2023

THIRD EDITION

COMPENDIUM OF INSPIRING PRACTICES ON URBAN-RURAL LINKAGES:

Implementation of Guiding Principles and Framework for Action to Advance Integrated Territorial Development

UN-HABITAT

COMPENDIUM OF INSPIRING PRACTICES ON URBAN-RURAL LINKAGES: Implementation of Guiding Principles and Framework for Action to advance Integrated Territorial Development

First published in Nairobi in 2023 by UN-Habitat

United Nations Human Settlements Programme (UN-Habitat)
P. O. Box 30030, 00100 Nairobi GPO KENYA
Tel: 254-020-7623120 (Central Office)
www.unhabitat.org

HS Number: HS/055/22E

Acknowledgements

Coordinators: Remy Sietchiping and Grace Githiri
Principal Author (s): Eol Chae and Antonio Kipyegon
Case Study Authors: Ambra Migliorisi, Ana Santillán, Anju Dwivedi, Elisa Carloni, Choudhury Rudra Charan Mohanty, Corina Demottaz, Daline Portocarrero, Dieter Van Moorhem, Nicola Gianluca Di Fiore, Ellen van Selm, Emmanuel Gbadebo Adeleke, Fazileh Dadvar-Khani, Francesco Tonnarelli, Ganesh Raj Joshi, Claudia Giordano, Hosein shenavaee, Ilse Kramer, Isai Laurente, Jurjen van der Weg, Lady Torrejón, Marco Delgado, Markus Appenzeller, Valentino Marini Govigli, Martin Probst, Luca Mulazzani, Nana Urakami, Nikita Harikishan, Olaf Gerson, Paola Peláez, Piet Brouwer, Rafael Córdoba Hernández, Rossana Poblet, Marco Setti, Shaivi Kulshrestha, Shubhagato Dasgupta, S. Vishwanath and Willem Van der Voort and The SAKiRP team at Enabel

Peer Reviewers and Supporters: Antonio Kipyegon and Grace Githiri
Proofreaders: Marie Soba, Camille Paris, Shannon McCormick and Phelistance Gendia
Design and Layout: Jean-Robert Gatsinzi
Printer: UNON, Publishing Services Section, Nairobi ISO 14001:2004-certified
Financial Support: Swedish International Development Cooperation Agency (SIDA)

Disclaimer

Coverpage: Region Deal Southeast Friesland © Partners Region Deal

2023

THIRD EDITION

COMPENDIUM OF INSPIRING PRACTICES ON URBAN-RURAL LINKAGES:

Implementation of Guiding Principles and Framework for Action to Advance Integrated Territorial Development

UN-HABITAT

Table of Contents

List of Figures

List of Acronyms

CAUPD	Chinese Academy of Urban Planning and Design
CBS	Central Bureau of Statistics
CERF	Central Emergency Response Fund
CGWB	Central Ground Water Board
CPHEEO	Central Public Health and Environmental Engineering Organisation
DSWG	Durable Solutions Working Group
ECoC	European Capital of Culture
EST	Environmentally Sustainable Transport
ESMP	Environmental and Social Management Plan
EUNIS	Europe Nature Information System
EVP	Ecosystem Vulnerability from Planning
FfA	Framework for Action
FH	Food Hub
FoodLAND	Food and Local Agricultural, and Nutritional Diversity
FSM	Faecal Sludge Management
FSP	Fries Sociaal Planbureau
FSTP	Faecal Sludge Treatment Facility
GDA	Gender and Development Alliance
GDP	Gross Domestic Product
GI	Green Infrastructure
ILPÖ	Institute of Landscape Planning and Ecology
IDP	Internally Displaced Persons
JIPS	Joint Internal Displacement Profiling Service
KPIs	Key Performance Indicators
KSPCB	Karnataka State Pollution Control Board
LC HRW	Lower Chillon River Watershed Ecological Infrastructure Framework
LEIS	Lima Ecological Infrastructure Strategy
LF	Leeuwarden-Fryslan
LiWa	Lima Water
LoU	Letter of Understanding
MAES	Mapping and Assessment of Ecosystem and their Services
NBS	Nature-Based Solutions
NGO	Non-governmental Organisations
NUA	New Urban Agenda
PBF	Peacebuilding Fund

PLA	Participatory Learning and Action
RAMP	Rural Access and mobility Project
SAKiRP	Sustainable Agriculture Kigoma Region Project
SDG	Sustainable Development Goal
SEZ	Special Economic Zone
SDI	Spatial Data Infrastructure
SMEs	Small and Medium Enterprises
SPIU	State Project Implementation Unit
STPs	Sewage Treatment Plants
TARURA	Tanzanian Rural and Urban Roads Authority
UNCRD	United Nations Centre for Regional Development
UN-Habitat	United Nations Human Settlements Programme
UNHCR	United Nations High Commission for Refugees
URL-GP	Urban Rural Linkages:Guiding Principles
VAD	Vitamin A Deficiency
WSUD	Water Sensitive Urban Design
WWTP	Wastewater Treatment Plan
WUF	World Urban Forum

Nyabigufa Bridge, Tanzania
© Enabel Tanzania

FOREWORD

I am pleased to present the third edition of the Compendium of Case Studies on Urban-Rural Linkages. This is a knowledge series demonstrating the application of the guiding principles of urban-rural linkages and framework for action.

The Sustainable Development Goals (SDGs) and the New Urban Agenda call for new, inclusive approaches and enhanced synergies between urban and rural communities and spaces – an essential component of the Agenda 2030 vision to "leave no one and no place behind".

Specifically, Target 11.a calls for "supporting positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning". Similarly, the New Urban Agenda demonstrates the Member States' commitment to promoting sustainable development through integrated urban and territorial approaches. To put these commitments into action, we need effective multilateralism and cooperation between all levels of government – local, regional, and national.

In this Decade of Action, national and subnational governments, working with development partners globally, must continue developing and implementing policies and strategies that leverage territorial opportunities and maximize the benefits of strengthening urban-rural linkages.

This third Compendium follows the first and second editions which were released in February 2020 and May 2021 respectively.

It expands the catalogue of case studies on urban-rural linkages from Africa, Asia, Europe, and Latin America. Thematically, it covers mobility, heritage and culture, basic services, technology, ecosystems, governance, urban and territorial planning, and food systems.

The case studies highlight the role national and subnational governments can play in strengthening urban-rural linkages through joint initiatives. This includes the multi-level, multi-sector, multi-stakeholder and whole of government approaches to the governance of urban and rural areas.

Decision makers, planners, and other stakeholders can use this series of 17 cases to draw lessons and adapt good practices applicable to their context. According to UN-Habitat's World Cities Report (2022), urban-rural linkages are sometimes overlooked in urban planning and decision-making process despite urban and rural areas being mutually interdependent. This series expands knowledge and good practices on urban-rural linkages, to inspire policymakers to fill this gap by ensuring that policies and plans consider urban and rural needs.

UN-Habitat is also preparing the inaugural Global State of Urban-Rural Linkages Report, which aims to take stock of progress on urban-rural linkages since the beginning of the millennium.

I hope this Compendium will inspire your action to implement integrated territorial development thereby ensuring 'no one and no place is left behind'.

Ms Maimunah Mohd Sharif,

Under-Secretary General, United Nations,
and Executive Director, UN-Habitat

INTRODUCTION

1. BACKGROUND

Several global processes including conflict, climate change and disaster recovery (COVID-19), continue to produce varying impacts on the flow of people and goods along the urban-rural continuum. This disproportionate impact is due to underlying factors such as national and subnational priorities, migration and population growth, scarcity of resources and competing interests between urban and rural areas.

The world's urban population has grown rapidly, from 751 million in 1950 to 4.2 billion in 2018 [1]. We are witnessing a world that will continue to urbanize over the next three decades—from 56 per cent in 2021 to 68 per cent in 2050. This translates into an increase of 2.2 billion urban residents, living mostly in Africa and Asia. On the other hand, the rural population is about 60 to 67 percent in low-income and low-middle-income countries and on average about a fifth of the population in high-income countries. However, data [2] indicates that globally, the rural population is in steady decline, partly contributed to by rural-urban migration.

Urban areas are known as the drivers of economic growth and prosperity, accounting for about 80 percent of global GDP[3]. In addition, the rapidly rising urban populations and thinning rural population influence policies and development priorities in favour of urban areas. As urban areas continue to benefit from this economic development, the rural population ends up being on the receiving end of increasing poverty.

The deep challenges of poverty and inequality persist in rural areas—home to four out of every five people living below the international income poverty line. Rural populations also have less access to education, health and other basic services [4]. (World Social Report, 2021)

While urban areas are undoubtedly the engines of economic productivity and growth, it must be recognized that rural areas are the cradle of resources (raw materials, labour, land and other natural factors) needed by urban areas to spur economic growth. Additionally, and in these times of climate change, rural areas are critical for the biodiversity and food systems. Rural areas are therefore key players in global and national growth, and must elevate to equal recognition level as urban areas, in contributing to socio-economic development, which in turn leads to enhanced shared prosperity across the rural urban continuum.

As underscored by the UN-Habitat Executive Director's introduction to the World Cities Report 2022, "Urbanization should not be at the expense of rural development. In fact, both should be symbiotic and mutually enhancing".

Against this backdrop, it is crucial to foster inclusive territorial development approaches that strengthen urban-rural linkages that leave no one and no place behind. Stronger urban-rural linkages are key to effectively address the current global cross-cutting challenges- conflict, disaster and disaster recovery (COVID-19), and climate change.

For instance, the COVID-19 pandemic clearly demonstrated the role played by urban-rural linkages in sustaining food systems across the urban-rural continuum. Promoting inclusive investment, finance instruments and systems to support both urban and rural areas and reduce inequalities in the provision of sustainable infrastructure and services are vital for a sustainable development that leaves no one and no place behind. Likewise, policy interventions characterized by integrated and complementary approaches should be adopted to significantly bridge and reduce the rural urban divide.

In both the 2030 Agenda for Sustainable Development and the New Urban Agenda (NUA), United Nations Member States agreed to policies that support integrated urban and territorial planning and development. They called for new, inclusive approaches and enhanced synergies between urban and rural communities and spaces – an essential component of the vision of Agenda 2030 to "leave no one behind". Several national and subnational governments, international organizations, local organizations, academia and other players in the urban-rural linkages field have therefore taken a wide array of efforts to foster and strengthen urban-rural linkages globally. For instance, UN-Habitat's programme on urban-rural linkages has seen several outcomes through multi-country activities, normative tools and knowledge products, as well as partnerships and advocacy efforts.

As a collective global effort, in 2019, over 130 stakeholders engaged in a participatory consultation process, convened by UN-Habitat that resulted in ten principles and eleven thematic entry points being identified and agreed upon, known as the Urban-Rural Linkages: Guiding Principles (URL-GP) and Framework for Action. The Guiding Principles can help shape strategies, policies and plans for sustainable urban and territorial development. The principles were developed for flexible application at different levels of government, intergovernmental organizations, development partners and other stakeholders including academia, research, civil society and the private sector. The Compendium of Inspiring Practices on Urban-Rural Linkages is a series of knowledge that takes stock of ongoing practices that exemplify the URL-GP and Framework for Action. The compendiums are made of examples sourced from partners from different regions globally through open calls for case studies. this 3rd edition is discussed in more detail in section two which also gives brief details about the previous editions.

FIGURE 1. Urban-Rural Linkages: Guiding Principles

Actions to create an enabling environment for urban-rural linkages:

A. Governance, legislation and capacity development.

B. Integrated planning across the urban-rural continuum.

C. Investment and finance for inclusive urban-rural development.

D. Empower people and communities.

E. Knowledge/data management for dynamic spatial flows of people, products, services and information.

Sectorial and thematic entry points:

F. Territorial economic development and employment.

G. Coherent approaches to social service provision.

H. Infrastructure, technology and communication systems.

I. Integrated approaches for food security, nutrition, and public health.

J. Environmental impact and natural resource and land management.

K. The urban-rural continuum in the face of conflict and disaster.

[1] https://www.un.org/development/desa/publications/2018-revision-of-world-urbanization-prospects.html

[2] World Bank (2018): rural population- https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS

[3] https://www.worldbank.org/en/topic/urbandevelopment/overview

[4] UNDESA (2021), World Social Report: https://desapublications.un.org/file/534/download

2. ABOUT THE COMPENDIUM

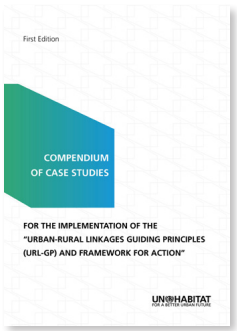
The 3rd edition of the Compendium of Inspiring Practices on Urban-Rural Linkages (URL) continues the series of knowledge, documenting inspiring initiatives to advance integrated territorial development. It also seeks to continue informing government leaders, experts and general readers about how these initiatives are linked to the Urban-Rural Linkages Guiding Principles and Framework for Action at global, national and subnational levels. The case studies are structured in a way that they present roles of different stakeholders in strengthening urban-rural linkages and how their actions contributed to the achievement of the project's goals and impacted the beneficiaries. More specifically, each case study shows the problem, the actions taken, the results and achievements there of. The compendium also contains lessons learned from the previous editions and presents next steps on the approach and development of the subsequent editions.

The first edition of the compendium, released during WUF10 in early 2020, compiled nine case studies following the release of the URL-GP and FfA in 2019.

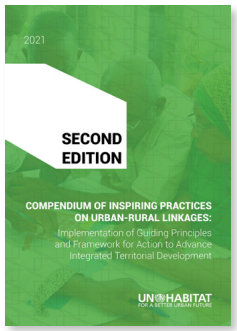
The case studies had been collected way before the launch of the guiding principles of urban-rural linkages and framework for action. They however displayed linkage to up to eight areas in the framework for action namely; the food system, transportation, urban and territorial planning, infrastructure and communication, conflict and disaster, integrated governance, territorial economic development and inclusive finance.

The second edition of the Compendium consisted of 17 case studies including two tools and 15 projects and was released in 2021. The cases were selected considering linkage to the URL-GP and regional representation. Additionally, many of the selected cases were from recent initiatives, with the aim being to depict the upcoming initiatives on urban-rural linkages.

From the submissions, it was possible to carry out analysis along several dimensions, including **geographical distribution, type of intervention, level of intervention (governance level), and actors engaged in URL interventions**.



Read the report here



Read the report here

The cases were also structured to demonstrate an explicit application of the URL-GP and FfA, which provided adequate information to analyse and present the distribution of the Guiding Principles. The structure and content in the case studies also enabled a narrative analysis of application of the Framework for Action.

The **3rd edition** of the Compendium is a compilation of 17 case studies demonstrating the progress made by different actors to advance urban-rural linkages. Building on the case study structure used in the second edition, this third edition continues with the approach of exemplifying how the Guiding Principles and Framework for Action are illustrated through the case studies.

It also continues demonstrating the value of the integrated territorial approach and helps to articulate the main dimensions of sustainability in practical, impact-oriented ways.

This third Compendium provides more inspiring examples of integrated efforts that apply the principles and actions of the URL-GP. It showcases practical entry points linking urban and rural, food and biodiversity, waste management, social integration, climate, soil and nutrition. This knowledge product is relevant for urban and rural actors at national and subnational levels, and can be applied to various geographical contexts to enhance territorial development

KEY FINDINGS AND MESSAGES/COMPENDIUM IN BRIEF

1. KEY FACTS ABOUT THE THIRD COMPENDIUM

This compendium is comprised of five cases from Africa, seven from Asia and Pacific, three from Europe and two from Latin America. The geographical analysis is not an indication of the overall status of urban-rural linkages initiatives in each region. It is an analysis based on the case studies that were received for this edition of the compendium.

FIGURE 2. Geographical distribution of the case studies

The case studies were classified under dimensions which include design, spatial plan, project, strategy, policy, and tool, a third of the cases were projects. Cases corresponding to spatial planning were 19%, followed by policies and tools at 14% each. However, one case does not necessarily correspond to one classification criterion, as some cases have multiple dimensions of approach.

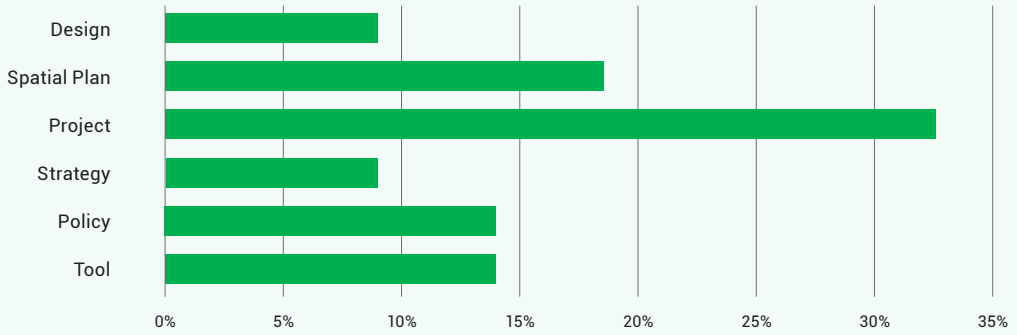


FIGURE 3. Types of intervention on urban-rural linkages

When cases were classified according to territorial jurisdictions, there were more cases in which more than one municipality cooperated or interventions were at the metropolitan, subnational, or regional levels (69 percent in total) than cases in one administrative jurisdiction (31 percent in total).

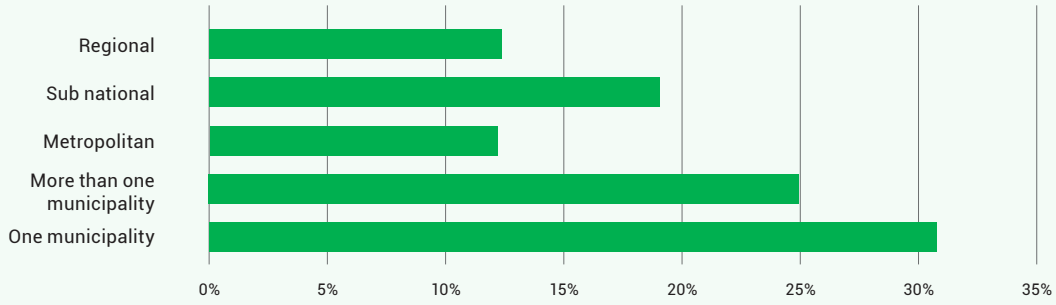


FIGURE 4. Level of intervention on urban-rural linkages

In most cases, actors and stakeholders from different fields, sectors and specialities were involved, showing multi sectoral, multi-level and multi-stakeholder approaches to strengthen urban-rural linkages. The actors can be broadly categorised into governments of different levels, private sector, civil society, academia and communities. Some cases depicted more than one actor within the same jurisdiction collaborating while others, actors from different levels of governance were involved. The composition also varied from partnerships between government bodies and those that brought together diverse actors.

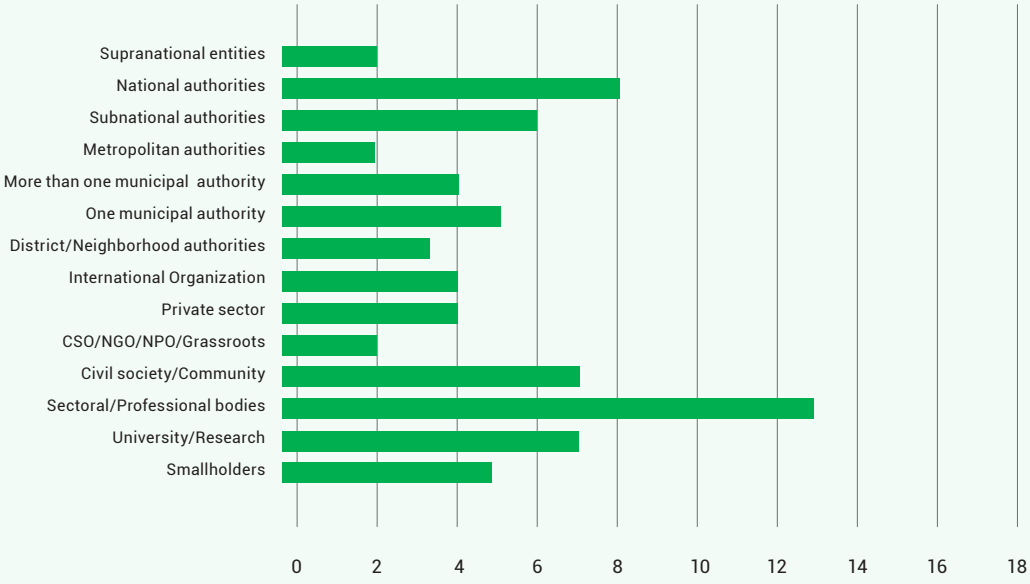


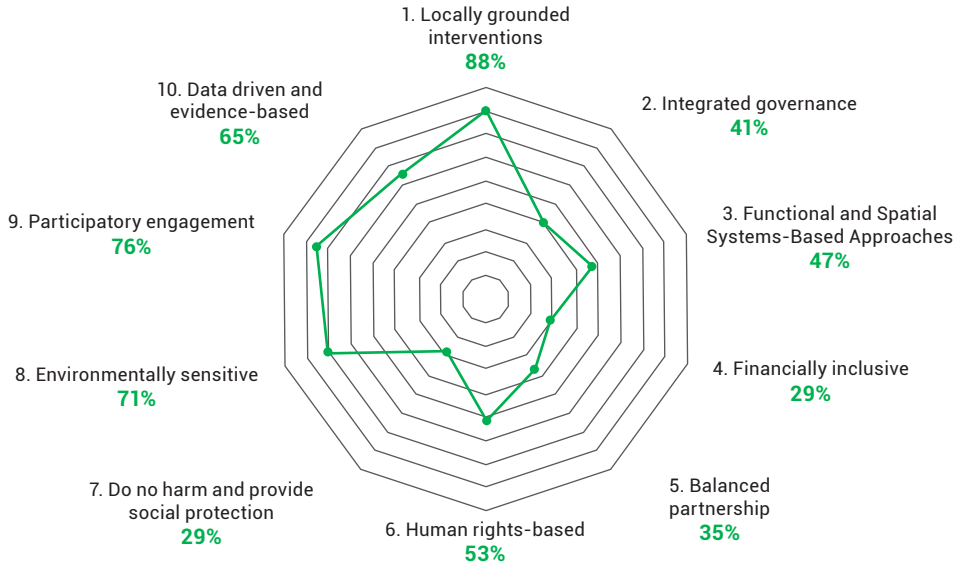
FIGURE 5. Actors and partners involved in urban-rural linkages interventions

2. KEY FACTS ABOUT APPLICATION OF THE GUIDING PRINCIPLES

Majority of the initiatives reflected the principle of **locally grounded interventions** (88 percent). This continues to show how crucial it is to consider the local contexts to maximise territorial assets and potential. From this set of cases, **participatory engagement** is significantly promoted (76 percent). Fostering and supporting meaningful participation of all groups including the most vulnerable brings a sense of ownership of the initiative, and realises more synergistic impacts for the community. Many of the case studies also demonstrate **environmental sensitivity** (71 percent). This shows the continuing need to make conscious efforts to protect biodiversity and vulnerable ecosystems, and establish strategies to mitigate the impacts of climate change in the urban-rural continuum.

Nearly half of the case studies reflected the principle of **functional and spatial systems-based approaches** while more than 50 percent demonstrated how the principle of a **human rights-based approach** is significant in promoting integrated territorial development. The case studies also reflect low application of the **do no harm and provide social protection** principle and the **financially inclusive** principle (each at 29 percent). More concerted efforts are needed to ensure interventions are people-centric and prioritizes the needs of all especially the vulnerable populations. Additionally, the cases show the need for more financially inclusive models of the respective actors and spaces in the urban-rural continuum.

FIGURE 6. Reflection of the Guiding Principles in the Case Studies



3. KEY FACTS ABOUT APPLICATION OF THE FRAMEWORK FOR ACTION

Application of the principles are made concrete through the Framework for Action. Sections of the framework identify sample strategies and policies, as well as planning and institutional actions to create an enabling environment in selected sectoral and thematic entry points for economic, social and environmental applications of the Guiding Principles. The framework is designed to support and provide guidance to all actors. Using a systems approach, the proposed fields of action are often related to each other and are informed by experiences at national and local levels.

The case studies in this compendium reflect application of both the Guiding Principles and the Framework for Action. An analysis of the case studies indicates a strong linkage to the FfA of **empowering people and communities** (65 percent). The initiatives demonstrate how the decision-making processes provide opportunities for different stakeholders to engage and share their priorities. These inclusive and participatory processes are crucial to effectively address socio-economic, spatial and even environmental priorities of the communities, with the stakeholders at the centre of it all. Close to 60 percent of the cases also reflect the **governance, legislation and capacity development**. Multi-level, multi-sectoral governance approaches to urban-rural initiatives are vital to ensure inclusion of development priorities of each level, sector and spaces across the urban-rural continuum.

Additionally, strengthening the capacity of relevant actors, on integrated governance, legislation, planning and related thematic topics is a key pillar for strengthening urban-rural linkages. At 53 percent, **environmental impact and natural resource and land management** is among the most depicted framework for action in the case studies. The initiatives also demonstrated significant application of other frameworks for action including **Integrated planning across the urban-rural continuum** (53 percent), **Territorial economic development and employment** (41 percent), **The urban-rural continuum in the face of conflict and disaster** (41 percent), and **Integrated approaches for food security, nutrition, and public health** (41 percent).

Some FfAs also reflected moderate to low application, which include **Investment and finance for inclusive urban-rural development** (35 percent), **Infrastructure, technology and communication systems** (29 percent) and **Knowledge and data management for dynamic spatial flows of people, products, services, resources and information** (24 percent). The FfA of **Coherent Approaches to social service provision** is reflected in 18 percent of the case studies. This is an indication of a need for increasing efforts to collaborate across urban and rural areas to improve social service provision especially for the most vulnerable.

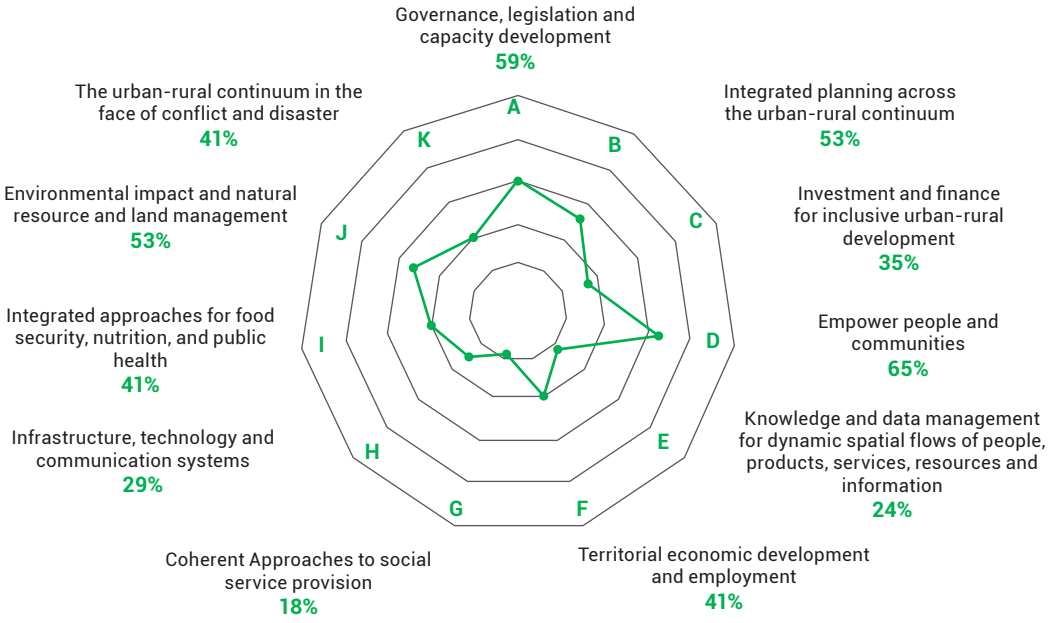


FIGURE 7. URL-GP reflected by the collection of 17 case studies

4. SUMMARY OF THE APPLICATION OF THE GUIDING PRINCIPLES FOR URBAN-RURAL LINKAGES IN THE CASE STUDIES

1

THE NETHERLANDS, MUNICIPALITY OF OPSTERLAND

Regio Deal Zuidoost Friesland (Region Southeast Friesland Deal), Multilevel cooperation to improve the quality of life and strengthen the region

> The South East Friesland regional deal is an example of an **integrated governance** initiative demonstrating a multi-level cooperation between the national government and regions aiming to improve the quality of life and strengthen regional prosperity through funding, knowledge exchange and regional multi-level cooperation. .

Some of the focus areas include capacity development on health and well-being, resilience of landscapes, watershed management, improving soil conditions, water quality and biodiversity, The Region Deal employs the principle of **participation** and inclusivity from the initial stage of the project to the end. For instance, the application procedure of Southeast Friesland has been organised by local and regional governments but was inspired by projects and ideas from the community. The case study also demonstrates **environmental sensitivity**. Besides governmental cooperation, the programme stimulates nature associations, schools, entrepreneurs, farmers and many other stakeholders working together to improve soil conditions, biodiversity and develop sustainable, economic and profitable climate-proof agriculture. **Balanced partnership** is also evident in the case. National, regional and local governments, non-governmental institutions, knowledge institutions, entrepreneurs, schools and the community are involved and their roles differ per project. Knowledge, expertise and funding is received from multiple stakeholders. The funding does not solely benefit urban areas, but also aims to improve the rural areas, which demonstrates **financial inclusivity**.

2

THE NETHERLANDS, LEEUWARDEN AND OPSTERLAND

European Capital of Culture Leeuwarden-Fryslân 2018 (LF2018), Strengthening city and region ties through culture.

> This program of 60 main events and 600 community events in Leeuwarden addressed themes such as social inclusion, ecology (especially water, energy and biodiversity), multi-lingualism and economy.

The contribution from over 65,000 inhabitants of Frysland demonstrated **participatory engagement**, which is further promoted by the central theme of the bid for Leeuwarden-Fryslân 2018 which was the Frisian "Iepen Mienskip"-translates to "Open Community".

The program also aimed to strengthen the ties between city and region. As a **locally grounded intervention**, working together as most municipalities in Fryslân delivered a much richer, more connected set of events than would have been possible if there had been a centralistic approach.

Integrated governance is also an applied principle, through the involvement of various government organisations (rural, urban, regional); between entrepreneurs, NGO's, and government; and between professionals and non-professionals. The aspect of environmental sensitivity is also present, in that in many of the over 600 community events, addressing biodiversity and how to protect it was discussed. Regarding the principle of **data driven and evidence-based**, a set of 32 Key performance Indicators (KPIs) were developed to track the results on the LF2018-goals.

3

FEDERAL REPUBLIC OF NIGERIA, NIGER STATE, MAGAMA LOCAL GOVERNMENT

Construction and Rehabilitation of Rural Roads and Bridges

> As a **locally grounded intervention**, the key objective of this project is to improve transport conditions and bring sustained access to the rural populace through rehabilitating and maintaining key rural infrastructure in a sustainable manner in Niger State, Nigeria.

The compendium of Niger State Rural Mobility Project (2021) evidently revealed that the project has had positive impact on employment, access to services, rural income, transport, farm output and agriculture value chain in Niger State particularly in the rural areas. Applying the **balanced partnership** principle, the project is co-funded by the World Bank, French Development Cooperation and the Niger State Government. The project also demonstrated **integrated governance** through the involvement of the Nigeria Federal Government and the Niger State Government. The project has also been highly **participatory**, where all critical stakeholders including the local institutions, the local communities, farmers, market traders, transport operators, youth, and the media were engaged in decision making processes. To ensure the project is **environmentally sensitive**, an Environmental and Social Management Plan (ESMP) was developed and enforced during the project implementation to address issues related to pollution (air, water and land), air quality, loss of vegetation and biodiversity, soil erosion, land degradation, construction waste, community health and safety. The project also applied the principle of **do no harm and provide social protection**. The implementation framework was designed to mitigate impacts such as land expropriation, homelessness, food insecurity, forceful relocation, social displacement, and loss of access to common property.

4

UNITED REPUBLIC OF TANZANIA, KIGOMA REGION

The Local Implementation of Sustainable Infrastructure to Increase Accessibility

> In this 6-year project in Kigoma, Tanzania, the aim is to increase smallholder farmer's income by improving the access to urban centres and particularly the central markets by investing in infrastructure.

This is done through improving rural roads and more specifically bridges. The project has a **balanced partnership** structure, as it is funded by the Belgian and the Tanzanian governments, implemented by Enabel and oversight carried out by Tanzania's Ministry of agriculture. A **financially inclusive** aspect of the project is that the local community contributes the local materials and some manual labour, two methods which provide income for the local community members. Throughout the project's implementation, **participation** happens at the level of communities, local authorities and regional government.

The continued involvement of the entire community has also applied the principle of **locally grounded interventions. Environmental sensitivity** is also keenly considered in the project.

For instance, protected areas are carefully considered by contacting conservation authorities before accepting a request for construction that would negatively influence the access to impact those areas.

5

REPUBLIC OF INDIA, ODISHA, DHENKANAL DISTRICT

Urban Rural Convergence for Faecal Sludge Management

> The urban-rural convergence project in Dhenkanal district of Odisha, India, aimed to extend existing urban faecal sludge management services (FSTP and desludging vehicles) to adjoining rural areas.

The initiative applies the principle of functional and spatial systems-based approaches by extending urban resources to the rural areas, for the benefit of the territory. The project was piloted for demonstrating this novel urban-rural convergence approach to achieve 'safely managed sanitation' for all – as defined by the Government of India's vision for rural sanitation. This demonstrates the application of the **human rights-based** principle the right to sanitation. Due to this project, rural households benefited by gaining access to treatment and desludging services, and consequently by abatement of local environmental pollution and health risks associated with unsafe management of faecal waste.

As a **locally grounded intervention**, the project leveraged the existing urban municipality infrastructure to benefit the rural populations. **Participatory engagement** was also key, as bottom-up stakeholder consultations were undertaken to build consensus amongst field functionaries and urban and rural local bodies while planning for the plug-in model, including discussions on components such as payment rates, methods and subsidies. **Data and evidence** was also employed- spatial demarcation of local areas for plug-in, load estimation from rural areas, and spare capacity of urban FSM infrastructure were informed by rigorous data analysis in the planning phase. After implementation, monitoring and data entry mechanisms were instituted for record keeping and tracking.

6

REPUBLIC OF INDIA, KARNATAKA STATE, BENGALURU (BANGALORE) CITY

Urban wastewater treated for farming in surrounding rural districts

> Following the launch of an irrigation scheme by the Karnataka region government in 2018. This project which began in 2017, aims to rejuvenate the depleted groundwater in the drought-hit regions by allowing the treated water to percolate down from these lakes and then be made available to farmers through open wells and borewells for irrigation and agricultural use.

The project provides farmers with treated wastewater for their irrigation needs, thus ensuring livelihood security for the farmers and food security for the city. As a locally grounded intervention, the project's'direct beneficiaries are farmers and farmworkers, and the benefits can be seen by increased employment and livelihood opportunities with income sources for them due to increased agricultural cultivation duration. Various government agencies have been collaborating on the project through a top-down approach.

Additionally other stakeholders have been invited for decision-making processes. This enhances political ownership and demonstrates integrated governance as well as participatory engagement. With regards to environmental sensitivity, As the project involved filling up of lakes with wastewater, it ensures a perennial supply of water, and it has been observed that due to the presence of the water in the lake, there is more biodiversity in and around the lake.

7

PEOPLE'S REPUBLIC OF CHINA, DONGGUAN, WEIYUAN

Planning Weiyuan Island Forest Park integration urban and rural communities

> One of the main objectives of this project is to restore Weiyuan Islands nature to provide a resilient and optimal environment for flora and fauna alike, ensuring its healthy future

The project is a **locally grounded initiative**, in that Local context was key in developing this project. The team carefully studied both the history and nature of the island and based our concept and design on these findings. To apply the principle of **functional and spatial systems-based approaches**, nature and urban patterns were analysed and solutions were offered to allow biodiversity to get fully restored, as well as the urban environment to develop with respect towards nature. This also corresponds to the principle of **environmental sensitivity**. In addition, a site eco-analysis was conducted to examine the current problems in depth and provide solutions in the forms of flood mitigation, tide defence systems, building a resilient green and blue framework, and repair of the eco-habitats for flora and fauna alike, among others. In relation to the principle of **Do no harm and provide social protection**, the project promoted well-being and health by carefully considering how people can experience Weiyuan's rich nature and benefit from it without harming it. Additionally, a key consideration was to protect the local biodiversity and land by creating restoration strategies that will empower nature and people alike.

8

EST MEMBER COUNTRIES IN ASIA (MULTI-COUNTRY)

Environmentally Sustainable Transport, Vientiane Declaration on Sustainable Rural Transport towards achieving the 2030 Agenda for Sustainable Development

> Rural transport is a key driver for improving rural wellbeing, economic development, community empowerment as well as livelihood and food security.

Due to inadequate basic rural transport infrastructure and services, many developing countries in Asia confront several socio-economic and development challenges. Acknowledging the fact that efficient rural-urban connectivity plays a crucial role in the generation of income, employment and wealth, and food security, the Asian Environmentally Sustainable Transport (EST) member countries voluntarily adopted the Vientiane Declaration on Sustainable Rural Transport towards Achieving the 2030 Agenda for Sustainable Development in 2017. In line with the objectives of the Vientiane Declaration, EST member countries are introducing numerous policy initiatives, strategies, and project development on rural transport improvement at local, regional, and national levels. With the help of the EST Secretariat, EST member countries are reporting their progress and effort for the implementation of the Vientiane Declaration in the EST Forum regularly. The declaration has the potential to create an impact by improving rural access, rural-urban connectivity, and sustainable freight movement in their countries. With regards to **environmental sensitivity**, the Vientiane Declaration calls for commitment to promoting environmentally sustainable transport in rural areas by introducing a low-carbon transport system and avoiding road development without environmental consideration. Vientiane Declaration also reflects **participatory engagement** by calling for wider national, regional, and international cooperation and support for reviewing progress, institutional capacity-building, knowledge sharing, technology transfer, and research and development for innovative solutions to improve rural-urban connectivity.

9

I.R. IRAN, MAZANDARAN PROVINCE, BABULKENAR

Facilitating Inclusive Urban-Rural Development through Complementary Approaches to Enhance Services, Cash, and Food Flow Networking

> This project analysed the complementary approach in an agricultural region of northern Iran by estimating the main flows of food, services, and financial resources in the region to determine the effectiveness of the complementary approach in integrated regional planning.

A key finding is that to enhance the intra-regional network system flow, it is important to maintain urban-rural linkages. Also, the most effective units in the regional networking system are poultry, fish farming, livestock farms, and industrial food processing companies. Besides strengthening the spatial linkages, the study also recommended that it is important to focus on rural-rural, inter-village interactions and local community empowerment plans. As a project promoting **participatory engagement**, the facilitators also held many consultations with government officials, academia and other stakeholders to examine common areas of cooperation and transfer common experiences in the field of planning and developing home businesses, small and medium rural entrepreneurship and realizing the opportunities and potentials of economic development in the Babolkanar Rural System. In relation to the URL-GP of **locally grounded intervention**, the facilitators have been chosen from local communities to ensure better interaction with local people. As a data-driven and evidence-based project, the questionnaire before and after implementing the plan helped to collect the data from different stockholders including but not limited to local people and rural managers.

10

SPAIN, COMMUNITY OF MADRID

The resilient territorial structure, Integrating ecological services into urban planning

> The Ecosystem Vulnerability from Planning (EVP) tool proposes a method to incorporate ecosystem services into urban planning.

Within the framework of the Spanish state land legislation, the method proposes how to protect areas based on their existing regulatory possibilities in the country, focusing on the case of the Community of Madrid and its environmental and urban legislation. The tool analyses the importance of this territory's ecosystems and services to improve regional resilience and optimize the capacity of cities to adapt to the environmental crisis and how to address it from the urban planning point of view, being able to protect and preserve certain areas from urbanisation due to their ecosystem services. At the core of the project is **data and evidence-basis**. The tool brings together various data types (urban, ecosystem and environmental) favoring the joint vision of the territory in each of the fields.

Continuing with the analysis, and in applying the **integrated governance** principle, the project proposes the necessity to integrate the public and private sectors, civil society organizations and professional and research institutions to produce a change in the way of understanding the territory and valuing the unbuilt space. In line with the **financial inclusivity** URL-GP, the project proposes prioritizing sustainable public and private investment, to favour maintenance and use of spaces with greater environmental value. The project is also **environmentally sensitive**, its main objective is to prioritize the protection and maintenance of the areas with the greatest risk of disappearance of their ecosystems and with the greatest ecosystem contributions.

11

REPUBLIC OF PERU, CUSCO, LA CONVENCIÓN, KIMBIRI

Urban and Territorial Planning

> This is a comprehensive project which incorporates the urban development plan of the capital city and the seven development plans of their villages (Kimbiri Alto, Samaniato, Progreso, Manitea Alta, Tahuantinsuyo Lobo, Chirumpiari and Palestina Alta), providing the district with instruments for its sustainable growth in the next ten years.

It directly includes the normative regulations for the exercise of municipal management with proposals for the use and habilitation of the land as well as an investment portfolio with a multisystem approach, promoting a resilient, healthy, productive, connected, and participatory territory. The project consisted of the development of technical-normative instruments of urban planning for the period 2021-2030. By the end of 2021, the validation stage of the project was completed and approved by the provincial municipality. The project resulted into technical-normative instruments, developed by the technical team with the help of **participatory** and consensual processes with the population and the government. In reflection of the **integrated governance** principle, the project methodology incorporated the participation of multiple actors in decision-making, from the various levels of state government (central, provincial and local) as well as the participation of various social actors, which strengthened their communication and agreement on the proposals. **Environmental sensitivity** is key to the project, as it prioritizes the balanced development of the scope of intervention in harmony with its ecological environment through the regulation of land use and occupation as well as specific interventions. In reflecting a **data-driven and evidence-based** approach, In the development of the project a new database of the field of study, and various urban diagnostic maps have been made, as well as proposals for both the capital city of Kimbiri and its villages, in different thematic areas such as housing, risk and disaster management, mobility, public space, and urban basic services.

12

REPUBLIC OF PERU, METROPOLITAN LIMA

Integrated Land, Water and People's Strategies

> In this project in Peru, the aim was to address challenges such as inequalities in access to basic services such as drinking water, sanitation and wastewater treatment, and access to healthy green areas. Additionally, many conflicts between urban and rural dwellers arise by the conflicting uses of the limited land and seasonal water sources, for urban and rural activities.

In this regard, the Lima Ecological Infrastructure Strategy (LEIS) was developed, building upon the existing scientific and practical knowledge of water sensitive urban design (WSUD) and Green Infrastructure (GI) concepts, adapted to the arid climate conditions. To study possibilities for the application of LEIS and discuss the strategy with local stakeholders, academia and residents, the Lower Chillon River watershed was chosen as the LiWa-LEIS demonstration area. In a feedback loop, the findings from the work in the demonstration area contributed to shape the LEIS water sensitive urban development and design recommendations. The strategy was applied at different scales and worked closely with the metropolitan and local district administration, technical agencies, research institutions, civil society and surrounding communities. Results were the Ecological Infrastructure Landscape Framework Plan for the Lower Chillon River valley with a set of acupuncture projects at meso and micro level. In relation to **integrated governance**, the project managed to incorporate the urban-rural nexus in multi-sectoral, multi-level and multi-stakeholder approaches to governance integrating a multidisciplinary approach, actors representing key main areas (territorial and urban development, water management, environment, parks management, climate adaptation, culture and social participation, among others) and at different levels (district, provincial, regional and national). The project was also **environmentally sensitive**, through creating the Lima ecological infrastructure network, supporting recovering ecosystems and expanding ecosystem services and biodiversity supporting resilient, and resource-efficient societies. The project also applied **functional and spatial systems-based approaches**, urban and territorial policy and planning. For instance, the LEIS is one of the first examples in Metropolitan Lima of territorial planning integrating open spaces (contained in natural ecosystems, cultural landscapes, cultural heritage and man-made ecosystems), with water sources and people's livelihoods, processes, like agriculture.

13

FEDERAL REPUBLIC OF SOMALIA, BELET WEYNE DISTRICT

Reconceptualizing the traditional urban-rural Settlement definition to Territorial approach

> This study was developed to start a process of recognizing the complex reality that characterizes the Somali territorial system and a new conceptualization of urbanization trajectories in the country, which could be extended to the Horn of Africa Region.

It does so showing different possible visual representations of the 'blended' environments that fall outside the current definition of urban but cannot be fully described as rural, distinguishing several identified forms that can be categorized between the urban and the rural form. In doing so, this study suggests an alternative reading of the territory and local and trans-local flows of people, goods, labour, and capital, and emphasizes the agency of smaller settlements and the country system beyond the mechanisms of international aid, formal jurisdictions, and competencies.

To promote a **functional and spatial systems-based approach**, the study suggests an alternative reading and describing the territory and local and trans-local flows of people, goods, labour and capital, and emphasizes the agency of smaller settlements and the country system beyond the mechanisms of international aid, formal jurisdictions and competencies.

14

AFRICA (MULTI-COUNTRY)

FoodLAND (FOOD and Local Agricultural, and Nutritional Diversity) Project, Multi-actor centres of innovation for urban and rural food systems in select African Countries

> Under this **locally grounded intervention**, a network of 14 local Food Hubs has been created in six Northern and Eastern African countries paired with 14 cities. The Food Hubs will be the organizational and operational frameworks that will join together local smallholder farmers, food processors (Small and Medium Enterprises), authorities, researchers, and NGOs.

The foreseen short-term impacts include empowerment of farmers and consumers; improved awareness of sustainable and highly nutritive food production and consumption models; test, validation, and adoption of technological innovations developed in the project FoodLAND; creation of initial partnerships amongst food actors, including public-private partnerships. **Participatory engagement** is applied through meaningful bottom-up, inclusive, horizontal participation of people and implementing a gender-sensitive Participatory Learning and Action (PLA) approach. The project also demonstrates **functional and spatial system-based approaches** by developing technologies for urban and peri-urban areas, the production will be brought closer to the markets resulting in a shorter distribution chain that can be more competitive with imported products in the fish farming system. The long-term impacts of the project include increased sustainability of the local food value chain through the direct empowerment of African smallholder farmers and food processors (SMEs); creation and reinforcement of the conditions for their sustainable growth, boosting their linkages with local, regional, and global markets, and laying the foundation for spreading of the innovations for the benefit of the rural areas in Africa.

15

REPUBLIC OF SUDAN, DARFUR REGION

Collaborative strategies to inform Durable Solutions for the displaced communities across the urban-rural continuum

> This intervention involves a collaborative durable solutions analysis and baseline study in 9 localities across Darfur.

The objective is to generate a shared evidence-base and durable solutions analysis and conducted under the durable solutions outcomes pillar of the Peacebuilding Fund (PBF) Sudan, to inform collective efforts towards longer-terms solutions strategies, sustainable development, and peace for displacement-affected communities in Darfur, Sudan. As a **locally grounded intervention**, the process set out in this case study allowed for local actors to build on the Juba Peace Agreement JPA and identify barriers to durable solutions at the locality level for displacement-affected communities. Through this process, local authorities – together with civil society, community members, and international actors – were able to identify actions and policies needed to support resilience in the identified urban and rural localities in Darfur. **Participatory engagement** was also a key part of the initiative- the community members were involved at different stages of the data process, including the validation of the findings, the prioritisation of the different barriers, and the action planning workshops.

The project was also **data-driven and evidence-based** as all stakeholders were involved in the design of the exercise and the analysis of the data. Applying this way of working ensures that; a/ the participating actors use the same evidence base to design concerted policies and programs to respond to the identified needs, and b/ the collected data can form a sound and agreed-upon baseline against which progress towards Durable Solutions can be tracked over time. The project also blended **integrated governance** and a **human rights-based approach**. A praised aspect of the used methodology is the inclusion of the whole-of-society throughout the data process, decision making including from the methodology design to the development of the Locality Action Plans. This approach was applied both towards the identification of the different groups of right-holders in the society (IDPs, host communities, nomads, IDP returnees and refugee returnees) as well as the relevant duty-bearers at the locality level (local authorities).

16

PEOPLE'S REPUBLIC OF CHINA, SHENZHEN MUNICIPALITY

Nature as Leverage – Integrating urban and rural components for ecological benefits

> In this Vision for the Coastal Area of Shenshan Special Cooperation Zone, the project develops a design framework for mountain, sea, and land development. The result is a future-proof coastal defence that integrates engineering and landscape design providing a vibrant sequence of protected spaces along the 12-kilometre-long coast

The local and ecological development thinking serves disaster protection along coast and mountain edges as well as ecological and urban development. This applies to the principles of **environmental sensitivity**. On the principle of **functional and spatial systems-based approaches**, a spatial plan of 103 km2 was developed, which covers both urban and rural areas as well as ecosystems including sea land and mountain. **Participatory engagement** is also reflected, where the coordinating team conversed with local residents and businesses and to learn more about their experience of the area before starting the design process. At the same time, public participation was a vital part of the Vision design stage. The project was also keen on **data and evidence**. Data was gathered through extensive site visits but also by meticulously studying the area, its residences, and history, and based our spatial strategy on our findings. The project is also **locally grounded**, as it was important to understanding the local context and creating a design and Vision specifically to match the area.

17

REPUBLIC OF INDONESIA, SEMARANG

Cascading Semarang

> This initiative focuses on performing a pre-feasibility study to identify opportunities for International Financial Institutions to early-adapt paradigm shifting projects, as well as programs related to climate change and water-driven challenges in Semarang, Central Java, Indonesia.

As such, plans, policies & programs in force were analysed to find opportunities to elaborate, to add, or to change in such a way that a paradigm shift in local thinking and approach was induced. As a **locally grounded intervention**, the project made sure to work together both with local community representatives but also local institutions and developed solutions for Semarang's needs and particular water challenges. Through cross collaboration, a **balanced partnership** was achieved. The team consisted of Netherlands-based and Indonesia-based experts with varied national and professional backgrounds.

The project also worked with local universities, communities, and specialized professionals, and exchanged knowledge and expertise in workshops among other consultations. This further demonstrates the principle of **participatory engagement**. The project also aims to address the human right to health (**human-rights-based** principle) through provision of adequate water. **Environmental sensitivity** was also considered through proposing ways of recharging the aquifers so as to stop land subsidence and secure the future of local biodiversity.

LESSONS LEARNED

Role of national government in strengthening urban-rural linkages

The national government can make deliberate effort to support other levels of government through overarching or specific programmes. The national government is in most contexts the custodian of the financial resources and policy processes which influence regional and local governments. The formulation of the programme by the national government to support other levels of government tend to be very strategic and sustainable. For example, in Opsterland the two initiatives to improve quality of life in Southeast Friesland and promoting city-region cultural heritage in Frusian.

Joint collaboration across levels and sectors

Joint collaboration is a fundamental aspect in urban-rural linkages approach. For example, the Southeast Friesland Region Deal for Opsterland, India' treated wastewater and Faecal Sludge Management projects involve different stakeholders from the national to local authorities. Multi-level and multi-sector collaboration is core since one agency or ministry can no longer solve complex development challenges on their own. Similarly, each level or department can contribute unique talents, skills, and expertise towards collective problem-solving. Wasteful expenditure on duplicated resources and bloated organisational structures can be reduced through joint efforts. Collaborative programmes can create a culture of sharing and collaborative problem-solving can be developed within the government. Cooperation of settlements also enhances the comparative advantage of that territory as a block over others.

Interlinkages of urban rural linkages to the global agendas as SDGs

An enhanced understanding of the economic, social, cultural, and environmental interactions between rural and urban areas is key to advance sustainable development. In both the 2030 Agenda for Sustainable Development (SDGs) and the New Urban Agenda (NUA), United Nations Member States agreed to policies that support integrated urban and territorial planning and development. They called for new, inclusive approaches and enhanced synergies between urban and rural communities and spaces – an essential component of the vision of Agenda 2030 to "leave no one behind". Thinking rural and urban areas together contributes achieving several SDGs and can drive a sustainable development of an entire region. All the case studies demonstrate the core role of the various interventions in achieving the SDGs.

Promoting cultural diversity and involvement of communities is key for localised urban-rural linkages.

Recognizing cultural diversity in a said context must be core in strengthening urban-rural linkages. This then entails understanding the people and involving them in the issues affecting them. Creating spaces and mechanisms to engage in the evidence gathering, design, planning processes and dialogues contributes to ownership and information to protect and respect local and indigenous cultures. This is demonstrated, for example, in the Sudan case study. In the LEIS/Chuquitanta case study in Peru, participatory design workshops focusing on water and ecosystems, supported the reconnection between people and waterbasin, following ancestral indigenous pre-Columbian practices of integrated territorial planning. The Fresian, Opsterland project displays how they are recognized at the regional level and thus connecting the city and village communities through cultural events. Niger state project displays involvement of the beneficiaries in the decision making of the project decisions.

Capacity building is key for sustainable urban-rural linkages – Niger state.

Knowledge exchanges and involvement of stakeholders through platforms, dialogues and capacity building are core to strengthening urban-rural linkages. Supporting ongoing dialogues between stakeholders through dedicated and innovative training curricula for the different actors would be instrumental in sustainability of initiatives or project outcomes. Niger state project entailed capacity building of the local authorities while engaging them throughout the process for maintenance and post-project activities.

Technological application in urban-rural linkages

Digital divide is a general phenomenon in the different contexts, being more evident comparing urban and rural areas. Leveraging technology and innovations would create equal opportunities for greater connectivity and integration between urban and rural areas. The FOODLand project aims to promote technological application in the food sector while promoting efficiency between producers, processors, and consumers.

Multiple dimensions of urban rural linkages intervention

Urban rural linkages entail different sectors, levels and stakeholders thus an intervention on the same leads to a multifaceted result. For example, the goal of the project in Kigoma, Tanzania is to increase smallholder farmer's income by improving access to urban centres, and particularly to central markets, by investing in infrastructure. The intervention has had substantial spillover effects in the health, education, and employment sectors (among others): in those sectors, access to centralized services has been improved, therefore public service provision has been expanded without the need for new health centres, markets or schools construction.

Multi-country commitments to address urban-rural linkages.

As much as urban-rural linkages and territorial approaches are place based and locally relevant, regional initiatives by neighbouring countries cannot be underestimated. The Asian Vientiane declaration on sustainable rural transportation was agreed upon by a set of member countries. Such initiatives would require the individual country contextualization based on the local issues; however, each would strive to meet the set goals necessitating implementation. Such initiatives would also attract funding as they are recognized at a regional level.

NEXT STEPS

This collection of case studies is an ongoing effort at UN-Habitat to collect examples from different contexts globally to document and share with the relevant actors seeking to enhance urban-rural linkages in their contexts. This collection and dissemination also contribute to the resolution adopted by member states in 2019 titled; "Enhancing urban-rural linkages for sustainable urbanization and human settlements."

The reporting of this resolution will be during the second UN-Habitat Assembly in June 2023 upon which a global report on urban-rural linkages will also be launched. This third edition of the compendium is a successful initiative in the urban-rural linkages work and will be disseminated to relevant stakeholders and through relevant events.

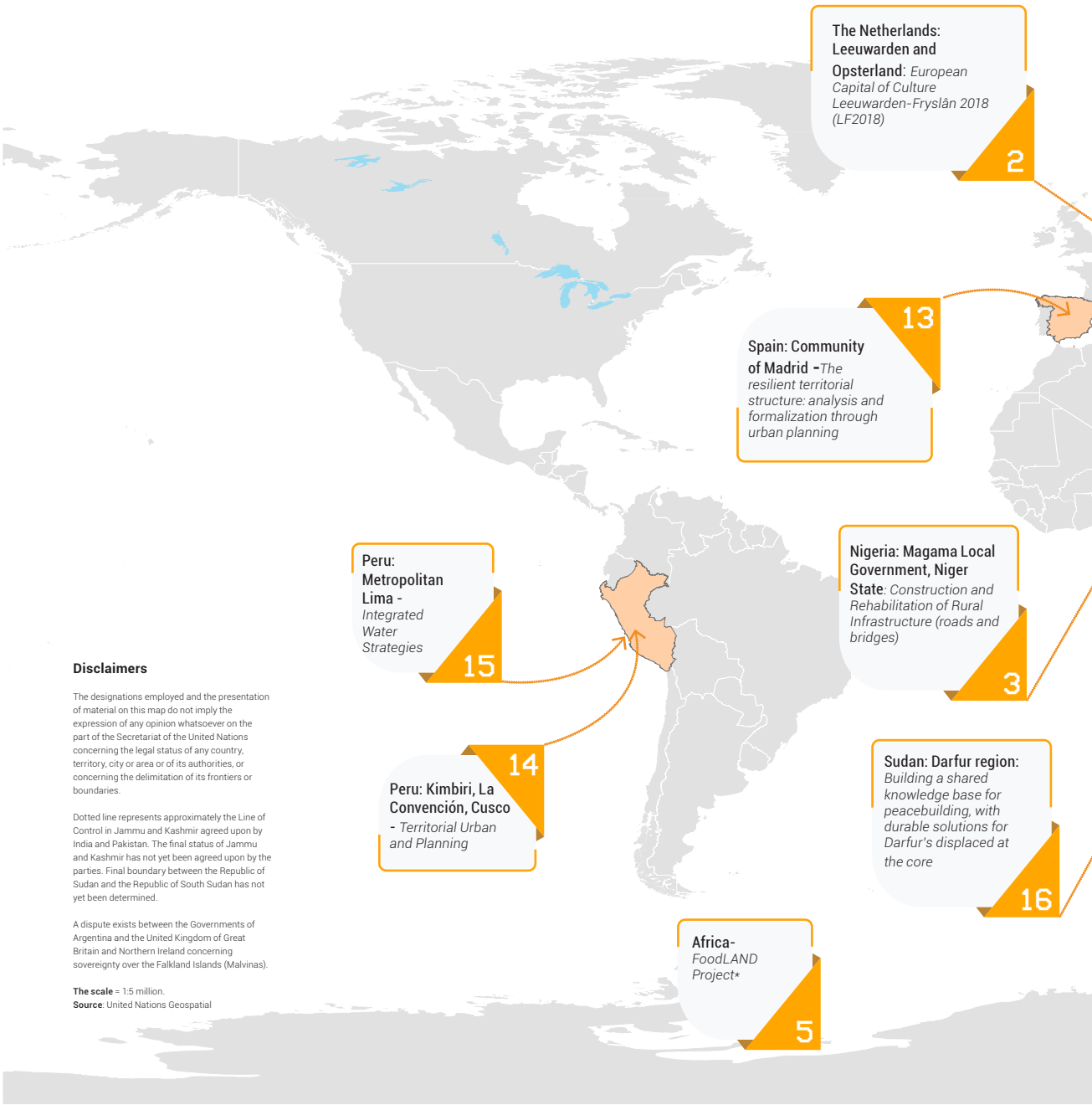
The next steps thereafter include:

1. **Special editions of the compendium**: Apart from these global general compendiums, UN-Habitat will also develop special editions of compendiums aligned to themes or events or projects among others. This will make it easier for stakeholders interested in particular themes or issues to have easy access to the global examples.

2. **Web-platform of the compendiums**: UN-Habitat aims to develop a web-platform that will bring together all the cases compiled in the various editions of the compendiums. This will increase accessibility and visibility for the various users. This will be available in the https://urbanpolicyplatform.org/

3. **Make use in toolkits, thematic papers and Guides**: The case studies provide a rich collection of practices, processes and approaches that could substantiate guiding documents for policy makers among others.

GEOGRAPHICAL DISTRIBUTION OF THE SELECTED CASES



Disclaimers

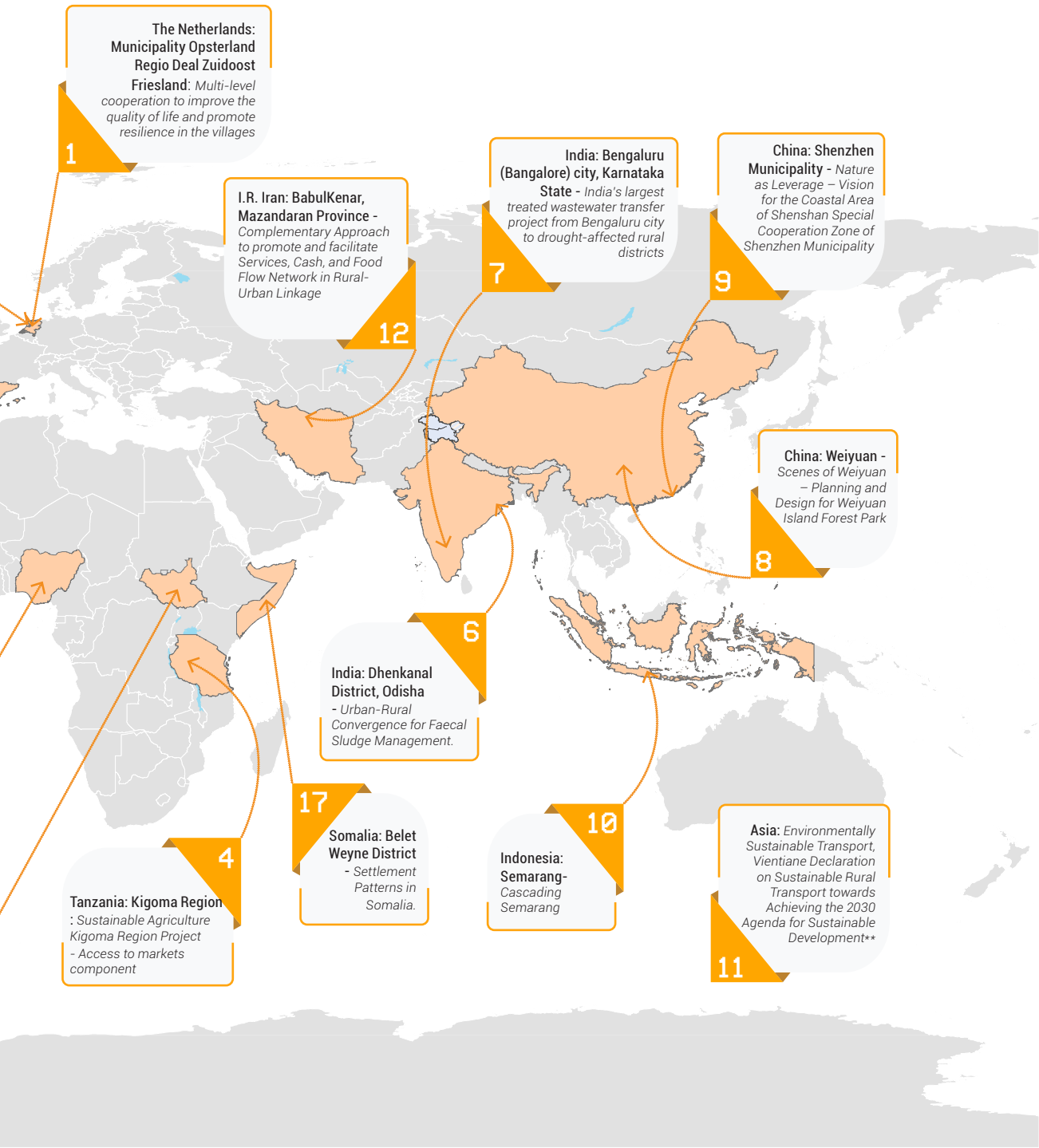
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

The scale = 1:5 million.
Source: United Nations Geospatial

* 1. Zoyout Dir Beni Mellal / Khenifra (Morocco) 2. Ait Ouallal Bittit / Ait Yazem (Morocco) 3. Enfidha, Chebika (Tunisia) 4. Jendouba (Tunisia) 5. Laelay Machew / Axum (Ethiopia) 6. Akaki, Nifas Silk (Ethiopia) 7. Mukurweini (Kenya) 8. Kitui (Kenya) 9. Kisumu (Kenya) 10. Mvomero, Morogoro rural (Tanzania) 11. Kilombero / Lindi (Tanzania) 12. Kamuli (Uganda) 13. Nakaseke (Uganda) 14. Kajjansi / Masaka (Uganda)



** **Location**: Environmentally Sustainable Transport (EST)* member countries in Asia: Afghanistan, Bangladesh, Bhutan, Cambodia, India, Indonesia, Islamic Republic of Iran, Japan, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, the Philippines, Russian Federation, Republic of Korea, Singapore, Sri Lanka, Thailand, Timor-Leste, and Viet Nam.

DETAILS OF THE 17 CASE STUDIES

THE NETHERLANDS: MUNICIPALITY OPSTERLAND REGIO DEAL ZUIDOOST FRIESLAND (REGION DEAL SOUTHEAST FRIESLAND DEAL)

Multi-level cooperation to improve the quality of life and promote resilience in the villages

TYPE OF INTERVENTION

Project

ABOUT THE CASE

Author(s): Ellen van Selm, Ilse Kramer and Piet Brouwer, Municipality of Opsterland

Location: Southeast region of the province of Friesland (Heerenveen, Ooststellingwerf, Opsterland, Smallingerland and Weststellingwerf), The Netherlands

When: February 2020-2023

Type of Intervention: Project

Partners: Municipality of Opsterland (Author); Municipality of Heerenveen; Municipality of Smallingerland; Municipality of Ooststellingwerf; Municipality of Weststellingwerf; The Fryslân provincial government (Provincie Fryslân); The regional water board Wetterskip Fryslân; The Ministry of Agriculture, Nature and Food Quality (LNV) and the Ministry of the Interior and Kingdom Relations (BZK)

Brief Description (to be expanded later): The Region Deal is a multi-level cooperation between the national government and regions aiming to improve the quality of life and strengthen connectivity within the region. It involved five municipalities and the provincial government with financial support by the national government. The cooperation therefore intails funding, knowledge exchange and regional cooperation for a period of four years.

Background and challenges

Southeast Friesland is a largely agricultural province located in the north of the Netherlands, with an approximate population of 187,000 inhabitants. The region is made up of 90 small villages, 68 of which are home to less than 1,500 inhabitants. The region has two larger urban areas, in which approximately 95,000 people live.

The region is facing multiple challenges, which are affecting the quality of life of its inhabitants. These challenges mainly concern demographic decline due to ageing populations, relatively poor health, low academic achievement, climate change, poor connectivity and a declining economic development.

The following statistics elaborate on these challenges: In Southeast Friesland, 23 per cent of inhabitants are over the age of 65, in comparison to 20 per cent overall in the Netherlands. This percentage is expected to increase over the next few years. The percentage of inhabitants aged 80 years and older is expected to increase by 74 per cent between 2021 and 2040. The number of children aged 14 years or younger has decreased over the past ten years by 14 per cent in comparison to 7 per cent at the national level. These figures are based on a March 2022 research study conducted by the Fries Sociaal Planbureau (FSP), an independent knowledge institution in Friesland. With the decrease in young people, a decline in students attending school is also recognizable, both in primary and secondary education. A shortage of students could possibly lead to the closure of school facilities in the region.

Looking at the number of students continuing on to higher education, the region scores low (5 per cent) in comparison to the national average of 24 per cent (FSP, 2022, p.29).

On economy, Southeast Friesland shows a slightly lower median disposable income of €24,900 vs. €25,900 for the Netherlands. The GDP in the region is €31,600 in comparison to the national average of €41,800 (FSP, 2022, p.15).

The challenge of connectivity relates to the accessibility of facilities within the region and infrastructure connecting the region to the rest of the province and the Netherlands. Inhabitants in Southeast Friesland, which is more rural, must travel a longer distance to access certain facilities in comparison to those living in a more urban area. While the region has internet access, the quality leaves room for improvement in the southernmost parts of the region. In general, the region is lagging behind in regard to connectivity when compared with the rest of the province and the country.

Finally, the region which is characterised by unique landscape is facing negative climate change impacts including desiccation, dealing with the energy transition and the agricultural transition. In essence, the energy transition should be from an energy system based on fossil energy sources (coal, oil and gas) to an energy system based on sustainable and CO2-neutral energy sources (sun, wind and water).

Such solutions can be found in rural areas; however, it requires a different type of land use. Regarding the agricultural transition, we look at the transition to a more sustainable agricultural system that contributes to emission reduction, develops sustainable revenue models and fair pricing, and practices nature-inclusive agriculture.

Solutions and implementation

To address the previously mentioned challenges, together with five municipalities, the provincial government (Provincie Fryslân), the regional water board (Wetterskip Fryslân), the Ministry of Agriculture, Nature and Food Quality (LNV) and the Ministry of the Interior and Kingdom Relations (BZK), the rural area of Southeast Friesland has established a cooperation through the so-called Regio Deal (Region Deal). This is a programme developed by the national government with the aim to strengthen regions and improve the quality of life through funding and multi-level cooperation. Together with the community ("mienskip in Frisian), the involved parties join forces to strengthen local villages and develop a resilient and sustainable environment.

The Region Deal implements a participatory and inclusive approach for the entire duration of the project. The application procedure of Southeast Friesland has been organized by local and regional governments but was inspired by community projects and ideas. An example of the community coming together is the Blue Zone in Bakkeveen. Initiated by a local general practitioner in Bakkeveen in 2015, it brings together associations and care organizations in the town to promote healthy ageing. Together, they organize several community activities for the town, with the overall goal of promoting healthy and happy ageing.

The Southeast Friesland Region Deal is divided into two central themes. The first theme deals with strengthening regional villages and supporting the well-being of our citizens. The second theme focuses on resilient landscapes and aims to preserve the environmental value of the area. It addresses watershed management, soil conditions, water quality and biodiversity. The overall programme is made up of 25 projects, which will be developed and implemented together with the community. The decision-making process and involvement can vary according to the project. However, community engagement is key during the entire programme. One example of a participatory and inclusive project is the "regiofonds" (Regional Fund). This fund stimulates the creativity and self-organizing capacity of the community and gives citizens the opportunity to contribute to their own environment. Citizens can propose new initiatives stimulating cooperation within the area and request financial support from the fund of up to €50,000. Universities, schools and other non-governmental organizations are also offered funding opportunities to explore solutions to improving the level of well-being.

Examples of projects focusing on the second central theme revolve around water conservation and watershed management. An example is the pilot water retention in Oranjewoud forest.

The vitality of the forest in Oranjewoud has deteriorated in recent years. This has negative consequences for biodiversity, natural values and landscape values. Measures to improve this situation are explored throughout this programme. Apart from governmental cooperation, the programme motivates nature associations, schools, entrepreneurs, farmers and many other stakeholders to work together to improve soil conditions and biodiversity and to develop sustainable, economic and profitable climate-proof agriculture. Local schools, entrepreneurs and energy network operators, for example, develop projects regarding sustainable local energy. Meanwhile, regional hospitality organizations, networks and entrepreneurs work together to develop a regional tourism development strategy.

In addition to the above-mentioned central themes, the Region Deal also focuses on two connecting and crosscutting (economic) subjects. The first subject aims to improve regional cooperation on sustainable local energy and support local community initiatives in addition to the work that has already been done. The second subject, a "different hospitable Friesland", focuses on strengthening the regional tourism and recreation programme towards a smart growth and sustainable balance within the region. An example of a crosscutting project is the development of local energy cooperatives. Wijnjewoude is a rural village in the municipality of Opsterland with approximately 2,000 inhabitants. The energy cooperative WEN (Wijnjewoude Energy Neutral) was founded by and for the village in 2015, with the core value of "together" with the citizens of Wijnjewoude and (agricultural) entrepreneurs.

In addition, WEN wants to keep the (social) costs of the energy transition as low as possible. Any profits from energy generation should be reinvested into the local community.

The overall programme is executed in a multi-level cooperative manner. National, regional and local governments, non-governmental institutions, knowledge institutions, entrepreneurs, schools and the community are all involved and their roles differ according to the project. Knowledge, expertise and funding are received from multiple stakeholders. The organizational structure of the Southeast Friesland Region Deal consists of the following: a programme board, responsible for development, monitoring and communication on developments. In addition, there is one programme team, responsible for coordination, implementation and policy accountability. A joint programme manager facilitates the process, ensures implementation and monitors coherence. Finally, every project has its own project plan and structure.

Over the next four years, €30 million will be invested into the region as part of the Region Deal. This amount consists of €15 million from the national government and €15 million from the region itself. As the programme touches on a wide range of issues, several linkages can be made with the SDGs. It is expected that over the next few years, the results of these projects will come together to improve the quality of life in the region.

Results and impact

The Region Deal is still ongoing and will continue until 2023. The expected long-term outcomes will take several years to achieve and should be visible in 2030. The independent knowledge institution in Friesland, FSP, will monitor the developments of the quality of life and the different perspectives of prosperity in Southeast Friesland. It will be accompanied by the work of the national monitor from the Dutch Central Bureau of Statistics (CBS).

However, the short-term results are also applicable. Several projects are already underway and resulting in positive changes. These include developing local initiatives and new building designs, repurposing empty buildings, improving local self-organizing capacities and facilitating town-dialogue. Long-term, by cooperating with several regional partners, the project aims to improve and strengthen community engagement to improve the quality of life of citizens. We have noticed a large interest in local involvement, previously mentioned projects such as WEN and the Blue Zone are clear examples of local interest evolving into successful local initiatives. The Regional Fund is an instrument for other citizens to bring their ideas to the next level. This should result in improved economic, social and ecological prosperity for the inhabitants.

Replicability and sustainability

Nowadays, the Netherlands measures the quality of life alongside prosperity in a region. This does not solely include economic development, but also social-cultural and ecological development. This broad perspective of prosperity comes from the translation of the SDGs into Dutch policy and is known as "Brede welvaart" (broad prosperity). For example, it encompasses the value of the living environment, social cohesion, economic development, employment, education, space and nature preservation.

The improvement of these conditions within the region will have a major impact on the quality of life and well-being of its inhabitants.

As the programme focuses on improving quality of life and broad prosperity, several SDGs are applicable depending on the project. However, SDG 11 and 15 are both crosscutting all over the programme:

SDG 11: Sustainable cities and communities

The Region Deal aims to strengthen the region, improve the quality of life in the villages and develop a resilient landscape towards a safe, inclusive and sustainable region for all citizens. To do so, it addresses issues such as ageing, population decline, citizen engagement and the development of public spaces. With the introduction of region deals, the national government encourages collaboration between the national government and the region to strengthen the region. Appointed region deals have a number of recognizable, and often related, challenges as described above.

With the Region Deal, additional funding is allocated to the region to accelerate the solving of local issues. Regions can apply for this programme and together with several governmental institutions and the involvement of local inhabitants, this funding is allocated to improve social cohesion, regional resilience and build towards sustainable cities and communities.

These kinds of national programmes and regional execution could inspire other similar regions across the world.

SDG 15: Life on land

The programme stimulates working towards resilient landscapes. Addressing issues such as watershed management, drought, protection and conservation of regional nature and landscapes. Forest conservation contributes to SDG 15. An example of an ongoing project, is the pilot water retention forests Oranjewoud. In this pilot project measures are taken to retain more water. This is a cooperation in the municipality Heerenveen, with Staatsbosbeheer[5] and the local community. Lessons learned from this pilot could be useful for forest conversation in different areas around the world.

Throughout the Region Deal, rural and urban areas work together in a wide variety of projects, resulting in improving the quality of life in both rural and urban areas. Multi-level governance, regional cooperation and citizen engagement through participatory approaches are key throughout the programme. For this reason, this programme is a relevant example to contribute to improving urban-rural linkages. A Urban and rural areas need each other, now and in the future, to tackle the challenges of today and tomorrow.

5 Staatsbosbeheer is known as a Dutch government organization for forestry and the management of nature reserves.

This initiative contributes to implementation of the URL-GP:

During the Region Deal, rural and urban areas work together in a wide variety of projects. Cooperation is very important, because neither area can solve these issues on their own. The urban area could provide infrastructure, while the rural area offers large amounts of space for agricultural and other forms of development.

1: Locally grounded interventions: the Southeast Friesland Region Deal is a regional programme in the north of the Netherlands connecting the more urban and rural areas of the local region. This programme seeks to help resolve future regional and local challenges such as climate change and an ageing population in the south-eastern rural area of Friesland. The overall programme aims to improve local well-being, not solely focusing on economic development but also on social-cultural and ecological development. This aligns closely with the first principle of the URL-GP.

2: Integrated governance: urban-rural linkages and multi-level governance can be recognized throughout the entire programme. The programme is a cooperation between national, regional and local governments. The community, schools and entrepreneurs are also involved.

4: Financially inclusive: the programme is funded by national, regional and local governments. The funding does not solely benefit urban areas, but also aims to improve the rural areas.

5: Balanced partnership: the programme is a four-year cooperation between national, regional and local governments. The community, schools and entrepreneurs are also involved in addressing future economic, social and environmental challenges. The main focus of this cooperation is improving the quality of life in this specific region. Therefore, this cooperation is specifically developed for this programme. Throughout this programme, the organizations work together through an inclusive and elaborate structure. There is one programme board, responsible for development, monitoring and communication on developments. In addition, the programme team, responsible for coordination, implementation and policy accountability has been appointed. Also, there is one joint programme manager, who facilitates the process, ensures the implementation and monitors the coherence and integrity. All of these actors come together on a regular basis. Depending on the project, different governmental organizations, the community, school and entrepreneurs are involved.

8: Environmentally sensitive: Several projects in the programme are concerned with addressing the issues of climate change and energy. The programme encourages working towards resilient landscapes, addressing issues such as watershed management, drought, and the protection and conservation of regional nature and landscapes. The Region Deal gives an extra boost to existing territorial development plans, helping the landscape to become more robust and climate-proof.

9: Participatory engagement: Involvement varies per project. One example of a participatory and inclusive project is the regiofonds (Regional Fund). This fund is intended to financially support initiatives from the mienskip contributing to the quality of life. This fund promotes the creativity and self-organizing capacity of the mienskip and gives citizens the opportunity to directly contribute to their own environment. Another example is the development of local energy cooperatives.

Throughout the programme, the community, schools and entrepreneurs are also involved. Participatory approaches are encouraged for example, the previously mentioned Regional Fund. Knowledge exchange is promoted through monitoring development by the national government and the regional independent knowledge institution FSP

10: Data driven and evidence-based: The FSP will monitor the development of the quality of life and the different perspectives of prosperity in Southeast Friesland alongside the national monitor from the Dutch Central Bureau of Statistics (CBS). The monitor measures well-being on a yearly basis and publishes the results in a report. In addition to data collected from the CBS, data is also gathered through the Frisian citizen panel established by the FSP. Inhabitants from the province over the age of 18 can participate in this panel in which citizens fill in a questionnaire on the quality of life in the province.

This project relates mostly to the following entry points of the Urban-Rural Linkages: Framework of Action:

A: Governance, legislation and capacity development: Multi-level governance can be recognized throughout the entire programme. The programme is a cooperation between national, regional and local governments focusing on improving the quality of life in the region. Three times per year, a meeting is organised between the region and the national government. Depending on the project, inter-municipal cooperation is also encouraged to achieve the objectives of the projects. For instance, Southeast Friesland includes 5 municipalities which have both urban and rural areas, which work together through different projects. This combination underlines the presence of urban-rural linkages.

C: Investment and finance for inclusive urban-rural development: National and local financing contributes to the implementation of this programme with €15 million from the national government and €15 million from the region.

D: Empower people and communities: Southeast Friesland has many small towns. 68 out of a total of 90 villages have less than 1,500 inhabitants. The region has two large towns, known as the urban centres, and several smaller towns. These towns vary from 4,500, 10,000 or 50,000 inhabitants. The local governments in the region cooperate via a certain governance structure in which all the municipalities are represented.

More urban and rural governments come together in this structure. Non-governmental organizations and community groups are also involved through different projects

J: Environmental impact and natural resource and land management: The Region Deal gives an extra boost to existing territorial development plans, helping the landscape to become more robust and climate-proof. An example is the integrated approach to restore the natural character of the stream valley of the river Linde. This is done by restoring the meandering channels of the canalized stream valley. Another example is the pilot water retention project in the Oranjewoud forest, which has experienced deterioration in recent years.

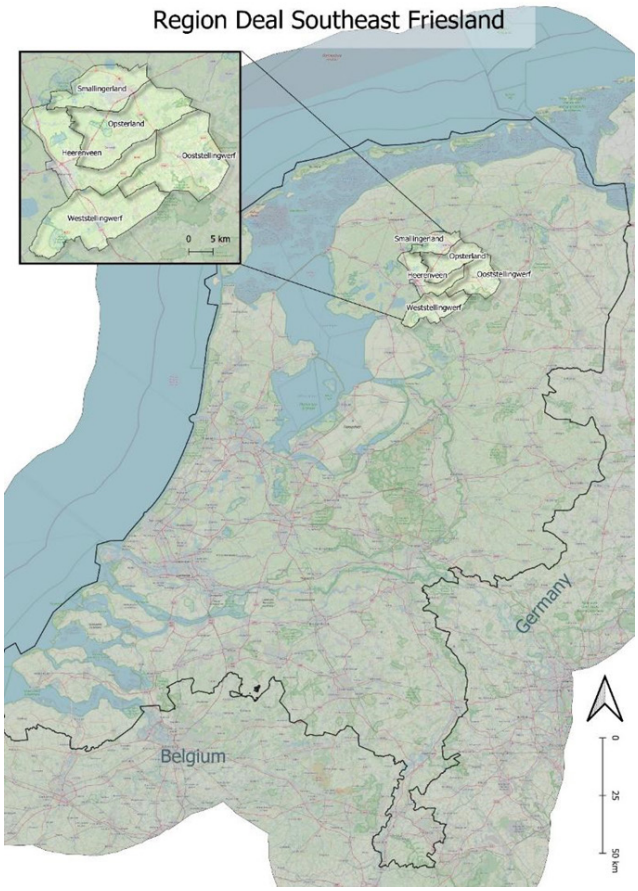


FIGURE 22 Map of the region and involved municipalities

© Municipality of Opsterland

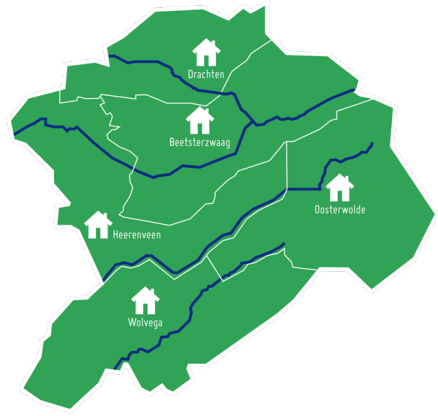


FIGURE 23 Region Deal: map of the region and involved

© Partners Region Deal

> Southeast Friesland: mayor Ellen van Selm elaborating the region deal with involved participants © Municipality of Opsterland

> Region Deal: application Region fund by municipality of Opsterland © Municipality of Opsterland

> Region Deal Southeast Friesland © Partners Region Deal

THE NETHERLANDS: LEEUWARDEN AND OPSTERLAND

European Capital of Culture Leeuwarden-Fryslân 2018 (LF2018)

TYPE OF INTERVENTION

Project

ABOUT THE CASE

Author(s): Jurjen van der Weg, Gemeente Leeuwarden, Municipality of Leeuwarden

Location: Leeuwarden and Opsterland, The Province of Fryslân, The Netherlands

When: 2009-2018, final results presented in February 2019, the legacy of LF2018 (LF2028) is ongoing

Type of Intervention: Project

Partners: 1) Government: European Union, national government of The Netherlands, the province of Fryslân, Wetterskip (working on water and water-defence) and other municipalities in Fryslân; 2) The community ("Mienskip") of the Friesian cities and villages; 3) Cultural field: institutions, creative businesses and self-employed creatives; 4) Tourism field: hotels, restaurants and other hospitality-providers; 5) Ecological field: NGO's on biodiversity, energy-transition, climate change; 6) Inclusion field: advocacy groups (among others the group working on the UN-inclusion-agenda), public and semi-public companies and organisations working with vulnerable people and people with a handicap; 7) Multilingual field: advocacy groups, writers/poets, libraries, scientific institutes and schools in our bilingual province; 8) Education field: Educational institutions ranging from kindergarten to grammar school; universities of applied sciences; research institutes; Panorama2028 and Places of Hope as centres of dialogue and debate; 9) Business: Both as sponsors and as partners

Brief Description: Leeuwarden-Fryslân was awarded the title of European Capital of Culture (ECoC, a title awarded by the European Union) in 2018. In this program composed of 60 main events and 600 community-led events (Mienskips), LF2018 demonstrated the richness of culture, addressing themes such as social inclusion, ecology (particularly water, energy and biodiversity), multilingualism and economy, considering that Friesland is a peripheral region in Europe. The central theme of the bid for Leeuwarden-Fryslân 2018 was the Frisian "Iepen Mienskip" which literally translates to "Open Community", Mienskip being the Frisian word for an action-based community.

The program also aimed to strengthen the ties between city and region. Working in cooperation with most of the municipalities in Fryslân delivered a much richer, more connected set of events than would have been possible if there had been a centralistic approach. It is widely accepted in Fryslân that joining forces between city and region gets more things done, despite being in the periphery of the Netherlands and Europe. Half of the events took place in the capital city of Leeuwarden and the other half in the surrounding region of Fryslân. For example, the strong connection between Leeuwarden and Opsterland, one of the 18 municipalities in Fryslân, facilitated the organization of numerous activities in Opsterland, including the LF2018-program.

Background and challenges

Fryslân is a peripheral region, both in the Netherlands as well as in Europe. The region is surrounded by the coastline of the Noordzee. It is an important agricultural region, with many touristic highlights. Fryslân has a strong regional identity, with its own officially recognized language and culture. While the countryside experienced rationalization processes in agriculture, the need for bigger villages, towns and cities (as centres for education, care, employment, shopping and culture) grew. The interdependence of city and countryside is a long-running theme within Fryslân, but is now seen as an opportunity instead of competition, as it was the case several decades back.

Given the unrelenting pace of world change, transforming our local society is urgent and necessary. Leeuwarden-Ljouwert is one of the poorest areas in the Netherlands, motivating young people to move away in search of other opportunities. Through our ECoC experience, we infuse energy and creativity across the region. This is a turning point in our history and will serve as an example for locations throughout Europe that face comparable challenges. We are now ready to scale up this level of participation to those millions of Europeans who have similar goals, via sharing, exchanging and interacting. Our ultimate goal is to create action-oriented, bottom-up organised solidarity within all sorts of neighbourhoods, regions and metropolises across Europe.

The concept of "Iepen Mienskip" in the heart of LF 2018

Leeuwarden-Fryslân 2018 won the title of European Capital of Culture (ECoC) in 2018, with the concept of "Iepen Mienskip" (Frisian for: Open Community, where the latter should be read as action-driven community). "Mienskip" is our stronghold: we have a long tradition of action-based communities: civil society working together on all sorts of issues and projects instead of or together with the local and regional government. "Iepen" is our challenge: opening up Leeuwarden and Fryslân, and Fryslân to the world. Check out the winning bid book, with a description of the concept, program, organisation and financing at: v4-online-bid2-lwd2018.pdf - Google Drive A quotation from that bidbook

The project addressed the challenges to:

- Strengthen the artistic and creative climate: Work on ecology and biodiversity.
- Cease economic opportunities through cultural tourism.
- Include everyone in our Mienskip.
- Promote the power of multilingualism.

Amongst others we have succeeded in:

- Making a connection between the traditional strongholds of Fryslân and Leeuwarden (Mienskip, performing arts, language, our connection with water and nature, the strong connection between city and countryside) and people and ideas from elsewhere (from all over Europe, Asia and Pacific and others).
- Making new connections between city and countryside, with the linkage between Leeuwarden and Opsterland as a striking example.
- Supporting the Fair Practice Code for the cultural sector.

Solutions and implementation

The main tool highlighted to solve these challenges is the Mienskip-method (community-based). Working in and with the community is a long running system in Fryslân. Arguably, the process may be found almost everywhere, yet in Fryslân it has been given a name, and its presence is felt by people as a part of their culture. For 2018, the approach called the Mienkip-method was developed, encouraging and supporting local initiatives, cultural ones among others

The LF2018-team accomplished this by cooperating with the regional and local governments, NGOs, funds and sponsors. An important ingredient of the approach was: **The ownership of ideas and events remained with the local communities, groups and individuals backing up the original idea**. This approach was a big success with about 600 bottom-up events in the LF2018-program and 65,000 Frisians actively contributing to LF2018. Of course, there was a substantial main program as well, but the unique selling point for our Capital of Culture-year is found in the power of the Mienskip-method.

The team worked with a small, dedicated professional team in a cultural foundation. Although fully autonomous in their cultural choices, the team worked closely together with the municipalities on logistics, marketing and event-management. Apart from that, many businesses, governmental and non-governmental organisations and community members from the Mienskip joined forces, supported by volunteers, to support the LF-team and produce events as well as parts of the program. 65,000 Frisians contributed to the yearlong LF2018. All kinds of institutions joined forces, with the government and the cultural field playing a particularly important role.

Fryslân (region), Leeuwarden (municipality, local government) and the Netherlands (central government) were the main financial supporters for LF2018. Additionally, ticket-sales and business-sponsorship provided significant funding for LF.

Results and impact

About 65,000 of the 650,000 inhabitants of Fryslân actively contributed to the LF2018-program as actor, technician, artist or volunteer; the Mienskip-method had a tremendous impact.

LF2028 events hosted 2.7 million visits by Frisians (about half of the total number of LF2018-visits). It is therefore fair to say that LF2018 had a significant impact on the Frisian population. In the cultural program with hundreds of events of diverse sizes, for example, around 425,000 visitors were welcomed within one weekend of the Giants of Royal de Luxe. The Frisians gained in pride and self-consciousness, through which transpired a strong "can-do"-vibe.

Based on independent research, the project appears to have had € 230-320 million of economic impact. The researchers based their findings from both the spending of local, regional, national and international visitors and the indirect impact of investments of businesses, government and other organisations because of Leeuwarden-Fryslân. Quite a bit of immaterial revenue was also tabled in.

The bottom-up movement of farmers, scientists, ecological organisations in conjunction with the Frisian Mienskip, who work towards more biodiversity, used LF2018 as leverage for their cause, having several appearances in the national parliament and the national centre for debate.

Perhaps the most important take away would be the pride Fryslân and the Frisians had delivered such a tremendous result.

The program was designed specifically for culture lovers but remained accessible to a wide variety of inhabitants of Fryslân. A particular focus was given to underprivileged groups. The accessibility of events for people with a handicap was a main topic for LF2018 and remains relevant still to a lot of event-managers. We are particularly proud for delivering a great program, free of charge or accessible for a small fee only. Right from the start, a partnership was also established with schools, welfare-organisations as well as the civil society to create events designed for children from low-income-households in order to give them a stage to perform, to discover, and to nourish their talents. The events in Opsterland were a clear-cut example of the importance of including the Mienskip in the process of programming: both the quality and quantity of events profited.

Working on the legacy of the program with the team of LF2028 and the triennial Arcadia (100 days of culture addressing major issues in our region, https://www.arcadia.frl), the challenges remain the same. The goal is to renew the energy in the Friesian Mienskip and to continue working on the liveability in Fryslân. In the first edition, Arcadia2022, an even bigger part of the program will be free of charge to make it accessible for everyone. Efforts will also be pursued to continue attracting people with no connection to culture, and to connect big and small events to the wishes and needs.

Apart from the fact that governmental and cultural organisations used LF2018 to work together through urban-rural linkages, a substantial number of the urban and rural inhabitants crossed the "border" between the cities and the surrounding villages and countryside. Directors and musicians from cities worked on events in the villages, actors and artists from the villages took the stage in the city or in the rural areas, audiences from cities and countryside mingled in hallways and outdoor events and theatres all over Fryslân. LF2018 could therefore be seen as a project stimulating the connection of the city with the countryside, and vice versa. A convincing illustration of this was the successful cultural collaboration of Opsterland and Leeuwarden.

Replicability and sustainability

A lot was gained from other European cities' experience being or planning to be European Capital of Culture before 2018. Aarhus 2017 (for joining in the whole region and for the way they shared their story with visitors) and Liverpool 2008 (Creating_an_Impact_-_web.pdf, liverpool.ac.uk, for the way they handled legacy and innovated in the field of evaluation and monitoring ECoC-results) were particularly inspiring. There were close connections with cities all over Europe.

Once the title was awarded by the European Union, it kept the program on track with review sessions and helped out in several events. International cultural partners strengthened the program and kept the flow of ideas going between Fryslân and the world.

In return, our expertise with the Mienskip-method, highlighting bottom-up working, is popular amongst future ECoC's and other cultural cities and regions, with the idea of teaching the process. Quite a lot of municipalities and regions from all over Europe visited for that purpose, as did cultural and societal organisations. Networks like the ECoC-family (with former, present and future ECoC's), CoL (UNESCO City of Literature; Leeuwarden was awarded the title in 2019, Leeuwarden City of Literature » Leeuwarden City of Literature) and Eurocities (the cultural branch of the European network of cities, Eurocities - Home) are additional possibilities for Leeuwarden and Fryslân to spread learned lessons.

Furthermore, the entire program of the Capital of Culture-year 2018 addressed, through culture, all kinds of societal, ecological and economical goals. The European Capital of Culture Team became strong ambassadors for the SDGs, particularly the SDG 17 (partnership for the goals). All projects were tailored as partnerships between the cultural field and all kinds of organisations (both grassroots and professional), businesses and governments. Among the other SDGs addressed in 2018, including the preparatory years and the following ones, SDG 8 (good jobs and economic growth) and SDG 11 (sustainable cities and communities) stood out.

This initiative contributes to application of the URL-GP:

The LF2018-project was a driving motor for the cooperation between city and countryside. Through the decentralization approach, characterized by a relatively small number of staff in the LF2018-organisation, the need and opportunity for local initiatives was definitely present. In the rural setting of Opsterland, a substantial bottom-up program flourished, using the impact of the central LF2018-program and gaining from the marketing-power of the professional LF-marketing team. Some rural Opsterland events had spin-offs in the capital city of Leeuwarden.

Through the clever use of regional and local funding and sponsoring opportunities, inhabitants, guests and tourists received a very diverse year-round cultural program in Opsterland.

The impact in Opsterland was substantial, through collaborative events, Culturele Hoofdstraat (Cultural Mainstreet), and through events such as the Tinco-exhibition.

The Tinco-exhibition is a unique urban-rural cooperation between Opsterland and the city of Cannes. The exhibition's realization is a clear example of community and participation coming together. Together with the local government, citizens of the municipality travelled to Cannes and explored the shared history. This recalls the story of Tinco Lycklama à Nijeholt, a nobleman born in Opsterland who travelled through the Middle East and later moved to Cannes. Together with the local government of Cannes, the Musée de la Castre in Cannes (Musée de la Castre (Cannes): Horaires, tarifs, téléphone

et avis, musee-chateau.fr) and the French national government, Opsterland received the opportunity to borrow 180 historical pieces from Cannes throughout 2018. The exhibition was inaugurated by local and regional representatives of Opsterland and Cannes and completely managed by local volunteers.

The initiatives and support of the Opsterland municipality in the early stages of the preparations for LF2018 were an inspiration to many other Frisian rural municipalities to participate in the LF2018-program.

1. Locally grounded interventions: Locally designed interventions with international inspiration, addressing "localised goals" as the backbone of the program.

2. Integrated governance: LF2018 was a project of cooperation and integrated governance between different types and sizes of government organisations (rural, urban, regional); between entrepreneurs, NGOs and government, and between professionals and non-professionals.

5. Balanced partnership: LF2018 was a joint production of "Mienskip", culture, government, business and NGO's.

8. Environmentally sensitive: LF2018 (project King of the Meadow) played an important role nationwide in addressing the loss of biodiversity.

9. Participatory engagement: 65,000 inhabitants of Fryslân contributed actively in the LF2018-program

10. Data driven and evidence-based: A set of 32 Key Performance Indicators (KPIs) were developed to track the results for the LF2018-goals. Check out the final report on monitoring & evaluation in: bijlage-slotmeting-lf2018-engels.pdf - Google Drive

This project relates mostly to the following entry points of the Urban-Rural Linkages: Framework of Action:

A. Governance, legislation and capacity development: LF2018 encouraged the development of new ways to work together: not only between the government, the cultural sector, businesses and society, but also between governments. There was an intensive cooperation between the province of Fryslân and the Municipality of Leeuwarden, both on the political and civil servant level.

B. Integrated planning across the urban-rural continuum: The events strengthened the already existing cooperation between all kinds of partners on the themes mentioned, creating leverage for integrated planning in some cases (e.g., biodiversity). With Leeuwarden being the heart of the LF2018-year for Fryslân and a lot of events taking part in the city and in the surrounding countryside, planning highlighted the linkage in the urban-rural continuum.

C. Investment and finance for inclusive urban-rural development: One of the many purposes of LF2018 was to invest in culture by addressing new touristic and business domains, and consequently by persuading them to visit the cities and countryside of Fryslân.

D. Empower people and communities: This was at the heart of our bid; "Iepen mienskip" (Open Community) was about empowerment, personal and community-growth, and creating pride about what you can achieve personally.

E. Knowledge/data management for dynamic spatial flows of people, products, services, resources and information: A substantial evaluation and monitoring-system was put in place to learn from 2018 experiences and share that with the world: bijlage-slotmeting-lf2018-engels.pdf (citynavigator.nl)

F. Territorial economic development and employment: Independent research (Dutch version: Microsoft Word - BBO notitie schatting economische impact LF2018.doc (bureaubeleidsonderzoek.nl); English version available on demand) has pointed out that LF2018 delivered € 230-320 million in economic impact and 2,500-3,200 working years of extra employment.

H. Infrastructure, technology and communication systems: While cultural infrastructure was delivered (among which 11 iconic fountains in the 11 Frisian cities), LF2018 invested mainly in events as well as processes and networks of collaboration that would work on after 2018. There was quite a bit of infrastructural work on roads and squares that could be done earlier or was done especially for the LF2018-year, while being in effect until now.

J. Environmental impact and natural resource and land management: All events had a strong aim to exist in respect with Green Key standards as much as possible, some officially, others (with smaller budgets and a small professional staff) unofficially. One of the events was used as a lab for festival-innovation regarding environmental impact. It would consist for instance of figuring how to handle the electricity-supply when there's no connection to the grid, and what to do with smoking-waist.

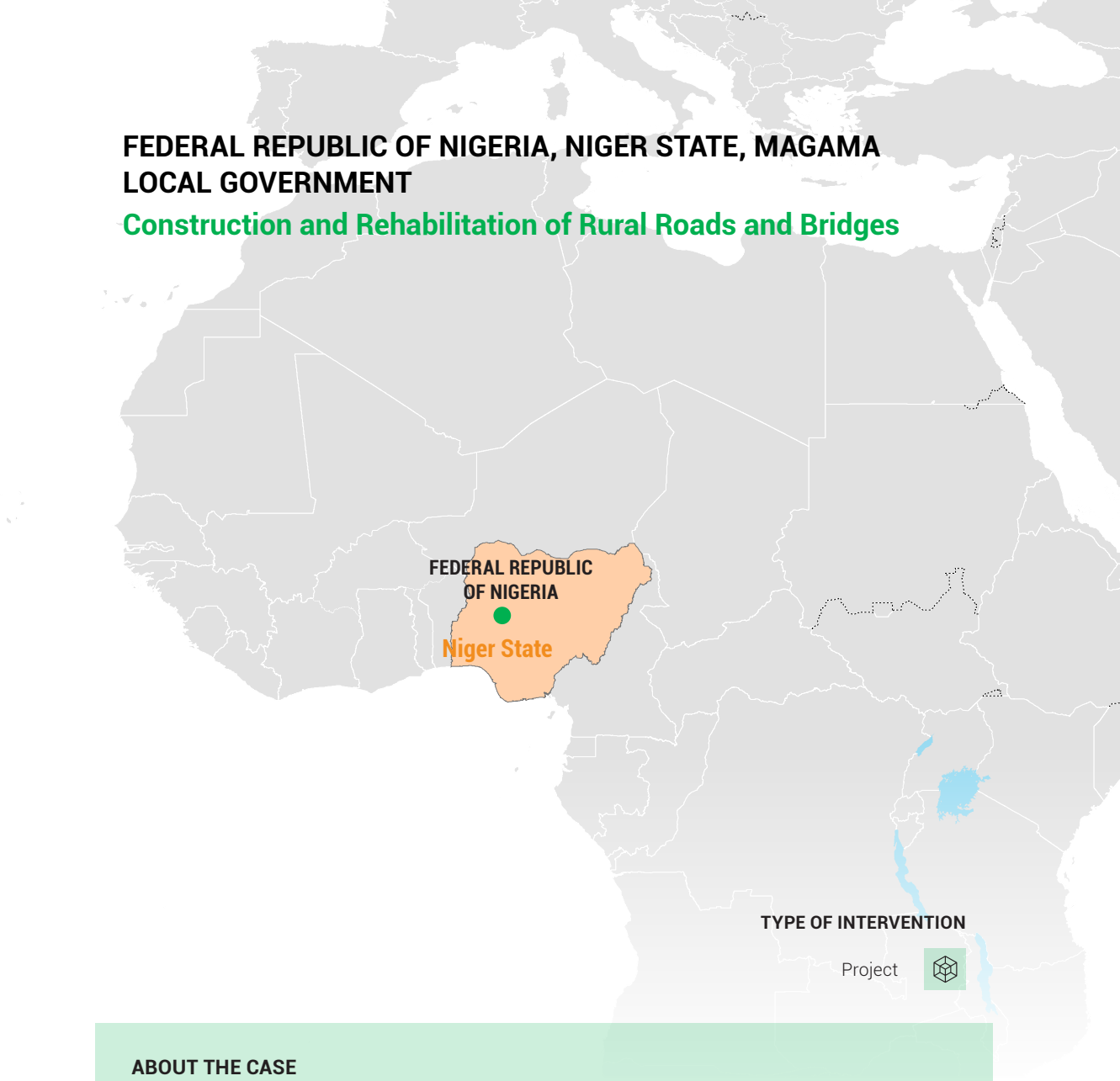
> *Tinco exhibition* © Opsterland

> *LF2018 - Oranjewoud Festival Â* © Lucas Kemper

> *The Giants of Royal de Luxe* ©Ruben van Vliet

FEDERAL REPUBLIC OF NIGERIA, NIGER STATE, MAGAMA LOCAL GOVERNMENT

Construction and Rehabilitation of Rural Roads and Bridges



ABOUT THE CASE

Author(s): Emmanuel Gbadebo ADELEKE

Location: Niger state, Nigeria

When: 2014-2020 (completed)

Type of Intervention: Project

Partners: World Bank (WB) and French Development Agency (AFD)

Brief Description: Provision and maintenance of rural infrastructure particularly rural access roads, river crossing (bridges and culverts)

Background and challenges

Niger state is one of the states in the Middle Belt region of Nigeria with the largest landmass of over 76,000 sq. km representing about 8 percent of the total land area of the country. In addition to the vast land resource, the state also has other resources that support agricultural activities both at small- and large-scale levels. With these resources, Niger state has emerged as a major player and leading contributor to agricultural productivity in the country at the regional and state levels. Agriculture plays a significant role in the economy of Niger State as its sectoral share of the Gross Domestic Product (GDP) was 47.2 per cent as of 2017, while about 90 per cent of the rural population in the state depends on agriculture as means of livelihood.

Niger State has immense natural resources, the largest and major contributor to agricultural productivity. Despite being a major hub with vast production of agricultural produce, the agricultural sector in Niger State still faces several challenges. For instance, poor linkage between urban and rural areas in Niger State particularly in the area of infrastructure development, whereby 21,000km of rural roads are poorly maintained. The resultant effect of inadequate infrastructure in the state is not only evident in the prevalence of rural poverty and high rate of mortality but also decline in flow of farm produce from rural areas to urban areas as well as declining returns on agricultural investment more importantly for the rural farmers. Along with this, increasing travel delays and cost, poor access to healthcare facilities, rural education enrolment and retarded rural economic growth have been challenges, meaning rural areas are left behind in the journey towards sustainable development.

To tackle this disturbing situation and strengthen the linkage between urban and rural areas, Niger State Government keyed into the Rural Access and Mobility Project (RAMP), a World Bank and French Development Agency co-finance initiative aimed at bringing access to the rural populace through rehabilitation and maintaining key rural infrastructure in a sustainable manner.

Solutions and implementation

The key objective of this project is to improve transport conditions and bring sustained access to the rural populace through rehabilitating and maintaining key rural infrastructure in a sustainable manner in Niger State. The project which cost USD 60million was co-financed by the World Bank and French Development Agency.

The World Bank contributed USD 45million to the project while the French Development Agency contributed USD 15million.

This project was part of the commitment of Niger State Government to implement the National Rural Travel and Transport Policy (RTTP) of 2006.

Similarly, the project was identified as one of three projects prioritized in the National Medium–Term Investment Programme (NMTIP) for Nigeria in support of the New Partnership for Africa's Development -NEPAD's Comprehensive Africa Agriculture Programme (CAADP). The project directly relates to Priority Area 2 of the NMTIP, and Pillar 2 of CAADP (Improvement of rural infrastructure and trade–related capacities for improved market access).

Between 2014 and 2020, the RAMP Project was implemented on 3 components.

Component 1 focuses on upgrading and rehabilitation of rural transport infrastructure which includes design studies, upgrading and/or rehabilitation, and related engineering supervision. This component brought prioritizing, constructing and commissioning of about 500km rural roads as well as 20 river crossings on rural roads in different parts of the state to facilitate accessibility of local farmers and improve transport conditions and bring sustained access to the rural populace in Niger State. Some of the major achievements recorded under this component are:

1. Construction/rehabilitation of 176km Rural Roads - comprising of 7 roads in 8 municipalities (completed)
2. Construction/rehabilitation of 403km rural roads in 15 LGAs (completed)
3. Construction/rehabilitation of 20 Bridges / River Crossings/ in 15 LGAs (completed)
4. Construction/rehabilitation 118km rural roads to provide access to the constructed 20 No River Crossings (completed)

Component 2 focuses on community-based road maintenance schemes. Under this scheme, members of benefiting communities were selected, trained and engaged to carry out routine maintenance along the rehabilitated roads in their communities. Major achievements recorded under this component are:

1. A total of 6 different stakeholders groups consisting of 48 members were selected, trained and equipped to carry out routine maintenance along the 47.2km pilot roads.
2. 15 groups consisting of 178 members were selected, trained and adequately equipped to carry out routine maintenance along the completed 176km rural roads.
3. 35 groups consisting of 395 members trained and equipped to carry out routine maintenance along the completed 403 km rural roads.

Component 3 addresses institutional capacity gaps in Niger State regarding rural road assets' management, developing and implementing sound rural transport policies.

The Niger State Ministry of Agriculture and Rural Development played a supervisory role on the project implementation while the State Project Implementation Unit (SPIU) coordinates the implementation of the project. Additionally, the State Project Monitoring Committee which comprises of representatives from different institutions (vis-a-viz the Niger State Ministry of Agriculture and Rural Development, Niger State Agricultural and Mechanization Development Authority, Niger State Ministry of Finance, Niger State Ministry of Justice, Niger State Ministry of Local Government , Niger State Ministry of Works and Infrastructure, Niger State Planning Commission, Niger State Community and Social Development Agency, and the Niger State Rural Access and Mobility Project) carrying out oversight functions on the implementation of the project.

Results and impact

Presently about 728,891 people are benefiting from the project intervention in the state most of whom are rural dwellers, farmers, market women and transport operators. Implementation of the Rural Access and Mobility Project in Niger State shows that provision of adequate and resilient infrastructure is pivotal to achieving inclusive economic growth and sustainable urban and territorial development in any region.

The compendium of Niger State Rural Mobility Project (2021) evidently revealed that the project has had positive impact on employment, access to services, rural income, transport, farm output and agriculture value chain in Niger State particularly in the rural areas. Some of the findings of the post project survey and immediate impacts of the project recorded include:

1. increase in traffic volume from rural areas to urban areas by 40 per cent
2. improved access to farm inputs for farmers in the intervention area
3. increase in farm size by farmers in the intervention areas by about 15 per cent
4. improvement in school enrolment in the intervention area compared to baseline by about 4 per cent
5. reduced drudgery in the activities of the beneficiaries in the intervention areas
6. improved access to primary and secondary health care services in the intervention areas.
7. reduction in post-harvest loss by about 50 per cent in the intervention areas compared to baseline.
8. reduction in travel cost compared to baseline by about 45 per cent

9. reduction in maternal death compared to baseline by about 60 per cent in the intervention area.
10. creation of 621 permanent jobs within the communities along the road
11. proliferation of new markets in some intervention areas
12. establishment of large-scale farms along rehabilitated roads which has reduced the number of unemployment.

Replicability and sustainability

To ensure inclusiveness and transparency in the process of project selection, design, implementation and maintenance, a series of 13public engagements vis-a-viz technical workshops, stakeholders' sensitization and consultation were organized not only to inform the stakeholders but to also participate in the decision making and selection of projects with immediate and long-term impact as well as implementation and maintenance of the projects. The Rural Access and Mobility Project does not only provide transport infrastructure for the selected rural communities but also opens the rural areas to agro-industrial development, encouraging investors in the private sector to fully exploit the agricultural potential in the rural areas. The project also enhances supply chain of agricultural produce, strengthens access to rural services thereby reducing transport and marketing transaction costs and increase production of food where the project has been implemented thus it is a practical model to accelerate balanced urban and territorial development in other part of Niger and any region.

This initiative contributes to application of URL-GP:

This project builds on some guiding principles for inclusive and functional urban-rural linkages, some of which include;

1. Locally grounded interventions: The RAMP project was an integrated action of the Federal Government of Nigeria and the Niger State Government to implementing the National Rural Travel and Transport Policy (RTTP) through the provision of access roads to rural communities in Niger State.

5. Balanced partnership: The project is co funded by the World Bank, French Development Cooperation and the Niger State Government. During the process of project selection, design, implementation of RAMP initiative, all critical stakeholders including the local/traditional institutions, the local communities, farmers, market traders, transport operators, youth, and the media were engaged to be part of the decision making.

7. Do no harm & provide social protection: One of the important components of the project is protection of vulnerable groups and the local population. The RAMP project carefully planned and implemented the framework to mitigate the adverse impacts the project may pose on the people and the host communities. The project builds integration of the prevent the issue of land expropriation, homelessness, food insecurity, forceful relocation, social displacement, and loss of access to common property.

8. Environmentally sensitive: The RAMP project considers environmental impacts of the project. Thus an Environmental and Social Management Plan (ESMP) was developed and enforced during the project implementation to address issues related to pollution (air, water and land), air quality, loss of vegetation and biodiversity, soil erosion, land degradation, construction waste, community health and safety

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

A. Governance, legislation and capacity development

RAMP project has been implemented to strengthen the urban - rural continuum through multi-level governance. The Ministry of Agriculture, and Ministry of Transport (at National Level), Niger State Ministry of Agriculture and Rural Development, and the Niger State Rural Access and Mobility Project jointly established a governance mechanism to implement the National Rural Travel and Transport Policy (RTTP) of 2006

C. Investment and finance for inclusive urban-rural development

The RAMP project was implemented through the co-funding agreement between Federal Government of Nigeria, Niger State Government, the World Bank and the French Development Agency.

D. Empower people and communities

Different categories of stakeholders including the local/traditional institutions, the local communities, farmers, market traders, Transport operators, youth, and the media were identified and engaged during the design as well as implementation of the RAMP project. Similarly for the sustainability of the projects, selected community members were trained and engaged to carry out routine maintenance of the rural roads and drainages constructed.

F. Territorial economic development and employment

Construction of rural access road has improvement the rural economy through employment creation, development market centres for sales of food items, and establishment of large-scale farms in rural areas.

> Auna Tungan Jika – Shafini Road - 36.6 km in Magama LGA (before)

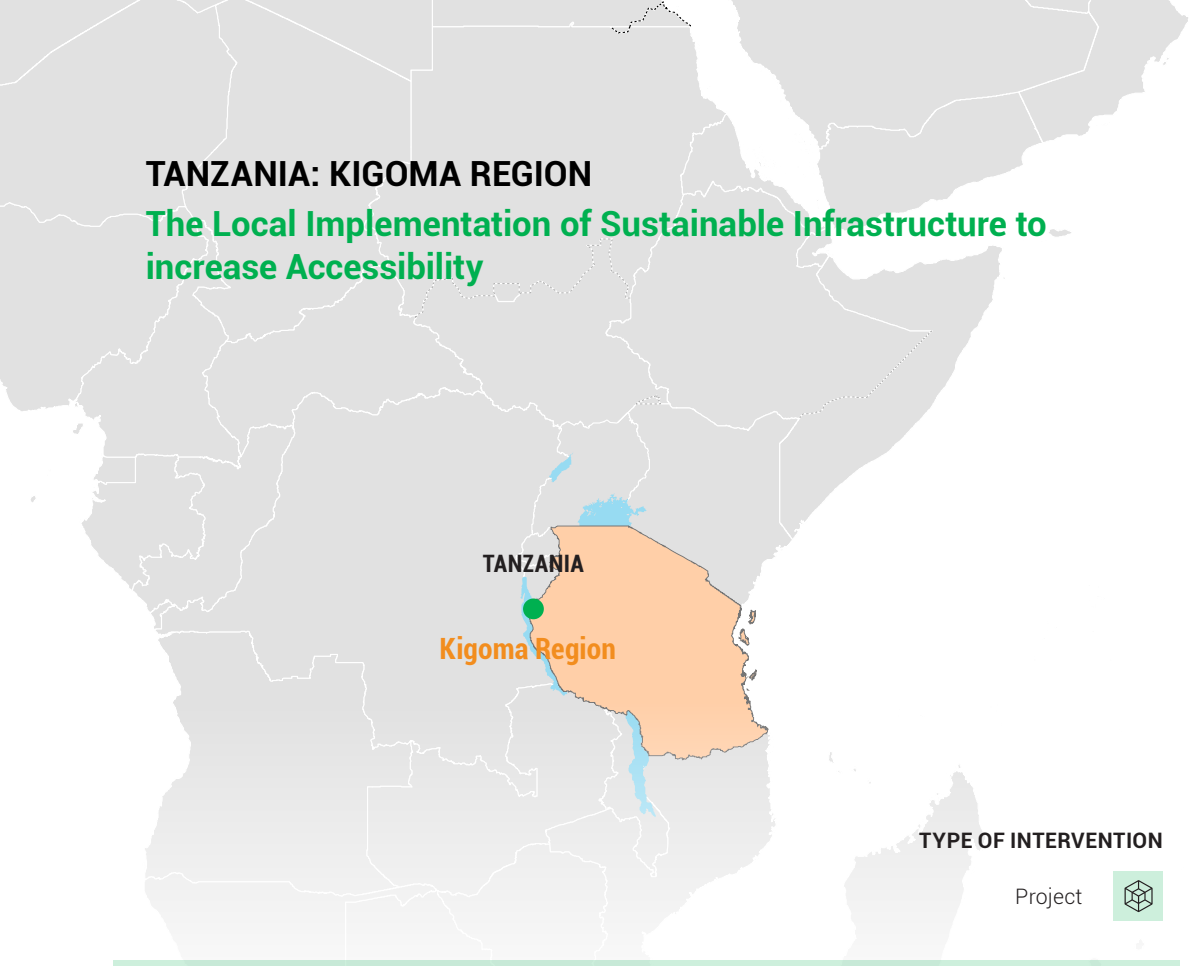
> Auna Tungan Jika – Shafini Road - 36.6 km in Magama LGA (after)

> Mazakuka - Construction of 3m x 2m Six Cells Box Culvert (before)

> Mazakuka - Construction of 3m x 2m Six Cells Box Culvert (after)

TANZANIA: KIGOMA REGION

The Local Implementation of Sustainable Infrastructure to increase Accessibility



TYPE OF INTERVENTION

Project

ABOUT THE CASE

Author(s): Willem Van der Voort, The SAKiRP team, Enabel, Belgian Development Agency

Location: Kigoma Region, Tanzania

When: 2017 - 2023 (6 years)

Type of Intervention: Project

Partners: Enabel, Belgian Development Agency (Author); Tanzanian Rural and Urban Roads Agency (TARURA); District and Village Governments of the Kigoma region, Tanzania.

Brief Description

The objective is to increase smallholder farmer's income by improving access to urban centres, and particularly to central markets, by investing in infrastructure. The infrastructure activity is part of the Sustainable Agriculture Kigoma Region Project (SAKiRP) implemented by Enabel. This bilateral project is 90% funded by the Belgian government and 10% by the Tanzanian government. Implementation is done by Enabel, with oversight from the Ministry of Agriculture on a regional level.

Background and challenges

The Kigoma region is situated in Western Tanzania, along Lake Tanganyika. Even though it is currently a sparsely populated region, demographic pressure has been increasing rapidly. Substantial refugee communities from Burundi and Congo are hosted in the region, and there is an important presence of external actors (UNHCR, IOM, NGOs and others) working with them. The region is divided into 6 districts, with Kigoma as its capital. The rural communities of the region experience difficulties in accessing urban centres, which provide services such as wholesale and retail markets, healthcare, education, and jobs. Women are particularly affected as they tend to spend more time travelling to and from the markets. Due to the poor condition of the roads, or the absence of an all-season river crossing, commuting to those centres is expensive, takes a long time, and is in the worst cases during the rainy season, is simply impossible. Despite investment from the central government and the Road Fund, the Tanzanian Rural and Urban Roads Agency (TARURA) has insufficient funds to meet the high demand to develop and maintain the rural road network.

Solutions and implementation

The infrastructure component is part of the Sustainable Agriculture Kigoma Region Project (SAKiRP), which aims at upgrading the value chain of the agricultural sector/produce in Kigoma. One critical aspect of said value chain is the physical access to markets. The infrastructure component works together with Tanzania's Rural and Urban Roads Agency (TARURA) and has identified safe all-season river crossings to be a major opportunity to lower prices for crop transportation to the market.

SAKiRP is a project funded and implemented by Enabel (Belgian Development Agency). A contribution is made by the National government on the level of the specific agreement (10%) and the beneficiary community makes a local contribution of about 20%. This last contribution is often in-kind by providing labour and collecting local materials. The Tanzanian Rural and Urban Roads Agency (TARURA) is the direct partner at regional government level and has now decided to include the technology in their national roads' development plan.

SAKiRP plans to build 100 bridges, of which 86 are already completed as of December 2022, as spot improvements on rural roads. These bridges are being built with the stone arch technology, which is a labour-intensive method that contributes to creating jobs for local masons and manual workers. The approach is demand driven, as the local community provides local materials and some manual labour. Apart from building the bridges, SAKiRP also trains the masons in this new technology and has achieved integration of arch bridge construction in TARURA's development plan and budget on a national level.

Enabel will fund a 6-months follow-up project to support TARURA with the roll-out of the stone arch technology on national level and to set up a training centre in Kigoma town. This technical support project aims at knowledge transfer, ensuring high quality standards for bridges implemented by TARURA on one hand, and a physical training centre where knowledge is managed, experienced trainers and practitioners are available for interested parties and a variety of real-life examples are easily accessible.

Results and impact

With the construction of 100 bridges, the expected result is a drop in transportation cost by at least 50%, an outcome that has already been observed in several case studies. Lessons learned are that inclusion of the community in infrastructure works increases ownership and reduces redundant work thanks to informed need assessments. By introducing the masonry arch technique for bridge construction in the region, the cost per bridge is reduced by 80% and the carbon emissions linked to building material and transportation is 50% to 80% lower when compared to the conventional reinforced concrete bridges.

The impact of this intervention is a reduced geographical divide between urban and rural areas in Kigoma. Opportunities of remote communities increase, while avoiding forced relocations. The intervention has had substantial spill over effects in the health, education, and employment sectors: in those sectors, access to centralized services has been improved, therefore public service provision has been expanded without the need for new health centres, markets or schools construction.

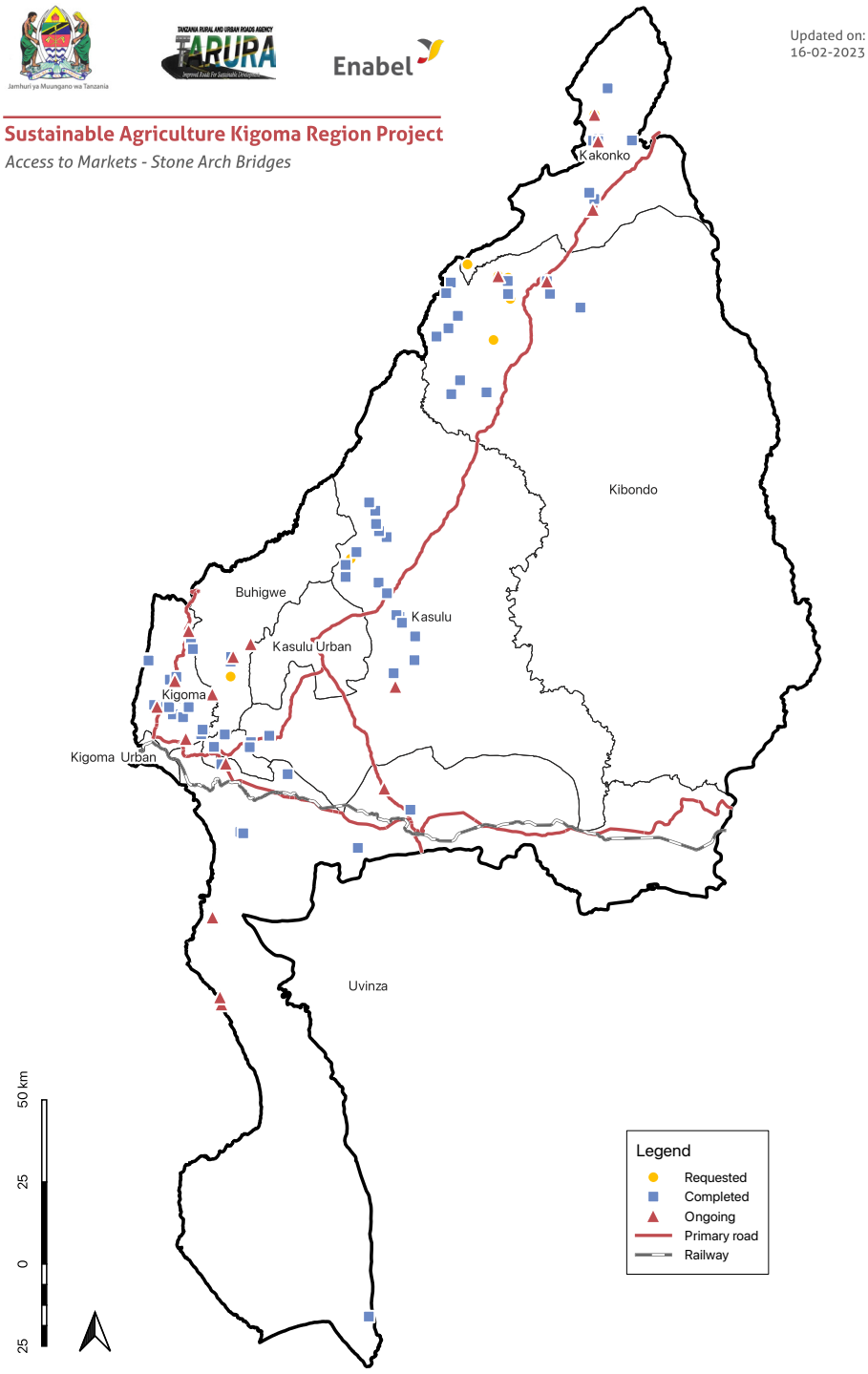


FIGURE 8. Map of Stone Arch Bridge construction in Kigoma Region implemented by Sakirp

© Enabel Tanzania

Replicability and sustainability

The stone arch technology has been developed and improved over centuries. The scale-up to 100 bridges in the Kigoma region has proved the approach is easily replicable, mainly due to 3 elements:

1. The design has been fully standardized, eliminating the need for expensive structural engineering work.
2. The execution is a lot less sensitive to the quality execution compared to reinforced concrete or steel.
3. The materials used are low-tech and usually available near the building site, only cement has to be supplied.

TARURA has integrated the technology in their national development plan and budget, thus ensuring the continuation of the approach on the long term and its expansion beyond the Kigoma region. The technology is suitable for any area where there is a need for short to medium span bridges, (1 - 60m) and wherever stones are readily available. It should be noted that bricks can also be used but would then require to be of high quality and the method of production should be assessed for environmental impact.

Any introduction of new technology needs great effort to win people over.

A pilot is needed to show one or several local real-life cases, before a larger project can be rolled out. To ensure sustainability, people have to be introduced and trained on the technology on all levels: village leaders, local road agencies, engineers and masons. The most effective way to reach this goal would be to work on local ongoing projects instead of theoretical examples. Involving the community brings not only major added value, but also the greatest bottle necks in terms of turnaround time, or in terms of ensuring all community members are included. Communities are juggling with many demands and political pressure, and require a good deal of flexibility.

The following SDGs are applicable on the project:

1. **SDG Goal 1.** End poverty in all its forms everywhere

In a direct way, bridge construction reduces the cost of transportation, thus increasing profit on the same products. Indirectly, income is affected by the increased access to opportunities for education, healthcare and jobs.

2. **SDG Goal 2.** End Hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture

By helping smallholder farmers reach bigger markets linked to urban centres, the supply for urban population is expanded and diversified, in turn lowering prices, increasing resilience of food supply and bringing a more diverse nutrition.

3. **SDG Goal 3.** Ensure Healthy Lives and Promote Well-Being for All at All Ages

Access to health care is improved, especially for people with reduced mobility such as the elderly.

4. **SDG Goal 8.** Promote Sustained, Inclusive and Sustainable Economic Growth, Full and Productive Employment and Decent Work for All

The greatest impact of improved rural access is on job opportunities outside of agriculture.

5. **SDG Goal 9.** Build Resilient Infrastructure, Promote Inclusive and Sustainable Industrialization and Foster Innovation

The innovative use of the established stone arch technology as a labour-intensive method reduces the impact on the environment by 50-80% when compared to reinforced concrete bridges. The structure also requires considerably less maintenance, and examples around the world show a possible service life of several centuries, which contributes to resilient and sustainable infrastructure.

6. **SDG Goal 11.** Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

Improved rural access decreases the geographical divide, while the improved mobility between urban and rural areas contributes to a greater resilience of both areas by diversifying opportunities.

7. **SDG Goal 12.** Ensure Sustainable Consumption and Production Patterns

The urban ecosystem is expanded, which allows for less constrained approaches where optimization can aim for sustainability rather than production alone.

This initiative gives evidence to the URL-GP of:

1. Locally grounded interventions: The community requests and participates in the construction of the bridge. The socio-economic parameters of that community are assessed to verify the need expressed by the community. The low-tech choice for stone arches allows for this local participation by manual laborers and masons.

4. Financially inclusive: The majority of the investment is done in rural areas rather than urban centres, on which a large share of funding is usually focused. The significantly reduced costs (reduction of 80% compared to reinforced concrete) allows the roads agency to serve more communities.

8. Environmentally sensitive: The construction of masonry arch bridges emits 50-80% less carbon compared to conventional reinforced concrete bridges. Protected areas are carefully considered by contacting conservation authorities before accepting a request for construction that would negatively impact those areas.

9. Participatory engagement: Throughout the project's implementation, participation happens at the level of communities, local authorities and regional government. Different forms of participation are presented from implementing partnerships to collaborative surveying and building its own infrastructure. In one case, a bridge was requested on a large river where foundations could only be constructed during the dry season. The district assisted the excavation by hiring an excavator, while TARURA committed to supplement the stones supplied by the village, and a nearby prison helped by clearing the site before construction.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

F. Territorial economic development and employment: The project is based in a secondary city (Kigoma) and all surrounding districts. Bridges serve to connect remote communities to the nearest marketplaces and urban centres. This infrastructure enhances territorial economic development and has also provided employment opportunities to many community members.

H. Infrastructure, technology and communication systems: The affordable but strong bridges make the urban-rural transport system resilient and sustainable. A demand-based approach is also used in a participatory way, as previously explained.

> Chankabwimba Bridge Under Construction © Enabel Tanzania

For additional information, please visit www.stonearchbridges.org

> Nyabigufa Bridge After Completion © Enabel Tanzania

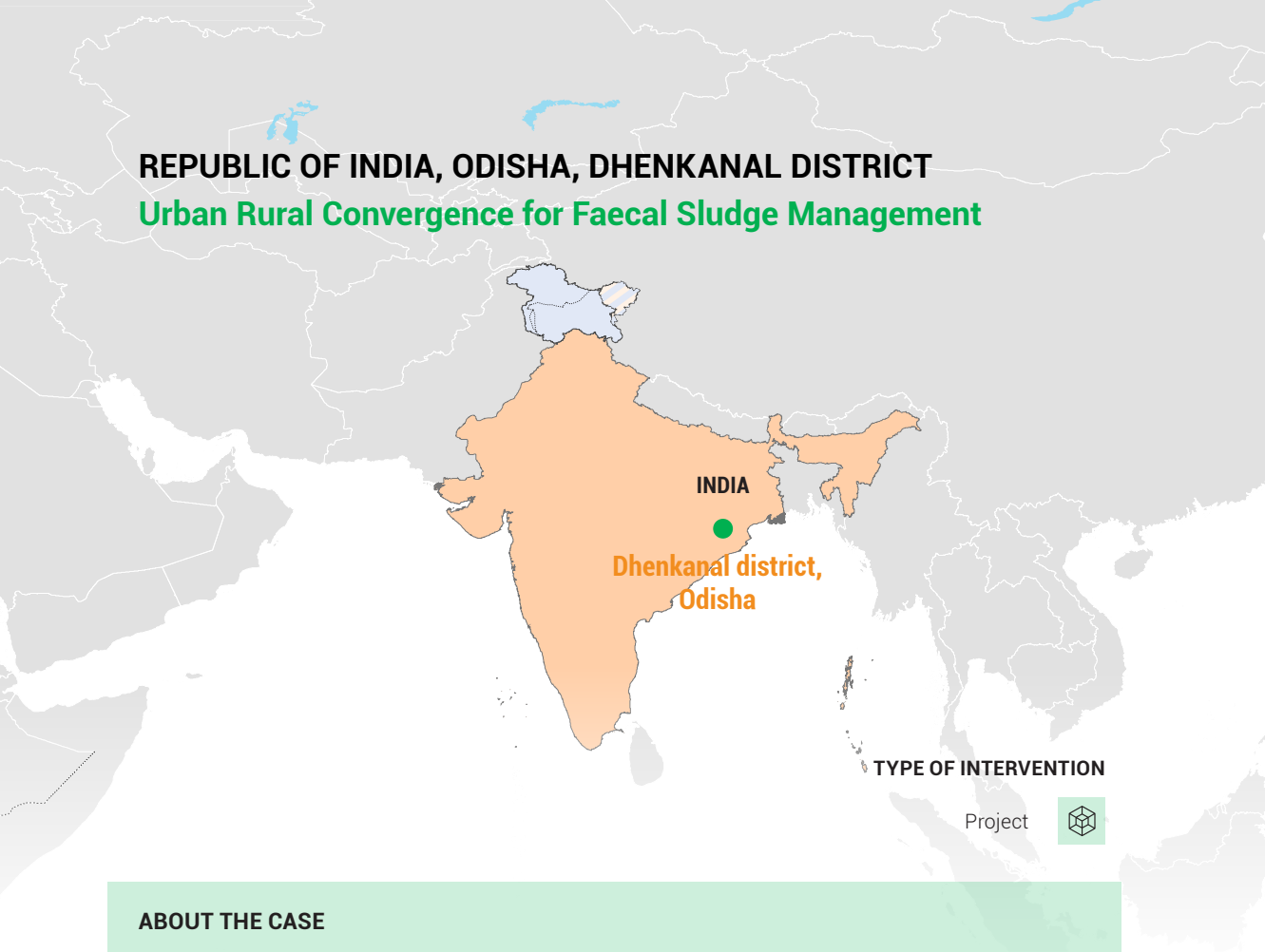
> Nyabigufa Bridge After Completion © Enabel Tanzania

> Kilema bridge (6m span, 10 000 EUR) © Enabel Tanzania

> Chankabwimba bridge creates a shortcut for villagers to reach public services and a safe alternative for the existing bridge on the main road which is in bad condition and is often submerged during floods. (25m span, 39 000 EUR) © Enabel

REPUBLIC OF INDIA, ODISHA, DHENKANAL DISTRICT

Urban Rural Convergence for Faecal Sludge Management



TYPE OF INTERVENTION

Project

ABOUT THE CASE

Author(s): Shubhagato Dasgupta, Anju Dwivedi, Shaivi Kulshrestha; Centre for Policy Research, New Delhi, India

Location: Dhenkanal district, Odisha, India

When: October 2019 - October 2021 (Phase 1); November 2021 -On-going (Phase 2)

Type of Intervention: Project

Partners

United Nations Children's Fund (UNICEF), Odisha, India; District administration, Dhenkanal, Odisha, India; Urban Local Body and Gram Panchayats, Dhenkanal, Odisha, India

Brief Description

The Urban-Rural convergence project in the Dhenkanal district of Odisha, India, aimed to extend existing urban Faecal Sludge Management services (FSTP and desludging vehicles) to adjoining rural areas. The project was piloted for demonstrating this novel Urban-Rural convergence approach to achieve 'safely managed sanitation' for all – as defined by the Sustainable Development Goals and Government of India's vision for rural sanitation.

Background and challenges

Odisha is one of the least urbanised states in India, with a rural population of almost 83% (Census, 2011). Dhenkanal is one of the 30 districts in Odisha with a population of nearly 1.2 million, with nearly 0.27 million households. The Swachh Bharat Mission (hereinafter referred to as SBM), launched by the Government of India in 2014, is a centrally sponsored scheme, and one of its intended goals is to achieve Open Defecation Free India. Consequently, India saw a rapid expansion of toilet facilities in rural areas to fight against open defecation, and made significant headway towards achieving **SDG6: Clean Water and Sanitation for All** by achieving this intended Open Defecation Free goal. Correspondingly, in Dhenkanal, efforts undertaken by the mission resulted in the district emerging as a 100% Open Defecation Free zone, through the construction of nearly 0.25 million toilets covering 212 Gram Panchayats (Village Councils) and approximately 1200 villages.

During the SBM, onsite sanitation systems were pre-dominantly constructed in the Dhenkanal district.

Owing to the high prevalence of onsite sanitation systems in the district, a need for ensuring safe treatment and disposal of faecal sludge and septage emerged – in accordance with the national policy framework on Faecal Sludge and Septage Management (2017). A large chunk of the rural population in India still grapples with environmental pollution and health risks associated with onsite sanitation systems, mainly due to persisting gaps in sanitation service delivery. These gaps emerge due to multiple factors, such as inadequate administrative capacity and lack of financing. However, urban centres are relatively well-equipped with human and financial resources to provide FSM services. Furthermore, due to the high prevalence of onsite sanitation systems in the Dhenkanal district, as well as the prohibitively high cost of networked infrastructure in rural areas, conventional sanitation solutions were deemed ineffective. Creating relevant processes and locally-informed interventions for faecal sludge management in the rural areas has also proven to be a challenge, though essential to ensure sustainable results and outcomes.

Solutions and implementation

Taking into consideration the emerging need for FSM, the Centre for Policy Research, Delhi, India, and UNICEF, with support from the District Government of Dhenkanal, Urban Local Bodies and Gram Panchayats (Village Councils), have engaged in planning for and implementing a novel urban-rural convergence approach, extending FSM services already existing in urban areas to nearby rural areas, by taking a district-wide planning approach.

Under this novel urban-rural convergence approach for FSM, existing urban sanitation infrastructure -specifically Faecal Sludge Treatment Facility (hereinafter referred to as FSTP) - and cesspool vehicle services for desludging of onsite sanitation systems, were leveraged to extend and provide FSM services to the neighbouring Gram Panchayats.

The lack of infrastructure and services in rural areas can be attributed to various reasons, such as prohibitively high cost of standalone FSM services in rural areas, due to low population density and lack of sustainable financing, along with gaps in rural institutional capacities. However, rural areas in proximity of those urban centres that have standalone FSM services institutionalised and infrastructure up and running, could leverage the existing infrastructure and services to cater to the requirements of the rural population. The urban-rural convergence approach, therefore, bridges the urban-rural divide, bypasses the need for additional infrastructure and provides opportunities for institutional convergence. Therefore, moving from theory to practice, the Dhenkanal pilot was conceptualised and executed so as to demonstrate the urban-rural convergence approach, by leveraging and extending existing FSM services in Dhenkanal municipality to neighbouring Gram Panchayats.

In order to build the plug-in model for urban-rural convergence, extensive data collection and analysis was undertaken to guide the planning and implementation processes. During the first phase of the project, 17 Gram Panchayats, covering 92 villages, within a 10 km radius of the urban FSTP in the Dhenkanal municipality, were spatially demarcated for the plug-in model. The plug-in radius was based on multiple parameters, such as spare capacity of treatment infrastructure, rural faecal load estimation through primary survey, and feasibility and cost analysis to ensure a sustained access to the existing FSM facilities (FSTP and cesspool trucks/vehicles). In order to identify whether or not the existing urban FSTP would be able to accommodate the faecal load for neighbouring rural areas, the spare capacity of the treatment facility was estimated by analysing the trends in capacity utilization of the two previous years of the plant's operation.

Plug-in clusters of said 17 Gram Panchayats were ratified in consultation with the rural and urban local bodies to define the terms of agreement – including desludging tariff, payment mechanisms, financing and monitoring. Based on those consultations, the Dhenkanal municipality and tagged Gram Panchayats passed resolutions to have a Memorandum of Agreement, which was finally signed by the respective parties. On this occasion, the district also launched and disseminated the Information Education and Communication (IEC) materials for FSM in rural areas, in order to spread awareness regarding the pilot intervention, the need for FSM, and to increase the demand and uptake of FSM in rural areas. Following the agreement signing, the municipality amended the Operation and Maintenance contract of the Area Level Federation[6] of the Self-Help Groups [7]responsible for managing the urban FSTP.

Lastly, extensive Capacity Building Workshops for all the tagged Gram Panchayats were conducted, covering 670 representatives.

After the successful completion and demonstration of Phase 1, 93 additional Gram Panchayats located within a 10-20 kms radius of the Dhenkanal municipality were also tagged to the urban FSTP during the ongoing implementation of Phase 2.

6 "Area Level Federation" is a consortium of Self Help Groups (refer to the next footnote for definition) at the area level; at city level, there are multiple Area Level Federations in place.

7 Self Help Groups are community based organisations wherein a group of individuals come together to address common issues or gain access to livelihood.

Results and impact

The Dhenkanal municipality is providing FSM services to every rural household of the 110 plugged-in Gram Panchayats. Monitoring and implementation data shows that from February 2021 till February 2022, the urban FSTP treated 630 KL of sludge from rural areas. Additionally, 93 Gram Panchayats of the district have been plugged-in with the FSTP at Dhenkanal municipality.. Furthermore, the success of the pilot has resulted in agreements between the state government's Housing and Urban Development Department of the Government of Odisha, the Panchayati Raj and Drinking Water Department of the Government of Odisha, the Centre for Policy Research and UNICEF for scaling-up the urban-rural convergence model for FSM and PWM in the entire state of Odisha.

As a consequence of this project, rural households in the tagged Gram Panchayats benefited by gaining access to treatment and desludging services, and consequently by abatement of local environmental pollution and health risks associated with unsafe management of faecal waste. In the medium to long term, rural population in other districts of Odisha, and India at large, will also benefit from the success of this pilot demonstration, due to its scalability and potential for replication. The urban local bodies and self-help groups in charge of operation and maintenance of FSTP will benefit from an increased use of infrastructure, and from the additional revenue generated. The mechanical emptying solution has led to a reduction of undignified manual scavenging practices.

Replicability and sustainability

The Dhenkanal district's efforts on urban-rural convergence have gained significant recognition at the local, state and national level. The urban-rural convergence model was also initiated in the Angul district of Odisha, after the pilot demonstration in Dhenkanal. Owing to the success of the pilot projects in Dhenkanal and Angul, a Letter of Understanding (LoU) was then signed between UNICEF, the Centre for Policy Research, the Housing and Urban Development Department of the Government of Odisha, and the Panchayati Raj and Drinking Water Department of the Government of Odisha in order to support the state government on urban-rural convergence. In May, 2021, Odisha's Panchayati Raj and Drinking Water Department released a notification to replicate the urban-rural convergence approach in the entire state of Odisha. For scaling-up, 7 pilot districts in Odisha have been identified for Phase 1 (ongoing since September, 2021) and the sub-pilot is currently operational in Urban Local Bodies and neighbouring Gram Panchayats of the Ganjam district in Odisha, after which the model will be replicated in the rest of the 7 pilot districts, followed then by all districts in the state. In addition to Faecal Sludge Management, the urban-rural convergence model will also focus on Plastic Waste Management (PWM).

The urban-rural convergence model has also received significant attention in the national policy circles, with the Government of India

releasing a notification on 14th September, 2021 urging state governments across India to facilitate the adoption of an integrated approach by urban and rural authorities for convergent action on FSM and PWM. Additionally, Dhenkanal municipality was also facilitated with an award by India Sanitation Coalition (ISC) -FICCI on 10th November, 2021, for this innovative FSM model of urban-rural convergence. Moreover, in 2022, Centre for Policy Research also bagged the coveted ISC-FICCI award for 'best non-profit engagement model in sanitation: rural and urban' in recognition of the implementation of the urban-rural convergence project in Dhenkanal district.

With aforesaid information, the following SDGs are applicable on the project:

1. **SDG Goal 6.** Ensure Availability and Sustainable Management of Water and Sanitation for All

2. **SDG Goal 11.** Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

3. **SDG Goal 15.** Protect, Restore and Promote Sustainable Use of Terrestrial Ecosystems, Sustainably Manage Forests, Combat Desertification, and Halt and Reverse Land Degradation and Halt Biodiversity Loss

This initiative contributes to application of the URL-GP:

1. Locally Grounded Interventions: The high prevalence of onsite sanitation systems in the Dhenkanal district coupled with the prohibitively high cost of networked infrastructure in rural areas resulted in the leveraging of the existing urban municipality infrastructure to enhance uptake of the urban-rural convergence model.

6. Human Rights-Based: The project's goal was centred around the fulfilment of the right to sanitation – aligned with the national and state level sanitation policies along with SDG6 – by ensuring "safely managed sanitation" for all, including in rural areas.

9. Participatory Engagement: Bottom-up stakeholder consultations were undertaken to build consensus amongst field functionaries and urban and rural local bodies while planning for the plug-in model, including discussions on components such as payment rates, methods and subsidies.

10. Data Driven and Evidence Based: Spatial demarcation of Gram Panchayats for plug-in, load estimation from rural areas, and spare capacity of urban FSM infrastructure were informed by rigorous data analysis in the planning phase. After implementation, monitoring and data entry mechanisms were instituted for record keeping and tracking the project.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

A. Governance, Legislation and Capacity Development: A formalised agreement between the Dhenkanal municipality and tagged Gram Panchayats provides an appropriate legal framework for governance of the project. Moreover, extensive capacity building initiatives along with open dialogues and discussions proved invaluable for consensus building amongst stakeholders.

B. Integrated Planning Across the Urban-Rural Continuum: The pilot is essentially predicated on connecting urban infrastructure with rural needs for increased services and efficient FSM practices.

D. Empower People and Communities: The project undertook bottom-up stakeholder consultations and capacity building exercises to support and introduce participatory processes for inclusion of multiple stakeholders throughout the project cycle.

G. Coherent Approaches to Social Service Provision: The project identified an opportunity to extend safely managed sanitation services in the rural areas by fostering an urban-rural formalized partnership and agreement model, thus resulting in spatially and socially equitable service provisioning in rural areas.

> Faecal Sludge Treatment Plant (FSTP) © Centre for Policy Research

> Exposure visit to FSTP by Sarpanches & PEOs © Centre for Policy Research

> Memorandum of Agreement signed between Gram Panchayats' Sarpanch and Dhenkanal Municipality, © Centre for Policy Research

> Signing of Addendum between Urban Local Body & Area Level Federation, © Centre for Policy Research

> Gram Panchayat level training and capacity building workshop on Faecal Sludge Management, © Centre for Policy Research

> Information Education and Communication flyers and campaign on Faecal Sludge Management, © Centre for Policy Research

Link to more photos and a video

> Information Education and Communication discussion cards (left) and flipbook (right) designed to capacitate and educate rural households and field functionaries regarding Faecal Sludge Managament, © Centre for Policy Research

REPUBLIC OF INDIA, KARNATAKA STATE, BENGALURU (BANGALORE) CITY

Urban wastewater treated for farming in surrounding rural districts

TYPE OF INTERVENTION

Policy

ABOUT THE CASE

Author(s): Nikita Harikishan, Vishwanath Srikantaiah; Biome Environmental Trust, Bengaluru, India

Location: Bengaluru city, Karnataka, India

When: 2017-Ongoing

Type of Intervention: Policy

Partners: Karnataka State Government, Karnataka State Minor Irrigation Department (MID), Bengaluru water supply and sanitation department (BWSSB), Local Gram Panchayat (transl. the Village council) along the lake chains being filled with treated wastewater and farmers.

Brief Description

The Government of Karnataka in 2018 launched an ambitious lift irrigation scheme, which would turn out to be the world's largest programme to transfer 770 million litres per day of treated wastewater from Bengaluru urban to the neighbouring drought-prone rural districts of Kolar, Chikballapur and Anekal. The objective of the project is to rejuvenate the depleted groundwater in the drought-hit regions by allowing the treated water to percolate down from these lakes and then be made available to farmers through open wells and borewells for irrigation and agricultural use.

It sees the obligation of a city to the farmers who grow food and vegetables for it, understands the water distress that they are facing due to drought and water shortage and seeks to provide treated wastewater for their irrigation needs, thus ensuring livelihood security for the farmers and food security for the city.

Background and challenges

Karnataka, one of the southern states of India, has an area of 92,204 km2, has the second largest arid zone (nearly one-third of the area) in India after Rajasthan, with a relatively small proportion of irrigated areas compared to other Indian states (26% of the gross cropped area). It is one of the 16 states in India which is frequently affected by drought, affecting not only the rain-fed production system but also the livelihood of people.

Bengaluru in Karnataka State has a population of approximately 13 million as of 2018. 1,440 million litres of water per day is sourced from the river Cauvery, which is approximately 95 km away and 300 m below the city (BWSSB, 2021). However, the water demand of the city is not completely met through Cauvery water and the deficit is met by groundwater.

A study by Institute for Social and Economic Change (ISEC) estimates that approximately 0.4 million borewells are present in the city, supplying about 500-600 Million Litres per Day (MLD) of water to the city.

Studies on Bengaluru in Karnataka and surrounding rural districts of Kolar, Chikkaballapur and Anekal have indicated that climate variability is increasing, showing more erratic rainfall patterns, increase in temperature, increasing variance in humidity, and dry spells becoming more frequent (KSNDMC, 2017[8]). The groundwater table has been plummeting over the past decade, with all classified as 'Over-Exploited' (OE) and it has impacted the agricultural production in the districts. Kolar and Chikkaballapur districts have been declared permanently drought-affected (CGWB, 2012[9]).

Solutions and implementation

Funded by the state Government of Karnataka, the wastewater transfer project was implemented in 2017, in partnership with the Minor Irrigation Department (MID) of the Government of Karnataka and the Bengaluru Water Supply and Sanitation Board (BWSSB).

The project aimed to improve the groundwater levels in the surrounding drought-affected districts through indirect recharge.

8 Karnataka State Natural Disaster Monitoring Centre. (2017). Drought Vulnerability Assessment inKarnataka. https://www.ksndmc.org/PDF/DVI_REPORT_KARNATAKA_2017.pdf

9 Central Ground Water Board (CGWB). (2012). Groundwater Information Booklet, Kolar District, Karnataka. Central Ground Water Board (CGWB).

The project was implemented over a period of 2 years. Experts were consulted to understand the local hydrogeology and understand the technical implementation details i.e., Indian Institute of Science (IISc) as a technical design partner and as a monitoring partner has also been involved. The Local Gram Panchayat (transl. the village council) is involved in further managing the operation and maintenance of the lakes.

Results and impact

At different scales, Bengaluru has lessons for wastewater management, and perhaps the most important one is how the city is treating its wastewater and recognizing its responsibility toward its drought-prone hinterland.

The study conducted has observed that the benefits of lakes being filled up can be seen by full open wells and increased yields of the borewells in the lake influence zone. The impact can be observed with the change in land use from eucalyptus plantations to farmers growing 3-4 crops in a year, including commercially viable crops. These lakes are also beneficial from the ecosystem services perspective, as they not only enhance biodiversity but also contribute to improving water quality and provide livelihood opportunities like fishing. Thus, with the formalized transfer of treated wastewater as a source for irrigation, the project ensures perennial water availability in the drought-affected districts of Kolar and Chikkaballapur, representing resilience for farmers against climate variability.

The project's direct beneficiaries are farmers and farmworkers, and the benefits can be seen by increased employment and livelihood opportunities with income sources for men, women and landless due to increased agricultural cultivation duration.

Additionally, livestock rearers rewarded with farmers growing fodder crops like maize throughout the year and a spike in water availability for the livestock.

Various factors contributed to the project's success, including political ownership and intersectoral collaboration of various governmental agencies, which has been done via a top-down approach. However, it is highly recommended to include all the key stakeholders in the decision-making, operation and maintenance of the tank after the project. Additionally, for the sustainability of the project, an institution should be assigned to be in charge of or responsible for the project.

Drought mitigation is as much about increasing the availability of water as it is about local community participation, which helps in creating ownership and post-project sustainability. The lakes traditionally have been community-managed, benefiting everyone dependent on it — from the stakeholders to flora and fauna. Social interactions are a measure for drought-proofing and climate mitigation; in villages where there is a stronger social bonding, they are able to overcome the shortage of water by barter systems, where they share land during times of distress and have food security.

The project is beneficial to the farmers/ labourers and those who have access to groundwater, but the project will have better outcomes if water is distributed equally and social equity is made.

Replicability and sustainability

As cities grow, water demand rises, which in turn increases the generation of wastewater. Simultaneously, more areas are affected are getting affected by the vagaries of climate change leading to long periods of droughts. More often than not, droughts and water scarcity are experienced in the city's hinterland that isn't supplied with piped water (which is the primary source of water for the city). The impact of drought is observed on the agriculture and farmers' livelihoods and the groundwater availability in the region, affecting the employment prospects and income of the local populace.

Secondly, the impact can also be observed on the city which is dependent on the hinterland for its food security. Therefore, it would be useful to think of the city as a net producer of water and nutrients and not just the net consumer, wherein the wastewater is shared with the city's hinterland for usage in agriculture either formally or informally. In this way, the livelihood security of the farmers as well as the city's food security can be safeguarded.

However, even though the benefits are demonstrated, the project can be better informed by socially driven community participatory approaches with better financial sustainability and institutional ownership.

The following SDGs are applicable to the scenario:

1. **Goal 6.** Ensure availability and sustainable management of water and sanitation for all

Bengaluru city is aiming for a 100% sewerage network, thus increasing the availability of treated wastewater. The city has integrated planning across the urban-rural, with one of the largest lift irrigation projects to transfer secondary treated wastewater from the Sewage Treatment Plants' (STPs) of the city to the hinterland to fill lakes for groundwater recharge in the drought-affected areas. The groundwater in turn, is used for agriculture by farmers. The experiences from Bengaluru demonstrate sustainable economic and environmental developments, which can inform regulatory frameworks for the installation and functioning of decentralized STPs and their monitoring in other metropolises and cities.

2. **Goal 11.** Make cities and human settlements inclusive, safe, resilient and sustainable

The treated wastewater project seeks to increase the groundwater tables in the drought-affected rural hinterlands around the city, through the transfer of the city's treated wastewater to fill up tanks in these districts, which is made available to farmers via open wells and borewells.

3. **Goal 13.** Take urgent action to combat climate change and its impacts

Further, the project has formalized the use of treated wastewater in agriculture and also addresses the climate variability of the rural districts around the city, which are semi-arid and declared permanently drought-hit whereas the city's water supply is secured by long-distance pumping.

This initiative contributes to application of the URL-GP:

1. Locally grounded intervention: The project sees treated wastewater as a climate-proof resource, which can be made available for agricultural purposes. The project would benefit from understanding the local hydrogeology to help better understand the impact on groundwater recharge, influence zones as well as provide inputs for overflow design for each of the lakes. This is a locally grounded intervention that seeks to increase crop production and provide a livelihood to farmers.

2. Integrated governance: As the project spans different jurisdictions, a strong vertical and horizontal integration of various stakeholders and levels of governance will create better accountability, and is crucial for the success of the project.

3. Functional and spatial system-based approach: Urban-rural linkages are often designed for exploitation, whereas the model used in this initiative ensures a win-win situation both for the city and for the rural hinterlands. It would be useful to think of the city and rural areas are linked, wherein the wastewater is shared with the city's hinterland for usage in agriculture either formally or informally. In this way, the livelihood security of the farmers as well as the city's food security can be safeguarded.

8. Environmentally sensitive: As the project involved filling up of lakes with wastewater, it ensures a perennial supply of water, and it has been observed that due to the presence of the water in the lake, there is more biodiversity in and around the lake.

9. Participatory engagement: Drought mitigation is as much about increasing water availability as it is about local community participation, which would help create ownership and post-project sustainability. The lakes traditionally have been community-managed, benefiting everyone dependent on the lake - from the stakeholders to flora and fauna. The project will benefit more if consideration towards equal distribution of water and social equity is made.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

A Governance, legislation and capacity development: As a case in point, a coordination committee comprising representatives of the planning department, water and wastewater management boards, the Department of Minor Irrigation, and the Rural Districts may be set up to review and monitor wastewater transfer activities from the city to the hinterland.

B Integrated planning across the urban-rural continuum: Forthcoming city sanitation plans prepared as part of the Urban guidelines would benefit from the integration of livelihoods and be accommodative of the existing sanitation economy.

C Investment and finance for rural-urban inclusive development: The case shows how it can be institutionalised and has been funded by the State Government, which covers the capital costs of the infrastructure implementation. The treated wastewater is provided for irrigation, free of cost to farmers. However, currently, there are no mechanisms to capture and compute the economic and non-economic benefits of resource recovery and reuse.

D Empower people and communities: the projects empower people through the provision of livelihoods. The outcome of the project was to improve agriculture and horticulture production, with respective net income increases, fisheries, and livestock by rejuvenating groundwater availability.

I Integrated approaches for food security, nutrition, and public health: The case deals with the safe reuse of treated wastewater and ensures that the treated wastewater meets the water quality standards set for reuse of wastewater for irrigation of crops by the Karnataka State Pollution Control Board (KSPCB) and Central Public Health and Environmental Engineering Organisation (CPHEEO). The treated wastewater is formally used for agricultural purposes, thus contributing to food security for the city.

J Environmental impact and natural resource and land management: The project benefits by enhancing the environment and ecology through filling up of lakes in drought-prone rural districts, which do not have a perennial water supply and are heavily groundwater depleted. As the city provides water and nutrients, it can be seen as a net producer of water rather than a net consumer, thereby reducing the city's physical impact on a river or watershed to minimal or be completely eliminated.

> Agricultural lands around the lakes uses water from wells, with drip irrigation

© BIOME ENVIRONMENTAL TRUST

> Sewage treatment plant in bellandur, Bengaluru

© MINOR IRRIGATION DEPARTMENT, THE GOVERNMENT OF KARNATAKA

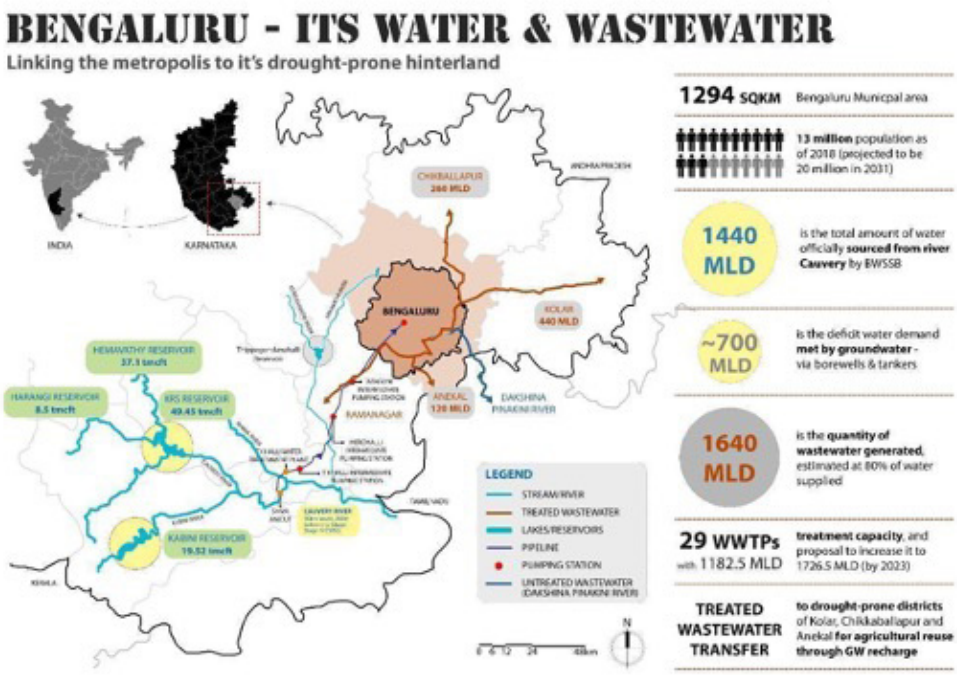


FIGURE 9. Illustrative representation of bengaluru water and wastewater use/reuse (information as of 2020)

PEOPLE'S REPUBLIC OF CHINA, DONGGUAN, WEIYUAN

Planning Weiyuan Island Forest Park integration urban and rural communities

ABOUT THE CASE

Author(s): Martin Probst, MLA+ B.V.

Location: Weiyuan Island, Binhaiwan Bay District, Dongguan Municipality, Guangdong Province, China

When: Jan 2020-Ongoing; Oct 2021 Masterplan adopted; Jul 2022 Start construction Key Node 1

Type of Intervention: Spatial Plan, Design

Partners: MLA+ (Landscape Planning and Design, Project Lead); Guangzhou Landscape Planning and Design Institute (Ecological Planning, Landscape Design of Key Nodes).

Brief Description

The main key objective was to integrate the Forest Park beyond its actual site boundary with the whole island. The "One Island, One Park" approach allows this hidden treasure to reach its full potential on all levels. This includes:

1. To restore Weiyuan Islands nature to provide a resilient and optimal environment for flora and fauna alike, ensuring its healthy future
2. To create a structure where the forest park is not only the characteristic heart and the focus of visitors but strongly related to the rural and new urban communities around it
3. To create networks of infrastructure so people can experience nature and history
4. To make Weiyuan a place of high life quality, which locals will want to explore, tourists will want to visit and, consequently, companies will want to invest in - which will boost the local economy.

Background and challenges

The 20 km^2 Weiyuan Island is located on the east bank of the Pearl River Delta in Dongguan's new Binhaiwan Bay District. The 2019 "Outline Development Plan for the Guangdong - Hong Kong - Macao Greater Bay Area" and the 2019 "Overall Development Plan of Dongguan Binhaiwan Bay Area (2019-2035)" designated Binhaiwan Bay District as a major development platform in the emerging mega-region. Weiyuan Island has been overlooked for over 30 years, which has led to a series of problems: ecological fragmentation due to rapid urbanization, disconnection between people and the island's rich history and nature, erosion of the mountain body, and a gradual weakening of the local eco-function. A series of proposals include solutions, aiming at restoring the local ecosystems to their full potential, creating island routes for people to experience all aspects of the island through different activities, and finally, uniting the urban and eco-landscapes into a harmonious co-existence.

Solutions and implementation

Island Wide Ecology Strategy

The Strategy for habitat development within a 20-year horizon integrates the coast with its different needs of coastal defence, the various urban areas, and the central mountain zone. The strategy includes steps to empower nature and to create a sustainable ecological environment:

1. To create an island-wide green and blue system
2. To repair and restore habitats within this system – animals and plants
3. To connect this ecological system wisely with the life of people

The strategy further indicates human use appropriate for each habitat, ranging from low impact hiking, light exploration, and nature education over light leisure activities, sport, new agriculture to the most intense urban uses such as intense sport, events, and everyday human activities.

Island Wide Zoning Strategy

To achieve a new unity of "One Island, One Park" this strategy overlays the forest park, the ecosystem, and the existing community structure and urban zoning. The "Character Interface" redefines the nature-urban relationship. Within the edge zones, key nodes are gateways for visitors and residents. It offers a touristic and recreational program to enjoy history and nature at all seasons.

Island Wide Network and Experience Strategy

This strategy is dedicated to connecting and creating great experiences along with slow mobility networks for user groups including history enthusiasts, nature explorers and local users. The extensive 80 km long network of routes over the whole island is supported by landscape facilities that help to overcome obstacles, that are destinations, or simply orientation and service points.

Results and impact

In short-term impact, it is expected to see local communities growing, a rise in tourism, as well as the return of local fauna and growth of flora. In long-term, it is expected to reveal to the public eye Weiyuan's magic, by nourishing its needs on all levels – its nature will flourish, people's life quality will dramatically grow, and it will become a popular destination of both history and nature enthusiasts. Finally, the immediate results are to see economic growth, since all these plans and developments will support the local economy.

Scene 1 – under construction

As kick off to the implementation Scene 1 of the masterplan is currently under construction. It targets the short-term impact set out above. This first key node clarifies the relationship of the new town, a cluster of museums at the edge of the urban zone, the main waterfront and the mountain forest park. It is the gateway into the main historic preservation area with its historic colonial fortification from the Opium War in the mid-19th century. As a gateway to the natural Forest Park, Scene 1 includes forest restoration and protection zones, as well as the start of the slow mobility network, that will connect communities across the mountain range in the centre of the island.

Replicability and sustainability

“Scenes of Weiyuan” stresses that all major planning and large-scale landscape projects must reach beyond their actual site boundaries to achieve maximum benefits through a strong integration. This is especially true for a spatially strong defined territory of an island.

KEY TAKEAWAYS

Work with the true system boundaries

Administrative and project boundaries don't usually match the boundaries of ecological and human systems related to the project. It is necessary to reframe the scale of the proposal and to work with the true system boundaries. Actual interventions might be limited within the site, but additional initiatives should be proposed to fully integrate with ongoing or future interventions in the context, or to inspire wider change.

Local variations under a big narrative

While a big narrative is necessary to lead an area in transformation into the desired direction, it is the attention to the rich variety in geography, ecology and human use that connects the overall story to careful placemaking and habitat creation at a local scale.

Make use of the edge effects

The main focus of a project is often on the site area itself, e.g., the mountain forest in this case. However, it is along the edges where different environments meet that a richer life is possible and extra benefits can be achieved. The edge effect can enhance proposals for the core area.

The SDGs applicable to this intervention are:

1. **SDG 3.** Ensure healthy lives and promote well-being for all at all ages;
2. **SDG 11.** Make cities and human settlements inclusive, safe, resilient and sustainable;
3. **SDG 15.** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

The local government has not formally linked this project to SDGs and has not committed to an "SDG Voluntary Local Review" process. The planning and design team, therefore, does not tackle SDGs individually, but focusses its efforts on the positive effect of synergies or interlinkages between SDGs through integrated, spatial solutions as set out in the next paragraphs.

This initiative contributes to application of the URL-GP:

1. Locally Grounded Interventions: Local context was key in developing this project. We carefully studied both the history and nature of the island and based our concept and design on these findings.

3. Functional and Spatial systems-based approaches: We have analysed both nature and urban patterns and offered solutions to allow biodiversity to get fully restored, as well as the urban environment to develop with respect towards nature. It was designed in ways that the two can co-exist harmoniously.

6. Human rights-based: Our plan is very much focused on promoting the right to health. The benefits of nature to the human body and mind are a fact, and we provided varied routes and activities to allow people to experience nature's nourishment at its full, ranging from hiking zones to building city micro-climates.

7. Do no harm and provide social protection: We promoted well-being and health by carefully considering how people can experience Weiyuan's rich nature and benefit from it without harming it. Additionally, we made sure to protect the local biodiversity and land by creating restoration strategies that will empower nature and people alike.

8. Environmentally sensitive: We conducted a site eco-analysis which allowed us to examine the current problems in depth and provide solutions in the forms of flood mitigation, tide defence systems, building a resilient green and blue framework, and repair of the eco-habitats for flora and fauna alike, among others.

10. Data driven and evidence-based: Our project is fully backed by evidence. Not only we have collected first-hand data through extensive site visits, but we have also studied the history of Weiyuan starting from 1717 until now, as well as analysed the area's location, ecology, potential risks, current urban and nature situation, and more.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

B. Integrated planning across the urban-rural continuum: The project approach to Weiyuan Island is utilizing all its aspects by creating blue and green strategies connected to the urban ones. Public space will become valuable, and the overall urban environment will be tranquil, since it will be connected to the green networks of the island in multiple ways.

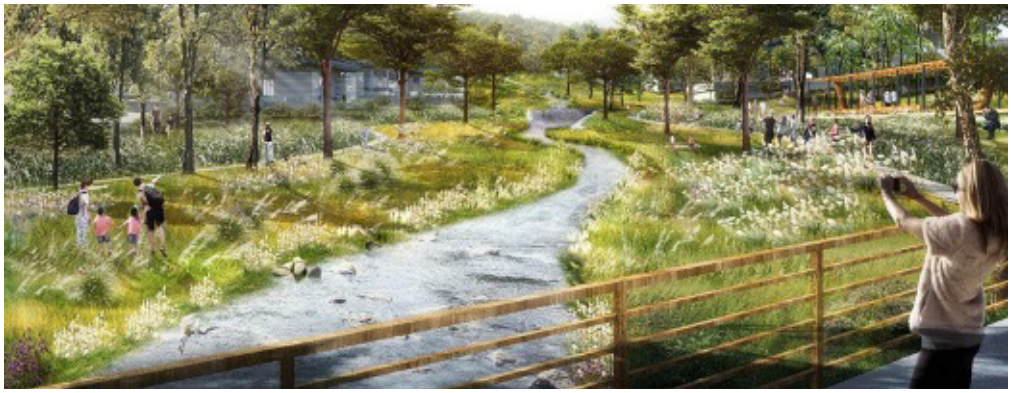
D Empower people and communities: Naturally, the team interviewed locals during our site visits, and took their experience into account during the design process. The intervention created a framework that will allow more than ten organizations to be involved in Weiyuan's new chapter, from the Heritage Protection Committee and the Sub-district Office to the local residents.

H Infrastructure, technology, and communication systems: The solutions promote a sustainable and resilient Weiyuan, where based on the eco-analysis, the team will provide the best solutions per zone. The urban plans will significantly reduce interfere with the biodiversity, namely, it will create a Central Bridge which will promote slow mobility and will prevent further mountain fragmentation.

I Integrated approaches for food security, nutrition, and public health: The full restoration of Weiyuan's biodiversity will not only benefit the health of the local's, but also the region's. It will dramatically improve the physical and mental well-being of people, but it will be a healthy ecosystem too, providing the Guangdong Province the benefits that each forest has to offer.

J Environmental impact and natural resource and land management: By creating the five ecological habitats of forest, reservoir, farmland, ocean, city, and their marginal habitats, we not only provide food and habitat for invertebrates. We further attract other consumers and decomposers to live and seek food. The multi-level forest structure is conducive to the development of forest biodiversity.

K The urban-rural continuum in the face of conflict and disaster: The intervention designed nature-based solutions in order to achieve an urban-rural integration with positive synergetic effects throughout the island.



> *Scenes of Weiyuan, rendering* © MLA+, GLPDI

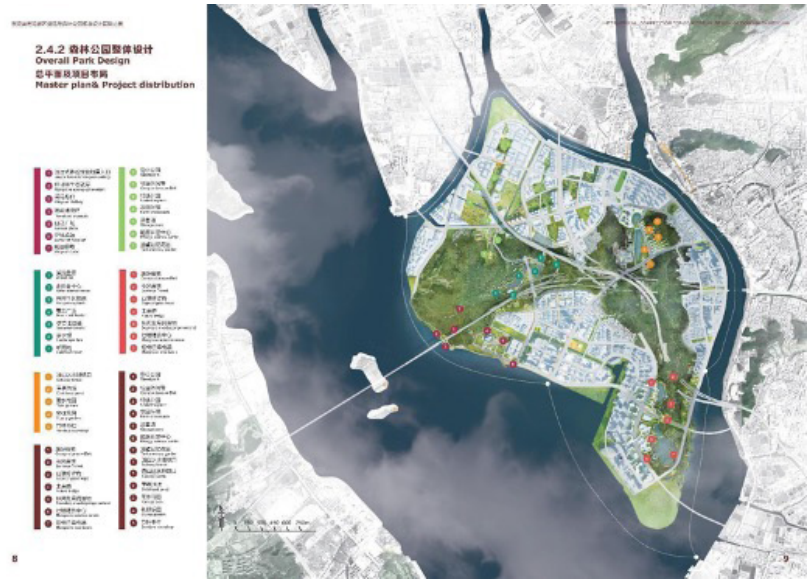


FIGURE 10. Scenes of weiyuan, map
© MLA+, GLPDI

EST MEMBER COUNTRIES IN ASIA (MULTI-COUNTRY)

Environmentally Sustainable Transport, Vientiane Declaration on Sustainable Rural Transport towards achieving the 2030 Agenda for Sustainable Development

TYPE OF INTERVENTION

Policy 

ABOUT THE CASE

Author(s): Choudhury Rudra Charan Mohanty, Ganesh Raj Joshi and Nana Urakami; Secretariat of the Regional Environmentally Sustainable Transport (EST) Forum in Asia; United Nations Centre for Regional Development (UNCRD)

Location: Environmentally Sustainable Transport (EST)* participating countries in Asia: Afghanistan, Bangladesh, Bhutan, Cambodia, India, Indonesia, Islamic Republic of Iran, Japan, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, the Philippines, Russian Federation, Republic of Korea, Singapore, Sri Lanka, Thailand, Timor-Leste, and Viet Nam.

When: 2017 – Ongoing

Type of Intervention: Policy; Partners; Environmentally Sustainable Transport (EST) participating countries; Ministry of the Environment, Government of Japan; Asian Development Bank (ADB); Economic and Social Commission for Asia and the Pacific (UN ESCAP); Department for International Development UK; SLOCAT (Partnership on Sustainable, Low Carbon Transport)

Brief Description : Rural transport plays a critical role in enhancing the well-being, economic development, community empowerment and livelihood and food security of rural areas. However, due to inadequate basic rural transport infrastructure and services, many developing countries in Asia face significant socio-economic and development challenges. These challenges include poverty, undernutrition, lack of access to agricultural markets, and limited access to basic utilities and services. Considering all these issues, participating countries of the Asian Environmentally Sustainable Transport (EST) initiative have voluntarily agreed and committed to implementing the Vientiane Declaration on Sustainable Rural Transport[10] towards achieving the 2030 Agenda for Sustainable Development.

10 Note: For more detail about Environmentally Sustainable Transport (EST) in Asia please visit at https://www.uncrd.or.jp/index.php?menu=376
For Vientiane Declaration please visit at https://www.uncrd.or.jp/content/documents/5099Final%20Adopted%20Vientiane%20Declaration-16March2017-(Unedited).pdf

Background and Challenges

In Asia, more than 47% of the population lives in rural areas and poverty in these areas is a major obstacle to achieving the Sustainable Development Goals (SDGs) in developing countries. A lack of proper rural transport infrastructure, food wastage and services contribute to food insecurity in the region. Additionally, Asia is particularly vulnerable to the impacts of climate change and natural disasters. Improving rural transport and accessibility can have a positive impact before, during, and after extreme weather events and other disasters, including more efficient evacuation, relief mobilization, and relocation and rehabilitation. Recognizing the importance of efficient rural-urban connectivity for income, employment, wealth, and food security, the Asian Environmentally Sustainable Transport (EST) participating countries voluntarily adopted the Vientiane Declaration on Sustainable Rural Transport towards Achieving the 2030 Agenda for Sustainable Development in 2017.

The major challenges addressed by this policy include:

1. Inadequate basic rural transport infrastructure and services in EST developing participating countries;
2. Poverty, undernutrition, and lack of access to agricultural markets, basic utilities, and services;
3. Environmental problems arising from vehicular emissions, lack of proper vehicle inspection and maintenance, and fuel adulteration, which significantly affect rural inhabitants and ecosystems;
4. Improving green supply chain logistics (from producers to consumers) in the Asian region;
5. Minimizing local and transboundary pollution, addressing the illegal transboundary movement of hazardous waste, as well as mitigating and adapting to climate change.

Improved rural transport infrastructure and services are essential for increasing rural resilience, empowering rural communities and promoting socio-economic transformation through poverty eradication, hunger elimination, social integration, increased food security, and improved supply chain logistics, ensuring that “no one is left behind,”.

Solutions and Implementation:

The Declaration calls for:

- A commitment to undertake Environmental and Social Impact Assessments in all rural transport infrastructures, including road networks, and to consider the environmental and social impact of the technologies used;
- The utilization of research outputs to develop innovative methodologies for providing more sustainable and appropriately-engineered rural connectivity that provides value-for-money and incorporates local resources and materials;
- The widest possible national, regional and international cooperation and support for rural transport development, institutional capacity-building, knowledge sharing, technology transfer, and research and development for innovative solutions to improve rural-urban connectivity.

In line with the objectives of the Vientiane Declaration, EST participating countries have introduced numerous policy initiatives, strategies, and project developments on rural transport improvement at local, regional, and national levels. A few examples include:

- **Afghanistan** launched the National Rural Access Program to improve rural connectivity.
- **Bhutan** implemented a massive rural connectivity program under the 11th Five-Year Plan.
- **Lao PDR** implemented a transport sector connectivity policy that focuses intensively on developing and improving the multi-modal transport system.
- **Malaysia** introduced the National Physical Planning Policy for Rural Area 2030. .
- **Cambodia** introduced a 15-year Plan for rural roads up to 2030 and prepared the National Strategy for Rural Roads and Access.
- **Pakistan** is improving access to basic facilities such as schools, hospitals, workplaces, farms and markets via a rural road improvement plan.
- **Sri Lanka** introduced a new rural transport policy which was approved by their Parliament.
- **Vietnam** launched a programme called Prime Minister on Roads Planning Programme.
- Similarly, other EST countries have also initiated different policies, programs, and projects toward the objectives of the Vientiane Declaration.

Results and Impact

With the help of the EST Secretariat, EST participating countries regularly present and publish their progress and efforts for the implementation of the Vientiane Declaration in the EST Forum. The declaration has the potential to create an impact by improving rural access, rural-urban connectivity, and sustainable freight movement in their countries. Donor agencies and development partners are providing technical and financial assistance to local and national governments for improving rural-urban connectivity. Governments are allocating significant budgets for rural transport infrastructure development, including road network development and adequate maintenance of existing rural transport infrastructures. As a result, rural people and villagers benefit from this.

There are several projects introduced in line with the objectives of the Vientiane Declaration. A few examples include:

1. Nepal has implemented the DTMP-District Transport Master Plan, connecting different villages with rural road transport.
2. The Russian Federation built about 2,000 km of public road network in rural settlements to improve agricultural production and processing facilities.
3. Afghanistan developed 500 km of gravel and asphalt roads under the National Rural Access Program.
4. Indonesia is implementing several Rural Transport Projects such as the Rural Transport Project for Guinea Bissau, to improve rural access to markets, essential public utilities, and other social services.

One notable example in Asia is India's Pradhan Mantri Gram Sadak Yojana (PMGSY) under which the Government of India is significantly improving rural road connectivity by constructing all-weather roads and upgrading old ones in rural areas across the country. The improvement of rural roads has led to an increase in the Human Development Index and catalyzed economic activity to eradicate rural poverty. India's 2013 road upgrade goal of 50,000 km was met, and 99 percent of the 2019 goal of 125,000 km has been completed, with the remainder to be completed within a year.

From the beginning of the scheme until now (December 2022) about 787,810 km of rural roads have been constructed. The scheme has benefited all aspects of rural life, such as agricultural production, increase in income of farmers, education and health indices, employment generation and women empowerment (Source: Country report presented by the Government of India at 14th Regional EST Forum in Asia, 2021.).

Replicability and sustainability

The Vientiane Declaration on Sustainable Rural Transport can be replicated in other developing regions, such as in Africa and Latin America, to achieve sustainable rural transport development and improve rural-urban access and connectivity. With aforesaid information, the following SDGs are positively impacted due to improved rural transport policies and infrastructure development:

SDG Goal 1. End poverty in all its forms everywhere

SDG Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

SDG Goal 3. Ensure healthy lives and promote well-being for all at all ages

SDG Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

SDG Goal 5. Achieve gender equality and empower all women and girls

SDG Goal 8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all

SDG Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation

SDG Goal 10. Reduce inequality within and among countries

SDG Goal 11 / 11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

SDG Goal 13 / 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

SDG Goal 15 / 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

This initiative contributes to application of the URL-GP:

Implementation of the Vientiane Declaration on Sustainable Rural Transport can address multiple Guiding Principles including:

1. Locally Grounded Interventions: The Vientiane Declaration calls for commitment to promoting inclusive, affordable, accessible and sustainable rural transport infrastructure and services, thus facilitating improved access to basic utilities and services, including health and education, by the rural community.

4. Financially Inclusive: Rural access does not only comprise investments in new roads but also adequate maintenance of existing infrastructure. Improved rural transport infrastructure and services are key enablers to increased rural resilience, rural empowerment and rural socio-economic transformation through poverty eradication, hunger elimination, social integration, increased food security and improved supply chain logistics. The Vientiane Declaration acknowledges that rural areas are the growth engine of agricultural products and that basic rural transport infrastructure and better transport services help access local markets for agricultural products, improve productivity, employment and business opportunities, and economic growth.

8. Environmentally Sensitive: It is important to underscore the environmental problems arising from vehicular emissions, lack of proper vehicle inspection and maintenance, and fuel adulteration, which significantly affect rural inhabitants and ecosystems. The Vientiane Declaration calls for commitment to promoting environmentally sustainable transport in rural areas by introducing a low-carbon transport system and avoiding road development without environmental consideration.

This project relates mostly to the following entry points of the Urban-Rural Linkages Framework of Action:

As a policy initiative, the execution of the Vientiane Declaration on Sustainable Rural Transport can address almost all actions provided below.

A. Governance, legislation and capacity development: The Vientiane Declaration calls for wider national, regional, and international cooperation and support for reviewing progress, institutional capacity-building, knowledge sharing, technology transfer, and research and development for innovative solutions to improve rural-urban connectivity.

H. Infrastructure, technology and communication systems: The execution of the Vientiane Declaration on Sustainable Rural Transport has led to the construction of several hundreds of km of road networks in EST participating countries by using advanced and green technologies. For example, under the Federal Law №362-FZ of December 5, 2017, the Russian Federation built about 2,000 km of public road network in rural settlements to improve agricultural production and processing facilities. Afghanistan invested in the expansion of the national and provincial road network by about 3,300 km, including the two north-south corridors, and the east-west corridor. Additionally, 2,500 km of gravel and asphalt roads under the National Rural Access Program were built.

> Launching of Vientiane Declaration by H.E. Dr. Bounchanh Sinthavong, Minister of Public Works and Transport, Lao People's Democratic Republic at the Intergovernmental Tenth Regional Environmentally Sustainable Transport (EST) Forum in Asia. © UNCRD

> Mayors witnessed and supported the Vientiane Declaration on Sustainable Rural Transport in the Intergovernmental Tenth Regional Environmentally Sustainable Transport (EST) Forum in Asia © UNCRD

I.R. IRAN, MAZANDARAN PROVINCE, BABULKENAR

Facilitating Inclusive Urban-Rural Development through Complementary Approaches to Enhance Services, Cash, and Food Flow Networking

ABOUT THE CASE

Author(s) : Fazileh Dadvar-Khani, Urban Economy Forum, and University of Tehran; Hosein shenavaee, Housing foundation of Islamic Revolution Iran

Location: BabulKenar, Mazandaran Province, I.R. Iran

When: 2018 - Ongoing

Type of Intervention: Tool, Project

Partners: Housing Foundation of Islamic Revolution Iran ;Agricultural and Natural Resources Engineering Organizations of Iran

Brief Description

The main hypothesis of the project is that an isolated geographical place can't meet all needs of its citizens, including food and services. As geographical places are highly dependent on other places to meet their needs and attain resources, a complementary approach is being used in the project. By focusing on a complementary approach[11], the capacities of settlements can be combined to allocate resources to these settlements to create balance among regions. This approach can also contribute to reducing inequalities in development through the simultaneous networking of activities and of settlements. In this approach, various settlements (cities and villages) help each other to cover their limitations and improve their capacities by creating effective collaborations and economic relations. Such collaboration among different settlements in a regional networking system will reduce food and resource waste and help to improve the quality of services and optimize physical, social, and financial projects by integrating the different institution's potential.

11 This approach focuse on the reality that development has a chain and cluster mode and cannot occur in an isolated single point.t can be said that several geographical regions, while exchanging their advantages and limitations with each other through mutual cooperation, engage in a kind of mutual exchange and complement each other's needs, capacities and development process.

For example, in a rural system, there are networks of villages that work together to improve their agricultural practices and create a sustainable food system. Each village specializes in a specific crop or livestock based on their geographical and historical potentials. By collaborating with other villages, they can trade their products and share knowledge and resources to improve their yields and reduce waste. They also work together to establish a local market system that benefits all the villages and provides access to fresh, locally grown food for the entire region. The exchange of goods in the local market and connecting with the central market facilitates cash flow in the area. This type of complementary approach helps to balance resources among different settlements in the rural system, reduces inequalities, and promotes sustainable development in these rural areas.

Background and challenges

Iran is the 18th-largest country in the world and the 2nd-largest country in the Middle East, with an area of 1,648,195 km2. More than half of the country's land is made up of mountains and highlands, 14% of the country is covered by deserts (mostly in the centre and southeast), and less than 14% of the total land area of the country contains lands suitable for agriculture, mostly located in the North. The study area has been chosen in this region because there are more settlements in different scales and less distance. These settlements have different relationships, and various exchanges are happening among them. This region presents a unique opportunity to study the complex interplay between urban and rural areas, and how they can complement each other to optimise resources and reduce inequalities in development.

Rural areas are defined and stratified at the level of the rural zone, rural complex, and rural system as follows:

1. **Rural zone:** It includes a community of several neighbouring settlements and is related to a homogeneous geographical and cultural territory with relatively similar functions with a superior population centre, and its population (each zone) is approximately up to five (5) thousand people. There are more than 96,000 villages that make up about 8,000 Rural Zones in the country.

2. **Rural complex:** it is a collection of several rural areas that are connected or interdependent, forming the area of influence with a superior rural centre and includes a population of up to 12,000 people. About 2,500 rural complexes are in all rural areas of the country.

3. **Rural system:** it is formed by the accumulation of several rural complexes and is the widest geographical territory for integrated operation and service coverage in the rural areas, which is formed with the centrality of at least one urban centre or a large village. The population of the rural system is between 20,000 to 40,000 people. Accordingly, the country's rural areas in the form of national physical plan areas (85 areas) includes about 800 rural systems.

The Goal:

The purpose of the "Rural Settlements and Space Planning Plan" is to create suitable foundations and grounds for the sustainable development of rural areas and the hierarchical organisation of rural services and facilities.

First, to establish coordination between different government agencies, briefing sessions were held with the governor's office, the program and budget organization, and the parliamentarian. The plan was presented in full detail, and the role of each government agency in the implementation of the plan was explained.

Next, briefing sessions were held with government institutions at the micro level, including the provincial housing foundation, the general manager, the deputy of rural development, the system expert, and the head of the city housing foundation. During these discussions, target villages for the implementation of the system plan were identified at different levels, and an executive team was formed. This team included the centre's rural development deputy, villagers, district council chiefs, prefects, and facilitators. It was important to select facilitators from within the local community to ensure that they were familiar with the culture and needs of the villages.

Overall, the process involved collaboration and coordination between various government agencies and local communities to ensure the successful implementation of the system plan.

In the next stage, the target and leading villages were selected based on criteria such as population, economic indicators like income, and social indicators. The leading villages conducted preliminary planning and identified priority projects, which were then compiled and evaluated. The implementation direction was presented to the rural zone team and facilitator team.

Throughout all stages, experts from the central office of the Housing Foundation were responsible for controlling and adapting to high-level policies and supervising the projects implemented by the facilitation group in the city.

After the implementation of the programs, a plan report was prepared, studied, and evaluated by relevant experts in the Housing Foundation. The report identified strengths and weaknesses, and feedback was presented to the group of experts in the city and province. This feedback helped refine and improve future planning and implementation efforts.

Framework:

The general framework of spatial planning plans and rural settlements includes three stages as follows:

1. **Diagnosis of the situation:** the first step is to assess the current situation in the rural areas and identify the main issues and challenges facing the rural population.

2. **Analysis of the situation:** the second step is to analyse the data collected in the first stage and identify the opportunities and constraints in the rural areas.

3. **Planning and organising:** the third step is to develop a comprehensive plan for the sustainable development of the rural areas.

The plan should take into account the different levels of settlements, and how they connect and communicate with each other to overcome their needs and facilitate the development movement.

The research indicates that in the northern region of Iran, external regional networking system linkages are stronger than internal ones. This results in a higher dependency of settlements on centres outside of the regional networking system than those within it. Smaller settlements, such as villages and towns, are primarily dependent on larger cities, leading to a lack of horizontal network connections between smaller settlements. For example, 49% of settlements have a direct connection to Daraz Kola, the central town. In the absence of such a horizontal network among small settlements, local products and capital are unable to circulate within the region's economy. As a result, most agricultural and livestock products are transferred out of the system in their raw form, without processing. The hierarchical relations between settlements in the region are also affecting regional development balance, resulting in a development gap between urban and rural areas. The project aims to address this challenge by creating local markets.

The main objectives of the project are as follows:

1. To analyse the complementary approach in an agricultural region of northern Iran by estimating the main flows of food, services, and financial resources in the region.
2. To determine the effectiveness of the complementary approach in integrated regional planning.
3. To investigate the three flows related to the supply chain of food, including food and agricultural productions, money, and services, to analyse the relationship between settlements and to better understand the urban and rural linkage.
4. To design the business strategy for the settlements, based on their capacity and role in the regional networking system.
5. To evaluate and assess the process to reduce the negative effects of the complementary approach, including preventing the formation of growth poles and strengthening the cash flow to the production sector.

Solutions and implementation

To address the challenges identified in the project, the first stage involves a study of the current state of the network system. Using Node XL network analysis software , the flow of food, services, and money is analysed based on their inter-relationships and urban-rural linkage within the regional system.

The software provides an output in terms of the graph density of agricultural products and flow of food, goods, cash, and people. In the regional networking system analysis, the project encounters two types of flows: interior regional networking system and exterior regional networking system.

The analysis of the exterior regional networking system's flow showed that most of the settlement's flow (urban-rural linkage) is directed towards the centre of the regional networking system, which is the city of Babul and attracts 60% of flows. While Tehran - the capital of Iran - is the major destination for the flow of agricultural products and goods from rural areas, and some of the villages have a direct connection with it. Most of the cash flow goes outside of the network system to the largest city in the regional system, which has financial connections with 25 settlements.

Results and Impact

It was recommended to improve intra-regional network system flow to create local markets for facilitating the flow of the food supply chain inside the system. These local markets will further improve the process of the food supply chain, including the processes of production, processing, distribution, retailing, and consumption. It will also reduce food waste, decrease the cost of agricultural production and lower the price of food. Additionally, reducing the transportation of goods can help to decrease CO2 emissions and led to environmental sustainability.

It was found that in order to enhance the intra-regional network system flow, it is important to maintain urban-rural linkages.

The most effective units in the regional networking system are poultry, fish farming, livestock farms, and industrial food processing companies. Besides strengthening the spatial linkages, it is important to focus on rural-rural, inter-village interactions and local community empowerment plans.

The major stakeholders and beneficiaries of the project are residents of rural and urban areas within the regional networking system, especially women, and youth, who live in these areas. Government agents involved in this project will also benefit from the implementation of the project indirectly, due to the regional development and improvement of the welfare of the population in the area under their governance.

Replicability and sustainability

The project focuses on the implementation of a sustainable development model. The project plan is based on a networking approach, aimed at identifying the untapped potential of regions in order to create spatial balance. By achieving this goal, the project aims to revitalise existing jobs, create new employment opportunities, and promote economic development and the prosperity of businesses within a supply chain relationship. By prioritising social development and fostering a sense of solidarity, participation and teamwork will be promoted, which are considered key factors in sustainable development and can be replicated in similar contexts. The following SDGs are relevant to the project:

1. **SDG Goal 1.** End poverty in all its forms everywhere

2. **SDG Goal 2.** End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

3. **SDG Goal 8.** Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all

4. **SDG Goal 10.** Reduce inequality within and among countries

5. **SDG Goal 17.** Strengthen the means of implementation and revitalise the global partnership for sustainable development

This initiative contributes to application of the URL-GP:

1. **Implementing locally grounded interventions:** Local grass root organizations were established by community members to work towards common goals and drive positive change from the bottom up.

4. Promoting financial inclusion: Establishing local micro-funds, supported by local community funding and governmental grants, can help provide small loans and other financial services to underserved communities, thereby promoting economic development and reducing poverty.

5. Encouraging balanced partnership: involves creating cooperative groups and networks that promote equitable distribution and sale of production. By forming these partnerships, producers can work together to achieve economies of scale, pool their resources, and increase bargaining power, leading to better prices for their products and improved market access. This approach can help to reduce inequality and promote sustainable development in the local economy.

6. Adopting a human rights-based approach By focusing on the equitable distribution of resources and opportunities, this approach aims to ensure that everyone has access to basic needs such as employment, education, health and clean water. By adopting this approach, development initiatives can work towards promoting social justice and reducing inequality.

9. Engaging in participatory processes by selecting facilitators from local communities to ensure better interaction with local people. The facilitators held numerous meetings and workshops with government officials and academics to identify areas of cooperation and share experiences in the field of planning and developing home businesses, small and medium rural entrepreneurship, and realising the opportunities and potentials of economic development in the Babolkanar Rural System.

10. Being data driven and evidence-based, by using questionnaires to collect data from stakeholders including but not limited to local people and rural managers, before and after the implementation of the plan. The approach involves gathering information from various stakeholders, including local people and rural managers, through surveys or questionnaires, both before and after the plan is implemented, to ensure that decisions are informed by data and evidence.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

A. Governance, legislation, and capacity development: The project establishes a regional network and Urban-Rural linkage to facilitate the cash, people, goods, and production.

B. Integrated planning across the urban-rural continuum: Networking of rural settlements contributes to urban-rural connectivity and corrects perceptual differences between decision-makers regarding urban-rural connections.

C. Investment and finance for inclusive urban-rural development: The plan encourages local community investments and financial governmental support.

D. Empower people and communities: The plan empowers the local community by providing investment, training, and job opportunity and encourages local community participation at all levels of the plan.

E. Knowledge and data management: The project utilises various questionnaires to collect data, information and opinions from the local population.

F. Territorial economic development and employment: It leads to economic empowerment by creating new jobs in rural areas and urban economic development in many cities and towns.

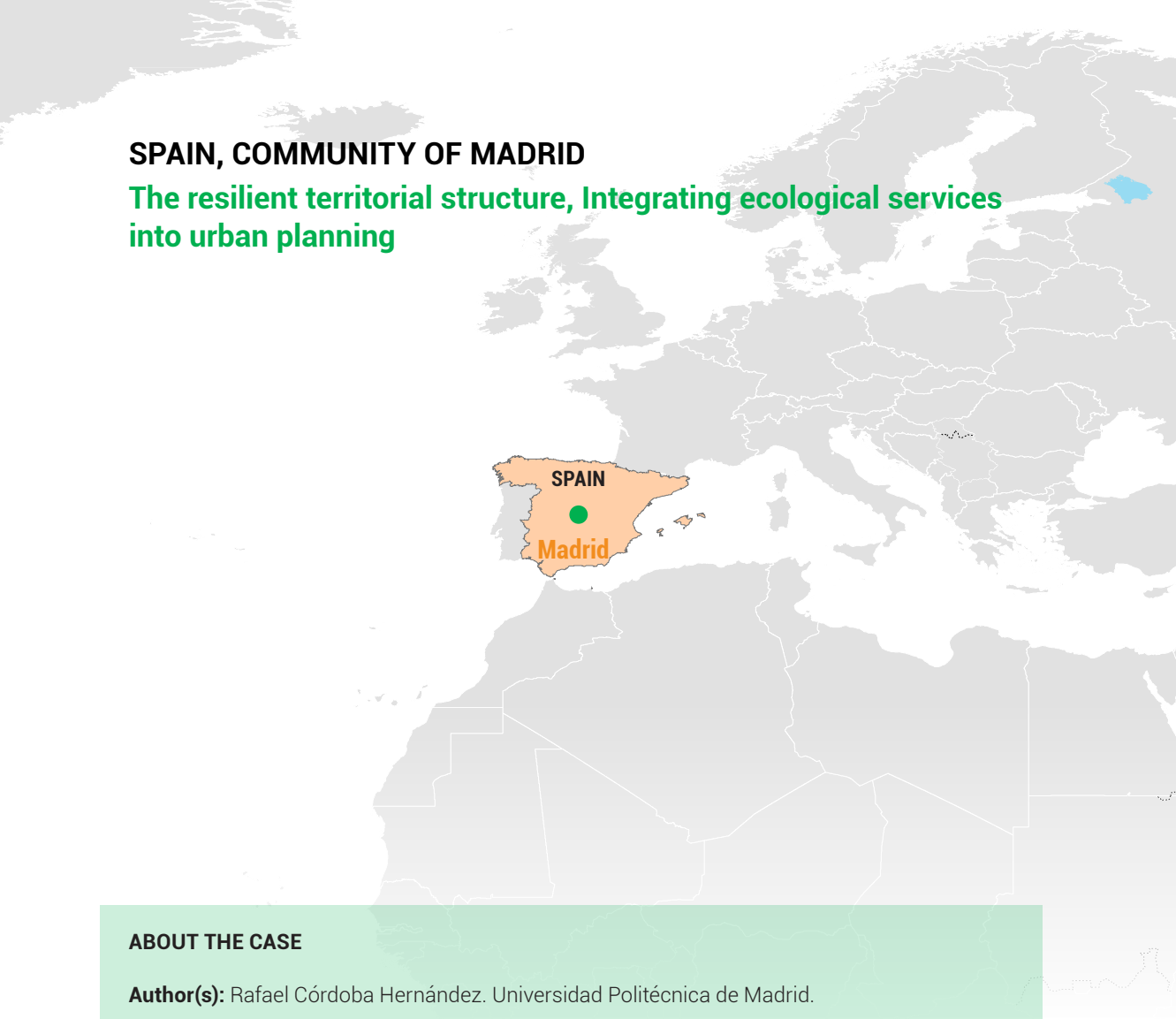
I. Integrated approaches for food security, nutrition, and public health: The plan facilitates food and agriculture and provides a local market for the economic prosperity of the region's settlements, including villages, towns, and cities.

In addition to the above entry points, the project aims to achieve the following goals:

1. Micro-owners' access to the market;
2. Rural access to "urban" public services beyond environmental services;
3. Prevent uncontrolled urban expansion;
4. Reduce the effects of migration.

SPAIN, COMMUNITY OF MADRID

The resilient territorial structure, Integrating ecological services into urban planning



ABOUT THE CASE

Author(s): Rafael Córdoba Hernández. Universidad Politécnica de Madrid.

Location: Community of Madrid, Spain

When: 2018-2021 (Completed)

Type of Intervention: Tool, Spatial Plan

Partners: Department of Urban and Regional Planning of the Universidad Politécnica de Madrid (DUyOT - UPM); Regional Ministry of the Environment, Housing and Agriculture of the Community of Madrid.

Brief Description

The Ecosystem Vulnerability from Planning (EVP) tool presents a methodology for incorporating ecosystem services into urban planning processes. Specifically, the method proposes ways to protect areas based within the framework of Spanish state land legislation, with a focus on the case of the Community of Madrid and its relevant environmental and urban legislation.

Background and challenges

The current problems in urban and territorial planning are largely the result of excessive anthropization of land, exacerbated in recent decades by planning policies that have given legal support to competition between municipalities to attract investment. To address this issue, it is necessary to take a holistic approach that considers the resilience of the system within which it is embedded.

The research focuses on a specific territory, the Community of Madrid, one of the 17 administrative territorial divisions in Spain, mainly concentrated in the metropolitan area of its capital. he Ecosystem Vulnerability from Planning (EVP) tool is used to analyse the importance of the area's ecosystems and services in order to improve regional resilience and optimise the capacity of cities to adapt to the environmental crisis. This tool also aims to protect and preserve certain areas from urbanisation due to their ecosystem services.

To achieve this goal, institutions must be able to reduce the risk of loss of ecosystem services. From a planning perspective, at least in Spain, this is accomplished through a model based on the structural elements that shape each region. Land classification and categorization is essential in improving a region's resilience against the current environmental crisis.

The tool also addresses challenges such as:

1. Understanding the role of biodiversity, its relationship with ecosystem services, as well as the different conceptual frameworks established for its evaluation.
2. Relating information on ecosystems and their contributions to urban systems.
3. Establishing the effective importance of planning in soil protection.

Solutions and implementation

The Ecosystem Vulnerability from Planning (EVP) tool aims to develop a methodology that incorporates resilience as a territorial attribute in urban planning by taking into account the contributions and interactions of ecosystems. It is designed to be flexible, allowing for adaptation to different territories, based on the available information about ecosystems and planning. The comparison of these results with the actual classification of land determines the vulnerability of an area to changes, providing a new perspective on the concept of land protection. Additionally, the tool provides planners with the reasons for protecting a specific area. The use of the EVP tool in planning can become a fundamental tool to face the problems derived from the decline and disappearance of these communities, as well as the goods and services they provide.

The implementation of the EPV tool at the regional level requires a series of prior conditions such as:

1. Standardisation of baseline information at the necessary scale;
2. Identification of the main impacts or direct drivers of change on ecosystems in the study area;
3. Identification, valuation and relevance of ecosystem services; and
4. Introduction of the planning factor in the ecosystem assessment. The information must be geo-referenced and linked to GIS software.

Obtaining the necessary information at the appropriate scale and definition is the main challenge facing the EPV tool. The framework of policies, institutional arrangements, technologies, data, and people that enable the sharing and effective usage of geographic information can help overcome this challenge by standardising formats and protocols for access and interoperability. This information is shared in public databases by the Spatial Data Infrastructure (SDI).

For accurate spatial diagnosis, each polygon resulting from the intersection of environmental and urban information must contain determinations for each field, including sub-categorization of the ecosystem in European Nature Information System (EUNIS), Mapping and Assessment of Ecosystems and their Services (MAES) and Information System on Land Occupation in Spain (SIOSE), the degree of affection of the pressures identified by the Millennium Ecosystems, the degree of ecosystemic contribution in supply, regulation, cultural and overall, as well as the interaction between the conditioning factors and ecosystemic services. In the urban field, each polygon must identify its class and category of land by planning, degree of execution of the planning, relationship with sectoral legislation, territorial planning and risks, and the cooperation of the administration. Data sources and resources include EUNIS Database, CORINE Database , SIOSE Database and SDI Databases for Urban planning, sectoral regulation, and other Community of Madrid.

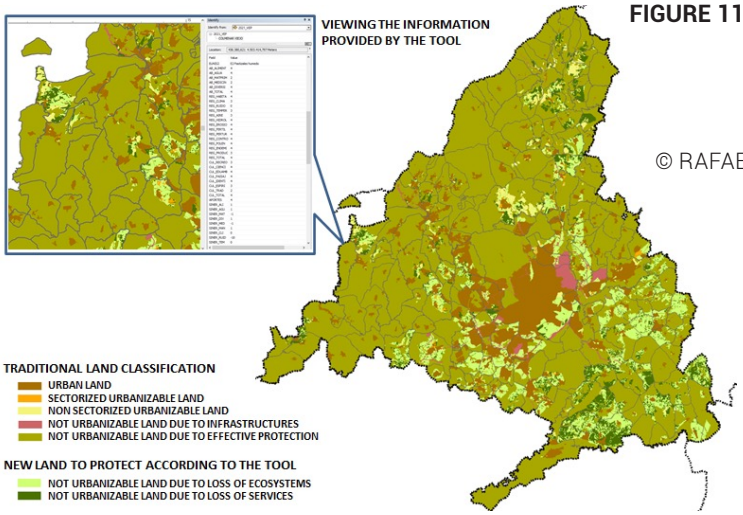


FIGURE 11. Viewing the information provided by the tool and new land to protect according to the study,

© RAFAEL CÓRDOBA HERNÁNDEZ

Results and impact

The immediate result of using the EVP tool is the ability to protect and preserve soil, to reduce the risk generated by direct drivers of change. Additionally, it enables the adequate assessment of goods and services provided by ecosystems to improve the resilience of the territory against the current environmental crisis. In the short-term, it allows for the evaluation of the effects of planning on ecosystems through scenarios and the adaptation of regional land legislation to properly consider the importance of ecosystems and their services. In the longer-term, accurate monitoring of the evolution of ecosystems is necessary to detect the causes of change.

The tool's effectiveness is conditioned by the revision of the planning of each of the 179 municipalities. As these planning modifications or revisions take place, more neighbourhoods will benefit from the results of reconsidering existing planning protections. It also greatly facilitates the work of obtaining information for both planning drafting teams and technicians who validate documents on behalf of the administration, reducing information times and making the adaptation of municipal planning to a more resilient one faster and more economical for the administration and neighbours.

The tool would also be integrated into the drafting process of different urban and territorial planning documents. It has all the associated information in a geo-referenced database, which can include new information fields to improve the detection of areas to be protected. This would enhance participation during the consultation and allegations phases of the document drafting process, allowing neighbours and stakeholders to comment on proposals and provide new information.

Replicability and sustainability

The proposed tool can be completely reproduced on another territory. It is based on a European identification methodology (MAES), which is adapted to the scale of work through a national mapping (SIOSE) by means of a terminological crossroads designed for the occasion. This cartography is shared throughout Spain, making it possible for the tool to be used throughout the country, potentially benefiting the entire Spanish population (47,326,687 - 2021). In addition, it would be necessary to have the digitised planning to introduce it into the tool.

To replicate the tool in other European territories, a higher definition cartography (minimum mapping unit 0.5 - 2 ha) would be required.

Once the data source has been chosen, the next step would be to identify the ecosystem services of that territory and their contributions, adapting them to the mapping at the chosen scale and territory. For the valuation of ecosystem services and the pressures they are subjected to, the tool relies on general valuations obtained from another research.

These values and the synergies between different inputs should be reconsidered in case of having more local or territorial information.

With aforesaid information, following SDGs are applicable on the project:

5. Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable adopting measures to conserve, improve and protect nature and the natural heritage: flora, fauna, landscape and existing ecosystems and creating a territorial strategy that lays the foundations of the territorial model with the aim of rational use of the territory.

6. Goal 13. Take urgent action to combat climate change and its impacts incorporating Nature-Based Solutions (NBS) into urban planning and management and promoting the creation of a municipal green infrastructure to address urban and territorial problems.

7. Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss, encouraging prevention and adaptation actions in those soils susceptible to be affected by different risks and designing the green infrastructure network with criteria of ecological connectivity with the aim of optimising the provision of ecosystem services to citizens.

This initiative contributes to application of the URL-GP:

1. Locally grounded interventions: The EVP tool is based on an ecosystem assessment framework but requires a specific regulatory framework. This helps justify certain positions in favour of certain protections or preservation of the soil in Spanish urban planning.

2. Integrated governance: It is necessary to integrate the public and private sectors, civil society organisations and professional and research institutions to produce a change in our way of understanding the territory and valuing the unbuilt space.

3. Functional and spatial systems-based approaches: The level of contribution of the ecosystems is intimately related to the functions that take place in the territory and the urban-rural linkages. Protecting spaces with the greatest ecosystem contributions favours their function and improves the quality of life of inhabitants.

4. Financially inclusive: To favour the maintenance and use of spaces with greater environmental value, it is necessary to prioritise sustainable public and private investment.

6. Human rights-based: Providing the rural environment with a sustainable use will favour the creation of an economy based on it. Accordingly, local employment, population growth, the recovery of abandoned homes or the strengthening of activities that are beginning to disappear in this environment, such as health or education, are favoured.

8. Environmentally Sensitive: The central axis of the tool is to strengthen integrated territorial development. Its main objective is to prioritise the protection and maintenance of the areas with the greatest risk of disappearance of their ecosystems and with the greatest ecosystem contributions.

10. Data driven and evidence-based: The tool brings together many data (urban, ecosystem and environmental) favouring the joint vision of the territory in each of the treated fields (ecosystem contributions, pressures detected by the Millennium Goals and urbanisation pressure). It can be enhanced with local field work and is used by planners or environmental agents to support the urban argumentation of land protection, as supported by the date. The reasons for the protection or preservation of the land based on the urban and ecosystem conditions are what will allow the creation of a new local economy that will favour the development of the human rights of its population.

This project relates mostly to the following entry points of the Urban-Rural Linkages: Framework of Action:

A. Governance, legislation and capacity development: Ecosystem Vulnerability from Planning (EVP) allows municipalities to reconsider current planning from the point of view of state land legislation. This review can be carried out by highlighting soils with the highest risk of change in response to the pressures and/or with the greatest ecosystemic attributions.

B. Integrated planning across the urban-rural continuum: The tool helps the State Strategy for Green Infrastructure and Ecological Connectivity and Restoration, promoting the identification of the most suitable soils to be incorporated into the future network of green infrastructures at the national level. In this way, the green infrastructure could have adequate protection and consideration from planning.

J. Environmental impact and natural resource and land management: State legislation on climate change incorporates new reasons to justify land protection: loss of ecosystems and biodiversity and deterioration or loss of essential ecosystem services. In the processing of urban and land use planning instruments, authorities must analyse potential risks that are identified with the EVP tool.

K. Conflict and disaster: The protection of certain areas from urban sprawl, as identified by the EVP tool, helps to strengthen the resilience of space in the urban-rural context. This significantly increases the resilience of the environment and the population and their capacity to recover from possible disasters or conflicts. The tool can be considered as a preventive measure in this sense.

> Recognition of ecosystems in field work © LUCAS MARTÍ GUTIERA

> Recognition of ecosystems in field work © RAFAEL CÓRDOBA HERNÁNDEZ

REPUBLIC OF PERU, CUSCO, LA CONVENCIÓN, KIMBIRI

Urban and Territorial Planning

TYPE OF INTERVENTION

Spatial Plan

ABOUT THE CASE

Author(s): Paola Peláez, Marco Delgado, Daline Portocarrero, Lady Torrejón, Isai Laurente, Ana Santillán; District Municipality of Kimbiri

Location: Kimbiri, province of La Convención, department of Cusco, Peru.

When: October 2019 – December 2021

Type of Intervention: Spatial Plan

Partners: District Municipality of Kimbiri; Provincial Municipality of La Convención; Ministry of Housing, Construction and Sanitation of Peru.

Brief Description

The project comprises the development of technical-normative instruments of urban planning for the district of Kimbiri, in Peru.

It is a comprehensive project which incorporates the urban development plan of the capital city and the seven (07) development plans of their villages (Kimbiri Alto, Samaniato, Progreso, Manitea Alta, Tahuantinsuyo Lobo, Chirumpiari and Palestina Alta), providing the district with instruments for its sustainable growth in the next ten years. It directly includes the normative regulations for the exercise of municipal management with proposals for the use and habilitation of the land, as well as an investment portfolio with a multisystem approach, promoting a resilient, healthy, productive, connected, and participatory territory.

Background and challenges

The district of Kimbiri is in the natural region called Ceja de Selva, which is characterized by its abundant vegetation, rugged slopes, and agriculture as a main economic activity. Thus, products such as cacao, coffee and coca leaf stand out among others. Being the largest valley of coca leaf production, the territory was particularly impacted in the 1980s with the internal armed conflict and the rise of drug trafficking. Currently, the region is facing major social, economic, and environmental challenges such as child malnutrition, illiteracy, gaps in equipment and services, forest depredation, as well as pollution of water resources, among others.

The district consists of the capital city and seven villages, as well as populations dispersed in rural areas adjacent to urban environments, including both peasant and native communities cohabitating on the territory. They are connected through the national road network and the Apurimac River. The capital city has a strategic location adjacent to this river, bordering the departments of Cusco and Ayacucho.

For the aforesaid geographical setting, following challenges were addressed to update technical regulatory instruments, allowing proper management of the urban-rural territory of the region:

1. Absence of both quantitative and qualitative data in the fields of study, as well as insufficient academic research which would help to understand the different urban-rural settlements in Amazonian territories.
2. The local government does not have a specialized department for rural-urban management, and therefore, neither for the implementation of the proposed planning instruments.
3. Regulations and manuals for the development of urban planning instruments are not consistent with the Peruvian territory's complexity.
4. Difficulty in proposing and sustaining an area of urban expansion in balance with natural areas and the landscape.
5. The limitations for the development of participatory and consensual planning in the context of the pandemic, social isolation, and language difference.
6. Distrust of the population due to failure of previous planning processes and projects.
7. Difficult accessibility and means of communication (telephone and internet signal) at the location of the study area.

Solutions and implementation

The project consisted of the development of technical-normative instruments of urban planning for the period 2021-2030. By the end of 2021, the validation stage of the project was completed and approved by the provincial municipality.

For the development of these planning instruments, the first element to be carried out was the diagnosis, including analysis of economic, social, environmental, land use, equipment, and basic services components, among others. The qualitative and quantitative data was collected from local and central governments in written and verbal form through various participatory processes, such as interviews, participatory workshops with community mapping techniques, and assemblies with graphical data collection.

To overcome the challenges of absence of technical staff in local government, a participatory approach was adopted to ensure correct implementation of the project in the present and in future. The activities involved in the approach included the creation of constant awareness by providing training to the various social actors in the population and local government. The strengthening of the technical team during the formulation stage of the project as well as the office in charge of implementation was achieved through the commitment of the population and the municipal institution. It further resulted in final approval of the normative instruments.

The next stage will involve management and implementation of the project by the local government, by executing proposed investment and by applying the rules for the regulation of land, buildings, and roads.

Results and impact

The project resulted into technical-normative instruments, developed by the technical team with the help of participatory and consensual processes with the population and the government. The key lesson obtained from the project is that, in order to achieve the objective at different stages, it is essential to identify the key actors and involve them in the decision-making process to reach a final consensus. Typical decision-making process would be for example to define the location of new urban facilities (education, health, commerce and others), the limits of the urban expansion land, as well as the new urban land uses and corresponding regulation.

It required a joint coordination between the Municipality, sectorial authorities, the community and specific property owners, in order to reach joint agreements and commitments, while always reiterating that the beneficiary of these proposals is the population of Kimbiri.

As part of the project, the capital city and the seven villages of Kimbiri now have investment portfolios which include prioritized projects in risk management, mobility, equipment, basic services, housing, and public spaces.

It is important to remark that all these projects have been conceived with an integral vision of the territory of Kimbiri, and with correlation between projects. In terms of urban tools management, the local government of Kimbiri has new instruments which will contribute to its balanced development for the upcoming ten years, with a normative character, official plans and urban regulation for the rational and sustainable use of land. To date, it is important to remark, as a result of the Urban Development Plan, the implementation and operability of the new Department of Urban and Rural Development incorporating new areas of inspection, urban control, cadastre and legal physical sanitation, in order to address the regulatory components of the plan.

An important and special result of the project, due to the work undertaken with the community, is the increased awareness in the locality impacted by the urban planning; not only did they have an important voice, but their role in the fiscalization and implementation of the instruments was also important.

Replicability and sustainability

A methodology was developed that allowed the realization of these planning instruments in urban-rural territories being validated by the national government (Ministry of Housing, Construction and Sanitation) and approved by the Provincial Municipality of La Convención. Therefore, this work can be replicated in other planning instruments for villages or cities for Andean-Amazonian region.

The methodology was based on the manual for the elaboration of urban plans (developed by the Ministry of Housing, Construction and Sanitation) with a critical view, incorporating new approaches that are adapted to the particularities of the capital city and seven villages of the Kimbiri district. With aforesaid information, the following SDG 11 is applicable on the project: Make cities and human settlements inclusive, safe, resilient and sustainable.

This initiative contributes to application of the URL-GP:

1. **Locally grounded interventions:** The project strengthens the links between the local and national government, receiving technical support and collaboration in decision-making and contributing to the improvement of regulations on rural-urban planning.

2. **Integrated governance:** The project methodology incorporated the participation of multiple actors in decision-making, from the various levels of state government (central, provincial and local) as well as the participation of various social actors, which strengthened their communication and agreement on the proposals.

An example was the consensus of the proposals on the flood risk zones next to the Kimbiri and Apurimac rivers, areas partially occupied by residential buildings. To this end, we created working groups with key actors such as: with the National Water Authority (central government) who participated and gave a favorable opinion on our proposals; with the Ministry of Housing, Construction and Sanitation (central government), who advised us with specialists' expertise on the subject and approved our proposals; and with authorities of the Municipality of Kimbiri (local government) and social representatives of the capital city (presidents of housing associations), who were sensitized and with whom agreements were made to protect these spaces, prevent their occupation and prioritize projects for risk management and mitigation.

8. Environmentally sensitive: The project prioritizes the balanced development of the scope of intervention in harmony with its ecological environment through the regulation of land use and occupation as well as specific interventions.

For example, in the areas next to the Kimbiri and Apurímac rivers without residential buildings, riverside defense projects and river parks were proposed as a strategy to convert these areas into large public recreational, tourist and landscape spaces. The aim was to benefit the population as well as its surrounding ecosystems by protecting it from risks associated with exposure from informal occupation.

9. Participatory engagement: Participatory processes are inclusive, adopting media valued by the population and adapting to existing socio-cultural dynamics.

10. Data driven and evidence-based: In the development of the project a new database of the field of study, and various urban diagnostic maps have been made, as well as proposals for both the capital city of Kimbiri and its villages, in different thematic areas such as housing, risk and disaster management, mobility, public space, facilities urban, basic services, among others. All this information has been provided in printed and digital format to the Municipality of Kimbiri (local government) as well as to the Ministry of Housing, Construction and Sanitation of Peru (central government), being public and freely accessible information (open data portal) that will allow the best management and implementation.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

A. Governance, legislation and capacity development: Both documents are technical-normative instruments approved by provincial ordinance, acquiring the status of law, and strengthening the urban management capacity of the local municipality of the district of Kimbiri. These documents are formulated in coordination with development policies at the national, sectoral and regional levels.

B. Integrated planning across the urban-rural continuum: The instruments provide regulatory and technical scopes for optimal land development and investment with a territorial approach. They work in coordination with the vision and strategic objectives of several the documents: ''Bicentennial Plan: Peru towards 2021'' (National Center for Strategic Planning of Perú, 2011), a long-term plan that contains the national development policies for Perú; ''VRAEM Strategy 2021'' (National Commission for Development and Life without Drugs, 2018), a multisectoral plan that establishes the interventions strategies for the development of the valley of the Apurímac, Ene and Mantaro Rivers; ''Cusco Concerted Regional Plan towards 2021'' (Regional Government of Cusco, 2016), a plan that establishes guidelines for the development of sectoral, territorial (provinces and districts) and institutional plans for the department of Cusco-Perú; ''Housing and Urban Planning National Policy'' (Ministry of Housing, Construction and Sanitation, 2021), a document that defines the main priorities and strategies in terms of housing and urban planning transitioning between an urban development model based on the continuous expansion and regularization of cities to a model of consolidation and democratization of cities.

E. Knowledge/data management for dynamic spatial flows of people, products, services, resources and information: Both the diagnosis and the proposal of the Urban Development Plan and the Urban Schemes have a strategic matrix of urban indicators, which show the gaps of each component analyzed (housing, mobility, basic services, risks, environmental conservation and equipment) as well as the goals to be achieved.

J. Environmental impact and natural resource and land management: Analysis of the evolution of the urban footprint and urban growth trends were carried out to identify the impact of land use change on the territory, through its causes and consequences in relation to property tenure and the degree of consolidation in the study areas, as well as the areas susceptible to urbanization over time.

K. Conflict and disaster: Both documents have a chapter on Risk Management, which includes the identification of hazards, vulnerability analysis, and existing risks, leading to proposals for risk management and mitigation prioritized in the investment portfolio under the strategic axis Sustainable and Resilient Territory.

As an example for conflict, during the development of the plans, incompatibilities between existing projects (basic services and urban service facility) were identified, one case was the new Kimbiri Hospital and the new Wastewater Treatment Plant. In order to properly locate both facilities, work groups were held with representatives of the Kimbiri Health Network, the Cusco Regional Health Management, representatives of the National Urban Sanitation Program of the Ministry of Housing, Construction and Sanitation, members of the Municipality of Kimbiri, and with landowners (to guarantee land availability).

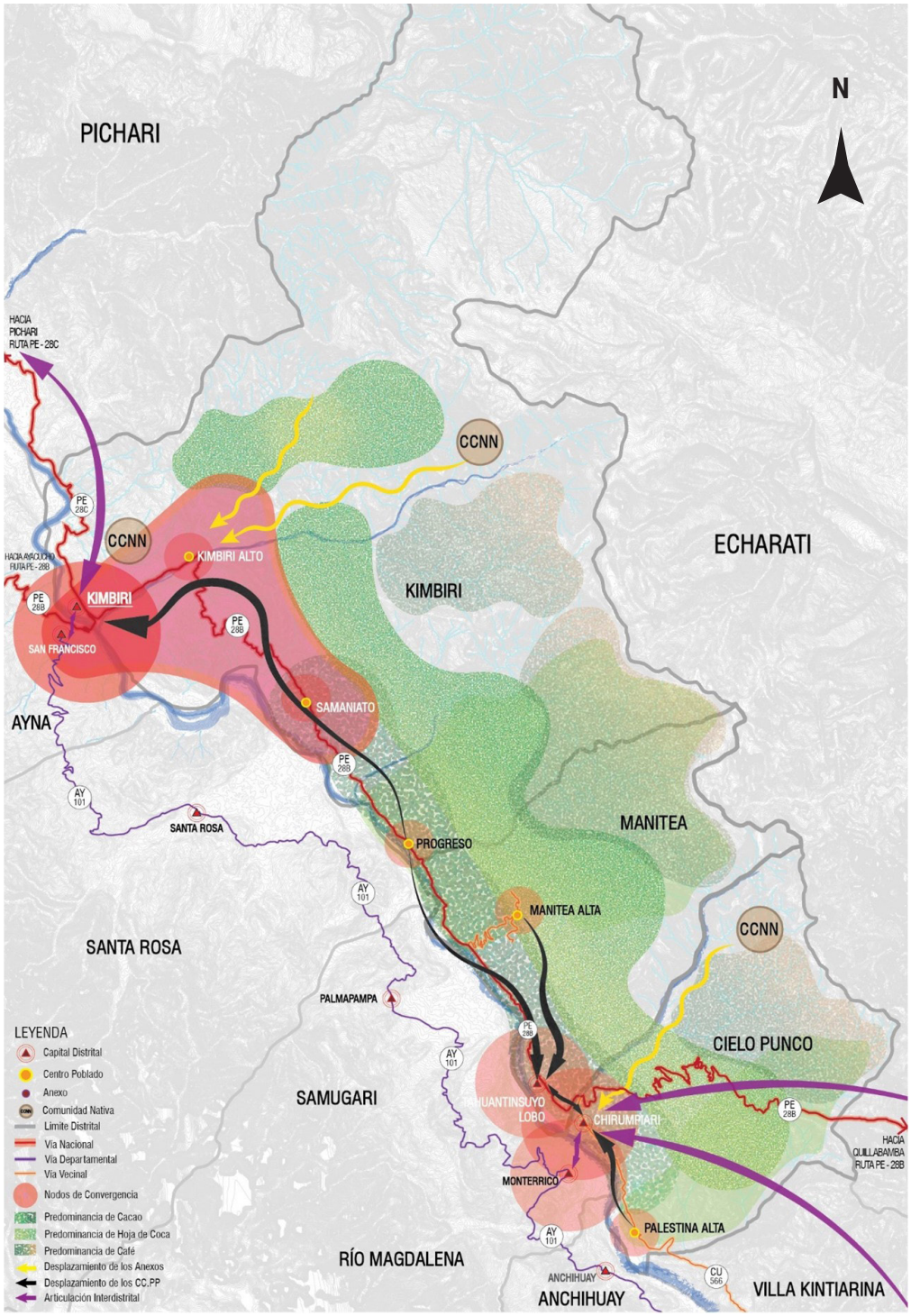


FIGURE 12. Map of the Territorial development model of Kimbiri's capital district and its rural villages.

© Kimibiri District Municipality / Anthony Martínez

> Capital city of Kimbiri, in the Apurímac River´s Valley © Kimibiri District Municipality (2021).

> Workshop with the community of the capital city of Kimbiri © Kimibiri District Municipality (2021).

> Workshop with the neighbors of Sampantuari Baja, in the capital city of Kimbiri © Kimibiri District Municipality (2021).

> Workshop with the neighbors of the village of Manitea Alta, in the district of Kimbiri © Kimbiri District Municipality (2021).

REPUBLIC OF PERU, METROPOLITAN LIMA

Integrated Land, Water and People's Strategies

ABOUT THE CASE

A) LEIS Strategy at Macro Scale:

A.1. Lima Ecological Infrastructure Strategy (LEIS): Metropolitan Lima, Peru.

B) LEIS Spatial Plan at Meso Scale:

B.1. Lower Chillon River Watershed – Ecological Infrastructure Framework (LCHRW): Urban, rural and peri urban area of the district of San Martin de Porres, Lima, Peru

C) LEIS Projects at Micro Scale:

C.1. Lower Chillon River Park, Chuquitanta, San Martin de Porres, Lima, Peru.

C.2. Wastewater Treatment Park (WWTP): The Children's Park: La Florida II, Chuquitanta, San Martin de Porres, Lima, Peru. Also known as the LiWa Pilot Project.

Author(s): Rossana Poblet, UN-Habitat

Location: Metropolitan Lima, Peru

When: A1) LEIS Strategy: 2011 - 2014; B1) LEIS Spatial Plan: 2011 – 2013; C1) LEIS River Park Project: 2011-2013; C2) LEIS-WWTP: Project concept and initial construction in 2013. Inauguration and operation started in August 2014; Monitoring and Evaluation: 2014-2020 (ongoing evaluation and support strategies are undertaken by communities, UNALM and the author)

Type of Intervention: Policy, Strategy, Spatial Plan

Partners: The Lima Ecological Infrastructure Strategy (LEIS), at Macro level was developed by:

The Institute of Landscape Planning and Ecology (ILPÖ) from the University of Stuttgart (coordination), the Lima Metropolitan Planning Institute (IMP), Foro Ciudades para la Vida (FCPV) the Universidad Nacional Agraria La Molina (UNALM), the Pontificia Universidad Católica del Perú (PUCP), the Universidad Nacional de Ingeniería (UNI) and the LiWa Partners

LiWa-LEIS Pilot Project: The Waste water Treatment Park "Children's Park": the Institute of Landscape Planning and Ecology (ILPÖ) from the University of Stuttgart (coordination), the San Martin de Porres Municipality, the community from La Florida II, Chillon River- Chuquitanta Farmers Association, German Ministry of Education and Research (BMBF)

The Lower Chillon River Park: Institute of Landscape Planning and Ecology (ILPÖ) of the University of Stuttgart, Metropolitan Park Services (SERPAR), San Martin de Porres Municipality and local residents.

LEIS was funded by the German Ministry of Education and Research (BMBF) as part of the Future Megacities Program "Sustainable Water and Wastewater Management in Urban Growth Centres Coping with Climate Change - Concepts for Lima Metropolitana (Peru) - (LiWa)". LiWa Partners: Institute for Automation and Communication (Ifak, coordination); Stuttgart Research Center forInterdisciplinary Risk and Innovation Studies (ZIRIUS), Institute for Modelling Hydraulic and Environmental Systems, Department of Hydrology and Geohydrology (University of Stuttgart); Ostfalia University of Applied Sciences-Campus Suderburg; the Peruvian water utility company (SEDAPAL); Foro Ciudades para la Vida (FCPV); Universidad Nacional de Ingeniería (UNI); Fomento dela Vida (FOVIDA); Helmholtz Centre for Environmental Research (UFZ)-Department of Economics and Dr.Scholz & Dalchow GmbH.

Brief Description

As a result of a new approach to participatory landscape planning, urban planning and water management, the multiscalar approach generated a positive impact, by designing strategic principles at a metropolitan level, and showing how these could be apply at meso level (Lower Chillon River Watershed Ecological Infrastructure Framework-LCHRW) and at micro level, with the construction of the Wastewater Treatment Park-Children's Park (WWTP). The design of the Lower Chillon River Park highlighted the route of the river and the Chuquitanta irrigation canals, identifying the critical existing conditions and the need to recover them to secure not only irrigation of green areas, but also food in the city. In addition, cultural heritage and cultural landscapes, were included as part of the systemic approach.

Background and challenges

The Peruvian capital, Metropolitan Lima, with over 10 million inhabitants while being located in the desert of the Pacific coast, is characterised by inequalities of access to basic services such as drinking water, sanitation and wastewater treatment in urban and rural areas. At the same time, many tensions between urban and rural dwellers arise by the conflicting uses of limited land and seasonal water sources, both for urban and rural activities. The main challenges were connected to the lost of ecosystems, environmental problems and deterioration of public health.

The main challenges were connected to:

- Legal boundaries and administrative competences
- Limited collaboration between water management and land planning technicians and authorities
- Political will
- Technical capacities
- Limited integrated, interdisciplinary and multidisciplinary approach
- Untreated industrial wastewater and lack of solid waste management

Additional achievements are:

- Participatory design of projects and implementation of the WWTP was developed in one of the less connected, more fragmented and dangerous areas in northern Metropolitan Lima.
- Novel nature-based solutions, outside of a scientific campus, were possible to implement mainly thanks to the engagement of La Florida II community and the Chillon River- Chuquitanta farmers association.
- Social adoption of nature-based solution (NBS) technology, through its operation and maintenance, by raising awareness of the community about the importance of the system through training and delegation of responsibilities
- A multifunctional system of green urban open spaces requires openness and innovation for integrated land use planning.

Due to these challenges, a new approach to urban planning and water management was needed. This includes new integrative planning and design tools to establish a functional spatial framework in order to link urban development with the consideration of optimised water use and considering people's processes.

Building upon the existing scientific and practical knowledge of water sensitive urban design (WSUD) and Green Infrastructure (GI) concepts, adapted to the arid climate conditions, the Lima Ecological Infrastructure Strategy (LEIS) was developed.

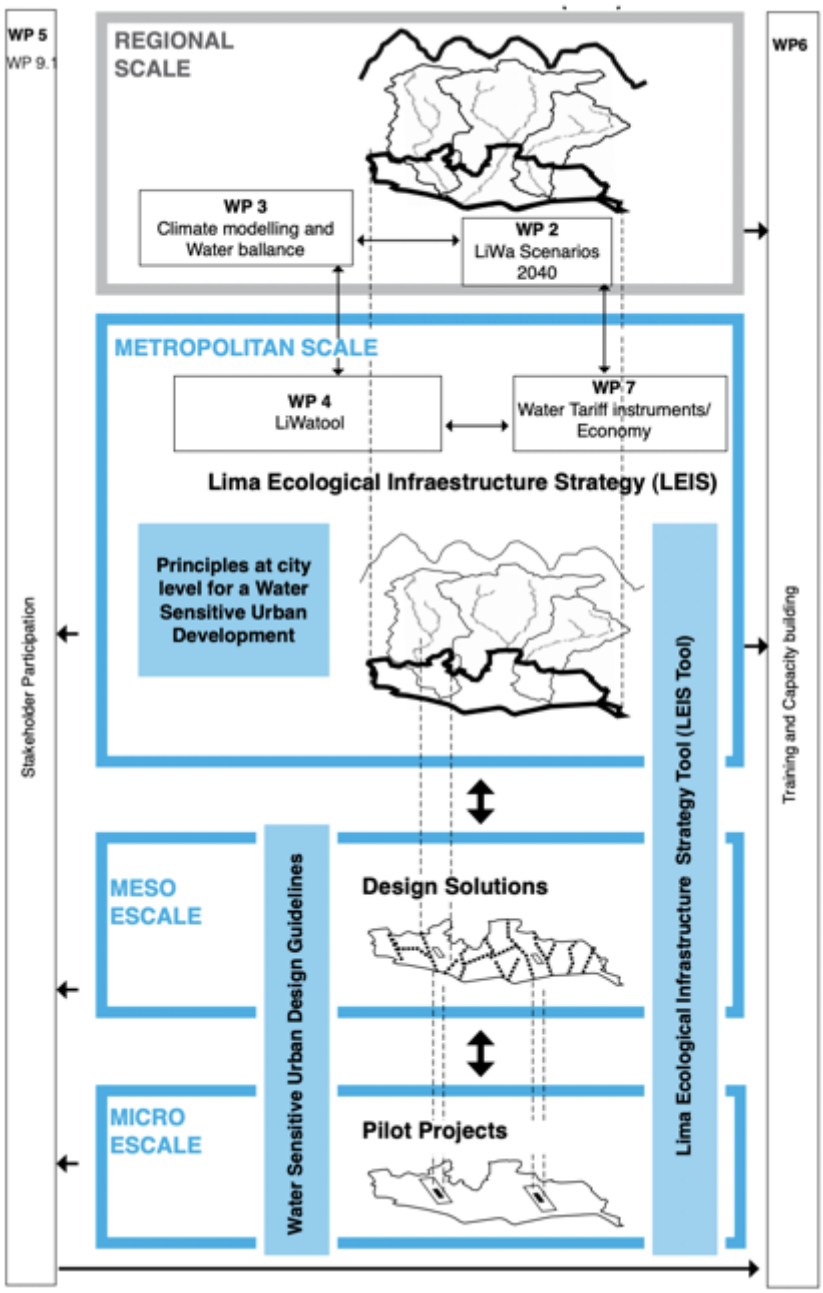


FIGURE 13. The Multi-scalar LEIS Strategy

© ILPÖ, University of Stuttgart

As Figure 12 shows, LEIS has a multiscalar, integrative and holistic approach. **On a macro scale**, LEIS' aim is to provide integrated planning principles, spatial analysis tools and water sensitive urban design guidelines. This will support the provision of the ecological infrastructure network described as a multifunctional system of open spaces along the metropolitan areas. In turn, this system will help tackle urban development challenges in a more efficient and sustainable way, contributing to the improvement and protection of the urban water cycle in a participative manner.

On an meso scale, the LCHRW defines a conceptual landscape framework focusing on integrating land, waterscapes and cultural landscapes, as well as archaeological and cultural heritage, to be systematically connected and part of the multifunctional system supporting its preservation. Following this proposal, the Lower Chillon River Park-Chuquitanta was conceptualised, and the WWTP "Children's Park", LiWa pilot project, was implemented.

Both parks are conceived as WSUD parks, treating contaminated wastewater and generating new open spaces to serve people's processes. On one side the Lower Chillon River Park-Chuquitanta project is a WSUD catalogue for: 1) recovering degraded ecosystems and increasing ecosystem services provision in the city; 2) reducing water risk events by creating multifunctional ecological infrastructure networks (like ecological dike systems for seasonal rainy events and extreme weather events, with El Niño – ENSO being a case); 3) supporting the river dynamics by returning space to the Chillon River, freeing occupied floodplains; 4) increasing social services for rural and urban residents including recreational and sports facilities; 5) supporting farmers by treating domestic wastewater and creating new sources of water for irrigation; 6) protecting agricultural land within the city by improving its performance and supporting fair production and consumption, as well as food security in the city; 7) recovering cultural landscape and cultural heritage in an area surrounded by important archaeological sites; 8) reconnecting people with their landscapes creating sense of belonging.

On the other hand, the WWTP Children's Park focuses on the benefits of irrigation channel systems and open flows of clean waters in urban areas, aiming for healthy green urban areas generation after natural treatment while being supported by a vertical constructed wetland (NBS). Thus, this park uses less water than a conventional park, and at the same time is a resilient and attractive public space for children under 10 years old and a community lacking healthy green open spaces. At the same time, the park supports ancient drainage systems and climate change adaptation in a widely dried up area.

Other objectives of the WWTP Children's Park includes:

- To create new healthy green areas, therefore reducing desertification and dust in the area in addition to benefiting the local community.
- To create synergies among key players, mainly rural and new urban residents, who use and benefit from waters transported by the irrigation channels.

- To promote the use of treated wastewater for reuse in green areas generation and maintenance.
- To demonstrate opportunities to improve wastewater quality through ecological technologies and NBS, as "constructed wetlands", integrating these components into public spaces.
- To raise awareness and show the importance of irrigation channels as a permanent source of water to support green area generation and agricultural activities.
- To create awareness of the desert environment and its limited water resources in relation to the water demand of green areas by using only native plant species with low water consumption in the park design.
- To serve as a demonstration project for integrative planning and design

Solutions and implementation

To study possibilities for the application of LEIS and discuss the strategy with local stakeholders, academia as well as residents, the Lower Chillon River watershed was chosen as the LiWa-LEIS demonstration area. In the form of a feedback loop, the findings from the work in the demonstration area were used to shape the LEIS water sensitive urban development and design recommendations. The strategy was applied at different scales while working closely with the metropolitan and local district administration, technical agencies, research institutions, civil society and surrounding communities.

It resulted in the Ecological Infrastructure Landscape Framework Plan for the Lower Chillon River valley with a set of acupuncture projects at meso and micro level. Microscale Project 1, "Lower Chillon Ecological River Park Chuquitanta" creates a multifunctional lineal corridor over the river bench, acting as an ecological water treatment facility from various water sources, acting as flood protection area during rainy season in the upper watershed and as river park for recreation of the more than 500,000 inhabitants living and working in the area. Thus, different areas have been defined like urban gardening, recreation, leisure, observatories, and interpretation centres connecting the cultural landscapes with the existing cultural heritage.

In November 2013, the project "Creation of sport, leisure and cultural services in the Chuquitanta Ecological Park, lower Chillon River Watershed" presented by Park Services of the Metropolitan Lima Municipality (SERPAR) was approved by the Ministry of Economy under the Participatory Budget process (SNIP N° 248792) and is pending pursuing its implementation.

FIGURE 14. Concerted WSUD Lower Chillon Ecological River Park Chuquitanta
© ILPÖ, University of Stuttgart

The design and construction of the Microscale Project 2, "Wastewater Treatment Park – Children's Park", located in the San Martin de Porres district, was built and inaugurated in 2014 as a recreational area with a vertical constructed wetland system, treating wastewater from a polluted irrigation channel. The aim of the pilot project was to implement an example applying the LEIS strategy principles, tools and manual for dry areas. The park treats contaminated water using a vertical constructed wetland. The treated water is then used for systemic irrigation of green areas that are healthy and do not harm users, especially children. The WWTP also uses less water than a conventional park in Lima, showing the benefits of using nature-based solutions and local native vegetation species, resulting in an innovative, resilient and attractive public space for the community.

The solution effectively demonstrates that it can be applied in urban, peri urban and rural areas.

After the intervention the farmers requested to implement the solution at the beginning of their farms, to treat the surface waters irrigating their crops, which are mainly domestic wastewaters during dry seasons, and polluted rain waters during the rainy season. Due to the use of the water canal, the community La Florida, classified as an urban area by the INEI (National Institute of Statistics and Informatics), started paying right of use for the waters to the Lower Chillon river and the Chuquitanta farmers' association, meaning that La Florida II, became a participant on decisions related to the use of water in the area. That strengthened the relationships between urban and rural areas for taking care of the water source.

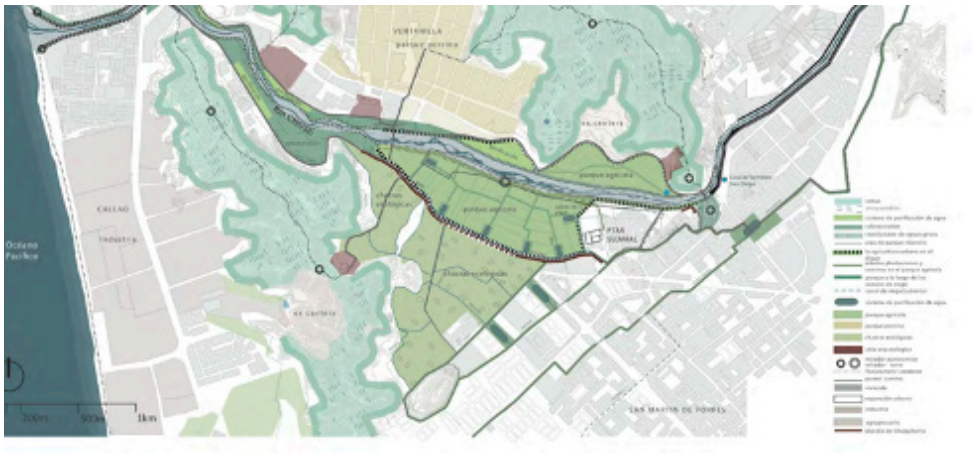


FIGURE 15. Proposal for ecological infrastructure-lower basin of the Chillon River: water-sensitive prototypes applied on a larger scale create an essential and regenerative ecological infrastructure for the city

© ILPÖ, University of Stuttgart

> Inauguration of the Children's Park including constructed wetland © ILPÖ, University of Stuttgart

> Productive & Wastewater treatment Park "Children's Park", La Florida II, Chuquitanta © ILPÖ, University of Stuttgart


> Participatory design workshops by age group at La Florida II, Chuquitanta © ILPÖ, University of Stuttgart

Results and impact

The overall results (contained in the LEIS Book in the English and Spanish version) include:

- **LEIS Principles**, a set of rules for water sensitive urban development, considering the integration of water and wastewater into planning and open space design [12].
- **LEIS Tool**, a GIS-based planning tool that quantifies demand, availability and potentials for the reuse of water supporting planning and sustainable open space design.
- **LEIS Manual**, a set of Water Sensitive Urban Design design guidelines for creating green areas towards development of water-sensitive green spaces.
- **Conceptual design and design documents** (SNIP N° 248792) of the "Lower Chillon Ecological River Park Chuquitanta".
- **Lower Chillon Landscape Framework** for the development of an Ecological Infrastructure Landscape considering the ecological, cultural, social, economic and archeological landscape in the area.
- **Lima Beyond the Park**, professional and academic exchange from different programs from Germany, Peru and worldwide. The exchange included international design winter semesters, Summer School and internships.

12 The 5 LEIS principles are: P1-Protect ecosystems and increase ecosystem services; P2-Preserve agricultural land; P3-Reduce vulnerability and increase resilience; P4-Support the hydrological and urban water cycle; P5-Strengthen effective governance.

- **LiWa Roundtables**, key stakeholders and key experts professional table for discussion and exchange.
- **Construction of the "Wastewater Treatment Park: Children's Park"**, LiWa - LEIS pilot project in the lower basin of the Chillón river, Chuquitanta, Lima.

The treatment system has efficiencies greater than 85% in pollutant removal. The resulting water quality allows reuse without risk, according to the parameters recommended by the World Health Organization. The social evaluation shows positive results for the adoption of the technology by part of the community, which is reflected by the willingness to get involved in the plans improvement, as well as in the adoption of commitments and responsibilities for the operation and maintenance of the treatment system.

The project represented a paradigm shift on the integration of water and land managements at metropolitan, district, and neighbourhood scales. LEIS principles were also adopted by the Lima Regional Development Plan-Lima 2025; the Lima PLAM 2035; and the Metropolitan Development Plan Lima 2040. The WWTP Children's Park project provided a sustainable alternative to improve the quality of water used for irrigation of green areas in the community of La Florida II, this community being its main beneficiary. In addition, the improvement of the water quality meant an improvement in the quality of life in terms of health and environment of the area of influence.

> "We didn't have green areas but now the children from La Florida II and other children, will have a place where to play in a secure place, thanks to the WWTP Children's Park".

Source: https://vimeo.com/230748079 © Rossana Poblet

> Participatory Process of LEIS Strategy © ILPÖ, University of Stuttgart

Replicability and sustainability

In the case of the Lima Ecological Infrastructure Strategy (LEIS), the transferability of results and of tools was always envisaged, emphasised by the presentation of the interlinked outcomes of this part of the project. The idea behind it was to make it easy for decision makers in similar situations to follow aims, where to implement it and how to implement it. The principles that were developed along that process are straightforward and can be adapted to other situations. The spatial analysis was based on local information and limited due to the accessibility of data. In other cities, urban planners and water managers still needed to agree on a unified view on the city. In any case, the spatial analysis and the developed tools propose a way to tackle it. Finally, the detailed and site-specific prototype designs based on results from interdisciplinary working groups are a good example of how to illustrate the approach.

The area of study is an intersection between urban and rural landscapes and activities. Great transformations supporting local communities, the environment, water management, effective governance and adaptation to climate variability could be achieved by applying LEIS in a holistic way. The full strategy, the landscape framework and the WWTP Children's Park demonstration project focus on SDG 2, SDG 6, SDG 10, SDG 11, SDG 13, and SDG 15. Therefore, if applying holistically the integrated strategy, a cascade of catalytic reactions will positively impact SDG 1, SDG 2, SDG 3, SDG 10, SDG 12, and SDG 16 respectively.

This initiative contributes to application of the URL-GP:

When analysing the context, we realised there was a fragmentation between urban and rural areas, contributing to the eruption of social, environmental, and economic conflicts, effectively reducing to minimum the communication between urban and rural dwellers.

However, the project focused on four aspects in the area: the different landscapes, the water sources, the urban/rural open space, and the people's processes. Connecting these elements confirmed there were intrinsic flows connecting rather than dividing.

1. Locally Grounded Interventions: The WWTP: Children's Park, was requested by the organised community La Florida II, Chuquitanta, Lima. The main need was to develop a park while taking into account that the open spaces were largely degraded.

2. Integrated Governance: The project managed to Incorporate the urban-rural nexus in multi-sectoral, multi-level and multi-stakeholder approaches to governance, integrating a multidisciplinary approach, actors representing key main areas (territorial and urban development, water management, environmental and parks management, and climate adaptation authorities) and authorities at different level (district, provincial, regional and national).

3. Functional and Spatial Systems-Based Approaches: The project promotes integrative, inclusive and systems-based approaches to urban and territorial policy and planning. For instance, the LEIS and the LCHRWEIF are primary examples of Metropolitan Lima's territorial planning integrating open spaces (contained in natural ecosystems, cultural landscapes, cultural heritage and man-made ecosystems), with water sources and people's livelihoods related processes, like agriculture.

4. Financially Inclusive: The LCHRWEIF, as well as the WWTP "Children's Park", secures and prioritizes sustainable public and private investments to balance and strengthen urban-rural linkages. The implementation of the latter was a joint effort by the local community La Florida II, the San Martin de Porres district municipality, and the Lima Water Project.

5. Balanced Partnership: The project managed to create new models of partnership along the urban-rural continuum. Part of this partnership included all actors influenced in one or another way by the use of the different flows of waters, like the Chillon River watershed, Chuquitanta irrigation canals, wastewater, grey water, and potable water. Those partners included the River Chillon Chuquitanta Farmers Association, La Florida II Community representatives, Environmental and Urban development district authorities, Callao and Lima Regional authorities, Academia (architecture section from Universidad Católica del Peru (PUCP), agricultural engineering section from Universidad Agraria La Molina (UNALM), as well as landscape planning and design from University of Stuttgart (ILPÖ);

6. Human Rights-Based: The LEIS, LCHRW and WWTP embrace the global normative agendas in national and subnational commitments for territorial cohesion and action, and it is especially following the UNDP Human Development Report Peru 2009, Vol. 2: A Vision from the Watersheds. In addition, it supports efforts for social justice and environmental justice in peri-urban areas, usually neglected.

7. Do No Harm & Provide Social Protection: During the assessment period, intense exchange between urban and rural dwellers was possible. Through the WWTP-Children's Park, a previous area of dispute among urban dwellers for the future use of the open space; and among urban and rural dwellers for the use of the irrigation channel water, was transformed into a thematic hydro-social park for children under 10 years old, encouraging their psychomotor development while at same time understanding the water's journey, flowing from the Andes to the deserted Peruvian coast, and then to the Pacific ocean. A new education cartoon character called "the San Pepito water drop", was created explaining its journey from the Andes to the Ocean, and way back.

8. Environmentally Sensitive: Creating ecological infrastructure networks support recovering ecosystems and expand ecosystem services and biodiversity, thus supporting resilient and resource-efficient societies.

9. Participatory Engagement: During the process, the community La Florida II directly requested the development of the project in their community. That meant that the whole community was fully involved in the planning, participatory design process, construction, implementation, and maintenance. The San Martin de Porres Municipality was fully committed to the project and the major inaugurated the Children Park as part of the "Children's Day" celebrations. In addition, international design studios, Summer Schools and internships were used to support and explore possible solutions considering local knowledge.

10. Data Driven and Evidence-Based: A combination of academic and scientific work, considering data from LiWa Project related to climate variability and water modelling; as well as perception by children, women, men and elderly living in urban and rural areas supported the development of the projects. However, the lack of continuity due to pandemics and change of priorities has increased the gaps to address urban-rural continuum and territorial cohesion using age- gender- and spatially disaggregated data.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action[13]:

A. Governance, legislation and capacity development: The LEIS strategy was the base which supported the definition of the Metropolitan Open Space and Ecological Infrastructure Plan in 2013, before being updated in 2022 with the Metropolitan Plan Lima 2040. Likewise, a "whole-of-government" group was established, and different discussions took place along the River Chillon Mancomunidad (commonwealth) and the LiWa Round tables.

B. Integrated planning across the urban-rural continuum: This has been fully achieved, allowing the construction of the water thematic park: WWTP - "Children's Park". The Lima Metropolitan Park authority SERPAR also followed the LEIS strategy and the LCHRWEIF to develop similar strategies along the other two rivers, the Lurin River and the Rimac River.

C. Investment and finance for inclusive urban-rural development: Funding during the LiWa and LEIS research project (from 2008 till 2014) was provided by the Ministry of Education and Research (BMBF) of Germany. In addition, the Lima Metropolitan Municipality adopted the Lower Chillon River Park project, approved by the Ministry of Economy for implementation through SNIP N° 248792. However, changes of local and metropolitan administrations in 2014 led to the development of new priorities, postponing the project.

13 More information can be found here: https://issuu.com/ilpe/docs/lima_ecological_infrastructure_stra_9c435aba38df2f

D. Empower people and communities: La Florida II representatives, as well as the Chillon River-Chuquitanta Farmers Associations, have been fundamental partners in disseminating the importance of implementing strategies like LEIS at all scales. They have also presented their experiences to different audiences, while keeping their objective of accessing clean water and sanitation for all settlements not yet fully recognised.

E. Knowledge/data management for dynamic spatial flows of people, products, services, resources and information: An analysis of all landscapes along the Chillon river watershed was carried out for two years. The landscape presented different features: social (divided by sex and age groups), environmental, waterscapes, landscapes, cultural heritage landscapes, economic--productive landscape, topographic landscape, climatic landscape, and risk landscape. These studies identified flows of people, products, services, resources and information. This aspect should be officially adopted to continue monitoring changes.

G. Coherent approaches to social service provision: After a study revealing that Metropolitan Lima, located over a desert and suffering from water stress, uses large amounts of potable water for irrigation of green areas, it was agreed that a new integrative strategy was needed. LEIS responded to this by offering a wide range of multifunctional open space systems supporting social services provision for all residents, urban and rural.

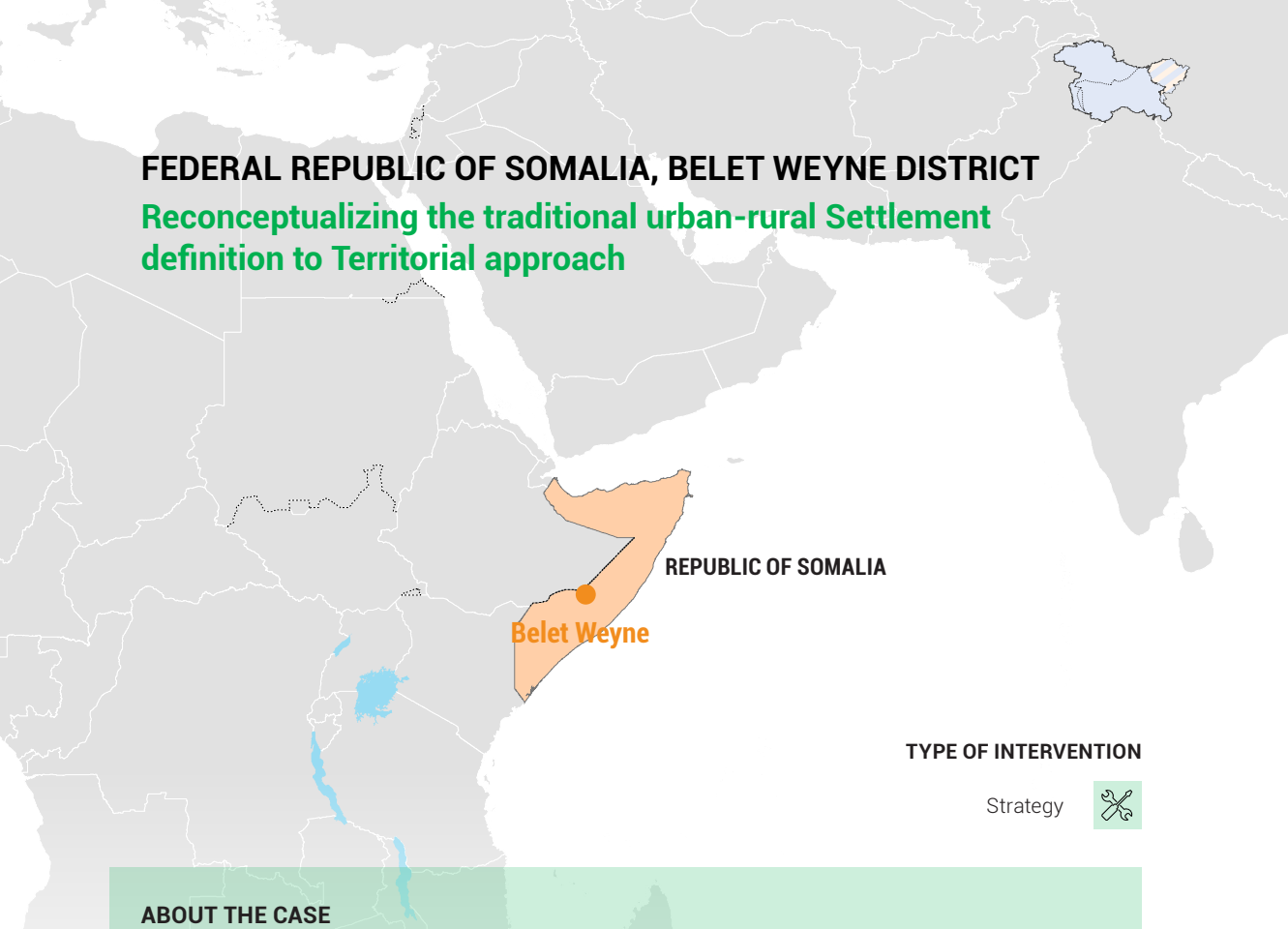
I. Integrated approaches for food security, nutrition, and public health: Over more than a decade, Lima has become a recognized World Food Capital for its rich variety of products at country level. However, simultaneously, alarming levels of poor nutrition are causing anaemia and obesity. Therefore, the Lower Chillon River Park Project ensures that agricultural land is transformed into new ecological farming, supporting food security in the city, good nutrition and improving overall health.

J. Environmental impact and natural resource and land management: The project incorporates integrated landscape management into territorial development plans, thus ensuring positive impact in the environment as well as in the water management.

K. Conflict and disaster: Physical and water risk, as well as disaster events, were assessed along the study area. The aim, as described by LEIS P3, was to include those areas as part of the multifunctional ecological infrastructure network. Meanwhile, positive effects were observed when urban dwellers and farmers joined forces to "reduce solid waste disposal over water bodies, like irrigation channels and protect them". Following this joint-effort, fewer flooding events and better quality of products and protection of public health were achieved.

FEDERAL REPUBLIC OF SOMALIA, BELET WEYNE DISTRICT

Reconceptualizing the traditional urban-rural Settlement definition to Territorial approach



TYPE OF INTERVENTION

Strategy

ABOUT THE CASE

Author(s): Ambra Migliorisi, UN-Habitat; Francesco Tonnarelli, Taltech - Tallin Technical University

Location: Belet Weyne District, Somalia

When: August 2020 - August 2021

Type of Intervention: Tool

Partners: UN-Habitat

Brief Description

This study was developed to start a process of recognizing the complex reality that characterises the Somali territorial system and a new conceptualization of urbanization trajectories in the country, which could be extended to the Horn of Africa Region. It shows different possible visual representations of the 'blended' environments that fall outside the current definition of urban but cannot be fully described as rural, distinguishing several identified forms that can be categorised between the urban and the rural form. In doing so, this study suggests an alternative reading of the territory and local and trans-local flows of people, goods, labour and capital, and emphasises the agency of smaller settlements and the country system beyond the mechanisms of international aid, formal jurisdictions and competencies.

Background and challenges

According to most statistics, Somalia is one of the few countries whose population still resides predominantly in rural areas, although it is experiencing rapid urbanization. Most policies, plans and programmes give much more attention to aspects connected with urban growth rather than to those concerning rural areas. Outside main cities, settlements are systematically described as rural, regardless of marked differences in population and population densities, land uses and land use change, infrastructure provision, livelihood strategies, as well as social and economic structures.

The urban-rural dichotomy does not properly describe different forms of urban concentration and the rich spectrum in settlement types which are unique to Somalia's territorial organisation It also disregards some of the features characteristic of the urban transition currently occurring in the country. The district of Belet Weyne is representative of the drastic changes in the lifestyle of Somalis, offering a glance at the complexity and at the rich variety of human settlements present in the country.

The study attempts to shed light on the complex organisation of Somali territory and human settlement pattern beyond the macro-category of urban and rural. It does not propose a method to define urban settlements but an attempt to represent through symbols the complex geographical reality of Somalia, which cannot be resolved through the urban/rural demarcation.

The study encourages specific territorial responses, allowing cross-sectoral interventions to move beyond traditional policy divisions. It does so by suggesting identifying a network of settlements combined with their territorial influence and the existing socio-economic linkages between them in order to better understand the interconnections between these livelihood and services demand, on one side, and governance, planning and management of services on the other. It also highlights the necessity of improving people's access to services and accommodating population growth. Other challenges covered by the intervention include:

- Review the means by which policy describes human settlements and territorial settings;
- Encourage local governments to define a roadmap for the elaboration of a National Land Policy and a National Urban Policy
- Propose a method to set a functional hierarchy of settlements based on availability and diversity of their services, infrastructure and socio-economic activities.

Solutions and implementation

The study is composed of two parts. The first one aims at analysing settlements from a morphological point of view, classifying them in different categories related to the configuration they acquired. This is mainly built on three primary variables: the human settlement's dimension, its spatial arrangement, and its degree of density, respectively defined as "size", "spatial arrangement" and "compactness". More specifically, each characteristic is then defined into sub/ macro-categories to exhaustively describe all the physical features of the settlement to which they refer. It is interesting to note that, while compactness has usually been considered a significant parameter to define urban character, the denser and larger settlements are the ones seemingly more rural in function - with an organic spatial arrangement and land division typologies which show no evidence of non-agricultural uses. Many smaller and more dispersed settlements, especially in pastoral livelihood zones, show instead clear signs of commercial activities - all "linear" types shown ahead have non-residential building typologies clustered around a "high street" or a square - giving them a more urban-like quality. In addition, it is also interesting to notice how settlements' spatial arrangements align with the different rural livelihood zones, therefore pointing at some characterisation in use. While most settlements are concentrated in agricultural and agropastoral areas along the river, the southern part of the Shabelle - corresponding to the "Riverine Gravity Irrigation Zone'' - presents the most compact settlements. The "Riverine Pump Irrigation'' has settlements with more dispersed configurations, and consequent lower densities.

The "Sorghum High Potential Agropastoral Zone" still has a very high number of points, but they seem to be mostly scattered structures with no evident logic of aggregation.

The second part, in turn, is composed of two internal phases. The first one consists of a two-layered analysis, with the aim of studying settlements in relation both to the surrounding service area and their cultural-related value. The second one, on the other hand, focuses on population estimates, which is particularly useful to assess when a certain settlement, reaching the 2,000 inhabitants mark, could be considered "urban", according to the official definition. In particular, three locational characteristics seem to condition the settlements' structure and their distribution within the territory, as well as determine the importance in terms of size and population:

1. the presence of transport infrastructure;
2. the presence of the river;
3. the presence of water points.

In Belet Weyne district, the infrastructure system is mainly related to the presence of a primary road axis which connects Mogadishu with the Northern cities of Somalia and the port of Bosaso. This axis flows parallel to one of the Shabelle, one of the two only permanent rivers of the country, along which all the major cities of the Hirshabelle State (Belet Weyne, Bulo Burto, Jalalaqsi and Jowhar, Balcad) are located. Another important feature is the presence of the airport which makes Belet Weyne the most important hub for the entire district.

The city does not seem to have a large number of satellite settlements but, at the same time, seems to condition the urban character of several small hamlets located along the river at a radius distance of around ten kilometres (see, for instance, the three small settlements of Gambarlawe, Quracley and Lebow presented previously). On a smaller scale, it seems these two factors - presence of water and transport infrastructure - are key elements determining the location of a settlement. The existence of the river, as the most important water resource for agriculture and pastoralism, and the presence of the primary road, as the main connection, constitute the premise of an infrastructural corridor. It is then possible to observe how most of the built areas of the district often organise themselves along the river, creating a sort of "riverine" rural agglomerations and taking advantage of the mild climate, the fertility of the soil and the flat topography. The converging features make these settlements more difficult to interpret in terms of spatial arrangement, having characteristics defined in other parts of these documents as "grid", "linear" and "radial" at the same time.

Other centralities which can give a settlement a more "urban-like" quality in terms of function and morphology are mosques, schools, health posts and markets.

In parallel, ahistorical analysis has been carried out by comparing existing settlements with the historical map drawn by the Italian Ministry of Colonies in 1925, which constitutes one of the first "scientific" maps available of the region.

The "duration of settlement" is not a variable usually introduced for defining an urban centre and its relevance, however the fact that a settlement was already existing at least one hundred years ago is definitely of some significance. Settlements present in the map predate the construction of the Mogadishu-Bosaso Road, and therefore signal the presence of historic nodes along nomadic routes, commercial centres and other types of settlements existing before colonial times.

The study was developed in 2020, when pandemic-related restrictions forced opt for a purely remote based approach. Various methods of interpretation of satellite imagery were therefore used. It must be noted that the use of Google earth as the main source gave access to images of sufficient quality of the whole study area, but on the other hand did not belong to the same studied period, portraying various time periods in terms of year and in terms of season. Given the nomadic or seasonal nature of part of the population, and the vast unpredictability of climate conditions in the past decade, this may have affected the observations.

Results and impact

While several global agendas have embedded in their monitoring and implementation the collection of several indicators for urban and rural areas, data rely on national definitions, mostly aimed at reaching international statistical comparisons not capturing historical, cultural and political factors that could describe the contextual differences of every country.

To reach a more sophisticated and factual understanding of the territory, the study outlines the importance of analysing the spatial structures and settlement relations, recognizing the agency of smaller urban agglomeration and defining a blended and dispersed reality that goes beyond the urban-rural dichotomy.

Based on this realisation, it appears quite clearly that a review of the way policies describe human settlements and territorial settings is needed. Even though definitions are failing to match reality, rural and urban are still relevant concepts and boundaries between them are yet to be erased. The Federal Government of Somalia through the Ministry of Public Works, Reconstruction and Housing has started a process to define a roadmap for the elaboration of a National Land Policy and a National Urban Policy, which necessarily will have to look into this issue and eventually shed light on the matter.

However, the question which arises is how to encourage specific territorial responses, allowing cross-sectoral interventions to move beyond traditional policy divisions. The need is to identify a network of settlements with their territorial influence (i.e. the geographical reach of different settlements' functions in the surrounding territory) and the existing socio-economic linkages between them, to better understand the interconnections between these livelihood and services demand, on one side, and governance, planning and management of services on the other, as well as the implications for improving people's access to services and accommodating population growth.

Determining the functional hierarchy of settlements based on availability and diversity of their services, infrastructure and socio-economic activities can allow interventions which are more rooted in the socio-cultural and economic environment of Somalia and therefore more effective and impactful.

Replicability and sustainability

This study is developed to start a process of recognition of the complex reality that characterises the Somali territorial system and a new conceptualization of urbanisation trajectories in the country, which could be extended to the Horn of Africa Region. Looking at the future, the use of automated methods could allow not only to make the process faster and less susceptible of mistakes, but to also easily incorporate new data as it becomes available. For example, such measures would include taking into consideration various images of the same location, thus overcoming the "static" nature of the observation, thus introducing factors such as seasonality and impact of climate events (droughts, floods, etc) into the evolution of the settlements. Further on-field research would be needed to get a more in depth and realistic understanding of the specific attributes of each settlement, in order to compare their functions, organise them in hierarchical categories and analyse the spatial relationships between them. Even with scarcity of data, uncertainty, rapidly evolving urban processes, weak planning systems and low accessibility, methodologies such as UN Habitat's Spatial Development Framework could be deployed.

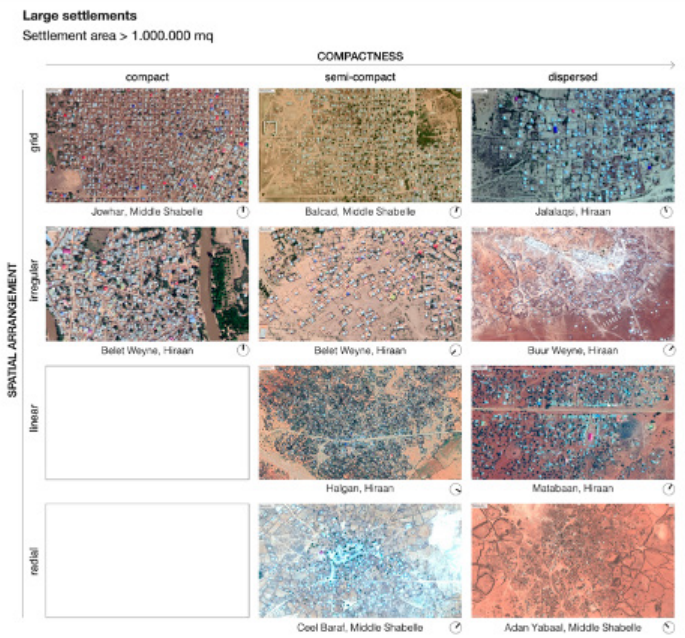
Furthermore, because a key asset for pastoralists is their knowledge of the local environment, an approach is needed to ensure that this collective wisdom is not only included, but also influences their capacity for planning and managing human settlements.

This initiative contributes to application of the URL-GP:

1. Locally Grounded Interventions

3. Functional and Spatial Systems-Based Approaches: The study suggests an alternative reading of the territory and local and trans-local flows of people, goods, labour and capital, and encourages the agency of smaller settlements and the country system beyond the mechanisms of international aid, formal jurisdictions and competencies. The study illustrates different ways of describing the territory based on a variety of factors. It does not propose a method for defining urban settlements, but is nothing but an attempt to represent through symbols the complex geographical reality of Somalia, which cannot be resolved through the urban/rural (or rather, non-urban) dichotomy.

The study outlines how the analysis of local context could inform and guide the translation of global agendas (Global Monitoring Framework of the 2030 Agenda for Sustainable Development, New Urban Agenda, among others) and could help local authorities and subnational actors to better define their urban and rural environment, also in terms of environmental inequalities and related support. System-based approaches can support the analysis of resource flows, considering the different scales of urban and rural settlements in systems of cities and towns.



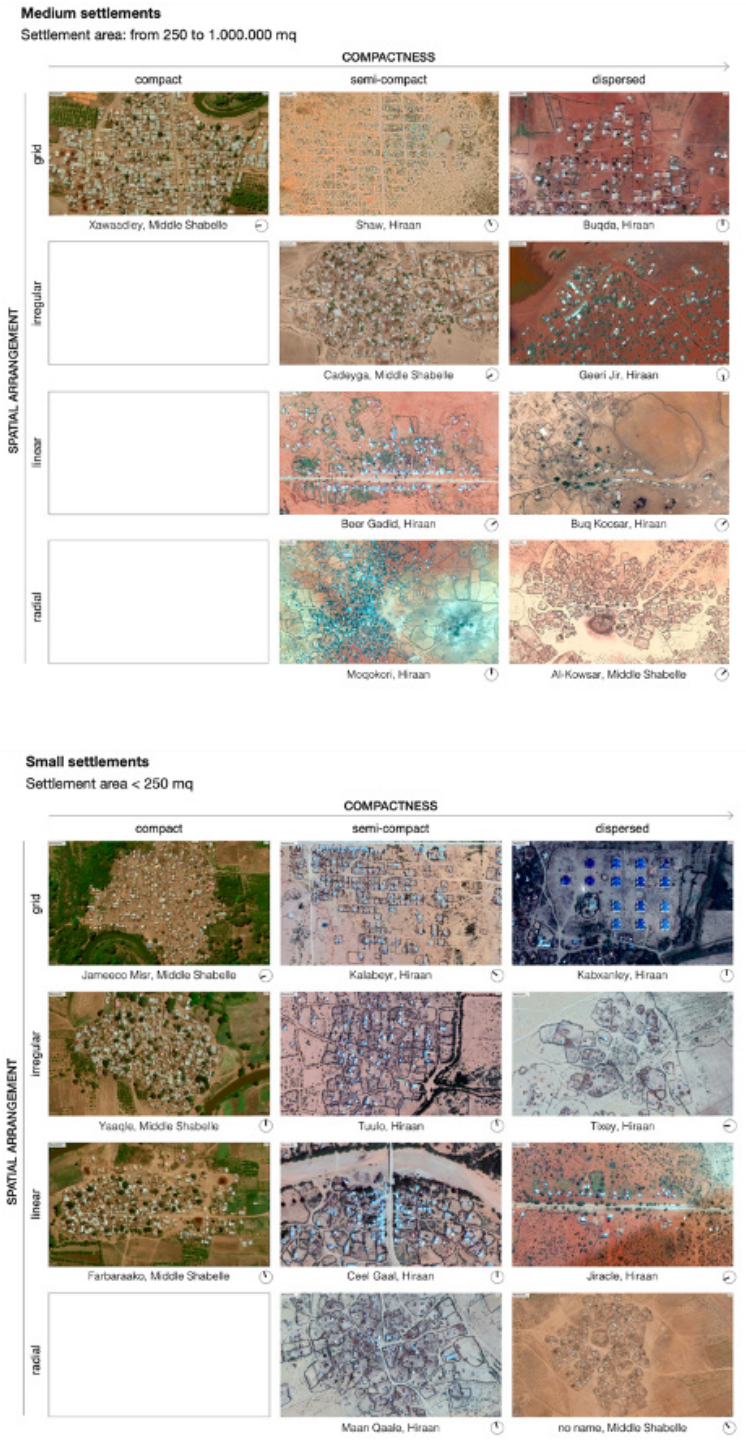


FIGURE 16. Morphological classification of settlements

© Ambra Migliorisi, Francesco Tonnarelli

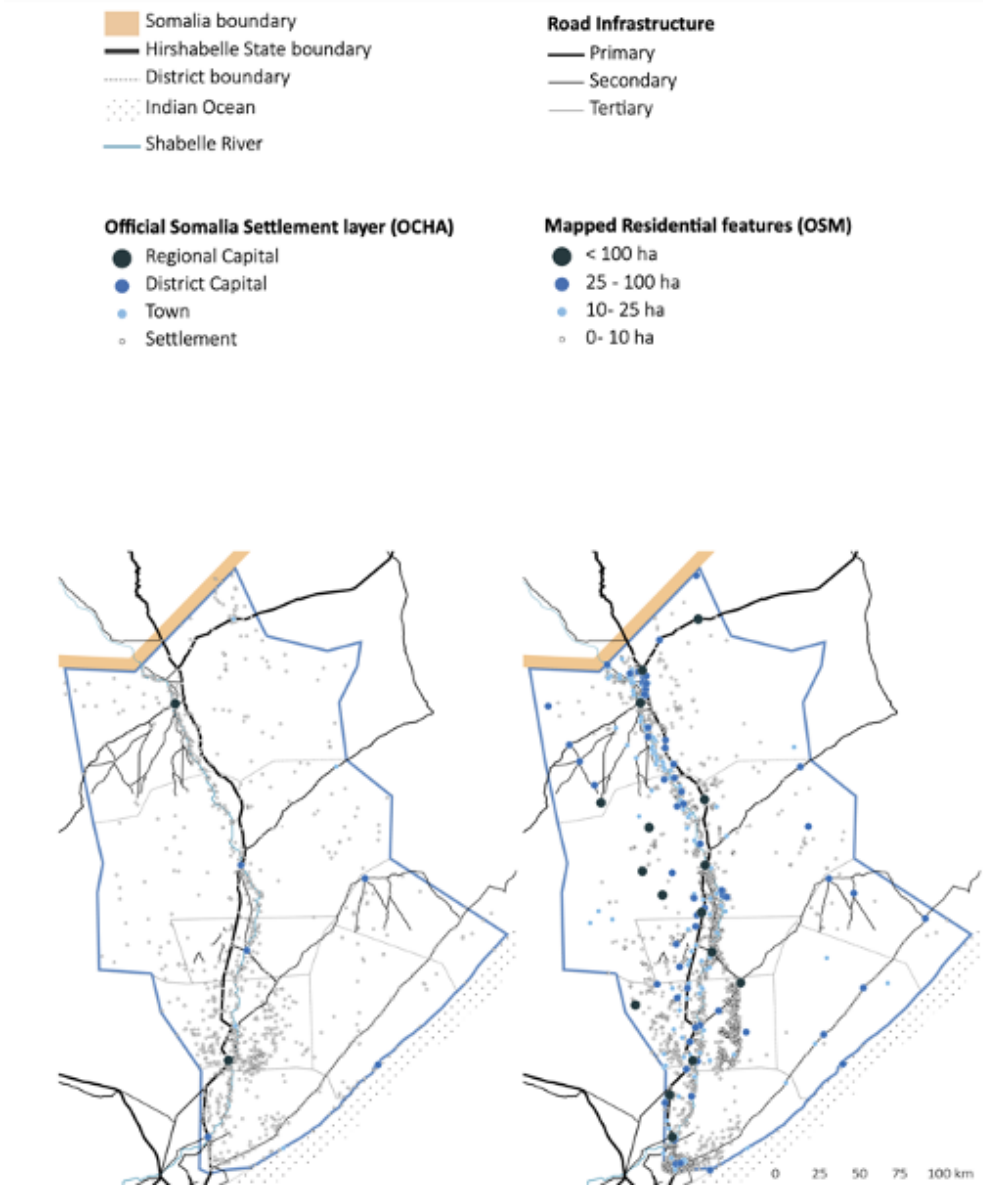


FIGURE 17. Comparison between official Somalia settlement layer and the mapped one
© Ambra Migliorisi, Francesco Tonnarelli

AFRICA (MULTI-COUNTRY)

FoodLAND (Food and Local Agricultural, and Nutritional Diversity) Project, Multi-actor centres of innovation for urban and rural food systems in selected African Countries

ABOUT THE CASE

Author(s): Marini Govigli, Valentino; Carloni, Elisa; Di Fiore, Nicola Gianluca; Giordano, Claudia; Mulazzani, Luca; Setti, Marco, Department of Agricultural and Food Sciences, Alma Mater Studiorum Università di Bologna, Bologna (BO), Italy

Location

1. Zoyout Dir Beni Mellal / Khenifra (Morocco)	8. Kitui (Kenya)
2. Ait Ouallal Bittit / Ait Yazem (Morocco)	9. Kisumu (Kenya)
3. Enfidha, Chebika (Tunisia)	10. Mvomero, Morogoro rural (Tanzania)
4. Jendouba (Tunisia)	11. Kilombero / Lindi (Tanzania)
5. Laelay Machew / Axum (Ethiopia)	12. Kamuli (Uganda)
6. Akaki, Nifas Silk (Ethiopia)	13. Nakaseke (Uganda)
7. Mukurweini (Kenya)	14. Kajjansi / Masaka (Uganda)

When: 01/09/2020 - 31/08/2024 (4 years)

Type of Intervention: Project

Partners

1. University of Bologna (coordinator)	9. Sokoine University of Agriculture
2. Eidgenoessisches Departement Fuer Wirtschaft, Bildung Und Forschung	10. Makerere University
3. The James Hutton Institute	11. Aquabiotech Limited
4. Ecole Nationale D'Agriculture De Meknes	12. National Agricultural Research Organisation
5. Institut Superieur Agronomique De Chott-Merie	13. Ministry Of Agriculture Livestock and Fisheries
6. Institut National Agronomique De Tunisie	14. Cefa - Comitato Europeo Per La Formazione E Agricoltura Onlus
7. Mekelle University	15. Relief Society of Tigray
8. University Of Nairobi	16. Volunteer Effort for Development-Concern Uganda (Vedco)

17. Farm Concern International Development Trust
18. Helvetas Swiss Intercooperation
19. Farm Concern International Development Trust
20. La Societe Gie Zoyout Dir Beni Mellal Gie
21. Kitui Enterprise Promotion Company Limited
22. Tamarillo Kenya Limited
23. Katundu Traders Ltd
24. Nutreal Limited
25. Groupement Hrayer Gloub Ethiran Fernana

Brief Description

A network of 14 local Food Hubs has been created in six Northern and Eastern African countries namely Kenya, Uganda, Eritrea, Ethiopia, Tunisia and Morocco, paired with 14 cities. The Food Hubs will be the organizational and operational frameworks that will join together local smallholder farmers, food processors (Small and Medium Enterprises), authorities, researchers, and NGOs. These 14 rural and peri-urban districts will represent the local centers of social and technological innovation, addressing the different phases of the food value chain from production to storage, to processing, to nutritional and healthy consumption, and measuring different individuals' decision-making processes as well as different socio-economic conditions. The expected outcomes touch a variety of actors in the food system as food producers, processors and consumers.

Background and challenges

The past decades have been characterized by significant changes in food systems. Specifically, new evidence shows an increase in specific forms of malnutrition. In some areas of the world, stunting and wasting are still widely present and critically high especially among children while obesity, overweight, and under-nutrition coexist in many countries.

These different stages of the nutrition transition have been evident in African countries as well. Eastern Africa is one of the world's sub-regions most affected by stunting, with a prevalence of 32.6% (Global Nutrition Report, 2022). At the same time, other forms of malnutrition prevail in Northern Africa (Global Nutrition Report, 2022), with high and increasing rates of overweight and obesity among children (13%) and adults (around 25%) populations. At the same time, anaemia among women of reproductive age has also reached the highest levels in Africa. Vitamin A Deficiency (VAD) is also widespread in Sub-Saharan Africa, especially among 5-year-old and younger children. VAD is associated with high mortality from diarrhoeal diseases and measles. The diffusion and worsening of unbalanced diets and malnutrition in Northern and Eastern Africa signal inadequate progress towards the SDGs (target 2.2) and highlight the need for ensuring that nutritious foods are accessible, affordable, and desirable especially for children and mothers.

These conditions, compared with the nutrition-responsiveness of the African food supply chains, indicate a gap: lack of coordination among smallholder farmers, inefficient use of resources, high vulnerability to climate change, low integration of supply chains and scarce market orientation often characterize local food systems. Indeed, African food systems usually display an abundance of biodiversity, food culture, typicality, and identity. These food systems provide essential environmental and social services and play a pivotal role in shaping individual wellbeing and in contributing to the sustainable development of a society. Research and innovation activities support food-related behavioural change of producers and consumers to boost both food diversity and healthy dietary diversity, two domains which are still unexploited, and whose interrelations have been given little attention to date. FoodLAND ultimately aims at contributing to closing this gap.

Through this project, three main challenges of the African food systems are being addressed:

1. Organizational needs: inadequate coordination among food operators and scarce market orientation is addressed by developing and implementing socio-organizational innovations, including the creation of local Food Hubs, the mapping of consumers' and producers' preferences and behaviours to detect food-related decision-making processes, the description of current conditions, choices and practices, and the identifications of propensities for dietary diversity and innovation adoption;

2. Technological needs in farming and food processing systems: poor performances are tackled by developing, implementing, and validating

- open technological innovations for farming systems, i.e., new models of precision agriculture exploiting digital farming systems and methodological and technological innovations enhancing agro-biodiversity, productivity, and resilience in (crop and fish) farming systems
- methodological and technological innovations enhancing primary processing of food, raw materials and ingredients, and secondary processing of novel food products. Training sessions are also organized and technical guidelines realized;

3. Nutritional needs: Unhealthy diet issues are addressed through the dissemination and communication of innovation, (i.e., by developing and providing tailored nutritional recommendations and guidance, implementing awareness-raising campaigns, and including counselling messages on the frequency of consumption of different products), strengthening and diffusion of balanced, healthy diets, and contributing to the reduction of malnutrition.

Other challenges being addressed are:

4. Gender balance along the food value chain and multi-stakeholder engagement.
5. Sustainability of the initiative.

Solutions and implementation

An operational definition of Food Hub (FH) had first to be developed along with stakeholders, to clearly establish its characteristics, in order to intervene.

Research partners first prepared a toolkit presenting guidelines for the design, implementation, and assessment of the 14 Food Hubs. Those were conceived as multi-actor centers of innovation, meant to develop or enhance the organizational, technological, cultural and operational conditions enabling local food supply chains, as well as to strengthen their nutrition-responsive, agro-biodiversity and food diversity. Despite the diversity in terms of form, characteristic, structure, function, and stakeholders involved, the guidelines aim at setting up a common framework that can easily be adapted to different contexts. The guidelines are composed of a definition of FH, a visualization of the FH process from conception to evaluation, an assessment, and finally the operationalization of the process along with a brief description and resources needed.

Resources provided include:

- A stakeholder mapping table, aimed at co-defining the core group/network of players and actors to involve, and how to engage them;
- A template consisting in guiding questions to co-define the structure in terms of mission, vision, objectives, and value propositions;
- A template consisting in guiding questions to co-define "good governance principles";
- A template for the Memorandum of Understanding (MoU), conceived as a possible way to formalize the FH. The template can be used to develop a tailored MoU, and indicates the MoU's main components (date, actors involved, actors' information, objectives, activities, actors' contributions).

The project followed a principle of co-design and co-development. Indeed, several meetings took place throughout the first year of the project both in the form of bilateral meetings (with identified FH facilitators) to address specific issues, and obstacles and how to mitigate them, and in more general meetings, involving all project's participants.

One of the main points discussed during the bilateral meetings was the issues and obstacles that the facilitators anticipate in the implementation of different phase of the FH process. A major concern was the involvement of stakeholders in the FH, both in terms of logistic and motivation. The facilitators mentioned that it can be challenging to bring all stakeholders together and to convince them of the benefits and the role of the FH in facilitating activities.

The establishment of Food Hubs will require the following resources:

- Human resources, including Food Hubs facilitators and managers who will be responsible for creating and maintaining the network at a local level, as well as the participation of public and private actors operating within the food value chain (including NGOs, farmers, and consumer associations);
- Technical resources in the form of technical knowledge provided by local partners involved in the intervention, which will be necessary to reach an agreement amongst stakeholders (e.g. the Memorandum of Understanding) and define the Food Hub governance structure.
- Institutions: the involvement of key local institutions per Food Hub is necessary, including local governmental authorities, farmers' and consumers' associations, extension services and health centers;
- Financial resources: so far, the Food Hub has only accounted for the cost of in-person meetings.

Results and impact

The intervention is ongoing, and the Food Hubs are being implemented in six African countries. Some of the initial results that have been achieved include the organization of learner-centered training courses for food operators, the joint definition of activities and innovation projects the provision of common resources and tools (such as technical equipment sensors), the conduct of innovation tests, and the production of operational guidelines and abstracts on innovations adoption and management.

Expected impacts (some of which have already been achieved) include:

- short-term impacts such as the empowerment of farmers and consumers, improved awareness of sustainable and highly nutritious food production and consumption models, the testing, validation, and adoption of technological innovations developed in the FoodLAND project; and the creation of initial partnerships among food actors, including public-private partnerships.
- long-term impacts such as increased sustainability of the local food value chain through the direct empowerment of African smallholder farmers and food processors (SMEs), the creation and reinforcement of conditions for their sustainable growth, the promotion of their linkages with local, regional and global markets, and the establishment of a foundation for the spread of innovations to benefit rural areas in Africa.

The beneficiaries of the planned interventions include all actors operating in the local food value chain of the 14 African cities involved, including smallholder farmers, food processors, local policymakers, NGOs, and consumer and farmer associations.

Replicability and sustainability

The aim of this intervention in standardizing the process of creating food Hubs across different African contexts is to draw comparable lessons from the implementation process of the 14 local experiences. This will support local partners in developing an effective operational methodology that can be used by African food practitioners willing to set up a Food Hub to increase sustainability and nutritional awareness. Throughout the FoodLAND project, local partners involved in the establishment of Food Hubs will be engaged in order to define suitable formalization procedures (such as Memorandums of Understanding) to ensure that Food Hubs are maintained even after the project ends.

The project aims to contribute to the achievement of the following Sustainable Development Goals (SDGs):

Goal 2. End Hunger, Achieve Food Security and Improved Nutrition, and Promote Sustainable Agriculture. This goal is being pursued through the following actions:

i) Community gardening in primary and secondary schools to enhance nutritional knowledge (Jendouba FH - Tunisia);

ii) Processing locally available food into novel nutrient products (i.e., energetic bars, noodles, and baby food) (Kajjansi-Masaka FH - Uganda);

iii) Production of blended flours with improved nutritional and functional properties (Mvomero FH - Tanzania, Endifha-Chebika FH - Tunisia).

Goal 5. Achieve Gender Equality and Empower All Women and Girls. The project promotes gender equality through the following measures:

i) Inclusion of a Gender and Development Alliance (GDA) composed exclusively of women farmers among the farmers' associations, as in the case of the Tunisian FH of Enfidha-Chebika;

ii) Encouragement of rotational leadership of women leaders in the Kenyan FH of Mukurweini;

iii) Inclusion of women and girls in the committee for the selection of leaders in the Ugandan FH of Kajjansi-Masaka.

Most of the established FH within the project have a minimum quota for women to ensure gender-balanced representation.

Goal 12. Ensure Sustainable Consumption and Production Patterns. The project aims to achieve this goal through the development of technological innovations within each Food Hub (FH), including:

i) Precision irrigation systems to prevent water wastage (Ait Ouallal Bittit / Ait Yazem - Meknes FH in Morocco);

ii) Osmotic dehydration and solar air drying techniques to shorten the drying duration, save energy, and improve the final product quality (Jendouba FH - Tunisia, Mukurweini FH - Kenya, Kitui - Kenya);

iii) Development of bio-based packaging for fresh and dried fruits and vegetables (Jendouba FH - Tunisia);

iv) Biodegradable mulching (Enfidha-Chebika FH - Tunisia);

v) Smart storage systems to improve food conservation (Ait Ouallal Bittit / Ait Yazem - Meknes FH in Morocco and Mukurweini FH - Kenya);

vi) Agro-ecological intensification to achieve ecological and economic sustainability, preserve soil conditions, and reduce waste.

This initiative demonstrates the following principles of the URL-GP:

1. Locally grounded intervention: The Food Hubs are local networks that aim to empower all stakeholders involved in the food value chain, from producers to consumers, with a particular focus on women's involvement. Their empowerment is developed through interventions that enhance both individual agency (the adopted participatory approach (point 5.) grounds the Food Hubs on the preferences and conditions of producers and consumers, so that decisions are taken jointly and activities are need-oriented) and the interrelationships between food operators, thereby strengthening social ties and mutual responsibility (e.g., by making joint choices, sharing equipment, exchanging experiences etc.).

2. Functional and spatial systems-based approaches: By developing technologies for urban and peri-urban areas, production will be brought closer to markets, resulting in a shorter distribution chain that can be more competitive with imported products in the fish farming system.

3. Balanced partnership: FoodLAND will create a network of 14 local Food Hubs that aggregate relevant actors and serve as injection points for the introduction of innovations, providing the organizational/institutional framework for collaboration between private and public actors/organizations operating in local food value chains.

4. Human rights-based: Nutritional recommendations are implemented as a means of fostering sustainable, healthy African diets that become mainstream in the 14 target cities, each of which is paired with rural and peri-urban areas and promote and fulfil the human right to food and health.

5. Participatory engagement: FoodLAND ensures meaningful bottom-up, inclusive, horizontal participation of people and implements a gender-sensitive Participatory Learning and Action (PLA) approach. Specific mechanisms (awareness of gender roles, power relations, provision of equal opportunities to participate in the process) are put in place to ensure women's participation.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

A. Governance, legislation, and capacity development: Food Hubs are conceived as multi-actor centers of innovations characterized by new multi-level and multi-sector governance mechanisms. Indeed, FHs promote the participation of diverse public and private actors. Multi-level and multi-sector governance are consequently ensured within each FH, as roles and responsibilities are co-defined through a participatory approach. While most local teams have developed Memorandums of Understanding (MoUs), manifestos have also been drafted, and in a few cases, ad-hoc legally recognized institutions are being set up or existing institutions (such as agricultural platforms) are being used.

B. Empower people and communities: FoodLAND empowers smallholder farmers and food operators through multi-actor participatory processes and partnerships, addressing inequities and inclusion. For instance, a gender-balanced representation in the Food Hub is guaranteed.

C. Territorial economic development and employment: FoodLAND creates new market opportunities at both the local and global scales, encouraging the flourishing of rural communities.

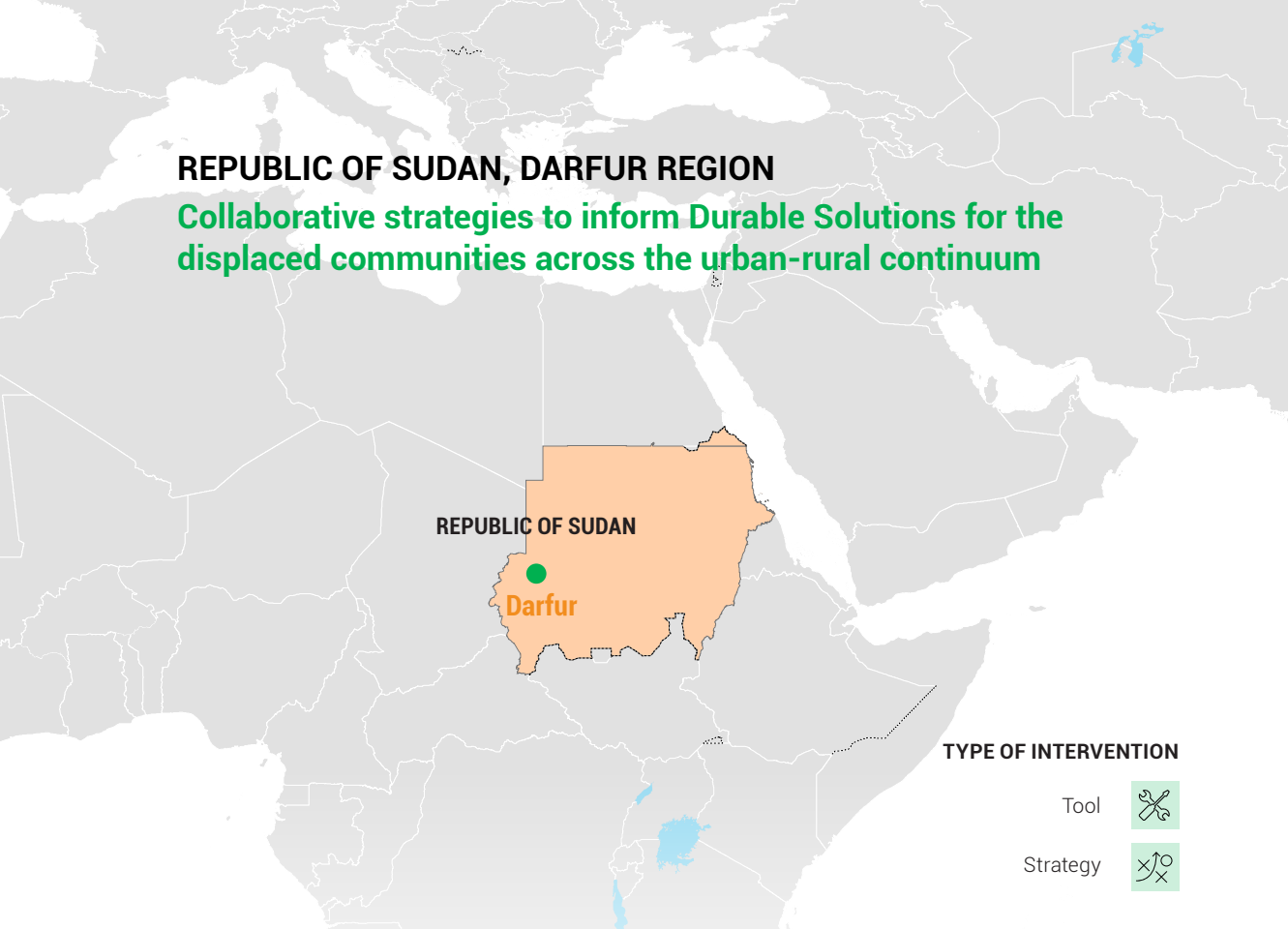
D. Integrated approaches for food security, nutrition, and public health: FoodLAND aims to foster nutrition-responsive and sustainable agro-biodiversity. The achievements will benefit both African and European consumers by providing them with traditional-based, healthy, nutritious foods, while encouraging the diffusion of African diets and aiding the fight against malnutrition, particularly in women and children.

> FoodLAND Food Hubs in Kenya, KISUMU © AquaBioTech Group, Source: https://foodland-africa.eu/photo-gallery/foodland-food-hubs/

> FoodLAND Food Hubs in Uganda, Nakaseke © Makerere University, Source: https://foodland-africa.eu/photo-gallery/foodland-food-hubs/

REPUBLIC OF SUDAN, DARFUR REGION

Collaborative strategies to inform Durable Solutions for the displaced communities across the urban-rural continuum



TYPE OF INTERVENTION

Tool

Strategy

ABOUT THE CASE

Author(s): Dieter Van Moorhem, Corina Demottaz, Joint Internal Displacement Profiling Service (JIPS)

Location: Darfur Region, Sudan

When: 2017-2019 El Fasher; 2020-2022 across Darfur region

Type of Intervention: Tool, Strategy

Partners

Peacebuilding Fund (PBF) and Durable Solutions Working Group (DSWG) Sudan, including UNHCR, UNDP, IOM, FAO, UN-Habitat, and UNICEF, with technical support from JIPS throughout.

Brief Description

The intervention involves a collaborative durable solutions analysis and baseline study in 9 localities across Darfur. It is to generate a shared evidence-base and durable solutions analysis and conducted under the durable solutions outcomes pillar of the Peacebuilding Fund (PBF) Sudan, to inform collective efforts towards longer-terms solutions strategies, sustainable development, and peace for displacement-affected communities in Darfur, Sudan.

Background and challenges

In Sudan, decades of conflict and disasters have left the country in a fragile situation, with close to 2.5 million people internally displaced in both rural and urban areas. The Juba Peace Agreement, signed in 2020, establishes durable solutions as a priority alongside rule of law and peacebuilding at a community level, to create more stable societies and longer-term and inclusive development. This is reiterated by the (draft) National Strategy on Solutions for IDPs, Returnees, Refugees, and Host Communities that the Government of Sudan is currently developing. To generate a shared evidence-base report that could support these efforts, a large-scale collaborative analysis covering eight localities across Darfur, both rural and urban, was implemented under the UN Peacebuilding Fund (PBF) in 2020-2021. The study included the localities of Tawila, Assalaya, Yassin, Sheiria, Gereida, Jebel Moon, Nertiti and Um Dukhun, as well as all displacement and conflict-affected communities (IDPs - Internally Displaced Persons, neighbouring non-displaced residents, nomads, IDP returnees and also refugee returnees). It builds and expands directly on the approach piloted in 2016-2019 in the urban and peri-urban area of El Fasher, Darfur, and is grounded in a participatory and multi-stakeholder process.

Solutions and implementation

At the local level, the key insights were reviewed, validated and prioritised by the displacement-affected communities, and subsequently translated into locally-anchored action plans through dedicated joint workshops with local authorities, community representatives and other key stakeholders. At the national level, the results from the studies were condensed into a series of thematic briefs that can inform on evidence-based and inclusive policy, on the operationalisation of the (draft) national strategy on solutions, as well as on integrated programming by the government together with humanitarian, development and peace actors. Building on the lessons learned from the previous study implemented in El Fasher, the durable solutions approach was enhanced in several ways; the indicators were reviewed against their relevance, need and the weight of each module.

Applying a people-centred approach, the preliminary analysis was taken back to the communities to obtain their validation of the results. Dealing with a population of mixed socio-economic background, visual tools were designed to make the insights accessible to all participants and enable them to meaningfully engage on the identified topics. These visual tools allowed for a discussion among all participants, which led to the displacement-affected communities being able to validate the findings.

During the action planning workshops, local authorities, civil society, sector specialists, the international community and displacement-affected populations were brought together to identify the activities needed to overcome the prioritised barriers to durable solutions.

©JIPS (Sept 2021)

From left to right

> In the first stage, findings from the durable solutions analysis were presented back to communities for validation. Visual cards were used to make the results accessible and easy to interact with.

> Based on the key findings from the durable solutions analysis, community participants jointly prioritise key obstacles for achieving solutions to the displacement situation in their localities.

Moving forward, it will be critical to have supporting coordination structures (existing platforms or newly created ones if none are available) to effectively follow up on and ensure implementation of the action plans, as well as fundraise to address any existing gap, if needed.

Results and impact

Short-term results include strengthening of engagement and collaboration between local authorities, displacement-affected communities, civil society and international actors.

Locally driven action plans translate the shared analysis into integrated responses tailored to the specific local rural/urban context and considering all displacement-affected population groups.

Medium-term results and follow-up measures are the following:

1. Humanitarian needs to achieve durable solutions for displacement-affected communities are reduced
2. A sound and shared durable solution analysis approach and methodology has been developed to have it tailored to the context. It can also be replicated in other rural and urban localities in Darfur, as it was undertaken with a subsequent exercise funded by the Central Emergency Response Fund (CERF).

3. Collaboration and coordination between humanitarian, development and peace actors around durable solutions has been strengthened, both horizontally (at the national level) and vertically (between the national and local levels).

Long-term expected results are the following:

4. Peaceful societies that create the needed environment conducive for the socio-economic integration of displacement-affected communities and a sustainable development in both rural and urban areas affected by displacement.

> *"Everyone had their own data and was implementing interventions without coordination. It was therefore important that the durable solutions tool was developed jointly and collaboratively [...] it is really important that we collectively shape a tool that everyone will use the outcome of."*
>
> UN representative. quoted in Measuring Progress Towards Solutions in Darfur[8]

Replicability and sustainability

The durable solutions analysis implemented under the PBF in 2020-2021 is a scale-up of a pilot exercise implemented in 2017-2019 in El Fasher, Darfur. It has been replicated across another 9 localities in Darfur and other states of Sudan, under the CERF and the UNHCR leadership, with continued technical support from JIPS. Lessons learned and good practices from the approach have been shared in the form of an external evaluation of the first exercise, including tools (such as a 'community validation and prioritisation facilitation sheet' [15]);

and articles on the experience and approach, available on JIPS' website. The evidence base and analysis have been made available through detailed locality reports[16], condensed and cross-cutting thematic policy briefs as well as an interactive data story[17].

The approach is best suited for contexts that are conflict-prone, protracted displacement situations in both rural and urban environments, and affecting diverse population groups (e.g., IDPs, refugee returnees, non-displaced communities, nomads, etc.).

14 https://inform-durablesolutions-idp.org/wp-content/uploads/2020/08/Progress-Durable-Solutions-IDPs-Evaluation-Sudan-June2020.pdf
https://www.jips.org/news/scaling-up-durable-solutions-analysis-in-darfur-sudan/

15 Durable Solutions & Baseline Analysis | Locality Reports (PBF & DSWG Sudan, 2021), https://www.jips.org/jips-publication/durable-solutions-baseline-analysis-locality-reports-pbf-dswg-sudan-2021/

16 Peacebuilding With Durable Solutions for Darfur's Displaced: Thematic Briefs (PBF Sudan, DSWG, UNHCR, JIPS; 2021), https://www.jips.org/jips-publication/peacebuilding-with-durable-solutions-for-darfurs-displaced-thematic-briefs-pbf-sudan-dswg-unhcr-jips-2021/ and the data story available at https://dswgsudan.org/pbfdarfur/

17 Facilitation Sheet | Community-Based Validation & Prioritisation Using Pairwise Ranking (JIPS, 2022), https://www.jips.org/jips-publication/facilitation-sheet-community-based-validation-prioritisation-using-pairwise-ranking-2022/

The key takeaways are the following:

1. Building sustainable peace requires longer-term and locally-driven solutions to protracted displacement, and effective engagement with displacement-affected communities alongside local authorities not only regarding the decisions that affect them, but also the evidence-base that underpins those.

2. Joining up national-level policy and solutions strategy processes with local-level and community-based planning across rural and urban areas effectively enables the transition from humanitarian to development interventions, towards more sustainable and efficient support to both the displaced and their hosts.

3. Inclusive and locally-led planning processes establish critical ownership, responsibility and accountability, to effectively implement national-level policy and strategies.

4. Localised approaches can be more effective in measuring the impact of a national-level policy and in increasing the resilience of societies in environments affected by forced displacement.

This initiative contributes to application of the URL-GP:

1. Locally grounded interventions: The process set out in this case study allowed for local actors to build on the Juba Peace Agreement JPA and identify barriers to durable solutions[18] at the locality level for displacement-affected communities. Through this process, local authorities – together with civil society, community members, and international actors – were able to identify actions and policies needed to support resilience in the identified urban and rural localities in Darfur.

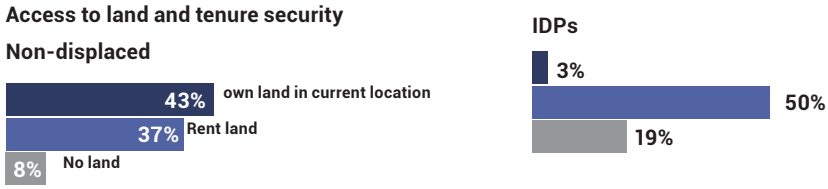
2. Integrated governance, balanced partnerships: The case study showed that in urban and rural areas, displaced persons have restricted access to land and land ownership, which impacts their options for reintegration. In response to this need, in one of the localities, the community members and their representatives identified the need for compensation to those who have lost their land due to the conflict, as well as strengthening the capacities of relevant local authorities to demarcate agricultural land and grazing routes.[19]

6. Human rights-based: A praised aspect of the used methodology is the inclusion of the whole-of-society throughout the data process, from the methodology design to the development of the Locality Action Plans. This approach was applied both towards the identification of the different groups of right-holders in the society (IDPs, host

18 IASC Framework on Durable Solutions for Internally Displaced Persons, https://www.jips.org/jips-publication/iasc-framework-on-durable-solutions-for-internally-displaced-persons/

19 More details see the related Thematic Brief 5: Access to Land and Tenure, https://www.jips.org/uploads/2021/11/Sudan-PBF2021-Thematic_Brief_5-land_tenure-lowres.pdf

communities, nomads, IDP returnees and refugee returnees) as well as the relevant duty-bearers at the locality level (local authorities). The community validation process ensured that the needs of the communities were representative of their lived experiences. Finally, the Locality Action Planning workshops brought right-holders together with duty-bearers to further discuss the identified barriers to Durable Solutions and to jointly identify required actions and policies to overcome these barriers.



"Nomads welcomed the notion of the community sessions and were happy to participate in the session as they are usually ignored. It was their first time to take part in such an activity."

Feedback from Dr. Adam Ahmed Suliman Sabill, SUDIA's facilitator on the community session in Yassin, East Darfur[20]

9. Participatory engagement: The community members were involved at different stages of the data process, including the validation of the findings, the prioritisation of different barriers, and the action planning workshops. To ensure a meaningful participation, illustrations were created to depict each of the identified barriers. This method proved successful to engage in a discussion with non-literate population groups and get their opinion on the prevalence and severity of the identified barrier. The validation and prioritisation activities helped ensure that the final analysis and Locality Action Plans would be informed by the needs and perspectives of the different segments of the community.

FIGURE 18. Visual card that depicted the local context and used local language, were created to make key findings on vulnerabilities and obstacles for durable solutions accessible to community groups with various data literacy levels.

© JIPS

20 https://www.jips.org/news/sudan-working-with-communities-in-country-partners-government-to-convert-data-into-action-in-darfur/

10. Data-driven & evidence-based: All stakeholders were involved in the design of the exercise and the analysis of the data. Applying this way of working ensures that; a/ the participating actors use the same evidence base to design concerted policies and programs to respond to the identified needs, and b/ the collected data can form a sound and agreed-upon baseline against which progress towards Durable Solutions can be tracked over time.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

B. Integrated planning across the urban-rural continuum, K The urban-rural continuum in the face of conflict and disaster: The durable solutions analysis and baseline studies will inform a localised way of working to implement the principles set forward in the Juba Peace Agreement at the locality level. The area-based analysis approach ensures that the urban-rural continuum in the face of conflict and disaster is considered in the policies and programmes that are informed by the evidence generated through the Durable Solutions analysis.

D. Empower people and communities: The analysis helps to better understand the specific vulnerabilities, needs and perspectives on solutions of the different population groups in focus, including barriers linked to environmental issues. Engaging different segments of the communities through the entire process, and by explicitly asking for communities' validation and prioritisation of barriers to overcome Durable Solutions, ensured that people and communities are empowered and participate in local decision making processes.

E. Knowledge and data management for dynamic spatial flows of people, products, services, resources and information, G Coherent approaches to social service provision: Finally, the multi-stakeholder nature of the exercise enables coherent approaches and integrated planning across not only the urban-rural continuum, but also different sectors for inclusive development. For instance, the baseline data produced through the analysis can be used to monitor progress against the locally-driven integrated Locality Action Plans, which are tailored to each locality context (rural and urban) and comprise humanitarian, development and peace aspects.

> An inclusive approach bringing together local authorities, affected communities, and international actors, was used to translate the key findings of durable solutions analysis into action plans. South Darfur, September 2021 © JIPS / Ola Samarah

> Action Planning Workshop in South Darfur, Sudan, together with local authorities, representatives of affected communities, and international partners. September 2021 © JIPS / Ola Samarah

> Community members draw their vision for a future with durable solutions during the community validation and prioritization workshops. Sheiria, Darfur, Sudan. September 2021 © JIPS / Ola Samarah

> Nertiti, South Darfur, Sudan. September 2021 © JIPS / Ola Samarah

THE PEOPLE'S REPUBLIC OF CHINA, SHENZHEN MUNICIPALITY

Nature as Leverage – Integrating urban and rural components for ecological benefits

TYPE OF INTERVENTION

Spatial Plan

Design

ABOUT THE CASE

Author(s): Martin Probst, MLA+ B.V.

Location: Shenshan Special Cooperation Zone, Shenzhen Municipality; Guangdong Province, China

When: 2019-2020

Type of Intervention: Spatial Plan, Design

Partners: MLA+ (Project lead, Urban Planning, Urban Design); OKRA (Landscape Planning, Landscape Design); Shenzhen IBR (Planning research and technical support)

Brief Description

The project develops a design framework for mountain, sea and land development. The result is a future-proof coastal defence that integrates engineering and landscape design providing a vibrant sequence of protected spaces along this beautiful 12-kilometres long coast. The local and ecological development thinking serves disaster protection along coastal and mountain edges as well as ecological and urban development. A resilient and dynamic blue-green system between mountains and sea is the framework for climate change adaptation, ecological regeneration, and the basis for all other developments. A local coastal development pattern responds to this framework and guides the development of life and economy in synergy, not in contrast with nature. The urban infrastructure supports the regenerative qualities of Shenshan Coast and is strongly linked to the unique experience of the place. Implementation proposals allow local stakeholders and partners to grow in capacity and ambition over time.

Background and challenges

Shenshan Coastal Area Vision is a Planning Vision and Urban Design Concept for a 103 km^2 coastal area within Shenshan Special Cooperation Zone, a new district of Shenzhen. The Southern Chinese metropolis Shenzhen has seen unprecedented urbanization and industrial development since becoming the first Chinese Special Economic Zone (SEZ) in the late 1970s. Yet, in recent decades the picture has become much more nuanced. Today Shenzhen drives new urban development paradigms: urban regeneration, ecological planning, the integration of urban, rural and ocean zones to name just a few. However, urban expansion is still required to meet the demands of this city, its economy and its people.

Approximately 100 km east of Shenzhen's centre, Shenshan is easily reached within 30 minutes by the recently completed high-speed train. It shows how investments in railway infrastructure reshape urban-rural linkages (URL) significantly. Once a rural backwater, the area is now fully interlinked with the development of the main city. The remote location, however, presents different challenges and opportunities, that this project addresses in an exemplary way, and that are worth sharing.

Following years of slow and informal development, Shenshan Cooperation Zone was formally put under the Shenzhen Municipal Administration, albeit with a special status. It will receive significant public and private investment and attract businesses and people to relocate to this new zone, both permanently as well as recreationally.

The project responds to national level requirements of "Building of an Ecological Civilization and Marine Power", as well as provincial changes towards building the "Guangdong - Hong Kong - Macau Greater Bay Area", a powerhouse of industrial development and global leadership, intensely depending on a new generation of well-educated talent with aspirations for a high quality of life.

The new development drive made it necessary to review and update the existing urban planning documents. This Vision is stage 1 of the formal planning review process.

Solutions and implementation

The freshwater strategy covers the whole watershed from mountain top to sea dike. "Mountain Sponge and Urban Sponge" systems make use of traditional forms of water management and hold the capacity to buffer rainwater, especially when draining into the bay is prevented by high sea levels.

The proximity of mountains and sea has the potential for a rich mix of habitats along the Shenshan Coast. The ecological framework will become complete through strategic ecological restoration projects allowing the regeneration of a series of land and sea habitat typologies.

Coastal Urbanization

"Nature as Leverage" proposes a development plan that is strongly interlinked with the location's natural patterns. It offers development principles that define the main urban areas, recreation-oriented coastal zones, and pedestrian-only zones, while at the same time leaving space for future innovation.

Infrastructure and Experience

"Nature as Leverage" focuses on public transport as the key infrastructure. Local mobility with fewer roads and fewer cars is closely linked to indoor and outdoor destinations and experiences that create a new rural-urban form of everyday life and experience of local qualities.

Results and impact

"Nature as Leverage" was formally adopted in Summer 2020 as the vision to inform the mandatory planning revision in the hands of the newly appointed local administration of Shenshan Cooperation Zone, under guidance of the government of Guangzhou province.

After completion of The Shenshan Coastal Area Vision in December 2019, the process continued directly into the next stage of work in early 2020. The Chinese Academy of Urban Planning and Design (CAUPD), as technical advisor to the authorities, led the so-called "Integration and Deepening Stage" including consultation. At this stage the Vision was qualified in consultation with stakeholders. Public engagement had already started in parallel with the Vision stage. The final version of the Vision was approved as a basis for further planning stages. Since the completion of the Vision, the revised planning has been formally adopted in 2021 and the new district plan for Shenshan Coastal Zone is now guiding the subsequent development of the area.

Replicability and sustainability

"Nature as Leverage" shows a way towards regenerative urban planning by radically breaking free from the modernistic paradigm of "form follows function" and grey, infrastructure-led urban development.

Key takeaways:

1. Starts with the local geography and culture. The clues for regenerative urbanism lie in responding carefully to local conditions and avoiding the application of generic solutions. The understanding of local climate, topography, flora, and fauna as much as local ways of living with them provides direction for sustainable, low-tech solutions from system to detailed scale.

2. Nature-oriented systems offer multiple benefits While serving the ecological regeneration of an area, nature-oriented urban systems can also be the protection from climate change and the driver for attractive urban areas, people, and industry.

3. Places that respond to natural systems Consider urbanization in synergy, and not in contrast with nature. Develop places that maximize the natural character of their setting.

4. Actions to safeguard the above Even at the early planning stage consider how to safeguard the essence of the plan in long term.

In this specific case we focused on two key actions: 1. A mobility infrastructure and experience plan that does not dominate but highlight and give convenient access to the unique experience of the site 2. An implementation process with a strategic land release, and collaborative design supervision supported by digital models and design guidelines.

This initiative contributes to application of the URL-GP:

1. Locally grounded interventions: Understanding the local context and creating a design specifically to match the area is the only way to achieve maximum strategy potential. Dedicating time to study the local landscape, lifestyle, flora, fauna, and history, but to also interview local residents and businesses during our site visits was key.

3. Functional and spatial systems-based approaches: We designed a spatial plan of 103 km^2, so it's only natural that the ecological and urban landscape varies across a zone of such scale. We thoroughly analysed the site and decided to use climate adaptation and coastal protection as leverage for integral urban development.

7. Do no harm & provide social protection: One of Shenshan's traditional ways of working and living with water is the fishpond method, which is very suitable for the local context. We implemented such low-tech, traditional solutions to achieve maximum water management results, but to also ensure the preservation of the local cultural identity and history.

8. Environmentally sensitive: Protecting the local biodiversity from further damage while ensuring the zone's future safety was our main priority. A dyke system is necessary, but can also be built without concrete use. We, therefore, proposed eco-dykes that not only contribute to the local ecology sustentation, but also to the overall landscape feeling.

9. Participatory engagement: During our extensive site visits, it was pivotal for us to converse with local residents and businesses and to learn more about their experience of the area before starting the design process. At the same time, public participation was a vital part of the Vision design stage.

10. Data driven and evidence based: It is simply impossible to design relevant solutions unless a thorough, well-rounded site analysis is conducted. We gathered our data by extensive site visits but also by meticulously studying the area, its residences, and history, and based our spatial strategy on our findings.

This project relates to the following entry points of the Urban-Rural Linkages: Framework of Action:

F. Territorial economic development and employment: The green infrastructure of landscape and urban projects will kickstart the development across the coast. This will consequently lead to the local economy moving towards a more holistic future and will attract climate positive investment. The airport accessibility is also expected to maximize investment, creating more work opportunities and boosting the local economy.

H. Infrastructure, technology and communication systems: The new monorail will function as an interchange Hub for various modalities. Every Hub will hold a Park & Ride system for an easy private-public transportation switch to reduce car traffic along the coastline. A bike & scooter sharing system will allow bridging of short distances too.

J. Environmental impact and natural resource and land management: Addressing climate change and environmental degradation was our first priority, especially when it comes to water management systems. By protecting existing ecosystems and promoting a respectful, synergetic coexistence with the local nature, we will ensure environmental stability and sustainable use of natural resources.

K. The urban-rural continuum in the face of conflict and disaster: Creating an eco-dyke system ensures Shenshan's ability to defend itself against extreme weather phenomena and creates a resilient framework for the region's social, natural and economic growth. We created three main protection zones: Mountain Sponge, City Sponge, and Sea Protection zone, creating a safe and ecologically sound development zone.

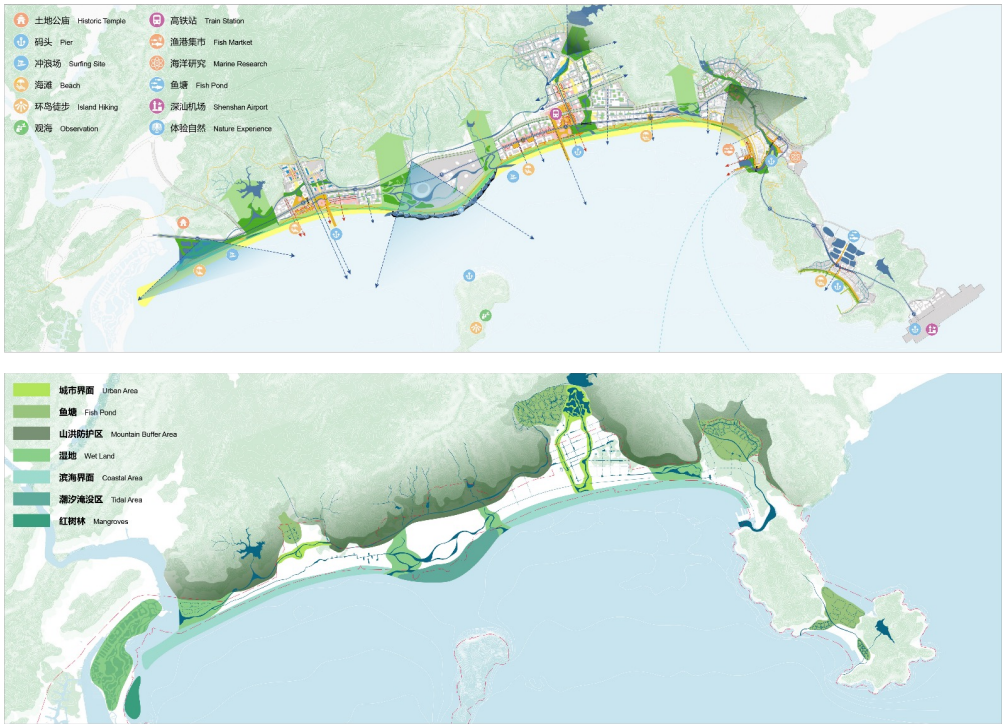


FIGURE 19. Nature as Leverage: Map
© MLA+, OKRA, Shenzhen IBR

> Nature as Leverage: Rendering © MLA+, OKRA, Shenzhen IBR

REPUBLIC OF INDONESIA, SEMARANG

Cascading Semarang

TYPE OF INTERVENTION

Strategy

ABOUT THE CASE

Author(s): Markus Appenzeller, MLA+ B.V.; Olaf Gerson, MLA+ B.V.

Location: Semarang, Central Java, Indonesia

When: Aug 2018-Apr 2019

Type of Intervention: Strategy

Partners: Stichting Deltares, FABRICations, Witteveen+Bos Indonesia, Universitas Diponegoro (UNDIP), Universitas Islam Sultan Agung (UNISSULA), IDN Liveable Cities, and special liaison Roy Kraft van Ermel.

Brief Description

This pre-feasibility study aims to identify opportunities for International Financial Institutions (IFIs) to early-adapt paradigm shifting projects, as well as programs related to climate change and water-driven challenges in Semarang, Central Java, Indonesia. The study analyzed existing plans, policies, and programs and identified opportunities to elaborate, add or change to induce a paradigm shift in local thinking and approach. These opportunities are formulated as implementable programs and projects, which would facilitate IFIs to pre-invest in their further development.

Background and challenges

Semarang, located in Central Java, Indonesia, faces numerous water-related challenges that are intertwined and complex. Rapid urbanization and the effects of climate change leave both upland and lowland areas increasingly threatened by floods. Additionally, the over-extraction of groundwater has resulted in significant depletion of aquifer and land instability, further exacerbating the city's vulnerability to flooding. Water demand in the city is expected to increase by 200% in the next 15 years.

In partnership with the National Enterprise Agency of the Netherlands and the special envoy for water of the Dutch government, Henk Ovink, an open call for projects was initiated in three cities across Asia: Chennai in India, Khulna in Bangladesh, and Semarang in Indonesia. For each city, two teams were appointed to develop concrete and implementable solutions for the water-related problems. These challenges, which are present throughout the urban fabric, include ensuring a sufficient supply of drinking water year-round, managing flooding caused by extreme weather events, and addressing the increased vulnerability of coastal areas due to rising sea levels and land subsidence.

For Semarang, MLA+ was selected as the leader of a consortium "Cascading Semarang", which also includes Stichting Deltares, FABRICations, Witteveen+Bos Indonesia, UNDIP, UNISSULA, IDN Liveable Cities, and special Dutch-Indonesian intercultural liaison Mr. Roy Kraft van Ermel. To fully understand the multi-layered challenges caused by too much or too little water, it is necessary to examine the underlying causes, which can often be complex and a result of both natural processes and human activity.

To address these challenges, the consortium conducted intense site visits and met with a wide range of experts in partnership with local partners, including UNDIP, the local university. Additionally, high-level discussions were held with the mayor's office, local planning departments, water authorities and utilities operation and maintenance organizations. The goal of this initiative was to start a conversation about new possible solutions and to rethink current approaches facing these issues.

Solutions and implementation

After conducting extensive discussions, workshops, and interactive sessions, the consortium developed five key concepts to address Semarang's water challenges:

1. **"Spongy Mountain Terrace"** uses the traditional method terrace farming as a water storage system, allowing for significant amounts of water to be stored for the dry season.

2. **"Rechannelling the City"** uses existing networks of canals to serve as a water storage and release system, providing additional public space while also managing stormwater.

3. **"Feeding the Industry"** tackles the issue of land subsidence in Semarang caused by industrial groundwater extraction by providing surface water for industrial use through the constructions of large new water reservoirs.

4. **"Micro Inventions – Resilient Kampung"** examines the use of surface and rainwater in different districts of Semarang.

5. **"Recharging the Aquifer"** refills depleted aquifers to reduce or prevent further land subsidence.

While the comprehensive masterplan for Semarang is costly, the consortium noted that the costs of inaction would be even higher. Implementation of the plan will require funding from national and international financing institutions. To move forward, the consortium evaluated the impact, the contribution to the Sustainable Development Goals (SDGs), and funding needs of each measure, and presented these findings in meetings with organizations such as the World Bank, the Asian Infrastructure Development Bank (ADB), World Wide Fund for Nature (WWF), and other national and international funding bodies.

Results and impact

The Cascading Semarang masterplan is a comprehensive approach to water management that addresses all water issues as part of an interconnected system. This approach allows for the linking of problems and opportunities in new ways, thereby resolving multiple challenges such as flooding and draught through the construction of water retention infrastructure to reduce landslide risks.

In the long-term, it is expected that the implementation of this plan will not only lead to increased economic growth in Semarang (SDG 8) through an expansion of the tax base, job creation, and local revenue sources, but also improved water security (SDG 6) in the face of climate change.

The key takeaways from this project are the importance of rethinking the ways teams are structured and plans are developed when addressing such challenges; A bottom-up approach, rather than a top-down approach, is more effective and beneficial for all stakeholders; Integrating cross-disciplinary collaborations and involving local communities earlier on in the process is key for addressing multi-faceted water problems.

Replicability and sustainability

The program has succeeded in generating momentum and garnering local support, which has enabled its continuation and deepening of alignment among governments and institutions at regional and national levels. This alignment is crucial in ensuring

the program's sustainability, particularly for infrastructure projects. It is therefore recommended that efforts be made to initiate smaller-scale projects and programs as a tangible demonstration of the program's impact.

The program's interventions have been demonstrated to be particularly effective in urban-rural areas facing challenges associated with climate change, including water. The MLA+ organization has already applied these ideas in several projects in China, and others have begun using them in different locations in Indonesia.

It is the program's comprehensive approach that makes it not only relevant for the city of Semarang, but also applicable in other locations with similar climatic, geographic, and geological conditions, such as those characterized by extreme weather events, proximity to both mountains and the sea, and natural or human induced land subsidence.

The initiative gives evidence to the Urban-Rural Linkages-Guiding Principles (URL-GP):

1. Locally grounded interventions: Efforts were made to collaborate with both local community representatives and local institutions to develop solutions specific to the needs and water challenges faced by Semarang.

2. Functional and spatial systems-based approaches: Strategies were designed to benefit all local systems by proposing ways of collecting water for both industrial and domestic use, managing floods for a safe urban environment, and recharging aquifers to prevent and eventually stop land subsidence, with a focus on considering water as an integral part of the city, rather than as an adversary.

3. Balanced partnership: Cross-collaboration was essential for the development of this plan. The team consisted of members from both the Netherlands and Indonesia with diverse national and professional backgrounds, including urban designers, architects, and environmentalists. Collaboration with local universities, communities, and specialized professionals was fostered allowing for the exchange of knowledge and expertise from various perspectives.

4. Human rights-based: The lack of access to water violates the human right to health and living under the constant threat of a flooding destroying one's belongings violates the right to adequate housing and living standards. The strategy is designed to provide solutions that address these and other related issues.

5. Do no harm and provide social protection: By protecting the urban infrastructure and natural water systems and providing access to water for all, the initiative is contributing to Semarang's social protection.

6. Environmentally sensitive: Failure to address Semarang's current water challenges could lead to more serious challenges for the future. The proposed ways of recharging aquifers are aimed at stopping land subsidence and securing the future of local biodiversity.

7. Participatory engagement: Workshops were organized to involve locals from diverse backgrounds, including - local university staff and community representatives, from the early stages of the process, gathering first-hand data and feedback from those directly affected by the challenges is essential in creating a truly sensible and beneficial solution.

8. Data driven and evidence based: The design proposal was based on extensive research and data collection through intensive site visits, interaction with the local communities, discussions with local experts, and the use of the team's own expertise to study the city and its water in detail.

This project aligns with several entry points of the Urban-Rural Linkages Framework of Action:

D. Empower people and communities: Collaboration among different disciplines and communities was paramount in the development of the project. By working together, we were able to gain a deeper understanding of the local context and build lasting relationships. Additionally, successfully implementing this type of approach makes it easier for others to replicate it in future projects and in other contexts.

H. Infrastructure, technology, and communication systems: Exhaustive research was conducted on efficient water connections, the existing network, uses, historic baseline, and causes of current challenges. Findings were shared with local communities, experts and stakeholders through discussions and workshops, and further developed through input from locals.

I. Integrated approaches for food security, nutrition, and public health: Lack of access to water dramatically lowers one's quality of life and health. From food production, access to drinking water and good hygiene, to the local economy, all aspects were taken into consideration when designing solutions.

J. Environmental impact and natural resource and land management: Our proposals for sustainable use of water were not only discussed and developed with local communities and institutions, but also with local governments. Changing policies can be a lengthy and challenging process, but we have certainly made a valuable contribution towards the right direction.

K. Conflict and disaster: The urban and rural environments of Semarang are constantly impacted by water extremes. The project focuses on both prevention, long-term solutions, and short-term relief. The need for action is urgent and the positive impact of implementing these strategies would be tremendous, on a social, environmental, and humanitarian level.

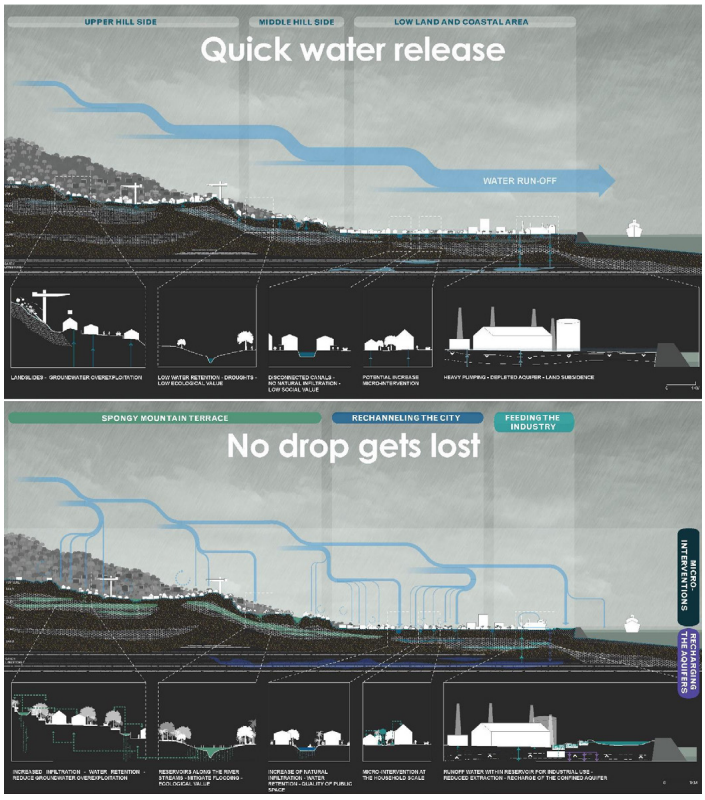


FIGURE 20. Common practice vs. The cascading semarang approach

© MLA+/FABRICATIONS

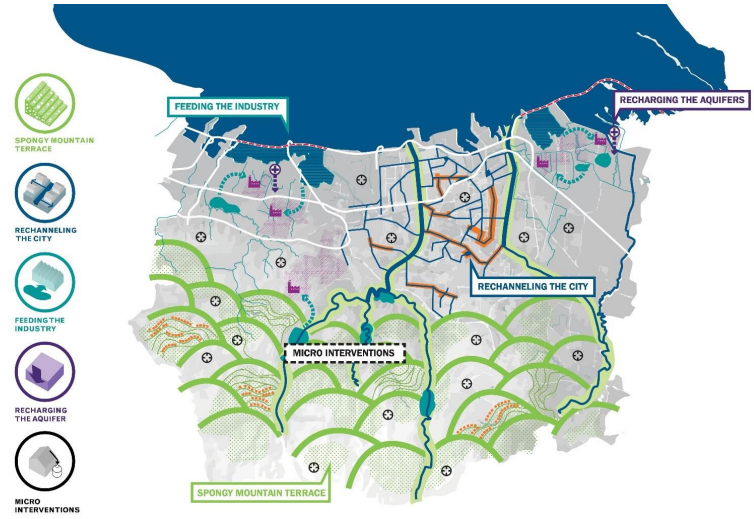


FIGURE 21. Water tools within the comprehensive plan

© MLA+/FABRICATIONS

ABOUT THE CASE STUDY AUTHORS

Ambra Migliorisi

Ambra Migliorisi is an Urban Planning expert working at the Metropolitan City of Bologna (Italy). She has experience in sustainable urban planning at territorial scale, with a focus on durable solutions for displacement crisis and urban regeneration processes. She has been involved in the development of urban upgrading and extension plans, both in Italy and international contexts, collaborating with UN-Habitat's Regional Office for Africa. She obtained a PhD in Architecture at the Sapienza University of Rome studying the relationship between informal practices and urban policies as possible frameworks for experimental urban planning.

Ana Santillán

Ana Rebeca Santillán Muñoz was born at the Highlands of Peru, at the city of Huancayo. Grew up in a small family as the older sister. Since she was little, she was interested in arts and literature. Studied Architecture at the "Universidad Nacional del Centro del Perú" the state university of the region. Because she was interested in social development, studied Social Projects Management and basic habitability for social inclusion. While developing as an architect also worked as Manager at an NGO. Currently developing investment projects in search of closing social gaps and equal development in society.

Anju Dwivedi (Associate Fellow, Centre for Policy Research, New Delhi)

Anju Dwivedi is an anthropologist by training and works as an Associate Fellow at the Centre for Policy Research (CPR). Coming with more than 25 years of experience in the development sector, Anju is currently anchoring and supporting water and sanitation research projects and programmatic interventions of CPR's Scaling City Institutions for India (SCI-FI) initiative. She has supported SCI-FI in piloting Faecal Sludge Management (FSM) projects in Odisha since 2015 and continues to play a significant role in the scaling-up of urban-rural convergence approach in the state. Currently, she is also anchoring research at SCI-FI on community-based organisations, participatory governance, and gender and inclusion in WASH planning, infrastructure, and services.

Carloni, Elisa

Elisa Carloni holds a Ph.D. in Global Studies: international economic policy, business and governance from the University of Urbino. She is currently a post-doc researcher at the University of Urbino (Italy), Department of Economics, Society and Politics. She has worked in H2020 projects dealing with innovations for low-waste food value chains and with the implementation of Food Hubs in six African countries at the Department of Agricultural and Food Sciences of the University of Bologna (Italy). Her research activities focus on industrial clusters, innovation networks, and public-private interaction.

Choudhury Rudra Charan Mohanty

Choudhury Rudra Charan Mohanty, an Indian national, is currently working as the Environment Programme Coordinator at UNCRD-DSDG/UN DESA (2003~till date). His main responsibilities at UNCRD includes implementation of three flagship initiatives and processes at regional and global level– (i) promotion of Environmentally Sustainable Transport (EST) in Asia; (ii) promotion of 3R, resource efficiency and circular economy in Asia and the Pacific; and (iii) International Partnership on Expanding Waste Management Service of Local Authorities (IPLA) – a SDG partnership. He obtained his Bachelor of Science degree (with Honours) in Agricultural Engineering and Technology from the Orissa University of Agriculture and Technology, India, and a Master of Engineering degree from the School of Civil Engineering/Asian Institute of Technology (AIT), Thailand.

Corina Demottaz (Head of Knowledge Sharing & Communications, JIPS)

Corina Demottaz holds more than 15 years of experience in communications, advocacy, and corporate responsibility in both the non-profit and private sectors combined. At JIPS – the Joint Internal Displacement Profiling Service –, Corina leads JIPS' Knowledge Sharing and Communication efforts, to feed into global policy and to enhance practices of the wider humanitarian and development partners working on data and displacement, drawing on JIPS' experiences, innovative approaches, and lessons learned. Corina holds a master's degree in political science and Corporate Communications from the University of Geneva and the University of Applied Science in Business Administration Zurich (HWZ).

Daline Portocarrero

Daline Portocarrero is a Peruvian architect with an interest in the design of participatory and management mechanisms for the implementation of urban plans, having achieved the approval of 05 development plans in the Peruvian Amazon between 2020 and 2022.

Currently, she is pursuing a master's degree in Urban Studies at FLACSO Ecuador, developing her investigation of rural-urban transformation processes under the analysis of spatial data for sustainable territorial development.

Dieter Van Moorhem (Former Head of Field Support & Capacity Building, JIPS)

Dieter Van Moorhem builds on more than 14 years of experience in the humanitarian and development sectors. Primarily focusing on protection and human rights-based approaches, Dieter has worked at the intersection between the humanitarian, development and security sectors in crisis and post-crisis settings. His engagement ranges from leading the design of results-based monitoring mechanisms, to developing protection strategies for international NGOs, as well as setting up and building well-equipped protection teams. Most recently, Dieter was Head of Field Support and Capacity Building with JIPS – the Joint Internal Displacement Profiling Service, leading on strategic engagement at the country level, in line with international recommendations and guidance.

Di Fiore, Nicola Gianluca

Gianluca Di Fiore is a post-doctoral research fellow in Agricultural Economics at the Agricultural and Food Sciences Department of the University of Bologna. His main activities are focused on two H2020 projects respectively on food losses and waste (LOWINFOOD) and African smallholder farmers (FoodLAND). During his Ph.D. he went through the analysis of urban food systems and urban agriculture. In particular, he focused his studies on the relationship between urban agriculture and municipal waste management.

Ellen van Selm

Ellen van Selm is currently mayor of the municipality of Purmerend (92,000 inhabitants) in the west of The Netherlands. Until September 2022 she was mayor of Opsterland, a rural municipality in the north of the Netherlands, with 30,000 inhabitants. Until that date, she also was president of the P10, the network of large rural municipalities in The Netherlands. A priority area for Mayor Van Selm is the cooperation between rural and urban regions in policy development, e.g. for the benefit of sustainable solutions to challenges in climate change and energy transition.

Emmanuel Gbadebo ADELEKE

Emmanuel ADELEKE is an Urban Development Consultant at the Policy, Legislation and Governance Section of UN-Habitat. He has vast experience in the area of urban planning and management, policy formulation, policy analysis and research, advisory services and project coordination in the fields urban planning and economic development. In his current position at UN-Habitat, he supports the formulation and implementation of National Urban Policy, formulation of Integrated Development Plans, and strengthening Urban-Rural Linkages within the context of Niger State Nigeria.

Fazileh Dadvar-Khani

Fazileh Dadvar-Khani is a Professor Emerita at the University of Tehran, Iran, with a background in geography, rural planning, and gender geography. She specializes in rural development, specifically on gender analysis and local community engagement. Dadvar-Khani has published numerous books and articles on rural planning, gender geography, and tourism development. She is currently working at the Urban Economy Forum in Canada, where she serves as the Secretariat of the Academic Platform and leads capacity building and partnerships at the World Urban Pavilion in collaboration with UN-Habitat powered by Daniels. In these organizations, she mostly focuses on building a global dialogue and capacities regarding implementation of SDGs, particularly SDG11.

Francesco Tonnarelli

Francesco Tonnarelli is a Research Associate at Tallinn University of Technology and an urban planner at UN-Habitat's Regional Office for Africa. He has managed and supported high-profile and complex projects for different agencies of the United Nations, such as UN-Habitat and UNHCR, mainly in East Africa and the Horn, Central and South Asia, with a specific focus on durable solutions for displacement crises and the development of capacities of local and national governments in urban and regional planning. As a researcher, Francesco studies the governance mechanisms of digital transition and their impact on urban planning and service delivery in Africa and overlooked urban contexts.

Ganesh Raj Joshi

Ganesh Raj Joshi is a transport and urban development practitioner with a Ph.D. from the University of the Ryukyus, Japan. He has more than 15 years of international experience in transport and urban planning and policy development, disaster risk reduction, and environmental protection. His work has focused mainly on supporting developing countries in building safe, inclusive, resilient, liveable, and sustainable cities and communities in Asia and the Pacific through sustainable transport development and smart city implementation. Ganesh is currently working at UNCRD, Japan, and managing the high-level Regional EST Forum in Asia, the Asian EST Mayor Forum, and other international capacity-building programs. He also contributed to different regional agreements, agendas, and declarations for sustainable transport and urban development in Asia and the Pacific.

Giordano, Claudia

Claudia Giordano is researcher and lecturer at the Department of Agricultural and Food Sciences, University of Bologna. Currently, her research focuses on food system governance, food economics and policy through interdisciplinary lens. In the last 7 years, she served as consultant for UNEP, FAO, the European Commission, Foundations and NGOs as food waste and circular economy expert. She was Special adviser for Agenda 2030 to the Minister of Research and Education of Italy (2019) and collaborated at the development of a National Plan for Food Waste Prevention and Reduction of Italy (2013-2014).

Hosein shenavaee

Hosein Shenavaee is a Ph.D. candidate in geography and rural planning at the University of Tehran with almost two decades of experience managing construction activities in Iranian villages through his work with the public organization, the Foundation of Housing. As an expert in civil engineering, he has been involved in numerous rural development projects in Iran, including regional planning and rural entrepreneurship. Shenavaee has led various projects and workshops and shared his knowledge and experience through multiple presentations in developmental organizations.

Ilse Kramer

Ilse Kramer was, until July 2022, policy advisor, working for Opsterland, a rural municipality in the north of the Netherlands, with 30,000 inhabitants. She is now working for the Dutch Ministry of Economic Affairs.

Isai Laurente

Architect from the National University of Central Peru, Resident of the project for the elaboration and implementation of urban management instruments including the urban development plan of the Kimbiri district, and the urban schemes of 07 populated centers in the same district. Currently coordinator of the area of legal physical sanitation of the sub-management of territorial urban development and cadastre of the district municipality of Kimbiri, La Convención, Cusco.

Jurjen van der Weg

Jurjen van der Weg was a program manager for European Capital of Culture Leeuwarden-Fryslân 2018 for the municipality of Leeuwarden. Leeuwarden is the capital city of the province of Fryslân in the north of the Netherlands. Within the municipality he was responsible for building up the first edition in 2022 of the triennial 100-day-event Arcadia, the legacy of LF2018. Now he is working on new democracy and innovation in civic engagement and government participation.

Lady Torrejón

Lady Torrejón is a Peruvian architect from the National University of Engineering with three years of experience in urban planning in the public and private sector with special interest in the Andean and Amazonian territories. For this reason, she has participated in different spaces such as conferences on the experience in territorial planning in the district of Kimbiri with the communities. In addition, she has experience in urban activism and urban research. Her personal interest is in urban policies for land regulation and in urban development instruments for housing generation. She currently works at the Metropolitan Planning Institute of Lima.

Marco Delgado

Marco Delgado is a Peruvian architect, currently working as a consultant for the Metropolitan Planning Institute of Lima, Peru. During the last 6 years, his interests and professional experience were focused on urban territorial planning, urban and regulatory analysis, as well as design. He has participated in a wide range of projects for both public and private sectors in Peru, addressing diverse environmental, social, economic, and urban management challenges.

Markus Appenzeller (Dipl. Ing. Architect SBA)

Markus Appenzeller is a Founding Partner and Managing Director of MLA+. With his extensive experience leading large-scale urban planning and architectural projects globally, Markus strongly focuses on anticipating the future and its potential impact on large groups of people.

This entails conducting detailed research into both probable and improbable scenarios, while maintaining a deep understanding of the forces at play within the urban fabric. His expertise has been invaluable in determining what aspects require planning and what elements should be left to the future to decide. He is also the head of Urbanism at the Amsterdam Academy of Architecture.

Marini Govigli, Valentino

Valentino Marini Govigli is assistant professor (fixed term) at the Department of Agricultural and Food Sciences, University of Bologna (Italy). His fields of expertise are socioeconomics of agro-forest goods and services, consumer behaviour and stakeholder preferences, intangible ecosystem services assessment, social innovation brokerage and multi-actor engagement. He has been involved in the development and execution of several European projects focusing on forest socioeconomics and African food value chain assessment.

Martin Probst (Dipl. Ing. MSc RIBA)

Martin Probst is an Associate Director at MLA+. His work strongly focuses on preserving and protecting local identities, as well as working with nature to achieve successful urban, architectural, and landscape projects. He brings extensive experience in the field, and has developed a methodology called "Nature as Leverage," which has been effectively utilized in Asia and Europe. Martin has a proven track record of navigating complex situations and engaging with local stakeholders to achieve positive outcomes.

Mulazzani, Luca

Luca Mulazzani is Associate Professor at the University of Bologna, he holds a PhD in Agricultural and Economics and Policy from the same University. Research activity focuses on innovation in the agri-food system, behavioral economics, institutional economics (in particular the role of cooperatives), natural resource economics. The main sector of interest is fisheries in the Mediterranean region. He is also interested in food security in African countries. He has participated in numerous international research projects, and he authored more than 20 scientific publications.

Nana Urakami

Nana Urakami is a researcher at UNCRD-DSDG/UN DESA. She has over 15 years of experience in capacity building on a broad range of sustainable regional development issues including urban-rural linkage for national and local government officials. Since the adoption of the 2030 Agenda, she has been involved in capacity building for integration of the SDGs into their plans and strategy to promote SDGs, with her recent work on the series of "Handbooks for SDG Monitoring by Local Governments" to support them to conduct a Voluntary Local Review (VLR).

Nikita Harikishan

Nikita Harikishan is a researcher and project manager at Biome Environmental Trust. She is an architect with a background in natural building, permaculture, and water management, with over 9 years of experience in the field. With a keen interest in nature-based solutions, her work ranges from facilitating the building of affordable community homes to designing rainwater and wastewater management for small homes to large farms. As a researcher, her work involves understanding Integrated Urban Water Management, with a specific focus on rainwater harvesting and the reuse of treated wastewater as a climate mitigation strategy.

Olaf Gerson (MSc Arch.)

Olaf Gerson is an Associate Director at MLA+. He has a strong track record of delivering successful projects across diverse cultures and countries, and a keen interest in promoting sustainable development, particularly in rapidly evolving economies and regions, such as China, East Europe, and Indonesia. Olaf is a natural team player and expert in leading multi-disciplinary teams, and was appointed as the project leader for the Cascading Semarang consortium, selected for the Water as Leverage Southeast Asia program.

Paola Peláez

Paola Peláez is a Peruvian architect with expertise in urban-rural planning projects for the public and private sectors. She holds a Bachelor's Degree in Architecture from Pontifical Catholic University of Peru. In addition, she has complementary studies related to urban planning and investment. She worked as part of the coordination and technical planning team for the Urban Development Plan of Kimbiri (a city located in the Cusco-Peru amazon jungle) from 2020 to 2021. She has worked as a Teaching-Assistant for the course Urban Planning Workshop 1 at her university.

Piet Brouwer

Piet Brouwer is a policy advisor, working for Opsterland, a rural municipality in the north of the Netherlands, with 30.000 inhabitants. He is experienced in working for both small and large municipalities, with a focus on international affairs and regional development.

Rafael Córdoba Hernández

Rafael Córdoba Hernández is Assistant Professor at the Department of Urban and Territorial Planning (Universidad Politécnica de Madrid). As an urban planner, he has participated in the development and implementation of urban and territorial planning at different scales. His current research focuses on territorial resilience and ecosystem vulnerability in relation to urban planning. He is a member of GIAU+S-UPM (Research Group in Architecture, Urbanism and Sustainability), AETU (Spanish Association of Urban Planners integrated in the European Council of Spatial Planners, CPT-CEU) and also Planners for Climate Action of the UN-HABITAT Climate Change Planning Unit (P4AC).

Rossana Poblet

Rossana Poblet is architect and urban planner with 10+ years' experience in international cooperation. Through integrated territorial-urban planning strategies and participatory methods, support systemic development in post-conflict and contested peri-urban (rurban) areas, in the so-called Global South. Her work focuses on supporting people's processes and effective governance, integrating resilient territorial strategies, like urban-rural linkages, ecological infrastructure, nature based solutions, WSUD, risk reduction and resilience. She is an active contributor to just cities and environments considering climate change, and as UN-Habitat Affiliated, supports National Urban Policies, the Agenda 2030 and Peoples' center smart cities strategies.

Setti, Marco

Marco Setti is PhD Professor of food and environmental economics and policy at the Department of Agricultural and Food Sciences of the University of Bologna. His research interests are in behavioural economics, with a focus on the decision-making processes and development studies and with more than 90 published research articles. He has a longstanding experience in the scientific coordination of international research projects and, currently, he is principal investigator of the EU RIA project FoodLAND.

Shaivi Kulshrestha (Research Associate, Centre for Policy Research, New Delhi)

Shaivi Kulshhrestha is an engineer by training and works as a Research Associate at the Scaling City Institutions for India (SCI-FI) initiative at the Centre for Policy Research (CPR). She holds an MSc in Water Policy and Governance from the Tata Institute of Social Sciences, Mumbai. Shaivi is interested in the intersection of technology, environment, and policy with a special focus on water and sanitation infrastructure and services. She is currently undertaking research on river pollution abatement and Faecal Sludge Management (FSM) from an institutional point of view. Shaivi also routinely supports the implementation of urban-rural convergence project in Odisha.

Shubhagato Dasgupta (Senior Fellow, Centre for Policy Research, New Delhi)

Shubhagato Dasgupta is a senior fellow at the Centre for Policy Research (CPR), heading the Scaling City Institutions for India (SCI-FI) initiative at CPR. He is an architect by training and holds an MSc in Housing and Development Planning from the Development Planning Unit of the University College London. His current research focuses on drinking water and sanitation in India, particularly non-networked sanitation systems and service delivery challenges in smaller cities. Shubhagato has played a key role in conceptualising the district-wide planning approach and has been spearheading the implementation of sanitation projects in Odisha since 2015. His other major areas of work include urban infrastructure and service delivery financing, housing and slum rehabilitation, urban sector public finance, and urban environmental infrastructure planning, management, and investment alternatives.

S. Vishwanath

S. Vishwanath is a Civil Engineer, an Urban Planner, and a Trustee with Biome Environmental Trust. He has 34 years of experience in the water, wastewater, and sanitation sector, helping design rainwater harvesting, aquifer recharge, wastewater recycling, and eco-san systems. He is an Adjunct Professor at the Azim Premji University, Bengaluru. He is a member of the Sustainable Sanitation Alliance and International Water Association. He has been a member of various expert committees which helped formulate the RWH policy and law for Bengaluru, the Wastewater policy, and the Water Policy for Karnataka, drafted by the Karnataka Knowledge Commission.

The Enabel SAKiRP Team

The Enabel SAKiRP team has been building stone arch bridges, amongst other rural infrastructure, since 2018 to support smallholder farmers. The team consists of international and local engineers who directly implement the construction, support staff taking care of admin and logistics, as well as agriculture technical assistants who help mobilizing communities and give them agency in critical infrastructure for their area.

The third edition of the Compendium of Inspiring Practices on Urban-Rural Linkages showcases 17 case studies from Africa, Asia and the Pacific, Europe, Latin America, and the Middle East. These cases highlight the application of the Urban-Rural Linkages Guiding Principles and Framework for Action (URL-GP) and emphasize the importance of an integrated territorial approach.

The cases cover a range of dimensions, including design, spatial planning, project implementation, strategy, policy development and implementation, and application of normative tools The cases highlight a multi-sectoral, multi-level, and multi-stakeholder approach, with common partnerships between different government levels, the private sector, civil society, academia, and communities

The compendium provides inspiring examples of efforts in various areas, such as linking urban and rural, food and biodiversity, waste management, social integration, climate mitigation, and nutrition. These examples demonstrate how the URL-GP can be implemented and the positive outcomes that can be achieved.

Overall, the compendium serves as a valuable resource for government leaders, urban and rural experts, and readers interested in urban-rural linkages and sustainable territorial development. It showcases the progress made by different actors, provides lessons learned from previous editions, and outlines the next steps for future editions. The presented knowledge is relevant at global, national, and subnational levels and can be applied in diverse geographical contexts to enhance territorial development.

PLGS Publications

HS Number: HS/055/22E

www.unhabitat.org
| : UNHABITAT
| : UN-Habitat worldwide | UN-Habitat

www.urbanpolicyplatform.org
| : @UNHABITAT_PLGS
| : UN-HABITAT, PLGS

For further information, please contact:
UN-Habitat Policy, Legislation and Governance Section
Urban Practices Branch, Global Solutions Division
www.unhabitat.org

UN-HABITAT