

Creating Liveable, Competitive and Resilient Cities

NIRAS URBAN DEVELOPMENT
CAPABILITY STATEMENT

#11

Sustainable cities
and communities

#9

Industry, innovation
and infrastructure

#13

Climate
action

#15

Life
on land





NIRAS – A nordic multi-disciplinary planning and engineering firm

With over 2400 professionals and a headquarter in Denmark, NIRAS is a leading international planning and engineering firm, with offices across Europe, Africa, Asia and Latin America. Our work is far-reaching, building skills and capacity in support of all 17 Sustainable Development Goals (SDGs). We assist our clients and partners in developing future societies that are well governed and based on climate-smart and environmentally sustainable solutions. NIRAS has an extensive track record for more than 60 years in designing and implementing complex international projects, promoting the most innovative and tailored solutions, across the entire build environment.

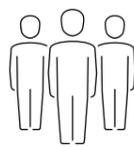
NIRAS International Consulting

A part of the NIRAS Group, NIRAS International Consulting is one of Europe's leading development consulting firms. The majority of our work consists of implementing large, long-term and multidisciplinary development projects, often in challenging environments. With our in-house expertise, local offices and extensive network of trusted associates, we have provided high quality project management and technical assistance services for more than 50 years, covering the entire project cycle, from design to implementation, monitoring and evaluation.

Our global network of external experts comprises around 25,000 development professionals, and our local offices support long-term partnerships and build local capacity in the countries where we work. Thanks to our decentralised structure, we always remain close to our projects and clients. With registered country offices in Asia, Europe, Latin America and Africa, we maintain strong local ties to partners, clients and experts in all of our key markets.

NIRAS offers a broad range of planning, capacity building and engineering services to create well-functioning and resilient cities, reduce poverty, facilitate inclusive economic growth, and promote equitable societies.

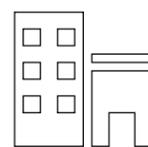
NIRAS quick facts



+2,400 employees



7000 projects



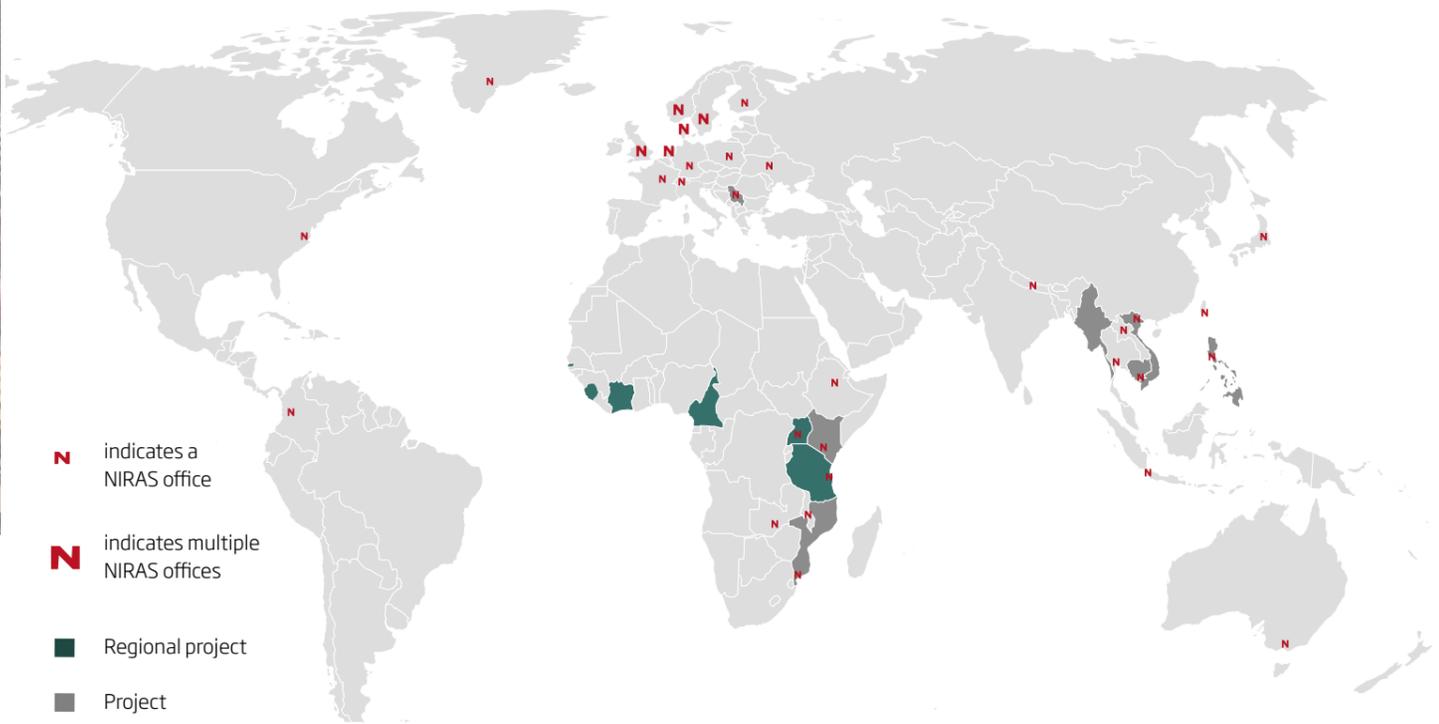
51 offices in 31 countries

Global excellence with a local presence

The geographical diversity of our office network and project portfolio is illustrated in the map below. Our size, global outreach and strong local presence across the continents enables us to be a leading service provider working towards the achievement of the SDGs. We have more than 50 years of experience and successful cooperation with multilateral clients including the African Development Bank, World Bank, Asian Development Bank and the EU, as well as bilateral donors such as FCDO, GIZ, KfW Sida and Danida.

Our urban development portfolio

Our offices in over 30 countries allow us to maintain a strong understanding of local conditions, as well as ties to experts and organisations in all of our key countries.



NIRAS in Africa

NIRAS has over 50 years of experience in managing development projects in Franco- and Anglophone Africa. Our experience in the region covers a broad range of sectors, and a number of our projects are interdisciplinary and cross-cutting in nature, taking into consideration issues such as climate change, engineering, infrastructure, finance, governance and social inclusion. Our long presence in the region enables good contact with central and local government bodies, and provides access to local knowledge networks, which combined secure the required administrative and logistical capacity that facilitates an efficient and effective project implementation, across countries and sectors.

Our office in Nairobi functions as our regional headquarters. The office strives to create strategic regional linkages, strengthen our African presence and transfer skills and expertise across all NIRAS offices on the continent. This allows NIRAS to cultivate and maintain our local presence in many African cities. See the NIRAS Africa brochure [here](#).

We have significant experience on the African continent in infrastructure planning and development, particularly in port and marine terminals as well as industrial parks and special economic zones. We have been involved in green and brown-field ports along most of the African seaboard. For the past four years our portfolio has comprised container terminals in Togo, Guinea, and Kenya; ore terminals in Guinea and Liberia; and oil terminals in Kenya and Tanzania. NIRAS port masterplans have been drawn up on a national level in Liberia, Nigeria, Tanzania and Ghana. In addition, planning and design related to the marine environment have been part of our coastal stabilisation projects in The Gambia and Egypt, and masterplanning of special economic zones in Nigeria and Kenya.

NIRAS has a strong local presence in Africa with country offices and representatives in Benin, Burkina Faso, Ethiopia, Malawi, Mozambique, Tanzania, Uganda and Zambia, and a NIRAS Africa head office in Nairobi, Kenya. We are currently managing projects in both West and East Africa, as well as the SADC region for clients such as the EU, KfW, GIZ, Danida, FCDO and the World Bank.



NIRAS has assisted several secondary cities in Kenya, Tanzania, Mozambique and other countries on the continent on improving basic living conditions in informal settlements. We have supported municipalities and city councils on infrastructure upgrade, municipal finance and strategic planning, and carry decades of capacity building and institutional strengthening experience across the continent.



NIRAS in Asia

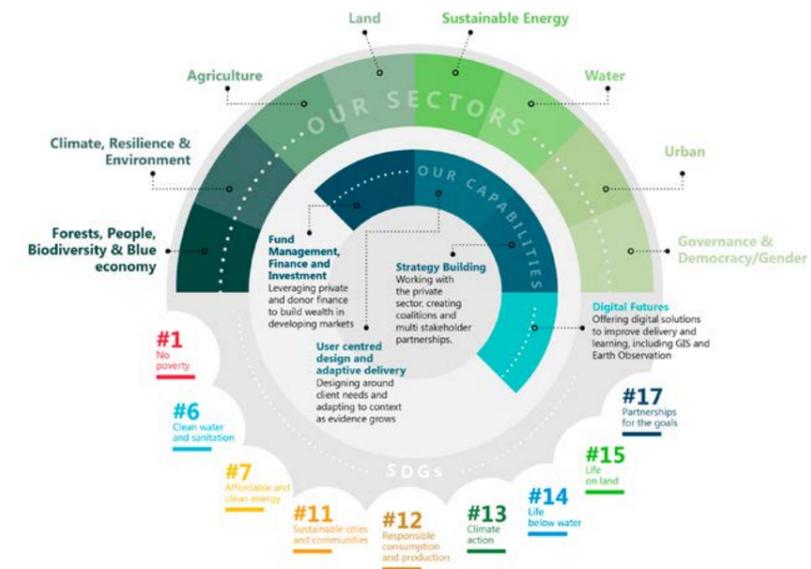
NIRAS has operated throughout Asia for more than 30 years, working with bilateral and multilateral development partners on more than 500 projects. NIRAS maintains regional offices throughout Asia including in Cambodia, Indonesia, Lao, Nepal, the Philippines, Viet Nam and Taiwan. NIRAS has long-term experience with ADB, World Bank, FCDO, C40, MFA Finland, Danida and many other clients in the region.

Our office in Manila functions as our regional headquarters, supporting the country offices in business development and project management, allowing each office to benefit from the experience and network of the entire regional NIRAS presence. You can find more information on our experience and more than 30 years of presence in Asia and the Pacific in [this brochure](#).

Our urban experience in Asia includes capacity building on sustainable urban water and sanitation services in Bangladesh, Cambodia, Lao, Myanmar and Nepal through the Sida-funded International Training Programme (ITP) on Sustainable Urban Water and Sanitation (SUWAS). We have several years of engineering experience with waste water treatment and drainage projects, as well as sustainable urban drainage systems and urban gardening experience from Vietnam, and solid waste management projects in Myanmar.

NIRAS has assisted the cities of Hanoi and Ho Chi Minh in their development of Climate Change Action Plans, identified urban EbA measure for Dong Hoi City and supported the strategic mainstreaming of ecosystem-based adaptation (EbA) in Vietnam.

NIRAS has an extensive network in Asia, with country offices in Cambodia, Indonesia, Lao, Myanmar, Nepal, the Philippines, Viet Nam and Taiwan. We are also implementing projects in countries such as Bangladesh, Malaysia, Mongolia, Tajikistan, Sri Lanka and Papua New Guinea. Our clients in Asia include the Asian Development Bank, the EU, CDIA, GIZ, Danida, FCDO, C40 and the World Bank.



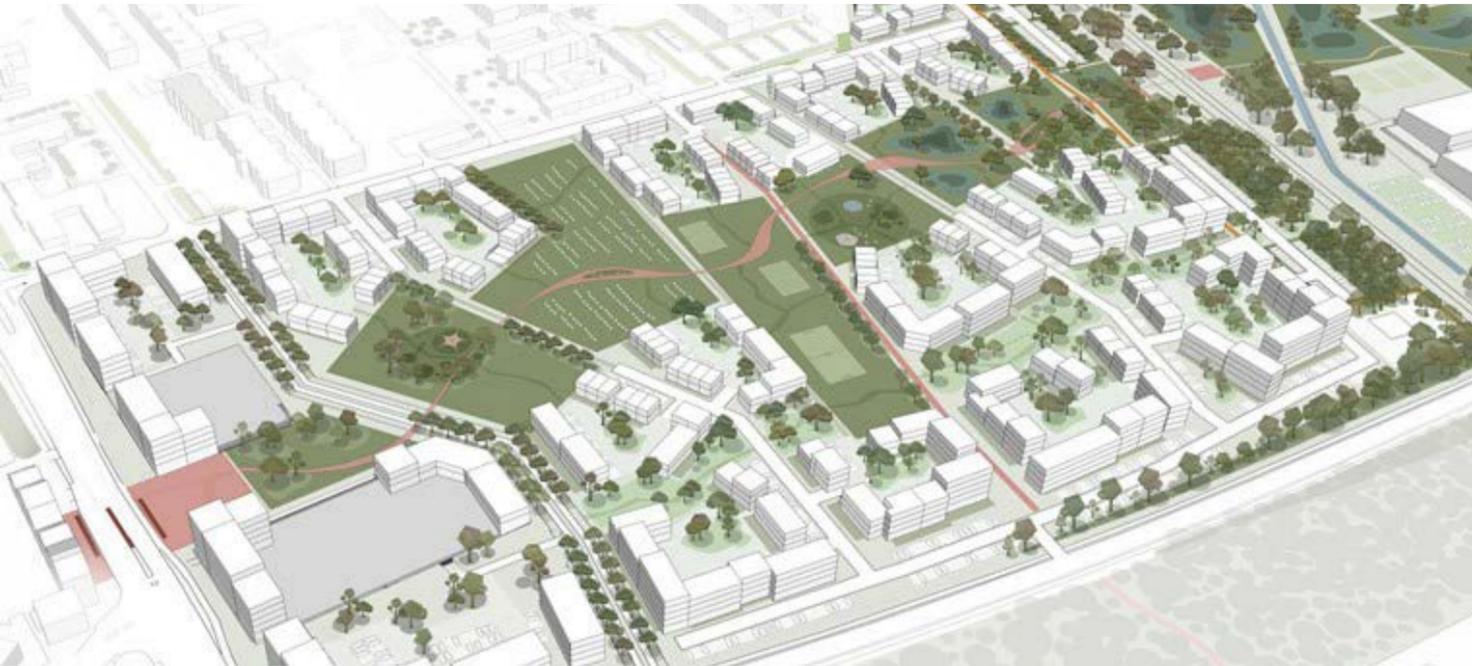
Planning resilient and liveable cities

NIRAS' approach to working in urban settings is rooted in the interdisciplinary nature of the challenges impeding cities from becoming productive, resilient, and liveable settlements. We work with national and city governments, as well as international agencies - often across technical disciplines such as competitiveness and job creation, gender and social inclusion, municipal financing, institutional capacity-building, infrastructure investment planning and climate change. When addressed in tandem, these are some of the core areas of intervention for achieving a more resilient response to rapid urbanisation.

NIRAS is addressing rapid urbanisation and urban development in a comprehensive manner with tools and methods that are based on a multi-sector approach and public participation, building on principles of

securing well-governed, competitive, inclusive and sustainable urban areas in line with the ambition of the New Urban Agenda and the SDGs.

NIRAS' knowledge in urban development equally encompasses infrastructure development and spatial planning, as well as understanding the nature and dynamics of the informal sector which drives the urban economies. We possess the required knowledge and tools to improve living conditions of urban communities and deliver capacity building and institutional strengthening, which enables the client to take long term strategic decisions on urban policies to improve resilience. Our approach aims to deliver strategies that are aligned to national priorities and can be translated into effective and practical instruments for local and national decision-makers.



Our nordic experience

NIRAS draws on its extensive project know-how from the nordic countries and across the world, and tailors international best practices and lessons learned to the context of each city that we engage with. We strive to embed our projects in structures with strong local ownership, and take pride in engaging our country offices and local expertise, when delivering technical assistance.

Our home base in the nordic region has allowed us to work with urban liveability for decades. We are continuously engaging with urban authorities in some of the most liveable cities in the world. Our services to Danish cities and municipalities include planning and engineering advice on climate change resilience, especially in relation to extreme rain events and handling of cloudbursts, in order to secure public and private investments from future climate hazards. We deploy a holistic approach to water management in the shape of the sustainable urban drainage system approach (SUDS) and nature-based solutions (NbS), which enables our teams to turn problems into opportunities, and create the basis for planning resilient and attractive urban areas.

Our approach to urban liveability is deeply rooted in our nordic traditions for city planning, where we have assisted urban managers in crafting and managing city plans and strategies, designed to reflect both long-term visions and short-term needs and capabilities. Our urban climate change adaptation experience in the Denmark has enabled NIRAS to become a leading practitioner in this field, and ideally positioned to facilitate the introduction of innovative urban nature-based solutions to other places in the world.

Our core services in urban development

NIRAS has a long track supporting ministries, municipalities and cities in addressing both infrastructure and institutional issues, including policy advice, physical planning, citizen engagement and municipal management, financing and administration. Our core services in urban development include:



Integrated and multi-sectoral urban planning

- + Integrated and multi-sectoral urban planning
- + Early-stage infrastructure development and prioritisation
- + Tourism planning, cultural heritage and design of public space
- + Gender mainstreaming and social inclusion
- + Digital tools and GIS for spatial planning
- + Mainstreaming of climate-compatible, low-carbon, resilient urban development



Urban resilience and green infrastructure

- + Nature-based solutions for climate change adaptation and mitigation
- + Urban flood risk management
- + Climate-resilient urban infrastructure planning
- + Climate action plans and strategic advice on climate resilience
- + Urban environmental management
- + Urban water resource management

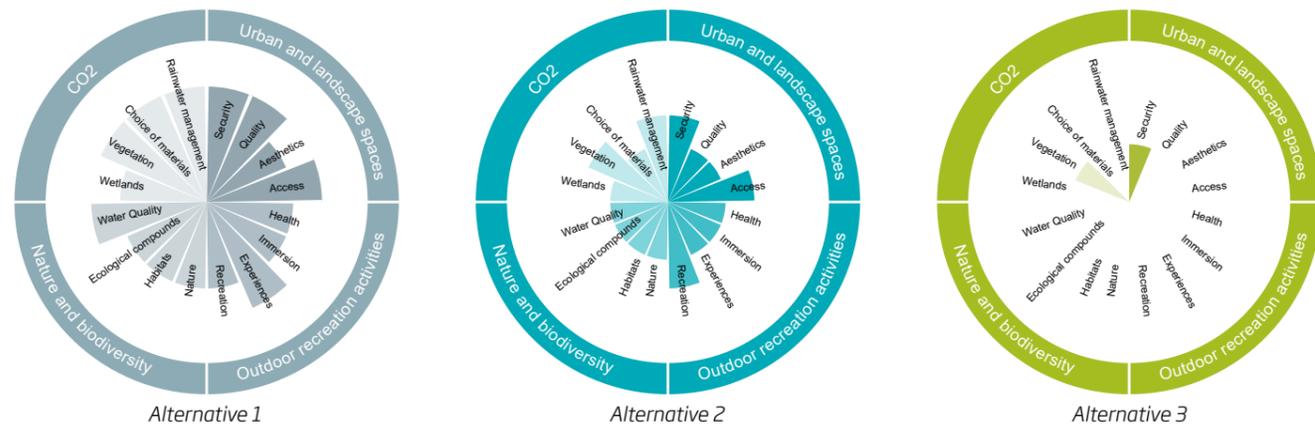


Urban governance, municipal finance and competitiveness

- + Institutional strengthening and public management
- + Enhancing technical and administrative capacity of city authorities
- + Public financial management and municipal financing
- + Gender-responsive budgeting
- + Competitiveness and local economic development
- + Job creation and private sector development

NIRAS tools to design Nature-based Solutions

- + A screening tool that is easy to use
- + Makes the added value of innovative solutions visible
- + Compares different alternatives to solve the same climate challenge
- + Can be used to identify the optimal level of service and financing
- + Ideal as a dialogue tool across municipality, utilities and private sector stakeholders
- + Provides an easily accessible basis for decision-making for non-technical decision makers
- + Designed to facilitate dialogue on public-private partnerships
- + Not only a "measurement tool" but also data for designing customised measures
- + Specifically design to capture to multiple benefits of nature-based solutions and green infrastructure



SPLASH is a calculation tool that equips decisionmakers with the best starting point possible for selecting the right technical solution and investment setup for urban climate change adaptation. The tool is targeted at utility companies and municipalities that want to jointly develop alternative solutions to traditional gray infrastructure projects. Developing these alternative solutions requires close collaboration between multiple stakeholders, thus SPLASH was developed with the goal of promoting dialogue and knowledge-sharing in such an environment.

The tool calculates the socioeconomic gains from climate adaptation by comparing investments with savings achieved by avoiding the projected damage cause by flooding. At the same time, SPLASH allows for the mapping of the added value that climate adaptation can contribute, especially when nature-based solutions and green infrastructure are in use. SPLASH allows for a comprehensive analysis to ensure that projects added value where it makes most sense and that a holistic approach is deployed to maximize socioeconomic benefits and avoid sub-optimisation in sub-areas.



The SPLASH tool not only enables cities to design better and cheaper climate adaptation solutions, it also raises the quality of the dialogue leading to public-private partnerships where municipalities, utility companies and the private sector enter into long-term and strategic collaboration on climate adaptation in their city.

Comparing projects on three parameters

SPLASH makes it possible to compare up to three different climate-change adaptation solutions designed to address the same flood risk. The solutions are compared on three parameters:

- **Socio-economic benefits - Does it pay off to adapt to climate change?**
SPLASH makes it possible to compare the costs of a specific climate change adaptation investment with the socio-economic benefits in the form of lower damage costs.
- **Costs allocation - Who should pay for the solution?**
SPLASH makes it possible to map the costs allocation between the parties involved e.g. the utility company, the municipality and private contractors.
- **What added value does the solution offer?**
SPLASH can be used to assess the expected added value on 16 different parameters and thus assess a project's ability to promote e.g. health, biodiversity, urban livability, recreational value or carbon reduction by using Nature-based Solution or a mix of green and gray infrastructure.

The output of the SPLASH analysis is a result sheet, where three selected solutions are compared according to the mentioned parameters. This information is then used to inform and support decision-making processes at administrative as well as political levels, by promoting evidence-based dialogue and knowledge-sharing. The data also creates a basis for coordination between different budget areas in the municipality or alternative sources of funding.

The NIRAS method to deploy SPLASH includes a detailed flood risk mapping, solution design and a matching detailed costs-benefit analysis - always adapted to the local needs, capacity and circumstances. The data generated from this analysis can be fed into our GIS screening tool that allows us to present a visual comparison of the three adaptation alternatives.

Our methodology enables cooperation that identifies and realises climate adaptation projects that protect cities from floods, provide socio-economic benefits, strengthens resilience and liveability. Using the SPLASH tool, we can assist urban decision-makers in identifying the most viable and affordable adaptation solution that offers the optimum benefits.

The SPLASH tool takes into account all forms of water related climate change hazards



Cloud burst



Storm surge



Fluvial flood



Rising groundwater



NIRAS and the Sustainable Development Goals

Our approach to urban planning is embedded in our dedication to design sustainable cities and empower resilient urban communities. We consider it critical that sustainability is integrated at all levels, to guarantee that the design process of sustainable urban infrastructure projects is based on a holistic approach, focusing on long term sustainability and local ownership.

The SDGs are at the heart of our work with cities. They are already firmly embedded in our company philosophy, our services and the way that we develop, design and implement projects. With strong international experience and local understanding of the circumstances, we offer a unique blend of experience and expertise to support the cities in moving closer towards achieving the SDGs.



The NIRAS SDG capture tool allows urban managers and other stakeholders to map their local urban infrastructure priorities and solutions and link them to the 17 SDGs. The method can be deployed in any sectors, thereby providing added value to any diagnosis conducted across technical fields.

NIRAS has been at the forefront of working with the SDGs for our clients, and we have developed and tested various SDG tools in support of making sustainability measurable in every conceivable project within municipalities, regions, industries, healthcare, supply, transport and construction. We have developed four SDG tools to help our clients - be they companies, organisations or public authorities - realise their investments in sustainable solutions. Apart from the NIRAS *SDG Capture* tool that allows for preliminary assessment of infrastructure solutions and how these impact the SDGs, we have also developed *SDG Measure*, *SDG Initiator* and *SDG Sustain* - tools that our project teams have full access to with NIRAS in-house backstopping. Furthermore, our digital project management, reporting, monitoring and impact tracking system SmartME is designed to integrate the SDGs in the assessment of investments and monitoring of progress.



The NIRAS SDG Capture tool helps translate the 17 SDGs into concrete and sustainable initiatives in any given project. This dialogue and screening tool offers a systematic approach to work with the SDGs, by setting specific goals and indicators to monitor your efforts. SDG Capture makes it easy to create an overview of the interfaces between the SDGs and virtually every conceivable project within municipalities, regions, industry, healthcare, utilities, transport, construction, etc. As a dialogue tool, it increases collaboration, ownership and interdisciplinarity. The goals are transformed into clear options, choices and deselections in the unique project context, for a more sustainable end result.

The NIRAS SDG Measure tool helps to assess how to build in a more sustainable manner. The tool can measure all possible construction parameters and show, for example how solar power, recyclable construction materials etc. affect the sustainability of a building, thereby making sustainability measurable. SDG Measure relates to the entire construction lifecycle. This includes all processes from extracting materials to planning, executing and operating, and what will happen to the construction when it has completed its lifecycle. With SDG Measure, you can pinpoint at which stage of the construction or of the building's lifecycle the individual SDG is met.



The NIRAS SDG Initiator can help a company incorporate the associated socio-economic costs into a business case through principles that ensure the best solutions for both the planet, the people, and the business. SDG Initiator can be applied in the following areas and help a company to:



1. Select the ideas in which an investment will provide the highest level of sustainability. The tool calculates the payback time of sustainability.
2. Set an ambition level for sustainability. SDG Initiator's ability to link financial metrics with sustainability metrics enables it to accurately assess an apt level of ambition, which is crucial for both strategy making and implementation.
3. Expedite the transition to a more sustainable business model by providing transparency in investments.

SDG Initiator is built on a series of basic rules that ensure the highest possible level of sustainable impact, as well as the best possible return on investment. In case of uncertain monetary and non-monetary trade-offs, the SDG Initiator can analyse the "sustainability payback" to help the user to prioritise. To achieve this, the SDG Initiator can effectively quantify the sustainability effect across an array of indicators encompassed in the SDGs. The relative importance of these indicators is determined by the socioeconomic cost related to them. This can, however, be adjusted taking into account competitiveness and the particular perception of sustainability.

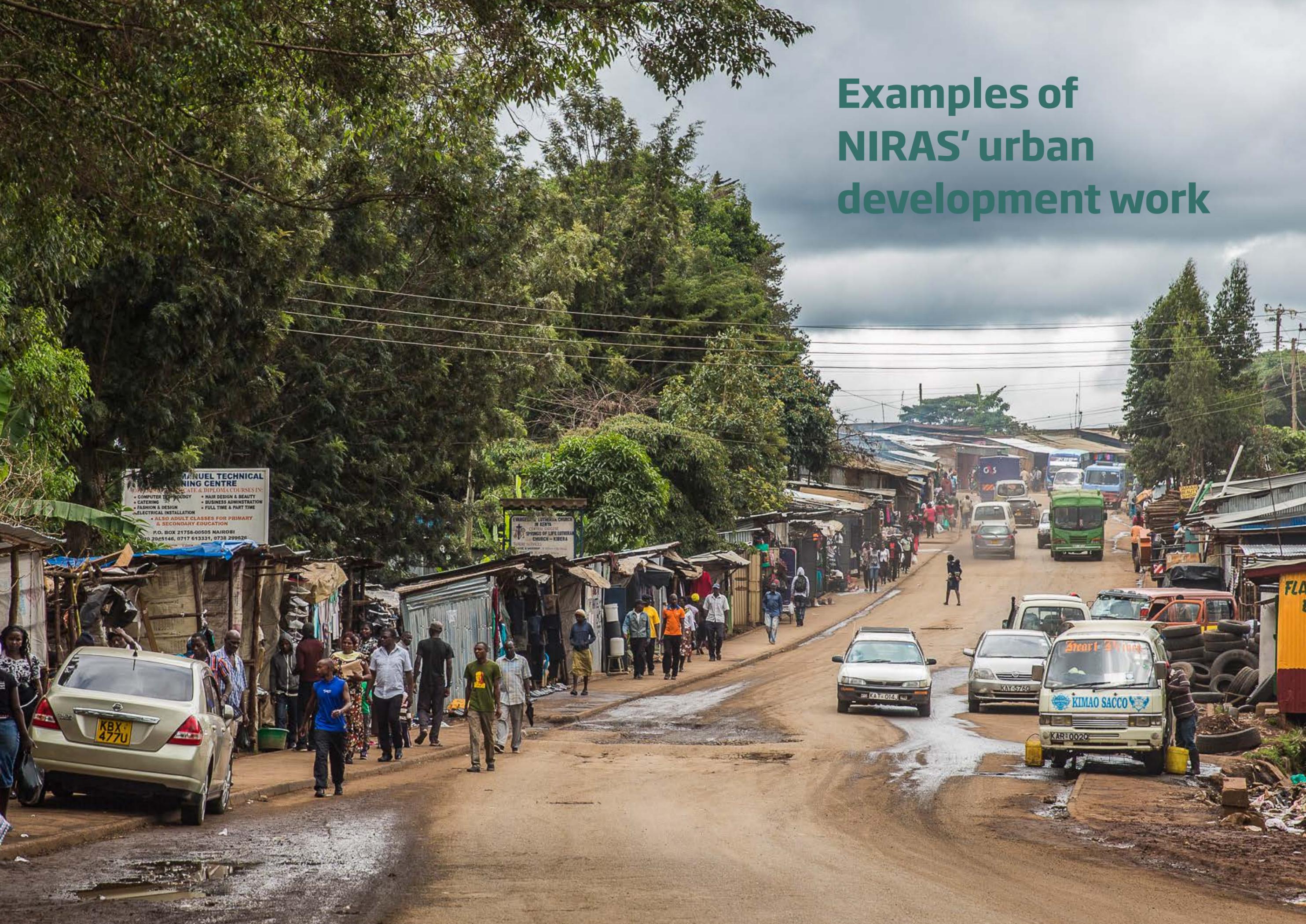


The NIRAS SDG Sustain tool is an advanced management and accounting system that can calculate a company's environmental impact throughout the value chain by comparing both past and current data. The system is based on easily accessible company data such as all data regarding purchases and expenses. The tool can be used as an overall screening tool that provides the initial insight into and understanding of conditions, such as providing the company with a well-documented basis for identifying its environmental goals and formulating its sustainability strategies. NIRAS Sustain complies with CDP, the GHG Protocol and science-based goals.

NIRAS is dedicated to ensure that our solutions positively impact societies beyond a project's lifespan, thereby delivering sustainable long-term results. By doing so, we allow the SDGs to permeate our strategies and the way we manage our projects and secure that infrastructure investments contribute to the SDGs and adhere to the expected environmental, social and governance (ESG) standards. This is done by placing a stronger emphasis on the broader strategic environmental, climate and social aspects of projects, or by identifying investment opportunities that create positive impact on especially women's and youth's wellbeing and employment opportunities. Our experience as engineers, planners, finance experts and development professionals enables NIRAS to quickly detect the less obvious linkages between infrastructure upgrade, urban planning and inclusivity, and our technical backstopping resources ensure that projects maintain a strong emphasis on the SDGs when implementing and monitoring assignments and engaging in project communication and visibility activities.



Examples of NIRAS' urban development work



MANUEL TECHNICAL TRAINING CENTRE
DIPLOMA IN AGRI & DIPLOMA COURSES IN:
• COMPUTER TECHNOLOGY • HAIR DESIGN & BEAUTY
• CATERING TECHNOLOGY • BUSINESS ADMINISTRATION
• FASHION & DESIGN • FULL TIME & PART TIME
• ELECTRICAL INSTALLATION
• ALSO ADULT CLASSES FOR PRIMARY & SECONDARY EDUCATION
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TEL: 2049146, 0717 613331, 0738 299626

EVANGELICAL LUTHERAN CHURCH IN KENYA
CENTRAL DISTRICT
SPRINGS OF LIFE LUTHERAN CHURCH - KIBERA
C/O: 100/101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000

KBX 477U

Start 2 Win
KIMAO SACCO
KAR 0020

Capacity-building for strategic mainstreaming of ecosystem-based adaptation in Viet Nam

PROJECT SCOPE

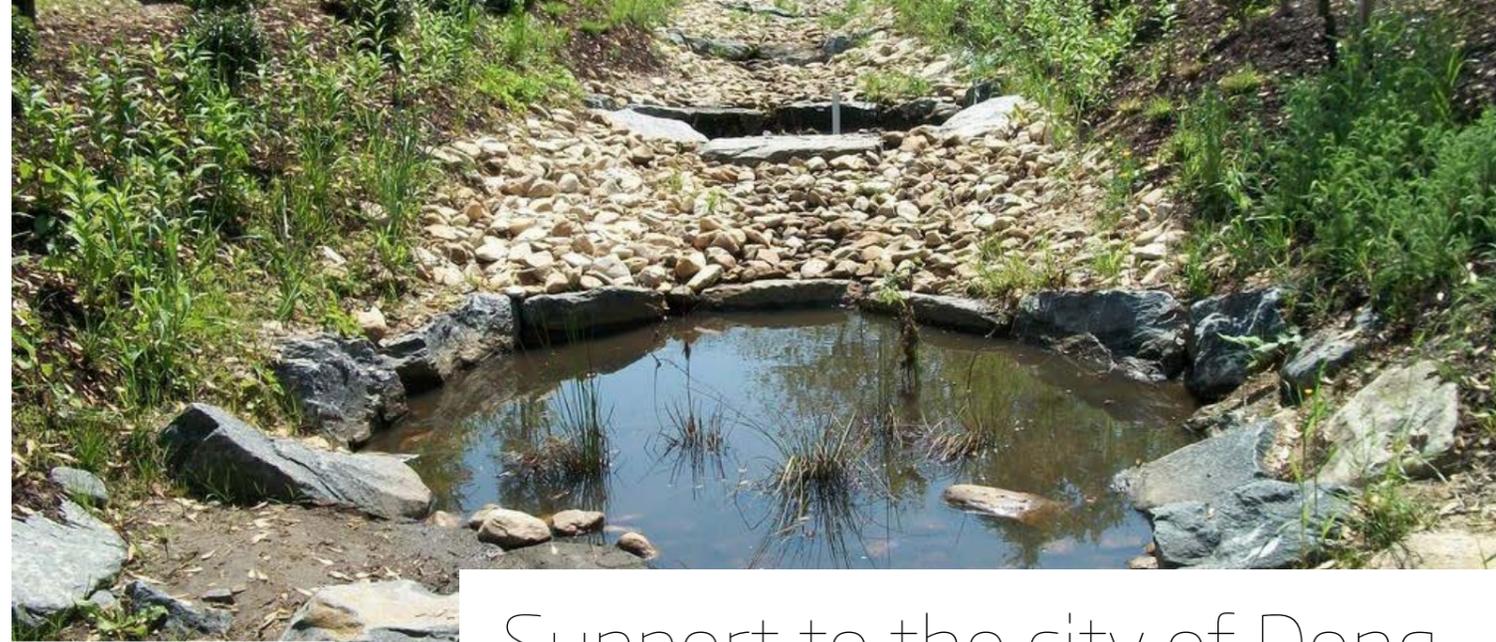
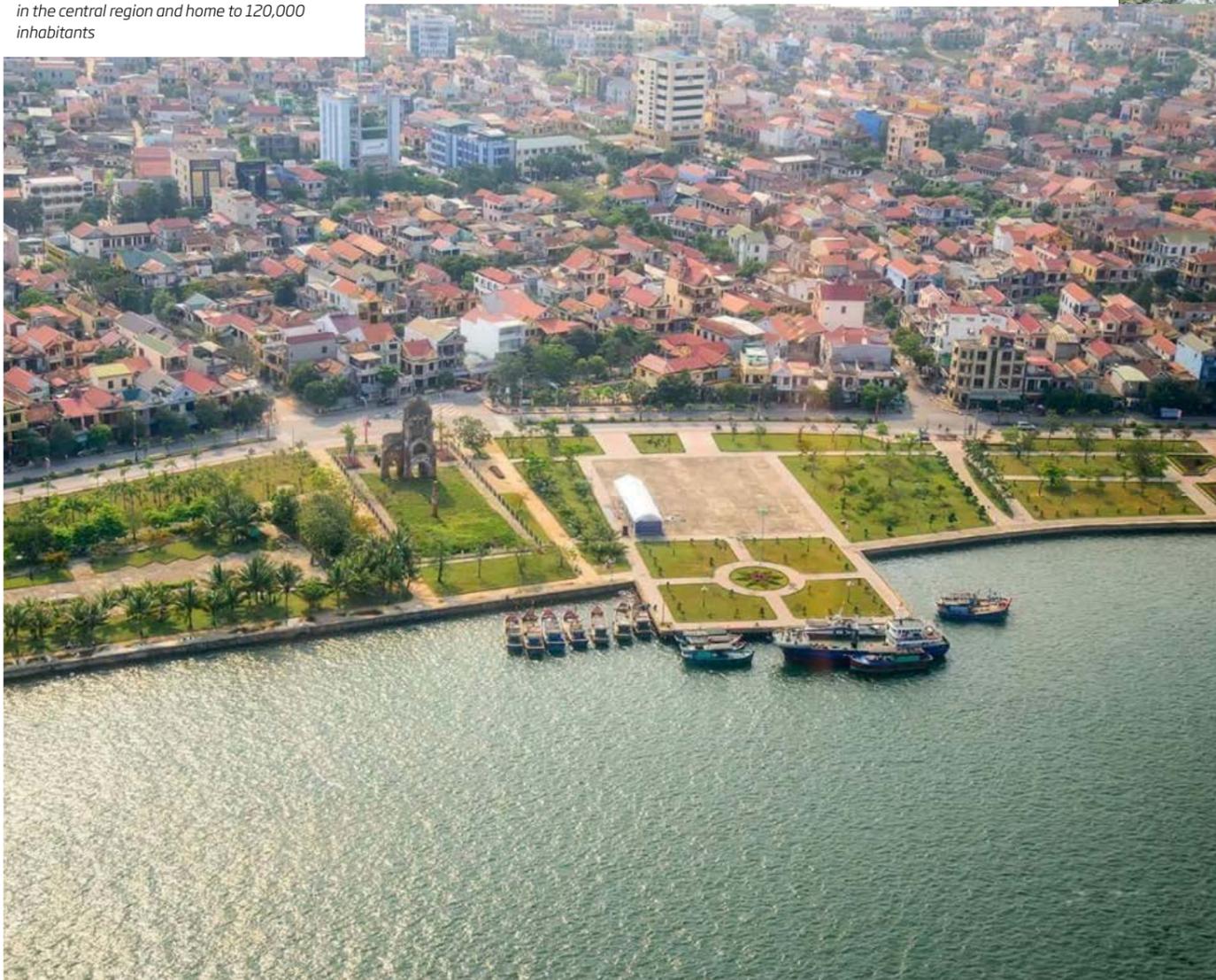
- + Local and national stakeholder engagement
- + Regional and local climate vulnerability assessment
- + Identification of potential ecosystem-based adaptation (EbA) measures
- + Preparation of capacity development strategy and training-of-trainers workshops

From 2014 to 2016, NIRAS supported the Vietnamese Ministry of Natural Resources and Environment in strategic mainstreaming of ecosystem-based adaptation (EbA) into land use and urban development planning in Viet Nam. The NIRAS team drafted a development strategy for mainstreaming climate change adaptation with a focus on EbA in close cooperation with the national project partners. By integrating the concept of EbA in trainings and supporting the institutionalisation of these trainings in already existing institutions in Viet Nam, the key stakeholders' capacity to take effective and, if possible, efficient EbA measures in planning processes was increased.

The NIRAS team screened existing international approaches and trainings on mainstreaming adaptation to climate change with a focus on EbA, conducted a capacity-needs assessment for mainstreaming EbA to climate change in relevant institutions at national and provincial level, and prepared and conducted test trainings and test workshops before drafting the final capacity development strategy, and implementing the training-of-trainers workshops.

Today, five years after this capacity-building process, EbA can be considered a topic that is well-known in Viet Nam. The pool of trainers has trained several hundred additional EbA experts that are today's ambassadors to continuously mainstream the topic into various sectors and sub-sector.

Dong Hoi is a coastal city in Vietnam, located in the central region and home to 120,000 inhabitants



Water management as part of the EbA measures

Support to the city of Dong Hoi on ecosystem-based adaptation in Viet Nam

PROJECT SCOPE

- + Capacity needs assessment to design and implement EbA measures
- + Climate-related risks and regional vulnerability assessment
- + Multi-criteria and cost-benefit analysis
- + Detailed outline for up to three urban EbA measures

Dong Hoi is a coastal city in Viet Nam, located in the central region and home to 120,000 inhabitants. The city is the administrative capital of Quang Binh Province and a major economic and tourism centre in the northern central region of Viet Nam, with kilometers of beaches and significant cultural heritage. The city is located along the Nhat Le estuary, a river draining a catchment area, and experiences recurrent floods almost on a yearly basis. Due to climate change, the sea level rise is expected to exacerbate the flood situation in the coming decades.

In 2019, NIRAS supported the city in their implementation of urban EbA measures by identifying a set of options for urban EbA and developing a detailed outline for up to three measures, in cooperation with and under consultation of the Dong Hoi City administration. The NIRAS team conducted a

scoping study of Dong Hoi City, including a capacity assessment to development and implemented measures on EbA and delivered a detailed analysis of the potential measures that matched the city's capacity and context.

Subsequently, the NIRAS team performed a multi-criteria and cost-benefit analysis of available EbA options, based on criteria discussed and weighted by local stakeholders. The final output was an outline of three urban EbA measures.

The process included interviews and workshops with key stakeholders to narrow down climate-related risks, based on a regional vulnerability assessment, implementation of capacity building measures and detailed analysis of the current situation and identification of potential EbA measures, including a cost-benefit analysis.

#4 Quality education

#13 Climate action

#14 Life below water

#15 Life on land

#11 Sustainable cities and communities

#13 Climate action

#14 Life below water

#15 Life on land

Danida fellowship learning programme on sustainable cities

PROJECT SCOPE

- + Curriculum development and preparation of course programme
- + Selection of course participants and recruitment of trainers
- + Implementation of the programme, monitoring, evaluation and reporting.
- + E-learning prior to the course activities in Denmark
- + Mentoring and evaluation of action plans on climate change adaptation and mitigation and sustainable urban development
- + Facilitation during lectures and excursions in Copenhagen

#4 Quality education #6 Clean water and sanitation #7 Affordable and clean energy #9 Industry, innovation and infrastructure #11 Sustainable cities and communities #13 Climate action #15 Life on land

The Danida Fellowship Programme on Sustainable Cities was a two-week learning programme in Copenhagen, Denmark, paired with e-learning activities. The course provided insight into environmental sustainability and demonstrated the importance of taking an integrated approach to urban development, with environmental considerations mainstreamed into all levels of planning and implementation. It focuses on sustainable cities as a framework, which connected the different elements of the programme.

The course objective was to increase the participants' ability to identify, analyse and integrate environmental considerations in the work of their home organisation. At the same time, the course took place in settings that motivated and enabled the participants to act as change agents within their organisation, and contribute to ensuring that their organisations integrate environmental and climate change considerations into their daily work, once they returned home from the stay in Denmark.

Key areas of the programme included urban mobility and pro-pedestrian development, public utilities, climate change adaptation, green infrastructure and urban resilience, land use planning, public management, solid waste management, wastewater treatment, renewable energy and public-private partnership modalities.



Visiting Vinge development site - A new urban area developed from scratch to accommodate 4,000 jobs and 20,000 inhabitants, a brand new train station, school, day care centres, sports halls and other public facilities.



Visiting Sillebro river valley, one of the biggest climate change adaptation sites in Denmark using nature-based solutions.

NIRAS has managed more than 25 Danida Fellowship Learning Programmes, each lasting for 2-4 weeks. We have trained more than 500 urban planners, city architects, municipal engineers, environmental officers and the like from Africa, Asia, MENA and Latin America in the last 12 years. The courses address multisectoral challenges and integrate climate change adaptation and mitigation, urban resilience, green growth and environmental sustainability into the sector specific curriculum.

By the end of the learning programme, the participants had:

- A deeper understanding of the benefits of integrated approaches and environmental mainstreaming in planning and implementation of development engagements;
- A better ability to identify and critically analyse environmental challenges and opportunities in relation to urban development and climate change adaptation, and to design innovative, cross-sectorial solutions;
- An increased ability to challenge "business as usual"-thinking in climate change adaptation and planning of grey and green infrastructure;
- Strengthened their knowledge about participatory planning for sustainable, liveable cities and how to involve the public and private sector, and civil society in the process;

The Danida Fellowship Learning Programme demonstrates the importance of taking an integrated approach to urban development, with resilience mainstreamed into all levels of planning and implementation. This is achieved by visits to Danish local government authorities,

utilities, civil society organisations and private companies, where participants acquire first-hand knowledge of multiple green initiatives implemented in Denmark. We often use case-based learning, where the participants prepare before the visits and discuss the benefits they find most relevance for their reality back home. The preparations are followed up with the visit itself, and subsequent presentations and debate about the solutions.

In NIRAS, we place strong emphasis on multiple benefits and holistic planning. This means that a visit is never exclusively about a specific technology or practice, but equally about the context in which it operates, including, for example, financing, legislation - and to a very large extent the synergies that may be associated with the technology or practice in question. As an example, our visits to climate-adapted urban areas are not just about how to deal with the increasing rainfall, but equally about how to integrate green recreational spaces, biodiversity, carbon sequestration, mobility, reduced heat-island effect, citizen involvement and much more into the solutions.

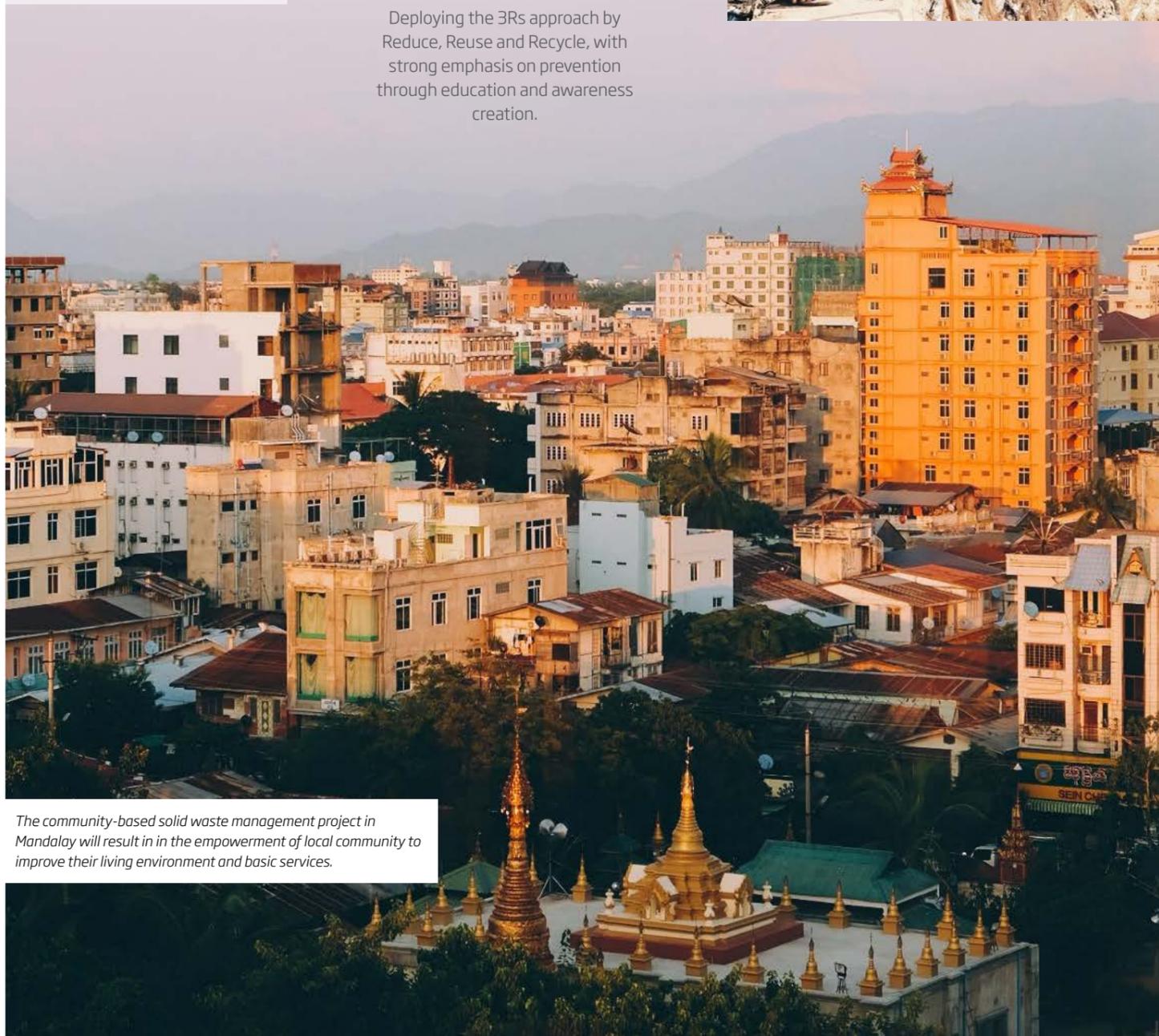
Mandalay community-based solid waste management

PROJECT SCOPE

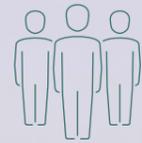
- + Integrated solid waste management
- + Participatory planning and stakeholder engagement
- + Awareness campaigns and capacity building
- + Urban climate change and environmental management
- + 3Rs approach - Reduce, Reuse and Recycle
- + Establish ward resilience committees
- + Establish ward resilience plans
- + Assess a ward resilience fund
- + Explore female livelihood opportunities

With a population of 1.25 million inhabitants, Mandalay is the second largest city in Myanmar. It is experiencing rapid urbanisation and battles with severe environmental degradation, inadequate infrastructure, and basic service provision. In an attempt to tackle this situation, the Mandalay City Development Committee (MCDC) launched the Mandalay City Waste Management Strategy and Action Plan in 2017, which is considered to be the very first initiative aimed at addressing the city's waste problem in a holistic and integrated manner, with the vision of eventually developing a resource-efficient and zero-waste management system. The plan is furthermore in line with the Mandalay Green City Agenda, which has been established to guide the city toward becoming a clean and prosperous green urban area by 2040.

However, the Action Plan cannot be realised without the involvement of Mandalay's citizens as they have a crucial role to play in creating a greener, healthier and more liveable environment. The Community-Based Solid Waste Management (CBSWM) project aims to convince the city dwellers that that the basis for all successful waste management operations rests in the willingness of citizens to follow good practices and maintain the discipline to do so consistently. Funded by the Asian Development Bank, CBSWM runs from October 2018 to October 2022 and targets four townships located at the banks of the Thingaza Creek.



The community-based solid waste management project in Mandalay will result in the empowerment of local community to improve their living environment and basic services.



More than 150,000 people in 28,692 households along the Thingaza Creek will be impacted by the project initiatives



Deploying the 3Rs approach by Reduce, Reuse and Recycle, with strong emphasis on prevention through education and awareness creation.



Urban environments are particularly vulnerable to climate change as unpredictable rainfall causes flooding, which is compounded by unorganised disposal of solid waste. In Mandalay, community-based solid waste management efforts are making a difference.

#5 Gender equality
#6 Clean water and sanitation
#11 Sustainable cities and communities
#12 Responsible consumption and production

CBSWM in a nutshell

The four townships involved in the project are situated along the banks of the Thingaza Creek, which is badly polluted and clogged by domestic and industrial waste, causing severe flooding during the rainy season. As a key measure to reduce the amount of trash dumped into bodies of water, the NIRAS team has been deployed to support the MCDC, and in particular the "Cleansing Department", in developing and launching awareness-raising campaigns on climate change impacts, solid waste, flooding, sanitation, and health among the residents. Pilot initiatives will be centred around three key interventions: Community Mobilisation, Awareness Creation, and Resilience Mechanisms. The project will define the boundaries of the pilot area, organise advocacy meetings with stakeholders at the ward, township and MCDC levels, establish a Ward Resilience Committee and draft a Ward Resilience Plan. The feasibility of a Ward Resilience Fund will also be assessed. After documenting lessons learned from the pilot area, NIRAS will develop an approach to replicate the efforts to other wards. This will involve an assessment of capacity gaps and resource constraints as well as the develop-

ment of a training plan for WRC members. As the project evolves, an additional stage will focus on monitoring, capacity building and backstopping "agents of change".

Synergies with ongoing efforts

The project is in line with the Mandalay Waste Management Action Plan as it deploys the 3Rs approach and places a strong emphasis on prevention through education and awareness creation. NIRAS' team will apply the hierarchy waste model of prevention, reduction, recycling and reusing, recovery and disposal - thereby directly contributing to the achievement of SDG 12.5 - reduce waste generation through prevention, reduction, recycling, and reuse. In addition, CRWM contributes to Mandalay's participation in the ASEAN SDGs Frontrunner Cities Programme by monitoring progress on SDGs 11.6, 5.5 and 6.3.

On a more general level, the project will closely cooperate with its sister project under the Mandalay Urban Service Improvement Project portfolio, namely the Capacity Development in Climate Change Resilient Urban Planning project, to harness synergies and coordinate efforts across the various departments of MCDC.

Improving economic efficiencies, productivity and living standards in four Tanzanian cities

PROJECT SCOPE

- + Local economic development
- + Mapping of business-enabling infrastructure
- + Improved business environment
- + Local revenue collection
- + Improved trunk infrastructure
- + Human capital development

Tanzania's Five-Year Development Plan (FYDP) II for 2017–2021 anticipates that ongoing rapid urbanisation (over 5% per year) will place additional pressure on urban infrastructure and services in spite of high levels of GDP growth in recent years. Tanzania's urban population is expected to grow from 15 million in 2012 to 60 million by mid-century, exceeding half the national total. Cities also account for the majority of the country's physical, financial, human, academic, and technological capital. Thus, the urbanisation process needs to be better managed to improve cities' economic efficiencies and productivity and provide better living conditions for their population and more inclusive and green growth.

The FYDP II requires all local governments and other stakeholders at the sub-national level to draw up Integrated Development Plans (IDPs). This is because many of the interventions anticipated under FYDP II - while national in scope - require concerted actions at the local or regional level. In the implementation of the industrialisation agenda, the role of local government authorities with regard to the local economic development (LED) approach is critical in addressing many issues related to, for example, allocation of land for investment, development of SME clusters, and support of LED initiatives.

Increasing and sustaining employment is central to the Tanzanian Government agenda and the main reason for the pursuit of an industrial economy. The key to sustainable industrial growth and job creation lies in the



growth of domestic companies and the attraction of local and foreign investors to inject capital and expertise into the economy. LED strategies will have to pursue socio-economic transformation and diversify sources of growth to address the challenge of job creation. Well-designed LED strategies will not only lead to diversified economies but also expand the revenue sources of the respective local government authorities, thus reducing financial over-dependence on the central government. Interventions will need to be cohesive, including improvement of the business environment, upgraded or new infrastructure, and enhancement of skills.

To better manage the urbanisation process and ensure cities' economic efficiencies, productivity, and improved living conditions, the World Bank contracted NIRAS to develop a LED strategy - with supporting action plans, projects and programmes - for the four participating urban local authorities from Mbeya, Tanga, Arusha and Mtwara.

Assessing growth potential and ability of urban services to meet needs

The project objective was to provide a strategic decision-making tool for selected urban cities to unleash economic potential and reduce poverty by improving the quality of, and access to, basic urban services through rehabilitation/upgrading of urban infrastructure and strengthening institutional capacity of government authorities. The strategic decision-making tool is captured in a LED strategy for each of the four participating cities.

The LED strategy analysed the participating cities in terms of business environment, the urban economy and its growth potential, as well as actions and plans for poverty alleviation. Each LED strategy incorporated inputs from the community, private sector, public entities and development partners who are working closely with the local government authorities. Outputs included: city economic assessments, city council business environment assessments, assessments of human development potential, SWOT analyses, "Diamond of Competitiveness", and strategic frameworks for the participating local authorities.



Once implemented, 4 cities with a combined population of 1,287,122 inhabitants will reap the benefits of the local economic development strategies.

NIRAS' role in the project

NIRAS assessed the growth potential of the participating cities' economies in comparison to the national one. This entailed examining local government authorities' contribution to national economic growth, share of exports, identification and assessment of cities infrastructure links to international and national points. The nature of firms within the area, access to finance and credit (including micro-credit) and local potential for economic growth was also assessed.

We identified existing main and growing sectors of the formal and informal economy, and assessed their growth rates and contribution to the economy. We conducted a trend analysis of employment (both quality and quantity), city GDP, contribution to city council income (through own source revenue rates and services),

level of exports, share of national industry, spatial clustering / concentration of main sectors and sub-sectors. Average wages in each sector and sub-sector were investigated and a Diamond of Competitiveness analysis conducted. We also examined educational levels, productivity, the main obstacles to growth and backwards and forwards linkages of sectors and sub-sectors.

In terms of the local business environment, NIRAS assessed how local authority services and responds to business needs, including small businesses and those in the informal economy. This included an examination of the regulatory framework and processes and fees related to planning applications, business registration, license applications. Our team also assessed how local authorities managed economic areas, infrastructure provision, transport systems and real estate planning.

Finally, NIRAS looked at human development potential by assessing education levels and skills from formal education and on-job experience (against potential needs).

A key aspect of the methodology was to collect data and review reports at national, regional and city levels. The city, agencies and ministries, private sector representative bodies, such as the Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA), and NGOs were sources of information. In order to obtain detailed information and an understanding of LED issues, a number of organisations were interviewed in Arusha, Tanga, Mbeya and Mtwara and focus group discussions addressing the economy, the business environment and infrastructure, and education and skills were held, followed by field trips and further desk research.

Priority interventions for the cities

Based on the analysis of information collected above, the TA team proposed strategic options and developed a LED strategy document for each of the participating local authorities. This was done in participatory manner with relevant stakeholders, who jointly identified a common vision and objectives.

The NIRAS team proposed key options and priority interventions for Mbeya, Tanga, Arusha and Mtwara, who remain the ultimate decision-makers on how to tackle the issues and in what order. Not all interventions will be carried out, but as LED is in the interest of the country as a whole, Government ministries, departments and agencies as well as the private sector and others stakeholders should also contribute to its implementation.

#8 Decent work and economic growth

#11 Sustainable cities and communities

Climate vulnerability study helps prioritise investments in four Cambodian cities

PROJECT SCOPE

- + Inclusive urban climate change adaptation
- + Participatory planning and stakeholder engagement
- + Flood protection and economic development
- + Public spaces upgrade
- + Urban ecosystem-based adaptation (EbA)
- + Climate change vulnerability assessment
- + Climate vulnerability and risk maps
- + Institutional capacity development
- + Development of adaptation options
- + Establish ward resilience plans
- + Assess a ward resilience fund
- + Explore female livelihood opportunities

Cambodia's provincial cities have experienced sustained urban growth, and it is critical to address their infrastructure to improve capacity to adapt to projected climate change impacts. As a result, Cities Development Initiative for Asia (CDIA) selected four provincial cities (Battambang, Kampong Speu, Kratie and Chhlong) to be part of the Climate Vulnerability and Adaptation Assessment of Cambodian Secondary Cities (CVAA) project.

CVAA assessed the nature and spatial location of climate hazards, vulnerabilities, and risks given current climate change projections and adaptive capacities. The four cities were selected as they are located on major rivers and highly susceptible to increased flood risks, leading to an urgent need for investment to improve resilience.

The resulting study informed the identification, prioritisation and design of proposed investments in the four cities.

The recommendations were integrated with the closely related feasibility study on the technical assessment of infrastructure, public space and landscaping. The CVAA project has thus been important to assess vulnerability and risk related to climate change and to provide recommendations for effective adaptation strategies, resilient infrastructure and inclusive urban development.



Photo caption/short text on project

#6
Clean water
and sanitation

#11
Sustainable cities
and communities

#13
Climate
action

#15
Life
on land

Climate vulnerability assessment

In our climate assessment, we compared two different projections to see how the climate is estimated to change and to define the full range of possible climate change impacts and risks. The findings suggested that there will be an increase in temperature, evaporation and rainfall. There will also be an intensity increase of the frequency and severity of a number of hazards that cause disruption in Cambodia, the main ones being floods, typhoons, storm surge, droughts, and fires. Sea level rise, which is occurring globally due to climate change, will also impact the Cambodian coastline.

The increased frequency and severity of these hazards will have subsequent adverse effects on aspects such as water supply, food availability, public health and riverbank erosion, all of which are already being experienced in Cambodia. These hazards are most likely to have the greatest impact on the most vulnerable people since climate vulnerability is amplified by extreme poverty, and social and gender inequality.

Project recommendations

Our recommendations were developed in close consultation with local stakeholders through a number of workshops and field visits. Even though most of the climate risks are similar between all four cities, individual recommendations with project options were developed based on the particular conditions in each city.

The project options included both structural works for reduced flooding, institutional strengthening activities, integrated spatial planning, and other cross-cutting projects. Below are a few examples of the type of projects recommended to the cities:

- Establish eco-recreation facilities with lakes and green parks to maintain the natural flood storage area while at the same time increasing the green recreation space for the local community.
- Structural works such as levees, sluice gates, riverbank protection, and floodwalls for better flood protection.
- Rehabilitation of canals to capture local stormwater runoff, which will lead to reduced flooding and improved drainage.
- Installation of flood forecasting and warning systems for increased warning lead time and capacity for flood emergency response.
- Capacity building of national and sub-national stakeholders for sustainable urban planning for more effective and holistic climate adaptation solutions.

These recommendations have formed an integral part of the project preparation process as it will assist the Ministry of Public Works and Transport to formulate and prepare the components of the upcoming AFD loan with a consideration for climate change.



4 cities with a combined population of 290,000 inhabitants will reap the benefits of the enhanced climate resilient infrastructure



Detailed climate vulnerability risk maps were produced for the 4 cities informing the development of resilient priority investment options

Local investment climate project

REVENUE COLLECTION

- + Distribution of point-of-sale machines
- + Improved and simplified revenue collection procedures
- + Development of a *Revenue Management Manual*
- + Support to draft revenue collection strategies
- + Capacity building of local government staff

#16

Peace, justice and strong institutions

#17

Partnerships for the goals



Revenue collector servicing local vendors and fishermen.

Local government revenue collection

The Local Investment Climate (LIC) project supported the local government authorities (LGAs) in the Kigoma and Dodoma regions in becoming more independent on financial support from central government. This included support to drafting revenue collection strategies and addressing issues related to prioritisation of tax areas, sources of revenue at district level, practices in revenue collection, by-laws related to taxes and levies, and key advocacy issues with input from both the private and public sector, captured through the public-private dialogue platforms established by LIC.

LIC also supported the LGAs in both regions with a total of 505 electronic point-of-sale (PoS) machines in 2016-2018. The use of electronic devices in LGA revenue collection led to an average increase of revenue by 53%, when comparing the numbers before the introduction of the PoS machine.

This increase in revenue collection encouraged the LGAs to procure 631 additional PoS at own cost. For example in Uvinza, Kigoma, a total of 65 additional PoS machines were bought by the LGA, which enabled the district to fully digitalise the revenue collection system, thereby improving their mobilisation of resources and ensuring more institutional accountability and transparency, as the PoS machines are connected to a geographical information system (GIS)-based Local Government Revenue Collection and Information System (LGRSIS), that acts as a control mechanism for revenue collection. In order to ensure sustainability across the LGAs, the LIC project and key national partner (PO-RALG) developed a *Revenue Management Manual* as a guideline for LGAs



Revenue collector at the Kibirizi landing site in Kigoma with the PoS Machine



Since 2016, a total of 505 Point of Sales machines have been distributed by LIC to the LGAs in Kigoma and Dodoma regions.



Since the introduction of the Point of Sales machines, the revenue collection has increased the LGAs revenue collection on average by 53%.

LIC aimed to improve conditions for inclusive growth and investment by transforming strategic clusters and value chains and providing support to Public-Private Dialogues at the local level.

in planning, reviewing and improving revenue collection.

By addressing the challenges of LGA revenue collection, the LIC project contributed to the SDG 17.1: *Strengthen domestic resource mobilisation to improve domestic capacity for revenue collection*, and SDG 16.6: *Develop effective, accountable and transparent institutions at all levels*.

LIC in summary

Working to address the critical constraints to business growth and economic development at the sub-national level in Tanzania, LIC encouraged practical and joint public-private sector responses to the challenges faced by government and business when improving the conditions for private sector development and poverty reduction at the local level. This is where private business, women and men come face to face with barriers that inhibit their business from growth.

The LIC project was born with the vision to improve the business and overall investment climate in the regions of Dodoma and Kigoma. It supported the districts in their efforts

to catalyse growth and strengthen the competitiveness of the private sector. LIC's objective was to improve conditions for inclusive growth and investments in the selected LGAs by transforming strategic clusters and value chains and provide support to public-private dialogues that foster a strong partnership between the two sectors.

The aim of these initiatives was to achieve practical reforms that alter the dynamics of the local economy, reduce the costs and risks of doing business, and strengthen private sector competitiveness and the base of LGA source of revenue.

Key areas of engagement

- Cluster and value chain development
- Public-private dialogues
- Small Industrial Facilities Fund

Geographical scope

In 2014, the LIC project commenced with activities in two LGAs in Dodoma and Kigoma. Today, LIC has expanded its engagement to all 14 districts and 16 LGAs of both regions.

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NIRAS offices around the world

Our decentralised structure ensures that we are always close to our projects. With 51 offices in 31 countries worldwide, we maintain strong local ties to clients, experts, and organisations in all of our key markets. Building on our motto "we listen, we learn, we deliver", NIRAS is proud to be a long-term partner in the pursuit of growth and prosperity for the countries in which we work. Our representations are staffed by professionals committed to building partnerships with local service providers, and we train and recruit local talent beyond the lifespan of individual projects. NIRAS sees this as a contribution to building sustainable and equitable future societies wherever we work. Contact our representatives to see how we can support your needs.

For a complete list of NIRAS country offices, visit our website: www.niras.com/locations

■ The next generation consultancy

Owned by a foundation and a percentage of its employees, NIRAS is an international multi-disciplinary consultancy firm with Nordic roots and values creating sustainable development solutions for a better, more equal, and stable world. We have about 2400 employees worldwide and implement projects in over 100 countries. We work across a broad spectrum of areas including construction, energy, water, climate change resilience, and infrastructure to rural development, the process industry, economic development, geodata, as well as urban planning. Our mission is to deliver tailored, innovative, value-creating, and results-driven solutions to enable our clients and partners achieve their goals. We do this by providing transformative support for positive change, addressing root causes, and magnifying impact through flexibility in implementation, capturing SDG-linked results, and celebrating successes.

Ethics and Sustainability

Through the more than 7000 projects NIRAS implements around the globe, we are doing our part to contribute to sustainable societies by meeting the UN's Sustainable

Development Goals (SDGs). All NIRAS results are linked to their contributions to one or several of the SDGs. In our own practice, we emphasise accountability and ethics. NIRAS is a signatory to the UN Global Compact and member of the International Federation of Consulting Engineers (FIDIC). Through these, we have committed to uphold a number of international principles.

International Consulting

A key business unit, NIRAS International Consulting collaborates with development organisations, donors, governments, institutional investors, and the private sector to design, manage, and evaluate projects and services that create opportunities for people to improve their lives and live in safe, equal, well-governed, and climate-resilient societies. We do this in partnership with our country offices and our extensive network of experts to ensure a comprehensive, results-driven approach that is both contextually sensitive and produces innovative outcomes for maximum value. We pride ourselves on efficient and effective results-based management.

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