

SELECTED REFERENCES

SOLID WASTE MANAGEMENT



COWI GROUP
COWI A/S

PM
RECZ

COUNTRY
Macedonia

PERIOD
2021 - 2022

CUSTOMER
EBRD

NORTH MACEDONIA: REGIONAL SOLID WASTE PROJECT - FEASIBILITY ASSESSMENT - TECHNICAL DUE DILIGENCE

No investment value. The Assignment is implemented by COWI a/s of Denmark on behalf of the European Bank for Reconstruction and Development (EBRD) and the Government of the Republic of North Macedonia, represented by the Ministry of Environment and Physical Planning (MoEPP). The Assignment will be implemented in five planning regions in North Macedonia, namely the Polog Planning Region (Polog), the Vardar and Southeast Planning Regions (VSE) and the Pelagonia and Southwest Planning Regions PSW).

The Assignment is implemented in order to proceed with the preparation of the Project and to provide a Feasibility Assessment for the Project which envisages a loan that will be provided in two tranches. The sovereign loan will be extended to the Ministry of Finance (MoF), while the Ministry of Environment and Physical Planning (MoEPP) will be the Implementing Entity responsible for implementation of the Project.

The projects has been grouped onto three main systems, i.e.

1. VSE Region

- Procurement of waste collection trucks and bins / containers
- Construction of a sanitary landfill in Dobroschinci that complies with the EU standards
- Construction of two transfer stations in Vardar region and two transfer stations in the Southeast region

2. PSW Region

- Procurement of waste collection trucks and bins / containers
- Construction of a sanitary landfill in Novaci that complies with the EU standards
- Construction of three transfer stations in Southwest region and two transfer stations in Pelagonia region

3. Polog Region

- Procurement of waste collection trucks and bins / containers
- Upgrading of the existing disposal site Rusino (Gostivar municipality)
- Construction of two new composting plants
- Construction of one transfer station near Tetovo

Assist EBRD with the assessment and preparation of the Project, i.e. SWM Projects in 5 regions of North Macedonia, i.e. Polog, Vardar & Southeast (VSE) and Pelagonia & Southwest (PSW), for funding by the Bank;

The specific objectives were:

- Study and review available projects documentation to identify and address any information shortcomings;
- Prepare and provide financial information on the Projects;
- Assess and provide suggestions concerning the Projects' alignment with the Bank's mandate, e.g. gender aspects and green economy transition;
- Verify and adjust the Projects' institutional and implementation set-up.

COWI GROUP
COWI A/S

HEALTHCARE HAZARDOUS WASTE MANAGEMENT PROJECT IN EGYPT

Investment value- 5,000,000 EUR

PM
JMN
COUNTRY
Egypt
PERIOD
2021 - 2025
CUSTOMER
State Secretariat for
Economic Affairs of
Switzerland -
Infrastructure Financing
(SECO)
TOTAL FEE
EUR 750.000

The expected results from the Healthcare Hazardous Waste Management Project (HHWMP) intend to support and complement the core features of the "Integrated Plan for Health Care Waste Management 2014-2019", such as the establishment of centralized healthcare waste incinerations facilities including the required institutional strengthening, capacity building and training. The decentralized facilities will provide a safer alternative for the hospital waste management and cover the needs of the whole of Dakhaleya, a prominent Governorate located in the Nile Delta North-East of Cairo.

COWIs services include:

- Project management
- Preparation of site assessment report
- Development of detailed communication strategy
- Development of tender documents for procurement of two incineration facilities including coordination of handing over and commissioning
- Development of overall waste collection and transfer system
- Institutional strengthening of CTDD including digital upgrade
- Development of training strategy and training material
- Development of accounting system and estimations of waste fees
- Preparation of business plan with financing scenarios and recommendations

COWI GROUP
COWI A/S
PM
EKSC
COUNTRY
Moldova, Rep. of
PERIOD
2021 - 2022
CUSTOMER
EBRD
TOTAL FEE
EUR 474.000

MOLDOVA SOLID WASTE PROJECT

The principle objective is to study the available material (e.g. existing Feasibility Studies and EIAs) for the three Waste Management Zones 1, 5 and 8 in Moldova and to address information shortcomings in line with EBRD requirements with the ultimate goal to comprehensively assess the technical, economic and financial feasibility of the Project. The second objective is to provide the Bank with financial and other information about the Client and the Project as set out in the scope of work.

The third objective is to assist the Bank preparing additional Project components concerning, for example transition, gender equality, GET etc.

Review of Feasibility Studies, including: Market Analysis and Demand Forecasts, Affordability, Project Design, Capital and Operating Costs, Environmental and Social Assessment, Economic Evaluation. Stakeholders Assessment. Calculation of the amount of GHG emission reductions. Promotion of gender equality.

Technical advisory services; Review of ; Gap analysis; Financial modelling; Institutional set-up

COWI GROUP
COWI A/S
PM
EKSC
COUNTRY
Egypt
PERIOD
2020 - 2021
CUSTOMER
European Bank for

HAZARDOUS WASTE MANAGEMENT PROGRAMME EGYPT, PHASE 1

The objective of this Technical Cooperation (TC) project is to assist the Government of Egypt in developing a national programme to address hazardous waste issues and identifying a commercially and technically viable hazardous waste management model along with a business case for a pilot hazardous waste management project that could potentially attract funding by IFIs.

Phase 1: Identifying Constraints and Assistance in Developing the Programme

Task 1 - Review of current hazardous waste management related legislation and standards in Egypt vis-à-vis relevant EU Directives and international best practice and identify recommendations for their improvement and enhancement;

Reconstruction and
Development - EBRD

TOTAL FEE
EUR 215.500

Task 2 – Identify current waste segregation, temporary storage; collection transportation and disposal practice and facilities in various governorates, including relevant providers of such services. Assess current design and existing capacity of hazardous waste disposal facilities and identify most critical needs in terms of either their expansion; refurbishment; modernisation or decommissioning and closure

Task 3 – Identify logistical, organisational and financial constraints and disincentives for proper segregation of hazardous and non-hazardous waste; its collection and disposal

Task 4 – Identify current chain of custody and monitoring requirements over the final disposal of waste and identify required improvements

Task 5 – Based on findings of task 1 -4, provide assistance in developing the draft national programme and approach for managing hazardous waste.

Implementation of for Phase 2 shall be subject to the availability of TC donor funding, the successful completion of Phase 1 and further written confirmation by various Egyptian authorities:

Phase 2: Identifying Hazardous Waste Management Options and Pilot Project

COWI GROUP
COWI A/S

PM
RECZ

COUNTRY
North Macedonia

PERIOD
2019 - 2020

CUSTOMER
EBRD

SOLID WASTE MANAGEMENT IN 4 REGIONS OF NORTH MACEDONIA, BASELINE AND FINANCING OPTIONS STUDY, REPUBLIC OF NORTH MACEDONIA

Investment value aimed by the Client: App. 37 m EUR

The Ministry of Finance and the Ministry of Environment and Physical Planning ("MoEPP") have approached the European Bank for Reconstruction and Development (the "Bank" or the "EBRD") with a request to provide assistance in developing the most appropriate financing structure for the respective waste management systems for four planning regions, namely the Southeast Region, the Vardar Region and the Southwest and Pelagonia Regions. COWI prepares a Baseline Assessment based on the existing information and the national waste strategy, and update the existing data as necessary and feasible. In addition, a high-level forecast of future demographics and waste generation / composition in the SE region will be conducted. Based on the findings of COWI shall carry out a review and logistic analysis to identify the most advantage configuration for inter-regional SWM systems, including the four studied regions, in order to set required waste management components and investment requirements to establish robust solid waste management systems to ensure 100% waste collection, a high degree of waste separation and treatment, a high degree of recycling and reuse of waste materials and limited waste sent to landfill. COWI also defined required CAPEX & OPEX and developed the corresponding financing option analysis for the selected configuration that included a pro-forma financial models and the assessment of service delivery alternatives.

COWI GROUP
COWI A/S

PM
LLA

COUNTRY
Mongolia

PERIOD
2019 - 2021

CUSTOMER
EBRD

ULAANBAATAR SOLID WASTE MODERNIZATION PROJECT - ENVIRONMENTAL AND SOCIAL ASSESSMENT

The Ulaanbaatar Waste Modernization Project has been designed to provide assistance to the Government of Mongolia to finance priority investments for improvement of solid waste management in the Municipality of Ulaanbaatar. Three dumpsites currently serve Ulaanbaatar: Narangiin Enger, Tsagaan Davaa and Moringiin Davaa, located in the northwest, northeast and southwest of Ulaanbaatar respectively. The planned location for the proposed project is adjacent to the Moringiin Davaa Dump Site (MDDS) in Khan-Uul district of Ulaanbaatar Municipality approximately 18 km southwest of Ulaanbaatar city. The planned improvements include both the expansion of landfill capacity and the establishment of a Construction and Demolition Waste (CDW) recycling plant.

TOTAL FEE
EUR 107.000

The objective of the Environmental and Social Impact Assessment (ESIA) is to identify and assess the potentially significant existing and future adverse environmental and social impacts associated with the current solid waste management (SWM) operations and the proposed Project, assess compliance with applicable laws and the EBRD Performance Requirements, to determine the measures needed to prevent or minimise and mitigate the adverse impacts, and identify potential environmental and social opportunities, including those that would improve the environmental and social sustainability of the Project and/or the associated current operations.

Specifically, the Consultant will:

- > Identify existing and Project-related environmental and social impacts and risks;
- > Describe and characterise a relevant environmental and social baseline commensurate with the risks posed by the current site operations and the proposed Project;
- > Carry out the assessment of impacts, outline the mitigation measures and develop a draft ESIA report in accordance with the EU EIA Directive;

COWI GROUP
COWI A/S

PM
ANMO

COUNTRY
Georgia

PERIOD
2020 - 2022

CUSTOMER
Asian Development Bank
(ADB)

TA 53114-001 GEO: PREPARING INTEGRATED SOLUTIONS FOR LIVABLE CITIES

No investment value. This Transaction Technical Assistance Facility (TRTA-F)) will support project preparation to ensuing urban development and water investment projects, comprising Livable Cities Investment Program (LCIP) and the second Water Supply and Sanitation (WSS) Service Improvement Project.

The TA facility will have three outputs:

Output 1: Feasibility study on ensuing project(s) prepared. The TA facility will prepare transformative, programmatic, and procurement-ready projects catering to local conditions. Feasibility studies will incorporate (i) programmatic, multisectoral, and multi-region solutions that call for large and/or complex public investments; (ii) innovation, technology, and public-private partnership; and (iii) timely project evaluation, selection, implementation, and capacity development support. The TA facility will assess and help to integrate high-level technology, i.e., supervisory control and data acquisition, smart information and communication technology systems, metering and billing, intelligent transport systems, and low emission vehicles, into project designs, where feasible.

Outputs include: (i) feasibility studies and master bidding documents; (ii) financial management and capacity assessment, cost estimate and financing plan, project financial viability and entity financial analysis, sustainability assessment of executing and implementing agencies, and fund flow, accounting, auditing, and financial reporting arrangements; (iii) economic analysis; (iv) safeguards documents on the environment, involuntary resettlement, and indigenous peoples; (v) poverty, social and gender analysis, collection of baseline data, and related action plans; (vi) procurement capacity assessment, risk assessment and management, and/or integrity due diligence; (vii) sector assessments; (viii) climate risks and vulnerability assessments; and (ix) public consultation and communication strategy. This may include geospatial analysis, earth observation and diagnostic studies, among others.

Output 2: Project management and urban service delivery capacity strengthened. The TA facility will cover technical and policy advice, reforms, governance, capacity development, and knowledge work to support ensuing and ongoing projects. Activities include: (i) strengthening governance and institutional capacity in operation and maintenance and cost recovery mechanisms, (ii) developing policy, strategy, regulation, and reform measures, and (iii) improving project implementation and contract management capacity. The government's human development initiative will be supported via sharing knowledge and best practices, building capacities-in skills, gender-sensitive professional and

workforce development, and human resources management-and increasing opportunities for private sector participation and investment. The TA facility will support knowledge management through gender-inclusive training, publications, and other cost-effective forms of knowledge sharing.

Output 3: Compliance and contractual disputes reduced. The TA facility will help to (i) preempt and/or resolve safeguards and contractual issues, and (ii) minimize potential contractual disputes. Executing and implementing agencies will be supported to ensure compliance with the Safeguard Policy Statement and facilitate resolution of project-related complaints as well as the development and implementation of remedial actions in projects affected by compliance review. It will assist the government in preparing and managing performance-based contracts, and implementing a range of measures to monitor, manage, and counter risks.

Due diligence services, such as financial management, economic and financial including tariff analysis, poverty and social analysis, gender analysis, safeguards (environment, involuntary resettlement and indigenous peoples), climate change, policy, regulation, institutional and utility municipal/community as applicable) assessment, and procurement/contract management risk assessment, public relations and communications strategy and plan including facilitation as well as sector expertise required for each of the ensuing project. This includes regional and urban planning, water supply and sanitation, urban transport, solid waste management, institutional and governance, climate change, public-private partnership (PPP), information and communication technology (ICT), and urban design.

COWI GROUP
COWI A/S

PM
RECZ

COUNTRY
Georgia

PERIOD
2019 - 2023

CUSTOMER
Solid Waste Management
Company of Georgia Ltd.

CENTRAL GEORGIA SOLID WASTE PROJECT – FEASIBILITY STUDY

Investment value - 40,000,000 EUR

The project is financed by the EBRD & KfW. The FS has the main purpose to verify whether a bankable project can be prepared and then proceed and prepare such a project. In this way, the Consultant has elaborated the main following components: SWM baseline for the 3 regions of the project (Mtskheta-Mtianeti, Shida-Kartli & Samtskhe-Javakheti); Population and waste forecasts for the project peri-od of 2025-2045; Analysis of eight possible SWM systems, comparing effective least-cost versus highest impact (cost-benefit) solutions; Preliminary design of SWM infrastructure for preferred option.

- Selection for landfill sites
- Financial and economic analysis of preferred
- Development of implementation plan
- National and international ESIA's for major SWM infrastructure

The Consultant's work on the Assignment are focused on specific Tasks grouped under the following six main Components:– Inception; Baseline Study; Project Proposal; Financial Analysis; Project Implementation Plan; Environmental and Social Assessment.

COWI GROUP
COWI A/S

PM
EKSC

COUNTRY
Mongolia

PERIOD
2019 - 2023

MUNICIPAL WASTE COLLECTION AND TRANSPORTATION MANAGEMENT IN ULAANBAATAR, MONGOLIA

The overall goal of the project is:

Ger area residents in Ulaanbaatar live in a cleaner and healthier environment as waste collection and transportation management is effective, cost-efficient and benefiting all.

Outcomes:

1. Effective regulations for the implementation of the new law are in place.

CUSTOMER
Swiss Agency for
Development and
Cooperation (SDC)

RECIPIENT
Municipality of
Ulaanbaatar (MUB)

TOTAL FEE
USD 3.792.840

- * Review existing guidelines, regulations and standards.
 - * Support the development of guidelines, regulations and standards for implementing the law.
 - * Review current activities and capacity of awareness raising.
 - * Develop additional awareness raising activities with the focus on waste collection and transportation.
2. Improved service quality and effectiveness in waste collection and transportation in selected districts.
- * Review of current service contracts for TUKs
 - * Prepare improved contracting models in test them in pilot districts
 - * Review of current monitoring system in the pilot districts and design improved GPS based system.
 - * Test the new system and provide training.
 - * Assessment of capacity improvement needs and develop/introduce capacity improvement programme.
3. Improved financial sustainability and efficiency of waste management.
- * Develop financial model for new tariff system.
 - * Training of financial model in pilot districts.
 - * Support testing of new tariff and payment registration system in pilot districts.
 - * Develop incentives for improved revenue collection in pilot districts.
 - * Identify gaps in customer registry and methods to close them in pilot districts.
 - * Review billing system and plan improvements.
 - * Review current cost calculation and budgeting tools in the pilot districts and plan improvements.
 - * Review current procurement processes and regulations and develop recommendations for improvement.

COWI GROUP
COWI A/S

PM
LJRA

COUNTRY
Malta

PERIOD
2019 - 2024

CUSTOMER
Wasteserv Malta Ltd

RECIPIENT
Wasteserv Malta Ltd

TOTAL FEE
EUR 3.150.147

NEW WASTE-TO-ENERGY FACILITY IN MALTA

Investment value -180,000,000 EUR

The international consultancy firm COWI A/S has been awarded a contract as Owners Engineer from Government owned Wasteserv Malta Ltd. The Project consists of the construction of a Waste-to-Energy Facility on the Maltese Islands with an expected annual capacity more than 100,000 tonnes. COWI's Consultancy Services comprises for the Preliminary Design, Engineering, Permitting, Procurement and Construction of a Waste to Energy Facility in Malta.

SPECIFICATION OF WASTE-TO-ENERGY PLANT

Waste incineration pr. year:	190,000 tonnes
Power production:	20 MW
Heat production:	0 MW
Flue gas system:	Semi dry

COWI will provide the full services for the preparation and completion of the specifications, tender documents and the Design, Build, Finance and Operate (DBFO) Contract as a result

The logo for COWI, consisting of the word "COWI" in a bold, orange, sans-serif font.

of COWI elaborated Public Private Partnership (PPP) schemes. Further, COWI provides overall procurement process facilitation, legal backing and assistance in the evaluation and contract award for the DBFO Contract financed through the PPP scheme. The ultimate aim of the procurement process is that the preferred bidder shall then become the private partner within the PPP.

The overall objective of this infrastructure investment project is to oversee and manage the construction of a Waste to Energy Treatment Facility, covering the preparation of the necessary studies, documentation and supervision of the said construction of a state of the art Waste-to-Energy Treatment Facility for the treatment of a wide range of waste fuels and ensure its adequate integration in the municipal waste management system in Malta contributing towards Malta's climate change obligations. COWI is also to provide consultation and supervision during the detailed design, construction & commissioning works as well as during the operations monitoring period.

COWI GROUP
COWI A/S

PM
ANMO

COUNTRY
Ukraine

PERIOD
2019 - 2020

CUSTOMER
Delegation of the
European Union to
Ukraine

ASSISTANCE TO UKRAINIAN AUTHORITIES IN IMPLEMENTATION OF THE NATIONAL WASTE MANAGEMENT STRATEGY

On September 16, 2014, the Association Agreement between Ukraine and the EU came into force. It stipulates that Ukraine will transpose EU legislation, including in the waste sector, into the national framework. It also prescribes the preparation of waste management plans in line with the waste hierarchy and of a national strategy designed to reduce the amount of biodegradable waste going to landfills. On November 8, 2017, the Government approved the National Waste Management Strategy by 2030. Ukraine's main priority is to prevent generation of waste through re-use, material processing or energy utilization. If none of the above options is appropriate, the disposal of waste in landfills should comply with environmental standards. The global objective of this project is to facilitate and promote the reform in the waste management sector. This reform will be directly related with the obligations of the Association Agreement. The specific objective of this contract is to assist MENR, MinRegion, regional and local level authorities and other stakeholders in implementation of National Waste Management Strategy through provision of training in selected pilot regions.

The project combines detailed training for selected regional authorities with inputs to the preparation of legislation on municipal waste in Ukraine. Additionally, Terms of Reference (ToR) for future Technical Assistance on municipal waste management need to be prepared. The major focus on the training is to support Oblast administrations in the preparation of Regional Waste Management Plans (RWMPs), consistent with the National Waste Management Strategy and Action Plan (NWMS) and in line with EU legislation and good practices and to assist the regions in preparation of sustainable projects in line with these plans.

COWI GROUP
COWI A/S

PM
JCL
OBA

COUNTRY
Ireland

PERIOD
2001 - 2014

CUSTOMER
Dublin City Council

DUBLIN WASTE-TO-ENERGY

Investment value -460,000,000 EUR

The project comprised a new thermal treatment plant in the Dublin Port area with a very high energy efficiency for a conventional Waste-to-Energy plant.

POWER EFFECT: 58.5 MW

CAPACITY: 2 x 35 ton/hour i.e. 550.000 t/a

THROUGHPUT: 600.000 t/a

ENERGY EFFICIENCY: 0.63

DISTRICT HEATING OUTPUT: 55 MJ/s at 95°C but prepared for a future expansion to 110 MJ/s at 95°C or to higher flow temperature at 120°C

RECIPIENT
Dublin City Council

TOTAL FEE
EUR 6.000.000

INCINERATER /

BOILER TYPE: Grate with semi flue gas cleaning and with cooling of turbine/generator condensate to River Liffey/Dublin Bay

FUEL: Municipal solid non-hazardous waste from the Greater Dublin area

As client's representative COWI's assistance comprised:

- Technology assessment including preparation of waste analysis, setting up a business case,
- Establishment of the basis for signing a design, build, operate and finance (DBOF) contract with a public-private partnership (PPP) company including PPP procurement
- Procurement including preparation of pre-qualification and tender documents for international tendering, negotiations with bidders, signing of contract and supervision of plant implementation and follow-up.
- Technical review of Basis of Design, tender specs, etc. and monitoring of design, construction and plant tests.

COWI GROUP
COWI A/S

PM
EKSC

COUNTRY

Kosovo

PERIOD
2018 - 2021

CUSTOMER
EU Office in Kosovo

TOTAL FEE
EUR 200.000

CLOSURE OF THE OLD AND DESIGN OF THE NEW LANDFILL IN PEJA, AND CLOSURE OF THE ILLIGAL DUMPSITE IN ISTOG, KOSOVO

Preparation of the preliminary and detailed design for:

- a.) Closure and remediation of the site of the existing landfill cell in Peja/Pec;
- b.) Construction of the new landfill cell in Peja/Pec;
- c.) Closure and remediation of the site at the illegal dumpsite in Istok/Istog.
 1. Preparation of Environmental and Social Impact Assessment Report (ESIA) and submission to relevant authorities for approval.
 2. Preparation of study of the geological, hydrogeological, geotechnical and environmental conditions on site in the location of the Peja landfill
 3. Preparation of preliminary design for closure of Istok dumpsite, closure of existing landfill in Peja and construction of a new landfill in Peja
 4. Detailed Design
 5. Preparation of Tender Dossier

COWI GROUP
COWI A/S

PM
NH

COUNTRY
Denmark

PERIOD
1988 - 2015

CUSTOMER
KARA/ NOVEREN
(Intermunicipal Waste
Company)

TOTAL FEE
EUR 2.707.500

REGIONAL WASTE MANAGEMENT CENTRE, NOVEREN

Investment value 2,850,000 EUR

COWI has been "Permanent Consultant" for the NOVEREN, Inter-municipal Solid Waste Management Company since its establishment in 1989. COWI has assisted in planning and developing the Regional Waste Management Centre at Audebo. The Waste Company is owned by 9 municipalities at the North Western Part of Zealand, Denmark having 150,000 inhabitants and generating 100,000 tonnes of waste each year. The main services carried out for the client during the mentioned period include:

Modern sanitary landfill at Audebo:

The landfill receives approx. 20,000 tonnes/year of in-organic and mixed waste (after primary recycling and incineration of combustibles). The landfill covers approx. 20 ha and is designed according to EU- landfill Directive requirement. The project is a "Build" based on detailed design of all installations etc. according to FIDIC red book. The total

construction and supply costs is approx 10 Mill. EUR. The first part of the landfill was constructed in 1990. Up to 2015 a number of 5 new cells have been constructed.

Materials Recovery Facility, (Clean MRF), Holbæk:

The facility receives source separated paper, cardboard and plastics from households and commercial/industrial enterprises. Capacity 10,000 tonnes/year. The facility comprises reception hall, sorting floor, manual sorting conveyor and baling equipment. The project is a "design and build" project based performance specifications on equipment (as FIDIC yellow book) and detailed design of building constructions and civil works (according to FIDIC red book). The total construction and supply costs is 1.5 Mill. EUR. The main part of the facility was constructed in 1992. Later extensions and improvements have taken place in 2000. In 2007 the facility was decommissioned.

Composting Facility (In Wessel composting technology (S&H concept):

The facility receives source separated organic waste from households and commercial enterprises (collected via a dual (twin bin) collection system. Total capacity 14,000 tonnes/year. The project is a "design and build" project based output requirements for produced compost and on performance specifications on equipment and all installations/buildings. The facility was constructed in 1997. Total constructions and supply costs are 3.1 Mill. EUR. In 2005 the facility was retrofitted with other equipment.

Waste Management Plan: The scope of the project covered economic and technical analysis of alternatives for increasing recycling of MSW via new systems for collection and through introduction of automatic centralised sorting. Mass Flow analysis, Economy, CO₂-savings and assessment of service level for citizens.

Landfill:

- > Project management
- > Geological and hydrogeological site investigations
- > Gas utilisat. investigat. + implementation of CHP plant
- > Environmental Impact Assessments (EIA)
- > Detailed design (site layout, drawings, technical system, leachate management)
- > Tender dossiers, including bills of quantities according to national conditions
- > Procurement
- > Tender procedure
- > Contracting
- > Construction management
- > Supervision of implementation

Composting and MRF – facilities:

- > Feasibility studies of alternative technologies
- > Setting up performance specifications for equipment
- > Detailed Design of constructions and installations
- > Environmental Impact Assessment (EIA)
- > Procurement of equipment and building works
- > Contracting
- > Supervision of all construction and installation works

Waste Management Plan:

> Analysis of collection systems to increase collection and recycling of waste from private dwellings, incl. waste flows analysis, economic analysis, env. asses., evaluation of a service level, technologies and automatic centralised waste sorting specifications.

COWI GROUP
COWI A/S

PM
ANMO

COUNTRY
Georgia

PERIOD
2017 - 2020

CUSTOMER
ADB

TOTAL FEE
USD 255.220

LIVABLE URBAN AREAS: INTEGRATED URBAN PLANS FOR BALANCED REGIONAL DEVELOPMENT

The Asian Development Bank (ADB) approved the technical assistance (TA) TA9220-GEO: Livable Urban Areas: Integrated Urban Plans for Balanced Regional Development on 4 November 2016, to help Georgia enhance the planning of selected urban regions and city clusters through integrated urban development, to achieve more balanced regional development. The Government of Georgia's strategic priorities for the regions include tourism development, cultural and historical heritage conservation, local economic development and agribusiness. The TA will develop a strategic vision and roadmap to unlock the economic potential of the selected regions by investing in key infrastructure enablers and identifying both quick wins as well as medium and long-term investments in the sub-sectors such as water supply, solid waste, road connectivity and sustainable urban transport, tourism infrastructure, cultural and historical heritage conservation and rehabilitation, and other key urban services.

The required services involve integrated urban and regional planning, masterplans, city visioning and participatory planning, communication strategies, community monitoring scorecards, performance indicators and benchmarking, resilient urban infrastructure and services, climate risk and vulnerability assessment, the application of information and communication technology in urban management, policy and regulatory reviews, municipal finance, the corporatization of utilities, tariff reform, and innovative finance mechanisms. The services lead to the development of a strategic vision and roadmap to unlock the economic potential of the selected regions by investing in key infrastructure enablers and identifying both quick wins as well as medium and long-term investments in the sub-sectors such as water supply and sanitation, road connectivity and sustainable urban transport, tourism infrastructure, cultural and historical heritage conservation and rehabilitation, and other key urban services.

COWI GROUP
COWI A/S

PM
SNS

COUNTRY
Denmark

PERIOD
1997 - 2017

TOTAL FEE
DKK 2.100.000

TECHNICAL ASSISTANCE, INCLUDING SUPERVISION AND DESIGN FOR RENO DJURS I/S WASTE MANAGEMENT COMPANY

Reno Djurs I/S is a waste company owned by "Norddjurs" and "Syddjurs" municipalities. The company owns an area of approx. 72 hectares for waste treatment, recycling and disposal. The old part of the landfill contains approximately 2 million m³ of waste and was in operation until 2009.

A new section of approx. 20 hectares was constructed in two phases and taken into operation in 2009 and 2011. Space for approximately 4 million m³ of waste also including a 2.000 m² sorting hall. Further, in 2013 a 24.000 m² composting area was constructed. During 2013-14 COWI A/S prepared the planning, design and tendering of a new extension of the landfill of 65.000 m², which at present is under construction under the supervision of COWI A/S.

Reno Djurs also operates 10 recycling stations.

COWI has been the primary consultant since 1997 on landfill and recycling centers for Reno Djurs I/S and carried out the planning, authority approval process, EIA, the detailed design, tendering and supervision of the landfill, sorting facility, bio waste treatment facility and recycling centers.

All contracts are based on FIDIC Red book equivalent standards, with some parts equivalent to FIDIC Yellow Book (e.g. 2000 m2 sorting hall that was tendered on the basis of functional demands). COWI prepared the EIAs and was responsible for all geological and geo-hydrological surveys and other field studies.

Capital costs approximately 11.4 million EURO.

- > Project management
- > Geological and hydro-geological surveys
- > Planning and feasibility studies
- > Design of waste infrastructure (recycling centres and landfill) according to FIDIC Yellow/Red Book (equivalent)
- > Cost estimations
- > Environmental Impact Assessment
- > Design of waste sorting facility
- > Design of biowaste treatment facility
- > IPPC approval
- > Preparation of Tender documents
- > Supervision of construction works
- > Environmental monitoring and preparation of annual monitoring reports

COWI GROUP
COWI A/S

PM
EKSC

COUNTRY
Egypt

PERIOD
2017 - 2022

CUSTOMER
Waste Management
Regulation Agency
(WMRA)

RECIPIENT
KfW Bankengruppe

TOTAL FEE
EUR 6.188.388

CONSULTING SERVICES FOR PROGRAMME IMPLEMENTATION IN KAFR EL SHEIK AND GHARBIA (LOT B – WORK PACKAGES 1 AND 3), NATIONAL SOLID WASTE MANAGEMENT PROGRAMME (NSWMP), EGYPT

Investment value - 53,695,578 EUR.

The Project (financed by KfW, EU and SECO) is to support the authorities on Governorate's and local level in

the Governorates of Kafr El Sheik and Gharbia (Lot B) through the preparation and implementation

of SWM investments under the framework of the 'National Solid Waste Management Programme' (NSWMP) and the establishment and functioning of the SWMUs in these Governorates.

The overall goal of the NSWMP is that the national solid waste management system contributes significantly to the sustainable protection of the environment and climate, the conservation of resources and the reduction of health-related hazards for the population in Egypt.

On the strategic level the NSWMP programme shall cover all waste types. It intends to catalyse a new development phase for the SWM sector in Egypt through developing a national SWM policy & legal framework, definition of responsibilities, establishment of competent institutions and capacity development as well as financing and cost coverage instruments. The NSWMP will lay the basis for a well-coordinated and sustainable development of the whole solid waste sector.

The services included:

- > Assistance to the Government in preparing option analysis and option reports as basis for the development of master plans. A computerised Operational Research optimisation model developed by COWI and named SWEEP (Solid Waste Economically Efficient Planning) has been applied for calculation in the option analysis. The model minimises the solid waste management systems net costs, i.e. the costs for collection, transfer and treatment minus revenues of various products from treatment, while the model at the same time keep meticulously track of waste flows by various material types, streams and fractions. The tool applied thereby is a combined financial modelling and a logistics planning tool for waste flow
- > Assistance to the Governorates in the development of master plans and decentralised investment planning together with support to the establishment of functioning SWMUs
- > Support the implementation of NSWMP infrastructure

Work Package 1:

Assistance to the Governorates in the development of master plans and decentralised investment planning together with support to the establishment of functioning SWMUs

The main tasks of this work package are:

1. Carry out overall program coordination and financial management (FC component)
2. Support the process of establishing functioning SWMUs within the Governorates
3. Develop strategic master plans for all waste streams
4. Organise the identification, design and implementation of immediate priority measures
5. Carry out an options analysis for municipal waste management
6. Verify and update the ISWM master plan for Kafr El Sheik Governorate
7. Prepare an ISWM master plan for Gharbia Governorate
8. Support operation services
9. Support monitoring and evaluation of operations

Work Package 3:

Support the implementation of NSWMP infrastructure

For each type of infrastructure the main tasks (service packages) are:

1. Prepare Preliminary Design and Environmental and Social Impact Assessments (ESIAs) – Service Package 1
2. Prepare detailed design and tender documents – Service Package 2
3. Provide tender support for works and supplies – Service Package 3
4. Supervision of the construction works and supplies contracts – Service Package 4
5. Defects notification – Service Package 5
6. Provide tender support for operation services – Service Package 6

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PM
EKSC

**NATIONAL SOLID WASTE MANAGEMENT PROGRAMME (NSWMP), EGYPT
– WORK PACKAGE 2**

No investment value.

This consultancy assignment is to support the authorities on Governorate's and local level in the Governorates of Kafr El-Sheikh and Gharbia through the preparation and

The logo for COWI, consisting of the word "COWI" in a bold, orange, sans-serif font.

COUNTRY	implementation of SWM investments under the framework of the 'National Solid Waste Management Programme' (NSWMP) and the establishment and functioning of the Solid Waste Management Units (SWMUs) in these Governorates. Work shall be undertaken in close collaboration with the national and local level administrations, ensuring that their capacity to undertake necessary tasks is strengthened in the process.
PERIOD	
2016 - 2022	
CUSTOMER	The project is divided into two phase:
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	Phase 1: 2016 - 2019
	Phase 2: 2020 - 2022
RECIPIENT	Phase 1: 2016 - 2019:
	The main tasks and activities under Phase 1 are:
TOTAL FEE	1. Support to SWMUs
EUR 1.541.180	<ul style="list-style-type: none"> > Advice on institutional setup of the SWMUs > Elaboration of integrated capacity development (CD) approach for members of the SWMU > Development of training modules of the CD approach and implementation > Development of guidelines and content trainings / training on-the-job to provide suitable collection and recycling services and to monitor and evaluate them > Development of interface management between SWMUs tasks and local level services
	2. Implement and evaluate Operator models for primary collection and recycling
	<ul style="list-style-type: none"> > Implementation, monitoring and evaluation of pilot projects > Project documentation of pilot measures for dissemination > Preparing and conducting of awareness campaigns to encourage locals to support pilot projects > Develop operational and financial plans for 8 new models > Encourage the private sector to implement the models > Development of a toolkit for the easy implementation of up to 6 Operator Models for primary collection and recycling > Proposing of standards for primary collection and basic recycling
	3. Prepare financial, planning and monitoring instruments for Governorate and local level
	<ul style="list-style-type: none"> > Analysis of cost and revenue streams and development/enhance existing tools for more efficient, cost effective management of solid waste > Development/enhancement of tools to introduce chosen planning and monitoring instruments > Training on-the-job to introduce the instruments > Monitoring and evaluation of conducted measures
	4. Marine Litter assessment
	<ul style="list-style-type: none"> > Marine litter assessment for two locations in Kafr El-Sheikh Governorate > Conduct baseline study and case studies > Develop strategy to avoid marine litter
	Phase 2: 2020 - 2022

The objective of Phase 2 is to improve capacities of SWMUs in the two Governorates in service delivery, financial management and in enhancing citizen participation. The following activities will be performed during Phase 2:

- > Prepare capacity development plan for SWMUs
- > Qualification of pool of trainers to SWM service improvement and financial management
- > Capacity building and on-the-job training for SWMUs on performance improvement and monitoring
- > Support to SWMU on governorate level to capacity building at regional and local level
- > Conduct affordability analysis and willingness to pay studies
- > Design tariff structure
- > Analyse potential of CBO and private sector involvement
- > Develop gender specific and target group oriented awareness campaigns
- > Conduct annual citizen satisfaction surveys and action plan for improved service delivery

COWI GROUP

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PM

ANMO

COUNTRY

Ukraine

PERIOD

2016 - 2017

CUSTOMER

Resources and Waste Advisory Group Ltd.

RECIPIENT

Ministry of Environment and Natural Resources

TOTAL FEE

EUR 41.250

NATIONAL SOLID WASTE MANAGEMENT STRATEGY AND ACTION PLAN

The lack of a National Solid Waste Management Strategy (National SWM Strategy) has been identified as one of the most important obstacles for a sustainable development of the Ukrainian waste sector and a major barrier for investments and investment security. Therefore the German Technical Cooperation in the Ukraine, via the 'Programme to Support the Green Modernisation of the Ukrainian Economy' (Green Economy Programme), is supporting the development of a National SWM Strategy and an Action Plan.

The Strategy shall set overall directions and adopt high level policy settings, targets and incentives. It shall cover the whole territory of the Ukraine and be concerned with the following waste streams: (1) Municipal solid waste (to be developed in cooperation with the MSW Management Project, EBRD); (2) Industrial and commercial non-hazardous waste; (3) Agricultural waste; (4) Construction and Demolition (C&D) waste; (5) Healthcare waste; and (6) Hazardous waste.

Development of the national strategy for the agricultural, construction & demolition and healthcare waste streams.

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JBJ

COUNTRY

Denmark

PERIOD

2010 - 2018

CUSTOMER

ARC, Inter-Municipal Waste Management Company, Denmark.

TOTAL FEE

EUR 444.600

GREATER COPENHAGEN MATERIALS RECOVERY FACILITY

No investment value. Parallel to the establishment of a new Waste to Energy facility to replace the old incineration plant Amagerforbrænding I/S (now named ARC, Amager Resource Center) decided to establish an advanced automatic mechanical and optical sorting plant for co-mingled collected recyclable materials and residual waste (also called a MRF, Materials Recovery Facility). This facility was planned to receive source separated and co-mingled collected dry recyclable materials as paper, cardboard, plastic and metal. Reception of residual waste was also an option. The capacity was planned to be in the range of 20.000 to 100.000 tons/year, depending on which waste materials to be received and from which catchment area.

The project comprises technical assistance to ARC, Inter-municipal Waste Company, in planning, design, procurement and implementation of an advanced central mechanical sorting plant for Municipal Solid Waste. The project is executed by COWI with IUT Ingenieurgesellschaft Innovative Umwelttechnik GmbH as sub-consultant.

- Feasibility study with

- Setting up baseline data on waste generation from different sources
- Identification and assessment of available technologies for source segregated collection and for advanced central mechanical sorting.
- Setting up alternative scenarios for regional integrated solutions covering collection, treatment and disposal, including high priority on secondary raw materials production.
- Conceptual design of central mechanical sorting facility (full scale and test scale), including market sounding at technical suppliers
- Preparation of complete tender documents including technical specifications for mechanical and electrical equipment
- Execution of the procurement process according to a Design and Build procedure
- Supervision during detailed design and construction of the sorting plant and the commissioning and running in of the sorting plant.

COWI GROUP

COWI A/S

PM

EKSC

COUNTRY

Moldova, Rep. of

PERIOD

2016 - 2017

CUSTOMER

European Investment Bank (EIB)

RECIPIENT

Ministry of Environment of Moldova

TOTAL FEE

EUR 625.000

PREPARATION OF SWM PROJECTS IN THREE REGIONS IN MOLDOVA

No investment value. 1. Overall objective

The overall objective of this Technical Assistance operation is to contribute to improving the standards of the current solid waste services and facilities, and increasing the operational efficiency and environmental compliance – with respect to the EU Directives and Standards – in the three targeted regions for SWM (Region 4 Chisinau, Region 6 East Centre, and Region 7 Balti) .

2. Purpose

The purpose of this TA operation is to prepare bankable and viable solid waste management investment projects in the three target regions of Moldova that will enable reduced environmental and health impact from solid waste management, increased recycling and recovery from the waste stream, and increased efficiency in service provision.

3. Results to be achieved by the Consultant

The specific results to be achieved through this TA operation are three comprehensive feasibility studies and the related studies, covered by the ToR, for integrated solid waste management projects in the three targeted regions of Moldova. The feasibility studies shall consider the investment required for a time span of 20 years with a particular focus on the first three years of development.

Brief description of services:

The scope of implemented consultancy services included:

- Planning framework - Description and analysis of regulatory, institutional and SWM planning framework as well as socio economic situation at the project area;
- Existing waste management situation – Description, analysis and assessment of existing MSW generation and infrastructure, collection/recycling systems, current costs and financing for all aspects of the current SWM system as well as issues and deficiencies in the current system and recommendations for changes.
- Demand analysis and design parameters - Forecast of future municipal waste generation and composition, forecast for demand for various solid waste systems/facilities and definition of their design standards/parameters.
- Dumpsite closure and rehabilitation – Preparation of the dumpsite inventory; Dumpsite screening; Identification of transitional disposal sites that can be used until

the regional sanitary landfill is operational; Preparation of conceptual designs for dumpsite closure and rehabilitation.

- Institutional and organizational framework - Proposal for a new institutional and organizational framework for management and operation of the new solid waste system; Preparation of draft cooperation (association) agreement for inter-municipal entity.
- The following tasks were partially prepared/completed, due to the absence of a decision of the Promoter:
- Option analysis - Identification and short-listing of appropriate options in the local context; Comparison and selection of preferred options that meets the set objectives and targets in a cost-efficient manner; Description of all selected components of the proposed solid waste management system -
- Site selection, authorization, site surveys - Determination of required site area and site selection for proposed treatment and disposal facilities; Confirmation of sites selected; Site investigation of selected sites to ascertain topographic, geological, geotechnical, hydrological, hydrogeological conditions - The task was partially completed, due to the absence of a decision of the Promoter.
- Cost and revenue for all new proposed systems and facilities as well as for dumpsite closure and rehabilitation for each year in the planning period.
- Financial and economic analysis (CBA) - NPV and IRR calculation; Socio economic analysis and economic IRR calculation; Risks and sensitivity analysis.

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PM
JBJ
JBJ

COUNTRY
Danmark

PERIOD
2010 - 2016

CUSTOMER
I/S Amagerforbrænding

RECIPIENT
I/S Amagerforbrænding

TOTAL FEE
DKK 8.000.000

PLANNING, DESIGN, PROCUREMENT AND IMPLEMENTATION OF AN ADVANCED SORTING PLANT FOR MUNICIPAL SOLID WASTE IN COPENHAGEN

No investment value. The project comprises technical assistance to Amagerforbrænding, Inter-municipal Waste Company, in planning, design, procurement and implementation of an advanced central mechanical sorting plant for Municipal Solid Waste. The project is executed by COWI with IUT Ingenieurgesellschaft Innovative Umwelttechnik GmbH as Joint Venture partner

The services cover:

- Feasibility study with
- Setting up baseline data on waste generation from different sources
- Identification and assessment of available technologies for source se-gregated collection and for central mechanical sorting.
- Setting up alternative scenarios for regional integrated solutions covering collection, treatment and disposal, including high priority on secondary raw materials production respectively high priority on energy production.
- Conceptual design of central mechanical sorting facility
- Preparation of Environmental Impact Assessment
- Preparation of technical specifications for mechanical and electrical equipment
- Preparation of complete tender documents
- Execution of the procurement process according to a negotiated Design and Build procedure
- Supervision during detailed design and construction of the sorting plant

- Supervision of the commissioning and running in of the sorting plant.

COWI GROUP
COWI A/S

PM
CHJ

COUNTRY
Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, Kosovo, Turkey, Iceland

PERIOD
2009 - 2014

CUSTOMER
European Commission, DG Enlargement

TOTAL FEE
EUR 29.707.133

INFRASTRUCTURE PROJECTS FACILITY – TECHNICAL ASSISTANCE WINDOW (IPF TA) (IPF-2)

Investment value -3,700,000,000 EUR. The Western Balkans Investment Framework (WBIF) was launched in 2009 with the objective of pooling grant resources in order to leverage loans for the financing of priority infrastructure and socio-economic development in the Western Balkans.

The selected investment projects are supported via the Infrastructure Projects Facility – Technical Assistance Window (IPF TA) contracts, one of which COWI A/S was lead on (IPF-2).

The specific project purpose was to ensure the effective and rapid preparation of bankable infrastructure investment projects which had been identified in the beneficiary countries as important and prioritised by the WBIF Steering Committee. Investment projects were supported within the following four sectors: transport, environment, energy and social infrastructure (buildings).

Each investment project was prepared in close cooperation with one of the WBIF investment partners (EIB, EBRD, KfW, CEB, EC).

The TA support comprised: identification studies, project scoping, prefeasibility and feasibility studies, economic and financial analyses, environmental impact assessments, social impact assessment, conceptual, project designs, tender documents and technical assistance to PMU/PIU/PITs. The TA also included training of beneficiary institutions and visibility activities.

A total of 36 individual investment projects were assigned for TA support under IPF-2, all of which were completed. The investment projects fell within four sectors: environment (9), transport (6), energy (10) and social infrastructure (buildings) (11).

The IPF-2 TA was contracted by the European Union, EC DG Enlargement (EuropeAid/128073/C/SER/MULTI). The contract was signed in November 2009 (no. 2009/224-490) and an addendum was signed in October 2011 (no. 2011/273-396). Total contract value was EUR 29,707,133 and the implementation period was from November 2009 till June 2014.

This project provided technical assistance (TA) for the preparation of infrastructure projects within the four sectors, comprising project scoping, feasibility studies, economic and financial analyses, environmental impact assessments, social impact assessment, conceptual, preliminary and main design of projects, tender documents preparation (typically following FIDIC models), other procurement support and technical assistance to PMU/PIU/PITs. The TA also included training of beneficiary institutions and visibility activities.

The following projects were completed:

Environment

- > Detailed design and tender documents for Shengjin sewerage network (TA2-ALB-ENV-01)
- > Detailed design and tender documents for the extension of Kavaja wastewater treatment plant (WWTP) and Golemi sewerage network (TA2-ALB-ENV-03)
- > Feasibility study for the improvement of flood protection infrastructure in Albania – Mati River (TA3-ALB-ENV-03)

- > Technical assistance for water and sanitation (WATSAN) projects in 15 municipalities in the Federation of BiH (TA3-BIH-ENV-02)
- > Technical assistance for the procurement and monitoring of Bijeljina wastewater treatment plant (WWTP) implementation (TA3-BIH-ENV-03)
- > Non-revenue water reduction plan pilot study for the Municipality of Tuzla and master plan for water supply to the settlements north of Tuzla (WB5-BIH-ENV-15)
- > Technical assistance for the construction of regional landfills in Montenegro (WB4-MNE-ENV-11 and WB4-MNE-ENV-12)
- > Technical assistance for flood risk management measures for the Republic of Srpska in BiH (WB5-BIH-ENV-17)

Social infrastructure

- > Review of feasibility study, detailed design and tender documents for research and development infrastructure facilities in Serbia (TA3-SER-SOC-01)
- > Support to the PIU and preliminary and main design for buildings C and D for judiciary facilities in Serbia (TA3-SER-SOC-02)
- > Support to the PIU and preliminary and main design and tender documents for the High Court of Belgrade (Palace of Justice) (WB6-SER-SOC-08)
- > EIA and energy supply study for Tirana University Hospital Centre (TA-ALB-04)
- > Technical assistance and design supervision for Idrizovo Prison Reform Project (prisons in Skopje, Kumanovo, Tetovo and Idrizovo) (TA-MKD-01)
- > Feasibility study and project definitions for Banja Luka medical facility, research centre and school including guidelines for education of nurses and other healthcare professionals in Republika Srpska (BiH) and preparation of the preliminary design (WB5-BIH-SOC-03)
- > Technical assistance for health provider institutions (HPI) in the former Yugoslav Republic of Macedonia, including feasibility study for 40 HPIs and supervision of detailed design for the hospitals in Skopje and Shtip (TA3-MKD-SOC-01)
- > Feasibility study, preliminary and detailed design and tender document preparation for South East European Centre for Entrepreneurial Learning (SEECCEL) in Zagreb (WB5-REG-SOC-01)
- > Support for the construction of INTEGRA sport and cultural facility, Mostar, BiH (WB7-BIH-SOC-05)
- > The Gardarsholm Sustainability Centre: Business plan, preliminary design and needs assessment for supplies (Iceland1)
- > Prefeasibility study for the Regional Refugee Housing Programme (RHP)

Transport

- > Feasibility study and main design including tender document preparation for the track overhaul of the Podlugovi-Sarajevo railway section on the Vc corridor (TA2-BIH-TRA-02)
- > Feasibility study for short term option (overhaul of existing line for designed speeds) including preliminary design and prefeasibility study for medium to long term options (modernisation for 160km/h speed double track and electrified line) for the rehabilitation of railway route 10 (TA-KOS-02)
- > Feasibility study including preliminary design for the rehabilitation of key railways links (east-west) in Kosovo* (WB5-KOS-TRA-06)

- > Feasibility study and main design including tender document preparation for the track overhaul of the Dobož-Maglaž and Jelina-Zenica railway sections on Corridor Vc (WB5-BIH-TRA-14)
- > Technical assistance during the construction of the Brčko by-pass (WB6-BiH-TRA-15)
- > Feasibility study including preliminary design for the Tirana by-pass – Kashar-Vaqarr-Mullet, (WB7-ALB-TRA-12)

Energy

- > Feasibility study Tirana 2 – Rashbull 220kV line and new 220/110kV substation in Rogozhina (TA3-ALB-ENE-01)
- > Feasibility study for the construction of a 120MVA substation 220/110kV in Tirana 3 and reinforcement of 110kV Tirana Ring (WB4-ALB-ENE-01)
- > Feasibility study update for the improvement of district heating Phase 2 – CHP in Pristina, Kosovo* (TA3-KOS-ENE-03)
- > Feasibility study and ESIA for the Elbasan-Bitola 400 kV transmission line (WB4bis-REG-ENE-01)
- > Feasibility study and ESIA for the interconnection of Serbia with Bulgaria for a gas transmission pipeline (WB4-SER-ENE-04)
- > Cost-benefit analysis for LNG evacuation pipelines Omišalj – Zlobin – Rupa (Slovenija) (WB5-HR-ENE-02)
- > Prefeasibility study for the southern gas pipeline interconnection of BiH and Croatia (WB6-REG-ENE-08)
- > Conceptual solution, feasibility study, EIA, SIA and conceptual design for an LNG regasification vessel (WB5-HR-ENE-01)
- > Feasibility study and EIA and SIA for the Ionian-Adriatic gas pipeline (IAP) (WB5-REG-ENE-03)
- > Identification study - fuel switching and system expansion for district heating in Gjakova, Kosovo* (WB8-KOS-ENE-11)

*This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.

COWI GROUP

COWI A/S

COUNTRY

Ukraine

PERIOD

2014 - 2015

CUSTOMER

IFC - International Finance Corporation

TOTAL FEE

USD 210.330

VINNYTSIA INTEGRATED SOLID WASTE MANAGEMENT PLAN

The aim of the project was to assist the City Administration of Vinnytsia with preparation of an Integrated Solid Waste Management Plan.

The scope of consultancy services included:

- > Assessment of the current solid waste management system in Vinnytsia and the surrounding areas and preparation of the baseline study;
- > Development of Integrated Solid Waste Management Plan for improvement of collection, transfer, recycling and disposal of MSW in Vinnytsia and surrounding areas with a total population of 500 thousand inhabitants;
- > Review of available engineering design documentation prepared in accordance with the Ukrainian regulations and IFC recommendations for construction of a new landfill and a waste transfer station.

> Development and implementation of a training program on (i) landfill operations; (ii) long-term planning of waste management including the service area extension, options for separate collection and recovery of recyclable materials to increase value added.

COWI GROUP

COWI A/S

PM

CASK

COUNTRY

Georgia

PERIOD

2014 - 2014

CUSTOMER

EBRD

RECIPIENT

Transproject

TOTAL FEE

EUR 300.000

KVEMO KARTLI SOLID WASTE FEASIBILITY STUDY IN GEORGIA

No investment value. The aim of the assignment was to assist in development of the EBRD's third investment project in Georgia in line with the national plan to modernise the waste management system in Georgia. The consultancy services were provided for the preparation of a Feasibility Study for five municipalities in Kvemo Kartli Province.

The scope of consultancy services included:

- Detailed analysis of existing solid waste operations (baseline study);
- Review and analysis of the waste management needs in the five municipalities and preparation of a detailed investment program based on the results of the analysis;
- Waste flow analysis and development of forecast for waste generation and collection
- Development of a GIS-based detailed solid waste management computer model for optimal route planning and assessment of needed number of collection vehicles, containers and transfer stations during a 20-years planning period
- Assessment of collection and direct transportation from the districts to a regional landfill contra collection contra transfer via a number of transfer stations.
- Site selection study for a regional landfill and possible transfer stations
- Detailed route planning and design of improved waste collection and transportation systems
- Detailed design for a new regional landfill including specifications for works hereunder leachate collection and treatment (evaporation) and gas handling and treatment (flare)
- Preparation of technical specifications for procurement of equipment
- Recommendation for institutional reform in the solid waste management sector including the potential for private sector participation;
- Environmental and social assessment of the project;
- Economic and financial analysis of the proposed project.
- Development of baseline study and detailed Project Proposal for the improvement of solid waste management in Kvemo Kartli Region, including the engineering designs, business plan, etc.
- Financial analysis of 5 Participating Municipalities (responsible for waste collection and transportation to new regional landfill) and the National Solid Waste Management Company of Georgia Ltd (with a business unit to be responsible for operation of the landfill).
- Development of business plan over the lifetime of the loan (estimated at 15 years) and calculation of IRRs (economic and financial).
- Review of potential for private sector participation (PSP) in waste collection and disposal.

COWI GROUP
COWI A/S

PM
ANMO

COUNTRY
Armenia

PERIOD
2012 - 2017

CUSTOMER
Asian Development Bank
(ADB)

TOTAL FEE
USD 746.409

TA 7991-ARM: SOLID WASTE MANAGEMENT IMPROVEMENT INVESTMENT PROGRAM

No investment value. The project includes preparatory technical assistance (PPTA) in two phases: the first one that will cover preparation of a strategic development plan for the sector, development of a sector implementation road map and a long term investment plan (covering institutional development, sector capacity enhancement, prioritization of required investments over the next 20 to 30 years); and the second phase that will cover 'classical' feasibility assessment of the envisaged investment package for individual project or projects that would be selected from the road map.

Phase 1 -Strategic development of the solid waste sector:

Phase 1 covers the strategic development of the SWM sector and create a sector road map and long term investment vision, covering institutional, sector capacity and strategic developments and related donor coordination as well as determining the volume and scope of required investments over the next 20 to 30 years, with identifying priority investment projects.

Phase 2 - Project preparatory study/feasibility assessment:

Project preparatory study / feasibility assessment of the proposed SWM intervention / priority investment or investments likely to be in the several Armenian regions including all required aspects of a loan and project documentation and ensuring proper project readiness (preliminary / indicative design and costing, safeguards, procurement readiness, readiness of counterpart funding / government approval / management matters).
Feasibility Study for Shirak Region.

The scope of consultancy services in the Feasibility Study included:

- > Detailed analysis of existing solid waste operations (baseline study);
- > Review and analysis of the waste management needs in municipalities in Shiraz Region and preparation of a detailed investment program based on the results of the analysis;
- > Waste flow analysis and development of forecast for waste generation and collection
- > Development of a solid waste management computer model for assessment of needed number of collection vehicles, containers and transfer stations during a 20-years planning period
- > Assessment of collection and direct transportation from the districts to a regional landfill contra collection contra transfer via a number of transfer stations.
- > Site selection study for a regional landfill and possible transfer stations
- > Detailed route planning and design of improved waste collection and transportation systems
- > Detailed design for a new regional landfill including specifications for works hereunder leachate collection and treatment (evaporation) and gas handling and treatment (flare)
- > Preparation of technical specifications for procurement of equipment
- > Recommendation for institutional reform in the solid waste management sector including the potential for private sector participation;
- > Environmental and social assessment of the project;
- > Economic and financial analysis of the proposed project.

Waste generation projections; Waste infrastructure planning; Financial modelling and calculations; Development of a SWM Strategic Development Plan, Road Map and Long Term Investment plan (2012-2030); Capacity development, regulation and oversight in Armenia; Review and recommendations on institutional management structure

(national/regional/municipal); Workshops / round tables with relevant stakeholders; Full Feasibility Study for Shirak region.

COWI GROUP
COWI A/S

PM
JMN

COUNTRY
Turkey

PERIOD
2012 - 2016

CUSTOMER
Department of EU
Investments, Ministry of
Environment

TOTAL FEE
EUR 3.196.010

INTEGRATED SOLID WASTE MANAGEMENT PROJECTS IN TURKEY LOT 2

Investment value - 199,000,000 EUR

The services included technical assistance regarding preparation of eight major Integrated Solid Waste Management projects, incl. strategies and plans for solid waste associations (Unions) in eastern and central Turkey. The total population included in the service area and thus affected by the projects was approx. 2.7 million, estimated to raise to 3.2 million by 2045. The projects closed down approximately 73 old dumpsites, and instead established 8 major sanitary landfills (with a total of 24 million m³ capacity) and equally many composting plants and materials recovery facilities (MRFs), and about 10 transfer stations – and included more than a 250 different waste trucks and about 50,000 new waste storage containers of different types in addition to movable landfill equipment. The aim was to establish Integrated Waste Management systems in conformity with EU regulations and Turkish laws.

Results and outputs were:

- > IPA application forms together with annexes.
- > Full tender dossiers.
- > Technical capacity of municipalities strengthened to prepare and implement environmental infrastructure projects in compliance with EU acquis and national legislation.
- > Municipality staff gained experience and knowledge on best practices in operation of integrated solid waste management projects through study visits.

The services included the preparation of the following outputs:

- > Integrated Solid Waste Master Plans. Plans were elaborated and approved for eight Unions located in Artvin/Erzurum, Şanlıurfa, Mersin, Ordu, Hakkari, Kahramanmaraş, and Diyarbakır Provinces. The Master Plans integrate the waste characterization studies, population studies and forecasts, and other general design considerations, sets up targets and goals, describes future infrastructure and associated investments, and determine the future user payments according to the polluters-pay principle.
- > Solid waste characterisation studies were conducted for eight regions for summer and winter conditions and included estimation of waste quantities as well as its composition.
- > Mapping and Geotechnical/Hydrological Surveying and investigations were conducted for 45 major project sites and a large number of small dumpsites that are planned to be reinstated by removal of the waste. Full geotechnical reports and maps (1:500 and 1:1000) according to the Turkish Standard were produced.
- > Design of Sanitary Landfills and Transfer Stations conducted as Employer's design in detail on the level of BoQ for the landfill body (excavations, backfilling), storm/rainwater, leachate, and landfill gas collection systems, bottom and top sealing, roads, electric and electro-mechanical installations, waste hopper, etc.
- > Design of plants and collection systems included conceptual design of wastewater treatment plants (biological membrane filtrations and nano-filtration units), mechanical/manual sorting plants for recyclables, windrow composting plants, buildings, and other facilities. In addition, collection trucks (EN 1501 compatible rear-end and side-loaded compaction trucks) and solid storage/collection equipment (770 litre EUR containers (EN 840) were designed together with long-haul large compaction containers and truck-trailers

- > Conceptual Design of closure of dumpsites included 17 medium sized dumpsites to be closed and rehabilitated according to Turkish/EU regulation by storm water, leachate and gas management, fencing, and impermeable top cover. Dumpsites will be monitored over a decade after closure. Small dumpsites are planned to be removed and thus reinstated to the natural situation
 - > Feasibility studies and Cost/Benefit Analysis comprised an assessment of the current institutional and operational systems, analyses of household income and affordability, full analyses the projects' financial and economic viability, the financing plans, determination of the grant rates, and sensitivity and risk analyses. The cost estimations were based on the design reports, Turkish cost catalogue and their BoQs
 - > EIA Studies and EIA procedures were conducted according to Turkish laws and regulations and included two public hearings in each of the project areas, full EIA reports, and non-technical summaries
 - > IPA application forms have been filled in according to available templates comprising the basic information about the eight projects making application for EU grants possible
 - > Tender Dossiers and full tender documentation have been elaborated for the projects including Instruction to tenderers, draft contracts, all forms, technical specifications, budgets, terms of references, etc. according to PRAG/FIDIC rules and templates: Works - FIDIC Construction (Red book) and FIDIC Plant and Design-Build (Yellow book), Procurement (Equipment), Service
 - > Operation Manuals for landfills and transfer stations have been drafted
 - > Study Tour to Germany organised and conducted
 - > Over-the-desk training and conduction of training sessions and seminars
- Capital costs approximately 199 million EUR
- > Integrated solid waste master plans
 - > Population studies and forecasts
 - > Design criteria studies
 - > Solid waste characterisation studies
 - > Mapping and Geotechnical/Hydrological surveying and investigations
 - > Detailed design of sanitary landfills and transfer stations
 - > Conceptual design of plants and collection systems (waste water treatment plants, sorting plants, composting plants, trucks and waste storage equipment, etc.)
 - > Conceptual design of closure of dumpsites
 - > Feasibility studies and cost/benefit analysis
 - > Cost estimations based on cost
 - > Catalogue and BoQs
 - > Environmental Impact Assessment (EIA) Studies and EIA procedures according to national requirements
 - > IPA application forms
 - > Tender dossiers and documentation PRAG/FIDIC: Works - FIDIC construction (Red book) and FIDIC plant and design-build (Yellow book), procurement (Equipment), service
 - > Operation manuals
 - > Capacity building and training courses

COWI GROUP
COWI A/S

PM
JMN

COUNTRY
Serbia

PERIOD
2010 - 2013

CUSTOMER
Delegation of the
European Union to the
Republic of Serbia

TOTAL FEE
EUR 1.926.693

TECHNICAL ASSISTANCE FOR THE TREATMENT OF HEALTHCARE WASTE, SERBIA

The overall objective of the project is to enlarge and strengthen the existing healthcare waste management system in accordance with Serbian requirements and EU directives and to further integrate it into the health, public health and environmental system.

The purposes of the project are:

1. Support and capacity building of beneficiary (Ministry of Health) to harmonize the healthcare waste management regulation with the EU legislation and development of additionally needed technical guidelines, standards and policies
2. Development, implementation and maintenance of a comprehensive monitoring system for healthcare waste and supporting information, including capacity building and awareness programme for the Ministry of Health;
3. Supporting the effective and efficient implementation (organization and supervision) of repackaging, transport, export and disposal of obsolete healthcare waste.
4. Support Ministry of Health and veterinary directorate to define the key facilities to be in charge for the sustainability of the project results and achievements

Development of national master policy plan and feasibility study for hazardous health care waste management i.e. outlining technologies to be used as well as the corresponding investment plan. The work was carried out in close collaboration with Ministry of Health in order to capacity build the ministerial staff.

Execution of capacity building and training session relation to all aspects of healthcare waste management (e.g. infectious control, hygiene, segregation, disposal) of staff from Ministry of health and healthcare facilities (hospitals).

Preparation of terms of reference and tender documents on basis of PRAG, participation in the tender evaluation to select the contractor and supervision of the contractor responsible for the collection, repackaging, transport and international shipment and incineration of pharmaceutical waste.

Development of outline design for temporary storage facilities and transfer stations for chemical and pharmaceutical healthcare waste

COWI GROUP
COWI A/S

PM
CASK

COUNTRY
Georgia

PERIOD
2009 - 2012

CUSTOMER
City of Rustavi

RECIPIENT
Odense Renovation A/S

TOTAL FEE
EUR 405.000

RUSTAVI SOLID WASTE MANAGEMENT PROJECT – CORPORATE DEVELOPMENT AND CITY SUPPORT PROGRAMME

The purpose of the project was to assist Rustavi city administration (the City) to establish a Landfill Management Company, to assist the City in selection of human resources with relevant qualifications, to prepare a list of equipment needed for proper functioning of the Company and to carry out for its staff a programme of initial training on the basics of landfill management. The landfill has been constructed to receive municipal solid waste from Rustavi and Gardabany municipalities.

The scope of consultancy services comprised the following 4 main activities/outputs:

- > Establishment of a Waste/Landfill Management Company, including the organisational set up; Public Service Contract and control over assets; Management Information System; Training and study tour for the staff of the company.
- > City Support Programme for Rustavi, including Project Implementation Support and Debt management.
- > Corporate Development Programme for the Waste/Landfill Management Company, incl. financial performance improvement; Operational performance improvement;

Implementation of the FOPIP; Development of Medium-Term Corporate Development Plan; and Capacity Building Programme.

> Stakeholder Participation Programme, incl. identification of information needs and provision of training to the stakeholders.

During the assignment it was revealed that the new Rustavi landfill and central material sorting facility faced serious problems with the operation of the facility. Based on this the assistance to Rustavi was extended with the objective to identify the problems and introduce improvements,

The extension included establishment of various improvement measures at the new Rustavi landfill and MRF/MBT facility. The measures included procurement of additional equipment, such as a waste compactor and equipment for improvement of the MRF/MBT facility (ventilation system, personal protection equipment etc.). Furthermore, the measures included construction of various infrastructures including three groundwater monitoring wells, a new main leachate collection well, gas extraction wells, etc.

The total consultancy services included:

- > Project management
- > Assistance with the establishment of a Landfill Management Company
- > Financial planning and management
- > Development of management information system
- > Training and capacity building
- > Information campaigns
- > Identification of improvement measures at the new landfill and the MRF/MBT facility
- > Detailed design and preparation of tender documents
- > Assistance during tendering and contract award

COWI has in co-operation with Odense Waste Management Company Ltd. organised a one week training and study tour to Denmark in September 2011 for four key staff members of the newly established "Rustavi Landfill Management"

COWI GROUP
COWI A/S

PM
NH

COUNTRY
Denmark

PERIOD
1989 - 2013

CUSTOMER
AV Miljoe

RECIPIENT
AV Miljoe

TOTAL FEE
EUR 2.800.000

GREATER COPENHAGEN LANDFILL AND GREEN WASTE DISPOSAL FACILITY (AV MILJOE)

During the early 1980'ties Copenhagen and the surroundings was in lack of waste disposal capacity and the regional authorities involved COWI in the project to find new and suitable locations for a new regional landfill. South of Copenhagen a suitable area was finally found. It was a coastal area next to an industrial zone. The area was developed by land reclamation of approximately 40 ha.

COWI has been "In-House Consultant" for the Greater Copenhagen inter-municipal Landfill Management Company since its establishment in 1989. COWI has assisted the company in planning and developing the landfill facility, as well as in its management. The landfill covers an area of 40 ha, the filling volume is 2 million m³ and the yearly waste delivery is 100,000-120,000 ton.

The scope of consultancy services included:

- > Planning and environmental impact assessment of the landfill site
- > Planning of a recycling material collection station (public amenity centre) adjacent to the landfill

- > Feasibility study of technical alternatives and design of the facilities
- > Detailed design according to FIDIC red book and tender procedure
- > Supervision of construction works
- > Preparation of operational manual
- > Setting up business plan for future operations
- > Advisor to Managing Director and staff in daily operation and management
- > Execution of tender procedures for transport and export of special wastes (flue gas cleaning residues)
- > Execution of EU tender procedure for temporary storage of burnable waste and later excavation and transportation to two incineration facilities
- > Execution of bench-marking analyses of costs and benefits related to the daily operation and management
- > Setting up budgets for investments and operations forming basis for tariff calculations
- > Execution of environmental monitoring of the environmental impact from landfill operations
- > Preparation of closure of the landfill (planned for 2016) including assessment of where necessary upgrading of pumping station, leachate collection facilities, pressure pipes etc.

The total construction costs for the entire landfill area during the implementation period was 26,000,000 Euro.