



CLIMATE CHANGE, CLEAN ENERGY AND URBAN WATER IN AFRICA

Promoting market-based deployment of clean energy technologies and services in municipal waterworks



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Promoting market-based deployment of clean energy technology solutions in municipal waterworks: Pilot initiative in South Africa

PROJECT DURATION: 2.5 years

DONOR: European Commission, DG Climate Action

IMPLEMENTATION: UNIDO is the Implementation Partner; REEEP as a strategic partner of UNIDO is the Execution Partner. Implementation will take place in collaboration with key South African Government stakeholders.

BACKGROUND

In developing countries and emerging economies, electricity costs can account for up to 40% of total operating costs in municipal water and wastewater facilities.

Energy efficiency and clean energy measures in urban water and wastewater facilities contribute to climate change mitigation and adaptation. Benefits to municipalities of adopting these measures include water, energy and cost savings, improved water quality and better service delivery to constituents.

SOUTH AFRICA

- **Strong need for energy efficiency:** Water and wastewater infrastructure accounts for up to 70% of the total energy consumed by South African municipal administrations.
- **Strong need for water efficiency:** South

Africa is a water-scarce country, and water demand exceeds supply nationally.

- **High potential for greenhouse gas (GHG) mitigation:** 90% of electricity in South Africa is generated by coal fired power stations.
- **Large infrastructure gaps at municipal level remain unaddressed:** South Africa has ageing water infrastructure; the level of non-revenue water stands at 35%. More than half of treatment plants do not fulfill effluent standards. There remain capacity deficits at municipal level, e.g. for energy assessments, energy management planning, tendering processes for private sector services, implementation and monitoring.
- **High potential for establishing viable demonstration projects** that can be replicated and scaled up within South Africa and across the SADC region. South Africa has a conducive policy environment (GHG reduction commitments, access to water and water quality policies, promotion of energy efficiency and renewable energy). Municipalities are at the forefront of leading the charge to address climate change. With tailored input from the private sector, interventions supported by the project can drive replication in other municipalities in South Africa and the SADC region. Project results will be communicated throughout the region in collaboration with key regional stakeholders.
- **Fully aligned with the development priorities of South Africa:** in terms of improved service delivery, transition to a green economy, employment creation and GHG emission reduction.

PROJECT DESCRIPTION

PILOT INITIATIVE FOR MODEL PATHWAYS OF MARKET-BASED APPROACHES TO COST-EFFECTIVE CLEAN ENERGY DEPLOYMENT IN MUNICIPAL WATERWORKS IN SUB-SAHARAN AFRICA

The project focuses on identifying clean energy opportunities in municipal water and wastewater infrastructure in South Africa. It pursues a basis for market-based replication and scale-up for municipalities nationally and across the SADC region to aid in capacity building and water service delivery.

The project includes **four** key components:

1. SCOPING AND GUIDANCE FOR DEMONSTRATION PROJECTS

The project engages with two pilot municipalities to demonstrate energy efficiency measures in water and water treatment systems, and, where applicable, clean energy solutions.

The project facilitates knowledge-sharing between municipalities, government agencies and relevant private sector service and technology providers, to support municipalities in:

- Establishing viable energy management and data collection systems
- Planning appropriate low cost/high return clean energy deployment
- Developing tender documents and proposals required to select technology and service offers
- Identifying and accessing finance from financial institutions or relevant infrastructure funds and support programs

- Implementing planned activities, monitoring progress, and evaluating and verifying results.

Private sector engagement will be tailored to the specific needs of the pilot municipalities, and may include short-term management contracts, bundling of small projects across multiple waterworks and energy-saving performance contracts.

The project focuses on simple and cost-effective technical solutions to improve energy efficiency, increase renewable energy production and decrease GHG emissions.

2. TAILORED CAPACITY BUILDING FOR MARKET PLAYERS AND ENABLERS

To ensure sustainable impact beyond its lifespan, the project seeks to create a critical mass of capacity for market enablers and market players, linked to existing efforts and initiatives.

3. INNOVATIVE MONITORING, EVALUATION AND LEARNING

Enhanced monitoring and evaluation, together with practice-based policy research, will generate lessons learned and present practical solutions for clean energy deployment in water and wastewater infrastructure. A critical review of the clean energy potential of municipal waterworks in South Africa will complement the demonstration projects. This review is supplemented by targeted knowledge sharing, aimed at disseminating market insights and policy recommendations.

4. PROMOTION OF SCALE-UP AND REPLICATION

The demonstration projects act as lighthouses for South Africa and the SADC region, focusing on highly scalable and replicable business propositions. Replication will be stimulated through peer to peer learning events with

interested municipalities in South Africa, where lessons learned from the project can be shared and promoted.

As an international climate initiative, the project has the potential to increase the ambitions of a large group of countries, exploiting achievable GHG emissions reduction options at low (or even negative) cost, while increasing local prosperity. The project will increase visibility for business opportunities related to energy efficiency and renewable energy deployment in the water and wastewater treatment sectors.

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