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Cairo International Convention
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The Construction Authority for Potable Water and Wastewater: Towards Smart and Sustainable Development of Water and Sanitation

The Construction Authority for Potable Water and Wastewater, one of the entities affiliated with the Ministry of Housing, Utilities, and Urban Communities, is one of the pivotal entities in supporting the infrastructure for providing potable water and sanitation services in the Arab Republic of Egypt. The Authority was established by Decree No. 497 of 1981 issued by the Minister of Reconstruction and State for Housing and Land Reclamation, to undertake a strategic role in planning, executing, and monitoring water and wastewater projects, in line with the state's goals for sustainable development according to Egypt's Vision 2030. The Authority operates according to the highest technical and environmental standards, and its activities expand to serve

approximately 34% of the population of the Republic, in the governorates of Cairo, Giza, Qalyubia, Alexandria, in addition to a number of new cities.

A Decade of Major Achievements (2014–2024)

During the last decade, the Authority has achieved a qualitative leap in its projects, where 322 projects were implemented with total investments amounting to 31.2 billion Egyptian pounds. These included the construction of treatment plants with a capacity of 3 million m³/day for wastewater, and potable water projects with a capacity of 1.6 million m³/day.

These included the delivery of water and sanitation services to 128 villages and their affiliated hamlets,

Contributing to a significant improvement in the quality of life for citizens in underserved areas. Notably, the sanitation coverage rate for villages in Qalyubia Governorate increased from 16.9% based on 2014 population data to 85% in 2024, while coverage in Giza Governorate rose from 32% to 50% during the same period reflecting the scale of efforts made to enhance infrastructure and public services.

Supervision of the Largest Treatment Plants in the Middle East and Africa

The Authority is responsible for supervising the operation and maintenance of the largest wastewater treatment plants in Egypt, which are among the largest in the Middle East and Africa. Among the most prominent of these:

Al-Gabal Al-Asfar Treatment Plant:

The plant was established to serve the population of Greater Cairo, and is considered one of the largest treatment plants in the world, with a current design capacity of 2.5 million m³/day, distributed over two phases:

- **Phase One:** 1.5 million m³/day
- **Phase Two:** 1 million m³/day
- Work is currently underway to implement the third phase with an additional capacity of 1 million m³/day, bringing the total capacity of the plant to 3.5 million m³/day by 2030.

It is also worth highlighting the key projects executed by the Authority

Abu Rawash Treatment Plant – Giza :

Total capacity of 1.6 million m³/day, distributed over:

- **Phase One:** 1.2 million m³/day
- **Phase Two:** 400 thousand m³/day

East Treatment Plant – Alexandria:

Total capacity of 1.2 million m³/day



Advanced Technologies for Environmental and Economic Sustainability

The Construction Authority for Potable Water and Wastewater pays great attention to adopting the latest technologies in the fields of water and wastewater treatment, out of its belief that true sustainability can only be achieved through the effective integration between operational efficiency and advanced technology. One of the key areas of excellence in this regard is the expansion in sludge treatment systems and the introduction of anaerobic digesters for the first time at the level of treatment projects in Egypt.

The Authority was the first government body to introduce this advanced technology at Al-Gabal Al-Asfar treatment plant, which is one of the largest treatment plants in the Middle East and Africa. This technology relies on the biological treatment of sludge in an oxygen-free environment to produce biogas, which contributes to reducing the volume of final sludge, producing renewable energy that can be used to operate parts of the plant autonomously, reducing the plant's carbon footprint, achieving economic benefit from waste, improving

treatment efficiency, and reducing the burden on transport and subsequent treatment networks. to reducing the volume of final sludge, producing renewable energy that can be used to operate parts of the plant autonomously, reducing the plant's carbon footprint, achieving economic benefit from waste, improving treatment efficiency, and reducing the burden on transport and subsequent treatment networks.

The application of these technologies is not limited to Al-Gabal Al-Asfar only, but the Authority has begun to expand their use in other projects including the East Treatment Plant as well as projects currently under preparation, such as the Arab Abu Saad Wastewater Treatment Plant in Helwan, the expansions and upgrades of the West Treatment Plant in Alexandria, and the sludge treatment and utilization project at Abu Rawash Treatment Plant in Giza Governorate. These efforts are part of the Authority's plan to develop sludge systems and maximize the utilization of sludge.



In the context of digital transformation, the Authority is working on integrating SCADA systems into new and existing plants, and applying digitization and GIS technologies for monitoring and maintenance, to ensure rapid response, improve performance efficiency, reduce losses, and enhance transparency in operations.

The Authority aims to serve as a model for achieving a balance between technology, social, and environmental sustainability. Its role goes beyond simply disposing of wastewater extending to the maximization of resource recovery from treatment processes through the reuse of treated

water and the utilization of sludge, through its use in producing biogas and fertilizers, thereby contributing to the circular economy by focusing on:

- Improving the quality of produced and treated water.

- Reducing losses from the networks through pressure and consumption monitoring.
- Supporting the transition to the safe use of treated water in irrigation and manufacturing.

This integrated approach makes the Construction Authority not only an executor of projects, but an innovator in providing solutions and a regional leader in sustainable water infrastructure.

A Central Role in the “Haya Karima” Initiative

The Authority plays an active part in the first phase of the national project to develop the Egyptian countryside (“Decent Life” initiative), where it is implementing 46 projects to serve a total of 39 villages in Giza and Qalyubia governorates, with an estimated cost of 7 billion pounds, including the construction of gravity networks and 25 lifting stations and 3 treatment plants in Giza Governorate, and construction of gravity networks and 24 lifting stations and 3 treatment plants in Qalyubia Governorate.

The Authority also plans to implement projects for the second phase of “Decent Life,” including 6 water purification plants and 15 treatment plants with a total capacity of 413 thousand m³/day.



Urban Expansion and Future Projects

Currently, 219 projects are being implemented in the governorates of Cairo, Giza, Qalyubia, and Alexandria, at a cost of about 31 billion pounds, with a total capacity of 1.78 million m³/day (516 thousand m³/day for Wastewater and 1.27 million m³/day for potable water). The plan also includes 16 projects in new cities with a cost of 13.7 billion pounds.



International Partnerships for Development

The Construction Authority is keen collaborate with development partners from major international financing and development institutions, such as the European Investment Bank, the African Development Bank, and the French Development Agency. The Authority continuously seeks to build strategic partnerships through the implementation of innovative projects under the public-private partnership (PPP) model, including the sludge treatment project at Abu Rawash Wastewater Treatment Plant and the expansion of Mostorod Water Plant with a capacity of 150,000 m³/day. These efforts aim to strengthen the Authority technical and financial capabilities and to deliver projects that support Egypt's sustainable development goals.



Towards a Sustainable Water Future

Through this comprehensive approach that integrates operational efficiency, technical innovation, and digital transformation, the Construction Authority for Potable Water and Wastewater affirms its position as a regional leader in the field of water resource management and sustainable infrastructure. It serves as a model in balancing environmental preservation with the provision of basic services with quality and efficiency, in line with the ambitions of the New Republic and serving the future of coming generations.



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