

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

December 2021

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Newsletter



Member Area

Events

- 15 December 2021 Webinar - Solar Powered Irrigation Systems for Small-scale Farmers in Mozambique - Status and Opportunity for the Sector
- 15 December 2021 Sistema de Irrigação com Energia Solar para Agricultores de Pequena Escala em Moçambique - Status e Oportunidade para o Sector

Add Event All Events

Job offers

- 17 December 2021 Global LEAP4RBF Appliance Monitoring & Verification
- 17 December 2021 International Policy Advisor

Add Job All Jobs

Opportunities

- 17 December 2021 Global LEAP4RBF Appliance Monitoring & Verification
- 21 December 2021 Small and Growing Business Fund

Add Opportunity All Opportunities

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Specials

Mozambique Off-grid Knowledge Hub

Latest Renewable Energy Publications

Energypedia Webinar

Join our Community

- Community
- Join Theme Groups
- Create an Article

Latest activities

- Raniha Saener edited the article Oficial de Planificação, Monitorio e Avaliação 06/20, 15 December 2021
- Raniha Saener edited the article Global LEAP4RBF Appliance Monitoring & Verification 06/20, 15 December 2021
- Raniha Saener created the article Associação de Empoderamento de Género e Inclusão Social 06/20, 15 December 2021
- Maria Fernanda Lemos Sizen Winyar edited the article Situação de Eletividade em Moçambique 06/20, 14 December 2021

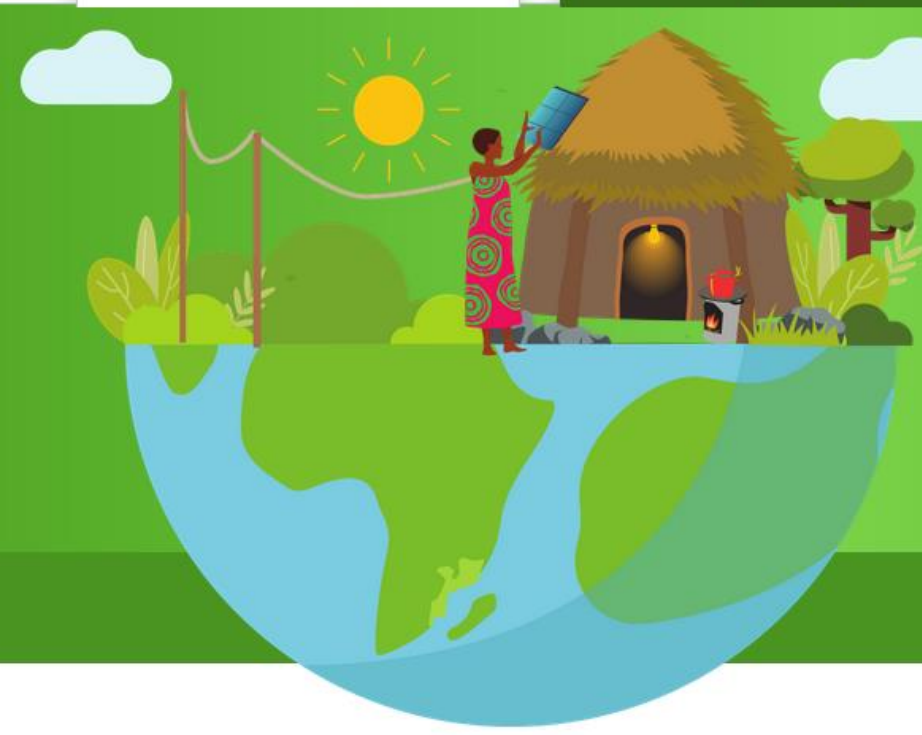
Largest Categories



[Mozambique Off-grid Hub](#)

[Mozambique Off-grid Practitioners Group](#)

[All Mozambique Articles](#)



Mozambique Off-grid Knowledge Hub



Developed by:



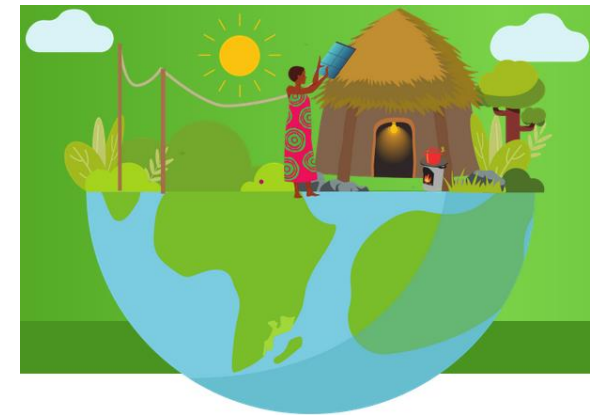
This hub is developed in collaboration with the GIZ programme **Green People's Energy for Africa**.



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



Versão em português

Mozambique Off-grid Hub

Mozambique Off-grid Practitioners Group

All Mozambique Articles

Mozambique 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

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[☞]

English Version

Off-grid Knowledge Hub - Moçambique

Grupo de profissionais

Todos artigos de Moçambique

Off-grid Knowledge Hub Moçambique

Informação sobre o país – Moçambique

A **República de Moçambique** está localizada no sudeste da costa Africana e tem uma superfície de 801.590 quilómetros quadrados. Faz fronteira com África do Sul, Swazilândia, Zimbabwe, Zâmbia, Malawi, Tanzânia e é separada de Madagáscar pelo Oceano Índico. O país está dividido em 10 províncias, e uma cidade capital (Maputo Cidade). É um dos países mais pobres do mundo e o 7º mais pobre e África, com um PIB per capita de USD 1281 (2019), um PIB total de USD 14,96 mil milhões (2019), e um crescimento anual do PIB de 3,11% (2018). **Consulte mais informações...**

Contextualização

- Pérfil do País
- Pérfil de Eletricidade
- Potencial em Energias Renováveis
- Situação de acesso à Energia

Configuração Institucional

- Enquadramento Institucional
- Enquadramento Legal e Estratégias de acesso à Energia
- Programas de Acesso à Energia
- Actores de Desenvolvimento

Questões transversais

- Fazendo negócios em Moçambique
- Nexo de Energia Humanitaria
- Impacto da COVID-19

Notícias do Sector

15 Dec 2021

Sistemas de Irrigação com Energia Solar para Agricultores de Pequena Escala em Moçambique - Estado e Oportunidade para o Sector[☞]

16 Dezembro 2021

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[https://energypedia.info/wiki/Mozambique Off-grid Knowledge Hub](https://energypedia.info/wiki/Mozambique_Off-grid_Knowledge_Hub)

[https://energypedia.info/wiki/Pt/Mozambique Off-grid Knowledge Hub](https://energypedia.info/wiki/Pt/Mozambique_Off-grid_Knowledge_Hub)

Mozambique-Energypedia Off-grid Knowledge Hub



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- Impact of COVID-19

Information on RE Technologies for Mozambique



Solar Home Systems



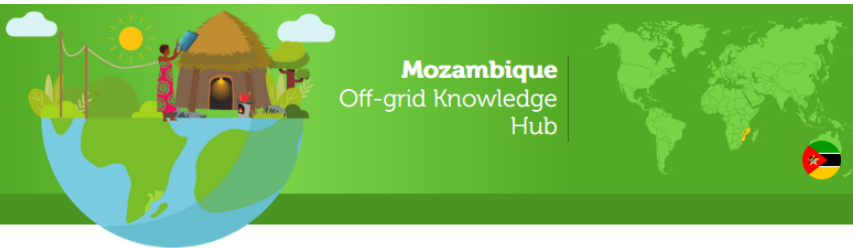
Improved Cookstoves



Mini/Nano grid



Productive Uses of Energy



Mozambique Off-grid Knowledge Hub

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Sector News

- 15 Sep 2021
Off-grid energy access regulation approved by Mozambican government
- 5 Aug 2021
Sweden provides €37M for electrification in Inhambane province
- 20 Jul 2021
Elettricidade de Moçambique tem 21 milhões de euros em dívidas a receber

Publications

- Wind and Solar Can Improve Energy Security and Independence in Albania
- Leveraging Energy Action for Advancing the Sustainable Development Goals
- Decentralised Renewable Energy Innovations to Boost Agri-Sector Productivity & Address Global Food System Challenges

[+ Add Publication](#) [→ All Publications](#)

AMER Publication Database

[AMER Publication Database](#)

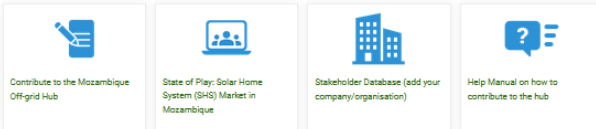
Opportunities

- 4 October 2021
African Youth Adaptation Solutions Challenge
- 14 October 2021
Expressions of Interest: Sustainable Energy Development and Access

Information on RE Technologies for Mozambique



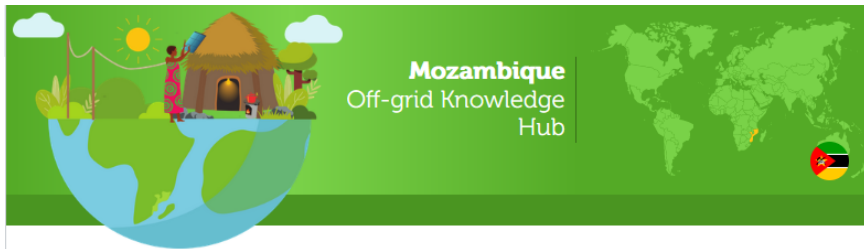
Highlights



Mozambique Off-grid Practitioners Group



Mozambique-Energypedia Off-grid Knowledge Hub



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Information on RE Technologies for Mozambique



Highlights

- Contribute to the Mozambique Off-grid Hub
- State of Play: Solar Home System (SHS) Market in Mozambique
- Stakeholder Database (add your company/organisation)
- Help Manual on how to contribute to the hub

Mozambique Off-grid Practitioners Group



Lisa Feldmann joined the group "Mozambique" on 03. 6 October 2021



Sector News

- 16 Sep 2021
Off-grid energy access regulation approved by Mozambican government
- 8 Aug 2021
Sweden provides €37M for electrification in Inhambane province
- 30 July 2021
Etricidade de Moçambique tem 21 milhões de euros em dívidas a receber

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

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

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
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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

Mozambique Off-grid Practitioners Group



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



Mozambique Off-grid Practitioners Group

The aim of this group is to share knowledge and experience on Mozambican energy sector. Discuss technical advances, lessons learnt and other topics. Find the information you seek by interacting with other experts and benefit from their vast experience! *(Please login to post a discussion!)*

Join the Discussion
Join Group
Off-grid Practitioners Group on Facebook Off-grid Practitioners Group on LinkedIn

Latest Group Activities

- Ranisha Basnet created the article
Solar Powered Irrigation in Mozambique : Recommendation
14:29, 13 December 2021
- Ranisha Basnet created the article
Solar Powered Irrigation in Mozambique : Barriers
14:26, 13 December 2021

Most Active Group Members

[Message Group Members](#)

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](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

The screenshot shows the 'Mozambique Stakeholder Database' interface. At the top, there are three tabs: 'Mozambique Off-grid Hub', 'Mozambique Off-grid Practitioners Group', and 'All Mozambique Articles'. Below the tabs is a header section with a blue building icon, the title 'Mozambique Stakeholder Database', and a description: 'Database of stakeholders who are active in the Mozambican energy space. This database provides an opportunity for organisations to showcase their work and connect directly with other stakeholders for networking and experience exchange.' Below the description, it says '2 stakeholder entries'. There are three main action buttons: 'Add' (with a plus icon), 'Browse' (with a magnifying glass icon), and 'Search' (with a magnifying glass icon). Below these are two columns of icons representing different stakeholder types and energy solutions. The first column, 'Stakeholders by Type of Organisation', includes Donor, Implementer, Governmental Organisation, Civil Society Organisation, Consultancy, Research / Academia, Private Sector, and Other. The second column, 'Stakeholders by Energy Solutions Offered', includes Solar lanterns, Solar home systems, Improved cookstoves, Nano/Mini grids, Productive uses: Pumping, cooling, lighting, and Others. At the bottom, there is a section for 'Stakeholder Database Latest Entries' listing 'AMER - Mozambican Renewable Energy Association' (created on 06 October 2021) and 'Energypedia UG' (created on 30 September 2021).

[https://energypedia.info/wiki/Mozambique Stakeholder Database](https://energypedia.info/wiki/Mozambique_Stakeholder_Database)

Individual Technology Hubs

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



Productive Uses of Energy Hub Mozambique

One-stop destination for all information related to productive uses of off-grid energy in Mozambique



Productive Uses of Energy (PUE) in Mozambique

This hub provides an overview of productive uses of energy such as irrigation, drying, cooling and other applications for Micro, Small & Medium Enterprises in Mozambique. It discusses the market potential and the opportunity for private sector involvement. For information on the energy sector of Mozambique, check out the **Mozambique Off-grid Knowledge Hub!** Join the Mozambique Off-grid Practitioners Group and become a RE advocate!

Currently the hub includes information about solar powered irrigation systems (SPIS) only. If you want to share information on SPIS or other PUE technologies, please contact us at info@energypedia.info.

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

Explore other RE Technologies/Resources for Mozambique



Solar Home Systems



Improved Cookstoves



Mini/Nano grid

Get Involved

Sector News

15 December 2021

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

03 Nov 2021

Mozambique commits to halt and reverse forest loss and land degradation by 2030 and to a new renewables target as part of its energy transition

16 Sep 2021

Off-grid energy access regulation approved by Mozambican government

Publications

Bioenergy for Sustainable Local Energy Services and Energy Access in Africa: Summary Report

Framing Electric Mobility for Urban Sustainability in a Circular Economy Context: An Overview of the Literature

2021 Appliance Data Trends

+ Add Publication All Publications

AMER Publication

Productive Use of Energy in Mozambique

[https://energypedia.info/wiki/Mozambique Productive Uses of Energy Hub](https://energypedia.info/wiki/Mozambique_Productive_Uses_of_Energy_Hub)

Productive Use of Energy in Mozambique



Background

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- Groundwater Management
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- WE4F - Toolbox on SPIS
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- Grundfos Go Solar [E](#)
- 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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Be **connected**
Be part of
energypedia

4,922 energy articles
11,316 registered experts
>80,000 monthly visitors

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Solar



Hydro



Bioenergy



Wind

ENERGY USE



Cooking



Productive Use



Mobility

CROSS CUTTING ISSUES



Energy Access



Countries



Impacts



Mini-grid



Grid



Financing and
Funding



Water and
Energy for Food



Climate Change

Newsletter

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Events

6 October 2021
Intersolar Europe 2021

7 October 2021
State of Play: Solar Home System
(SHS) Market in Mozambique

[+ Add Event](#) [≡ All Events](#)

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Thank you for your interest in energypedia.

Before submitting your registration, please review the following information:

- Please read the [Terms of Service](#) before submitting your registration.
- Once your account is created, an email with further instructions will be sent to you.

1. Create Your Account

Please fill in all the fields in this section.

Username:

Email address:

Main areas of interest

Select the topic areas below in which you have formal expertise or would like to do the most work in.

- Solar (?) Hydro (?) Bioenergy (?) Biofuel (?) Biogas (?)
 Solid Biomass (?) Wind (?) Mobility (?) Improved Cooking (?) Productive Use (?)
 Mini-grid (?) Grid (?) Financing and Funding (?) Impacts (?) Powering Agriculture (?)
 Countries (?) Energy Access (?) Climate Change (?) PMCC (?) Mozambique Off-grid Hub (?)

2. Add Your Details

Real Name (First Name and Surname):

Your details will be set as the initial content for your user profile page. Make sure that you are comfortable publishing this information. You can change this information later on in your profile page.

Make sure you are comfortable publishing such information. Your name can be changed via your [preferences](#).

Please tell us about your profession or how you are involved in renewable energy sector.

Terms of Service

I have read and agree to abide by the [Terms of Service](#) of energypedia. The name I have specified under "Real name" is in fact my own real name.

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<https://energypedia.info/wiki/Special:RequestAccount>

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](https://energypedia.info/wiki/Toolbox_on_SPIS)

GET INFORMED	PROMOTE & INITIATE	SAFEGUARD WATER	MARKET	INVEST	FINANCE	DESIGN
SET UP	IRRIGATE	MAINTAIN				

Crop Water Requirement Tool



2 CROP WATER REQUIREMENT

Farm code/name: Mary Wanjiku's Farm

Area measurement unit: Conversion factor to 1 ha:

	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	

Total farm area: acre

Crop to be irrigated	Area acre	Season	Planting Date	Irrigation method	Irrigation Efficiency	Cropping density
<input type="text" value="Carrots (Oct/Jan - Arid climate)"/>	<input type="text" value="2,50"/> ✓	<input type="text" value="Season 1"/>	<input type="text" value="29.10.2021"/> <input type="text" value="01.05.2021"/>	<input type="text" value="Microirrigation: Drip irrigation"/>	<input type="text" value="90%"/>	<input type="text" value="Normal spacing"/>
<input type="text" value="Carrots (Oct/Jan - Arid climate)"/>	<input type="text" value="2,50"/> ✓	<input type="text" value="Season 2"/>	<input type="text" value="01.07.2022"/>	<input type="text" value="Microirrigation: Drip irrigation"/>	<input type="text" value="90%"/>	<input type="text" value="Normal spacing"/>
<input type="text" value="none"/>	<input type="text" value=""/> ✓	<input type="text" value="Season 1"/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value="Normal spacing"/>
<input type="text" value="none"/>	<input type="text" value=""/> ✓	<input type="text" value="Season 1"/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value="Normal spacing"/>
<input type="text" value="none"/>	<input type="text" value=""/> ✓	<input type="text" value="Season 1"/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value="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 2021	in Kenya	Pump utilization rate:	25%	Yearly water need in m³ - year 1:	5066,24

Pump Sizing Tool

INPUT Head Calculation

Basic assumptions

daily solar irradiation:	4,0	kWh/m ²
solar system losses:	25	%
photovoltaic array type:	single-axis tracked	
estimated water source yield:	50,0	m ³ /hour
sustainable extraction from water source:	50%	/hour
daily water pumping rate:	25,0	m ³ /day
pump pipeline diameter:	1 1/2	inch
pump pipeline length:	200,0	m
pump pipeline material:	PVC, drawn tubing, glass	

<http://globalsolaratlas.info>



Page 1

Page

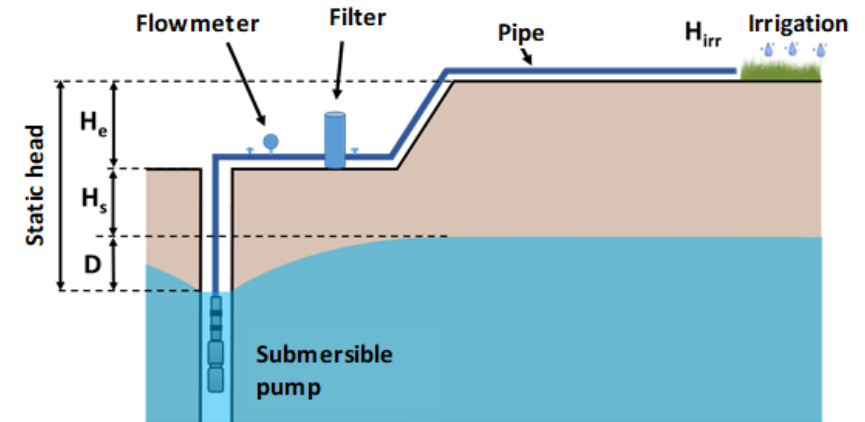
Determination of Pumping Head

Water source: **Groundwater** Select

Direct feed

(pump connected directly to the irrigation system)

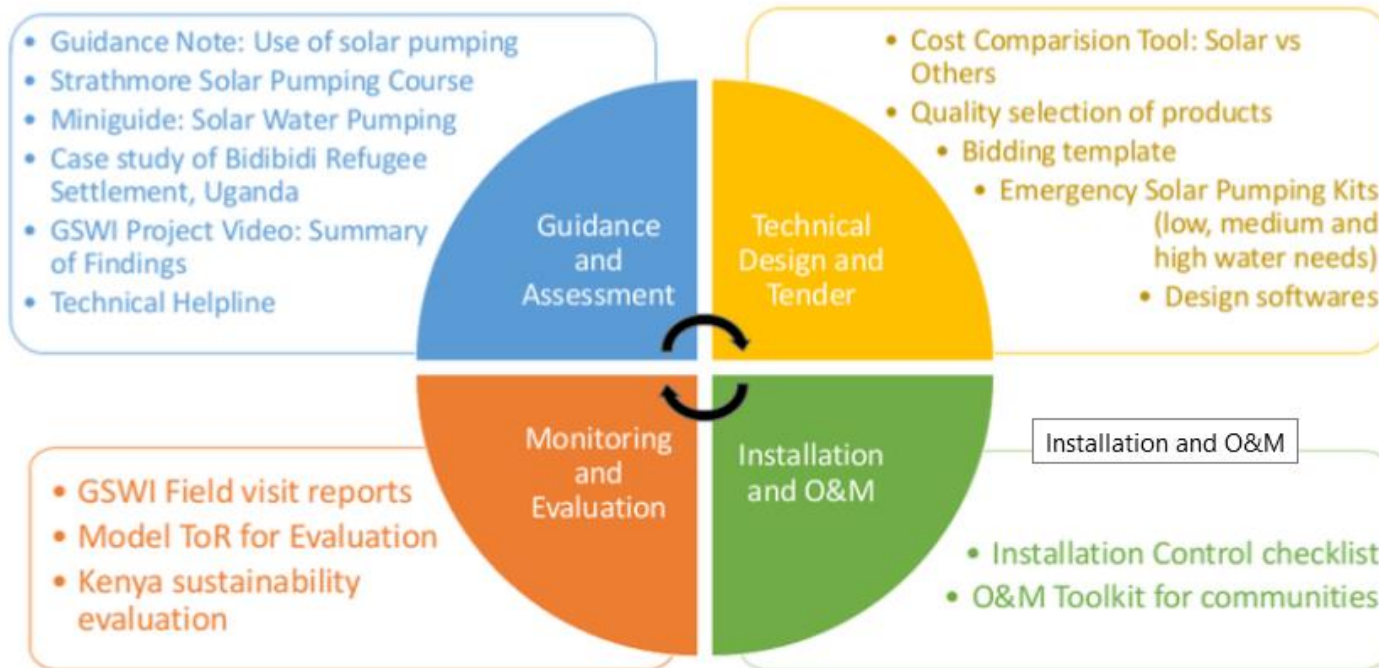
TDH = $H_s + D + H_e + H_m + H_f + H_l + H_{irr}$ 67,8 m



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](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”.

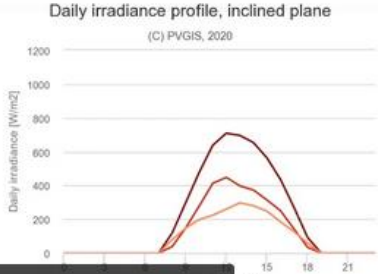
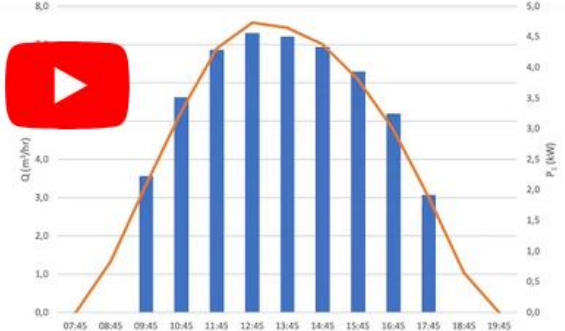
	Water storage tank sizing
Generator/grid powered	0.5-1 x daily water requirement
Hybrid (solar+ generator/grid)	0.5-3 x daily water requirement
Stand-alone solar	1-3 x daily water requirement


Solar Powered Water Systems in a Humanitarian Context

Hourly Supply vs. Demand Analysis

• Determine hourly supply in worst month for given array size

Copy link

Watch on  YouTube

[https://energypedia.info/wiki/Water Storage Tank Sizing for Solar Powered Irrigation](https://energypedia.info/wiki/Water_Storage_Tank_Sizing_for_Solar_Powered_Irrigation)

Thank you!

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