

The Client / The Donors / The Contractor

The wastewater treatment facilities for the city of Durres were part of measures implemented under the "Albania Integrated Water and Ecosystems Management Project" financed by a blended loan and credit provided by the World Bank (International Development Association with Global Environment Facility – IDA-GEF) and by the European Investment Bank (EIB), supplemented by financial contributions from the Government of Albania.

The measures were administered by the Ministry of Public Works and Transport, Water Project Implementation Unit (PIU).

The Italian company Giovanni Putignano & Figli S.r.l. constructed the wastewater treatment facilities for the city of Durres.

Main Processes

The Activated-Sludge Process

The activated-sludge process is a biological method of wastewater treatment that is performed by a variable and mixed community of microorganisms in an aerobic aquatic environment. The overall objective of the activated-sludge process is to remove substances that have a demand for oxygen from the system. This is accomplished by the metabolic reactions of the microorganisms, the separation and settling of activated-sludge solids to create an acceptable quality of secondary wastewater effluent and the collection and recycling of microorganisms back into the system or removal of excess microorganisms from the system. The activated-sludge process contains five essential interrelated equipment components.

The first is the aeration tank in which oxygen is introduced into the system by fine bubble air diffusers. Second, rotary lobes blowers (200 kW each) ensure that adequate air (oxygen) is fed into the tanks and that the appropriate mixing takes place. Third, aeration tanks are followed by secondary clarifiers, in which activated-sludge solids are separated from the surrounding water by the process of flocculation. Fourth, return activated sludge is collected from the secondary clarifiers and pumped back to the aeration tanks before dissolved oxygen is depleted. Fifth, activated sludge containing an overabundance of microorganisms (surplus sludge) is removed from the system.






The Sludge Anaerobic Digestion

Surplus sludge is processed in anaerobic digestion tanks in which microorganisms break down biodegradable material in the absence of oxygen, generating substantial amounts of biogas; this biogas is used to generate electric power, covering up to 30 % of the overall electric demand of the wastewater treatment plant.

The Constructed Wetland

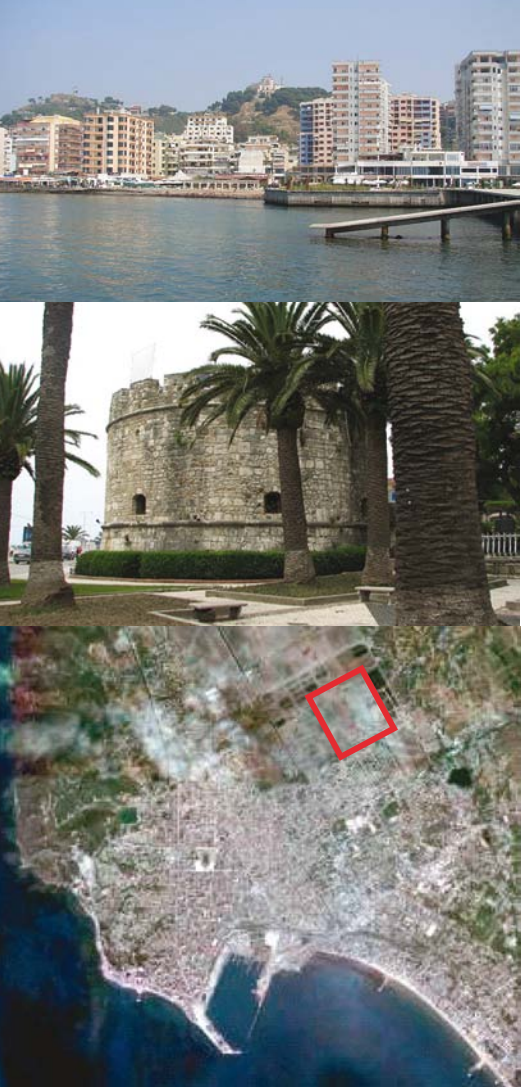
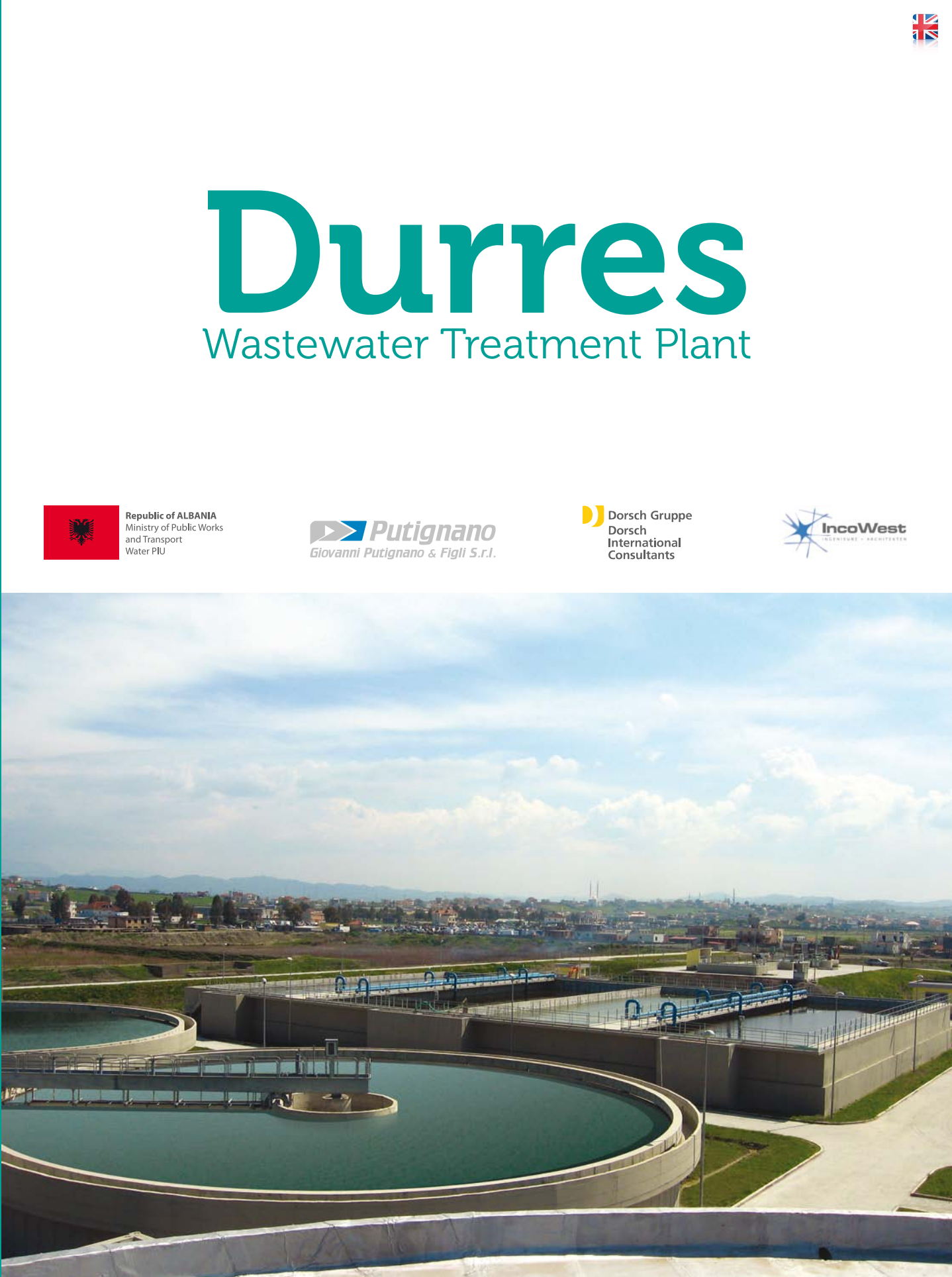
An extensive system of shallow ponds of an area of 15 hectares, resembling natural wetlands, to further remove contaminants from the treated wastewater has been added.



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Main Suppliers

 Screens, Belt Conveyor, Desanding Units, Scraper Bridges, Thickeners	 Pensocks, Telesopic Valves, Heat Exchanger, Biogas Filters and Condensation Separators, Metal Works	 Submersible Pumps, Air Diffuser System	 Rotary Lobe Blowers	 Cogeneration Unit, Gen-Set	 Progressive Cavity Pumps	 Gate Valves, Butterfly Valves, Check Valves	 Steel Pipes
 HD-PE Pipes	 Biogas Desulphurization Unit, Torch	 Biogas Compressors and Blowers	 Low Voltage Switchboards, SCADA System	 Gas Holder, Fiber and UV System	 Manometers	 Electric Equipments	 Air Compressors
 Instruments	 Instruments	 Medium Voltage Switchboard	 Fire Fighting Unit	 Horizontal Centrifugal Pumps	 Chemicals Dosing Station	 Laboratory Equipment	 Pipe Fittings
 Furnishings/Bronzengery	 Furnishings	 Electric Cables	 Digester Insulation Corrugated Steel Sheets	 HD-PE Tanks	 Fuel Tanks	 Ready-Mixed Concrete	 Varisco and KSB Agent



The City

Durres is the second largest city of Albania. It is the most ancient and one of the most economically important cities of Albania, located on the central Albanian coast, about 33 km west of the capital Tirana. It has a population of around 202,000 (as of 2009 estimate).



The Objective / The Plant

Water pollution has caused significant deterioration of the natural inland ecosystems as wastewater is discharged into tidal marshlands or to the marine coastal zones. The objective is protection, restoration and enlargement of endangered coastal and marine habitats by introducing wastewater treatment facilities for the city of Durres with an estimated population of 250,000 in year 2022.

The wastewater treatment facilities for the city of Durres are located in the vicinity of Porto Romano and cover an area of about 64 hectares. The wastewater facilities comprise one inlet pumping station, one pre-treatment (two screens, two aerated grit chambers, one flow-rate measuring channel), activated-sludge system (four oxidation tanks, two sedimentation tanks, one activated sludge recirculation), treatment wetland unit of 15 hectares, sludge treatment line (two thickener tanks, two digestion tanks, eight sludge reed beds), bio-gas line (one gas-holder, one desulphurization unit, one torch, one co-generation plant), operation, laboratory and information buildings, infrastructure services, transformer station (1,250 kVA) and diesel-driven emergency power generator set (720 kVA). The wastewater treatment plant has a capacity of 250,000 population equivalents and is designed to cope with a biological load of 9,000 kg/day and with a hydraulic load of 60,000 m3/day (wet weather flow).

The Treatment Stations

The Plant includes the following treatment stations:

 Wastewater line	 Sludge Line	 Biogas Line
<ul style="list-style-type: none">- Coarse Screen- Inlet Pumping Station- Pre-treatment (fine automatic screen, grit chamber, flow-rate measurement, over-flow/by-pass, ferric chloride dosing for phosphorous removal)- Activated Sludge Aeration Tank (4 lines)- Secondary Sedimentation Tank (2 lines)- Activated Sludge Recirculation- Wetland	<ul style="list-style-type: none">- Thickener Tank (2 lines)- Anaerobic Digestion Tank (2 lines)- Reed Beds	<ul style="list-style-type: none">- Biogas Storage- Desulphurization Unit- Co-generation Plant- Torch



Durres

Wastewater Treatment Plant

Constructed by a team of experts dedicated to professionalism and success

A huge plant to meet environmental challenges and to protect the ecosystem

<p>Giovanni Putignano & Figli S.r.l. Mr. Raffaele Putignano</p> 	<p>Giovanni Putignano & Figli S.r.l., CEO, Mr. Mario Parchitelli</p> 	<p>Giovanni Putignano & Figli S.r.l. Project Director, Mr. Vito Matarrese</p> 	<p>Giovanni Putignano & Figli S.r.l. Project Manager, Mr. Vito Laera</p> 	<p>Giovanni Putignano & Figli S.r.l., Ass. Project Manager, Mr. Nicola Panarese</p> 	<p>Giovanni Putignano & Figli S.r.l. E/M Engineer, Mr. Giambattista Intini</p> 	<p>Giovanni Putignano & Figli S.r.l. Technical Department</p> 	<p>Adriatik Sh.p.k., Mr. Petrit Kovaçi, Mr. Ardian Mustafaraj, Mr. Olsi Graceni</p> 
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