

WATER & INFRASTRUCTURE

WATER RESOURCES AND CONSULTANCY

WATER SUPPLY

SANITATION AND WASTEWATER TREATMENT

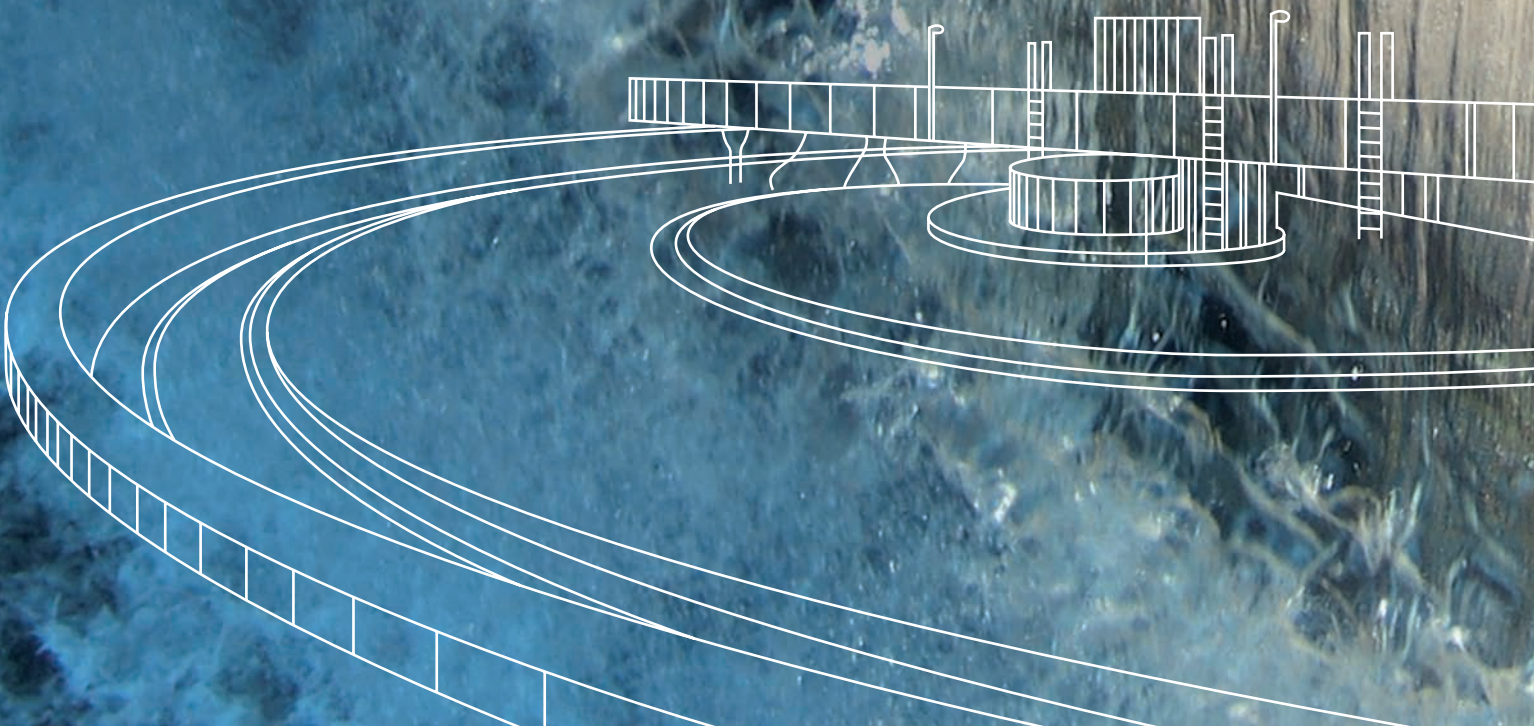
TOTAL WATER MANAGEMENT

HYDRAULIC ENGINEERING

TRANSPORTATION AND LINKED IT SYSTEMS

INFRASTRUCTURE CONCEPTS

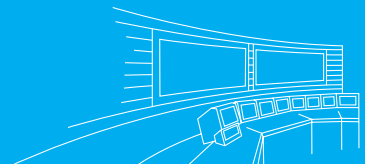
CIVIL ENGINEERING



FICHTNER

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Engineering & Consultancy – Worldwide

Fichtner is Germany's biggest independent infrastructure engineering and consultancy enterprise. By providing technical planning, expert consultancy and IT services, in more than one hundred countries our highly qualified staff handle rehabilitation as well as technical and economic optimization of facilities and installations for infrastructure, energy supply, water supply, waste management and wastewater disposal. With our Stuttgart Home Office plus our subsidiaries and affiliates, branches and project offices around the globe, the Fichtner Group manages more than one thousand ongoing projects.

Our engineers and consultants work for public institutions, international development and commercial banks, the public and private utility sector, and clients in energy- and water-intensive industries.

Our Water & Infrastructure Business Division

In this Division, engineers, organizational and economic consultants, hydrologists, hydrogeologists, sociologists and civil engineers tackle projects concerned with water as well as urban development, traffic and construction.

- Our water and transportation experts offer solutions for all technical, ecological and economic challenges in connection with water supply, sanitation, water treatment and traffic infrastructure.
- Our management experts support decision makers in companies and government agencies by providing economic, strategic and organizational consultancy.
- For complex urban development projects, our consultants work out integrated infrastructure concepts for the provision of electricity, heat/cold, water and telecommunications as well as for waste management and sanitation.
- Fichtner's civil engineers manage infrastructure projects in the sectors of transportation and civil engineering.
- Sector-specific IT solutions for complex infrastructure systems are offered by the information-technology specialists working for the Fichtner company.

References



Privatization, Public Private Partnerships (PPP)

- Lead advisor for award of a water supply management contract in Riyadh, Saudi Arabia, and support in setting up a national water utility enterprise
- Lead advisor for award of a concession agreement for water supply to the two biggest cities in Malawi, Lilongwe and Blantyre
- Drawing up a national privatization scheme and plan of action for Bahrain's sanitation sector
- Support of an internationally active water supply enterprise in drawing up bidding documents as a candidate for a concession for water supply and sanitation in a town with a population of 50,000 in Germany
- Assistance in co-opting a private operator and investor for Armenia's national water supply and sanitation system



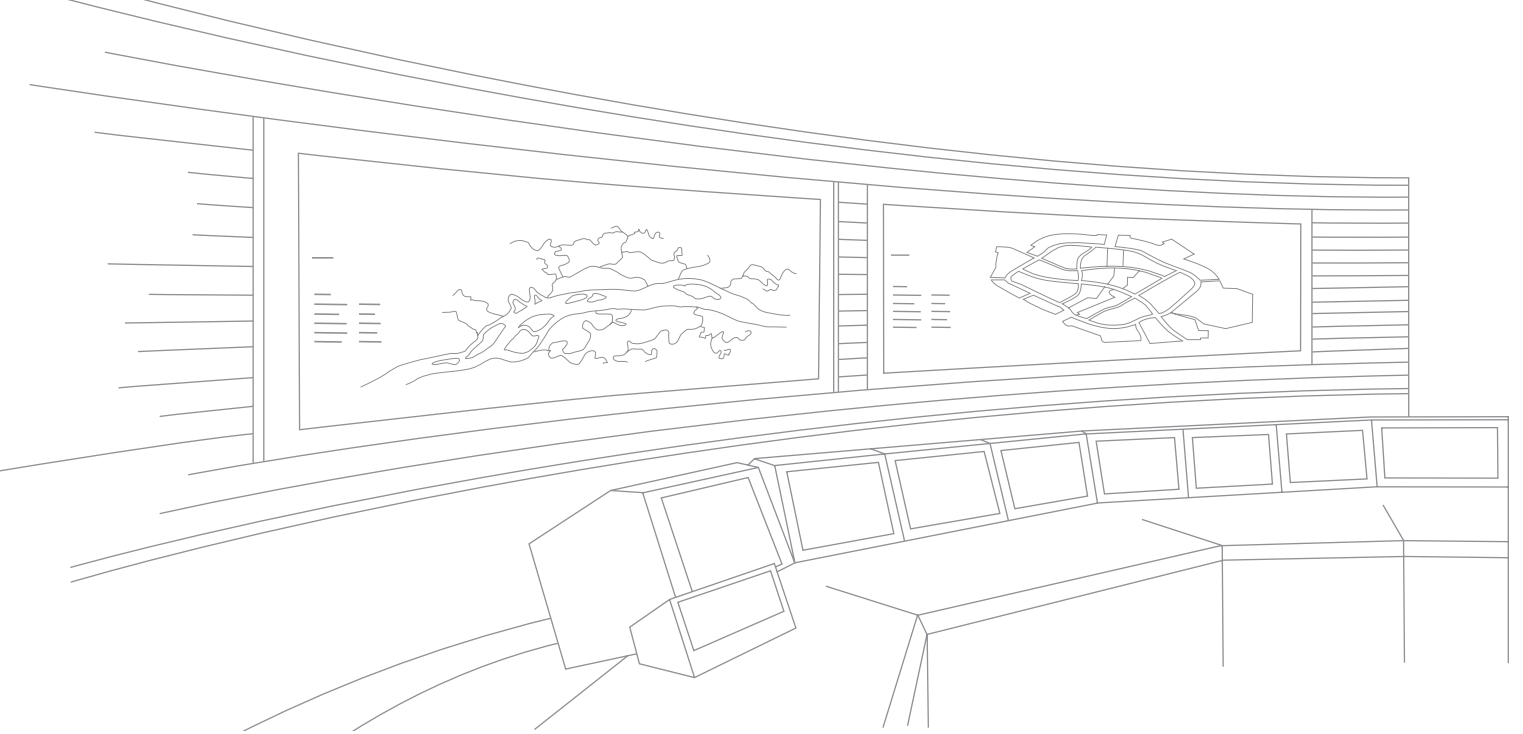
Auditing

- Routine auditing of the management operations of two private companies for water supply and sanitation in Nicaragua with a service territory totaling 13 communities, a population of 220,000, and 33,000 premises connections
- Annual technical auditing of the private operator of eighty water supply systems in Ghana in accordance with agreed performance standards for drinking water quality and quantity as well as for system pressure, flows and cutting water losses
- Periodic reviews of the performance of the private operator of the water supply and sanitation systems of Jeddah, Saudi Arabia, for compliance with the specified performance parameters for upgrading the supply service



Organization and IT Consultancy

- Determination of basic data and constraints followed by development of business models for marketing treated wastewater from the five biggest cities in Saudi Arabia
- Organizational analysis for efficiency raising and corporate reorientation of the municipal water and sanitation utility, *Hallesche Wasser und Abwasser GmbH*, Germany
- Setting up decentralized municipal enterprises for operating the water supply, sanitation and waste management systems in six towns in Honduras
- Assistance to five municipal water supply utilities for upgrading water supply at the coast of Montenegro
- Market study on sewage sludge disposal for an international water supply and sanitation enterprise
- Setting up a water resources management information system for the Baden-Württemberg State association for water supply in Stuttgart, Germany
- Specification, development and implementation of a wastewater inventory system for a chemicals company



Water Resources and Consultancy

Our experts offer comprehensive economic, strategic and organizational consultancy for water supply and sanitation utilities as well as for industrial clients. Our services range from preparing masterplans and economic studies, through management consultancy and assistance in transactions for public-private partnership (PPP) projects, up to configuring qualified asset management and IT solutions for applications of a specific technical or multi-disciplinary nature.

Privatization concepts

Our experts in the water supply and sanitation sector offer technical, financial and commercial consultancy services for corporate transactions, water purification and wastewater treatment plants as well as water supply and sewerage networks. Public-private partnership (PPP) models, too, are increasingly favored, with high capital expenditure projects

financed by PPP models, and the know-how of private-sector enterprises transferred to the public sector. We have also accumulated many years of experience in formulating management contracts, devising BOT/BOO and leasing models, and structuring concession agreements.

Audits

On behalf of investors, owners and operators, Fichtner undertakes technical and operational audits of plants and facilities for water supply and sanitation. While maintaining strict neutrality vis-à-vis vendors, contractors and operators, our experts assess and document performance parameters and so monitor proper implementation and effective-

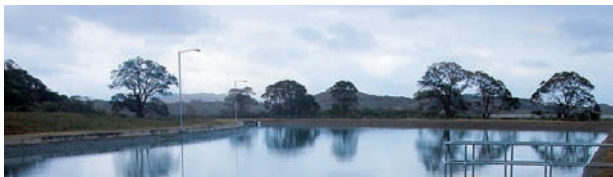
ness of contractual agreements. Among other things, these audits serve to establish contract execution to assess remuneration under performance-based contracts, to evaluate economic descriptors, and for benchmarking, in which processes and services are systematically compared on the basis of best-practice performance figures.

Organizational consultancy

We support our clients in the water supply and sanitation sector by identifying and implementing measures for raising efficiency and optimizing operational procedures. On the basis of analysis methodology specially developed for this sector combined with a strengths-weaknesses profile, we ad-

vice on optimization of procedures, whether to insource or outsource services, how to adapt the organization structure to best meet our clients' needs, and on workforce requirements and staff development. A further focus of our work is to provide support in developing new service offerings.

References



Drinking water supply

- Updating framework plans, planning and drawing up tender documents for construction and rehabilitation of water supply facilities, comprising desalination plants as well as water transportation, storage and distribution, in Northern Cyprus
- Planning tie-in of a new deep well into the source-based water supply network of a Black Forest community, Germany
- Technical assistance for *Office National de l'Eau Potable* for upgrading water supply systems in Morocco
- Planning and site supervision for wells and water networks with awareness campaigns and personnel training for securing rural water supply in two prefectures in Central Guinea
- Planning, tendering and supervision of implementation of expansion of Kabul's water supply as well as organizing and conducting staff training programs for the central water authorities, Afghanistan
- Reconfiguring the drinking water system for 2.75 million inhabitants of Mbuji-Mayi, Democratic Republic of the Congo



Industrial water supply

- Planning cooling water supply for thermal power plant projects of all types
- Development and evaluation of options for renovating cooling water supply at the operating site of *Degussa GmbH*, Rheinfelden, Germany
- Plant evaluation and working out the economic and technical requirements for supplying water to a large chemicals complex for a German supply utility



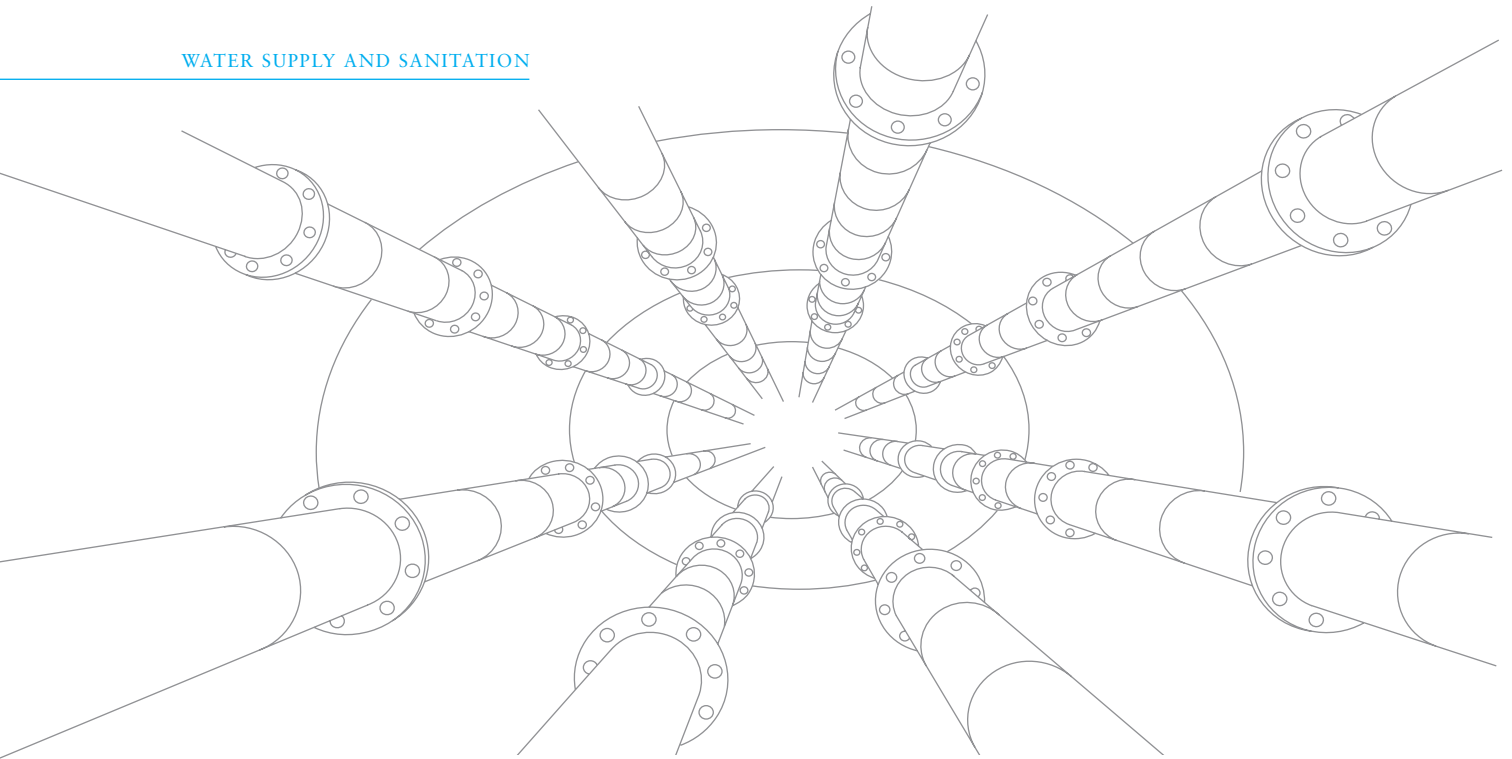
Seawater desalination

- Technical Advisor and Owner's Engineer for the Independent Water and Power Production (IWPP) Project "Shuaibah Phase 3": erection of a 900 MW power plant and an 880,000 m³/d seawater desalination plant in Saudi Arabia
- Review of feasibility study and planning for a 275,000 m³/d reverse osmosis seawater desalination plant in Chile
- Technical assistant for a desalination plant generating service water for phosphate processing in Morocco
- Reference design and blueprint design, check of drawings and site supervision at a reverse osmosis seawater desalination plant with a capacity of 250,000 m³/d in Sydney, Australia



Overland water pipelines

- Engineering and site supervision for a 185 km overland water pipeline in connection with erection of a seawater desalination plant in Fujairah, United Arab Emirates
- Independent review and consultancy for the Pahang-Selangor raw water transfer project in Malaysia, which comprises construction of a reservoir, a water intake structure with pumping station, a pressure pipeline and a water transfer tunnel
- Planning and site supervision of a 42 km DN 500 water pipeline from Lindau Waterworks to Wittenberg, including several transfer structures, Germany
- Conceptual study for a 240 km overland water pipeline from Rio Grande to Aguascalientes, including two tunnels of lengths 10 km and 40 km, Mexico



Water Supply

Almost 20% of the global population lacks access to clean drinking water. The Fichtner Group is working all over the world on projects for winning potable water from groundwater, surface water and seawater. To provide supplies of drinking water in both rural and urban areas, the emphasis is on efficient and sustainable exploitation of precious water resources.

Water production and treatment

- In **hydrogeological and hydrological studies**, our experts ensure and check water availability and quality for extraction from groundwater and surface water resources.
- We provide conceptual design, engineering and supervision of implementation of **drinking water purification plants**, ranging from distributed well projects for rural water supply to sophisticated technical facilities for water cleaning and treatment in towns and cities.
- In place of fresh water treatment plants, in many regions large-scale **seawater desalination plants** with the latest process technologies engineered by Fichtner have proven their worth.

Supply networks and overland water pipelines

- Planning of new **water supply networks** and rehabilitation of existing inadequate ones requires much experience and sound technical knowledge. Our specialist engineers are concerned worldwide with reducing technical water losses in supply networks while taking into account the requirements, financial possibilities and economic interests of users and operators, and working out concepts for strengthening administrative entities.
- Wherever drinking and service water have to be transported to urban centers over long distances, our engineers with their stock of experience and know-how in pipeline construction implement **overland water pipeline construction projects**, from preliminary planning with corridor routing; through design, engineering and tendering; up to site supervision and commissioning.

Industrial water supply

- Segregating **industrial water supply** from drinking water networks conserves resources and can be economically attractive. We analyze technical feasibility and economic viability, and plan and supervise projects for industrial water production and treatment for a range of water qualities. We also check the possibilities of production-integrated environmental protection by minimizing water consumption and installing water recycling systems.

References



Rehabilitation and extension of Bucharest Sewage Treatment Plant, Romania

For compliance with European environmental standards, Bucharest's Glina Sewage Treatment Plant is being completely rebuilt. In the first phase, initially 55% of the daily production of sewage, amounting to 900,000 m³/d, is to be treated to EU standards. Fichtner as a member of a joint venture was entrusted with the entire construction site supervision. For the second stage, Fichtner engineered a further treatment train to double the capacity to 4 million population equivalent and planned a sewage sludge incinerator.



New sewage treatment plant for Managua, Nicaragua

As part of a program to protect Lake Managua and to upgrade sanitation in the capital of Nicaragua, a sewage treatment plant with a capacity for 1.1 million inhabitants, or 1.4 million population equivalent, was constructed. Our engineers prepared a feasibility study and established the most favorable solution under technical and economic aspects, which comprised anaerobic clarifying ponds, bacteria beds and a discharge pipeline to Lake Managua. They also undertook preliminary planning and layout engineering, tendering for an EPC turnkey contract, and supervision of construction and commissioning.



Fujairah BOT sanitation project, United Arab Emirates

In the City of Fujairah and its northern suburbs, the sewerage system has been extended by 170 km of sewers of size from DN 200 to DN 700, 34 km pressure sewer mains from DN 125 to DN 600, 27 pumping stations and a sewage treatment plant. For this project, to be let on a Build-Own-Transfer (BOT) basis, Fichtner prepared the feasibility study, preliminary planning, layout engineering and the environmental impact analysis. Further, Fichtner assisted in awarding the concession agreement for a period of 30 years, as well as in contract award to a general contractor and operator. Fichtner also supervised construction.



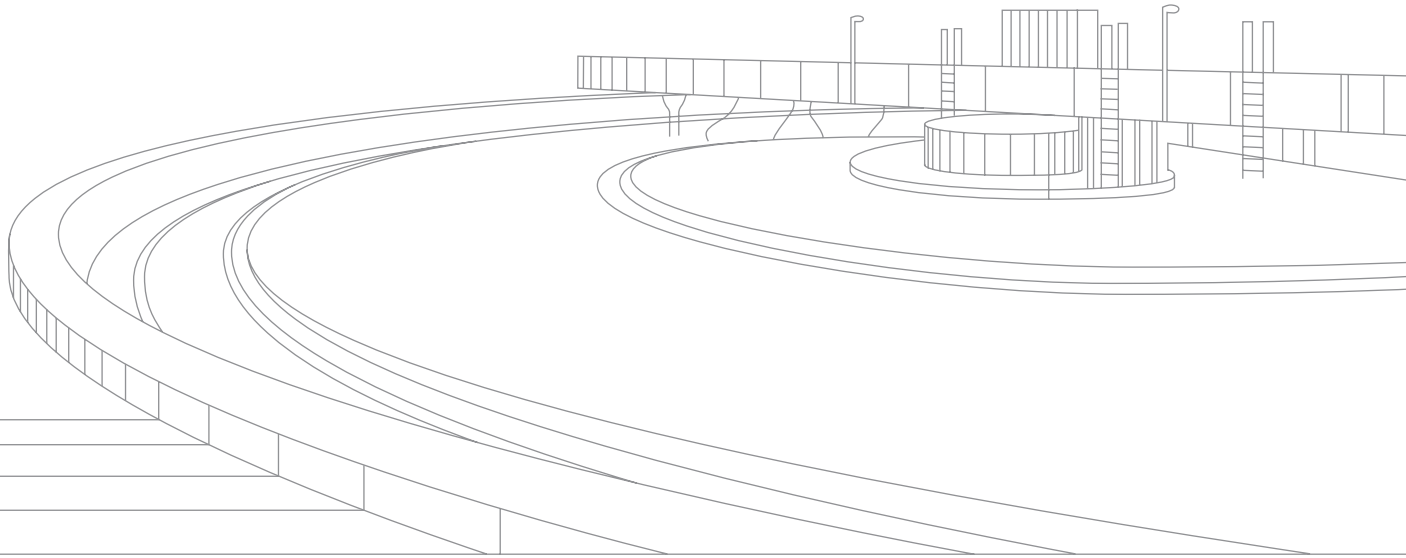
Strategy and general plan for sanitation in Kampala, Uganda

The aim of this project was to specify the planning criteria for a sanitation system in the Ugandan capital, Kampala, that could keep pace with the city's explosive growth. For a planning horizon of thirteen years, Fichtner prepared comprehensive technical and socio-economic studies, whose findings served as the basis for taking a strategic decision on whether to construct a central treatment plant with an extensive network of sewer mains or several treatment plants and sewer networks with limited coverage.



Rehabilitation of the wastewater systems of two oil refineries, Romania

In the framework of a feasibility study, Fichtner worked out measures in compliance with EU environmental protection legislation for environmentally friendly and economic collection, treatment and recycling of all wastewaters generated in the oil refineries of Arpechim and Petrobrazi, operated by *Petrom S.A.* Fichtner's engineers also investigated the possibilities for rehabilitation and optimization of the pipeline network and wastewater treatment plant.



Sanitation and Wastewater Treatment

To preserve water as a vital resource, highest priority is given to reducing the pollutant content of wastewaters. Elimination of pollutants, wastewater treatment and effective exploitation of this essential commodity mean that an increasing number of people worldwide can be supplied with fresh drinking water.

Sewer networks

With the aid of the latest software for dimensioning under hydraulic and treatment aspects, our engineers plan complex sewer networks serving catchment areas of all sizes. These include premises connections, sewer mains, pumping stations and, finally, wastewater cleaning and sewage treatment plants.

Sewage treatment

For dealing with sewage effectively and economically, treatment plants have to be matched to the quantities generated and local conditions. Fichtner has supervised and implemented many types of sewage treatment projects worldwide, catering to a broad range of requirements and applying a wide variety of process technologies.

Sewage sludge concepts

Alongside the biological, mechanical and chemical cleaning stages, each sewage treatment project needs a concept for dealing with sewage sludge. We analyze the needs and recommend from a range of options – like sludge stabilization, mechanical dewatering, thermal and solar drying up to sewage sludge incineration – the one that is best suited for the task on hand.

Industrial wastewater treatment

Industrial wastewater treatment is a specialty within wastewater handling in general. Depending on wastewater makeup, complex biochemical and mechanical process stages are needed for removing industrial wastes and toxins before the water is in a fit condition for returning it to the general hydrological cycle.

Wastewater recycling

For water utilization concepts worldwide, wastewater recycling is gaining in importance. In many regions, intensive use is made of treated wastewater for agricultural irrigation and for industrial processes. Our consultants support governments and administrations as well as private sector clients in the conceptual design phases, and provide comprehensive consultancy on technology, requirements and possibilities for applications of wastewater recycling. As well as technical aspects, frequently social, cultural and religious concerns play a part.

References



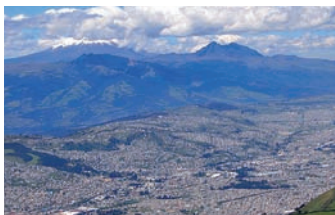
Recycling waste water in the City of Riyadh, Saudi Arabia

In view of the explosive growth of the Saudi Arabian capital and the consequent scarcity of freshwater resources, Fichtner was awarded a contract to prepare a masterplan for recycling the purified effluent from the wastewater treatment plants in Riyadh. Our engineers investigate possibilities for utilizing this treated water, for example for irrigating greened areas or in agriculture and industry, and develop a general concept for this.



Optimization of drinking water quality in the Russian Federation

With the aim of upgrading drinking water supply in Northwest Russia, Fichtner developed a regional scheme to ensure continuous monitoring and control of drinking water quality. The project tasks included determining the causes of deterioration in raw and drinking water over the past twenty years, setting up pilot projects, recommendations for alternative potable water supply concepts and for innovations in drinking water management. Further, the basic conditions for a cost-covering tariff system were established.



Framework water resources planning for the region and city of Quito, Ecuador

In the metropolitan region of Quito with its population of around 2.2 million, at present municipal sewage and industrial wastewaters are discharged untreated into the rivers, contaminating not only these but also the groundwater. Fichtner was entrusted with working out a masterplan for rehabilitation and maintaining the quality of the rivers in the metropolitan region. Components of this investigation are identification of sources of contamination, comparison of measures and working out plans to implement these, as well as development of a monitoring model.



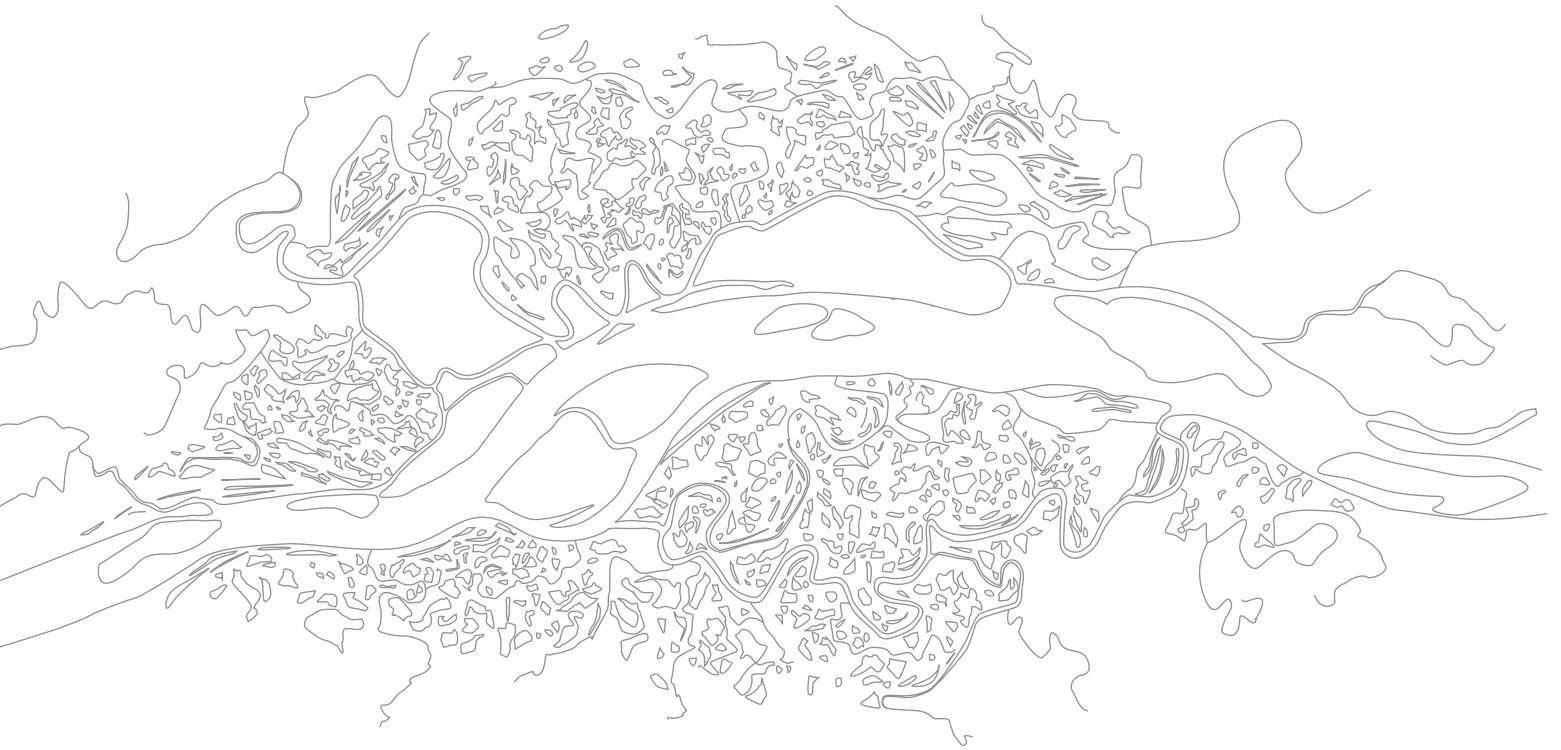
Construction of a new dam and a 200 MW hydropower plant in Mali

Through this multi-purpose project, construction of the new Manantali dam will allow year-round irrigated agriculture over an area of 375,000 ha in the Senegal Valley while at the same time improving river navigability. Further, the 1600 m long and 70 m high dam will permit power generation by a 200 MW hydropower plant. Under general project management, Fichtner prepared preliminary and feasibility studies, undertook conceptual and detailed engineering, and provided site supervision services followed by commissioning.



River training and bank protection pilot projects at the Brahmaputra-Jamuna River, Bangladesh

Following a disastrous flood in Bangladesh, under the leadership of the World Bank, a flood protection plan has been set up with 26 project components – the Flood Action Plan. Our company was awarded a contract to act as general contractor for the biggest component with regard to time and costs. Our task was to develop and test cost-saving bank protection structures, and to investigate the means and processes through which flow in selected river stretches could be so influenced that the banks could be largely kept free of erosion.



Total Water Management and Hydraulic Engineering

Water is just as indispensable to life as it is scarce. To preserve this precious resource, our engineers are developing “Total Water Management”: sustainable, intermeshed solutions made up of a range of components, comprising environment friendly water management; responsible drinking water management; protection of groundwater, lakes, rivers and seacoasts; judicious use of bodies of water; and finally flood protection with appropriate and carefully planned hydraulic structures.

Management and protection of bodies of water

Bodies of water are used for transportation, provision of drinking water, irrigation, electricity generation in hydropower plants, and also for leisure and recreation. Fichtner’s inter-disciplinary project teams tackle the resulting technical, ecological and administrative tasks. They also take into consideration flood and coastal protection, work out measures for maintaining water quality, advise on returning watercourses to a near natural state and make proposals for their further development.

Water management framework planning

Our engineers and consultants establish the framework conditions for exploiting water resources in river basins as well as in communities and economic regions. To this end, they prepare expert hydrological studies and draw up water balances to establish water availability and which partial flows can be exploited. In this way, they have accumulated experience from projects undertaken in all parts of the world.

Drinking water and recycled wastewater

In towns and regions where water is scarce, our engineers prepare drinking water supply concepts and devise measures for optimizing drinking water quality. They also develop solutions to purify and recycle waste water.

Hydraulic engineering

Decades of experience in small- to large-scale hydraulic engineering guarantee qualified project handling for our clients: from the planning stage up to site supervision and final acceptance for such structures as:

- dams and reservoirs
- hydropower plants
- spillways
- river and navigable waterways construction, like locks and weirs
- harbor construction.

References



Traffic planning

- General planning for widening the A5 autobahn to six lanes, Germany
- Site supervision for a 115 km section of a main highway, Republic of the Congo
- Project engineering and structural planning for rail bridges to extend the rail track to Öhringen with general planning of a curved steelwork pedestrian and cycle bridge, Germany
- Planning and site supervision with health and safety coordination for linking Fasanenhof district to the Stuttgart light urban rail network, including a 1400 m long tunnel, Germany
- Planning and tendering for a double water-saving lock for the River Elbe crossing at the Magdeburg waterways junction, Germany
- Feasibility study, detailed engineering and site supervision for rehabilitating and extending Acajutla Seaport in El Salvador, with technical consultancy on its operation



Airport projects

- Planning the official government reception area on the apron at the new Berlin-Brandenburg International Airport, Germany
- Planning and site supervision for apron, outdoor facilities, central services supplies, waste management, warehouse and control center of the A380 hangar at Frankfurt Airport, Germany
- General planning for renewing and extending the takeoff and landing runway system of Dresden Airport, Germany
- Preparing a masterplan for the commercial airports at Floriana, Hungary; Al-Hasakah and Ar-Raqqah, Syria; Libreville, Gabon; and Palanga and Kaunas, Lithuania



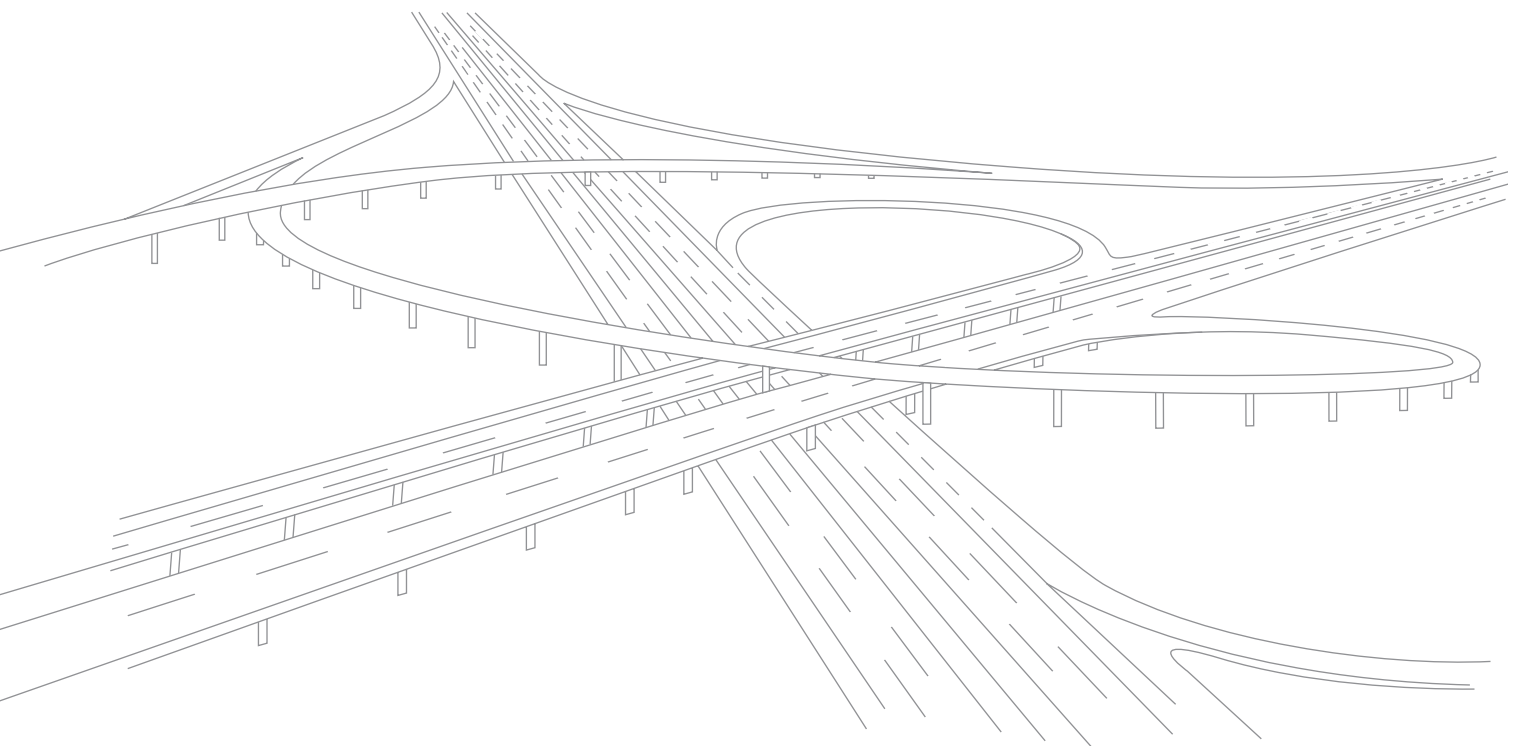
Traffic infrastructure

- Investigation of regional traffic to update the traffic model in connection with construction of the new B31 West highway between Breisach and Freiburg, Germany
- Analysis and forecast of traffic conditions under particular consideration of recreational traffic for the *EUROPA Rust* theme park and planning of a new junction with the A5 autobahn with feeder road, Germany
- Traffic surveys and updating the traffic model of the town of Rheinfelden as well as development, appraisal and recommendation of road network concepts for traffic control, Germany
- Planning services for the B19/B298 highways bypassing Gaildorf, the B295/B464 traffic junction as well as the B28 Altensteig bypass, Germany



IT consultancy and IT solutions

- Implementing the Geoweb solutions “Infrastructure Register” for retrieval of rail system information as per TSI (EU directive on “Technical Specification for Interoperability”) and “Conditions of Use of Rail Network” (publication of criteria for use of rail network to comply with EU Directive 2001/14/EC) for the German rail company, DB Netz AG
- Conceptual design of a system for supporting mobile rail switch maintenance with tie-in to the SAP system for the municipal transport company, Dresdner Verkehrsbetriebe
- Design and implementation of the FIS register, a database for licensed vehicles and components of the federal German rail authority with Web service link to the European Railway Agency (ERA)
- Design and implementation of data migration for the strategic geographical information system “Database of fixed installations (DfA)” for the Swiss federal rail company



Transportation and Linked IT Systems

Traffic on road and rail as well as in the air and on water is steadily growing. Engineers and consultants of the Fichtner Group are accepting this challenge by developing smart and forward-looking concepts. These ensure optimum configuration of traffic systems and support efficient operation of the required infrastructural facilities.

Road, rail, water and air traffic

Our strength lies in handling complex projects that we tackle by taking an inter-disciplinary approach, so merging economic performance and sustainability with user needs and appealing architecture for security of future operation and an optimum outcome. For planning and conceptual development in the traffic sector, our consultants and engineers have recourse to a large stock of experience and familiarity with regulations, standards and codes applicable to the communal sector.

Traffic planning

- Traffic analyses and projections
- Investigations of noise and pollutant emissions
- Traffic control engineering
- Infrastructure and development planning
- Concepts for local public transport
- Concepts for road maintenance

Transportation infrastructure

- From general planning down to detail planning of traffic facilities
- Planning civil structures for road construction, rail traffic, local transport, water navigation and port facilities

Airport projects

- Airport maneuvering areas and aprons
- Passenger and cargo terminals, warehouses
- Airport lighting and instrument landing systems
- Airport roads, lighting installations, fencing and gates
- Central services supply and waste management facilities

IT consultancy and IT solutions for transportation and traffic

The efficiency of transportation enterprises depends to a high degree on the availability and quality of information. We support you in planning, operating and optimizing your infrastructure installations with expert IT consultancy,

devising intelligent IT solutions and setting up geographical information systems, with services ranging from IT strategy and data management, through IT operating concepts and up to classical project monitoring and management.

References



Infrastructure masterplan and planning energy supply for Anting, China

For the model ecological town, *Anting New Town*, with a population of 20,000 located in a district of Shanghai, Fichtner drew up an integrated infrastructure masterplan, focusing on the energy and waste sectors. On this basis, we undertook detailed planning of the first district heating and cooling system in Shanghai. The conceptual basis was optimization of the building envelopes as well as the heating and air-conditioning technology to German standards, resulting in halving of the energy demand, together with innovative solutions for energy conversion and distribution.



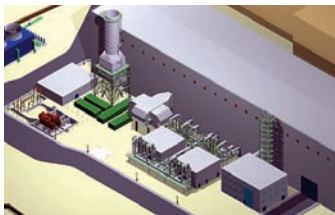
Integrated infrastructure planning for the “Flower of the East” scheme, Persian Gulf

The “Flower of the East” scheme developed for the island of Kish is planned as one of the biggest luxury holiday resorts in the world, to include commercial areas, a golf course, villas, hotels and a yacht marina. Fichtner was awarded a contract for planning the complete infrastructure that included a seawater desalination plant, a sewage treatment plant, a power plant, the seawater pumping station and a centralized cooling supply. Our planning of the complete central utility services and waste management networks covers power supply, district cooling and gas distribution networks as well as the entire water supply pipeline and sewerage systems.



Redevelopment of a former barracks area in Freiburg, Germany

For development of the 38 ha property of the former Vauban Barracks for housing construction, Fichtner assisted in remediation of contaminated plots, planning the 2.6 km long connection to the municipal urban rail network and working out a drainage plan with a concept for sustainable stormwater management. After preparing a traffic study, we undertook planning, tendering and site supervision for roads, sewers and trough-trench infiltration drainage as well as coordinated management planning.



General planning for the Siemens Duisburg Megatest Center, Germany

In this new facility, *Siemens* runs trials of its high-capacity compressors under realistic operating conditions before they are shipped out. The core of this center is a 180 m long trials shop equipped with cranes in which compressor trains can be tested. Belonging to this facility are other technical and specialized structures, like steelwork pipe bridges, cooling water basins and transformer bays as well as a staff facilities block with control center. For the civil, mechanical, electrical and control contract sections, our engineers rendered all planning services and site supervision up to commissioning.



Planning and site supervision of new structures for Freistadt Hospital, Austria

Freistadt State Hospital has been completely modernized by undertaking complex structural measures over a period of four years without interrupting operation, and has been extended by an area of about 5000 m². For four new multi-story buildings, remodeling of existing buildings and construction of the connecting tracts, our engineers undertook complete structural planning, construction management and specialist site supervision.



Infrastructure Concepts and Civil Engineering

All over the world, urban mega-centers are growing and with these the demand for power, heating and cooling, water, and telecommunications as well as for sanitation and waste disposal. Their infrastructure must meet the highest requirements to control impacts on climate, environment and social structure. To this end, Fichtner develops integrated concepts for infrastructure to meet future needs.

Infrastructure masterplans

On the basis of inventories of existing facilities and projections of demand, a general picture of the required infrastructure is built up. Our experts undertake surveys and analyze all required data, draw up masterplans for

energy and water supply, waste management, sanitation, district heating and cooling, communications, traffic and transportation. Then guidelines are formulated for urban planning and architecture.

Infrastructure concepts

The systemic planning of our infrastructure experts takes account of intermeshing of the components and their mutual interactions. Regarding the concerns of energy, water and the environment, our enterprise is familiar with the latest technologies. With their inter-disciplinary know-how and decades of experience, our engineers devise innovative solutions, set up iterative technical and organi-

zational loops, and exploit all advantages deriving from the interplay of the systems by, for example, optimizing organization and efficiency, exploiting synergies, and harmonizing building physics, architecture and central services technology. Moreover, by astutely influencing user behavior, demand can be minimized.

Surface structures and architecture

A team of experienced architects and civil engineers rounds off the range of services offered by the Fichtner Group, with the emphasis on facility engineering, and planning and consultancy services for technical structures, administration blocks, hospitals, and airports. Specifically, we provide:

- facility planning
- structural engineering
- general planning
- expert consultancy on fire protection, concrete restoration and upgrading energy systems.

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