OACPS R&I | OACPS RESEARCH AND INNOVATION PROGRAMME

INNOVATION FUND

Transformation of the waste sector towards a waste-energy nexus in the Southwest Indian Ocean region (TWENex)

PROJECT CONSORTIUM

PROJECT COORDINATOR

Indian Ocean Commission (IOC), Mauritius

PARTNERS

Mauritius Research and Innovation Council (MRIC), Mauritius

LOCATION

Eastern Africa and Indian Ocean:
Comoros, Madagascar, Mauritius, Seychelles

PERIOD

December 2021 – June 2025

TOTAL BUDGET

EUR 2, 823, 528

EU FUNDING

EUR 2, 400, 000

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TWENex
Waste-to-Energy in the South-West Indian Ocean

CHALLENGE

In the small island developing states (SIDS) of the Indian Ocean, increasing greenhouse gas (GHG) emissions from industrial fossil fuel combustion, open waste dumping and, in some islands, a reliance on biomass for cooking, combined with growing waste production and a lack of processing mechanisms, is having a negative impact on public and environmental health and hampering sustainable development.

FOCUS

Knowledge on integrating energy production into the waste value chain in Indian Ocean SIDS will be enhanced by building local skills and competencies, as well as by developing mechanisms for collecting and exchanging information at national and regional levels. This will boost research and innovation (R&I), increase job opportunities for students and researchers, and improve national R&I capacity for furthering the development of the waste-to-energy sector

RATIONALE

The region is experiencing an overall population increase leading to growing demand for energy. At the same time, generation of waste is increasing due to socio-economic developments and changes to the standard of living.

This situation requires a sustainable approach to the provision of clean energy and waste management in the interest of the region's long-term welfare and development.

Whereas some islands enjoy near universal electricity access, others still experience problems accessing electricity and other sources of energy. However, all of the islands face waste management issues, such as landfill saturation and inadequate waste collection / management systems.

The need to support the development of renewable energy technologies (RET) in the Indian Ocean SIDS is based on national long-term ambitions to achieve higher shares of renewable energy in their energy mix in line with sustainable development and climate change mitigation strategies. Waste management is also a major issue, with existing infrastructure and collection capacity severely strained in the region; however there is also a growing focus on circular economy.

By addressing the problems of waste management and environmental degradation while diversifying the energy mix and improving energy access, two critical and urgent issues can be tackled simultaneously. Moreover, by facilitating interaction between public authorities, the private sector, education providers, researchers and local communities, societal buy-in of the waste-to-energy sector can be consolidated early on and new economic opportunities created in waste management and RET.

The OACPS R&I Programme is an initiative implemented by the Secretariat of the Organisation of African, Caribean and Pacific States (OACPS) and funded by the European Union (EU)

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TWENex

A power plant producing energy from bagasse in La Réunion (2018)

METHOD

National R&I institutions, public authorities at local and national level, enterprises and business organisations, education providers, agricultural communities, and non-governmental organisations (NGOs) will be involved in TWENex.

TWENex facilitates the development of a waste-to-energy ecosystem within the Indian Ocean region, while recognising and addressing local and sub-local specificities, and, in partnership with various local and regional organisations, will:

- Collect and update relevant data for analysis and informed decision making on waste management and RET.
- Strengthen interactions between public and private actors to identify areas of collaboration for business development and project implementation.
- Implement R&I demonstration projects and pilot projects.
- Develop technical and business models for technology transfer.
- Transfer, scale and replicate the models.

The projects and models aim to:

- Provide clean access to energy and reduce dependence on fossil fuels and biomass.
- Help relieve environmental degradation associated with waste management and GHG emissions.
- Generate new opportunities for local businesses.
- Engage and promote local and regional R&I.
- Support government ambitions for sustainable development.

EXPECTED RESULTS

Impacts

An inclusive R&I environment enabling a transition to sustainable management of the waste value chain and production of energy from waste in the western Indian Ocean islands.

Outcomes

- Improved knowledge on trends in the waste value chain and the waste-to-energy sector.
- Enhanced collaboration between the public and private sector along the waste value chain.
- Research centres, universities, grassroots organisations and Public-Private Partnerships (PPPs) developing and improving innovative technologies along the waste value chain.
- Innovative technologies along the waste value chain adopted by the public and private sector.
- Updated public policies on promoting the development and utilisation of innovative and sustainable technologies in the waste value chain and the WtE sector.

Outputs

- Consolidated information on trends in the waste value chain and the waste-to-energy sector.
- Actors from the public and private sector along the waste value chain strengthened in cross-sectoral collaboration.
- Capacity of research centres and universities enhanced in improving research methodologies to update existing or develop new waste-to-energy technologies.
- Capacity of research centres and waste technology service providers enhanced in transferring innovative waste-to-energy technologies.
- Public authorities supported in updating and developing policies that facilitate the waste-to-energy sector.

PROGRAMME PRIORITIES

Access to digital literacy, knowledge and use of emerging technologies.

Links between R&I skills development and labour market.

Synergies in the R&I ecosystem (private sector, technology transfer, R&I uptake).

Local and indigenous knowledge.

SECTOR

Waste, energy

KEY WORDS

waste management, renewable energy technologies, health, natural resource management, waste-to-energy

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Bagasse, a by-product of the sugar production from sugar cane, is used to produce energy in Mauritius (© G. Ribouet, IOC, 2021)

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