



From Water Reuse to Climate-Resilient Investment

Egypt's Proposed Intensive Water Reuse Programme

From concept development to investment readiness

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MED-RISE • CAIRO WATER WEEK 2026

Egypt's water challenge

WATER RESOURCES

65.35 BCM/year
Nile: 55.5 BCM/year

WATER DEMAND

88.55 BCM/year
Agriculture: 68.1 BCM/year

REUSE CONTRIBUTION SHOWN

23.2 BCM/year
Gap fulfilled by water reuse

What this means Egypt has substantial experience in water reuse.
The opportunity is to explore how additional reuse solutions can be developed safely and sustainably, taking into account local conditions, environmental safeguards and economic feasibility.

An existing national water system to build on

IRRIGATION NETWORK

35,000 km

AGRICULTURAL DRAINAGE NETWORK

20,000 km

TREATMENT CAPACITY HIGHLIGHTS

Mahsara: 1.0 MCM/day
Bahr El-Baqar: 5.6 MCM/day
New Delta: 7.5 MCM/day

A proposed sequence

Drainage water



Quality assessment

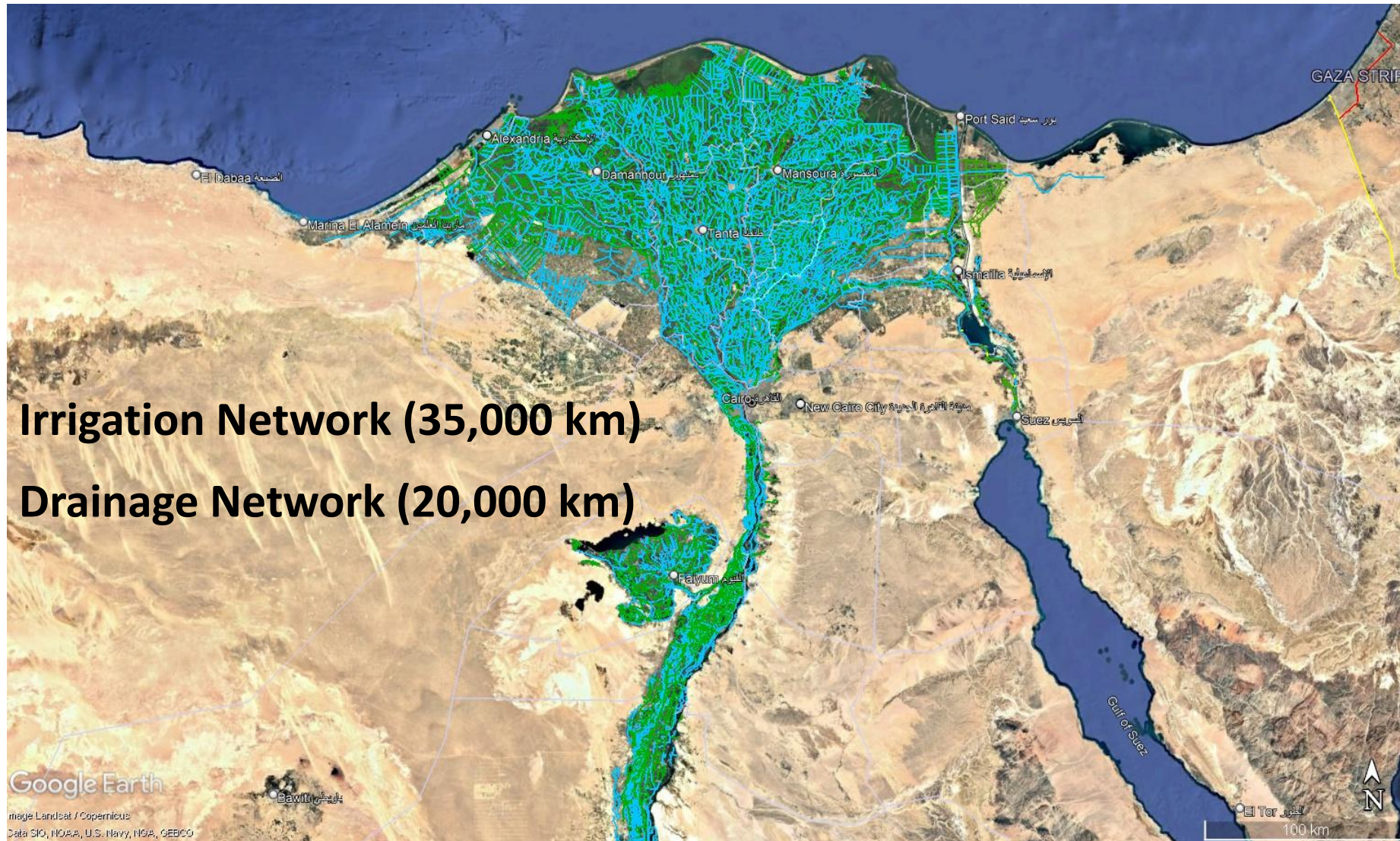


Fit-for-purpose treatment

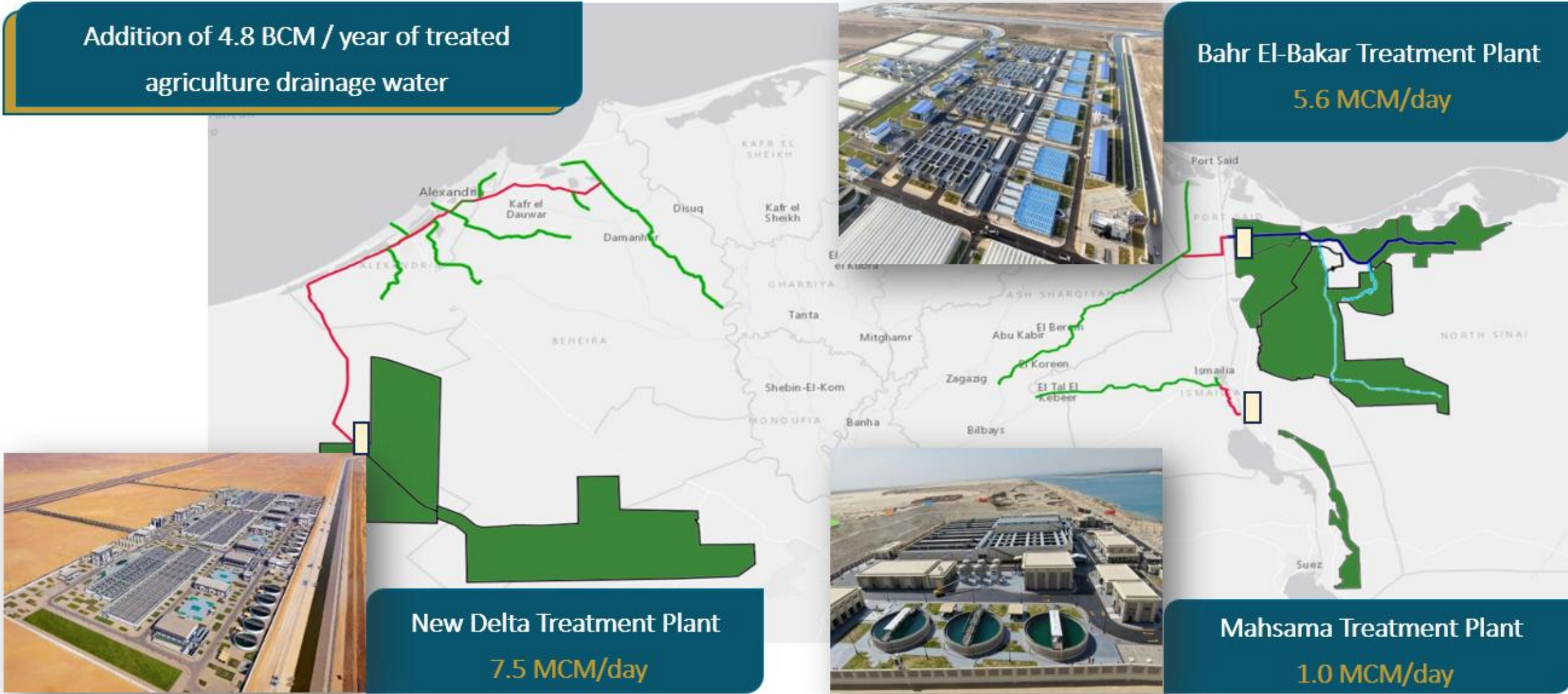


Safe, productive reuse

Egypt's water network



Water Treatment – Agriculture Drainage Network



The next challenge: water quality and salinity

A portfolio of solutions, matched to local conditions

1 MAP AND CLUSTER SOURCES

Assess quantity, quality, salinity and seasonal variability; group sources by suitability and location.

2 MATCH THE INTENDED USE

Select treatment according to crop needs, soil conditions, irrigation method and environmental limits.

3 ASSESS FEASIBILITY

Compare treatment options, energy demand, lifecycle costs, residuals and safe brine management where relevant.

4 PLAN SAFE OPERATIONS

Set out monitoring, quality assurance, institutional responsibilities and farmer engagement.

Decision principle: choose a solution only after the water source, end use, environmental safeguards and full lifecycle costs are understood.

Why this is a WEF E Nexus investment

Design water, energy, food and ecosystem outcomes together

WATER

Use water that is fit for purpose, with treatment matched to quality and salinity.

ENERGY

Assess energy demand and renewable-energy options, including solar where technically and economically suitable.

FOOD

Link irrigation-water quality to crop selection, agricultural practices and market demand.

ECOSYSTEMS

Include soil and receiving-water protection, residuals management and safeguards from the outset.

The proposal should assess the integrated system as a whole—not only the treatment plant—and compare costs, benefits and risks across the full chain.

Egypt's National Intensive Water Reuse Programme

Concept note stage only — implementation has not started

PURPOSE

Develop an evidence-based approach to assessing agricultural drainage water and identifying safe, productive reuse opportunities.

PROPOSED WORK

Map and classify sources; assess quantity and quality; develop integrated WEFE options; examine feasibility and lifecycle costs.

SAFEGUARDS

Consider environmental and social safeguards, monitoring, institutional responsibilities and residuals management.

Next step

Finalize the proposal and identify a suitable pilot to test the proposed approach under local conditions

The national proposal: building an investment-ready pathway

A concept under development — implementation has not started

1 UNDERSTAND THE RESOURCE

Map drainage-water sources and assess quantity, quality, salinity and variability.

2 DESIGN THE INTEGRATED MODEL

Link treatment or desalination with energy, irrigation, crop choices and market opportunities.

3 TEST FEASIBILITY

Assess lifecycle costs, environmental and social safeguards, responsibilities and financing options.

4 PREPARE FOR FUTURE SCALE-UP

If approved and resourced, test a suitable model; use evidence to inform future investment decisions.

The aim is to test the technical and financial assumptions before considering wider investment.

Regional cooperation can broaden the effort

AWARe provides a platform for developing climate-resilient water adaptation solutions

REGIONAL COOPERATION

Egypt, Tunisia, Morocco and Jordan agreed to cooperate under the AWARe initiative.

PROJECT DEVELOPMENT

Egypt and Morocco, with UNDP, approached the Adaptation Fund during the initial development phase.

CURRENT STATUS

The proposal is under preparation. Financing approval has not been confirmed.

Complementary opportunity

Regional collaboration can support shared learning and help advance climate-resilient water reuse solutions under different local conditions.

What makes the case bankable?

MED-RISE guiding question 1

EVIDENCE

Reliable data on source quantity and quality, demand, location, and suitable end uses.

ECONOMICS

Transparent CAPEX and OPEX estimates, energy needs, lifecycle costs and expected benefits.

PREPARATION

Feasibility, safeguards, institutional roles, implementation options and a realistic investment pathway.

The appropriate financing mix should be assessed rather than assumed at concept stage

What could nearly stop implementation?

MED-RISE guiding question 2

TECHNICAL & ENVIRONMENTAL

Variable water quality, salinity, energy intensity, soil impacts, residuals and safe brine management.

FINANCIAL & COMMERCIAL

High CAPEX or OPEX, uncertain agricultural returns, affordability and unclear value capture.

INSTITUTIONAL & DELIVERY

Unclear mandates, weak O&M capacity, limited data, farmer acceptance and coordination risks.

These risks should be examined early through feasibility analysis, stakeholder consultation and a realistic operating model.

What would another country need to replicate it?

MED-RISE guiding question 3

- 1 Build a reliable baseline of water quantity, quality, salinity and seasonal variation.
- 2 Design the whole WEFE system: treatment, energy, irrigation, crops, markets and safeguards.
- 3 Test CAPEX/OPEX, affordability, environmental and social risks, and operational requirements.
- 4 Agree institutional roles, O&M responsibilities and farmer/community engagement.
- 5 Use evidence from any approved pilot to inform an investment and scaling roadmap.

The proposed programme's central investment logic is to validate an integrated WEFE model before considering national-scale replication.



THANK YOU

Turning water reuse into
climate-resilient agricultural investment

