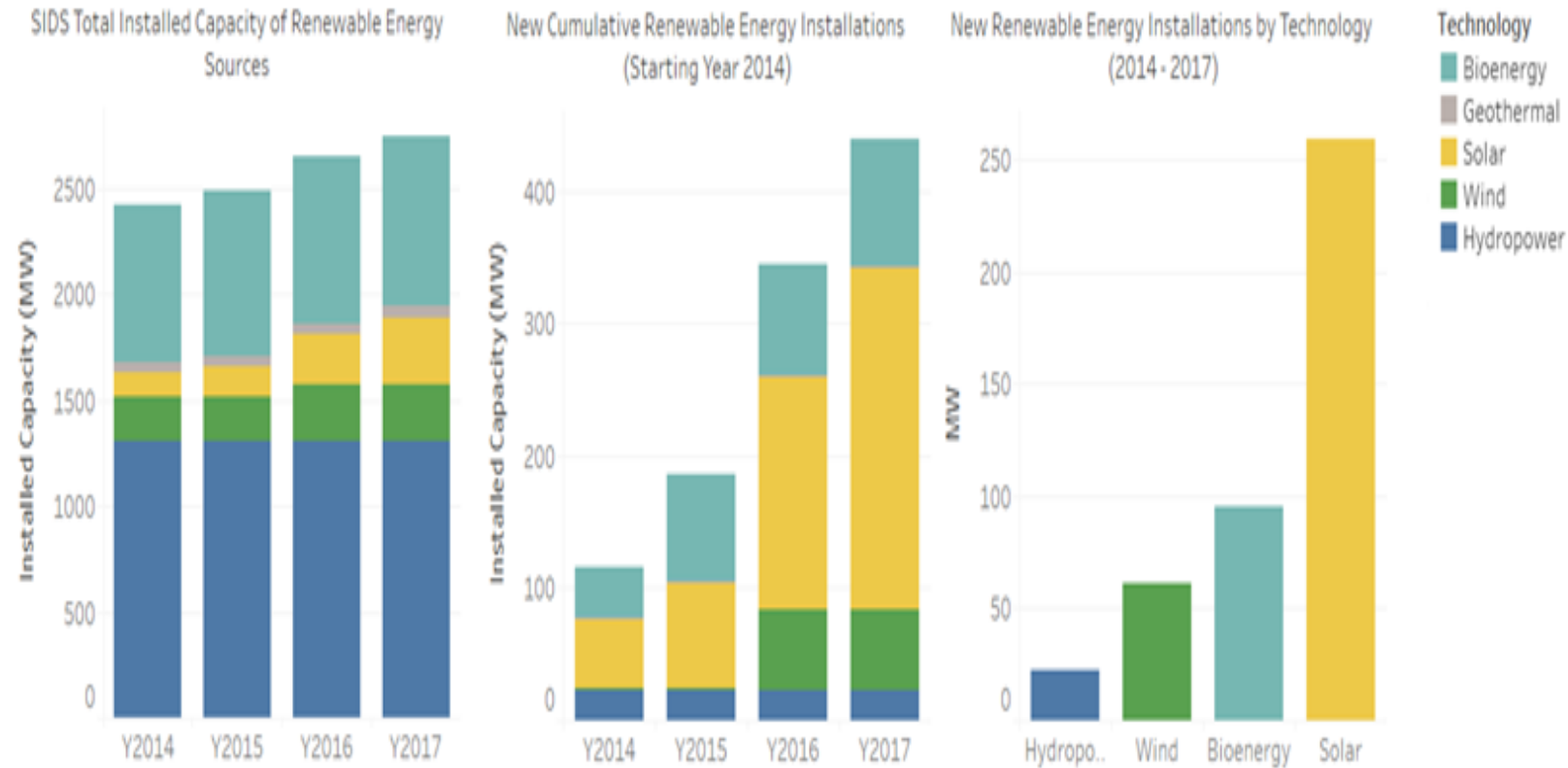
SIDS Lighthouses initiative: Outline

- Partnership between Small Island Developing States (SIDS), IRENA and other development partners
- 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 renewable energy deployment in the power sector*
 - *Well structured systems transitions*
 - *Information exchange between partners*
 - *Capacity building in SIDS*

TARGETS by 2020:

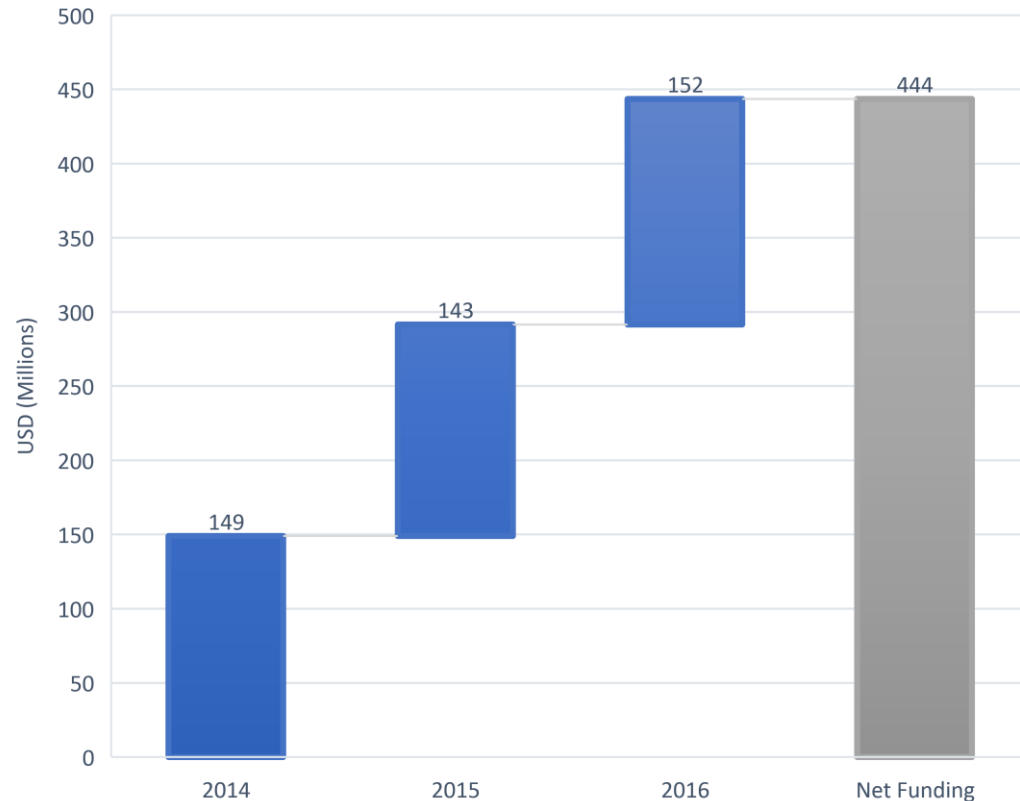
- USD 500 million mobilized
- 100 MW of new solar PV
- 20 MW of new wind
- Significant quantities of other RE technologies
- All participating SIDS have RE roadmaps

TARGET 1 – SOLAR AND WIND (MW INSTALLED)



- The growth of RE in SIDS has been very impressive
- From 2014 - 2017, more than 400 MW of RE has been added to the power sector across SIDS
- The SIDS have exceeded Solar PV targets of 120 MW
- Wind power installations have exceeded the 20 MW target.

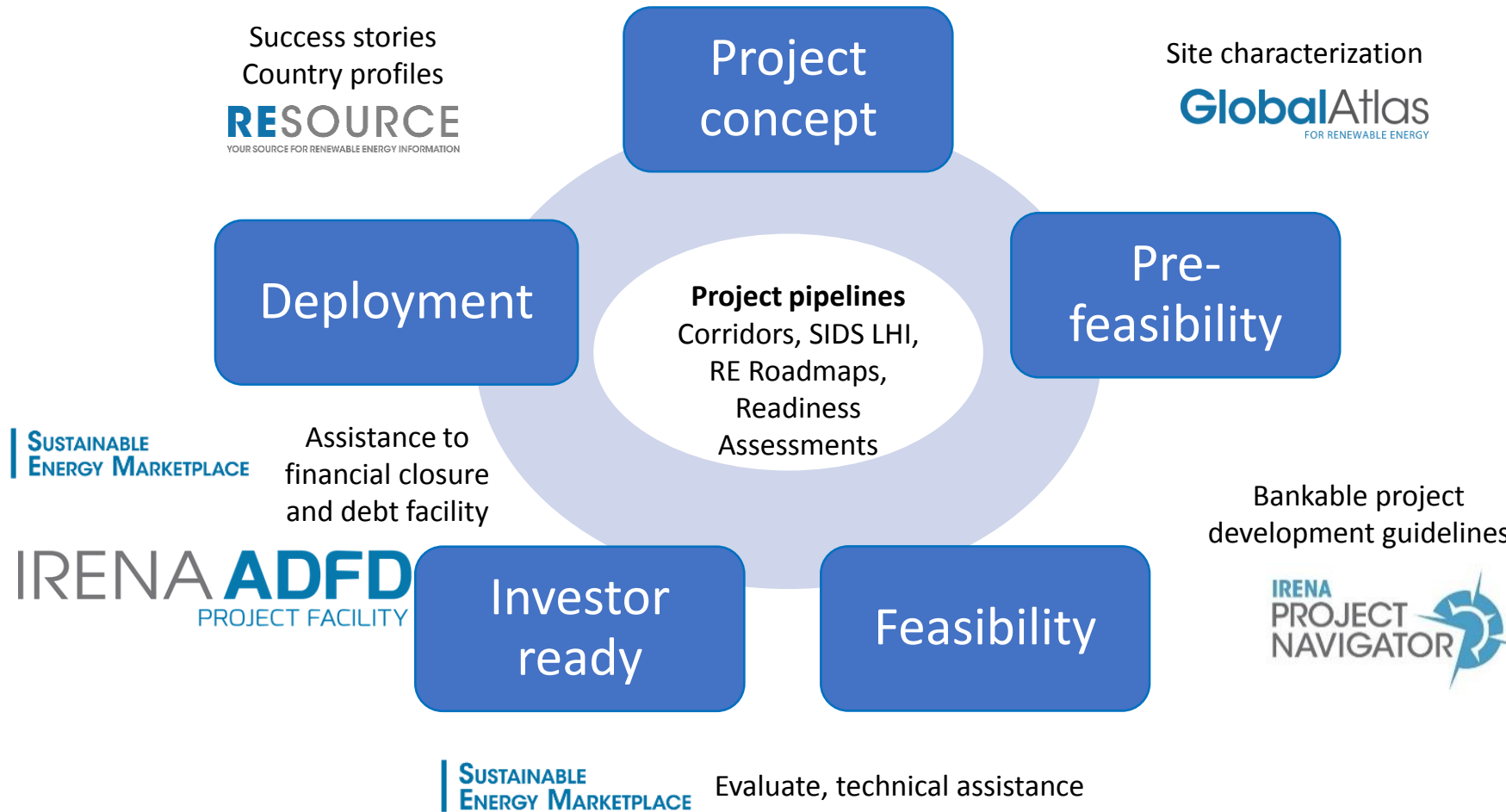
TARGET 2 – FUNDS MOBILIZED (500 MILLION USD)



The figures are based on publicly available data on RE projects in SIDS. This does not encompass all projects and RE funding in SIDS.

- Data on funding for RE in SIDS is a major challenge
- Based on partial data gathered for SIDS, more than 400 Million USD has been made available for developing RE in SIDS from 2014 to 2016
- The SIDS are on track to meet and even exceed the SIDS Lighthouses Initiative's target of 500 Million USD.

Support to mobilize funds - IRENA Tools



Preliminary support

- Quicksans
- Roadmaps
- Readiness Assessments

QUICKSCANS

- Rapid assessment of needs / high impact opportunities
- Covers all elements of energy transition
- IRENA communicating Quicksan findings to development partners and island community to increase impact
 - Detailed report launched at COP23 Island Energy Day:
<http://www.irena.org/publications/2017/Nov/SIDS-Lighthouses-quicksan-Interim-report>
 - Interactive score chart on IRENA website:
<http://islands.irena.org/Quicksans.aspx>
 - Identifying additional venues to showcase Quicksan results
- IRENA will conduct 2nd round of Quicksans
 - Cover all Lighthouses island partners
 - Provide tool for measuring progress since 1st Quicksan



Road Maps



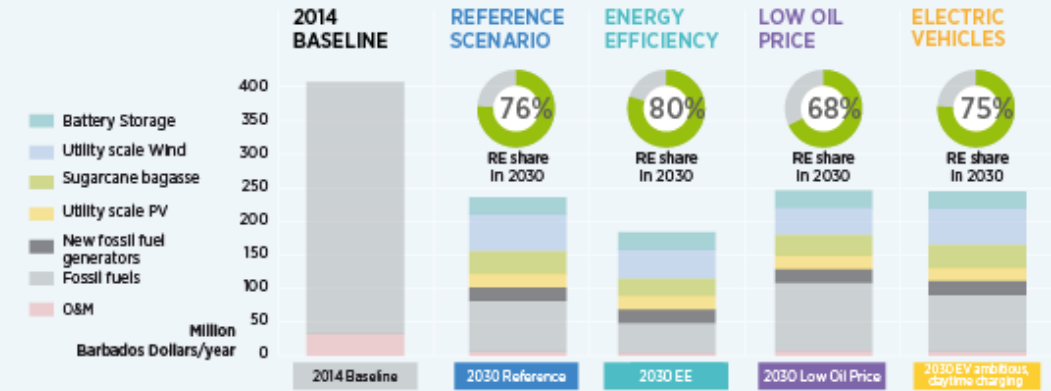
Capacity expansion

Least-cost capacity expansion plan 2015-2030

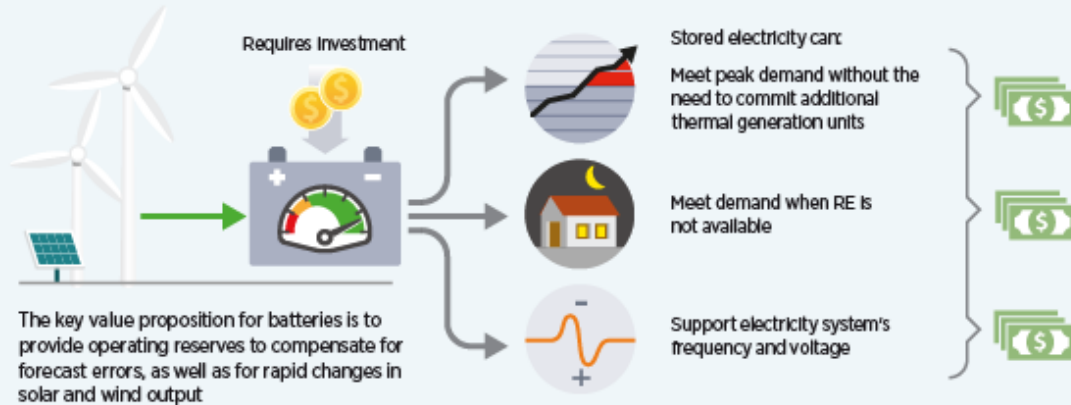
Dispatching

Production cost modelling of 2014 and 2030 scenarios

Roadmap gives detailed insight on how renewables can reduce power sector costs.



Roadmap identifies options to support battery storage deployment.



Road Maps

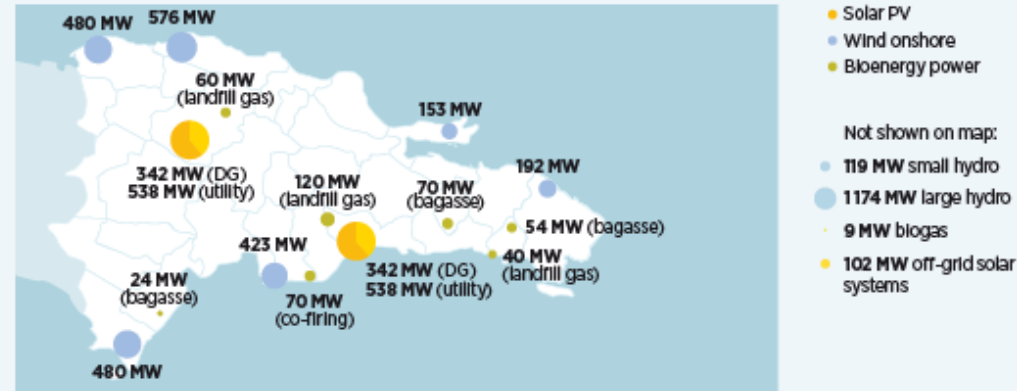
Capacity expansion

REmap analysis identified the potential for RE in the energy mix by 2030

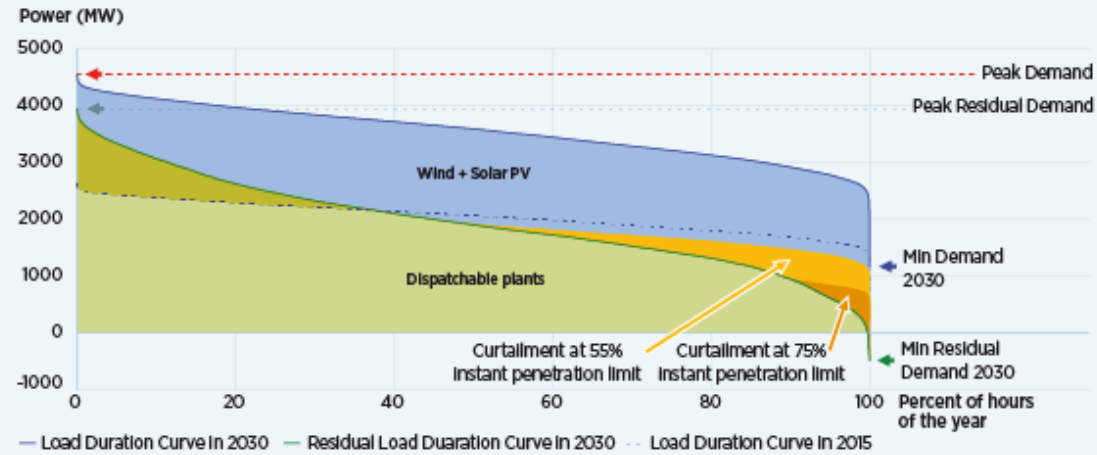
Dispatching

VRE penetration and transmission bottlenecks estimated based on projected VRE generation and duration curves

Dominican Republic REmap 2030 analysis shows significant renewables capacity expansion is possible.



REmap analysis provides insight on integrating higher shares of PV and wind.



Grid Integration Studies

Integration studies in association with energy authorities and network operators supporting evaluation of impacts and Operation & Expansion planning of the grid

Concluded Grid Studies

- Palau
- Samoa
- Antigua and Barbuda
- Cook Islands

Ongoing/Planned 2017-2018

- Vanuatu
- Fiji
- Dominican Republic
- Cuba

Reviews of technical reports

- Barbados

Exchange of Experience and Capacity Building

- Technical workshops and webinars with partners in the Caribbean and Pacific, technical guides and global access to software tools



The work has been supported by voluntary contributions from Norway, New Zealand and Germany



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

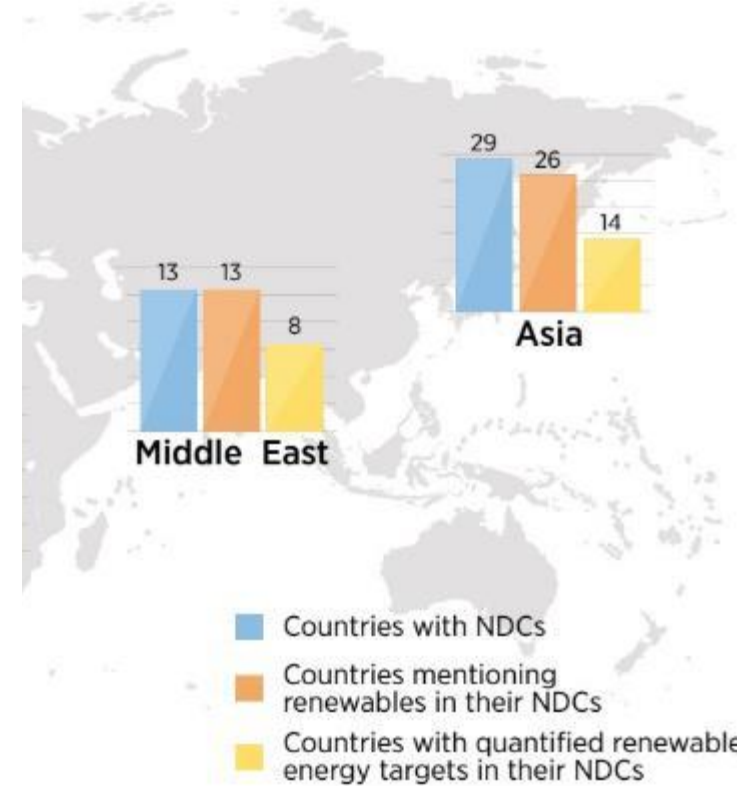
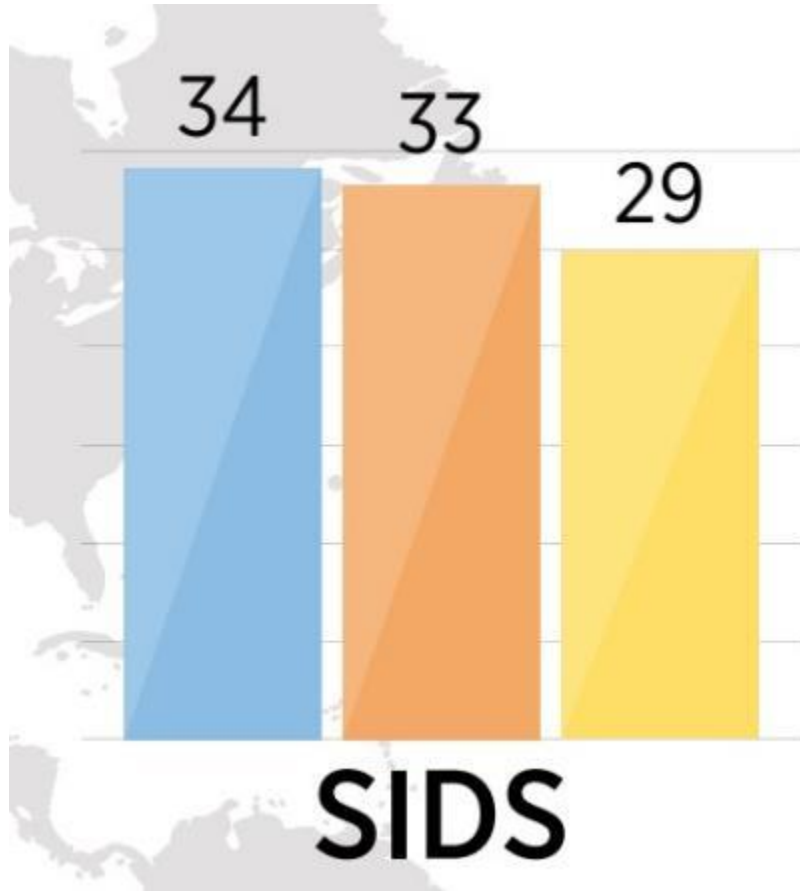
Status:

- **Completed SIDS:** Kiribati, Grenada, Fiji, RMI, Vanuatu, Antigua and Barbuda, Bahamas



Role of NDCs

UNFCCC Parties including renewable energy in their NDCs



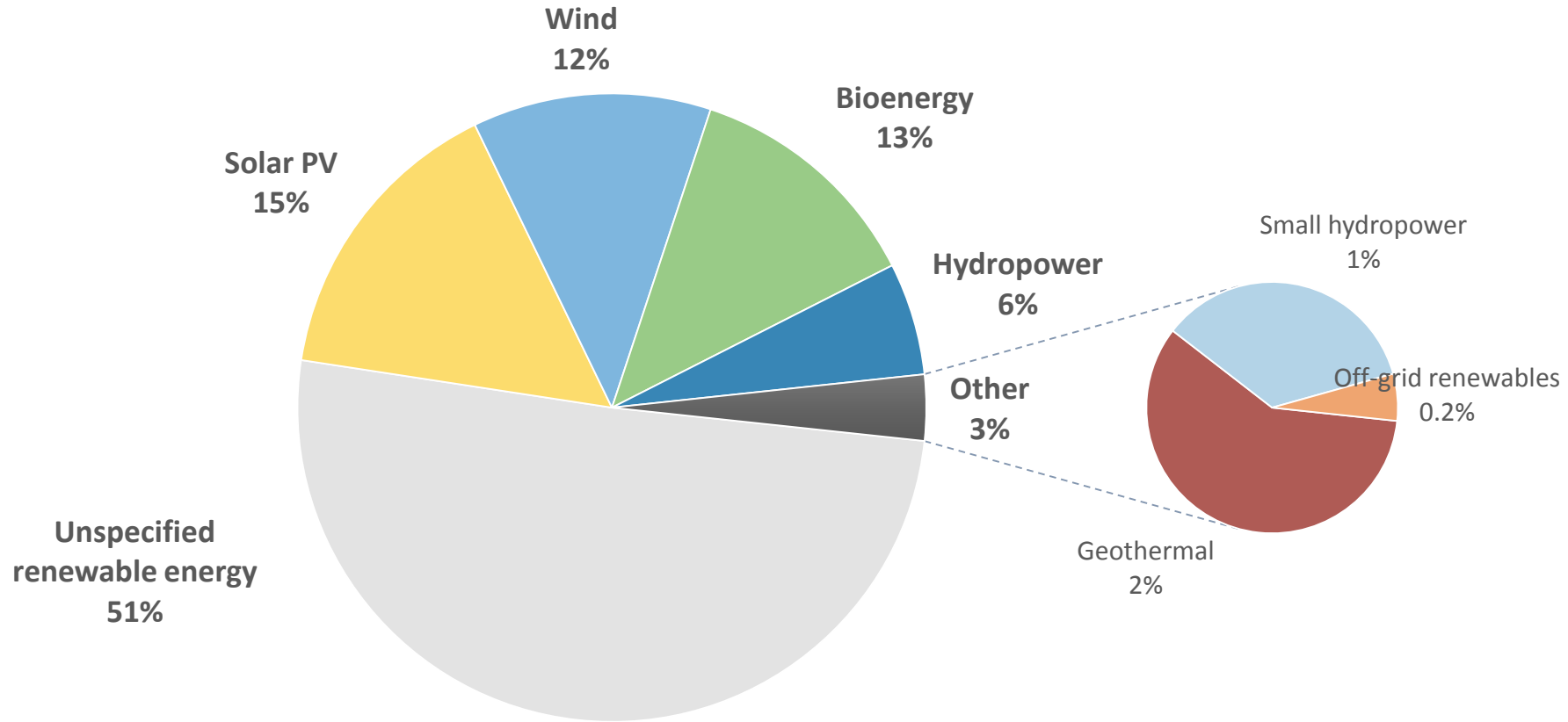
Virtually all SIDS mention renewables in their NDCs and 85% of them include quantified renewable energy targets

Source: IRENA, 2017



New capacity installed by 2030 in SIDS as a result of NDC implementation, by technology

NDC-driven increases in renewable power installed capacity up to 2030 by technology

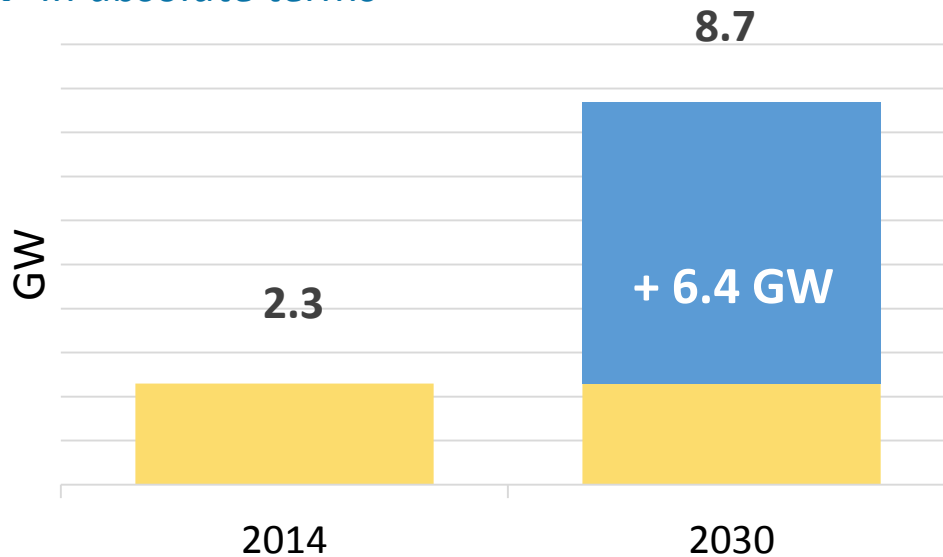


Source: IRENA, 2017

Growth in SIDS renewable power installed capacity as a result of NDC implementation

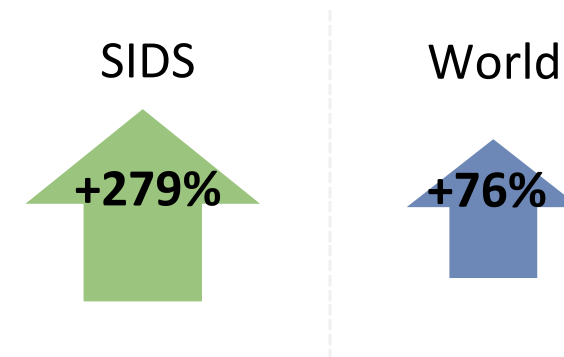
NDC-driven growth in capacity between 2015 and 2030

→ *In absolute terms*



- Additional capacity installed as a result of NDC implementation
- Renewable power installed capacity in 2014








→ *In relative terms*



Renewable energy targets in SIDS NDCs show an ambitious growth for renewables in the power sector



SIDS with 100% renewable energy target in their NDCs

By	2020	2025	2030
	 Tuvalu	 Cabo Verde	 Fiji
	 Cook Islands		 Papua New Guinea
			 Samoa
			 Vanuatu

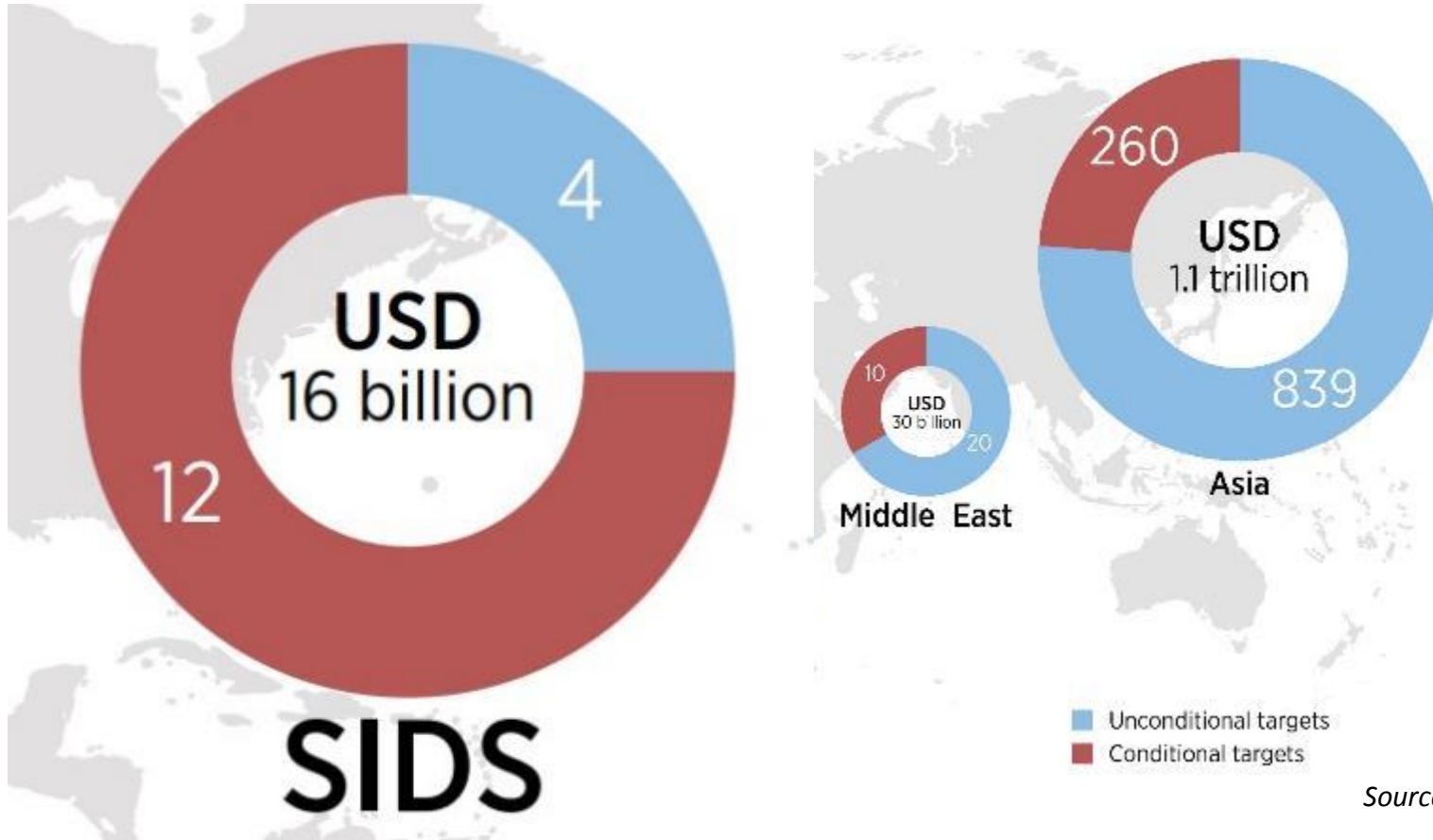
A number of SIDS have very ambitious plans seeking 100% renewable electricity



Investment needed by 2030 to implement renewable energy targets in current NDCs

Total investment needed by 2030 for renewable energy targets in NDCs

USD 16 billion will be needed by 2030 to implement the renewable energy targets set out in SIDS NDCs, of which 75% for conditional targets

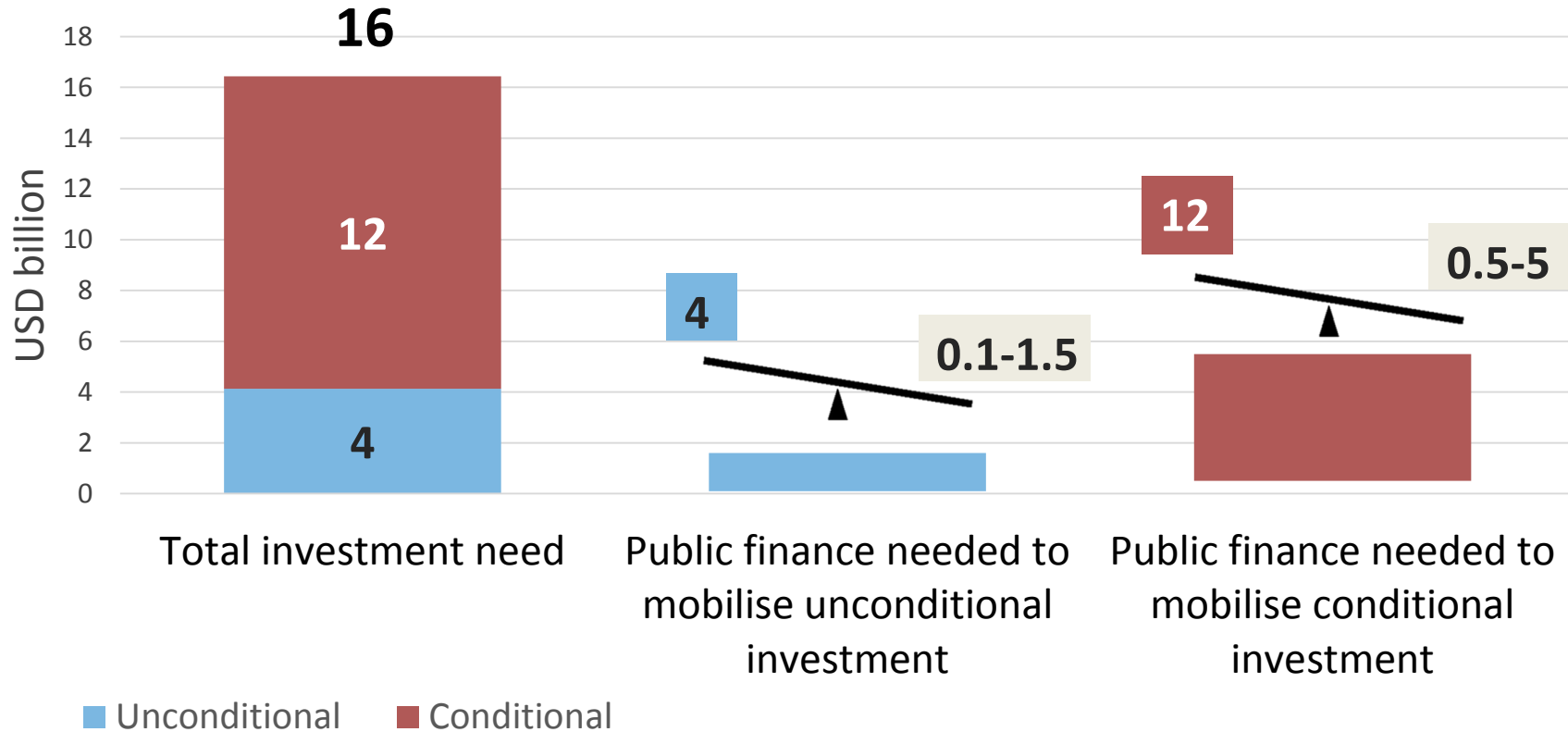


Source: IRENA, 2017



Leveraging private investment to implement renewable energy targets in SIDS NDCs

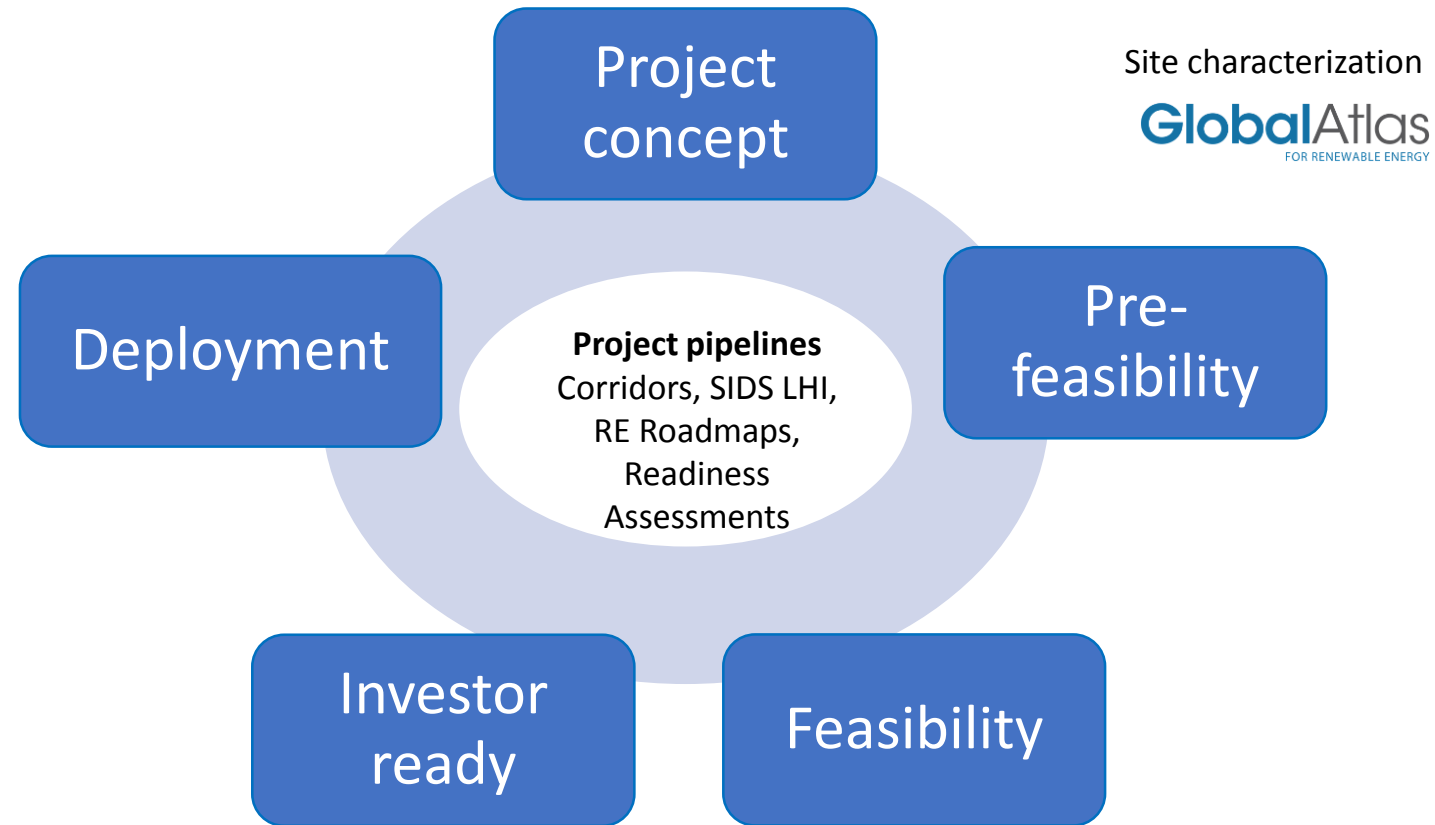
Public finance needed by 2030 for renewable energy targets in SIDS NDCs



Public finance should focus on crowding in private investment through the use of risk mitigation instruments and structured finance

Source: IRENA, 2017

Capital Mobilization



ITEM 1: The Global Atlas

- » 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 Site appraisal service demonstrated on wind sites in Comoros and Cape Verde

The Site Appraisal Service - The service is an innovative and cost effective approach to screen sites earmarked for solar and wind development in countries. This service efficiently expedites the development process and increases the likelihood of success with finding economically viable sites for further investments.

Technology configuration covered

Wind

Solar stand-alone (Utility scale)

Solar and battery hybrid system

Solar and diesel hybrid system

Work for SIDS:

- 2 wind sites for Cape Verde
- 4 wind sites for Comoros
- More sites in the pipeline: Nauru, Marshall Islands and Fiji

To request for site appraisals, please contact:

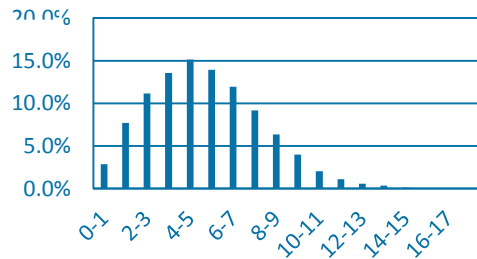
GlobalAtlasServices@irena.org

The service entails...

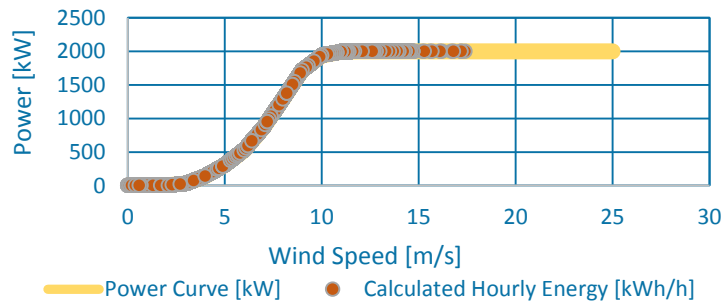
Data Analysis, Power Simulation & Financial modelling

1. Wind data analysis – inter-annual variability, direction and frequency distribution

Spatial resolution	3km
Length [years]	10.0
Mean wind speed [m/s]	5.1
Max wind speed [m/s]	18
Min wind speed [m/s]	0
Inter-annual variability	3.42%
Air density [kg/m3]	1.159



2. Power simulation curve



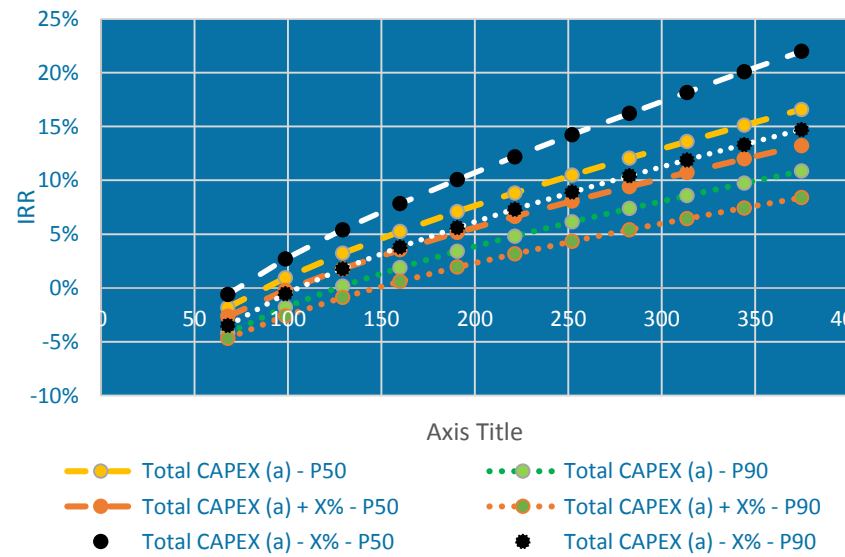
Production estimates

P25 (MWh/Year)	4,836
P50 (MWh/Year)	4,161
P90 (MWh/Year)	2,879

3. Financial model – cash flow model, NPV, IRR and Sensitivity analysis

Base scenario: P50, Tariff \$200.6/MWh

NPV net income before tax	1,714,106
IRR before tax	11.44%
NPV net income after tax	-15
IRR after tax	8.00%
LCoE (per MWh)	165.08

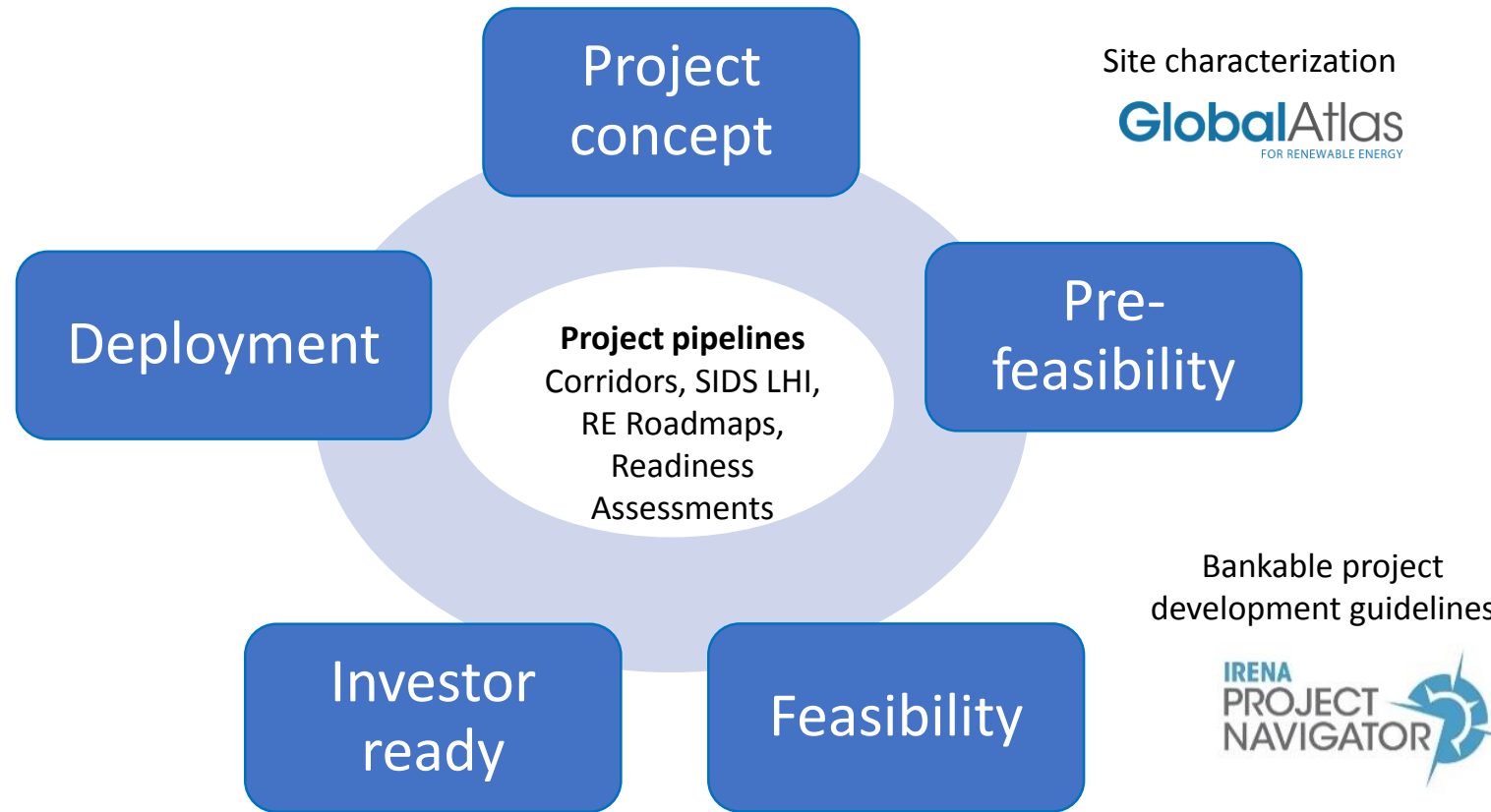


Interpretation

Possible result interpretations

1. The site is economically feasible – within a given tariff range (in US cents/kWh)
2. The site is marginally feasible – *only under certain conditions i.e. high current tariff and very low financing costs*
3. Marginally feasible – *only when pooled with several other economically feasible sites*
4. Not economically feasible

IRENA Tools



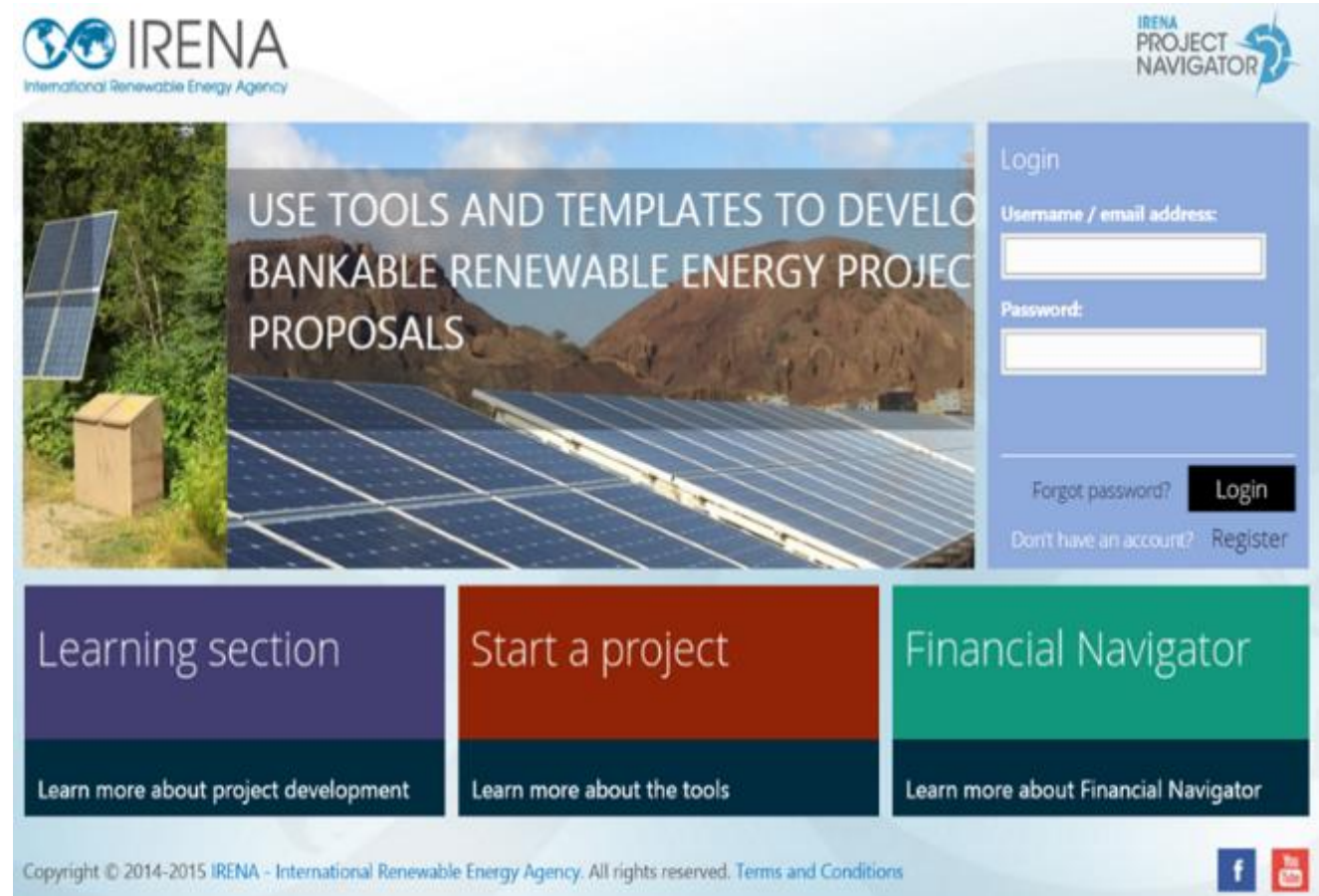
ITEM 2: PROJECT NAVIGATOR

Objectives

- » Increase the bankability of projects by:
 - » Strengthening the project development base
 - » Enhancing the quality of project proposals
 - » Reducing costs and mitigating risks through improved planning and efficient use of funds
 - » Facilitating effective implementation

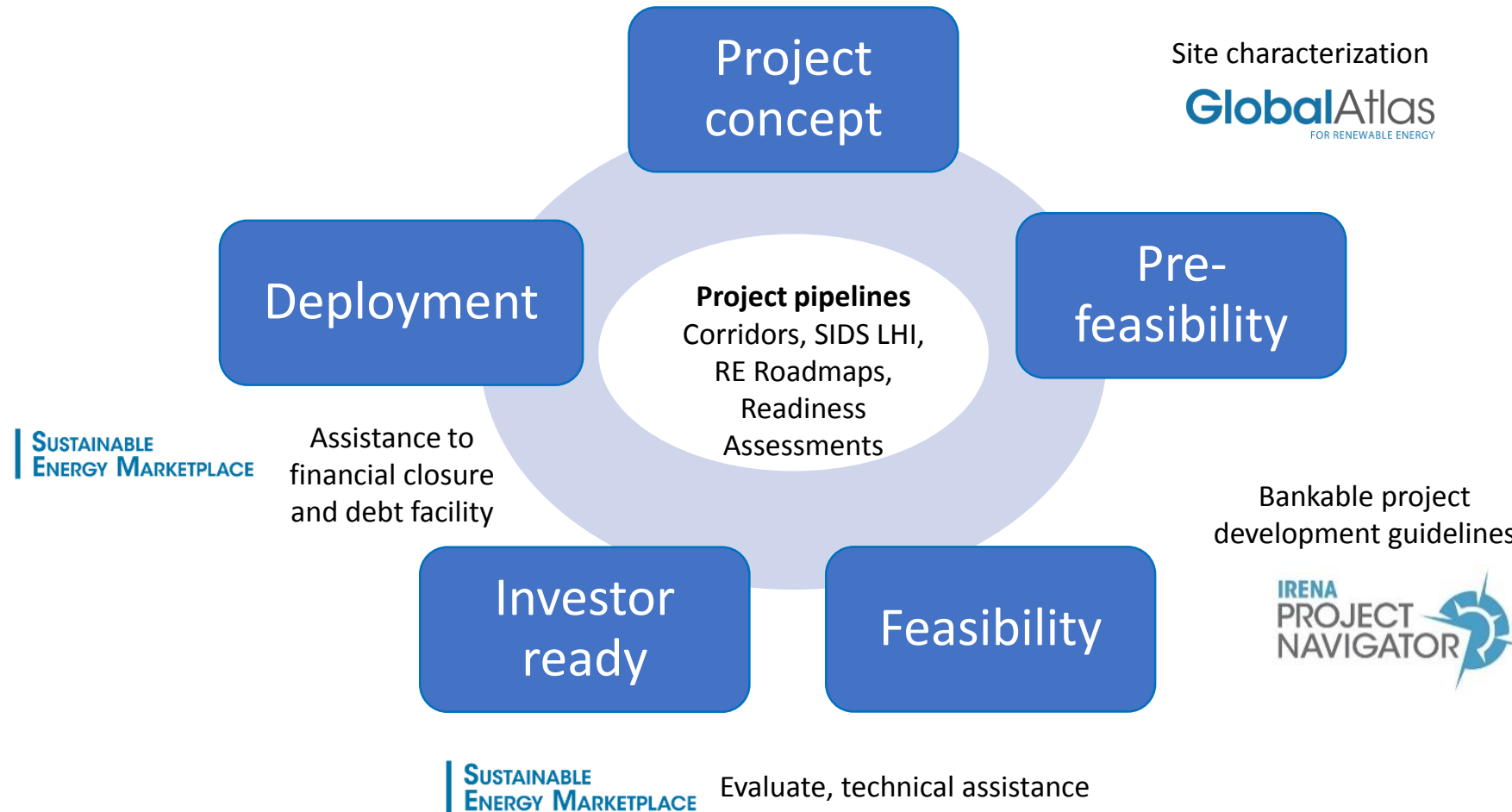
Scope

- » All renewable energy technologies
- » Different financing types: grants, loans, equity
- » Project sizes: from individual use to utility scale projects
- » Global: all geographical regions



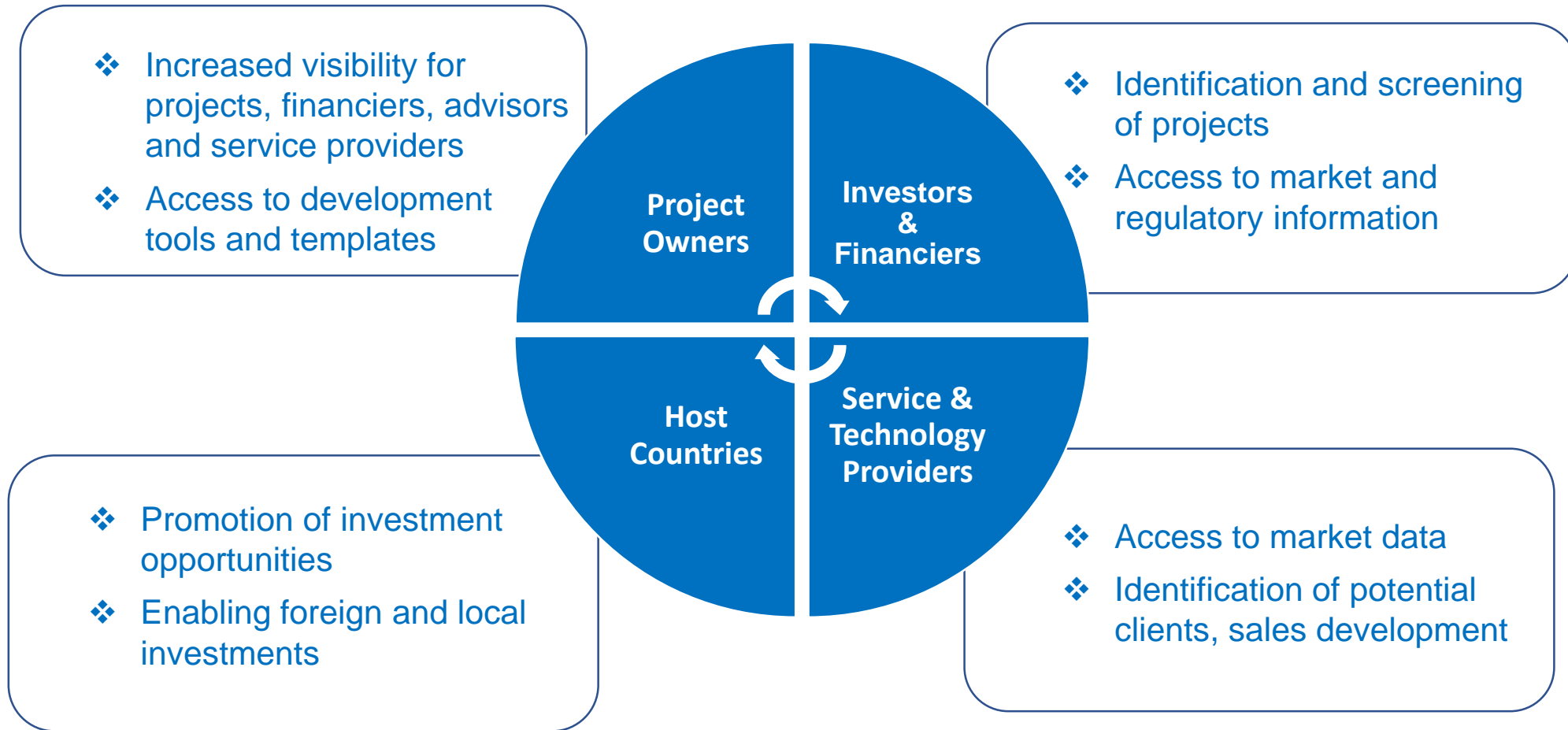
The screenshot shows the IRENA Project Navigator website. At the top left is the IRENA logo (International Renewable Energy Agency). At the top right is the 'IRENA PROJECT NAVIGATOR' logo. The main banner features a background image of solar panels and a hill, with the text: 'USE TOOLS AND TEMPLATES TO DEVELOP BANKABLE RENEWABLE ENERGY PROJECT PROPOSALS'. On the right side, there is a login section with fields for 'Username / email address' and 'Password', and buttons for 'Login', 'Forgot password?', and 'Register'. Below the banner are three main navigation buttons: 'Learning section' (with subtext 'Learn more about project development'), 'Start a project' (with subtext 'Learn more about the tools'), and 'Financial Navigator' (with subtext 'Learn more about Financial Navigator'). At the bottom, there is a copyright notice: 'Copyright © 2014-2015 IRENA - International Renewable Energy Agency. All rights reserved. Terms and Conditions' and social media icons for Facebook and YouTube.

IRENA Tools



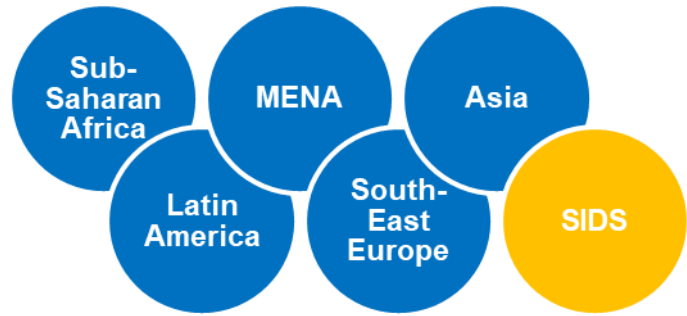
ITEM 3: Sustainable Energy Marketplace

A virtual marketplace connecting renewable energy project owners, financiers/investors, services providers and technology suppliers.

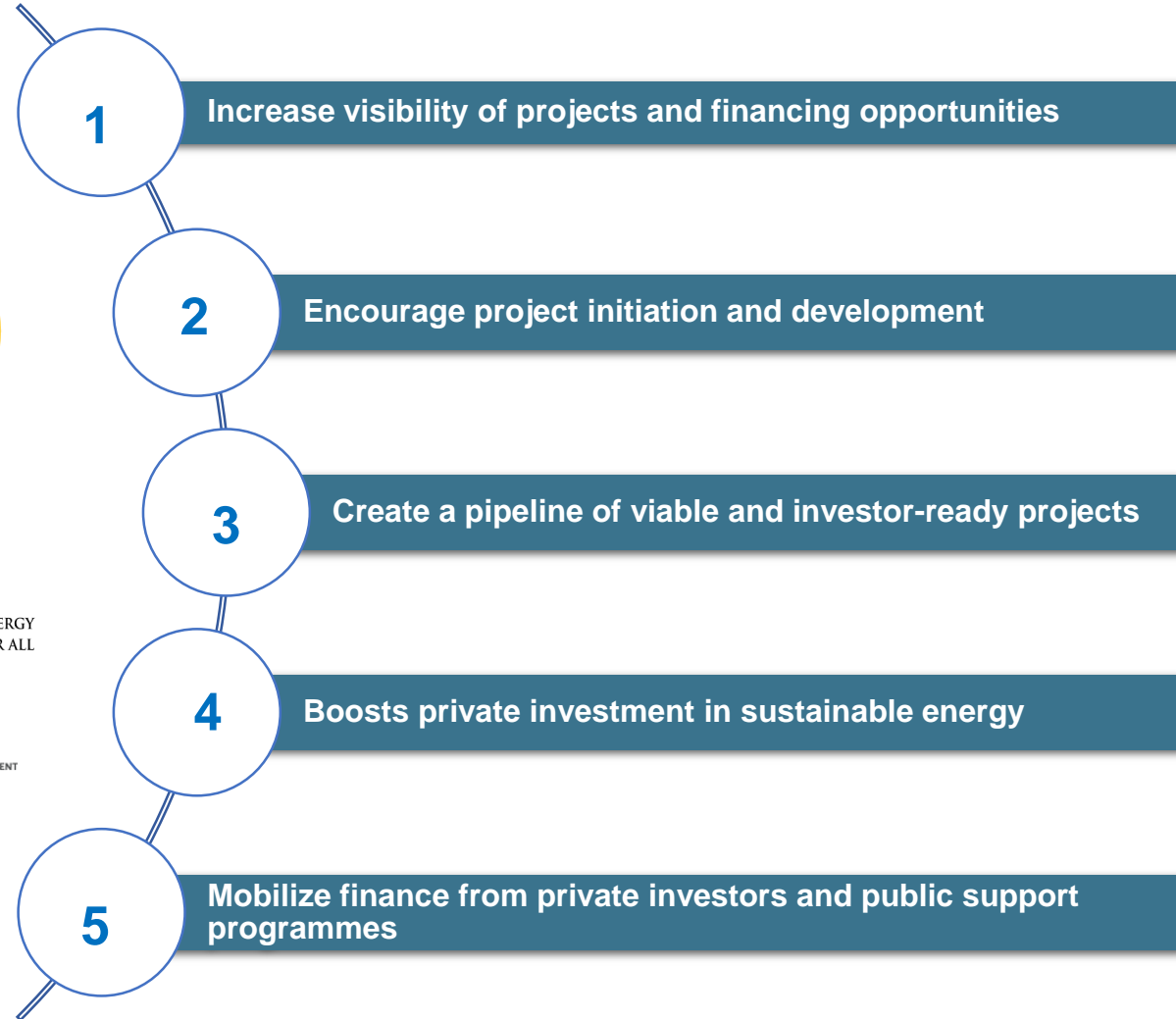


Sustainable Energy Marketplace

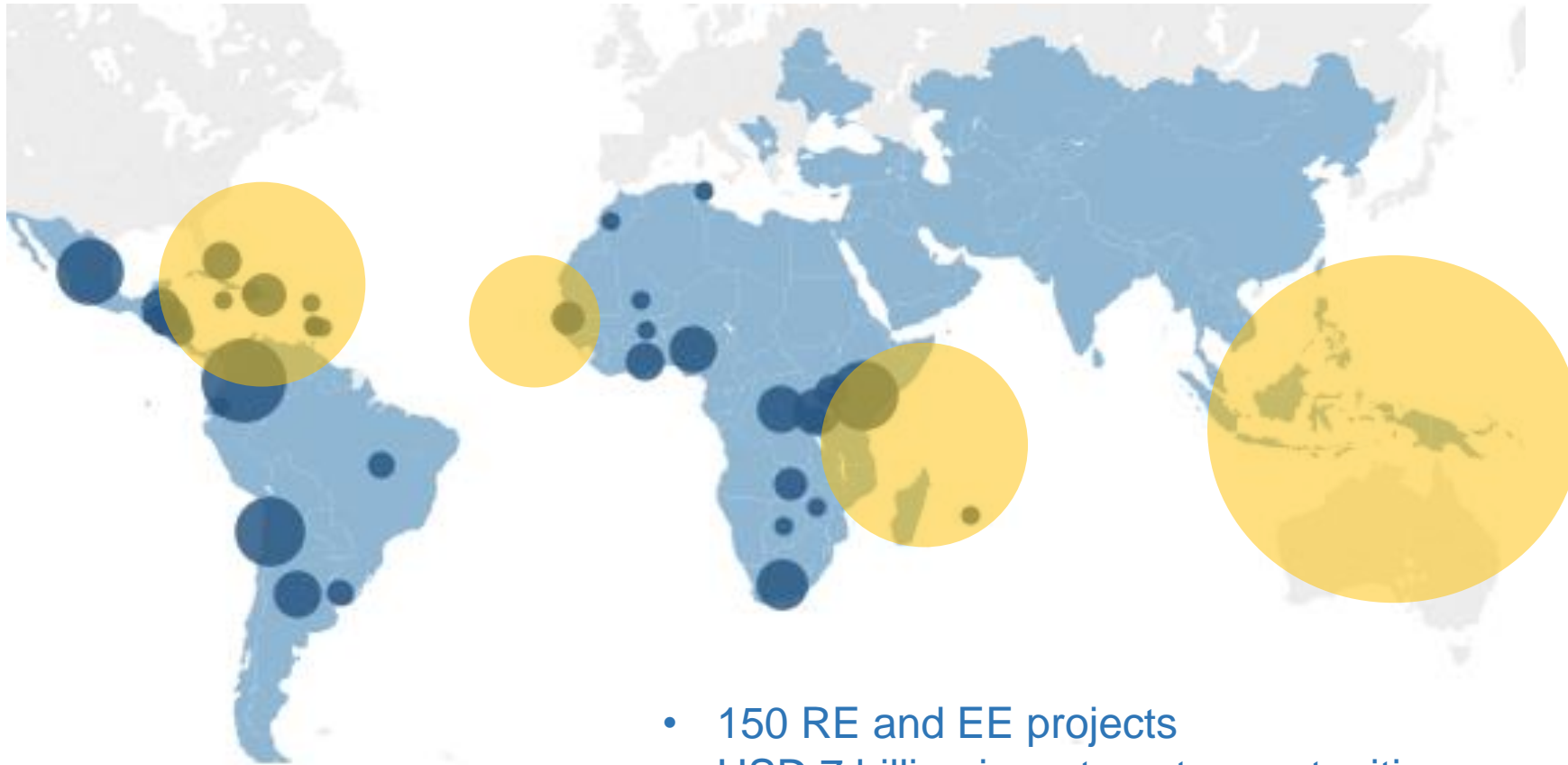
Regional hubs



Partnerships



Sustainable Energy Marketplace



- 150 RE and EE projects
- USD 7 billion investment opportunities
- 39 financing institutions
- 119 financial instruments



Sustainable Energy Marketplace

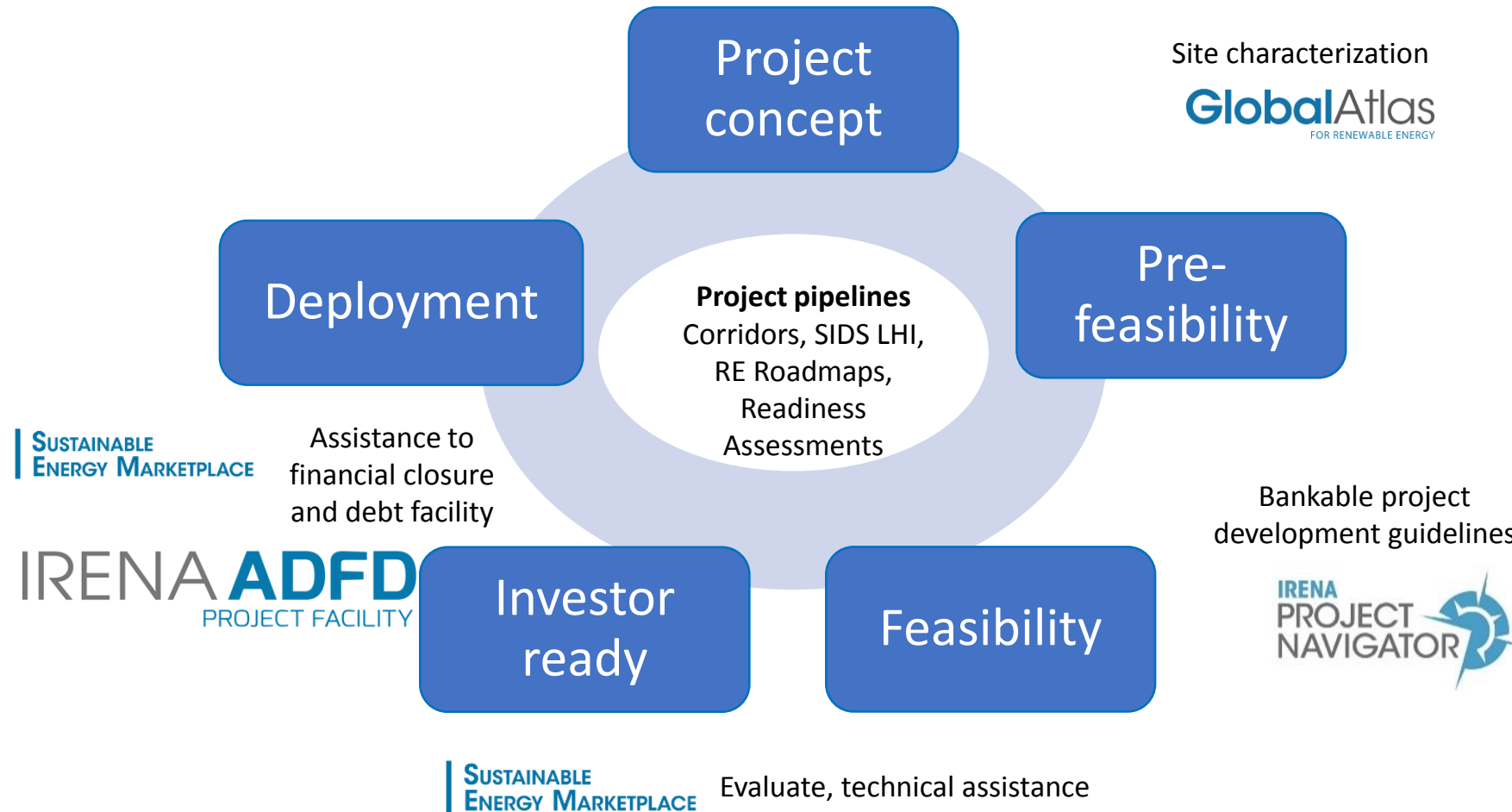


The screenshot displays the Sustainable Energy Marketplace interface. At the top, there's a language dropdown set to 'English'. Below it, user profile information shows 'ADMIN' with options for 'LOG OUT' and 'EDIT ACCOUNT'. A 'Menu' section lists 'Homepage', 'Advanced search', 'Regions', 'Media', and 'Administration'. At the bottom of the menu are links for 'HELP' and 'TERMS & CONDITIONS'. The main content area features a world map with pins indicating project locations. A legend identifies blue pins as 'Renewable energy' and green pins as 'Energy efficiency'. Below the map, four key statistics are presented: 7 billion US \$ Total investment cost, 3 GW Combined installed capacity (power generation projects only), 149 Projects, and 93 Financing Instruments. At the bottom, there is a search bar with the placeholder 'Search keyword', a search icon, and a button for 'more filters'.

Marketplace.irena.org



IRENA Tools



ITEM 4: IRENA ADFD PROJECT FACILITY

- Collaboration between IRENA and the Abu Dhabi Fund for Development.



- USD **350 million** in concessional loans from ADFD over **seven annual funding cycles** to promising renewable energy projects in developing countries recommended by IRENA.

Funding offer

- **USD 50 million** available in each cycle.
- **USD 5-15 million** ADFD loans for each project, covering **up to 50%** of the project costs. Remainder must be co-financed.
- **1% or 2% loan rates. 20 years loan period** including 5 years grace period.



3.6 MW solar mini-grid project in Burkina Faso receiving USD 10 million selected in the third cycle.

Allocation so far to the fifth funding cycle

USD 630 million in total project costs of which:

- ✓ **USD 214 million from ADFD**
- ✓ USD 420 from co-financing

USD 136 million to be allocated in remaining two cycles

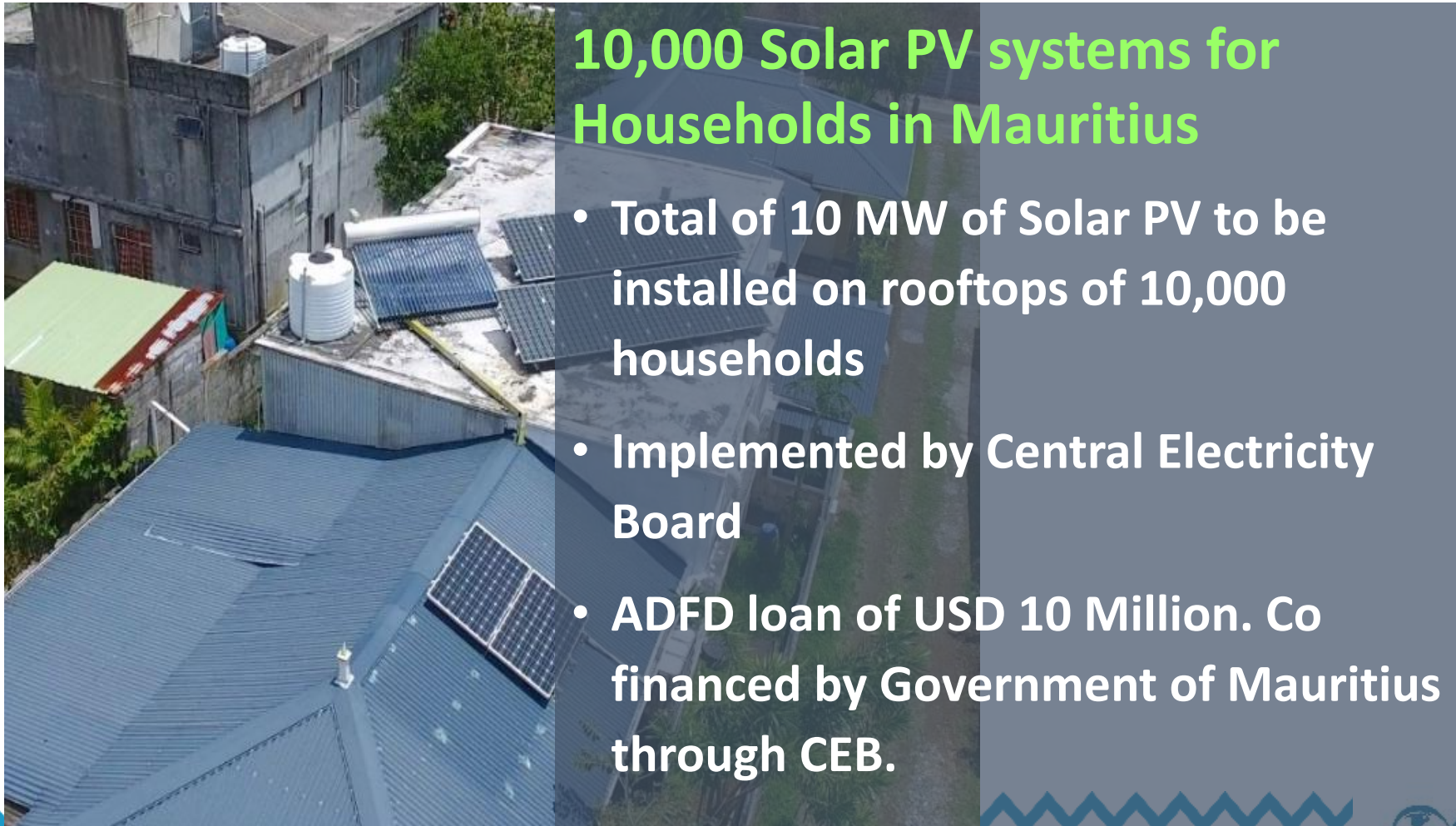
Maldives

Small Scale Waste to Energy Project

- Implemented by Ministry of Environment and Energy
- 2MW capacity waste to energy plants
- USD 6million ADFD loan with co-finance from Government of Maldives.



Mauritius



Accessing funding

Call for proposals for 7th cycle will open **mid-Nov 2018** with a deadline of **mid-Feb 2019**. The application form is already open to work on online and save.

Eligibility

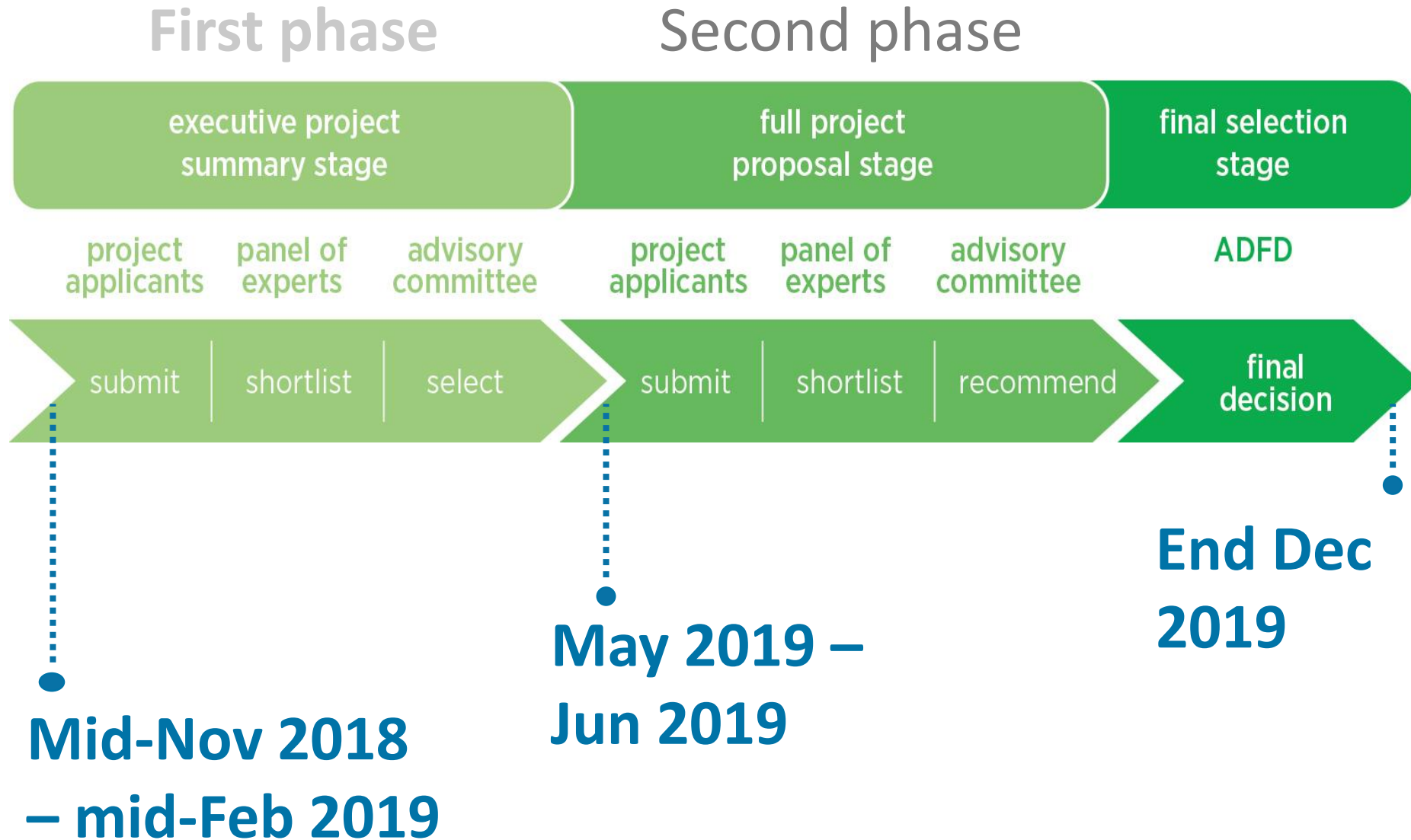
- Members of IRENA, Signatories of the IRENA Statute or States in Accession and developing countries in the “DAC List of ODA Recipients” from the OECD. Preference is given to IRENA members in the selection process.
- Renewable energy as defined in the Statute of IRENA: all forms of energy produced from renewable sources in a sustainable manner which include inter alia bioenergy, geothermal energy, hydropower, ocean energy, solar energy, and/or wind energy.

Government driven
and can obtain a
**Government
Guarantee** for the
loan

**Economically
and financially
feasible**

**Positive
development
impacts**

Process



First phase of process

Phase 1 Evaluation by experts (weighting 100%)	Technical merit (40%)	Economic/financial viability (30%)	Socio-economic & environmental impacts (30%)
Executive Project Summary – applicants submit mid-Nov 2018 to mid-Feb 2019	<ul style="list-style-type: none">-Objectives-Design-Management	<ul style="list-style-type: none">-Project cost-Revenue sources-Business plan	<ul style="list-style-type: none">-Social, economic and environmental benefits-Stakeholder engagement



Second phase of process

Phase 2 Evaluation by experts (weighting 100%)	Technical merit (40%)	Economic/financial viability (30%)	Socio-economic & environmental impacts (30%)
Full Project Proposal including full feasibility study + Government guarantee letter – shortlisted applicants submit early May to end June 2019	<ul style="list-style-type: none"> -Detailed project design and output -Resource assessment -Implementation plan and operational arrangements -Technical risk mitigation measures -Organisational and management capabilities -Monitoring and evaluation 	<ul style="list-style-type: none"> -Full economic/financial feasibility study -Co-finance agreements -Economic/ financial risks and mitigation options 	<ul style="list-style-type: none"> -Stakeholder engagement -Accessibility -Affordability -Job creation -Energy security -Environmental / health -Other/ gender/ transformation/ replicability/ scalability/ innovation -Risk mitigation

How to apply - online



Accessible finance for renewable energy projects in developing countries

The International Renewable Energy Agency (IRENA) and the Abu Dhabi Fund for Development (ADFD) have collaborated on a joint Project Facility to support replicable, scalable and potentially transformative renewable energy projects in developing countries. ADFD committed USD 350 million in concessional loans, over seven annual funding cycles, to renewable energy projects recommended by IRENA.

7th cycle will open in mid-November 2018. Start working on your applications now!

[Apply here](#)

Background information on the Facility is available in [English](#), [French \(Français\)](#), [Spanish \(Español\)](#) and [Arabic \(عربي\)](#).



“The IRENA/ADFD Project Facility has identified path breaking renewable energy projects providing sustainable and

Quick Links

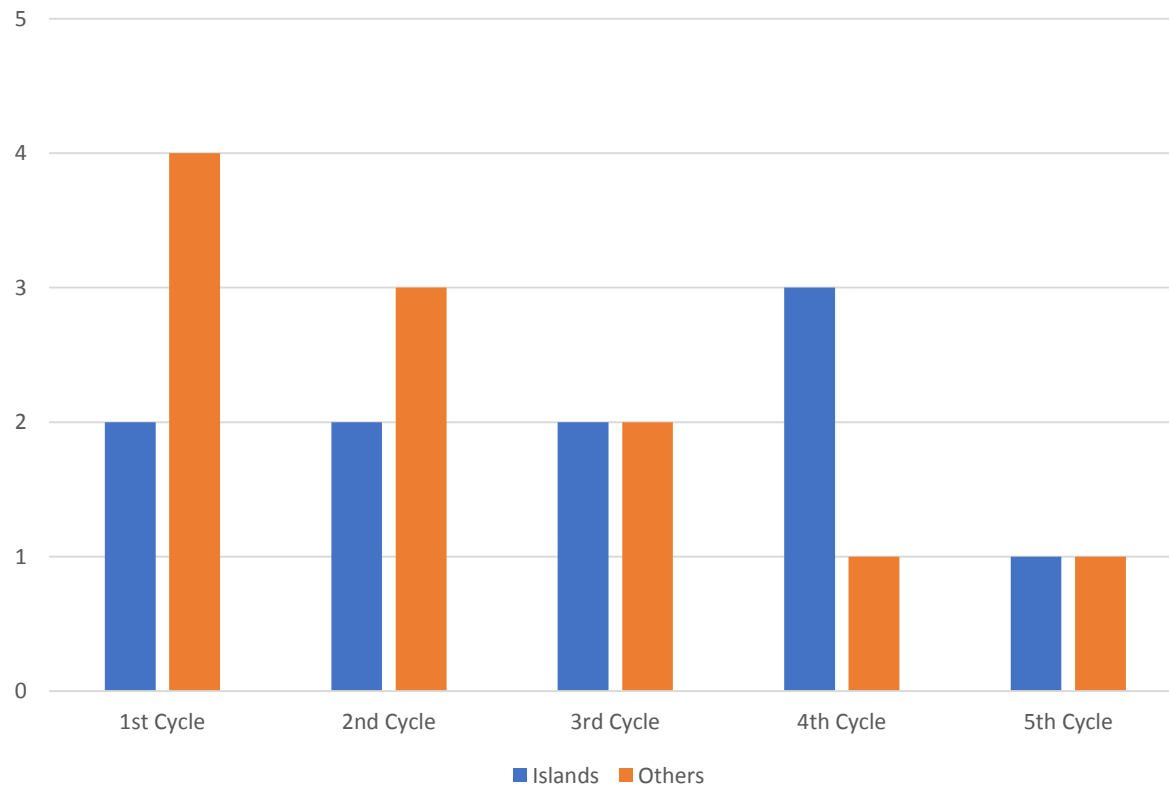
- [Overview](#)
- [Project Facility](#)
- [Apply](#)
- [Selected Projects](#)
- [Announcements](#)
- [FAQs](#)
- [Register](#)
- [Login](#)

Contact

adfd@irena.org

IRENA/ADFD - SELECTION SUMMARY

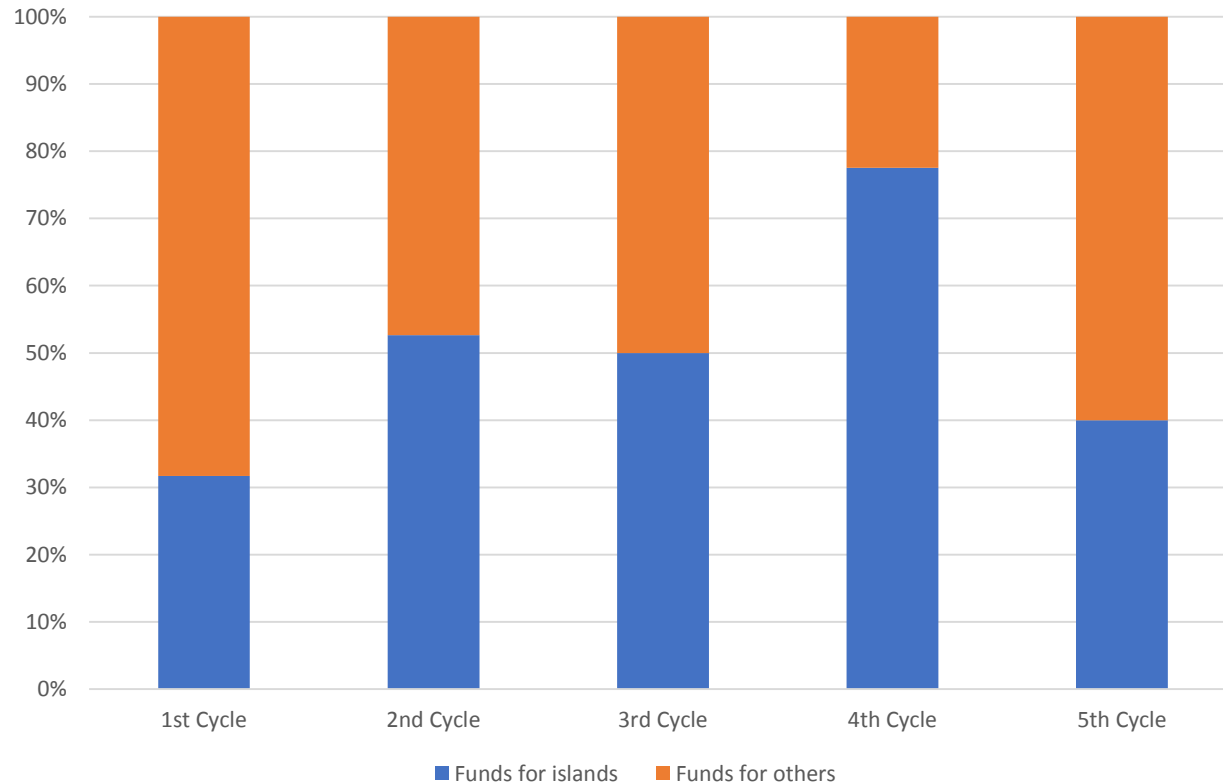
Island beneficiaries per cycle



- 10 out of the 21 projects selected in five cycles are in Islands
- Island projects are in the Caribbean, Pacific, Africa and South Asia
- From 3rd Cycle onwards, Islands have comprised at least 50% of selected projects

IRENA/ADFD-FUNDING ALLOCATION TO ISLANDS

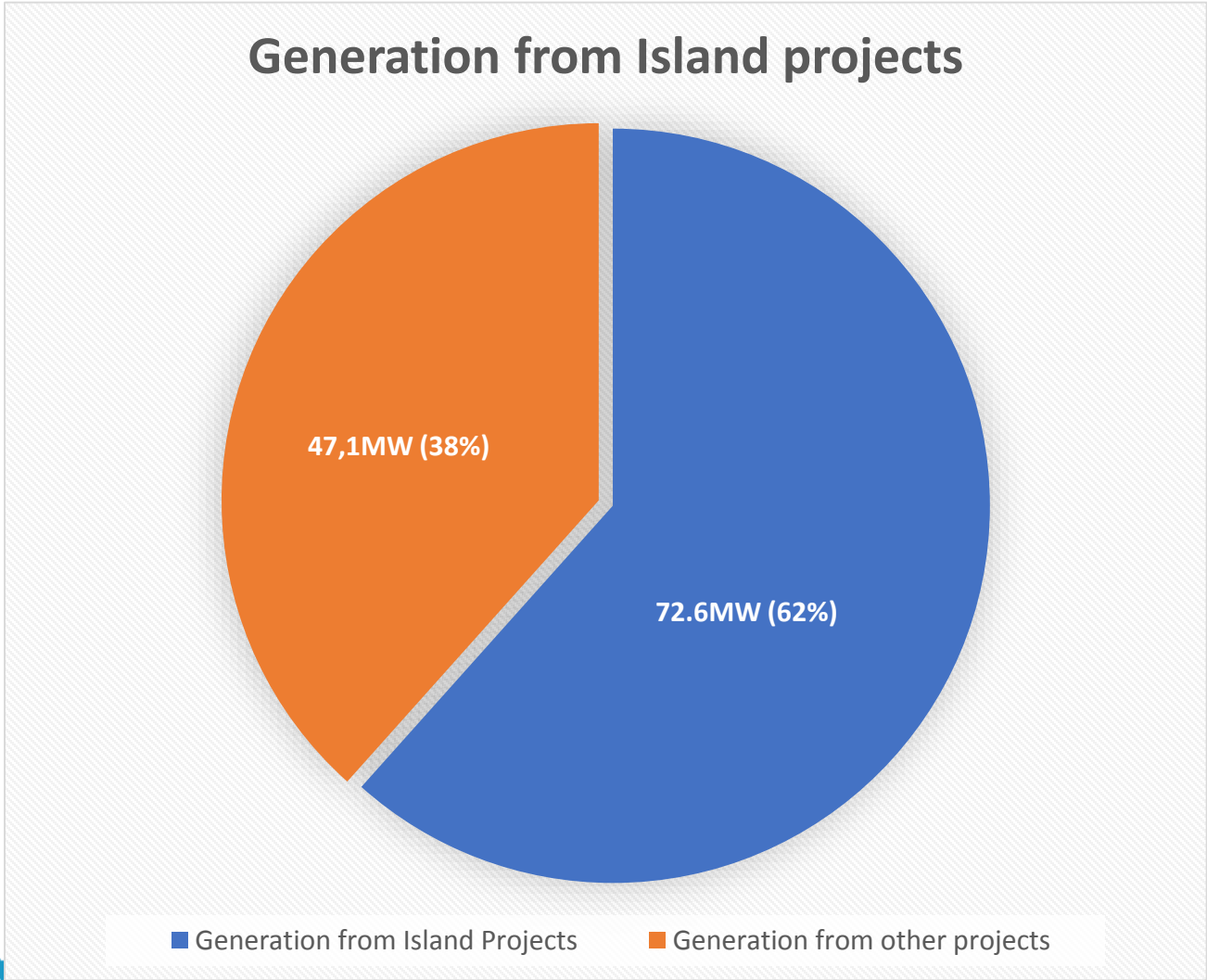
Percentage of ADFD funds allocated to Islands



- USD 111 million of ADFD loans out of a total of USD 214 million allocated has been for Island projects
- Amount of funding from other sources over USD 365 million
- For instance GCF USD 86 million for the Solomon Islands project as co-funder



IRENA/ADFD – RENEWABLE ENERGY GENERATION CAPACITY



IRENA/ADFD – SOCIO-ECONOMIC IMPACTS



Impact

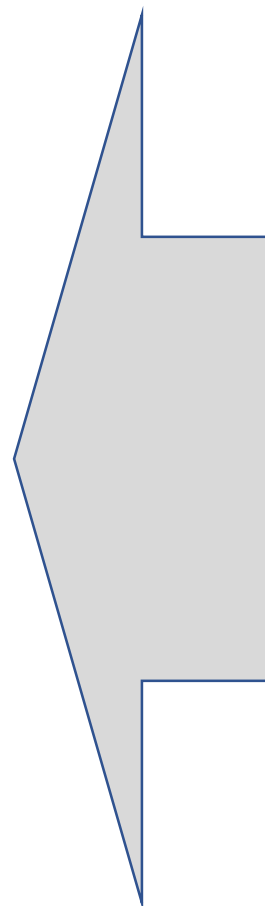
Access to renewable energy for 450,000 persons and gender empowerment

Over 20 million litres of fresh water provided annually

More than 21 million liters per annum in avoided diesel imports

Over 2.5 million tCO₂e avoided annually

Increased share of renewable energy in national energy mix



Project specific examples

Solomon Islands' 20MW Hydropower Project will serve 183,000 persons with renewable energy. Strong involvement of women in project decision-making.

Republic of Marshall Islands 4.6MW Solar PV hybrid with battery storage project. Project will provide over 15 million litres of fresh water annually.

Mauritius 10MW Roof-Top Solar PV Project (1KWh installations) will save the country close to 1 million litres of diesel imports annually. Saving of USD 28 million annually through replacement of diesel-based generation in Solomon Islands project.

Emission reductions of over 2.0 million tCO₂e annually from the Solomon Islands Hydro Power Project

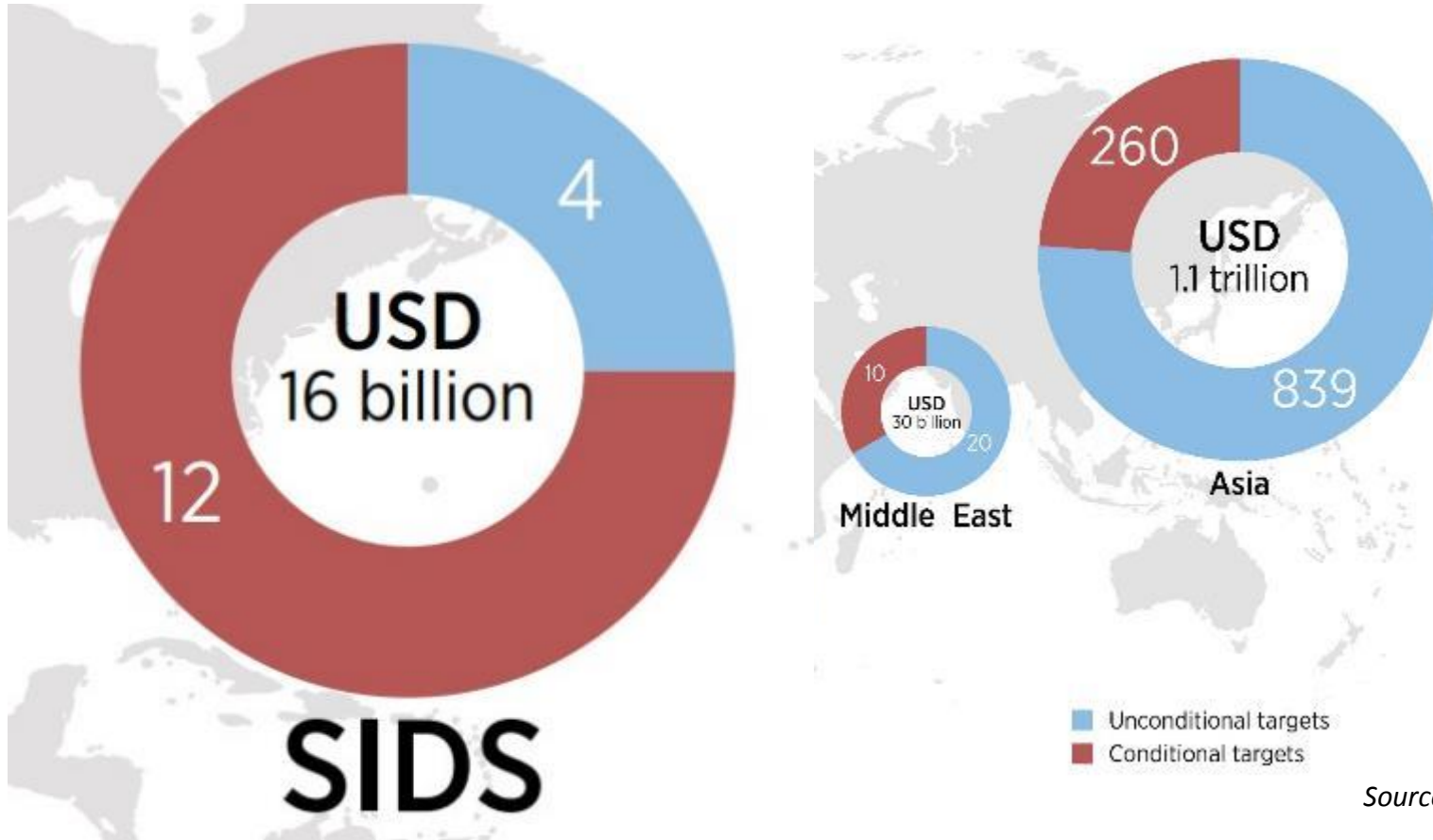
The St. Vincent & the Grenadines geothermal project will enable the country to generate 75% of its electricity from this renewable resource



Investment needed by 2030 to implement renewable energy targets in current NDCs

Total investment needed by 2030 for renewable energy targets in NDCs

USD 16 billion will be needed by 2030 to implement the renewable energy targets set out in SIDS NDCs, of which 75% for conditional targets



Source: IRENA, 2017





Thank You

islands@irena.org

