

SELECTED REFERENCES

# TRANSPORT INFRASTRUCTURE



**COWI GROUP**  
COWI A/S  
**PM**  
SSO  
**COUNTRY**  
Denmark  
**PERIOD**  
2023 and 2024  
**CUSTOMER**  
Sund & Bælt (state-owned).  
**TOTAL FEE**  
DKK 125 million

The new ring road creates an infrastructure that supports the development of the new residential districts Refshaleøen, Kløverparken and Lynetteholm in Copenhagen. The Eastern Ring Road will connect Nordhavn in the north with Copenhagen Airport and the Øresund Link in the south. This will ensure better handling of traffic around the eastern and northern parts of Copenhagen by relieving Motorring 3, the Amager motorway and the Øresund motorway by moving traffic away from these heavily burdened roads and reducing the number of kilometres driven.

The Eastern Ring Road is planned to be completed in 2035. COWI's task is to carry out the preliminary analysis that will eventually lead to the environmental impact assessment (EIA). This work includes analysing and evaluating the environmental impact of the solutions for the technical project and adjusting these to avoid unacceptable impacts before completing the final EIA reporting of the developed solution. Furthermore, the EIA involves environmental studies at and in the water, but also on land. COWI's biologists will assess the effects of the marine construction work on the flow in the Øresund and the handling of excavated material and contaminated areas on Prøvestenen.

The tunnel and the construction work will have many interfaces with urban development and recreational areas as well as with the new metro line M5, Lynetteholm, the Nordhavn Tunnel and the flood protection of Copenhagen.

**COWI GROUP**  
COWI A/S  
**PM**  
KWHL  
**COUNTRY**  
Denmark  
**PERIOD**  
2021 - 2022  
**CUSTOMER**  
DSB  
**RECIPIENT**  
  
**TOTAL FEE**

## COPENHAGEN FUTURE RAIL NETWORK

Implementation of a new automated COA4 S-bane system including provision of a new generation of s-trains as well as necessary adjustments to infrastructure, processes and operation.

As part of the new automation programme also a restructuring of the organisation around the Copenhagen S-bane will take place. The vision for the S-network is to deliver attractive mobility for customers to accommodate the population growth in the Danish capital region while securing financial and sustainable efficiency.

The existing S-train fleet will reach its planned technical end-of-life in the years 2026-36. From 2029 and approximately 10 years ahead new driverless S-trains must therefore be set in operation in parallel with the current conventional S-trains being phased out of operation.

The programme will be carried out via a number of workstreams and projects that can vary from phase to phase.

The Programme will through its lifetime evolve around 6 main components:

1. Tender, test and roll out of new automatic EMU fleet and automation
2. Analysis, tender, test and roll out of DAS and platform safety systems
3. Tender and management of changes to and maintenance of the existing infrastructure
4. Develop and manage a system design and necessary integration
5. Building and implementation of a new organisation
6. Plan and deliver a smooth Transition

**COWI GROUP**

COWI A/S

PM

JME

**COUNTRY**Cote d'Ivoire, Ghana,  
Togo, Benin, Nigeria**PERIOD**

2020 - 2023

**CUSTOMER**

ECOWAS

**RECIPIENT****TOTAL FEE**

USD 725.000

**ROAD SAFETY AUDIT OF THE PRELIMINARY AND DETAILED DESIGNS OF THE ABIDJAN-LAGOS CORRIDOR HIGHWAY (1024 KM):**

No investment value. Road safety Audit of the Preliminary and Engineering Design of the Abidjan- Lagos Corridor Highway.

Review of the Corridor Member States Design Guides and other International standards for Highway Design and recommend on safety aspects to harmonised design standards. Road safety assessment of existing alignment.

Road Safety Audit of the preliminary and detailed design: Preparation, site visit, writing of road safety audit report. The project is divided into three lots and road safety audits at three stages.

The audit will cover the highway's design and detailed study phase. For each of the selected stages an audit will include indication of shortcomings that may lead to road crashes. Recommendations to improve road safety in the design will be made based on best practise cost-effective improvements and mitigation measures. The measures proposed for each identified issue will minimize the frequency and severity of preventable collisions/crashes prior to opening of the road.

Furthermore, interaction of the various design elements with each other and with the road network within the project corridor will be reviewed. All road users and interaction between those will be considered during the audits.

Identify safety performance risks in the design proposed by the design engineering firms, enabling adjustments to design aspects with a view to resolve or reduce the risks through road safety audits during 2 phases of the design study (preliminary design and detailed design).

- Provide safety input on harmonisation of road standards in the corridor.
- Road safety assessment of existing corridor.
- Road safety audit of preliminary design and detailed design.

**COWI GROUP**

COWI A/S

PM

JJU

**COUNTRY**

Namibia

**PERIOD**

2019 - 2019

**CUSTOMER**International Finance  
Corporation (IFC)**RECIPIENT****TOTAL FEE**

USD 482.500

**FEASIBILITY STUDY AND CONCEPTUAL DESIGN OF FSU TERMINAL WITH LNG-ON-THE-BEACH.**

No investment value.

Based upon recent work undertaken for IFC, there appears to be a market for trucked LNG in Namibia and the Northern Cape region. Therefore, IFC is interested to know the optimum, lowest cost, highest benefit, configuration of a Floating Storage Unit (FSU with regas onshore) with capability to deliver cryogenic LNG to shore either in southern Namibia or at the northern end of South Africa's Western Cape Province, or alternatively in Walvis Bay in Namibia. This to serve both Namibia and Northern Cape region of South Africa with trucked LNG and to feed either a potential gas powerplant in Walvis Bay or one in Oranjemund for which plans and permits exist.

IFC has selected a consultant team consisting of COWI and K&M Advisors to carry out the study with COWI as the lead consultant.

The services covered the following:

- Screening of 5 sites in the area of the Orange River, and selection of the two most appropriate sites for more de-tailed analyses
- Determine met-ocean conditions at the two sites based on data collection and numerical modelling
- Site visit to Walvis Bay and the Orange River area

- Optimize location, configuration, conceptual design, cost, schedule and execution plan for an FSU terminal in Walvis Bay
- Calculation of Levelized Cost of Electricity (LCOE) for Walvis Bay
- For two sites in the Orange River area, determine the optimum location, configuration, conceptual design, cost, schedule and execution plan considering the aggressive wave conditions
- Preparation of report and presentation.

**COWI GROUP**

COWI A/S

**PM**

CHJ

**COUNTRY**

Western Balkans - Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Kosovo, Montenegro and Serbia.

**PERIOD**

2016 - 2022

**CUSTOMER**

European Commission, DG NEAR

**RECIPIENT**

European Commission, DG NEAR

**TOTAL FEE**

EUR 7.030.505

**TECHNICAL ASSISTANCE TO CONNECTIVITY IN THE WESTERN BALKANS (CONNECTA)**

The EU "connectivity agenda" to improve the links within the Western Balkans and with the EU building and connecting transport and energy infrastructure as a driver for growth and jobs. The overall objective of the Technical Assistance is linked to the EU connectivity agenda by contributing to the development of a TEN-T Core Network in the Western Balkans as well as development of the regional energy market and the extension of the electricity and gas networks in the region. CONNECTA will contribute to achieve the connectivity target by filling gaps in project preparation and transport reform measures. In this perspective, the purposes of this contract are as follows:

1. bringing high priority transport and energy infrastructure projects to maturity for investment co-financing;
2. supporting the preparation and implementation of short and medium terms regional reform measures in the transport sector.

The results of the project will be deliverables of the highest quality for transport and energy infrastructure investments and for regional reform measures in the transport sector.

Specific results will include:

- pre-feasibility studies, general designs, feasibility studies, preliminary designs, cost benefit analysis, environmental impact assessments, detailed designs, tender documents, etc., for transport and energy infrastructure projects, as well as transfer of know-how in project development, project management and financing techniques to the beneficiaries, to enhance talents and skills of local human resources; and
- strategic plans and frameworks for the development and maintenance of the Core Network to TEN-T standards, impact assessments, training, guidelines, analysis and assessment of existing national strategies, laws and/or plans including recommendations.

Sub-projects

Transport

Ongoing

CONNECTA- TRA-INFR- MKD-FS+DD-01: (€ 275.000) (Preparation of project documentation (FS, DD) of access road at Tabanovce joint border station (Corridor X), ESIA) Lead IFI is EBRD. Inception report and option analysis submitted on 12 July 2018. Preliminary design, feasibility study and detail design completed. Tender documentation has been submitted in July 2021.

CONNECTA- TRA-CRM-SRB- RS-02: (€ 50.000) (Road Safety Audit on detail design for new highway section Nis - Plocnik along Route 7 in Serbia; RSA (stage 2)) Lead IFI is EIB-EBRD. The sub-project is relatively straightforward, and the project



requirements clear so no kick-off meeting was needed. Instead, an announcement of commencement of activities was made by the CONNECTA team on 7 May 2020.

- CONNECTA- TRA-INFR-BiH- STD-01: (€ 310.000) (Consultancy services for preparation of a set of tunnel and fire safety studies for the Prenj Tunnel in Corridor Vc; Risk Assessment and updating of tunnel guidelines for BiH) Lead IFI is EIB-EBRD. Kick-off meeting held via teleconference on 16 June 2020. Inception report was submitted on 17 July 2020 introducing reallocation of person months and involvement of CONNECTA in the updating of tunnel guidelines. The report was approved on 27 July 2020.
- CONNECTA- TRA-INFR-SRB- CS-02: (€ 412.000) (Technical Assistance to Construction Supervision on Nis- Brestovac Railway Line) Lead IFI -N/A. An informative meeting was held in July 2020. CONNECTA has reviewed the construction contract documents and is assisting the Serbian authorities with preparatory administrative activities in accordance with FIDIC.
- CONNECTA- TRA-INFR-BiH- DD-02: (€ 530.000) (Technical Assistance for preparatory studies: Motorway on Corridor Vc - from Interchange Johovac to Interchange Vukosavlje; Review/ update of DD, update of ESIA) Lead IFI is EIB. Kick- off meeting held via teleconference on 12 May 2021. The Inception Report was submitted on 21 June 2021 and approved on 28 June 2021. First Draft Package of deliverables sent on 15 September 2021. Expected completion February 2022
- CONNECTA- TRA-INFR-BiH- DD-03: (€ 661.000) (Update of Design for railway on Corridor Vc - from Samac to Rjecica) Lead IFI is EBRD. Application approved on 28 April 2021. RFA 78 requesting start of sub- project approved on 1 June 2021. Expected completion March 2022 but may have to be extended by a couple of months.
- CONNECTA- INFR-TRA- MKD-ESIA-04: (€ 365.000) (Technical assistance for preparation of environmental and social gap analysis, review of the existing technical project documentation and preparation of supplementary documentation for construction of the rail section Kriva Palanka – border with Bulgaria; ESIA update, review of tender documents including design) Lead IFI is EIB-EBRD. Kick-off meeting held on 22 December 2021. No need for inception report in this sub-project which is fast-track and of short duration. In addition, its scope is clear. Expected completion June 2022.

#### Potential

- Potential (€ TBD) Railway Network Resilience (REGIONAL) TCPS to decide
- Potential (€ TBD) Development of common road safety performance indicators (REGIONAL). Scope to be defined by TCPS and CONNECTA
- Potential (€ TBD) Development of common road safety strategy (REGIONAL – 4 countries). Scope to be defined by TCPS and CONNECTA
- Potential CONNECTA- TRA-CRM-REG- MOB-07 (€ 930.000) (Deployment of smart and sustainable mobility in the Western Balkans; TA on sustainable mobility) Lead IFI is N/A. Hopefully, an RFA will be submitted to DG NEAR in January 2022. Currently in communication with TCPS to agree upon the team for the sub-project. This sub-project needs to start soon to avoid more extensions to the duration of the whole of the CONNECTA project.
- Potential CONNECTA- TRA-CRM-REG- ITS-08 (€ 630.000) (ITS strategy for Bosnia and Herzegovina, Kosovo\* (all modes), Albania (railway and maritime) and Montenegro (railway) and deployment of road traffic management centres in Bosnia Herzegovina and Kosovo; Studies on ITS deployment) Lead IFI is N/A. Detailed scope defined by TCPS and CONNECTA. TA application re-submitted and approved by DG NEAR.
- Potential CONNECTA- TRA-CRM-REG- BCP-09 (€ 400.000) (Technical assistance for preparation of technical documentation for modernisation and infrastructure

capacity improvements of selected road border crossing points (BCP) on the extended TEN-T network in the Western Balkans) Studies and designs on border crossing improvements) ) Lead IFI is N/A. Detailed scope defined by TCPS and CONNECTA. TA application resubmitted and approved by DG NEAR.

Potential (€ 200.000) (Technical assistance to rail PIU in Serbia) Lead IFI is EUD. Application to be submitted by Serbian stakeholders. CONNECTA has written several times to request status and it is hoped that a final decision on CONNECTA'S involvement will be made in the next reporting season.

Completed

CONNECTA-TRA- CRM-REG-01: (€ 575.000) (Preparation of road safety inspections and audit plans including pilots) Lead IFI is N/A. Part of CTRM agenda. Consolidated Final Report (revised) submitted on 23 July 2018. Acceptance email from SEETO on 31.07.2018.

CONNECTA-TRA- CRM-REG-02: (€ 690.000) (Preparation of maintenance plans (2018-2022) Lead IFI is N/A. Part of CTRM agenda. All interim reports submitted and accepted. Final Reports (road, rail) submitted on 10/11.12.2018. Acceptance email from SEETO on 14.12.2018.

CONNECTA-TRA- CRM-REG-03: (€ 525.000) (Strategic framework for implementation of ITS) Lead IFI is N/A. Part of CTRM agenda. All interim reports submitted and accepted. Final Report submitted on 10.12.2018. Acceptance email from SEETO on 14.12.2018.

CONNECTA-TRA- CRM-REG-04: (€ 600.000) (Border crossing facilitation on indicative extensions of TEN-T Road network in Western Balkans; FS, institutional assessment, road/action plans). Lead IFI is N/A. Part of CTRM agenda. All interim reports submitted and accepted. Final Report submitted on 05.06.2019. Acceptance email from TCPS on 07.06.2019.

CONNECTA-TRA- INFR-MNE-PD-01: (€ 600.000) (Finalisation of Preliminary Design for priority bypass component of the Adriatic-Ionian Highway Section in Montenegro (Budva Bypass); PD and ESIA). Lead IFI is KfW. Final Report with preliminary design, ESIA and cost estimates submitted over several stages late autumn 2018. Acceptance letter from MoTMA on 25.01.19.

CONNECTA-TRA- INFR-MKD-DD-02: (€ 50.000) (Review of project documentation for ITS deployment on road Corridor X in MKD; Review of DD.) Lead IFI is WB. Review Report submitted on 5 December 2018. Final agreed on 8 January 2018. Acceptance email from MoTC on 22.01.2019.

CONNECTA-TRA- CRM-SRB-RS-01: (€ 30.000) (Road Safety Audit for preliminary design documentation in highway section Plocnik – Merdare in SRB (SEETO Route 7) RSA (stage 1)) Lead IFI is EIB. Final RSA report submitted on 13 July 2019. Acceptance letter from beneficiary on 05 August 2019. There is provision and available budget for RSA adjustment if required. No further news to date.

CONNECTA-TRA- CRM-REG-RS-DD- 05: (€ 857.000) (Preparation of selected detail designs for improving road safety conditions along high risk sections in the indicative extension of TEN-T road network in the Western Balkans; DD.) Lead IFI is N/A. Part of CTRM agenda. All interim reports submitted and accepted. Final Report submitted on 05.03.2021. Acceptance email from TCPS on 14.05.2021.

CONNECTA-TRA- CRM-REG-BCP-06: (€ 400.000) (TA for establishing electronic queuing management system (e- QMS) on 4 selected road border crossings (BCP) sections in the indicative extension of TEN-T road network in the Western Balkans (Orient East/Med corridor) PD-DD, TD) Lead IFI is N/A. Part of CTRM agenda. All interim

reports submitted and accepted. Final Report submitted on 30.03.2021. Acceptance email from TCPS on 05.04.2021.

CONNECTA-TRA- INFR-MKD-DD-03 : (€ 345.000) (Preparation of project documentation (DD) for replacement of guardrails according to EN standards along Corridor X in MKD, DD) Lead IFI is EU. Draft Design completed and submitted for external review on 19 July 2019. Minor comments received on 13 September 2019. Final design documentation submitted on 26 September 2019. Approved by independent external reviewer on 09.10.2019. Acceptance email from MoTC on 07.02.2020

CONNECTA-TRA- INFR-SRB-CBA-01: (€ 70.000) (Update of Cost Benefit Analysis for Stalac-Djunis railway section in Serbia). Lead IFI is EIB. Inception Report submitted on 04.06.2020. Draft traffic study, multicriteria analysis and cost benefit analysis submitted. Acceptance email from MEI received on 14.12.2021

#### Energy

##### Ongoing

CONNECTA- ENE-INFR- MKD- CBA+FS+ESIA+ BD+TD-03: (€ 1.173.000) (Gas Interconnector MKD – GR, Preparation of CBA, FS, ESIA, Basic Design and Tender Dossier: CBA, FS, ESIA, BD and TD) Lead IFI is EIB. Kick-off meeting held on 29 May 2019. Final inception report submitted on 05 August 2019. ESIA screening report submitted on 16 July 2019. ESIA Scoping Report and SEP submitted on 15 January 2020. Although the Environmental Declaration has been received, EBRD have requested an update to allow for EBRD funding. Discussions on necessary additional works related to the ESIA are ongoing.

CONNECTA- ENE-INFR-SRB- TP-03: (€ 153.000) (Gas Interconnector SRB – BG, Tender Process including Tender Dossier; TP) Lead IFI is N/A. Application accepted in general terms on 6 May 2019. RFA 48 requesting start of sub- project approved on 17 July 2019

CONNECTA- ENE-INFR-BIH- PD-TD-02: (€ 1.511.000) (Gas Interconnector BiH – HR (Zagvozd – Posusje – Novi Travnik) with a main branch to Mostar; PD and TD) Application approved on 3 July 2019. RFA 47 requesting start of sub- project approved on 17 July 2019

##### Completed

CONNECTA-ENE- INFR-BIH-CBA-01: (€ 141.000) (Financial viability analysis and Cost Benefit Analysis for the interconnection Pipeline BiH – HR (Zagvozd – Posusie – Novi Travnik with a branch to Mostar)) Lead IFI is EBRD. Final Inception Report submitted on 6 October 2017. Final Report submitted 14 May 2018 Acceptance email from BH-Gas on 17.05.2018

CONNECTA-ENE- EE-RS-01: (€ 7.000) (Building Stock Study for the Public Sector in the Western Balkans; Scoping report) Lead IFI is KfW. Final Scoping report submitted on 8 May 2019. On 11 June 2019 DG NEAR concluded that there is no need for CONNECTA to embark on a second phase. Acceptance emails from several stakeholders during April 2019

The Mott MacDonald led consortium is providing the following services:

1. Preparation of project documentation for priority connectivity infrastructure projects:

- pre-feasibility studies,
- feasibility studies,
- preliminary designs and detailed designs

- cost benefit analysis,
  - environmental impact assessment,
  - tendering documents and supporting in tendering process
  - capacity building;
2. Implementation of technical standards and accompanying reform measures:
- (i) opening of the transport market;
- (ii) establishment of competitive, reliable and safe transport system (improvement of road safety, trade and transport facilitation, Intelligent Transport System (ITS) deployment on the Core Network, establishment of functioning maintenance system ensuring no section in poor/very poor condition by 2020);
- (iii) increasing the effectiveness of Border Crossing Procedures (effective Border Crossing Agreements, implementation of Integrated Border Management (IBM) strategy).

Until March 2018 MM provided following services for the preparation of Road Safety Inspection and Audit plan:

1. Prepared a three-year RSI plan for the core and comprehensive network and pilot RSIs on high accident sections:
- Map existing core and comprehensive road network in Western Balkans.
  - Compile a list of all Road Safety Inspections that have been implemented during the last 3 years (2014-2016), including those that followed the EuroRAP/iRAP inspection methodology
  - Undertake road safety inspections using SEETO's road safety inspection guidelines on 10% (about 550 km) of the core and comprehensive road network that is considered highest risk portion of the network based on fatal crash data.
  - Prepared three-year RSI plan for the core and comprehensive network and pilot RSIs on high accident sections:
2. Carried road safety audits as per the Directive 2008/96/EC on all projects on the core and comprehensive network:
- Compile a list of all rehabilitation and new construction road projects on the core and comprehensive road network that are currently under preparation;
  - Prepare a plan to undertake road safety audits, at various stages as per the Directive 2008/96/EC and SEETO's Road Safety Audit Handbook
  - Undertake Road Safety Audits for a sample of 6 projects
3. Established a national system for continuous road crash data collection (by 2018).

**COWI GROUP**

COWI A/S

PM

JME

**COUNTRY**

Serbia, Montenegro,  
Bosnia and Herzegovina,  
Macedonia, Albania,  
Kosovo

**PREPARATION OF ROAD SAFETY INSPECTION AND AUDIT PLANS FOR CORE/COMPREHENSIVE ROAD NETWORK IN WESTERN BALKANS (WB6) AND PILOTS**

No investment value. Technical assistance to connectivity in the Western Balkan countries within transport and energy. TA for both connectivity policy measures and infrastructure investment preparation and project implementation.

Provide direct support to the Western Balkans' ministries responsible for transport and infrastructure and to road authorities for programming infrastructure maintenance and to



**PERIOD**  
2017 - 2018  
**CUSTOMER**  
European Commission -  
DG NEAR  
**RECIPIENT**  
SEETO  
**TOTAL FEE**  
USD 600.000

assist the SEETO Secretariat in monitoring the implementation of relevant transport measures in the framework of Connectivity Agenda.

The specific activities of the sub-TA include:

- > Prepare three-year Road Safety Inspection plan for the core and comprehensive network and pilot Road Safety Inspections on high accident sections
- > Help to ensure that road safety audits are carried out according to the Directive 2008/96/EC on all projects on the core and comprehensive network and undertake six sample road safety audits
- > Support RPs in establishment of a national system for continuous road crash data collection (by 2018).

**COWI GROUP**  
COWI Belgium  
**PM**  
PAMK  
**COUNTRY**  
Ukraine  
**PERIOD**  
2018 - 2019  
**CUSTOMER**  
European Investment  
Bank  
**RECIPIENT**  
  
**TOTAL FEE**  
EUR 292.000

## REGIONAL PASSENGER SERVICES MODERNIZATION PROJECT PHASE 1 – TECHNO-ECONOMIC FEASIBILITY

No investment value.

- Develop affordable and feasible investment projects to improve significantly the level of service of the regional and suburban passenger rail system in the Pilot Regions through preparation of two feasibility studies; and
- Demonstrate the financial flows necessary to sustain the proposed investment projects through preparation of a suitable financial model, to be applied separately in each of the two Pilot Regions.

-Inception

Discuss and agree the methodology for conducting the assignment with the Contracting Authority in consultation with the Promoter, Pilot Regions and other relevant stakeholders, including the definition of at least three or more future scenarios (established, inter alia, by virtue of economic viability and financial affordability) covering

-Perform demand forecast.

The Consultant carried out a detailed analysis of the demand/mobility requirements for regional and suburban railway systems in the two Pilot Regions

-Perform Supply Forecast.

The Consultant carried out a detailed supply assessment and forecast requirement for the regional railway systems in the two Pilot Regions,

-Recommend associated infrastructure improvements.

The Consultant recommended an appropriate plan to improve the related station

building/environs, platform, stabling and maintenance depot and fare collection infrastructure required to deliver the regional/suburban services in the two Pilot Regions,

-Undertake a quantified Cost Benefit Analysis.

The Consultant prepared a quantified cost-benefit analysis (CBA) in line with suitable standards to be agreed with the Contracting Authority - e.g. DG Regio CBA Guide (2014). The CBA was applied to the various scenarios agreed in advance.

-Preparation of Feasibility Study

The Consultant consolidated the analysis and results of performing tasks 3-5 into two feasibility study reports, one for each region, that makes a clear investment proposal for implementation over a 3-5 year horizon.

-Develop a Financial Model.

The Consultant prepared an excel based financial model for application in each of the two Pilot Regions that is consistent with the Spreadsheet Standards Review Board best practice or other suitable standard agreed with the Contracting Authority.

-Prepare the Procurement Documentation.

The Consultant prepared the necessary procurement documentation for the agreed rolling stock investment plan.

**COWI GROUP**

COWI A/S

**PM**

JME

**COUNTRY**

Montenegro

**PERIOD**

2018 - 2019

**CUSTOMER**

IMC Worldwide

**RECIPIENT**

Transport Authority

**TOTAL FEE**

EUR 470.000

## ROAD SAFETY ASSESSMENT OF MONTENEGRIAN ROADS

No investment value.

The purpose is to undertake detailed road safety assessment in line with Directives 2008/96 EC and 2004/54 EC. The project will prepare Risk Maps and do Road Star Rating in accordance with iRAP methodology. On-job training of the licensed institution to audit road safety aspects implemented and plan for tracking of road safety performance. Prepare a Safer Road Investment Plan with prioritisation of urgent actions.

Responsible for Training of Road Safety Staff through classroom and on-the -job training. Training in Road Safety Policy (RSI, RSA), Site solutions, route treatments and safe system approach, Road Safety Workshop, Prepare training material and manuals for classroom and on the job training.

Carried out road safety inspections on selected locations.

Support on Risk Mapping of Road Sections based on accident frequencies and traffic data and road surveys.

**COWI GROUP**

COWI A/S

**PM**

JME

**COUNTRY**

Armenia

**PERIOD**

2019 - 2022

**CUSTOMER**

European Investment Bank (EIB)

**RECIPIENT**

MOTCIT

**TOTAL FEE**

EUR 530.010

## SUPPORT TO THE ARMENIAN ROAD SAFETY IMPROVEMENT PROJECT

No investment value.

Technical Assistance to ensure proper quality of black spots improvement works and supporting capacity development for relevant authorities and stakeholders with the aim of reaching international standards regarding road safety, thus contributing to the following: i) improving black spots on several roads of intense traffic; ii) updating Armenian road design standards to reflect the EU and international best practice on road safety and increased focus on vulnerable road users; iii) developing Road Safety Audit capacity in Armenia and better integration of Road Safety Audit in all EU supported road projects in line with the EU Directive 2008/96/EC on Road Infrastructure Safety Management (EU Directive 2008/96/EC); and iv) stronger capacity and processes within the MOTCIT (including its subsidiary entities Armenian Roads Directorate and Transport PIO) and Road Police to manage planning, design and operation of safer roads.

Road safety auditing of design, Road Safety capacity Building including training in road safety and road safety auditing, Development of local capacity to undertake road safety audits, Review road design standards.

**COWI GROUP**

COWI A/S

**PM**

OLEK

**COUNTRY**

Denmark

**PERIOD**

2018 - 2019

## INCREASED GREEN TRANSPORT DEMAND FOR PUBLIC PROCUREMENT

No investment value. The project consisted of two main parts. 1) Analysis of Copenhagen Municipality options for increasing the demand for suppliers' use of green vehicles 2) An analysis of the potential in developing a municipal city-logistic centre.

Part 1)

The analysis considered the suppliers' vehicles and current as well as future possibilities for changes to green vehicles.

**CUSTOMER**  
Municipality of  
Copenhagen

**RECIPIENT**

**TOTAL FEE**  
DKK 1.268.814

The municipality procurs for 13 billion DKK annually using more than 18,000 suppliers. A large part of the procurement is made through the central procurement system and framework contracts including services and physical deliveries.

As a basis for the analysis COWI considered:

- Which type of procurement is made and what is the magnitude in DKK and what is the expected amount of transport related to the procurement.
- What is the situation in different supplier groups? - What type of vehicles are used, how much are they used, what is the age and fuel types
- What is the market situation regarding vehicle technologies. Which types of vehicles can be substituted by green vehicles (electricity, gas and hydrogen) and how do they meet suppliers' need in the short and long run
- How will the price on deliveries change, and how will competition be influenced within different procurement categories

Using these inputs COWI outlined a set of criteria related to suppliers' transport solutions considering which areas

Part 2)

COWI analysed the potential for setting up a municipal city-logistic centre. The aim of the centre is to consolidate deliveries to the municipal institutions in order to reduce transport. As basis for the for the analysis an account of the deliveries was made using the values contained in the municipal procurement system. This was translated to a number of daily and annual deliveries and an assessment of which of these would be relevant for the logistic centre. Experiences from other countries and other centres in Denmark was included to assess the potential CO2 impacts and the costs related to establish a center and which costs savings could be expected. A workshop including procurement responsible from the municipality, key suppliers and transport providers was held in order to outline possibilities and determine which of three main approaches to recommend. Finally recommendations to the process needed to prepare and establish a centre was given.

Data analyses of municipal procurement

Assessment of green transport potential in procurement

Technological transport solutions

Analysis of city-logistic potential

Workshops

Stakeholder interviews

Impact assessment

Recommendations for green public procurement

Recommendations for analysis process for a municipal city-logistic centre

**COWI GROUP**  
COWI A/S  
**PM**  
KSP  
KSP

**COUNTRY**  
Uganda

**PERIOD**  
2018 - 2022

**TECHNICAL ASSISTANCE TO THE MINISTRY OF WORKS AND TRANSPORT, THE UGANDA NATIONAL ROADS AUTHORITY AND THE UGANDA ROAD FUND – LOT 1 (EUROPEAID/138563/IH/SER/UG - UGANDA-KAM**

No investment value. The consultancy services were to the MoWT and its sector agencies and covered a broad range of activities.

Phase 1 (implemented in 2018) led to preparation of a comprehensive mid-term review of the National Transport Master Plan including the Master Plan for the Greater Kampala

**CUSTOMER**  
National Authorising  
Officer, Ministry of  
Transport Uganda

**RECIPIENT**  
National Authorising  
Officer

**TOTAL FEE**  
EUR 3.997.000

Metropolitan Area (2008-2023). In addition, the Consultant built capacity among the nominated staff from the relevant departments in Monitoring and Evaluation procedures.

Phase 2 (implemented 2019 – 2022, extended period because of covid 19 situation) delivered three results.

Result 1: Preparation of an intermodal/multimodal transport strategy for Uganda (2021 – 2040), embodied a detailed collection of existing secondary data and primary data including nation wide traffic surveys for all modes of transport; a full situation analysis of the transport sector in Uganda, preparation of a transport planning model as the main tool to assess future scenarios; a detailed multicriteria methodology and procedures for assessing alternative transport scenarios, programmes and projects, taking as references Vision 2040, National Development Plan and transport policies in determining the transport sector's objectives. The result was a National Integrated Transport Master Plan 2021-2040 (NITMP), with detailed strategic implementation plan and modal investment programmes and action plans and a monitoring and evaluation framework for the NTMP. It also also included an abridged version of the NITMP to facilitate its dissemination, and other documents required to elicit the government approval of the NTMP.

Result 2: Setting up of a functional transport planning office at the MoWT: The main goal was to ensure that the MoWT will have the transport planning capabilities and tools to sustain and keep the relevance of the NITMP through time. To attain this goal, the TA used a variety of instruments, including on the job training, seminars and workshops, specific project appraisals, and partnership with Makerere University, in addition to assisting the MoWT in the actual setting up the transport planning office. To ensure that the result is being met, the TA incorporated monitoring and evaluation procedures for the training and capacity building.

Result 3: Mainstreaming Strategic Environmental and Social Assessment (SESA) in MoWT's planning systems, comprising preparing the SESA methodology and procedures, conducting SESA for the NTMP and associated programmes and projects and incorporating the SEA into MoWT's planning systems.

COWI's share of the contract is approximately 59%.

COWI provided overall project management (Project Director, Deputy Director, technical backstopping, project administration) on behalf of the COWI-WYG-Gauff Joint Venture that supplied four long term key experts based in Uganda in each project phase covering functions such as:

Team Leader

Transport Planner

Transport Engineer/Highway Specialist (phase 1)

Transport Modeller (phase 2)

Environmental and Social Safeguard Specialist

In addition, COWI supplied a national Deputy Team Leader as well as national (approx 20) and international (5) short term experts in a larger number of transport fields covering all modes of transport as well as economic and environmental experts with a strong focus on capacity building

**COWI GROUP**  
COWI A/S  
**PM**  
LTAO

**CEBU-CORDOVA LINK EXPRESSWAY**

Investment value - 800.000.000 EUR.

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

**COUNTRY**

Philippines

**PERIOD**

2016 - 2021

**CUSTOMER**Metro Pacific Tollways  
Development Corporation**RECIPIENT**Metro Pacific Tollways  
Development Corporation**TOTAL FEE**

EUR 4.500.000

The Cebu-Cordova Link Expressway will connect the main Cebu City Industrial Area to Mactan Island south of the existing two bridges. The link will have a length of 8.25 kms and two by two traffic lanes and pedestrians walks either side. The main aim is to provide the highest standard toll expressway in regard to safety, comfort & speed.

The main bridge is a cable stayed bridge with a 400m main span crossing the main navigation channel to the port of Cebu. On the Cebu side connections are made to the existing Coastal Road and with ramps into the city centre. On Mactan island the expressway will run on embankments to connect to the existing Mactan Circumferential road and a operation, maintenance and tolling facility will be established on this side of the crossing.

The main and approach cable supported spans are comprised of a prestressed concrete box girder, while the viaduct bridges features a concrete deck on pre-tensioned concrete NU girders. The hollow concrete piers are supported on a pile cap with large diameter bored piles.

The owner has procured the project using the Early Contractor Involvement process in order to benefit from the innovative approaches that can be offered by the contractors familiar with the conditions in the local and regional areas.

Technical Assistance & Owners Engineer Services for procurement and construction.

the services comprises:

- planning and supervision of supplementary site investigations
- concept design of alternative main bridge crossings
- concept designs of alternative alignments for ramps on the Cebu side.
- preparation of pre-qualification documents
- support of the owner in the prequalification process at contractor presentations
- evaluation of applicants
- recommendation of prequalification candidates
- preparation of tender documents
- preparation of early contractor involvement processes and documents
- owner support and coordination with contractors
- evaluation of bids
- contract preparation support
- construction management
- design follow-up during construction
- contract management
- technical assistance during construction
- 

**COWI GROUP**

COWI A/S

**PM**

CHJ

**COUNTRY**Albania, Bosnia and  
Herzegovina, North**WESTERN BALKANS INVESTMENT FRAMEWORK INFRASTRUCTURE  
PROJECT FACILITY TECHNICAL ASSISTANCE 5 (IPF5)**

Investment value - 250.000.000 EUR. Total contract amount: 25,568,600 EUR

The purpose of this TA operation is to support the preparation and implementation of priority investment projects in the environment, energy, social and transport sectors in the



Macedonia, Kosovo,  
Montenegro and Serbia

**PERIOD**

2016 - 2021

**CUSTOMER**

EIB

**RECIPIENT**

**TOTAL FEE**

EUR 25.568.600

Western Balkans, viz. Albania, Bosnia and Herzegovina, former Yugoslav Republic of Macedonia, Kosovo\*), Montenegro and Serbia.

The contract value is more than 25 million EUR. By the end of the project 15 TA projects will have been implemented under this contract as well as preparation of four set of terms of reference and two ad-hoc advisory services to DG NEAR/ENER and DG NEAR/TREN respectively. At this stage (March 2020), the following projects have been assigned to IPF5:

Energy - 1 subproject with TA value 296,124 EUR

WBEC-REG-ENE-02: (296,124 EUR) Regional study on energy efficiency and renewable energy potential in the Western Balkans. Lead IFI: EU. Review of current energy use by country; Forecast of renewable energy share by 2030; Forecast of energy efficiency improvements.

Transport - 5 subprojects with TA value 10,788,063 EUR and total investment costs 5,666,000,000 EUR

WB14-MNE-TRA-01: (2,776,365 EUR) Rehabilitation of Bar-Vrbnica railway (bridges), Montenegro. 3 million EUR. EIB is lead IFI. Rehabilitation of 90 reinforced concrete bridges and viaducts. Main design; procurement plan; tender documents; support to the PMU and PMU capacity building.

WB14-SER-TRA-01: (1,175,020 EUR) Rehabilitation of railway line Stalac-Kraljevo-Rudnica, Serbia 1.400 million EUR. EIB is lead IFI. Pre-feasibility study. General (concept) design for 149 km railway line. Traffic forecasts and market analysis; topographical and geodetic surveys; geotechnical investigations; preliminary social and environmental impact assessment; preliminary cost-benefit analysis; railway track design; hydraulic design; structures design; design of signals and telecommunications systems; track electrification design; pre-feasibility study report.

WB14-REG-TRA-01: (3,010,790 EUR) Feasibility Study of Adriatic - Ionian Highway, Albania and Montenegro. 3.500 million EUR. EBRD is lead IFI. Approximately 450 kilometres high-class road. Adriatic-Ionian corridor traffic study; options analysis; a preliminary environmental and social impact assessment; conceptual design; financial and economic analysis; environmental and social action plan; land acquisitions and resettlements framework; PPP and financing options.

WB16-ALB-TRA-02: (1,498,877 EUR) Detailed Design for Tirana By-pass; Albania; 1.5 MEUR; EBRD is lead IFI. Detailed design; Geotechnical surveys; Topographical Surveys; Environmental and Social Impact Assessment (up-date); Resettlement Action Plan;

WB17-MNE-TRA-03: (2,260,751 EUR) Bar-Boljare Highway - Podgorica By-pass; Montenegro; 2.390 MEUR; EBRD is lead IFI; Preliminary Design; Options Analysis; Environmental and Social Impact Analysis;

WBEC-REG-TRA-02: (57,800 EUR) Updating of Connectivity Networks Gap Analysis study. Lead IFI: EU. Update 91 project fiches for identified connectivity projects across Western Balkans giving latest implementation status; Update the GIS on which these fiches are stored and can be viewed; Provide updated Connectivity Networks Gap Analysis study which summarizes project maturity and the financing needs for all projects;

WB15-SER-TRA-01: (8,460 EUR) Completion Plocnik-Merdare E80 Highway DD7 ESIA. Lead IFI: EBRD. Schematic design necessary for issuing of location conditions; finalisation of highway preliminary design;

Environment - 7 subprojects with TA value 8,413,817 EUR and total investment costs 440,000,000 EUR

WB14-KOS-ENV-01 (1,495,590 EUR) Feasibility study for construction of the Lepenc canal (and the two related reservoirs), Kosovo. 1.5 million EUR feasibility study for the construction of a canal and two irrigation dams. Hydrologic analysis; assessment of water demand; topographical surveys; environmental and social impact assessment; cost benefit analysis; draft feasibility study report.

WB12-BIH-ENV-04C1 (3,372,449 EUR ) and WB19-BIH-ENV-01: (1,784,724 EUR) Preparation of flood hazard maps and flood risk maps in Bosnia and Herzegovina, Bosnia and Herzegovina Phase I and II. 5.165 million EUR EIB is lead IFI. Preliminary flood risk assessment as per EU Floods Directive; methodology for flood hazard and flood risk mapping; LIDAR and field surveying of selected areas/river stretches; building of hydraulic models (1D and 2D using HEC RAS); hydraulic analysis; preparation of flood hazard and flood risk maps for Bosnia and Herzegovina as per EU Floods Directive.

WB10-MKD-ENV-01: (399,900 EUR) Water and sewerage programme, Republic of Macedonia. 0.400 million EUR. KfW is lead IFI. Detailed technical designs for water and sewage investments; tender documents; support to PMU in tendering and contracting; supervision of works in Kavardaci and Radovis. FIDIC Red Book. Estimated value of works is 0.650 million EUR in Kavardaci and 0.950 million EUR in Radovis. Review of technical designs for water and sewage investments; tender documents; support to PMU in tendering and contracting for Gostivar. Estimated value of works is 6.5 million EUR in Gostivar.

WB15-MNE-ENV-01 : (414,925 EUR) Montenegro water and wastewater program, Montenegro; 0.450 MEUR; EIB is the lead IFI. 5 sub-projects: Feasibility Study and Tender Dossier in Rozaje and Kolasin FIDIC Yellow Book (WWTP) and FIDIC Red Book (Sewer); Tender dossier in Mojkovac (FIDIC Red Book) Procurement Strategy and Conceptual Design Plav and Gusinje; Tender Dossier Pljevlja FIDIC Red Book (network) and FIDIC Yellow Book (Water Treatment Plant)

WB18-BIH-ENV-01: (1,500,000 EUR)WATSAN programme in Republika Srpska; BIH; 1.500 MEUR. EIB is lead IFI; Project Appraisals, Feasibility Studies and Tender Dossiers \*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Social - 5 subprojects with TA value 2,385,799 EUR and total investment costs 108,000,000 EUR

WB9-SER-SOC-01: (698,518 EUR) Supervision of Belgrade judiciary facilities rehabilitation (Palace of Justice), Serbia. 0.540 million EUR supervision of works. EIB is lead IFI. Supervision of works on existing justice building. Building size 29,000 m2 net area. Works contract approximately 17 million EUR. All responsibilities of the "Engineer" as per FIDIC Red book contract.

WB14-BiH-01C2: (334,859 EUR) Support to the construction of a maximum-security state prison - Component 2: Development and installation of a MIS software. Lead IFI: CEB. Review of client requirements; Development of Management Information System for the State Prison; Training and Maintenance.

WB14-BiH-SOC-01C3: (132,862 EUR). Support to the construction of a maximum-security state prison – Component 3: Capacity Building. Lead IFI: CEB. Development of training modules and materials; Forming groups of trainers using mainly existing prison officers; Training of approx. 120 trainees (mainly prison guards).

WB17-MKD-SOC-02: (1,091,291 EUR) Reconstruction of penitentiary institutions. Lead IFI: CEB. Support to the PIU; Build institutional capacity in terms of prisoner rehabilitation programmes and organisational change management; Undertake

the Main design of the Closed Male section and Female section of the Pre-Trial and Pre-Sentence Units.

□ WB09-HR-SOC-02C1: (128,269 EUR) Zadar University New Campus and Resource Learning Centre; 0.3 MEUR; EIB is lead IFI. Support to tendering and procurement.

The consortium provided technical backstopping, financial management and consultancy input within the fields specified below and in the sectors of climate change, energy, environment, water and waste water, transport and social infrastructure.

The Consortium has been providing expert technical assistance services for the execution of projects such as:

- > Concept, detailed and main design
- > Feasibility studies
- > Economic and financial appraisal
- > Cost benefit analysis
- > Environmental and social impact assessment
- > Strategic environmental assessment
- > Capacity building
- > Tender documents
- > Supervision of works
- > Technical and management assistance
- > Assistance to tendering process

**COWI GROUP**

COWI A/S

PM

KWHL

**COUNTRY**

Tanzania

**PERIOD**

2017 - 2020

**CUSTOMER**

Yapi Merkezi

**RECIPIENT**

**TOTAL FEE**

EUR 16.000.000

## DAR ES SALAAM-MOROGORO RAILWAY PROJECT

Investment value - 1.000.000.000 EUR.

Detailed design services for the standard gauge railway (Sgr) line from Dar Es Salaam to Morogoro (205 km main line and 95 km of sidings / passing loops) on an alignment parallel to the existing meter gauge line. The alignment for the Standard Gauge Railway line between Dar es Salaam and Morogoro is designed to deliver safe operation, minimized maintenance and give high passenger comfort. The line is linking Dar es Salaam with Morogoro through Pugu, Soga, Ruvu and Ngerengere. Rolling Stock Workshops and Marshalling Yard (the Depot) are located between Ruvu and Ngerengere – close to the Dry Port that is also under construction. In the centre of Dar Es Salaam the new railway is carried by 2.5 km of viaduct which is supported by 100 piers. Line speed is 160 km/h. The contract is a Fidic Design and Build contract (yellow book) and the contractor is Yapi Merkezi.

COWIs services:

- > Topographical surveys and mapping
- > Climatic, hydrological and hydraulic investigations
- > Geotechnical, soils and materials investigations
- > Operational plan studies
- > Alignment detailed design
- > Embankment, geotechnical and earthworks detailed design
- > Viaduct and bridge detailed design

- > Track works detailed design
- > Roads detailed design
- > Marshalling yard and depot detailed design

**COWI GROUP**

COWI A/S

**PM**

ECH

**COUNTRY**

Tanzania, United Republic of

**PERIOD**

2015 - 2016

**CUSTOMER**

Reli Assets Holding Company Ltd. (RAHCO)

**RECIPIENT**

Reli Assets Holding Company Ltd. (RAHCO)

**TOTAL FEE**

EUR 2.800.000

**KIGOMA - TABORA RAILWAY UPGRADE**

No investment value. The 620 km railway project traverses the western region of Kigoma - Tabora. The proposed railway section to be upgraded starts at Kigoma town and traverses through small towns, farmlands and other perennial and non-perennial crops and several mining areas. Moreover, the branch off to Mpanda is included in this project. The overall objective of this project is to promote sustainable mobility along the corridor, through upgrading of the existing railway line to the latest American Railway Engineering and Maintenance-of-Way Association (AREMA) standard together with the upgrade from Dar es Salaam to Tabora. Such upgrading and construction shall lead to:

- Unlocking the West of Tanzania
- Increase the capacity of the railway line and train speeds
- Reduce travel time and cost for passengers and goods
- Increase transport safety and protection of the environment, and
- Allow the interoperability with new railway line by modernizing standards.

The new line will have standard gauge (1435 mm) and 25 tons axle load (suitable for cargo trains). For this and other reasons, the existing line shall be completely replaced with new line including alignment within existing corridor, embankment, permanent way, structures and drainage systems.

COWI staff has been responsible for overall project management, rail and bridge technical issues, geotechnical issues, hydrology, hydraulics and contractual matters.

The present project comprises:

- Aerial mapping of project area
- Topographical ground survey
- Geotechnical survey
- Hydrological survey
- Environmental and social Impact assessment
- Economic and financial feasibility study
- Detailed design
- Tender documents

**COWI GROUP**

COWI A/S

**PM**

JME

**COUNTRY**

Ukraine

**PERIOD**

2012 - 2015

**ROAD SAFETY AUDIT EUROPEAN ROADS II UKRAINE**

No investment value. The assignment cover a road safety audit of available designs on 171 km of road rehabilitation projects ( M-01, M-05 and N-01), a review of road safety audits carried out for 172 km of road rehabilitation projects (M06 and M07) and transfer of knowledge. The objective is to assess the projects to provide recommendations to improve road safety in the rehabilitation projects.

The objective of the project was to assess the road projects with regard to road safety and to provide recommendations to improve road safety of the rehabilitation projects. This

**CUSTOMER**  
European Investment  
Bank (EIB)

**RECIPIENT**

**TOTAL FEE**  
DKK 377.324

included an assessment whether the road safety audit system in Ukraine was in accordance with the EU road safety directive, carrying out road safety audits of available design, carry out road safety inspection of improved roads, provide second opinion on road safety allegations made by NGOs and review design standards used.

- > Review design standards used with regard to road safety
- > Review available accident data
- > Verify compliance with the principles of EU RSA Directive, applicable Ukrainian standards and laws and state-of-the-art standards  
on Road Safety
- > Review of road safety audits carried out for the road rehabilitation projects under construction (M06 and M07) to assess whether they are carried out according to EU Directive on road safety and whether the recommendations of such road safety audits have either been included in the final designs or, where not included, indicate the justification for such exclusion and the acceptability of the approach followed
- > Brief road safety inspection (M06 and M07) to identify safety problems on the roads and provide recommendations
- > Road safety audit of roads (M01, M05 H01 and M06 Zhitomir bypass) being designed to identify safety problems in the design and provide recommendations
- > Assess projects to provide recommendations to improve road safety for the rehabilitation projects
- > Transfer of knowledge through on the job training of engineer nominated by UKRAVTODOR.
- > Assessment of allegations by NGOs on road safety issues as well as replies from road authorities
- > Attend and present on one-day meeting/training workshop in Kiev to present the final reports
- > Provide responses to UKRAVTODORS replies on road safety measures.

**COWI GROUP**  
COWI A/S

**PM**  
MOSF  
KEC  
NWB  
NWB

**COUNTRY**  
Denmark

**PERIOD**  
2010 - 2016

**CUSTOMER**  
Aarhus Letbane I/S

**RECIPIENT**  
Aarhus Letbane I/S

## AARHUS LIGHT RAIL

No investment value.

Based on a comparison of various means of transport such as metro, trams and busses carried out by COWI, it has been decided to establish a light rail system in Aarhus. For the chosen light rail solution, several technical alternatives have been analysed as well as the technical, financial and environmental consequences. At the same time, neighbouring municipalities have started to take an interest in light rail as a means of transport to and from Aarhus.

The project now comprises: Stage 1 - Construction of light rail in the Aarhus area including the establishment of shared operation between the two suburban railways and a number of extension stages, which in the long run will connect East Jutland.

The light rail will include two existing local railways (95 km), one running north of the city to the seaport town of Grenaa and the other running south of the city to the town of



TOTAL FEE  
DKK 180.000.000

Odder, as well as construction of a new light rail line (12 km) running through the most densely populated part of Aarhus city.

The project includes all civil engineering works and technical components necessary for the construction of light rail and adjustment of the existing railway lines to light rail traffic. The project includes both project management and technical consultancy services covering all associated project phases and disciplines.

COWI has provided project management consultancy services and is providing technical consultancy services for the overall light rail system in Aarhus. The project management consultancy services comprised overall management of the entire project and sub-projects in relation to organization, resources, quality, economy and time.

COWI has also provided process consultancy services, coordination of all consultants, contractors and suppliers, stakeholder management, including authority coordination and approvals. In addition, in cooperation with the client COWI has developed the tender strategy and is assisting with tendering and contracting. Finally, COWI was responsible for phase-by-phase review, sparring, control and approval of project documents.

As technical advisor, COWI undertook tasks associated with the execution of preliminary analyses and investigations, traffic planning and Environmental Impact Assessment (EIA) report. In connection with the EIA report, COWI has prepared the technical project for the most complicated section between Aarhus H and Nørreport station.

COWI has carried out preliminary surveys including topographical surveys, geotechnical investigations, geodetic surveys and examinations of contaminated soil.

Moreover, COWI prepared conceptual and preliminary design for alignment and all civil engineering works including rail infrastructure integrated in roads and segregated from roads, new construction as well as rehabilitation and adjustment of the existing infrastructure covering roads, bridges, overpasses and underpasses, tunnel lighting, platforms and stations etc.

COWI is currently finalizing detailed design for several civil works contracts. For several other civil works contracts COWI has finalized detailed design, tender documents and tendering and contracting process.

COWI carried out conceptual and preliminary design and is currently finalizing detailed design and tender documents for technical components such as tracks, signalling system, ATC and ATC train stop system, telecommunications/radio, high-voltage systems etc. in connection with the adjustment of existing railway lines to light rail traffic.

In addition, COWI has prepared tender strategy and provides tendering and contracting assistance to the client including preparation of information documents and requirements for briefing applicants seeking prequalification for contracts, assistance to the client regarding questions from prequalification applicants, assistance to the client in assessing prequalification applicants, assistance regarding questions from tenderers, assistance in assessing tenders, assistance in contract negotiations and preparation of documents for contracts.

Finally, COWI is responsible for handling of land acquisition (expropriations) and relocation of utilities and prepares plans for traffic regulation. Moreover COWI carries out risk and safety management, procurement/tender strategy, tendering and contracting, and supervision of works.

The project also includes design, construction and operation of light rail transport systems. The tasks include preparation of basic design for CMC (Control and Maintenance Centre) including depot/workshop and OCC (operation central centre), functional specifications for the transport systems, tender documents for design, build and maintain contract.

The functional and technical specifications for the transport systems and tender documents for design, build and maintain contract have been finalized. The transport system is now in the tendering phase.

- Project management services as described above (provided between 2005 and 2011)
- Conceptual, preliminary and detailed design for civil works
- Preparation of tender strategy
- Preparation of tender documents for civil works
- Interface management incl. interface management among transport system disciplines
- Risk and safety management
- Participation in preparation of tender documents for design, build and maintain contract of railway systems and rolling stock
- Tendering and contracting assistance to the client including:
  - Preparation of information documents and requirements for briefing applicants seeking prequalification for contracts,
  - Assistance to the client regarding questions from prequalification applicants
  - Assistance to the client in assessing prequalification applicants
  - Assistance regarding questions from tenderers
  - Assistance in assessing tenders
  - Assistance in contract negotiations and preparation of documents for contracts

**COWI GROUP**

COWI A/S

**PM**

CFCL

**COUNTRY**

Denmark

**PERIOD**

2015 - 2016

**CUSTOMER**

Ring 3 Letbane I/S

**RECIPIENT**

Ring 3 Letbane I/S

**TOTAL FEE**

DKK 190.000.000

### RING 3 - LIGHT RAIL IN COPENHAGEN

Execution of 27 km light rail incl. 28 stations. Ring 3 light rail passes 8 municipalities, both on and off established roads and approximately 60 junctions. The work requires more than 60 new or modified structures including bridges, culverts and retaining walls. The roads contract includes design and construction of civil works for the light rail alignment and the associated roadworks. The project includes the design of lines and road, drainage, road lighting, traffic and route signals, superstructures, soils and land management as well as demolitions. The work includes the further handling of interfaces, collaboration with contractors and utilities. The contract includes all temporary and permanent works, incl. traffic management.

Basic design

Detailed design for 6 crossings on existing railway

Possible supplementary contracts: Follow-up and supervision.

**COWI GROUP**

COWI A/S

**PM**

OWJ

**COUNTRY**

Denmark

**PERIOD**

2014 - 2018

**CUSTOMER**

Aalborg Kommune

### AALBORG LRT/BRT

COWI has assisted Aalborg municipality from the initial planning to the design phase of a high class PT corridor. The corridor is 12 km long with 22 stops connecting the western and the eastern part of the city where a new University Hospital will open in 2022. In certain streets in the city centre PT will share the road space with car traffic. Different measures to restrain car traffic is implemented. Solutions to ensure level-free entry to PT vehicles and minimize conflicts between passengers and cyclists at stops are investigated. For an LRT different options for locating a control and maintenance centre have been examined.

**RECIPIENT**

**TOTAL FEE**

DKK 8.000.000

The assignment includes preparation of a clearing report - including an update of construction cost estimates according to NAB (Danish national budgetting method) and cost benefit analyses - and an Environmental impact assessment according to EU and national legislation.

The technical design is reviewed and updated to clarify and minimize impacts on the urban areas and green habitats along the line. Expected impacts (e.g. on traffic noise, and land use) are evaluated and described.

COWI services include:

- Project management
- Preliminary design
- Urban integration
- Preliminary operation plan
- Construction cost calculations
- Operation cost calculations
- Assessment of impacts on areas and rights
- EIA
- Detailed design BRT
- Socio-economic analysis
- Organizational and financial analysis
- Preparation of risk assessment
- Adaptation of bus networks
- Traffic modelling
- District plan for the entire high-class corridor

**COWI GROUP**

COWI A/S

**PM**

OLEK

**COUNTRY**

Denmark

**PERIOD**

2013 - 2014

**CUSTOMER**

The Capital Region of Denmark

**RECIPIENT**

**ELECTRIC VEHICLE ASSISTANCE TEAM**

No investment value. The purpose of the project was to support municipalities and hospitals in the capital region in switching to electric transportation. The Greater Copenhagen Area and the municipalities of the region have agreed to aim at shifting up to 25% of the public vehicle fleet to electric transportation. As an initiative to fulfil this target the Greater Copenhagen Area hired COWI as an assistance team. COWI assisted the municipalities and hospitals in finding the information needed to support the decision process in the municipalities.

The specific activities undertaken in each municipality were an initial mapping of the existing vehicle fleet and the use of this fleet. This mapping was used to analyse how many of the vehicles could be changed to electric vehicles seen from a technical and economic point of view. Based on the analyses COWI gave recommendations on which

**TOTAL FEE**  
DKK 4.000.000

vehicles could be shifted and what the economic and CO<sub>2</sub> emission consequences were. In addition, recommendations regarding the needed recharging infrastructure were given.

The entire process used for each municipality includes also two workshops to ensure a true anchoring of the transition process in the involved organisations.

- Project management
- Communication
- Analyses
- Economic assessment
- Recommendations

**COWI GROUP**  
COWI A/S  
**PM**  
CHJ

**WESTERN BALKANS INVESTMENT FRAMEWORK (WBIF),  
INFRASTRUCTURE PROJECT FACILITY, TECHNICAL ASSISTANCE 4 (IPF  
4), INFRASTRUCTURES: ENERGY, ENVIRONMENT, TRANSPORT AND  
SOCIAL**

**COUNTRY**  
Albania, Bosnia and  
Herzegovina, North  
Macedonia, Kosovo,  
Montenegro and Serbia

-Investment value 2,456,109,000 EUR.

**PERIOD**  
2014 - 2018

The Western Balkans Investment Framework (WBIF) was established in 2009 by the European Union (EU), the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD), the Council of Europe Development Bank (CEB), and Kreditanstalt für Wiederaufbau (KfW) and Bilateral Donors. The overall objective of the WBIF is to contribute to the stability, reform and EU accession process in the Western Balkans and enhance harmonisation and cooperation in investments to promote the socio-economic development of the Western Balkans.

**CUSTOMER**  
European Investment  
Bank (EIB)

**RECIPIENT**

Selected investment projects are supported by the Infrastructure Projects Facility – Technical Assistance Window (IPF TA) IPF 4 with COWI A/S as contract lead partner. The specific purpose of the IPF 4 operation is to support the preparation and implementation of priority infrastructure investment projects in the energy, environment, social and transport sectors in Albania, Bosnia and Herzegovina, Kosovo\*, Montenegro, North Macedonia, and Serbia. Each investment project is prepared in close cooperation with one of the WBIF investment partner's as lead IFI (EIB, EBRD, CEB, KfW, EU IPA Programme).

**TOTAL FEE**  
EUR 22.842.202

Energy - 4 subprojects with TA value €2,494,177 and total investment costs of €260,650,000:

- > WB5-REG-ENE-02, 400kV interconnection between Serbia-Montenegro-Bosnia, feasibility study, Regional.
- > WB10-MNE-ENE-01, Gas development master plan in Montenegro.
- > WB11-ALB-ENE-01, Gas master plan and project identification in Albania.
- > WB15-REG-ENE-03, Pre-feasibility study for Albania - Kosovo gas pipeline (ALKOGAP), regional.

Environment - 3 subprojects with TA value €2,486,916 and total investment costs of €116,300,000:

- > WBEC-REG-ENV-02 (WB FLOODS), Flood management activities in the Western Balkans: Gap analysis/needs assessment for the implementation of the EU Floods Directive in the Western Balkans.

> TA3-SER-ENV-01, Municipal water – Pre-feasibility study for Novi Sad wastewater treatment plant.

> WB12-BIH-ENV-04C2, Support to the PMU of the Flood Risk Management Project in the RS, Bosnia and Herzegovina.

Social - 4 subprojects with TA value €3,486,916 and total investment costs of €154,739,000:

> WB11-REG-SOC-01, Construction supervision of SEECEL, internal design and tender documents preparation, regional.

> WB11-SER-SOC-01, Supervision of works for the reconstruction of the judiciary building in Kataniceva Street, Serbia.

> WB12-MKD-SOC-01 Technical assistance for the prison implementation programme in North Macedonia.

> WB14-BIH-SOC-02 Banja Luka Medical Faculty, Detailed design and hospitals waste management plan in Bosnia.

Transport - 9 subprojects with TA value €14,414,347 and total investment costs of €1,924,420,000:

> WB10-MNE-TRA-01, Bar-Vrbnica railway line upgrade: Evaluation of the conditions of 95 concrete bridges, technical assistance to the project implementation unit (PIU) and main design of Podgorica Station.

> WB10-SER-TRA-02, Prefeasibility study and conceptual design for the construction of highway E-80 (Merdare to Doljevac), Serbia.

> WB11-KOS-TRA-02, Feasibility study, preliminary design with environmental and social impact assessment of the highway (SEETO Route 7) Merdare-Pristina, Kosovo.

> WB13-SER-TRA-01, Preliminary design and feasibility study with environmental impact assessment for the construction of highway E-80 (Merdare to Doljevac), Serbia.

> WB12-MNE-TRA-01, Detailed design and tender documents for the reconstruction of the road Scepan Polje-Pluzine, Montenegro.

> WB13-MNE-TRA-01, Bar-Vrbnica railway line upgrade: Inspection of tunnels, Montenegro.

> WB13-MKD-TRA-01, Construction of the railway joint border station in Tabanovce, North Macedonia.

> WB13-ALB-TRA-01, Feasibility study for the rehabilitation of the railway line Durres-Pogradec-Lin and a new rail line link to the border with North Macedonia, Albania.

> WB15-SER-TRA-01, Feasibility study and environmental impact assessment for the section Plocnik-Merdare for E-80 highway, Serbia.

\*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

As lead company COWI is delivering overall project management including a project director, technical backstopping, financial management and consultancy input within the fields specified below and in the sectors of energy, environment, transport and social infrastructure.

The COWI-IPF Consortium will provide expert technical assistance services for the execution of projects such as:

> Technical assistance/PMU support (TA)

> Pre-feasibility studies (PS)



- > Feasibility studies (FS)
- > Environmental and Social Impact Assessment (ESIA)
- > Preliminary and detailed design (PD, DD)
- > Support for the tendering process (TP)
- > Supervision of works (SoW)

and other activities in the field of infrastructure preparation and studies in the Beneficiaries countries.

**COWI GROUP**

COWI A/S

**PM**

MBRA

**COUNTRY**

Denmark

**PERIOD**

2013 - 2026

**CUSTOMER**

Rail Net Denmark

**RECIPIENT**

**TOTAL FEE**

DKK 366.000.000

**ELECTRIFICATION PROGRAMME - DENMARK**

Investment value -12.000.000.000 DKK. The Danish Government has decided to electrify four plus five optional sections of the Danish rail network, which account for almost half of the Danish rail network. As a result, Rail Net Denmark (owner of the rail infrastructure in Denmark) has initiated the Electrification Programme covering the chosen railway network.

Rail Net Denmark has appointed COWI in joint venture with SYSTRA to provide management and technical consulting services for the electrification of the first four sections, which cover more than 550 kilometres of rail, and the joint venture has an option for the remaining five scheduled sections, which cover 800 kilometres.

The electrification of the first four sections requires an investment budget in excess of DKK 4 billion.

The Electrification Programme includes:

- Installation of a catenary system (including masts, foundations and geotechnical surveys)
- Installation of the necessary infrastructure to secure the power supply from the power grid
- electrical shielding of technical installations, where necessary
- Other alterations to the surroundings of the railway (e.g., removal of trees).

The overall system definition is under preparation. The information documents and requirements for briefing applicants seeking pre-qualification have been finalised. Tender project and tender documents are under preparation.

The COWI/SYSTRA joint venture provides the following services:

- Management of the entire Electrification Programme
- Stakeholder management
- Functional requirements for catenary systems, power supply and remote control system
- Interface management
- Tender strategy
- Tender documents for design-and-build contract(s)
- Tendering and contracting including:
  - Preparation of information documents and requirements for briefing applicants seeking pre-qualification for contracts
  - Assistance to the client regarding questions from prequalification applicants
  - Assistance to the client in assessing pre-qualification applicants
  - Assistance regarding questions from tenderers

- Assistance in assessing tenders
- Assistance in contract negotiations
- Preparation of documents for contracts
- Updates of construction budget and time schedule
- Review of contractor's design
- Construction management
- Supervision of works
- Review of testing and commissioning
- Safety and risk management
- Land acquisition
- Environmental issues.

**COWI GROUP**

COWI A/S

**PM**

PKJ

**COUNTRY**

Denmark

**PERIOD**

2012 - 2020

**CUSTOMER**

Odense Letbane

**RECIPIENT**

Odense Letbane

**TOTAL FEE**

DKK 200.000.000

**ODENSE TRAMWAY**

Investment value - 2.600.000.000 DKK.

Odense Tramway: EIA, Design and Tender phase for 14 km new light rail in suburban and dense urban areas in the city of Odense.

Odense Light Rail phase 1 includes the construction of a 14 km long light-rail section, which runs through the most heavily trafficked parts of the city. Phase 1 of Odense Light Rail will be put into operation in 2020.

Odense Tramway consists of a new 14 km long double track light rail line between Tarup and Hjallesø through the centre of Odense, including connection to train and bus at Odense Central Station. The new light rail alignment primarily follows existing public roads, of which the most will need widening to fulfil the extra need for space. In a later phase it is planned to build another line from Dalum to Vollsøse.

The project includes the following civil works components: rail infrastructure integrated in roads and segregated from roads, alignment, adjustment of the existing infrastructure including roads, bridges, overpasses and underpasses, bicycle parking, lighting, reconfiguration of street signals, platforms, stations/stops, buildings, relocation of utilities etc.

The project includes the following transport systems: track engineering, traction power system, road signalling and tele-communications system, SCADA system, systems integration, safety approval of light rail system and infrastructure, light-rail operation and maintenance, Control and Maintenance Centre including depot/workshop and OCC (operation central centre), and rolling stock.

The project includes technical consulting services in all project phases: feasibility study incl. cost benefit analysis, surveys and investigations including topographical surveys, geotechnical investigations, geodetic surveys and examinations of contaminated soil, environmental impact assessment (EIA), assistance with preparation of tender strategy, conceptual, preliminary and detailed design of all civil works, tender documents for works contracts, engineering follow-up and supervision of works in the construction phase for all civil works, conceptual and preliminary design (functional and performance specifications) for all transport systems, assistance with tender strategy for transport systems, preparation of tender documents for design, build and maintain contract, supplier supervision in the design and build phases (check of supplier design, supervision of supply and commissioning).

Finally, the project includes land acquisition (expropriations), relocation of utilities, traffic regulation, and risk and safety management.

- Project management
- Surveys and investigations
- Feasibility study incl. cost-benefit analysis
- Environmental impact assessment (EIA)
- Management and coordination of transport systems activities
- Interface management incl. interface management among transport system disciplines
- Risk and safety management
- Input to procurement/tender strategy for civil works contract(s)
- Preparation of conceptual, preliminary and detailed design for all civil works
- Preparation of tender documents for works contracts
- Supervision of works
- Management and coordination of preparation of conceptual and preliminary design (functional and performance specifications) for all transport systems
- Assistance with tender strategy for transportation systems
- Management and coordination of preparation of tender documents for design, build and maintain contracts
- Coordination of supplier supervision in the design and build phases (check of supplier design, supervision of supply and commissioning).

**COWI GROUP**

COWI A/S

PM

JNP

**COUNTRY**

Uganda

**PERIOD**

2014 - 2023

**CUSTOMER**

Uganda National Roads Agency

**RECIPIENT**

**TOTAL FEE**

EUR 4.700.000

## SUPERVISION OF WORKS UNDER THE CAPACITY IMPROVEMENT OF THE KAMPALA NORTHERN BYPASS PROJECT

Investment value - 67.394.567 EUR.

The Kampala Northern Bypass Road Project upgrades and rehabilitates the existing single and dual Carriageway over 22km through urban areas of Northern Kampala. The project includes five grade separated interchanges and one at-grade interchanges, three foot bridges and 18 bridges. A number of interchanges have four bridges.

Road alignment passes through existing swamp areas requiring good solutions to drainage issues.

Construction works were performed while maintaining traffic flow on the existing, operational lanes of the bypass.

Design Review and Design Update as agreed with the Client and supervision.

The design was reviewed including all drawings, traffic calculations, and geometric details, soil conditions for bridge foundation and pavement design, pavement design, traffic safety audit and junction improvement and optimisation. The review findings were communicated to the Client with recommendations for modifications where required. The BoQ and works contract cost estimates were also reviewed.

Supervision services included overall management of the project implementation, assurance of quality of all material incorporated into the permanent works, monitoring works progress against work programme and certification of Interim Payment Certificates; chairing and minuting progress meetings between Client, Contractor and Supervisor, claims management, liaison with third parties as required and reporting progress and quality to the Client.

**COWI GROUP**

COWI A/S

**PM**

ECH

**COUNTRY**United Republic of  
Tanzania**PERIOD**

2013 - 2016

**CUSTOMER**Reli Assets Holding  
Company Ltd.**RECIPIENT****TOTAL FEE**

DKK 19.000.000

**UPGRADING OF TANGA - ARUSHA RAILWAY LINE**

Investment value -3.280.980.000 DKK

Upgrading of 440 km of existing (100 years old) narrow gauge railway to standard gauge and 32 ton axle load. The design speed is 120 km for passenger trains and more than 200 realignments are included. approximately 250 culverts and more than 30 bridges up 40 m long have to be replaced to handle the increased axle load.

All railway disciplines are involved from civil works to permanent way, operations, signaling and telecom as well as new station buildings, CTC centres, container terminals and workshops.

Aerial mapping of project area

Topographical ground survey

Geotechnical survey

Hydrological survey

Environmental Impact Assessment

Economic and financial feasibility study

Detailed design

Tender documents

**COWI GROUP**

COWI A/S

**PM**

KSP

**COUNTRY**

Denmark

**PERIOD**

2009 - 2011

**CUSTOMER**Ministry of Taxation,  
Denmark**RECIPIENT****TOTAL FEE**

EUR 867.000

**NATIONAL ROAD USER CHARGES, DENMARK**

No investment value. The project developed and analysed a number of concrete and comprehensive models for advanced Road User Charges (RUC) in Denmark for both light and heavy vehicles and prepared the basis for the political decisions on the introduction of RUC in Denmark. The project also included comprehensive process and project management assistance to the Client.

In 2009, the Danish Parliament defined the basic principle of introducing green RUC in Denmark, based on GNSS: Charges will reflect the vehicle characteristics as well as the time and place of travel. The aim of the scheme is to reduce congestion, reduce CO2 and other emissions and to promote the use of public transport.

COWI A/S, in collaboration with RappTrans of Switzerland, was entrusted to undertake the analyses, which included the following:

- Definition of a number of scenarios/models of RUC in Denmark, comprising domestic as well as foreign vehicles
- Definition of operational models
- Estimation of costs and revenues
- Estimation of effects on road user behaviour, congestion and environment
- Recommendation on procurement and implementation issues.

The project also provided comprehensive assistance to the Ministry in the management of the entire programme, including work programming and follow-up, liaison with the inter-ministerial working groups, stakeholder analyses, communication and the implementation of specific studies and investigations.

- Development of models/scenarios for consideration
- Assessment of the effects of defined scenarios (traffic, environment, congestion)
- Estimation of revenues and costs

- Definition and assessment of operational models
- Outlining of a feasible implementation process
- General process and project management assistance
- Programme management.