

COWI Environment Projects in India

Bid Evaluation & Assessment New Delhi

The project is an extension of the Implementation Phase as depicted in the Master Plan for Optimum Waste Treatment and Disposal Facilities for the Entire State of Delhi, and includes:

- Assistance to MCD in the development of an Integrated Municipal Solid Waste Treatment Facility and an Engineered Landfill site at Narela Bawana area, in the north of Delhi Region, with a lifetime of 20 years.
 - Assistance to MCD in technical evaluation of the bids and selection of the best suited technical and commercial bid for development of the Narela Bawana Landfill site, based on the Guidelines as per the Municipal Waste Management and Handling Rules 2000 and international standard guidelines for municipal solid waste treatment and disposal facilities.
 - Provision of adequate training and expertise to the MCD in further evaluation of similar proposals for development of landfills and waste treatment facilities as set out in the Master Plan Implementation.
- COWI's service comprised technical assistance, bid evaluation methodologies, tender support, technical evaluation, and training.

Country	India
Period	2005 - 2006
Client	UNOPS
Recipient	MCD, Municipal Corporation Delhi

Technical assistance for sustainability measures – Minor irrigation in Orissa

As part of the AIDCO Global Framework Contract AMS/451; Lot 2, Infrastructures, COWI Belgium (taking over Kampsax International) was awarded the present assignment. The objective was to: The global objective of the assignment is to support the achievement of project objectives, as per the FA, ensure that all required measures for the sustainability of Water User Associations are undertaken and that strategies for the replication of the project are agreed and outlined with the Department of Water Resources.

COWI Group	COWI Belgium
Country	India
Period	2004 - 2005

The current technical assistance assignment is intended to continue support towards ensuring sustainability, provide support and suggest strategies for the replication of the demonstrated approach to rehabilitation.

This assignment was managed by COWI Belgium (previously Kampsax International) under reference INF-342

Technical Assistance

COWI Environment Projects in India

Delhi Waste Master Plan & Feasibility Study

Feasibility Study and Master Plan for Optimal Waste Treatment & Disposal for the Entire State of Delhi based on Public Private Partnership Solutions. The objective of the project is to converge on an optimal economically and environmentally sustainable waste treatment and disposal plan for the Delhi State. Three main tasks have been defined: Task 1: Technical and commercial study for evaluation of the suitability of municipal solid waste for waste processing facility having sustainable commercial viability, Task 2: Technical study for setting up the recommended option at each site; Task 3: Plan of action for the implementation of the recommended option(s).

The services of COWI comprised technical assistance, preparation of general master plan and elaboration of feasibility study.

Country India
Period 2004 - 2004
Client UNOPS, United Nations office for Project Services, Nordic Funds
Recipient Municipal Corporation of Delhi

Review of the Rural Drinking Water Supply and Sanitation Project, Karnataka, India.

The objective of the review was to assess (i) progress of activities and outputs vis à vis project planning, timeframe and budget; (ii) the effectiveness of the project's O&M strategy with regard to sustainability of the water schemes; (iii) the overall acceptance and integration of approaches successfully applied by the project into the government system and to propose measures for further institutionalisation of these approaches; (iv) the effectiveness of current organisational and management structures and capacity building arrangements; (v) the project's phasing out plan, utilisation of funds and need for reallocation for the remaining project period.

COWI provided the review team comprising a water sector specialist/team leader and a sociologist, who co-operated closely with the Royal Danish Embassy. The review team held meetings with relevant stakeholders at national, state and decentral level as well as with project staff. Field visits were undertaken to selected schemes. Findings, conclusions and recommendations were summarised in a Debriefing Note and presented at debriefing meetings in Karnataka and Delhi. The assignments was completed with a Final Review Report.

Country India
Period 2004 - 2004
Client Ministry of Foreign Affairs, Danida
Recipient Ministry of Foreign Affairs, Danida

COWI Environment Projects in India

Pesticide management and use in an Indian agro-service company

Assessment of use and regulation of agrochemicals in India and preparation of a pesticide management plan (with technical annexes) for an Indian company providing services and supplies to small and medium scale farmers that primarily cultivate paddy rice. Mission to India in January 2002 including field inspections at farm service centres (in Andhra Pradesh and Tamil Nadu, respectively) operated by the company.

The described services.

Country India
Period 2002 - 2002
Client International Finance Corporation
Recipient Mahindra Shubhlabh Services Ltd.

Karnataka WS&S Project

The objective of the appraisal was to reach agreement between the Government of India (GOI), the Government of Karnataka (GOK) and the Government of Denmark (GOD) on the final phase of a 3-4-year period of Danish assistance to the drinking water and sanitation sector in Karnataka, with a Danish grant contribution of DKK 30-40 million. COWI provided an appraisal

Country India
Period 2001 - 2002
Client Ministry of Foreign Affairs, Danida
Recipient Governments of India and of Karnataka

COWI Environment Projects in India

Sidhmukh and Nohar Irrigation Project in India

As part of the AIDCO Global Framework Contract AMS/451; Lot 2, Infrastructures, COWI Belgium (taking over Kampsax International) was awarded the present assignment. The objective was to:

The Project aims to bring an area of 84 170 ha of desert land under gravity irrigation in northern Rajasthan. Water is conveyed from Himalayan Rivers through Punjab and Haryana. The construction of feeder canals in Punjab and Haryana and of water distribution systems within Rajasthan (in the form of distributors and minors) constituted the major works in the Project. Watercourses and "chaks" will be developed to convey water to farmer fields. Other supporting activities such as animal husbandry, agro-forestry and sand-dune stabilisation will also be implemented. The overall objective of the project is:

- To reduce rural poverty by raising farm incomes in a drought prone area with a cultivable command area of 84 170 ha in the Sidhmukh and Nohar region of northern Rajasthan;
- To slow down and reverse the current rate of degradation of the environment caused by wind erosion and increased population pressure on the land;
- To reduce the risk of famine and to contribute to improved food security in the 64 villages by providing a guaranteed water supply. The target population is about 94 000.

The specific targets of the project are:

- 496 km of feeder canals to be constructed in Punjab, Haryana and Rajasthan;
- 84 170 ha of command area to be developed for gravity irrigation;
- Water User Groups to be organised;
- Trees planted to prevent wind erosion;
- 200 adaptive/demonstration trials to be conducted in farmers fields;
- 1 800 farmers to be trained in husbandry of irrigated crops and provided with input packages;
- 45 Women Saving Groups to be established and trained in health care for dairy cattle.

Total Project value is 65 M€

Technical assistance

The general objective of the mission was twofold:

- to give technical assistance to the beneficiary in order to complete the construction of the canals and related structures by December 2001;
- to verify and evaluate the financial accounts of the project

This assignment was managed by COWI Belgium (previously Kampsax International) under reference INF-053

COWI Group	COWI Belgium
Country	India
Period	2001 - 2001

COWI Environment Projects in India

South Kanara Environmental Master Plan Study

Development of a master plan for integrated environmental management and co-ordination of natural, human and economic resources in the South Kanara District, State of Karnataka. Establishment of attainable sustainable development objectives based on analysis of economic potential and constraints in institutional framework and capacities. Preparation of action plans for target authorities and institutions at district and state levels and outlining of co-ordination procedures between them. Definition and feasibility of immediately needed projects and studies to be executed as part of the action plans. Regarding air quality planning the study includes specifications for data collection for air pollution emissions inventory, preparation of meteorological datasets for dispersion modelling in local authority, and planning of modelling activities.

Country India
Period 1993 - 1999
Recipient DANIDA

Environmental Training Institute Projects

COWIconsult has been appointed as consultants to advice the Governments of Tamil Nadu and Karnataka to set up environmental training institutes in Madras and Bangalore. The consultancy services include strategy and policy formulation, training needs assessments, preparation of training packages, setting up management and administrative systems, training of trainers and setting up monitoring and evaluation systems.

Country India
Period 1994 - 1998
Recipient Danida

Environmental Master Plan for Dakshina Kannada, Karnataka State

Preparation of implementation plan for integrated environmental programme including components within industrial pollution control, air quality monitoring, land use planning, water resources management, biodiversity conservation and public awareness campaigning. The plan was prepared in close collaboration with State and District authorities, local counterpart staff and NGOs.

Country India
Period 1997 - 1998
Client Ministry of Foreign Affairs,
Danida
Recipient Karnataka State

COWI Environment Projects in India

Water Supply and Sanitation Sector Support

Formulation of Danish Programme support to the water supply and sanitation sector in India. The formulation included overall assessments of water supply, water resources, sanitation, institutional issues and financial viability and was based on pilot investigations in three programme states (Karnataka, Madhya Pradesh and Orissa). Focus was given to rural and small town's water supply.

The recommended programme included identified projects within small towns water supply, rural water supply and institutional strengthening. COWI was responsible for all consultancy services on the project.

Country	India
Period	1997 - 1998
Client	Ministry of Foreign Affairs, Danida

COWI Environment Projects in India

Rural Water Sector Strategy

Rationale and Objectives: India and the World Bank have been cooperating within the water sector for decades, especially within the irrigation and urban sectors. The level of cooperation has during the 1990s also been entering into the rural water and sanitation sector. Despite the impressive coverage of provision of safe drinking water facilities in the rural areas, the Government of India recognised the needs for reforms especially to ensure institutional sustainability and financial viability of the sector. In 1996 the Government of India and the World Bank decided to review the entire water sector in order to reach a platform for future cooperation. This also included a review of the rural water supply and sanitation sector with the objective of establish the framework for possible future cooperation within this sector. Approach and Outputs: The sector review and assessment were based on field visits and consultations in six States (Punjab, Maharashtra, Uttar Pradesh, West Bengal, Karnataka and Kerala). The work was undertaken as a joint Government of India and World Bank effort facilitated by sector analyses and recommendations for future actions prepared by COWI. The final sector review report was presented and discussed at a stakeholder workshop in New Delhi in February 1997, and it has later been recorded that the main recommendations of the study have had a significant impact on not only the World Bank's support programme to the rural water sector in India, but not least to the Government's own sector policies. The adoption of a demand responsive approach (DRA) is now a reality throughout India, and full cost recovery from user charges is now in the process of being institutionalised. The sector study included

- i) consultation meetings with key sector experts at the World Bank HQ in Washington and in New Delhi;
- ii) visits to six states in India in order to collect and assess the present level of services, mode of practise and key lessons learned;
- iii) analysing information and observations and have mid-term discussions with key sector stakeholders in India; and
- iv) present and facilitate discussions of the draft sector study report at a stakeholder workshop in New Delhi.

Environmental Training Institute Projects

Development and test run of training programmes on Hospital Waste Management and on Introduction to Hazardous Waste Management for the training institutes of Pollution Control Boards in Tamil Nadu and Karnataka, India.

Country	India
Period	1996 - 1998
Client	World Bank

Country	India
Period	1995 - 1997
Client	Danida
Recipient	Danida

COWI Environment Projects in India

Environmental Master Plan Study, South Kanara

The master planning incorporated social, economic and physical development with the dual intention of designing interventions which regulate social and economic activities in order to protect the environment, and of setting environmental objectives realistically. Considerable emphasis was placed on institutional development and training to enable the various state and local government agencies to execute the Environmental Master Plan.

Country India
Period 1993 - 1995
Client Ministry of Foreign Affairs,
Danida

Kerala State Rural Water Supply

COWI provided advisory services to the Kerala Water Authority on a water supply project in Kerala State covering 800,000 persons in 23 rural panchayats. The services provided included monitoring, project evaluation and advise on standards and guidelines for planning and design, preparation of tender documents, implementation and supervision, operation and maintenance, and hydrogeological investigations and locating sites for exploratory well-drilling. During the last stages, COWI developed a programme for improved operation and maintenance of piped water supplies in the state and training of staff. Standards for planning and design, preparation of tender documents, implementation and supervision, operation and maintenance, hydrogeological investigations and site location for exploratory well drilling.

Country India
Period 1985 - 1995
Client Ministry of Foreign Affairs,
Danida

Environmental Master Plan Study, South Kanara

A multi-disciplinary planning project aimed at facilitating an integrated management of natural, human and economic resources to ensure sustainable development of the assets of South Kanara District before year 2000. The master planning incorporates social, economic and physical development with the dual intention of designing interventions to regulate social and economic activities in order to protect the environment and of setting environmental objectives realistically. Considerable emphasis is placed on institutional development and management to enable the various state and local government agencies to execute the Environmental Master Plan. The master planning incorporates social, economic and physical development with the dual intention of designing interventions which regulate social and economic activities in order to protect the environment, and of setting environmental objectives realistically. Considerable emphasis is placed on institutional development and training to enable the various state and local government agencies to execute the Environmental Master Plan.

Country India
Period 1993 - 1995
Client Ministry of Foreign Affairs,
Danida

COWI Environment Projects in India

Wastewater treatment plant for brewery, Rajasthan
Planning and process design for low price wastewater treatment plant for new brewery in Rajasthan, Southern India (24,000 p.e.).

Country India
Period 1992 - 1994
Recipient Danbrew Ltd. A/S,
Copenhagen

Environmental Status and Pollution Control Measures in the Cement Sector in India

Review of the cement sector in India with visits to 12 a priori selected cement plants in Karnataka and Madhya Pradesh, relevant institutions, organizations and laboratories. The following issues were covered:

- identification of the status of environmental control and occupational health at the plants
- preliminary outline of mitigating measures for pollution control
- preparation of Terms of Reference and Plans of Operation for further studies.

Country India
Period 1989 - 1992
Recipient Danida/IBRD

Cement industry in India, Environmental conditions
Investigation of the Indian cement industry's common environmental conditions and the pollution control measures taken by the Indian authorities.

Country India
Period 1989 - 1992
Recipient DANIDA, IBRD

Study of the General Environmental Status and Pollution Control Measures in ...

Assessment of the environmental and occupational health problems in twelve selected cement plants, primarily from dust pollution. Identification of options for increased efficiency and pollution control.

Country India
Period 1989 - 1992
Recipient Danida, IBRD

Study of the General Environmental Status and Pollution Control Measures...

Assessment of the environmental and occupational health problems in twelve selected cement plants, primarily from dust pollution. Identification of options for increased efficiency and pollution control.

Country India
Period 1989 - 1992
Recipient DANIDA/IBRD

COWI Environment Projects in India

Orissa Drinking Water Supply Project, Phase I

Improvement of the rural water supply and sanitation in Orissa State. Drilling and construction of 10,000 tube wells (depths from 30-300m) with hand pumps serving 2 million people. Provision of a maintenance system, health education, and training. The chief advisor and the design advisor assisted the project director in aspects such as socio-economic and hydrogeologic surveys, research and design programmes, drilling of tube wells and installation of hand pumps, development of a maintenance system, implementation of a demonstration sanitation project, training, and establishment of a training centre. For the socio-economic investigation, data was collected and evaluated for nine blocks simultaneously, one block equivalent to 100 villages. For the hydrogeological investigation, shallow aquifers were identified by vertical electric soundings and exploratory tube wells were drilled. A data bank was established. The coastal area with a high iron content and high salinity made it necessary to include a research and development programme in order to optimise the design of tube wells, hand pumps and iron removal plants as well as to investigate alternative water supply technologies. 150 contractors drilled the tube wells, and thus construction supervision was part of the project. India MARK II hand pumps were installed where possible and UNICEF platforms were constructed. Special quality control was carried out regarding material inspection and installation. Laboratory facilities were established. The maintenance system was developed with participation of local skilled or semi-skilled manpower in a two-tier system. Health and hygiene education and promotion were important parts of the project. Education was given to all villagers, especially women and children with particular emphasis on school teachers, village volunteers, women's group representatives, etc. A training centre was established for internal training courses attended by maintenance mechanics, contractors' representatives, and assistant and junior engineers. Several professionals attended external courses outside the State of Orissa. Sustainability and replicability together with the transfer of knowledge were important objectives.

Country India
Period 1985 - 1991
Recipient Ministry of Agriculture and Rural Development, India
Financing: Danish International Development Assistance (Danida)

Project Identification Study on Three Lakes in Tamil Nadu

Abatement of pollution of three mountain lakes heavily polluted by untreated sewage. Environmental assessment of three lakes. Review of existing and designed sewerage facilities. Conceptual design of treatment plant (100,000 PE). Feasibility study of the rehabilitation of the three lakes including a monitoring and modelling programme.

Country India
Period 1991 - 1991
Recipient Danish International Development Assistance (Danida)

COWI Environment Projects in India

Project Identification Study on Three Lakes in Tamil Nadu
Abatement of pollution of three mountain lakes heavily polluted by untreated sewage. Environmental assessment of three lakes. Review of existing and designed sewerage facilities. Conceptual design of treatment plant (100,000 person equivalents). Feasibility study of the rehabilitation of the three lakes including a monitoring and modelling programme.

Country India
Period 1991 - 1991
Recipient Danida

Study of Stack Gas Monitoring and Development of an Air Pollution Dispersion Model...

Assessment of the need for continuous stack gas monitoring and identification of suitable monitoring systems. Identification of the need for air pollution modelling and formulation of a project for development of a suitable model.

Country India
Period 1990 - 1991
Recipient DANIDA/IBRD

Common Industrial Pollution Treatment Facilities

Industrial waste pollution abatements in four industrial estates in Gujarat, Maharashtra, and Tamil Nadu. The four industrial estates investigated cover a total of 2,900 industries with a water consumption of 116,000 m³/d and with individual pre-treatment facilities. As regards wastewater treatment, the need for pre-treatment was investigated for different types of industries. Alternative options for common treatment were proposed and the most feasible solution selected for each industrial estate. For solid waste collection, treatment, and disposal, various options were investigated, and the most feasible solution was selected for each industrial estate. The toxic and hazardous components of waste water identified for different types of industries and options were investigated for separation of waste, collection of toxic waste from several industrial estates, treatment of both organic and inorganic toxic/hazardous waste and options for disposal of the end product. The institutional framework of the industrial sector was investigated and options for ownership, management, operations and maintenance of the common collection, treatment, and disposal facilities were evaluated. Proposals were made for financing of capital and recurrent cost including models for cost recovery from users.

Country India
Period 1990 - 1991
Recipient Client: Local Governments of Gujarat, Maharashtra and Tamil Nadu
Financing: International Bank for Reconstruction and Development (IBRD)

COWI Environment Projects in India

Design and Supervision, North Kanara Integrated Development Project

COWI provided an irrigation engineer and a mechanical engineer for the rehabilitation of a number of gravity and pumped smallholder irrigation schemes. The irrigation engineer was responsible for the survey, detailed design, preparation of Bills of Quantities and supervision of construction of the rehabilitation works. The mechanical engineer assessed the condition of existing pumping plant and auxiliary equipment, made recommendations for its repair or replacement and supervised the installation of new equipment.

Country India
Period 1988 - 1991
Recipient Danida

Drinking Water Project, Orissa

The Orissa Drinking Water Supply Project was situated in the saline belt of coastal Orissa which suffered from a variety of groundwater problems, like saline aquifers and high iron and manganese contents. The total population planned to be supplied was approximately 2 million people in 20 rural districts. The water supply was based on handpumps and some few piped schemes.

Country India
Period 1985 - 1991
Client Ministry of Foreign Affairs, Danida

Assistance to the project within aspects of socio-economic and hydrogeological surveys, research and design programmes, drilling of tubewells and installation of handpumps, development of a maintenance system, implementation of a demonstration sanitation project, hygiene education, training and establishment of a training centre. Totally 10,000 tubewells were drilled (depths 30-300 m.) and installed with handpumps. Services provided by COWI were:

- Assistance to the Project Directorate during the initial phase of the project
- Preparation of design manuals
- Review of drilling and water resources programme.

COWI (including services made under the name of Krüger Consult/Enviroplan, who merged with COWI in 1996) has over a period of seven years provided a long range of staff including Chief and Design Advisers to the project.

COWI Environment Projects in India

Chemical Waste Treatment Study

The objective of the project was to propose ways to abate phenol pollution from a chemical factory either through treatment of the effluent or a combination of methods which would reduce the content of phenol. The present situation was evaluated with regard to existing production facilities and wastewater treatment facilities and to recommend improvements. The recommendations were i) to close down the factory and transfer production to a modern plant or to a plant with a more suitable recipient; or ii) to modernise the existing production facilities and the wastewater treatment plant. If alternative i) cannot be implemented for social reasons in the region (e.g. unemployment, loss of highly educated persons), the only alternative left is. Compared with a modern plant, the existing plant was not up to date. In a modern plant, a recovery plant is added, which can recover the phenol from the wastewater and recycle the phenols back to the production line. By adding the process (an extraction process) to the existing facilities, the benefits are: a) reduction of the content of phenol in the wastewater b) increase in the yield of salicylic acid and aspirin. Therefore, it was recommended to add the above process to the plant and then upgrade the wastewater treatment facilities. After the final treatment of the wastewater in the existing polishing lagoon, the content of phenol would be very low and by precipitation of sulphate by lime the wastewater could be used for irrigation. The sludge generated consisted mainly of calcium sulphate and could be used in the cement industry.

Country India
Period 1989 - 1989
Recipient Danish International
Development Assistance
(Danida)

Orissa State Rural Water Supply

COWI has provided chief and design advisers for a large DANIDA-financed water supply project in Orissa State covering 2 million people in 20 rural districts.

Project management, project monitoring, project evaluation and advising on design standards and criteria as well as giving guidelines for planning and design.

Seconding Danida, COWI has provided water supply socio-economic experts for several project review missions on the above project.

Country India
Period 1984 - 1986
Recipient Danida