



Nairobi, Kenya - International Off-Grid Renewable Energy Conference (IOREC):

IRENA's Project Navigator and IRENA's Sustainable Energy Marketplace



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September 30, 2016

Content Outline

IRENA Project Navigator – Technical Concept Guidelines:
Mini-grid Applications

INSPIRE – IRENA Standards and Intellectual Property Rights
for Renewable Energies

Sustainable Energy Market Place – Scaling up Renewable
Energy Investment



IRENA
PROJECT
NAVIGATOR



Technical Concept Guidelines: *Mini-grid Applications*

The Project Navigator Platform

Home	Learning section	Start a project	Financial Navigator	My account	Sign out
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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!

News

13 May, 2015

"Introduction to the IRENA Project Navigator" Webinar

5-6 May, 2015

2nd Project Navigator Workshop, Ulaanbaatar, Mongolia

22 April, 2015

Project Navigator Launched

Learning section

Learn about project development

Start a project

Create a project workspace

Financial Navigator

Find funding opportunities

The Project Navigator Platform

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



Learning Section

- » Project development and technical guidelines
- » Best practices
- » Tools, templates, examples
- » Case Studies

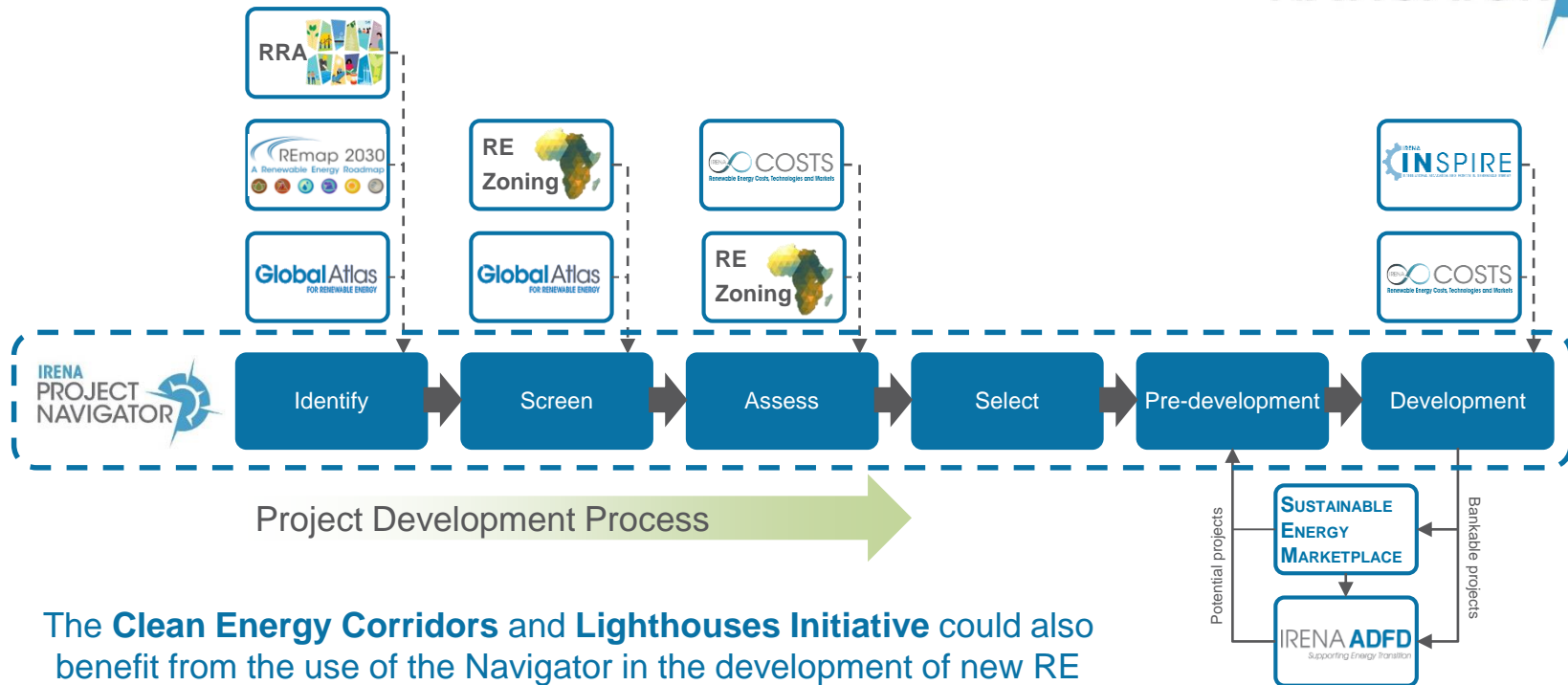
Start a Project

- » Personal and private workspace
- » Stepwise approach
- » Track your progress
- » Export documents

Financial Navigator

- » Information on multiple funds
- » Filter by region and technology
- » Information includes fund types, requirements and contact details among others.

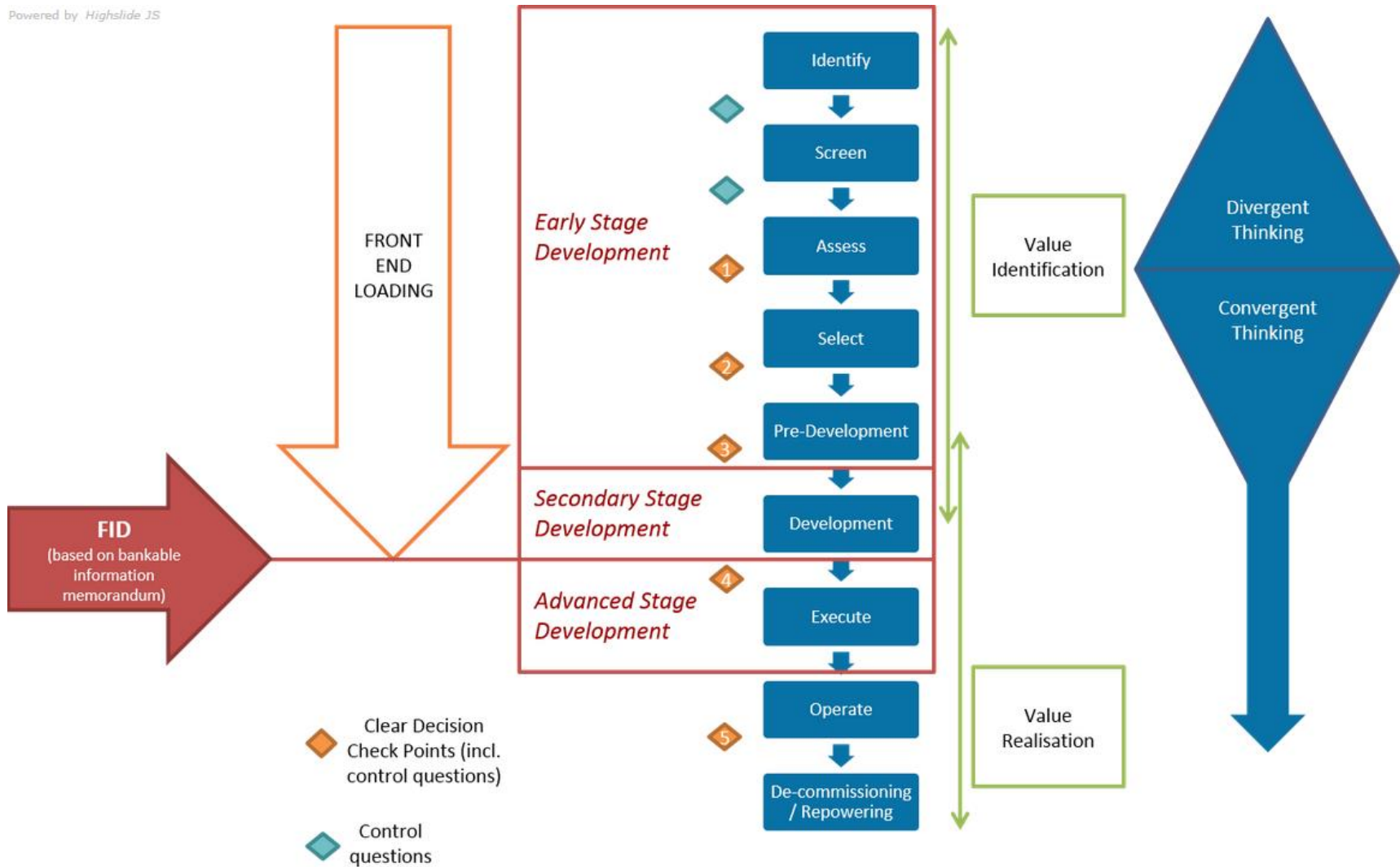
SYNERGIES



The **Clean Energy Corridors** and **Lighthouses Initiative** could also benefit from the use of the Navigator in the development of new RE projects.

Process Overview

Powered by Highslide JS



1

TECHNICAL CONCEPT GUIDELINES: BACKGROUND

Technical Concept Guidelines

Mini-grid Applications

Why?

- Technical Concept Guidelines should facilitate project development and deployment of all technologies.
- Developers and Member states have shown interest in Mini/micro grids

Objective

- To show project developers how to select plan a successful Mini/Micro-grid project, taking into account external influences, such as legislation, stakeholders or contracts

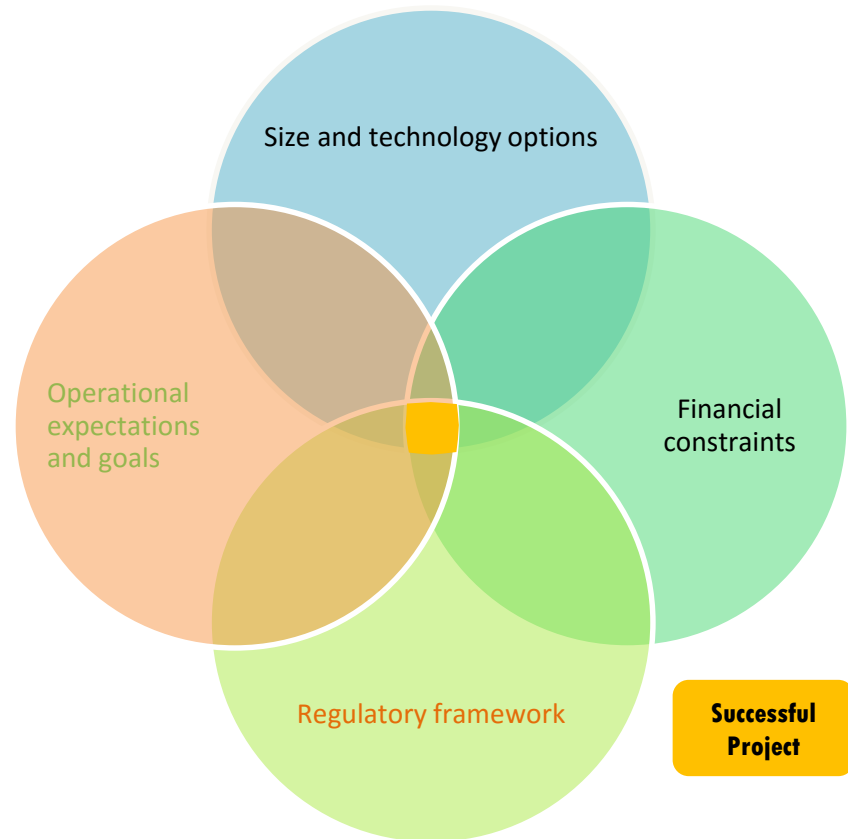


Scope

- Technology overview
- Project planning and design
- Financial assessment
- Project execution and commissioning
- O&M

Main Features

- Minimum requirements for bankability of a Mini/Micro-grid project
- Comparison of possible options
- Case studies and tools
- Financial model
- Lessons learned / Do's and Don't's from previous projects



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DEFINITIONS

Types of mini-grids

Off-grid

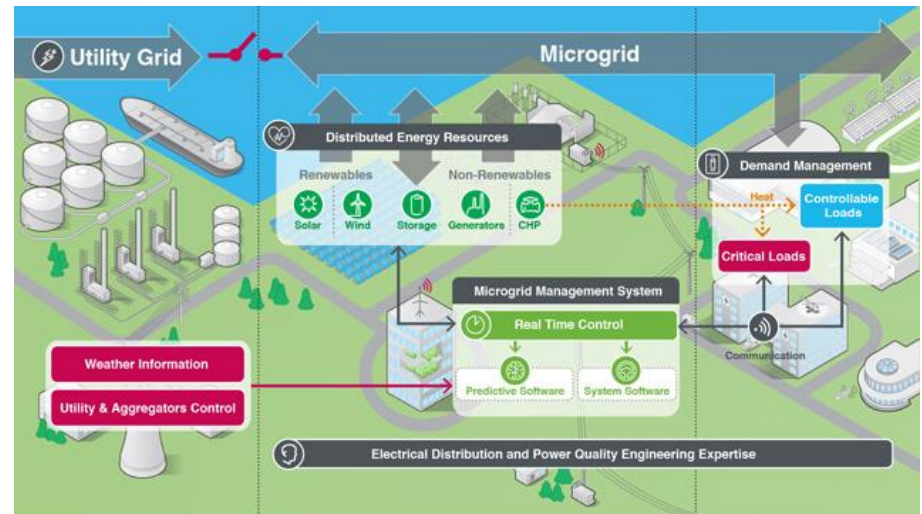
- Small size
- Semi-autonomous
- Good for rural communities and islands
- Objective: to offset diesel consumption with RE

Resilient

- Grid connected
- Typically in developed nations
- Emergency facilities / control and operation centres
- Commercial, industrial, healthcare facilities facing sustained grid outages

Advanced

- Grid connected campuses with multiple distributed loads
- High levels of automation, control, forecasting
- Serve as test-beds for innovation



Operation Modes

- Islanded
- Parallel with larger grid



Financial viability

- Financially sound by reducing dependence on oil-based fuels
- Increasing efficiency of engines with storage
- Through bill management: taking advantage of peak and off-peak periods

Social impact

- Provide options for electrification
- Potential refrigeration and medical equipment
- Overall improvement in quality of life

Sustainability / Carbon offset

- RE Minigrids reduce carbon emissions and improve sustainability by displacing fossil-fuelled based generation

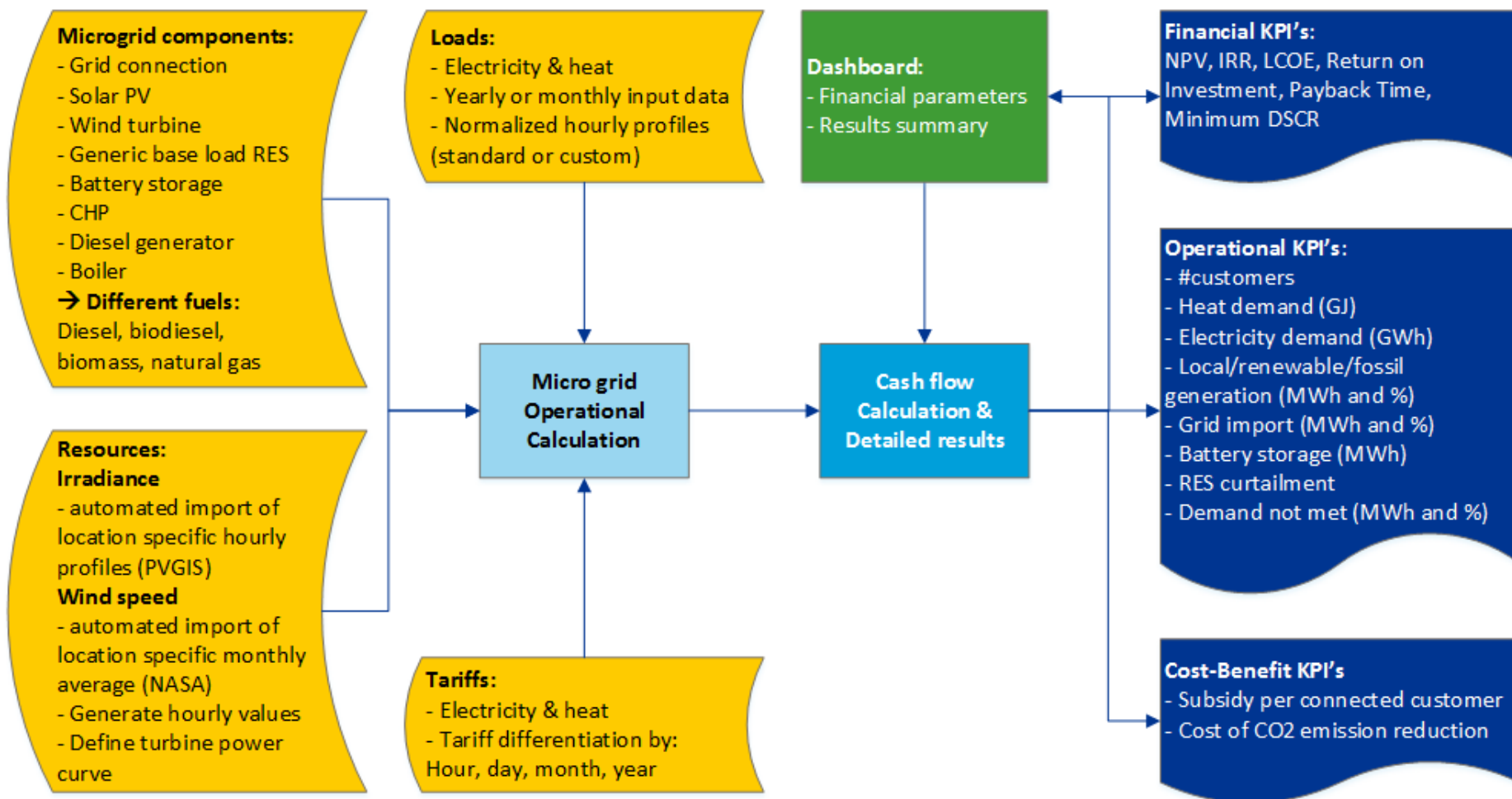
Resiliency and reliability

- Resilience for services such as lighting, water/wastewater, telecommunications, and medical facilities
- Increased reliability reliable when dealing with critical loads due to their design, which includes a variety of centralized interconnected resources

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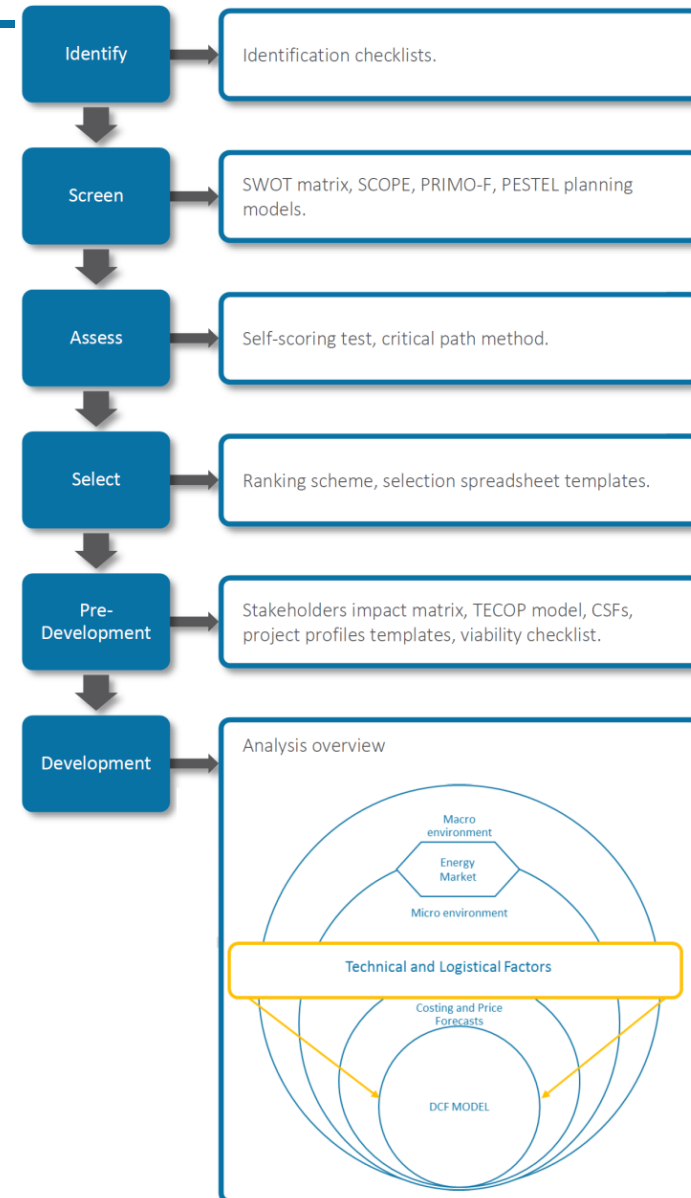
ADDITIONAL TOOLS

Financial Tool



Technical Content

- The project consists of 5 aspects:
 1. Minigrid definitions and conceptual guidelines, introduction and background information
 2. Minigrid project development guidelines, detailed guidance on each of the 9 project development steps in the Project Navigator
 3. Microgrid operation and financial evaluation tool, prove the financial feasibility of the project
 4. Project case studies, lessons learned for different types of microgrids and locations
 5. Set of practical tools for project developers, guiding and structuring the process to develop a bankable and successful proposal.



IRENA PROJECT NAVIGATOR



Thank you!

Visit us: www.irena.org/navigator

Contact us: navigator@irena.org



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INSPIRE

IRENA web platform for RE standards and patents: www.irena.org/inspire



IRENA's web-based application on International Standards and Patents in Renewable Energy – INSPIRE - is an interactive platform which facilitates the access to such information by:

- Providing one entry point for information on renewable energy technology (RET) patents and standards for the public interested in RE but non-experts in standards or patents
- Relating the information to practical applications
- Informing the users on what are and how to use patents and standards for the deployment of RET
- Facilitating a dialogue between the different stakeholders on these topics

SCALING UP RENEWABLE ENERGY INVESTMENTS

30 SEPTEMBER 2016

Aleksi Lumijarvi

Programme Officer, Renewable Energy Private Sector Finance, IRENA

Virtual Market Place for Sustainable Energy Projects

To scale up renewable energy and energy efficiency investments a virtual market place is created with the objective to support:

- ✓ initiation,
 - ✓ development and
 - ✓ financing
- of sustainable energy projects

By:

- *Improving the transparency of the market*
- *Offering relevant tools and databases for market players*
- *Supporting and facilitating projects in 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

Matchmaking / search engine

- HOME
- ABOUT
- BENEFITS FOR USERS
- MEDIA
- MARKETPLACE
- USER PROFILE
- IRENA REPORTS
- OTHER MARKETPLACES

Sustainable Energy Marketplace

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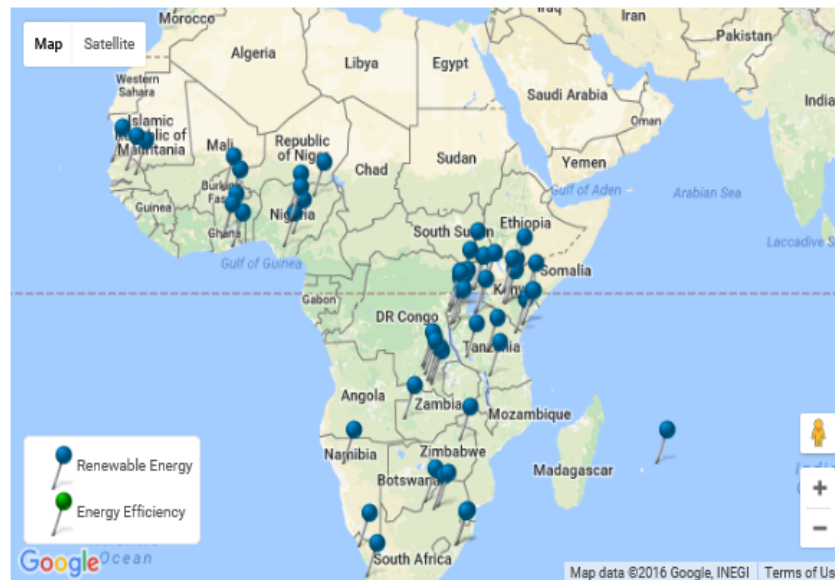
Number of projects in the market place

988 MW

Combined capacity of projects in the market place (power generation projects only)

2.4 bn US\$

Total investment cost



- ### NEWS
- 09/07/2016 - Mary Ellen Harte: Climate Change This Week: It...
 - 09/07/2016 - Egypt agrees to international arbitration for PV projects but...
 - 09/07/2016 - 6th African Rift Geothermal Conference ARGEO – early bird...
 - 09/07/2016 - Tanzania and Ethiopia preparing 400 MW PPA ahead of...
 - 09/06/2016 - Planning, Tendering And Closing Global District Energy Projects
- [see more...](#)

- ### EVENT CALENDAR
- Africa-EU Renewable Energy Cooperation Programme - Off-grid Matchmaking Event
Nairobi, Kenya
 - 4th Annual Powering Africa: Nigeria 2016
Abuja, Nigeria
 - East Africa Festival of Energy 2016
Dar Es Salaam, Tanzania
 - Regional Energy Co-operation Summit

LATEST PROJECTS

Nigeria	Solar - PV - utility scale
N9-Spider	50 MW electricity
Ghana	Solar - PV - utility scale
Tilli Solar	20 MW electricity
South Africa	Wind - on-shore

THE SUSTAINABLE ENERGY MARKETPLACE: a new horizon

As part of IRENA's objective to sustain and facilitate the spread of renewable energy technologies, IRENA has implemented a virtual market place for renewable energy projects. The Sustainable Energy Marketplace is a free platform, for project owners, governments, financiers, and service and technology providers to help develop and drive investments to new renewable energy projects.

Matchmaking / search engine

HOME

ABOUT

BENEFITS FOR USERS

MEDIA

MARKETPLACE

- » General Search
- » Projects
- » Financing instruments
- » Service Providers
- » Technology Suppliers
- » Organizations
- » Countries

USER PROFILE

IRENA REPORTS

OTHER MARKETPLACES

LATEST PROJECTS

Projects Search

Search...

Project technologies

- Solar - PV - rooftop/building integrated/distributed (4)
- Solar - PV - utility scale (2)

Apply | Clear

Country

- Ghana (2)
- Morocco (1)
- Nigeria (2)
- Uganda (1)

Apply | Clear

Project status

- Feasibility (3)
- Financing (3)

Apply | Clear

Project ownership

- Private (5)
- Private Public Partnership (1)

Apply | Clear

Grid connection

- Grid connected (4)
- Mini-grid (2)

Apply | Clear

Organization name

- Access Infra Africa Limited (1)
- EME West Africa (1)
- GVE Projects Ltd. (1)
- Ghana Capital Partners (1)
- ICIMI (1)
- Solar Breeder Morocco S.a.r.l. (1)

Apply | Clear

Expected start of construction

2,011 2,021

All

Expected start of operation

2,011 2,021

All

Matchmaking / search engine

SGI Biomass-to-E... 15 MW electricity
see more...

- See Less Filters

Save alert Export to Excel

PROJECT NAME	ORGANIZATION NAME	PROJECT TECHNOLOGIES	COUNTRY	CAPACITY	TOTAL INVESTMENT (MILLIONS USD)	STATUS OF PROJECT	EXPECTED START OF CONSTRUCTION	EXPECTED START OF OPERATION
Tororo 20MWp Solar PV Plant	Access Infra Africa Limited	Solar - PV - utility scale	Uganda	20	30	Feasibility	10/10/2016	6/1/2017
Green Village Electricity Project	GVE Projects Ltd.	Solar - PV - rooftop/building	Nigeria	17.8	3.492	Financing	5/7/2015	12/1/2015
Shared-ownership Off-grid Solar Electrification	ICIMI	Solar - PV - rooftop/building	Nigeria	15	38	Financing	9/1/2016	1/1/2017
Solar Breeder Morocco	Solar Breeder Morocco S.a.r.l.	Solar - PV - rooftop/building	Morocco	8	10	Financing	4/1/2016	9/1/2016
Decentralised Solar PV project for Self	EME West Africa	Solar - PV - rooftop/building	Ghana	20	36.4	Feasibility	6/1/2016	6/1/2017
28MW solar PV in Senya Beraku, Ghana	Ghana Capital Partners	Solar - PV - utility scale	Ghana	28	56	Feasibility	6/1/2016	10/1/2017

6 results

Matchmaking / search engine

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LATEST PROJECTS

Nigeria	Solar - PV - utility scale
N9-Spider	50 MW electricity
Ghana	Solar - PV - utility scale
Tilli Solar	20 MW electricity
South Africa	Wind - on-shore
Diamond Wind Dev elopment	140 MW electricity
Uganda	Solid Biomass - CHP
Biomass Power Ge	28 MW electricity

Ghana Capital Partners 28MW solar PV in Senya Beraku, Ghana

CONTACT ADMINISTRATOR

Ghana - Solar - PV - utility scale

CAPACITY 28 MW electricity	INVESTMENT (MILLIONS USD) \$56.00	ANNUAL GENERATION 42,000 MWh electricity
GRID CONNECTION GRID CONNECTED	PROJECT OWNERSHIP PRIVATE	

- LAND ACQUISITION** FINALIZED
- PERMITS** IN PROCESS, FINAL STAGE
- FEASIBILITY STUDIES** IN PROCESS, FINAL STAGE
- AGREEMENTS** IN PROCESS, FINAL STAGE
- FINANCING PROCESS** PLANNED

Status of project

Project idea
Pre-feasibility
Feasibility
Financing
Construction
Operation

6/1/2016 10/1/2017

Expected start of construction / installation Expected start of operation

PROJECT LEVEL IRR 17 %	EQUITY IRR 22 %	DIRECT PAYBACK PERIOD 6 Years
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Project summary

Project objective and structure
The project will provide electricity via the national grid to 200,000 homes or 1 million people. The project is 100% owned by GCP. SolarCentury will be our EPCM partner. SolarCentury will be responsible for the technical work, construction and assisting GCP with maintenance. GCP is responsible for equity and senior debt financing and project management.

Location
The project site is 45 mins drive by car from Accra, Ghana. The site is accessible by a main access road. The site



Contact information

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sidney@ghanacp.com

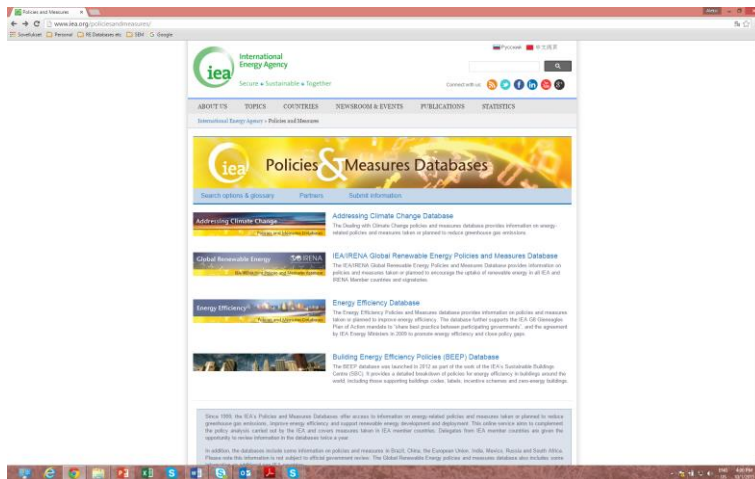
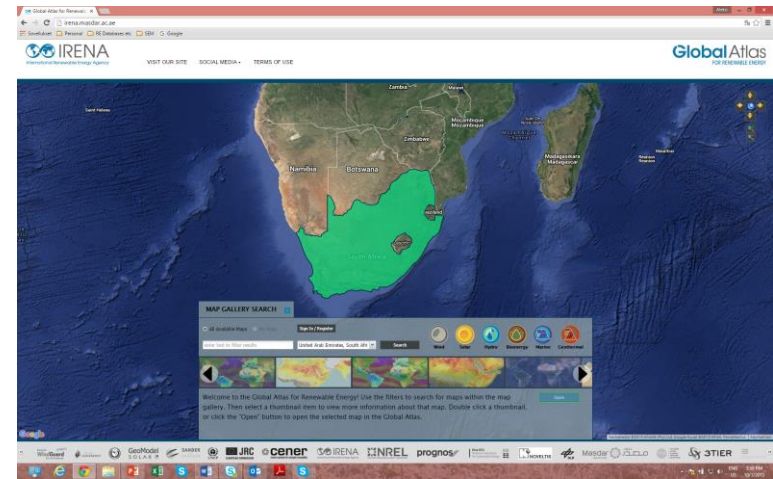
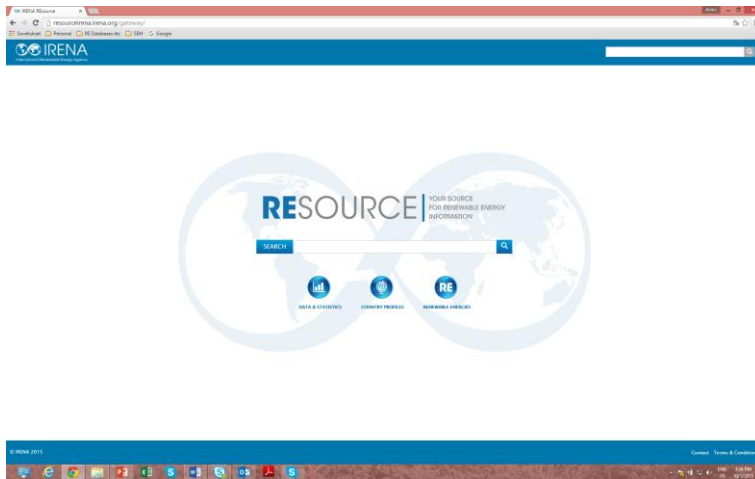
[Data room](#)

Financing plan

Financial instrument	Amount (millions USD)
Equity, controlling stake/ M&A	20
Senior Debt	36

Available financing

Tools and databases



Engaging partners in project facilitation

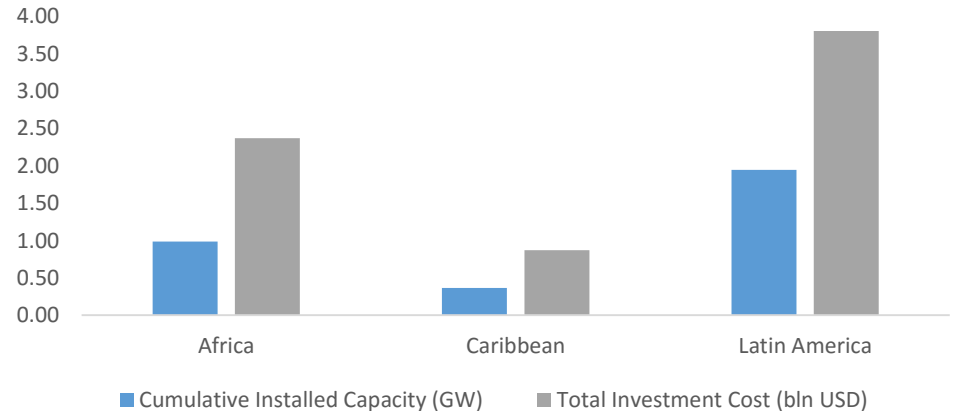


1. **Project origination;** “Marketplace as a pipeline aggregator”
2. **Project facilitation;** identifying funding facilities, match-making

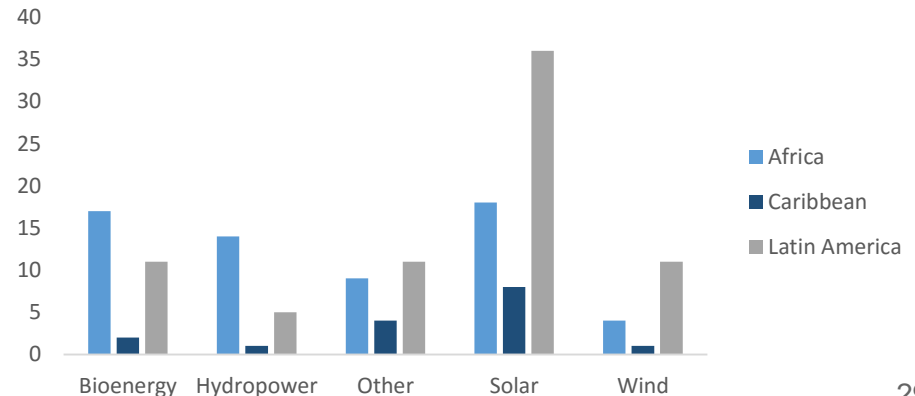
Current User Volume

- 231 registered users
- 152 projects
- 84 financing instruments
- USD 7 bln investment need
- 62 solar projects
- 30 bioenergy projects
- 20 hydropower projects
- 16 wind projects
- 24 other renewable energy projects

Total investment cost (USD bln) and Capacity (GW)



Project types by region (number of projects)



Thank you!



ACCESS TO
CARIBBEAN PORTAL

ACCESS TO
LATIN AMERICA PORTAL

ACCESS TO
AFRICA PORTAL

<http://www.irena.org/marketplace>