EMERGE Pilot

SoutheastAfrica | Mozambique

Name
ENERGY System Modelling for Green Development of Africa

Acronym
EMERGE

Call
HORIZON-CL5-2022-D3- 02-02

Partners
11

Countries
9

Demosites
Morocco, Mozambique and Niger river region

Budget
€2.49M

GA number
n. 101118278

Why this region?

EMERGE supports sustainable development in Africa through integrated modelling tools for Water-Energy-Food (WEF) Nexus planning and low-carbon energy transitions.

Mozambique combines exceptional renewable-energy resources with major development challenges. Electricity access reached about 44% in 2022, but strong urban-rural disparities persist and many remote communities remain dependent on costly, unreliable or traditional energy sources.

The country has around 12 GW of hydropower potential and strong solar resources of 4.5–7 kWh/m²/day. Demand for electricity, transport and modern energy services is rising rapidly, while climate impacts threaten infrastructure, livelihoods and development gains.

These conditions make Mozambique an important testbed for modelling an inclusive, resilient and affordable transition that expands access while avoiding long-term dependence on high-carbon development.

What is happening there?

In Mozambique, EMERGE applies integrated modelling and stakeholder co-design to examine how national development, energy-access and climate objectives can be achieved together.

The work connects medium- to long-term priorities under Mozambique's climate strategies and Just Energy Transition Strategy through 2050. Particular attention is given to solar and hydropower expansion, rural electrification, electric mobility and community benefits.

Participatory engagement brings government, academia, utilities, the private sector, civil society and development partners into a shared evidence-based planning process.

Scan for more details

Focus Areas | Themes

The Mozambique pilot addresses five interconnected dimensions of a just, low-carbon energy transition:

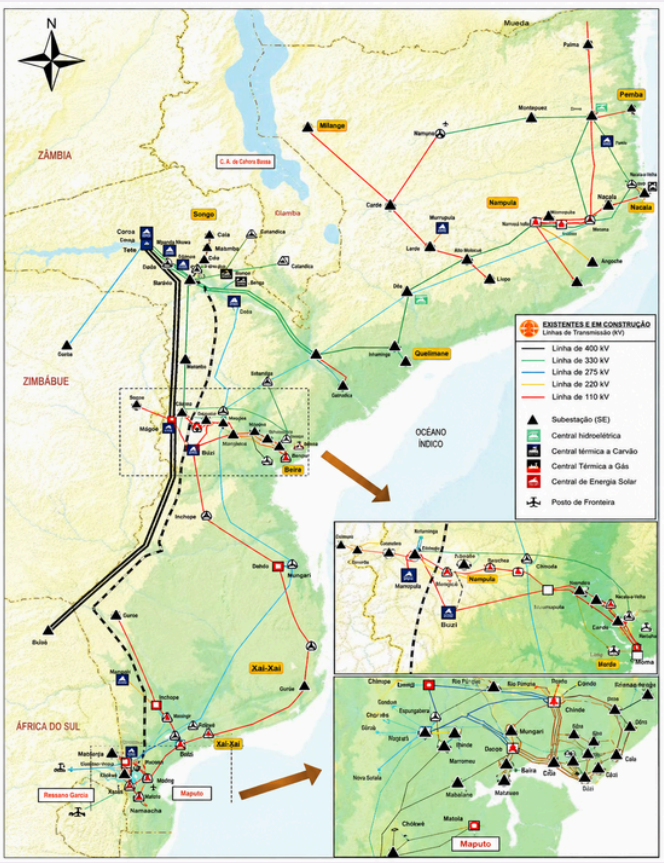
Long-term modelling and scenarios:
Developing evidence-based energy and emissions pathways to 2050, linking energy demand, technology choices, investment needs and mitigation outcomes.

Renewable electricity and energy access:
Assessing grid-based hydropower, solar and wind together with decentralized solar, mini-grid and small-hydro solutions for rural and peri-urban communities.

Clean and productive energy use:
Exploring clean cooking, solar home systems, efficient lighting, solar water heating and solar pumping for irrigation to improve welfare and reduce unsustainable biomass and diesel use.

Low-carbon mobility and efficiency:
Examining electric vehicles and buses, improved public transport, biofuels, CNG and demand-side efficiency alongside progressive grid decarbonization.

Capacity, data and stakeholder co-design:
Strengthening local modelling expertise, datasets and institutional cooperation through inclusive engagement with public institutions, academia, business and civil society.



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Mozambique Energy Snapshot

44%
electricity access in 2022

4.5-7
kWh/m2/day solar resource

12 GW
estimated hydropower potential

3,500 MW
additional solar envisaged by 2050

1,000 MW
additional wind envisaged by 2050

19.63 MtCO2e
energy-sector mitigation potential in 2050

Who is involved?

The Mozambique pilot is anchored by the Center for Energy Research Universidade Eduardo Mondlane (CPE-UEM), supporting modelling, research, capacity development and national dialogue.

Relevant public institutions, including MIREME, EDM, FUNAE and ARENE, participate alongside climate authorities, universities, private-sector actors, civil society, development partners and communities to ensure nationally relevant and implementable results.

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