



WORLD-CLASS ENGINEERING AND AN EMPOWERED WORKFORCE

THE CONTRIBUTION OF
DANISH CONSULTING
ENGINEERING COMPANIES
TO SUSTAINABLE DEVELOPMENT
AND LASTING IMPACT



Danish Association of
Consulting Engineers

The Danish Association of Consulting Engineers (FRI) is a trade association for Danish consulting firms providing consulting services, planning and project management on a technical-scientific basis. In addition, member firms provide services in economic as well as non-technical fields with delivery of the relevant systems involved.

FRI member firms provide independent consulting services on market terms.

FRI represents the majority of businesses in the industry.

FRI member firms employ 12,500 people in Denmark and 25,000 worldwide. Total turnover in the industry amounts to DKK 12.2 bn (€1.63 bn) in Denmark and DKK 9.0 bn (€1.2 bn) in subsidiaries abroad.

Thank you to all the contributors:

Ramboll

NIRAS a/s

Alectia

NTU

SWECO

COWI

DI

Design: BGRAPHIC

Print: Vesterkopi

ISBN: 87 88086 97 6

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WORLD-CLASS ENGINEERING AND AN EMPOWERED WORKFORCE

THE CONTRIBUTION OF DANISH CONSULTING ENGINEERING COMPANIES TO SUSTAINABLE DEVELOPMENT AND LASTING IMPACT

The private engineering sector has always been a significant contributor to international development assistance. In recent decades it has not only been continuously improving its technology transfer to help solve critical issues in developing countries, it has also been building capacity, developing human resources in recipient countries, providing much needed jobs and training, and even fostering the launch of local businesses by empowering entrepreneurial engineers. Danish consulting engineers are not only part of this prominent sector, they are leading it.

The Danish sector works well with public bodies, has been keen to learn their language, understand their perspectives and needs, and provide solutions closely tailored to the local geography and people. Through the way it implements projects, the world over, it is also responding, directly and indirectly, to

a number of the UN sustainable development goals (SDGs) for 2030. World-class Danish consulting engineering companies have been providing intelligent engineering solutions for sustainable water and sanitation management to help ensure access to clean water and sanitation to everybody (SDG6), clean tech for affordable, reliable and clean energy solutions (SDG7), and have continuing global success in major road and water supply/ rail projects fostering innovation and to build resilient infrastructure (SDG9). Their ability to combine in-depth understanding of sustainable development, with the latest technologies to transfer, and a keen ability to empower people, provides life-changing innovations and robust infrastructure in recipient countries. This they provide through building long-term relationships and support in-country.



This paper presents an overview of the lasting and sustainable impact of activities carried out by Danish consulting engineering companies in the developing regions of Asia and Africa. The overview is based on six success stories and a questionnaire-based survey from October 2015. The survey gathered responses from 11 Danish enterprises which, together, represent more than 80% of the total revenue of the Danish consulting engineering companies with activities overseas.

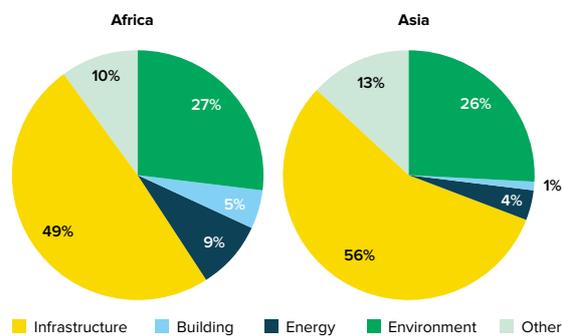
➤➤ **ACTIVITY IN DEVELOPING COUNTRIES**

Danish consulting engineering firms have become increasingly international in recent decades and today can be found working globally to assist developing countries – through both projects and ‘sector programmes’. According to the 2015 survey, each firm working abroad makes an average of 30 new contracts a year in developing countries¹. Of these, 80% are implemented in Africa and the rest in Asia.

The main driver for success for these firms, has been the steady increase in global demand for expertise in water, sanitation, climate and environmental, or ‘green’, engineering solutions. In 2015, half of the engineering contracts involved environmental solutions.

The firms are also in high demand for their approach to challenges in developing country infrastructure such as in roads, airports and telecommunication systems. About a quarter of project portfolios involved infrastructure solutions. Other core engineering solutions in their portfolio included those in energy and building.

ACTIVITIES IN THE PROJECT PORTFOLIO OF DANISH CONSULTING ENGINEERING COMPANIES IN DEVELOPING COUNTRIES



¹ For this document, ‘developing countries’ refers to those on the recipient list of the Development Assistance Committee (DAC) of the OECD and therefore include low- and middle-income countries, and least developed countries





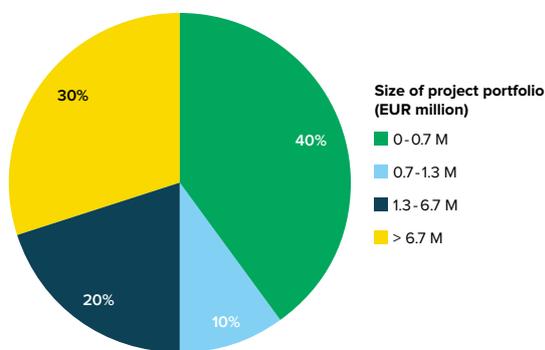
The size of the environmental component tends to increase with the size of the implementing firms. Smaller and medium-sized companies are more focused on providing infrastructure and energy solutions.

Where projects in Asia have a higher degree of environmental components, African contracts tend to involve more energy related projects, such as constructing power plants and other energy solutions.

RISING REVENUES FROM OVERSEAS CONTRACTS

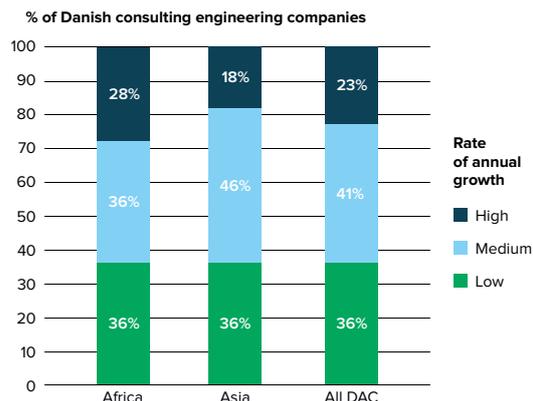
The level of involvement varies across the different sectors, but half of the engineering firms' annual turnover in their developing country portfolio exceeds 1.3 million EUR. For 30% of the companies, the figure is above 6.7 million EUR.

ANNUAL TURNOVER OF DANISH CONSULTING ENGINEERING COMPANIES BY TOTAL PROJECT PORTFOLIO SIZE IN DEVELOPING COUNTRIES



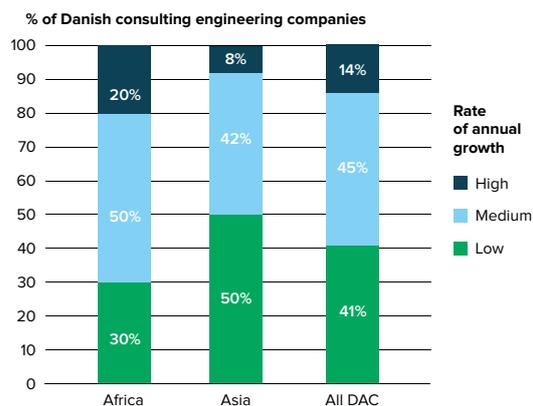
Being involved in development has intensified during the last decade, in both Asia and Africa. While the majority of firms experience growth in their 'developing country portfolio', many have seen particularly high growth rates. For example, 28% of the Danish engineering businesses report a high to very-high growth in their African project portfolio over the last five years. In Asia, this share is 18%.

ANNUAL GROWTH FOR DANISH CONSULTING ENGINEERING COMPANIES IN DEVELOPING COUNTRIES SINCE 2011



According to the engineering sector, the growth seems to be continuing at the same pace in Africa, with a little slowdown in Asia. Almost two out of three companies expect a medium-to-high growth rate in 2016 and 2017.

GROWTH EXPECTATIONS OF DANISH CONSULTING ENGINEERING COMPANIES IN DAC-COUNTRIES FOR 2016 AND 2017





9 OUT OF 10

DANISH CONSULTING ENGINEERING COMPANIES WORKING INTERNATIONALLY ARE TODAY WORKING IN DEVELOPING COUNTRIES

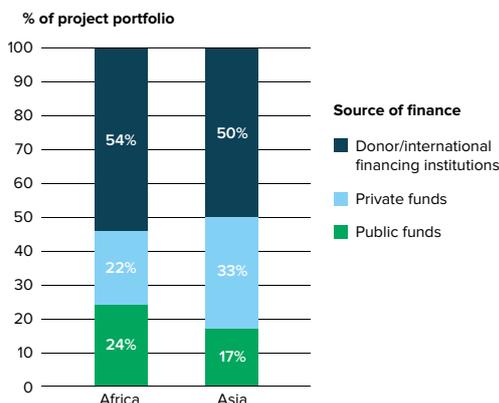
PRIVATE FUNDING GOING UP

In developing countries, Danish consulting engineering companies are most often contracted on projects and programmes financed by international financing institutions, donors including Danida, and other bilateral governmental institutions. However, this is not the only means of involvement.

During the past decade, with an increasingly improved local regulatory framework, the number of privately funded projects, including those with direct business-to-business (B2B) investments, has mushroomed.

Today, 33% of projects involving Danish consulting engineering firms in Asia are privately financed. In Africa it is 22%. These projects include direct B2B collaboration, as well as sub-contracting in, for example, privately run sea-ports, telecommunications and airport systems.

THE FINANCIAL PROJECT PORTFOLIO OF DANISH CONSULTING ENGINEERING COMPANIES IN DEVELOPING COUNTRIES



CRITICAL ROLE OF CAPACITY BUILDING

... enhance international support for implementing effective and targeted capacity-building in developing countries ...

(SDG17.9²)

Danish enterprises are highly aware that technical assistance and training goes hand in hand. Without it, the potential effects of the projects may be lost. Success depends often on how a project is able to build capacity and engage local people, including staff and those due to benefit from the project. Danish engineering services have a long track record of ensuring a high degree of capacity building and training. Today, about half of all Danish consulting engineering companies have a capacity building component linked to their projects.

While formal training is important for ensuring professional knowledge transfer, involving informal, on-the-job training is increasingly recognised as being key to achieving successful results. More than two thirds of the engineers surveyed say that they 'often' or 'always' include informal training for local employees and sub-contractors as part of their assistance activities.



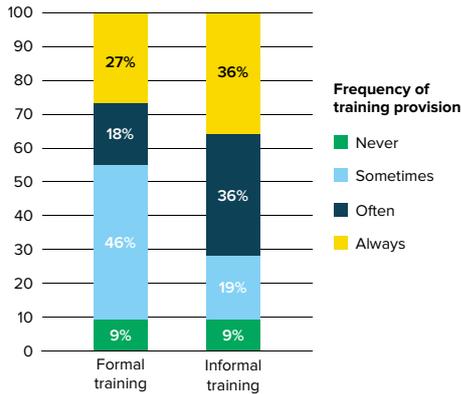
50%

OF DANISH CONSULTING ENGINEERING COMPANIES COMBINE TECHNOLOGY TRANSFER WITH TARGETED CAPACITY BUILDING

² A sub-goal from UM 2030 Sustainable Development Goal 17



TYPE AND AMOUNT OF TRAINING PROVIDED BY DANISH CONSULTING ENGINEERING COMPANIES FOR LOCAL EMPLOYEES OR SUB-CONTRACTORS



Formal training includes classroom training, courses and higher education. Informal training includes significant on-the-job training.

1 OUT OF 4
 CONSULTING ENGINEERING COMPANIES IN INTERNATIONAL DEVELOPMENT CREATE MORE THAN **50 NEW LOCAL JOBS** PER PROJECT

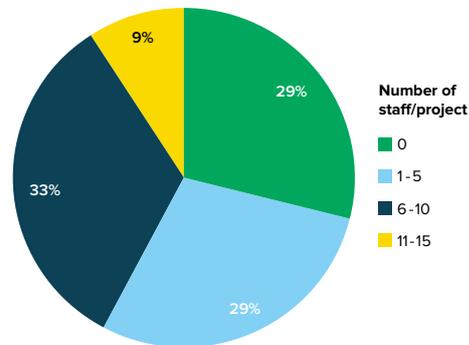
IMPACT ON EMPLOYMENT

... support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises ... (SDG8.3³)

The Danish consulting engineering sector is renowned for involving and empowering their local counterparts, to ensure results are sustainable and continue to benefit the country many years after project delivery has been completed. On average, each firm engages about 300 full-time local project staff. About 42% have more than five local members of staff per project.

Large Danish enterprises, with more than 500 employees, each employ an average of 525 full-time, local project staff, almost equally divided between projects in Asia and Africa.

LOCAL STAFF EMPLOYED BY DANISH CONSULTING ENGINEERING COMPANIES PER PROJECT IMPLEMENTED IN DEVELOPING COUNTRIES



Engagement abroad involves high investment and risk for companies. Partners need frequent consultations and local know-how must be built up carefully over time (decades or more). This is why almost all the larger Danish enterprises choose to establish regional and local branches and offices.

³ A sub-goal from UM 2030 Sustainable Development Goal 8



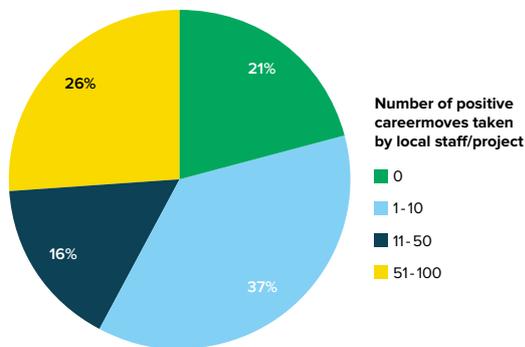
In fact, Danish consulting engineering firms already working in developing countries maintain an average of almost five offices each, across Asia and Africa.

... increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship ...

(SDG4.4⁴)

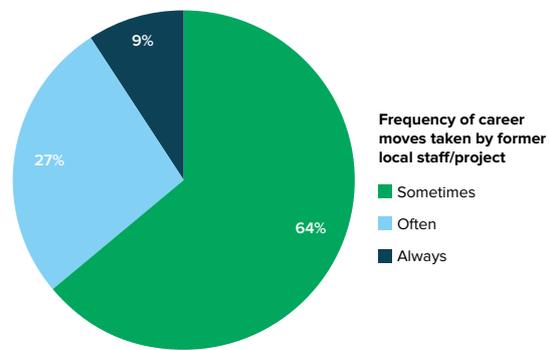
An indicator of successful training and empowerment is the number of real jobs and new local companies created in the aftermath of the engineering projects. In 79% of all projects, project staff were able to improve their job situation by making beneficial career moves after being involved in a Danish engineering project. One out of four Danish companies report that more than 50 such career moves were observed for staff previously involved in a developing country project.

POSITIVE CAREER MOVES TAKEN AFTER BEING ENGAGED IN PROJECTS IMPLEMENTED BY DANISH CONSULTING ENGINEERING COMPANIES



About 36% of the engineering companies reported that they frequently observe previous project employees making subsequent positive career moves, starting their own businesses, etc. following their engagement with the Danish projects.

POSITIVE CAREER MOVES OF LOCAL STAFF PREVIOUSLY EMPLOYED BY DANISH CONSULTING ENGINEERING COMPANIES IN DEVELOPING COUNTRIES.



In the following pages, six case studies demonstrate how Danish consulting engineering companies make a significant difference to the development of a host country, not only by contributing to improved physical infrastructure but also to building local capacity to create lasting domestic growth.



4 A sub-goal from UM 2030 Sustainable Development Goal 4



RAMBOLL INDIA: TRANSLATING TECHNICAL INSIGHTS INTO SOCIAL BENEFITS

Ramboll began its operations in India in early 1997. Over the years, the company has established business in three core sectors: telecom, buildings and transport. Through capacity building activities and comprehensive collaboration, Ramboll India is emerging as an innovation hub.

Background

India is one of the fastest growing economies in the world which puts significant strain on its infrastructure and in particular its cities. The development of multi-disciplinary engineering consulting by Ramboll in India has meant that the company is in a position to play a key role in ensuring that India develops in a sustainable fashion and its infrastructure keeps up with its extraordinary economic growth.

KEY INFORMATION

Core sectors: Telecom, buildings and transport

Employees: 800

Principal offices: 5 (Gurgaon, Hyderabad, Mumbai, Bengaluru and Chennai)

Regional offices: 5

In 2015, Ramboll had 800 employees in India working across transport, energy, buildings and telecoms providing holistic and sustainable solutions to ensure that infrastructure can support healthy economic growth.

Contributing to the development of smart cities in India

The flow of people from rural to urban areas in India makes the cities grow explosively and puts great pressure on infrastructure. Therefore, the Indian government has announced a 'smart cities programme' to secure the construction of a range of new, contemporary cities and at the same time refurbish existing cities under the banner Smart Cities Mission.

A smart city is one which strives for sustainable and attractive city growth. In the 100 Indian cities to be developed, infrastructure needs to be upgraded in order to reach acceptable standards. This entails, amongst other things, an adequate and stable electricity supply, water supply, waste and sewer system, up-to-date public transport, and sustainability of all systems.

"In Denmark we know a lot about how to plan and develop cities in the smartest way possible. Also, Ramboll has built a solid insight into the Indian market over the last two decades. The challenge now is to position our expertise and demonstrate that we match the Indian context."

Søren Holm Johansen, Executive Director at Ramboll



A collaborative approach

Culturally, India is far removed from Ramboll’s traditional Danish base. In developing the business in India, close collaboration between the Danish workforce and their Indian colleagues was central to their success.

There is a daily interaction between staff in Denmark and those in India – across transport, structures, oil and gas, and environment and water. This is integral to the technical development of the Indian staff and contributes significantly to the development of an Indian smart city. Such daily interaction is central to the development of the Indian mind-set with regards perceived international best practice in developing urban infrastructure.

“Developing our Indian staff is central to the development of Ramboll’s expansion in the country. Consulting is a ‘people business and as such the growth of our Indian colleagues in all aspects of personal and professional development is integral to our vision.”

Andrew Inman – Senior Project Manager, Ramboll Denmark

Local employment and empowerment

The technical capabilities of employees are continuously strengthened by a training and development team, which provides globally recognised internal and external training events. ‘Global work-sharing’ as an approach



is fully absorbed into the company’s culture with team members across different locations cooperating and working in close partnership.

Apart from the technical training, cultural courses including off-site and team-building workshops, are being developed for each region in the country as a means for learning about, and understanding, the way people from other regions act and think.

It is inevitable that employees will find new opportunities. Numerous Ramboll Indian staff have left Ramboll India for bigger and better roles in State institutions, universities and national ministries. The approach to their work, how they have developed both as people and professionals whilst working with Ramboll, as well as the global outlook that they have attained, has been central to their professional progression both with Ramboll India and beyond.

Lasting legacy

With the development of its staff in India, it is hoped that there will be long lasting legacy of smart cities, constructed in a sustainable fashion.

“Ramboll has acquired a prestigious client base in India over the past decade. It has firmed up its investment plans and stays committed to its clients and community to achieve sustainable solutions that impact the end-users and society as a whole.”

Pawan Maini, Managing Director, Ramboll India

But the real lasting legacy is in the people. For close to 20 years Ramboll has worked in India, developing its employees and strengthening the cultural exchanges between India and Scandinavia. The company is very proud to see its employees in India grow within the company but also outgrow it in India. The ‘lasting legacy’ also extends to Ramboll’s offices globally where employees have been enriched by the experience of cooperating and working with their Indian colleagues!

 <ul style="list-style-type: none"> • 800 people employed • 1,100 employees expected by the end of 2016 	 <ul style="list-style-type: none"> • Cultural learning • Enhancing technical capabilities • Global work-sharing 	 <ul style="list-style-type: none"> • Strengthen buildings, rail and tunnel expertise • Additional telecom solutions for Indian and global market • Evolve to an innovation hub 	<p>LASTING IMPACT</p>
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NIRAS IN KENYA: EXPANDING MARITIME INFRASTRUCTURE IN EAST AFRICA

For the last decade NIRAS has been working closely together with the Kenya Ports Authority (KPA) in the rehabilitation and extension of the Port of Mombasa. The company's involvement has led to the creation of several hundred permanent jobs directly at the port. The resulting improvements in infrastructure have drastically reduced operational costs for Kenya's importers and exporters thereby also creating large indirect employment. On-site training has empowered local employees of which two have since gone on to start businesses of their own.

Background

The Port of Mombasa, the biggest in East Africa and the region's trade gateway, handles imports of fuel and consumer goods and exports of tea, coffee etc. Besides Kenya, the port is also the most important import/export hub for a number of land-locked countries in the region including Uganda, Rwanda, Burundi and Southern Sudan. Since 2005, NIRAS, a Danish consulting engineering company with approximately 1,400 employees worldwide, has been working in close cooperation with KPA on four individual projects.

PORT REHABILITATION – PROJECT AT A GLANCE

Client: Kenya Port Authorities
Sector: Maritime infrastructure
Country: Kenya
Project value: > 6.7 million EUR
Project term: 2005 – ongoing
Financing: Government funded

The projects include a rehabilitation of the existing container terminals, an extension of the container terminal and, most recently, a new oil terminal which will quadruple the capacity for off-loading oil products from larger ships. This last project is set to be completed in 2017.

All projects have been realized as part of the overall strategy of the KPA to increase the capacity of the Port of Mombasa, with the government's objective for Mombasa to become the maritime hub of the East African region, meeting international standards for port operation. NIRAS has been active in the African port sector for several decades and the expertise it has gained from such involvement has been critical for KPA in reaching their objective.

“The Port of Mombasa is the gateway for import and export not only to Kenya, but also to other land-locked countries East African countries like Uganda, so the existing oil terminal is crucial for import of fuel to a big part of East Africa. Kenya Port



Authority is therefore pleased that we can now implement a new terminal with increased capacity and we are looking forward to continuing our collaboration with NIRAS on this important project.”

Daniel Amadi, Head of Projects Development and Management, KPA

Local employment and empowerment

Central to all of NIRAS’s African ports projects is the use of local employees and consulting companies. The NIRAS project at the Port of Mombasa is no exception. The use of local engineers has been particularly important during the implementation phases of the four projects when approximately 20 local employees have been employed by the company.

NIRAS has, from the start of their involvement, had an explicit focus on on-site training for local employees. According to Jesper Harder, Business Unit Director of NIRAS Ports and Maritime, this training has not only been beneficial to NIRAS:

Two former employees have actually started their own consulting company after working for NIRAS – both are now employing 10 to 20 persons on a permanent basis.”

Jesper Harder, Business Unit Director, NIRAS

In addition to directly employing local people, NIRAS also makes extensive use of local consulting engineering companies, for the Port of Mombasa projects. The sub-contractors have assisted in several functions during both the design and implementation phases. And by using them, NIRAS has indirectly created an additional 200 to 300 jobs.

Lasting legacy

The temporary project-related employment benefits from NIRAS’s involvement are, however, only secondary in importance to the permanent effects of the rehabilitation and extension of the port facilities at Mombasa. Since 2005, the yearly container traffic has increased by around 100%, and direct employment at the port has increased by close to 500. In addition, the infrastructural improvements have led to both indirect and induced job creation. The employment multiplier of infrastructure projects often exceeds two⁵, thus the involvement of NIRAS is likely to have created more than 1,000 permanent local jobs.

“The Kenyan Government is keen on achieving its ambitious Vision 2030 goals (e.g. to become a middle income country), and to do this, investments are required in infrastructure that will facilitate growth. The Port of Mombasa is the region’s gateway and with increased volumes of trade, investments are required to ensure the facility copes with the demands and improve our competitiveness.”

Henry Rotich, National Treasury Cabinet Secretary, Government of Kenya

EMPLOYMENT INFORMATION

- Local employees:** Approx. 20
- Expatriates:** Approx. 10
- Number of local employees at sub-contractors:** Approx. 200-300
- Number of direct permanent local jobs created:** Approx. 400-500
- Financing:** Government funded

“From the start in 2005 till now, we have tried to engage the same staff and it is evident that the on-the-job training has had a very positive effect. The local staff employed are getting increasingly independent of expatriates working on the project.

⁵ IFC Jobs Study: Assessing Private Sector Contributions to Job Creation and Poverty Reduction



- Employed approx. 20 locals
- Created around 300 jobs at local sub-contractors
- Approx. 400-500 permanent jobs created since 2005



- On-site training is a vital project component
- Active empowerment of employees
- 2 former NIRAS members established their own consulting company



- Increased traffic by 100%
- Employment multiplier of infrastructure often above 2
- Over 1,000 permanent jobs created

LASTING IMPACT



ALECTIA IN MALAWI: EXPANDING CARLSBERG BREWERY MEANS BETTER SKILLS AND GREATER CAPACITIES IN MALAWI

The Carlsberg Brewery in Malawi wanted to expand its soft drink production plant to satisfy the high demand for its products. Contracting ALECTIA ensured optimised operations and increased capacity, including training and benefits to the local job market and community.

Background

Carlsberg Malawi Brewery Limited was the first Carlsberg brewery established outside Denmark. Since its inauguration and start of production, it has undergone a series of upgrades and extensions to keep up with the demand for high quality beverages. ALECTIA has assisted the business in several projects over the years thus helping to maintain the continued success of the company and to help build local capacity.

Carlsberg Malawi is located in the area of Makata, Blantyre, and is the leading producer of beer and soft drinks in the country. It contributes to the national and local economy as a responsible employer, business partner and producer of top quality brands. It also supports government efforts in community development programmes, such as sports promotion, environment and health initiatives. The brewery has strong links with the promotion and development of golf and football

as its contribution to a healthy and positive economic development of Malawi. Carlsberg is the official beer of the Malawi National Football Team.

“Over the years, ALECTIA has helped us in carrying out a series of upgrades and extensions of our facilities. Each time our partnership has resulted in enhanced local competencies enabling the personnel to construct, operate and maintain the production facilities.”

**Rimantas Eringis, Supply Chain Director,
Carlsberg Malawi Brewery Ltd.**

In 2010, the company assigned ALECTIA to expand a soft drink plant in Lilongwe. The project resulted in a new production facility that covered an area of 5,000m² and was established as a greenfield project with new buildings and new utilities, water, and wastewater treatment. The project also included the installation of a new packaging plant with a syrup preparation plant for soft drinks.

ALECTIA was responsible for the overall master plan, conceptual design, tendering, and engineering follow-up for the establishment of the various facilities. The aim was to help optimise company operations and secure hygienic standards at the plant, as well as to leverage expert knowledge on how to establish, operate and maintain production facilities in the soft drink industry.



PROJECT INFORMATION

Client: Southern Bottlers and Carlsberg Malawi Brewery Ltd.

Project type: Expansion of the production facilities including the overall master plan, conceptual design, tendering, and engineering follow-up on the establishment of the various facilities.

Country: Malawi

Project value: About 14 million EUR in total, including 0.9 million EUR to ALECTIA

Contract term: FIDIC Contract

Project type: Commercial project

Project office with one ALECTIA site manager

thoroughly trained in operating and maintaining the machinery, ensuring their safety and in being able to handle any future production challenges.

PROJECT RELATED EMPLOYMENT INFORMATION

Local employees: About 100 FTE⁶

Expatriate employees: About 25 FTE

Jobs at local sub-contractors: About 25 FTE

Training/education of local employees: Approx. 200

Local employment and empowerment

The expansion of the production plant had a positive impact on local employment. Namely, roughly 100 local workers were involved in the project during the construction. In addition, the soft drink plant provided jobs for 35-40 local people per shift after it went into production.

“ALECTIA has not only assisted us maintaining the continued success of our company. With ALECTIA’s sustainable approach and high business ethics they have also contributed to better skills and capacities in the local community that are valuable for the future development of the area.”

Rimantas Eringis, Supply Chain Director, Carlsberg Malawi Brewery Ltd.

Apart from these quantitative aspects, the project helped to improve the skills of the local staff as well. Local managers at the plant gained a deeper understanding of a state of the art approach to optimise operating services, and how to manage and motivate employees. The provision of how to secure high standards of hygiene and safety at the plant was a particular focus area. By the end of the project, the local operational personnel were

Lasting legacy

Besides capacity building, another goal of the project was long-term growth in Malawi. An emphasis was put on including stakeholders in the planning and implementation of the project to foster an implicit knowledge transfer. Hence, the project will serve as inspiration for future operations in the community. For instance, the very strict standards and requirements that were set on the projects in regards to the waste water treatment plant in order to protect the environment sought to encourage the community to use the higher standards for waste water treatment in future projects. Moreover, local engineers gained valuable insights from working on methodologies during the project phase that later translated into a professional preparation of tender documents.

“Whenever ALECTIA participates in a project in developing countries, we are well aware that our presence is not only of benefit to our customers, but also affects the local community. For many years we have had activities in Malawi, and I am certain that our engagement has contributed positively by bringing knowledge and value to the surrounding community.”

Christian Luxhøj, Account Director, ALECTIA

6 FTE = full-time equivalent



- 100 employees during construction
- 35-40 after implementation
- 25 expatriats (FTE)
- 25 full-time jobs at local sub-contractors



- Training and education of local employees: about 200
- Optimising operating services
- Increased safety and hygiene standards



- Emphasis on Malawi’s long-term development
- Implicit knowledge transfer to local stakeholders, managers and engineers
- Encouragement to adopt high standards for future waste water treatment programmes

LASTING IMPACT



NTU IN ZAMBIA: EMPOWERMENT THROUGH KNOWLEDGE AND COOPERATION

NTU is a private consultancy based in Denmark which recently carried out two major infrastructure projects in Zambia: The first in aviation, and the second in the road sector. Their particular emphasis was on safety and security, and building capacity.

The projects were successful, not least because of the formal and informal training provided to stakeholders, a resulting strengthened legal and institutional capacity, and the direct creation of 350 local jobs. The private sector was also empowered when former staff members established six new businesses.

Background

The aim of the first project was to strengthen the institutional capacity of the civil aviation regulator in Zambia to help ensure a safe and secure aviation environment. NTU worked on good governance, implementing international civil aviation standards, harmonisation with EU standards where appropriate, cooperation with

European aviation authorities, and policy support. The project completed in 2015 having trained staff, updated regulatory systems, and provided technical support for the procurement of safety and communication equipment.

“We are pleased that NTU is assigned as the consultant for the Zambian Government on such a strategically important project that will significantly contribute to supporting the promotion of tourism and the diversification of the economy. We have worked previously in Zambia on road transport projects and are very pleased to have the opportunity to develop our cooperation further.”

Emina Kapetanovic, NTU Senior Project Manager

The second project dealt with the National Road Sector Framework 2012 and the Zambian Road Sector Strategy outlining the need for agency alignment, coordination and development. In this ongoing project, NTU is responsible for formulation and implementation of the Capacity Building Programme, an entrancing part of the National Road Sector Framework and the Road Sector Investment Programme. The project involves consulting services to support the coordination and capacity building measures for the transport sector institutions at central and regional levels.



NTU is leading an international team, for an EU-funded project, to provide Zambian officials with a comprehensive capacity building programme for all road agencies. This combines demand-driven support targeting established and operational road agencies, and support at regional level to newly established local road authorities to help them fulfil their mandates regarding their management of rural road networks. A significant output has been the Local Road Authorities Procedures Manual with useful sections on planning, road prioritisation and selection, surveys, design, community access projects, intervention selection, procurement and report writing.

“This is actually the most important capacity building programme that EU has so far financed in Zambia: 4.62 million EUR, close to 36 million kwacha, mostly through technical assistance, long and short term, on a demand driven basis. [...] It is also important to note that the programme will support the public sector as well as the private sector – private contractors and engineering consulting companies – as they necessarily move forward with their client counterparts.”

Gilles Hervio, Ambassador, EU Head of Delegation to Zambia and COMESA

Local employment and empowerment

The two projects, with their offices in Lusaka, employ around 90 local people and 25 expatriates and have created around 350 jobs through local sub-contractors. Having been sufficiently empowered by NTU, six project employees have gone on to establish their own businesses and have subsequently hired local staff.

There has been significant effort put into local capacity building and immediate activities have included: needs assessment, formulation and implementation of formal and informal training events, focus and technical working

groups, knowledge sharing in the workspace, and leadership and team-building actions. In addition to these, there have been broader effects of the company’s involvement in Zambia through a rich matrix of outputs, results, intermediate impacts and global impacts.

Lasting legacy

Immediate outputs are resulting in an efficient road management system, effective road agencies, strengthened local construction industry and safe road network, efficient and compliant civil aviation institutions as well as a safe and modern civil aviation sector. Such results then facilitate more intermediate impacts such as greater accessibility and mobility, institutional developments, enhanced human capacity and improved access to food and food security. More broadly still, the road project contributes to poverty reduction and improved living conditions in the region, social development and equitable economic growth.

“... the TA support provided by the project team to the Airworthiness and Ops Department of the DCA, in the early phase of the project was of particular benefit. This involved the preparation of manuals, checklists of procedures etc. in line with ICAO requirements together with on-the-job training with a SSTE. This work undoubtedly contributed towards the removal of the significant safety concern identified in ICAO’s USOAP audit in November 2009.”

Representative of the Mid-term review of Aviation Sector Support Programme in Zambia

 <ul style="list-style-type: none"> • Approximately 90 local project employees • Estimated 350 local jobs created • 6 project employees set up their own business 	 <ul style="list-style-type: none"> • Formal and informal trainings • Focus and technical working groups • Knowledge sharing 	 <ul style="list-style-type: none"> • Efficient road management and effective road agencies • Strengthened local construction industry • Safe road network and safe and modern civil aviation 	<p>LASTING IMPACT</p>
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SWECO IN BANGLADESH: SECURING SUSTAINABLE URBAN WATER SUPPLY TO THE ASIAN MEGACITY OF DHAKA

Securing a reliable urban water supply in Dhaka illustrates the effective approach of one Danish consulting engineering company which seamlessly integrates institutional with socio-economic support in major infrastructure projects. Sweco A/S Danmark⁷ has brought new water management technologies to Bangladesh, helped to build local capacity and knowledge in the field, and provided jobs for more than 3,000 people.

Background

Dhaka, capital of Bangladesh, is one of the fastest growing megacities in the world and has a population of about 16 million. As such, it faces more challenges than most as it tries to deliver basic and improved services to its expanding population, especially with the added pressures of when climate change, water scarcity and environmental.

The project, Design and Management Consultancy for Dhaka Water Supply Sector Development Project (DWSSDP), is expected to benefit around 6 million people.

“DWASA’s mission is to be the best water utility company in Asia. So far under the Project we have been able to ensure 24/7 water supply to the city dwellers and reduction of NRW to a satisfactory level. We are providing water to the city dwellers at the cheapest rate in the world. We do appreciate Sweco’s cooperation to achieve our mission by their expertise and most updated technology.”

Taqsem Khan, Managing Director of Dhaka Water Supply and Sewerage Authority

Its main objective is to rehabilitate and strengthen the Dhaka water supply system, including infrastructure improvement and capacity building of the city’s water supply and sewerage authority (DWASA). It includes the rehabilitation and replacement of over 1,800 km of water supply pipeline, and uses the most sophisticated and up-to-date trenchless (no-dig) technologies.

PROJECT AT A GLANCE

Client: Dhaka Water Supply and Sewerage Authority (DWASA)

Sector: Urban water supply

Country: Bangladesh

Project value: Around 13 million EUR

Project period: 2009-2016

Project financing: Asian Development Bank (ADB)

⁷ Formerly Grontmij A/S



Local employment and empowerment

The capacity building component of the project focuses on ensuring sustainability of the investments and the transfer of knowledge and know-how to DWASA so that it can continue to manage and improve the water supply system long after the project has finished.

There are 95 local and 16 expatriate employees on the project, plus a possible further 3,000 employed by sub-contractors.

Lasting legacy

This project has significantly reduced ‘non-revenue water’ from more than 60% to an average of less than 6%. It has also realised a 24/7 water supply for a population of over six million. The provision of this pressurised supply not only ensures delivery of high quality water but also reduces unnecessary energy and electricity cost.

“In Korail Slum, the inhabitants, represented by CBO leaders, are enjoying the benefits of having access to safe drinking water – less incidence of water-borne sickness, spending more time in their other daily activities, and savings earned from paying their legal connections. Another benefit of access to water that came out in the discussion was that the residents were able to maintain clean latrines in Korail.”

Simon de Haan, Team Leader, DMC-DWSSDP

The project is the first to bring trenchless technologies to Bangladesh and the first to supply low-income slum communities with legal piped water supply connections. It was the legalisation of water connections for the slum dwellers, and other users, that reduced the non-revenue water in the supply system and increased revenue for strengthening DWASA and the systems it manages. In total, around 3,000 legal connections were installed in Korail slum (the largest in Dhaka), resulting in the addition of over 100,000 customers to DWASA’s piped water supply system.

It is estimated that the revenues of DWASA have more than doubled as a result of the project, due to better distribution of hygienic drinking water, metering, legalisation of previously illegal connections, and reduction in non-water revenue.

Having a continuous and pressurised water supply has improved the health and living conditions of the population in general, reducing the burden of water-related diseases, and making it a vital input toward enhanced economic development and poverty alleviation. In the slum and low-income areas, the piped water supply provides clean water and reduces the time needed to carry it home, as well as making considerable savings on water costs. This especially empowers the poorer section of society to become healthier and have more time for income-generating activities and education.

POST-PROJECT ACHIEVEMENTS

Improved life quality: From intermittent supply of filthy water to 24/7 supply of hygienic water

Energy saving: People do not need to use suction pumps or to boil water before drinking

Non-revenue water: Reduced from 60% to 6%

Water revenues: 100% increase due to reduced physical and commercial losses



- 95 locals employed
- 3,000 local employees at sub-contractors



- Focus on knowledge transfer
- DWASA able to manage and improve water supply independently



- Less than 6% non-revenue water
- Realisation of 24/7 water supply to 6 million people

LASTING IMPACT



COWI TANZANIA: COMBINING GLOBAL KNOWLEDGE WITH LOCAL PRESENCE

COWI has been present in Tanzania for five decades. Over this period numerous projects throughout the country have been implemented. It puts a special focus on using local staff which has fostered the building up of a local pool of knowledge, as well as the promotion of high standards.

Background

Four years after Tanzania's independence in 1961, COWI Tanzania Ltd. was established by a group of committed engineers who went on fact-finding trips to the new state and saw the possibilities in an emerging market. With 50 years of permanent presence, COWI Tanzania has executed projects in all regions of the country, some managed from its office in Dar es Salaam, others from temporary project offices with international staffing.

COMPANY KEY INFORMATION

Company: COWI Tanzania Ltd

Established: 1965

Country: Tanzania

Number of projects in 2014: 64

Number of different customers in 2014: 41

Turnover in 2014: 5.1 million EUR

ISO certified by the UK Bribery act: 2010

ISO 9001 certified: 2015

Local employment and empowerment

In 2015, COWI Tanzania employed 100 permanent and/or long-term project staff, most of whom are university graduates in the fields of engineering, economics, environment and social science. The company focuses on four sectors: buildings, transportation, water and energy. It also covers and economic, environmental and social management. Services are offered to national governments, bilateral and multilateral aid institutions and private customers.

“COWI Tanzania's competitive advantage is that we have 90% Tanzanian staff. We have an international mind-set in respect to quality, business integrity and timely delivery. This combined with our design team in India makes COWI Tanzania unique and very competitive.”

Thomas Solgaard Sørensen, Managing Director, COWI Tanzania

With its recently obtained ISO-certification, COWI Tanzania has demonstrated compliance with the highest quality management standards and has reached a level where it enjoys international recognition. COWI Tanzania's employees work under the same set of values as all employees in the COWI Group, promoting integrity, respect, independence, freedom and high professional and ethical standards.



STAFF KEY INFORMATION

- Number of local employees:** 103
- International employees at the office:** 7
- Average seniority with COWI Tanzania:** 6.9 years
- Percentage of employees with BSc/MSc/PhD degree education:** 29 / 27 / 2
- Percentage of employees with personal/professional development plans:** 30%
- Number of employees with project management experience:** 8

Simon Kabwebwe joined COWI Tanzania in 1990 and has been part of the company for half of its 50-year presence. He has witnessed its development and seen it turn into one of the largest consultancies in Tanzania.

As a senior topographical surveyor, with experience in highway and transportation engineering, Simon has participated in numerous projects, from which he has acquired extensive knowledge about modern technology and equipment. He is currently working on a project for the Railway Holdings Company (RAHCO) to upgrade railway lines in Tanzania, and he has contributed to thousands of kilometres of highway design projects.

“I have developed my personal and professional skills tremendously since I joined the company”, he says, and he explains how employees are encouraged to continuously develop their competences through either internal training or external courses in new technology and software.

“When looking back on the past 25 years, my employment with COWI Tanzania has given me the opportunity to travel in different countries, work on multinational projects and meet people of different nations. And then it has enabled me to support my family”.

“Learning so much from the different projects we are working on here is one of the things I have enjoyed the most during my 25 years with the company.”

Simon Kabwebwe, COWI Tanzania

Lasting legacy

The philosophy behind COWI's permanent presence in Tanzania, as well as in other countries, is to combine global knowledge and local presence. COWI Tanzania cooperates with international experts from the entire COWI Group, but takes on projects locally and builds up a local knowledge pool. “We work together as one strong team and share knowledge, expertise and experience,” says Simon.



- 100 permanent and/or long-term project staff
- Majority of staff are university graduates
- Focus on local staff (90% of the employees are local)



- Office in Dar es Salaam
- Temporary project offices
- ISO certification



- Provision of internal and external training
- Transfer of global knowledge, experience and standards to develop local workforce

LASTING IMPACT



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