Mozambique Off-grid Knowledge Hub and Tools/Resources for SPIS planning

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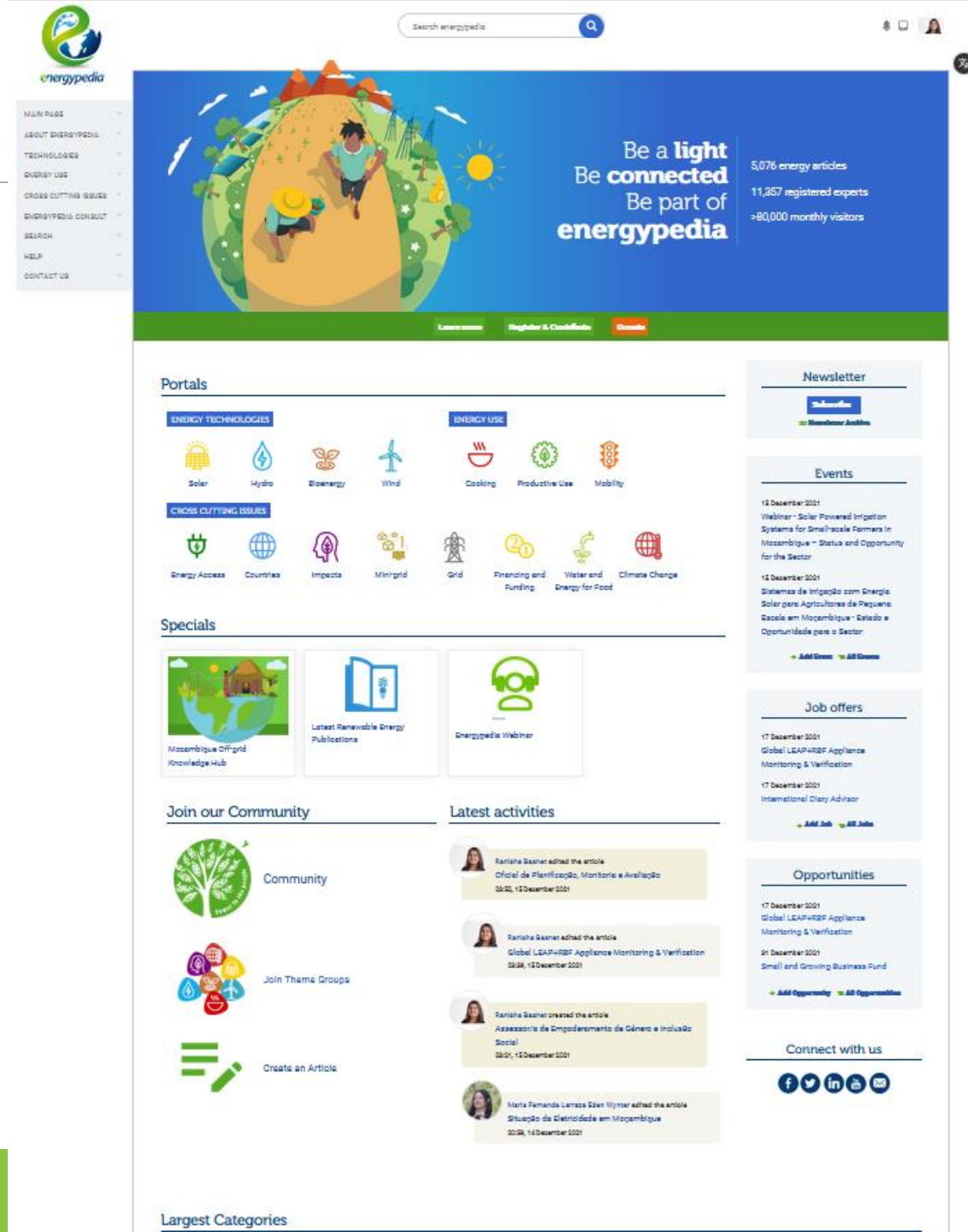
www.energypedia.info



Versão em portugues

Mozambique Off-grid Hub | Mozambique Off-grid Practitioners Group | All Mozambique Articles

Mozambique Off-grid Knowledge Hub

Developed by:

energypedia

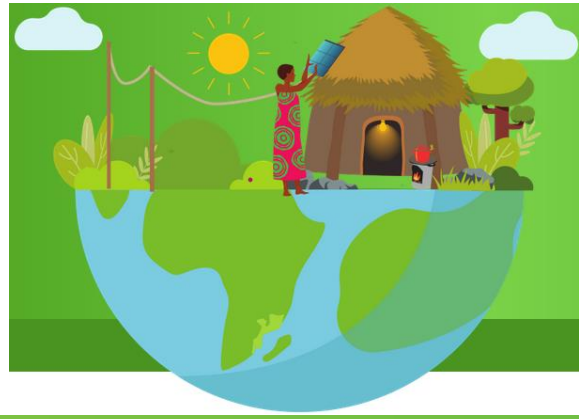
This hub is developed in collaboration with the GIZ programme **Green People's Energy for Africa**.

cooperação alemã DEUTSCHE ZUSAMMENARBEIT

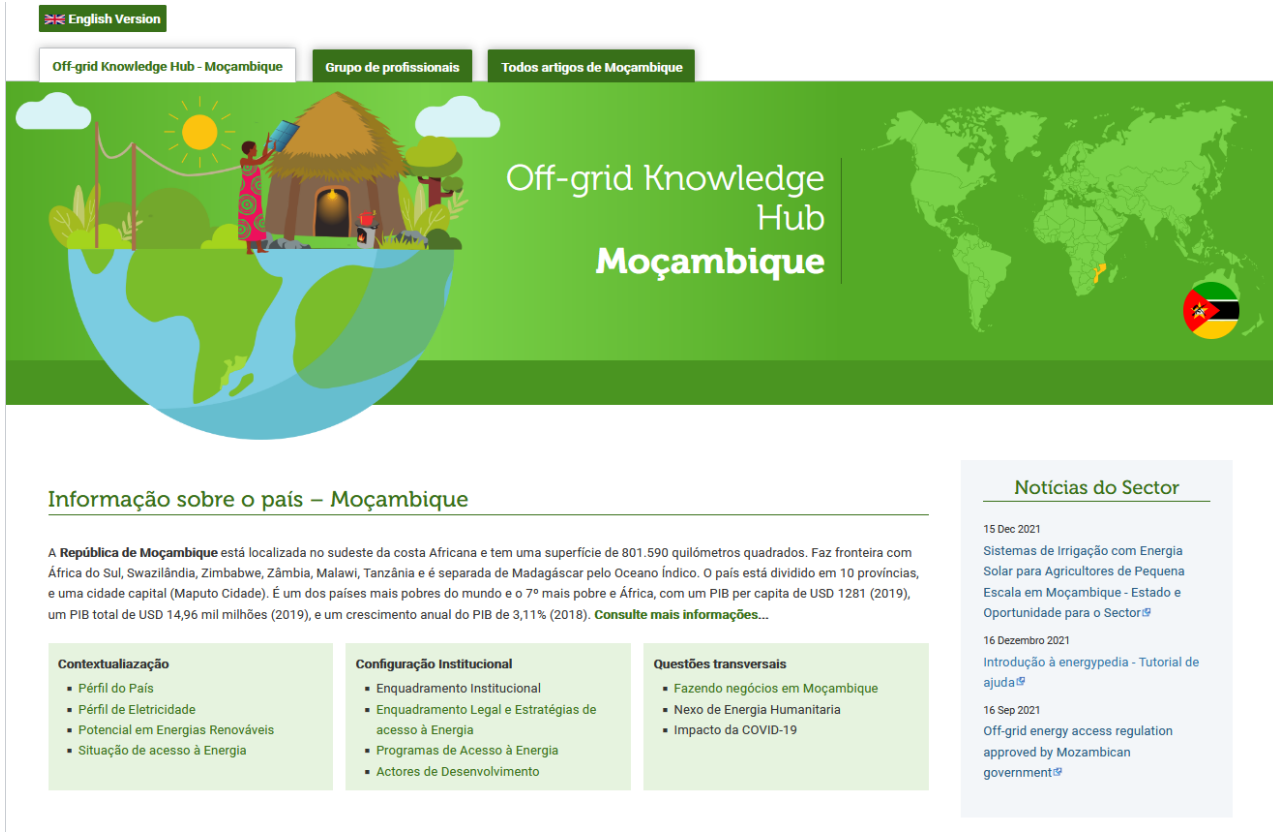
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Mozambique-Energypedia Off-grid Knowledge Hub

- One-stop destination for all curated **RE and energy access information** in Mozambique on energypedia
- Focus on technologies such as **Solar home systems, clean cookstoves, nano grids and productive use of energy**
- **Continuously updated** with new information from the community
- Stakeholders can **share** their project information, knowledge and lessons learnt on the hub



Mozambique-Energypedia Off-grid Knowledge Hub



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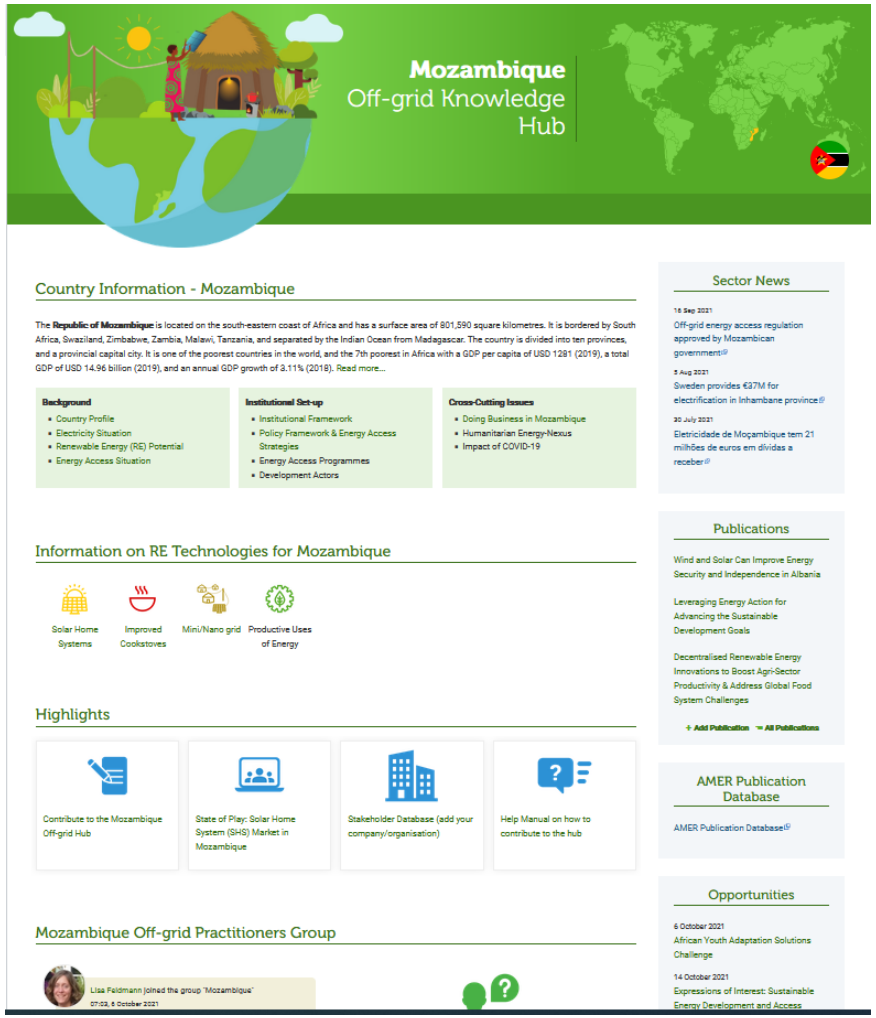
Mozambique-Energypedia Off-grid Knowledge Hub



Country Information - Mozambique

The **Republic of Mozambique** is located on the south-eastern coast of Africa and has a surface area of 801,590 square kilometres. It is bordered by South Africa, Swaziland, Zimbabwe, Zambia, Malawi, Tanzania, and separated by the Indian Ocean from Madagascar. The country is divided into ten provinces, and a provincial capital city. It is one of the poorest countries in the world, and the 7th poorest in Africa with a GDP per capita of USD 1281 (2019), a total GDP of USD 14.96 billion (2019), and an annual GDP growth of 3.11% (2018). Read more...

Background

- Country Profile
- Electricity Situation
- Renewable Energy (RE) Potential
- Energy Access Situation

Institutional Set-up

- Institutional Framework
- Policy Framework & Energy Access Strategies
- Energy Access Programmes
- Development Actors

Cross-Cutting Issues

- Doing Business in Mozambique
- End-User Finance in Mozambique
- Financing Opportunities for Energy Access Companies
- Humanitarian Energy-Nexus
- Impact of COVID-19

Information on RE Technologies for Mozambique

Solar Home Systems | Improved Cookstoves | Mini/Nano grid | Productive Uses of Energy

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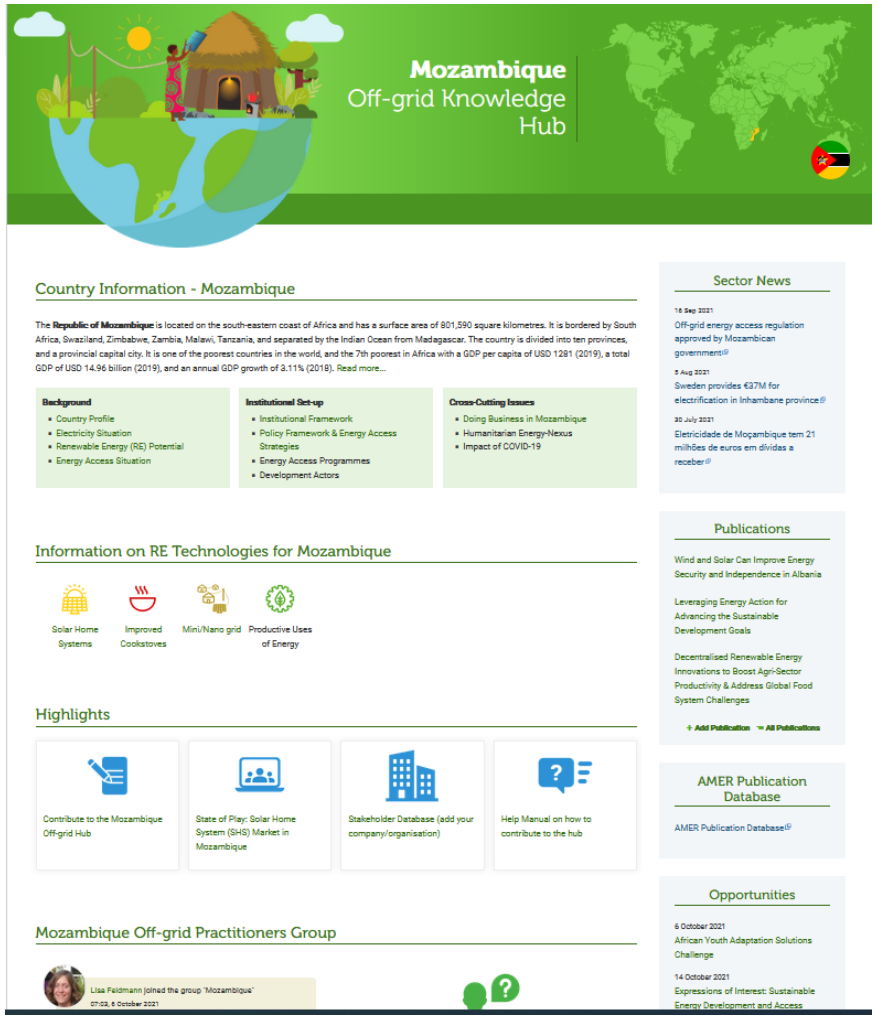

Sector News

15 December 2021
Webinar - Solar Powered Irrigation Systems for Small-scale Farmers in Mozambique – Status and Opportunity for the Sector

16 Dezembro 2021
Introdução à energypedia - Tutorial de ajuda

16 Sep 2021
Off-grid energy access regulation approved by Mozambican government

Publications

Decentralised Renewable Energy Innovations to Boost Agri-Sector Productivity & Address Global Food System Challenges

Theme Report on Energy Transition

Crowd Power Syndicated Financing Co-lending Partnerships with Crowd Lending Platforms

+ Add Publication All Publications

AMER Publication Database

AMER Publication Database

Opportunities

6 October 2021
African Youth Adaptation Solutions Challenge

14 October 2021
Expressions of Interest: Sustainable Energy Development and Access Project

+ Add Opportunity All Opportunities

Job offers

30 January 2022
Assessor/a de Empoderamento de Género e Inclusão Social

31 January 2022
Oficial de Planificação, Monitoria e Avaliação

+ Add Job All Jobs

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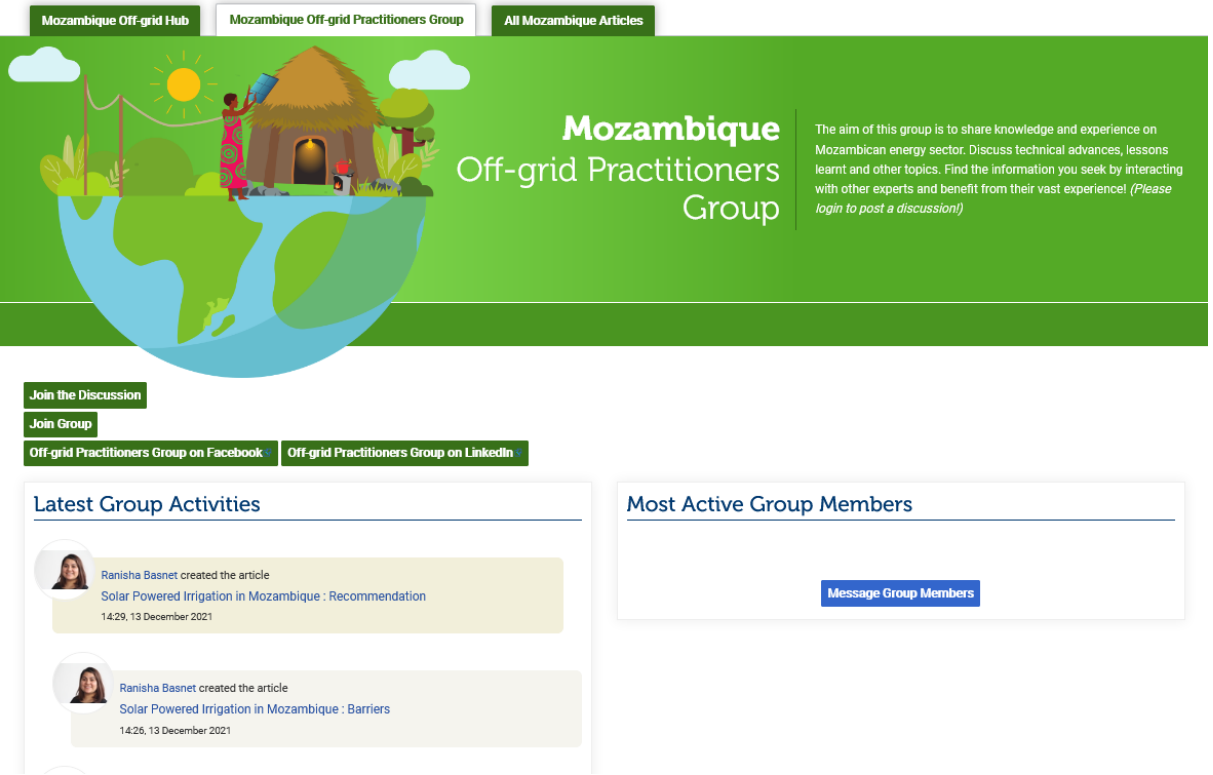
Mozambique Off-grid Practitioners Group



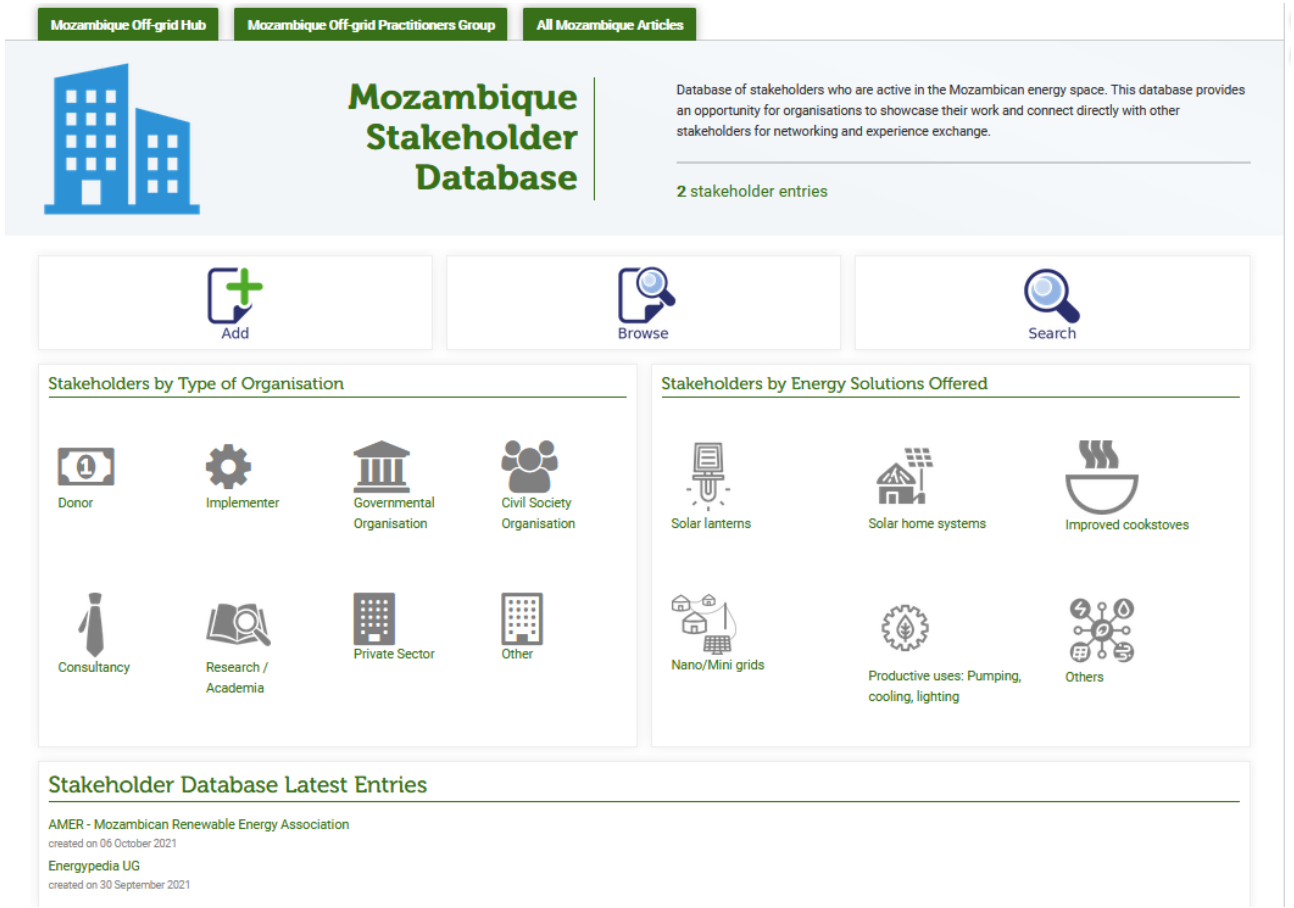
Join the group:

- Get the latest updates from the sector – Monthly Mozambique News
- Interact with fellow energy experts
- Post your questions or answers questions from fellow energypedian

https://energypedia.info/wiki/Group:Mozambique_Off-grid_Practitioners_Group

Mozambique-Energypedia Stakeholder Database

- Easily add your organisation and your work to the facility
- Browse through to search for organisations offering specific services
- Open and free for all



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Individual Technology Hubs

Productive Use of Energy in Mozambique

https://energypedia.info/wiki/Mozambique_Productive_Uses_of_Energy_Hub

Productive Use of Energy in Mozambique

Background

- Productive Uses of Energy - Definition
- Agriculture Sector in Mozambique
- Solar Pumping and Irrigation

Market Assessment for Solar Powered Irrigation (SPIS)

- Market Landscape
- Market Share
- Support Initiatives
- Challenges
- Recommendations & Opportunities

Technical & Financial Aspects of SPIS Planning

- Selecting Good Quality PV modules
- Water Storage Tank Sizing
- Groundwater Management
- Calculating Water Demand of Crops

Tools & Resources

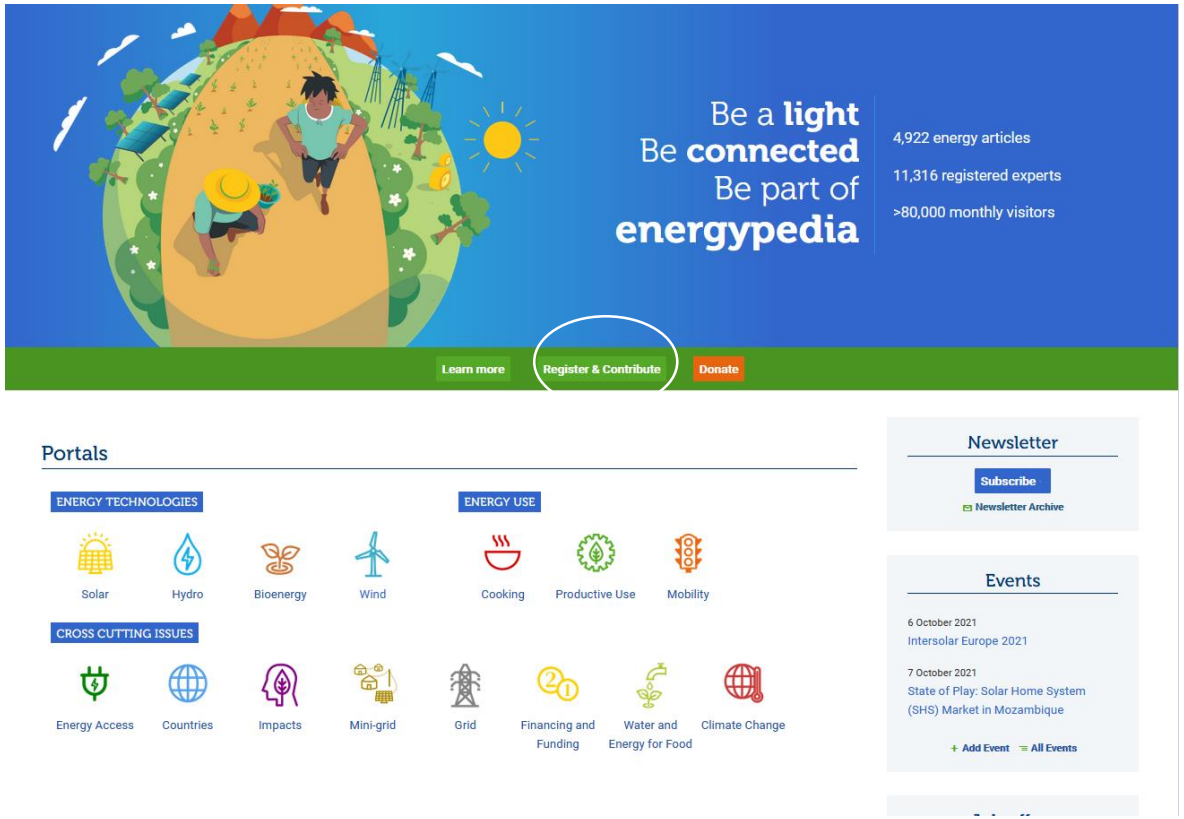
- Tender Call for SPIS and PAYGO Companies (Upcoming)
- WE4F - Toolbox on SPIS
- Oxfam - Solar Pumping Toolkit
- Practica - Solar Irrigation Pump Selector
- Grundfos Go Solar
- Webinar series on solar pumping

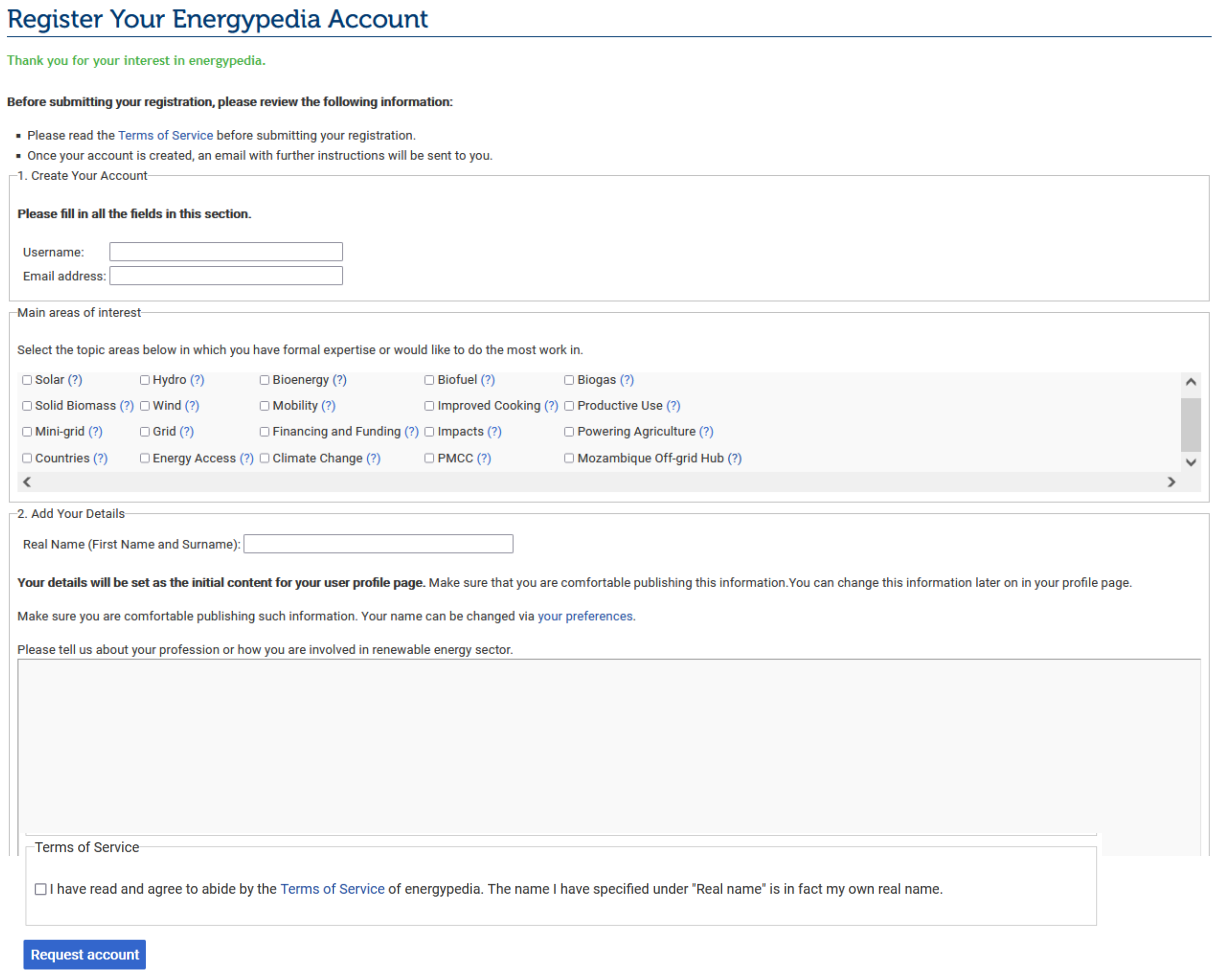
https://energypedia.info/wiki/Mozambique_Productive_Uses_of_Energy_Hub

How to contribute to the energypedia community?

- Register on energypedia and join the Mozambique Off-grid Practitioners Group
- Have a case study on off-grid systems, share with us or reach out to us at info@energypedia.info for a case study template
- Want to add information to the articles that we showed you, simply edit them or create new ones. Join us tomorrow for a technical tutorial on how to edit/create articles on energypedia

Register on Energypedia





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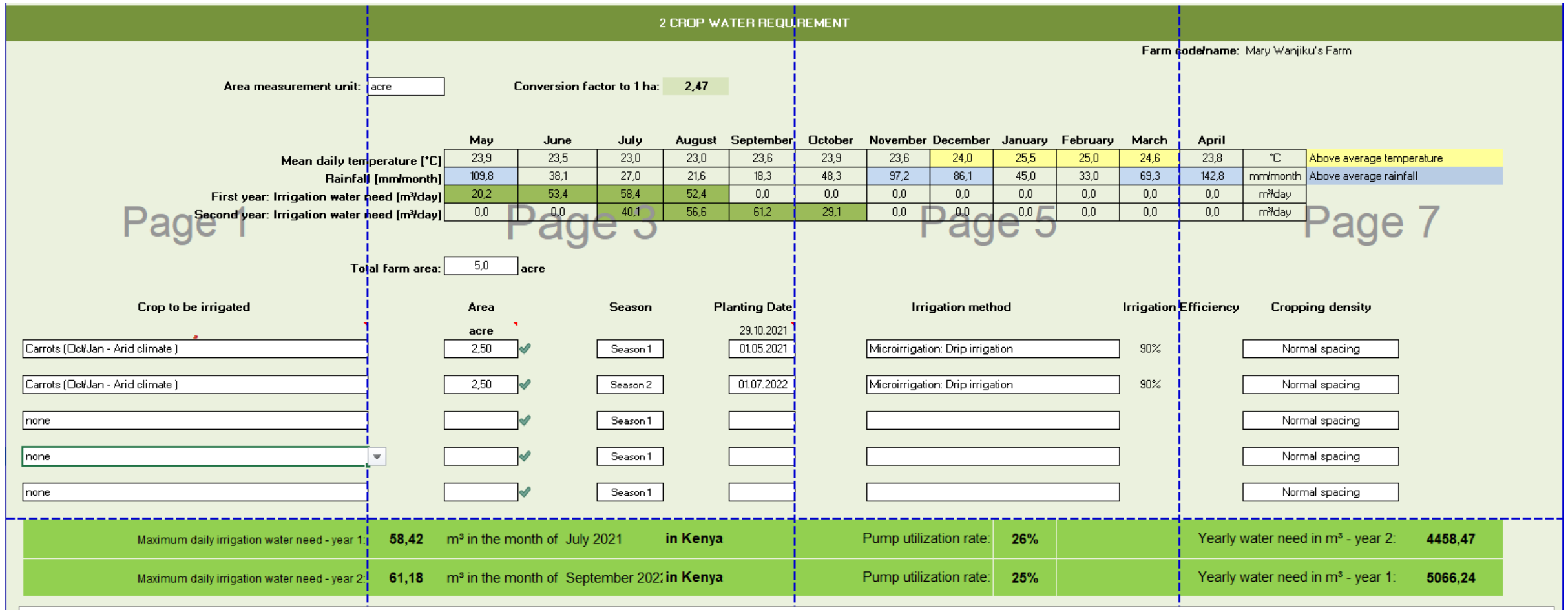
Tools and Resources for SPIS Planning on Energypedia

Tools for SPIS Planning

Toolbox on SPIS: GIZ‘s Water Energy for Food Programme

https://energypedia.info/wiki/Toolbox_on_SPIS

Crop Water Requirement Tool



2 CROP WATER REQUIREMENT

Farm code/name: Mary Wanjiku's Farm

Area measurement unit: acre Conversion factor to 1 ha: 2,47

	May	June	July	August	September	October	November	December	January	February	March	April		
Mean daily temperature [°C]	23,9	23,5	23,0	23,0	23,6	23,9	23,6	24,0	25,5	25,0	24,6	23,8	°C	Above average temperature
Rainfall [mm/month]	109,8	38,1	27,0	21,6	18,3	48,3	97,2	86,1	45,0	33,0	69,3	142,8	mm/month	Above average rainfall
First year: Irrigation water need [m³/day]	20,2	53,4	58,4	52,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	m³/day	
Second year: Irrigation water need [m³/day]	0,0	0,0	40,1	56,6	61,2	29,1	0,0	0,0	0,0	0,0	0,0	0,0	m³/day	

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Total farm area: 5,0 acre

Crop to be irrigated	Area	Season	Planting Date	Irrigation method	Irrigation Efficiency	Cropping density
	acre		29.10.2021			
Carrots (Oct/Jan - Arid climate)	2,50	Season 1	01.05.2021	Microirrigation: Drip irrigation	90%	Normal spacing
Carrots (Oct/Jan - Arid climate)	2,50	Season 2	01.07.2022	Microirrigation: Drip irrigation	90%	Normal spacing
none		Season 1				Normal spacing
none		Season 1				Normal spacing
none		Season 1				Normal spacing

Maximum daily irrigation water need - year 1: **58,42** m³ in the month of July 2021 **in Kenya** Pump utilization rate: **26%** Yearly water need in m³ - year 2: **4458,47**

Maximum daily irrigation water need - year 2: **61,18** m³ in the month of September 202 **in Kenya** Pump utilization rate: **25%** Yearly water need in m³ - year 1: **5066,24**

Pump Sizing Tool

INPUT_Head Calculation

Basic assumptions

ily solar irradiation:	4,0	kWh/m²
lar system losses:	25	%
notovoltaic array type:	single-axis tracked	
stimated water source yield:	50,0	m³/hour
ustainable extraction from water source:	50%	/hour
ily water pumping rate:	25,0	m³/day
mp pipeline diameter:	1 1/2	inch
mp pipeline length:	200,0	m
mp pipeline material:	PVC, drawn tubing, glass	

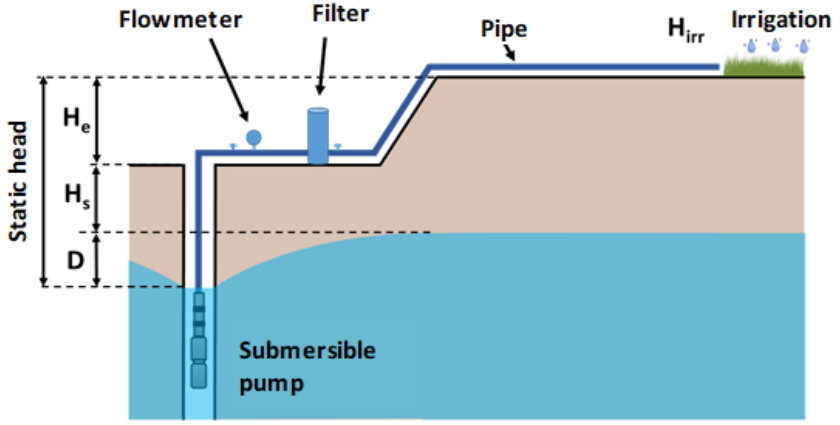
http://globalsolaratlas.info

Water source: Groundwater Select

Direct feed

(pump connected directly to the irrigation system)

TDH	=	$H_s + D + H_e + H_m + H_f + H_l + H_{irr}$	67,8	m



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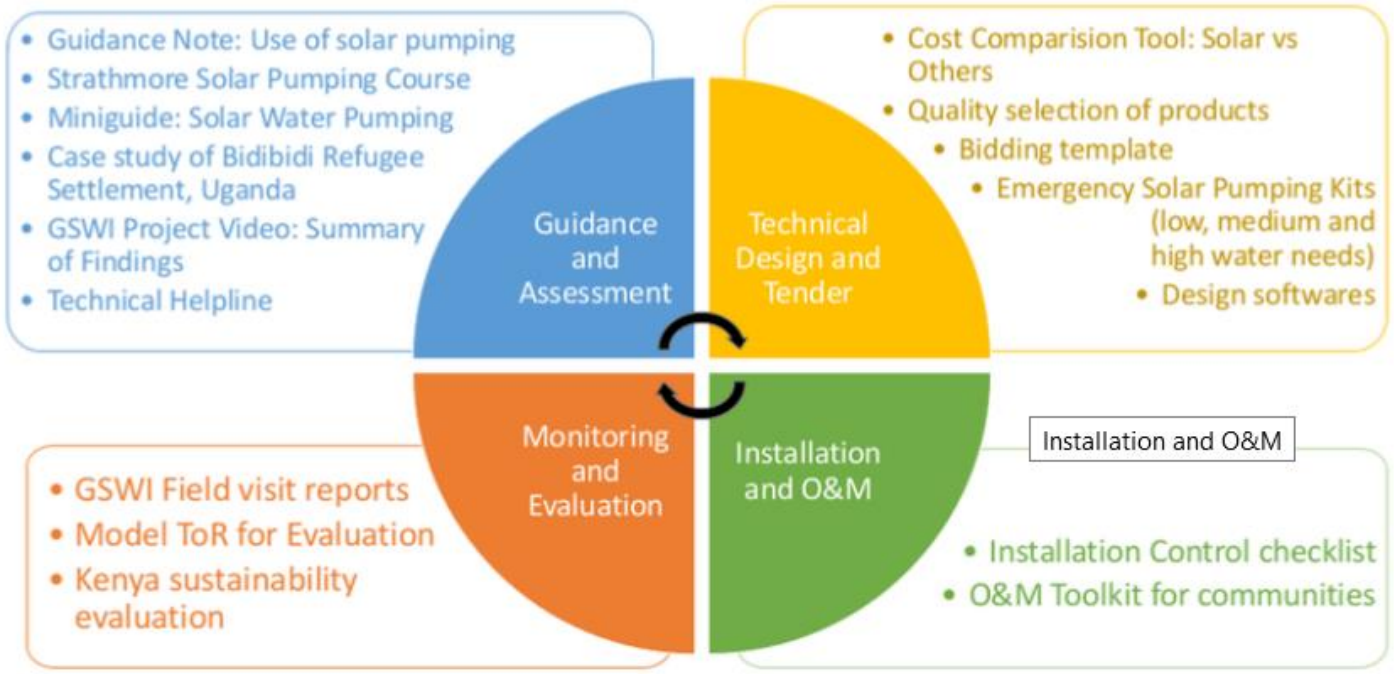
Determination of Pumping Head

Link to Toolbox training: https://www.dis-course.net/courses/solar-powered-irrigation-systems/spis-toolbox-online-trainings/registration.html

Solar Pumping Toolkit - The Global Solar & Water Initiative

https://energypedia.info/wiki/Solar_Pumping_Toolkit_-_The_Global_Solar_%26_Water_Initiative



Cost Comparison Tool

DIESEL GENERATOR STAND ALONE SYSTEM

Component	Unit	Qty	Total Price (USD)
Pump	Watt		
Generator	kVA		
Electrical Connection Board	Unit		
Cables & Low level	m		
Transport	km		
Installation	Day		
		Total Price	

Discount factor in country A = 12%
Cost of 1 liter of diesel in USD:
Consumption of diesel (l/h)
Running time of generator (hours/day):
Safe Yield (m3/h):
Daily water provided (m3/d):

EQUIVALENT HYBRID (SOLAR+GENERATOR) SYSTEM

Component	Unit	Qty	Total Price (USD)
Pump	Watt		
Inverter	Watt		
Solar Modules	Watt		
DC Accessories	Watt		
Cables & Low level	m		
Support Structure	Watt		
Transport	km		
Installation	Day		
		Total Price	$0

Discount factor in country A = 12%

Solar Pumping
Running time of solar (hours/day):
Safe Yield (m3/h):
Daily water provided with solar (m3/h):

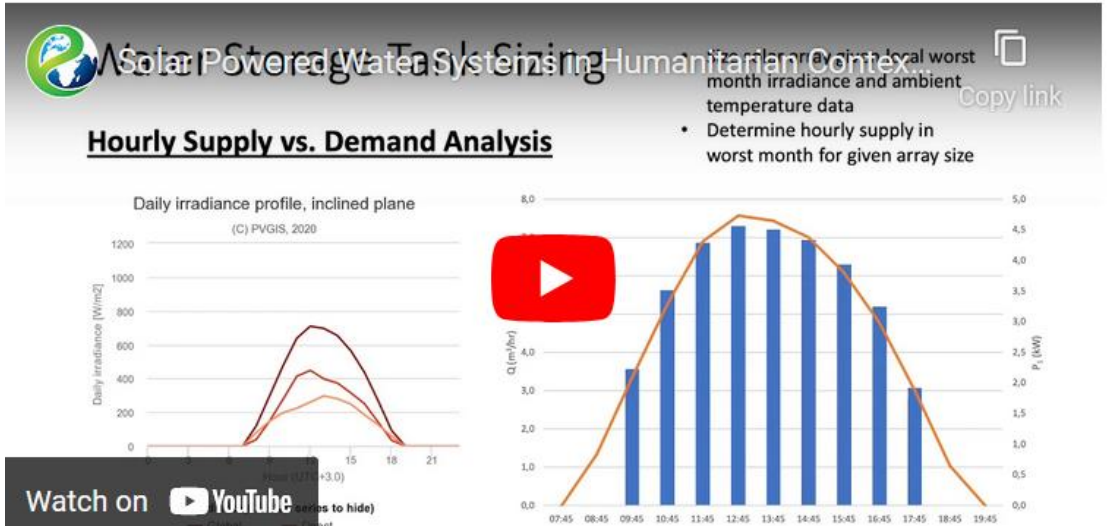
Generator Pumping
Consumption of diesel (l/h)
Running time of generator (hours/day):
Daily water provided with generator (m3/h):

Total Daily water provided by Hybrid system (Solar + Generator) in m3/d:

Water Tank Sizing

Quick guideline for sizing water tanks mentioned in the book, “Solar Pumping for Water Supply”.

	Water storage tank sizing
Generator/grid powered	0.5-1 x daily water requirement
Hybrid (solar+ generator/grid)	0.5-3 x daily water requirement
Stand-alone solar	1-3 x daily water requirement



https://energypedia.info/wiki/Water_Storage_Tank_Sizing_for_Solar_Powered_Irrigation

Thank you!

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