



SOPHIA

Sustainable Off-grid solutions for
Pharmacies and Hospitals In Africa

Aims to improve quality of life of
populations through better treatment
& working conditions in rural
and remote health facilities in Africa



**Better
Healthcare**

**Clean Energy
Technologies**

**Clean Water
Facilities**

**Clean Cooling
Solutions**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 101036836

SophiA Objectives

The objective of the SophiA project is to provide sustainable off-grid energy supplies and clean drinking water for rural and remote health facilities in Africa, thereby accelerating the sustainable development, growth and economic transformation, and ensuring improved access to energy and health services for all.

The SophiA systems will be manufactured using local resources and will be tested at four rural hospitals in remote African regions, aiming to create new business and job opportunities within the continent. Moreover, a special focus will be put on capacity building and skills training for students, as well as targeted support for spin-off/start-up companies to strengthen the development of a highly skilled workforce and increase the capacity for local sustainable development.

SophiA Impacts

BETTER HEALTHCARE

Sustainably improve quality of life of populations through better treatment and working conditions in rural and remote health facilities in Africa

CLEAN ENERGY TECHNOLOGIES

Use renewable, flexible and modular plug-in energy systems for sustainable off-grid supplies, easy to integrate in existing infrastructures

CLEAN WATER FACILITIES

Provide soft drinking water free of bacteria and viruses and steam/hot water for sterilization

CLEAN COOLING SOLUTIONS

Use of environmentally friendly natural refrigerants to provide medium, low and ultra-low temperatures for cooling applications

SophiA Technologies

SophiA will enable populations to sustainably increase their quality of life by providing to rural and remote health facilities in Africa access to:

- Safe, clean drinking water and distilled water for medical purposes
- Hot water and steam production for hospital thermal requirements
- Cooling of surgical or intensive care units
- Cooling of medicines and food at +5°C
- Low temperature storage of blood plasma at -30°C
- Ultra-low temperature storage of sensitive medication at -70°C
- Emergency electricity supply for surgical and intensive care units

Demonstration sites

The SophiA systems will be assembled, tested and demonstrated at four rural hospitals in remote regions throughout the African continent covering the major geographical regions and different climatic conditions in Burkina Faso, Cameroon, Malawi and Uganda.

The project will provide a handbook/guidelines for local companies to build and replicate the SophiA systems on site.

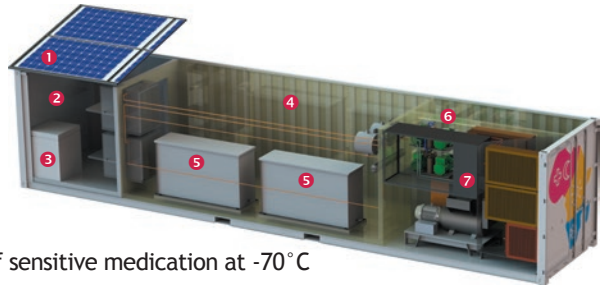


In order to create the greatest possible sustainable and economic benefit, the exploitable results will be furthermore focused into different other markets, besides the health sector.

The final goal of SophiA is to develop two reliable, plug-in, modular container solutions that can be easily integrated into existing buildings and infrastructure

SophiA Solar Cooling Container

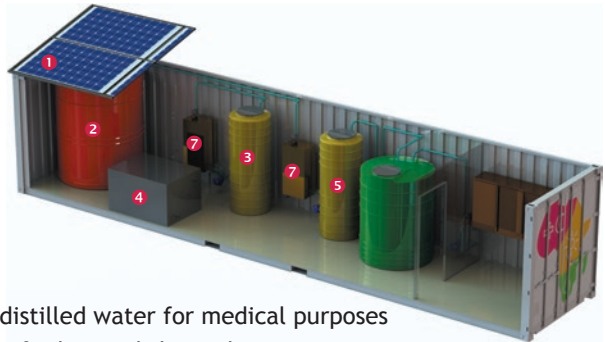
- ❶ PV-Power systems
- ❷ Storage at -70°C
- ❸ Storage at -30°C
- ❹ Storage at $+5^{\circ}\text{C}$
- ❺ Thermal energy storages
- ❻ Machinery room
- ❼ Emergency lithium batteries



- ❶ Ultra-low temperature storage of sensitive medication at -70°C
- ❷ Low temperature storage of blood plasma at -30°C
- ❸ Cooling of medicines and food at $+5^{\circ}\text{C}$
- ❹ Cooling of surgical or intensive care units
- ❺ Emergency electricity supply for surgical and intensive care units

SophiA Solar Water Container

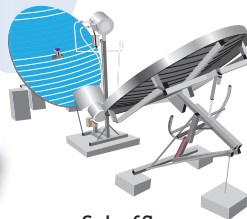
- ❶ PV-Power systems
- ❷ Storage tank for drinking water
- ❸ Deionized water storage tank
- ❹ Solar steam generator
- ❺ Buffer tank for UF treatment
- ❻ Ultrafiltration (UF) tank
- ❼ Capacitive deionisation (CDI) modules



- ❶ Safe, clean drinking water and distilled water for medical purposes
- ❷ Hot water and steam production for hospital thermal requirements



X-Sol
Hot Water System



Scheffler
Reflector

PVmedPort System



PV powered station for education, capacity building, vaccination and awareness campaigns

SophiA Consortium



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Project period: 2021 - 2025

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