AGENDA – AFTERNOON

13:00 – 14:00 Pilot project implementations
Local partners & experts

14:00 – 14:20 Smart city financing
Maria Baez, Frankfurt School of Finance – City financing advisor

14:20 – 14:35 **Coffee break**

14:35 – 14:55 Prague's perspective: How cities learn and transform through experimentation
Tomáš Vácha, OICT Smart Prague – Head of International Department

14:55 – 15:00 Acknowledgements and end of online program

15:00 – 16:00 Site visits for audience on site

16:00 – 17:00 Closure

PILOT PROJECT KOCHI

Dr Marius Mohr, Dr Debjani Ghosh, Dr Rajan Chedambath

Fraunhofer IGB, C-HED & NIUA

City Lab Kochi – Pilot project presentation

Sustainable Neighborhood

MGI Final Conference 2023

9.5.2023, Dr. Debjani Ghosh, Dr. Rajan Chedambath, Dr. Marius Mohr

University of Stuttgart
Institute for Human Factors and Technology Management IAT

Fraunhofer

Supported by:

Federal Ministry for Economic Affairs and Climate Action

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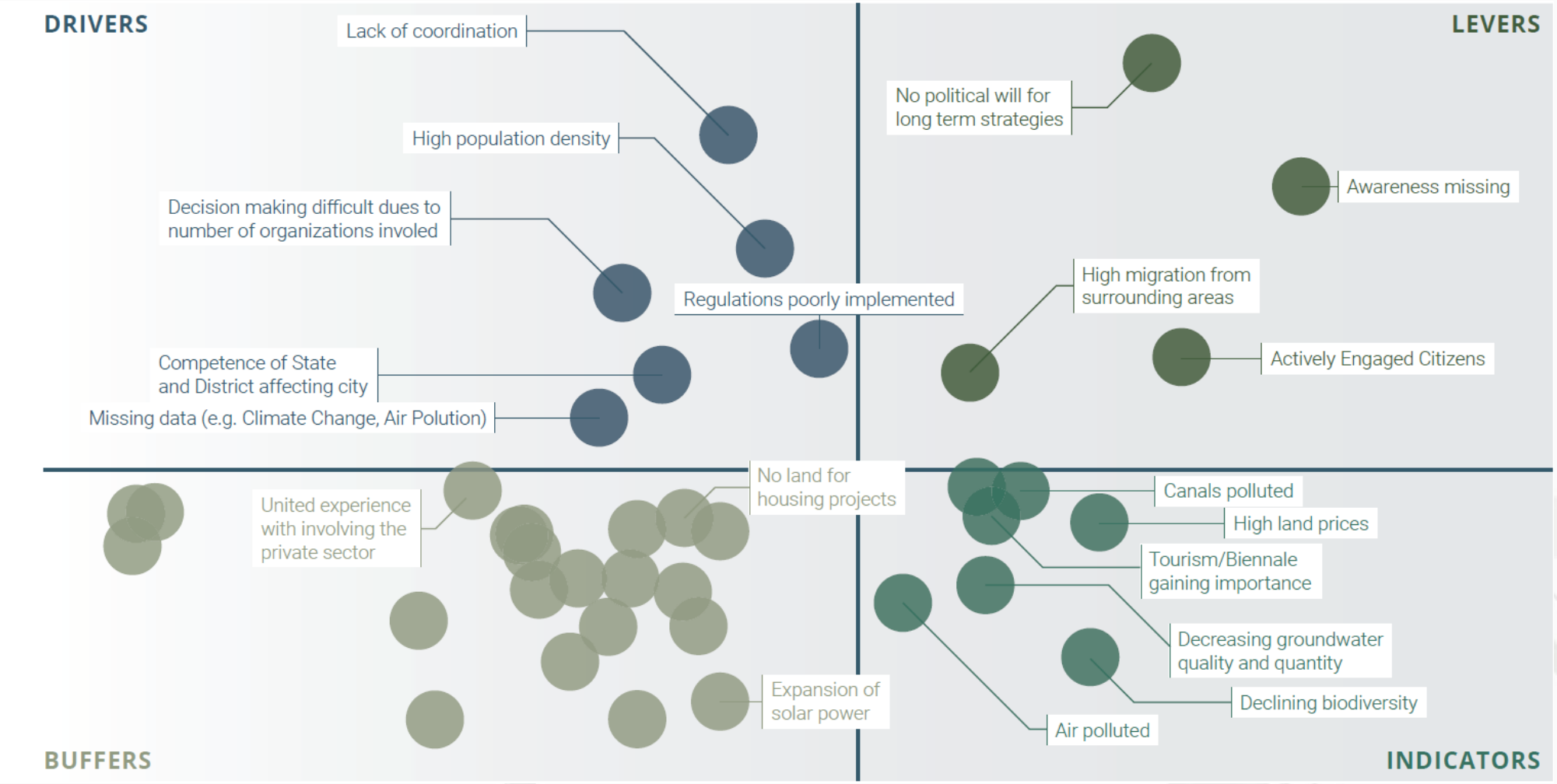
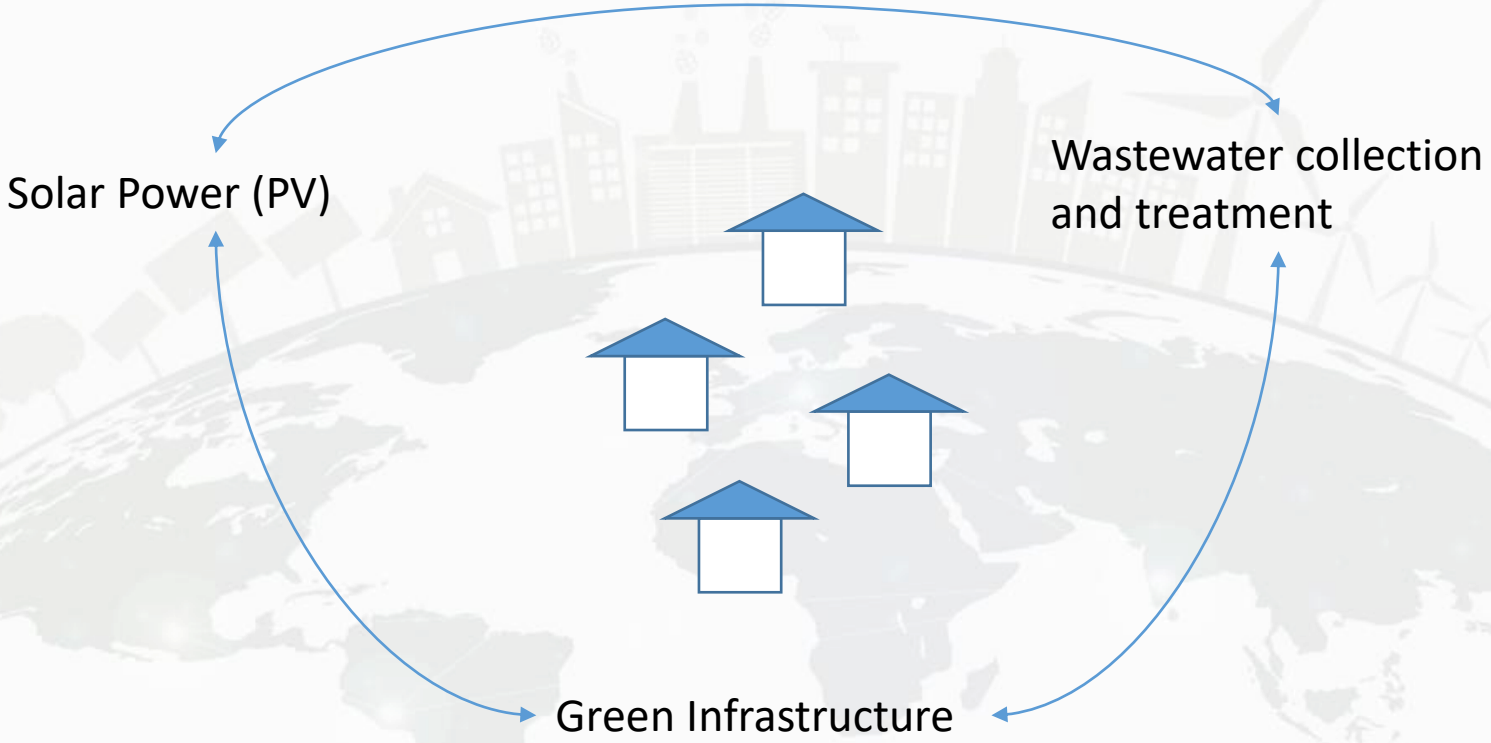
15 Project ideas

Impact Factors – cross-impact analysis



Sustainable Neighbourhood Kochi – integrated infrastructure development



SUSTAINABLE NEIGHBOURHOOD | SITE DETAILS

- The project is located in two adjacent wards of North Kochi:
- Puthukalavattom (1.14 sqkm)
- Elamakkara North (0.98 sqkm)

The area is a mixed-use neighborhood. The project activities include:

- ❖ 15 (number) solar PV installations at residential homes at Elamakkara Ward
- ❖ Green Infrastructure and Nature-based Sewage Treatment Plant at the *Elamakkara Government Higher secondary school (*5357 sqm) *of Puthukalavattom ward*

Solar energy

- 15 On-Grid PV systems of 2 KW capacity each installed on residential buildings in Elamakkara ward
- No storage, direct feed into the grid
- Monitoring data will be available on homepage of C-HED

Green Infrastructure

- Living pavilion with green roof on schoolyard
  - Storage of rainwater – less flooding
  - Evaporation reduces Urban Heat Island Effect
  - Plants bind CO2 and dust
  - Enhancing biodiversity

- Cool Roof: light reflecting paint on roof
  - Decreasing temperature in building without air conditioning

Sewage treatment

- Pre-treated sewage from septic tank
- Planted Gravel Filter (water flowing underneath the surface) with local plants
- Sand and Activated Carbon filter for polishing
- Treated water can be used for irrigation
- Fence important to prevent contact with untreated water

RELEVANCE OF THE PROJECT

Minimise waste production

Promoting use of renewable resources

Reduce carbon emissions

Increasing and Improving green spaces

Encouraging community participation

COOPERATION FROM THE CITY

- The Hon'ble Mayor and the city council are closely engaged with the project, monitoring all the key milestones.
- Kochi has also been taking an active lead in initiating sustainable projects.
- The Sustainable Neighborhood project has been incorporated in the Municipal budget.
- The residents of the selected wards as well as the Parent Teacher Association at the school have been involved since the initial survey stage of the project area which helped them getting to know the project better.
- Timely stakeholder meetings with the residents' representatives, school authorities, city council members of the division, officials from the Kochi Municipal Corporation etc. were also conducted to involve the citizens and representatives at every step

VISION FOR THE PROJECT

- The Sustainable Neighborhood pilot is a part of Kochi's efforts towards sustainable development in all sectors.
- The city is now focusing on incorporating various sustainable development projects, including the scaling up of the "sustainable neighborhood" project in the municipal budget of 2023-2024.
- The team is also committed towards making this project accessible to all the citizens of Kochi residing in other areas, which provides an opportunity for further developing and scaling up of the project.

Tuesday, January 17, 2023
Kochi

THE HINDU
Kochi

Sustainable neighbourhood pilot project nearing completion

Elamakkara, Puthukkalavattom divisions selected for programme's implementation; roof-top solar plants, decentralised sewage treatment project, green pavilion to reduce the urban heat island effect being initiated

The Hindu Bureau
KOCHI

The pilot project of the Sustainable Neighbourhood Programme, which brings together an integrated solution for refurbishing the neighbourhoods, is nearing completion in Kochi, according to civic authorities.

The Elamakkara and Puthukkalavattom divisions of the Kochi Corporation were selected for the implementation of the pilot project, which aims to increase the share of renewable energy through roof-top solar projects, reduce CO2 emissions and make the city and the neighbourhood independent in terms of electricity generation. The decentralised sewage treatment project aims to reduce soil and water pollution and thereby increase the quality of living. The unit will be completed in one month, said a communication issued by the Kochi Corporation.

Under the pilot mode, solar power plants are being installed in 15 households in Elamakkara North Division and a nature-based sewage treatment unit is being set up at Elamakkara Girls Higher Secondary School. The school will shortly become the first educational institution in the State to function using solar power. The projects are likely to be commissioned by February, said the communication issued by M. Anilkumar, Kochi Mayor.

The green infrastructure/green pavilion component of the project, which is being implemented at the school, aims to reduce the risk of flooding and promote evaporation of water. The project will lead to a cooling effect in the area and thus reduce the urban heat island effect. The construction of green pavilion and vertical garden has been initiated. The University of Stuttgart and Fraunhofer Institute for Industrial Engineering, Stuttgart Frankfurt School of Finance, and National Institute of Urban Affairs of the Central government are partnering in the project.

A review meeting of the project was attended by Mr. Anilkumar, Mauris Mohr, the representative of the Fraunhofer Institute for Industrial Engineering, Aditya Fuke, the Indian representative of the Institute, experts Debjani Ghosh, Anna Brittas and Pramod P. Thevannor and Sunny George from the SCMS Group of Institute. Civic representatives and experts from the Centre for Heritage, Environment and Development of the Kochi Corporation and the Agency for Non Conventional Energy and Rural Technology attended the review meeting, the communication said.

CONTACT

MORGENSTADT GLOBAL SMART CITIES INITIATIVE
GLOBAL APPROACH – LOCAL SOLUTIONS

Dr. Marius Mohr
City Lab Lead
Fraunhofer IGB
marius.mohr@igb.fraunhofer.de

Dr Debjani Ghosh
Associate Professor
National Institute of Urban Affairs (NIUA)
dghosh@niua.org

Dr. Rajan Chedambath
Director
C-hed Kochi
director@c-hed.org

University of Stuttgart
Institute for Human Factors and Technology Management IAT

Fraunhofer

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Thank you for your attention!

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PILOT PROJECT PIURA

Stella Schroeder

University of Piura

City Lab Piura – Pilot project presentation

Transformation of a small illegal dumpsites for recovery and converting into a quality public space using digital planning tools

MGI Final Conference 2023

May 2023, Stella Schroeder

University of Stuttgart
Institute for Human Factors and Technology Management IAT

Fraunhofer

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Pilot project

Problem of solid waste collection, 200 tons of rubbish produced per day, **about 25% of them are not collected**.

In 2021, **14 micro-dumpsites** have been registered. These have become infectious hotspots. **Investment of 400,000 S/year for clean-up**.

Micro-dumpsites are **not considered in the Urban Development Plans**.

Focal point of infection and considered as unsafe / vandalism areas.

Reduction of biodiversity, increase of atmospheric pollution.

Project objectives

Conversion of illegal dumpsite into new green areas for the city

- Improve the problem of micro-dumps, cleaning it, reconverting it and consolidating it as a space for public use.
- To privilege principles of sustainable urban and landscape design as a solution to adapt to climate change.

Demonstration of strategic and digital urban planning (GIS)

- Work with tools that facilitate municipal management in an integrated manner.
- Create a common digitised geo-referenced database to facilitate and optimise work and project planning and to promote interdisciplinary projects and strengthen cooperation between departments.

Promote citizen participation and environmental education.

- Encourage a culture of recycling, promoting a sense of identity, awareness and care for space and the environment.
- To provide tools and the necessary knowledge to activate and empower citizens.

Anchoring, continuity and scaling

- Capacity building: GIS use by the municipality and for citizens with environmental education programmes.
- Stimulate replication of the pilot.

Strengthening urban infrastructure

Basic infrastructure and services are the foundation and underpinning of a functional and resilient urban environment.

Habitat II and III include drinking water supply, sanitation, waste management, social welfare, transport and communication facilities, energy, health and emergency services, schools, public safety and open space management as urban basic infrastructure and services sectors.

Urban systems and infrastructure

- Energy
- Mobility
- Construction and public space
- Security and well-being
- Water and sanitation
- Waste

Fuente figura: Fraunhofer IAO; Naciones Unidas

Urban Gardining Festival. March 2022

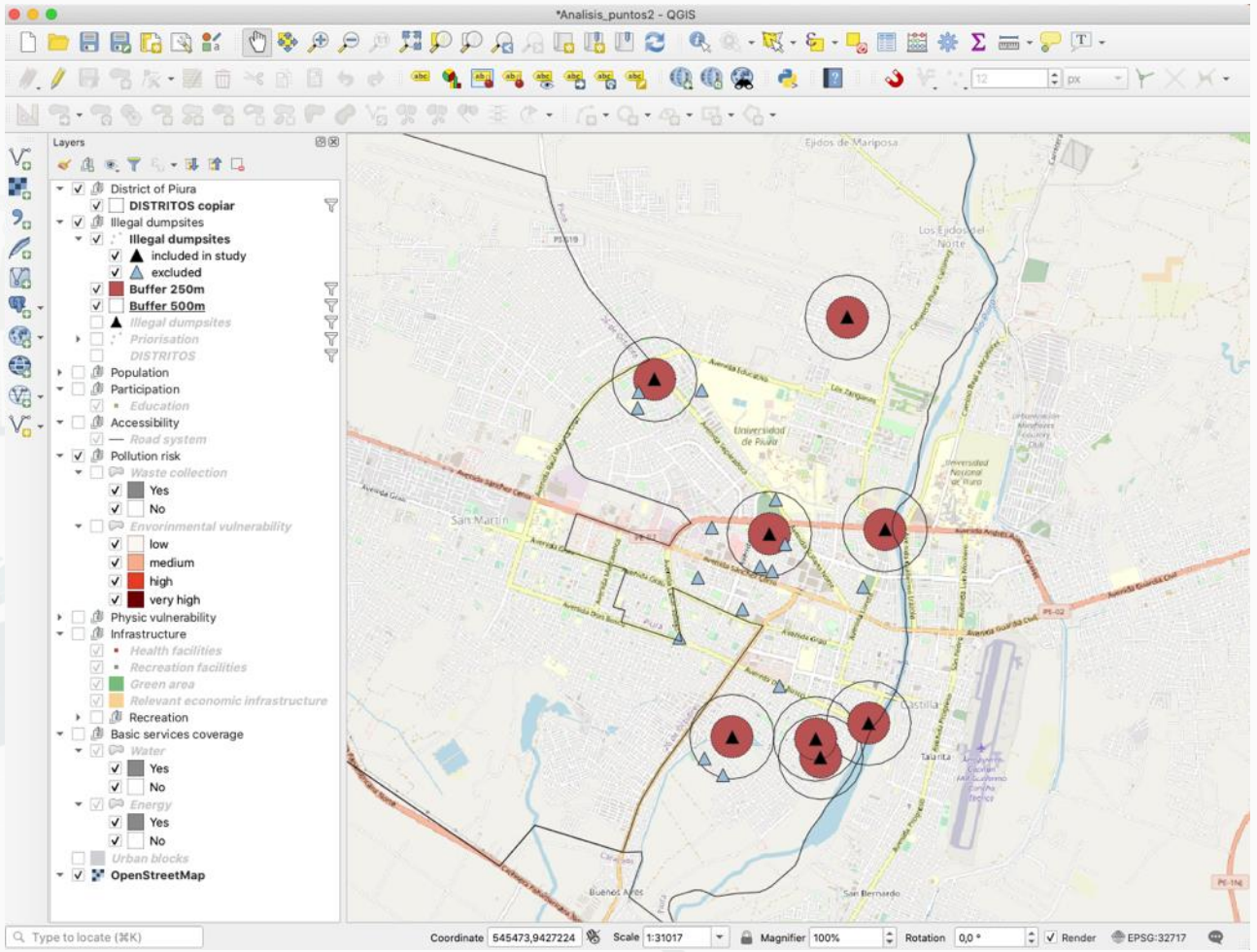
Urban Gardining Festival. March 2022

Capacity building GIS. May 2022

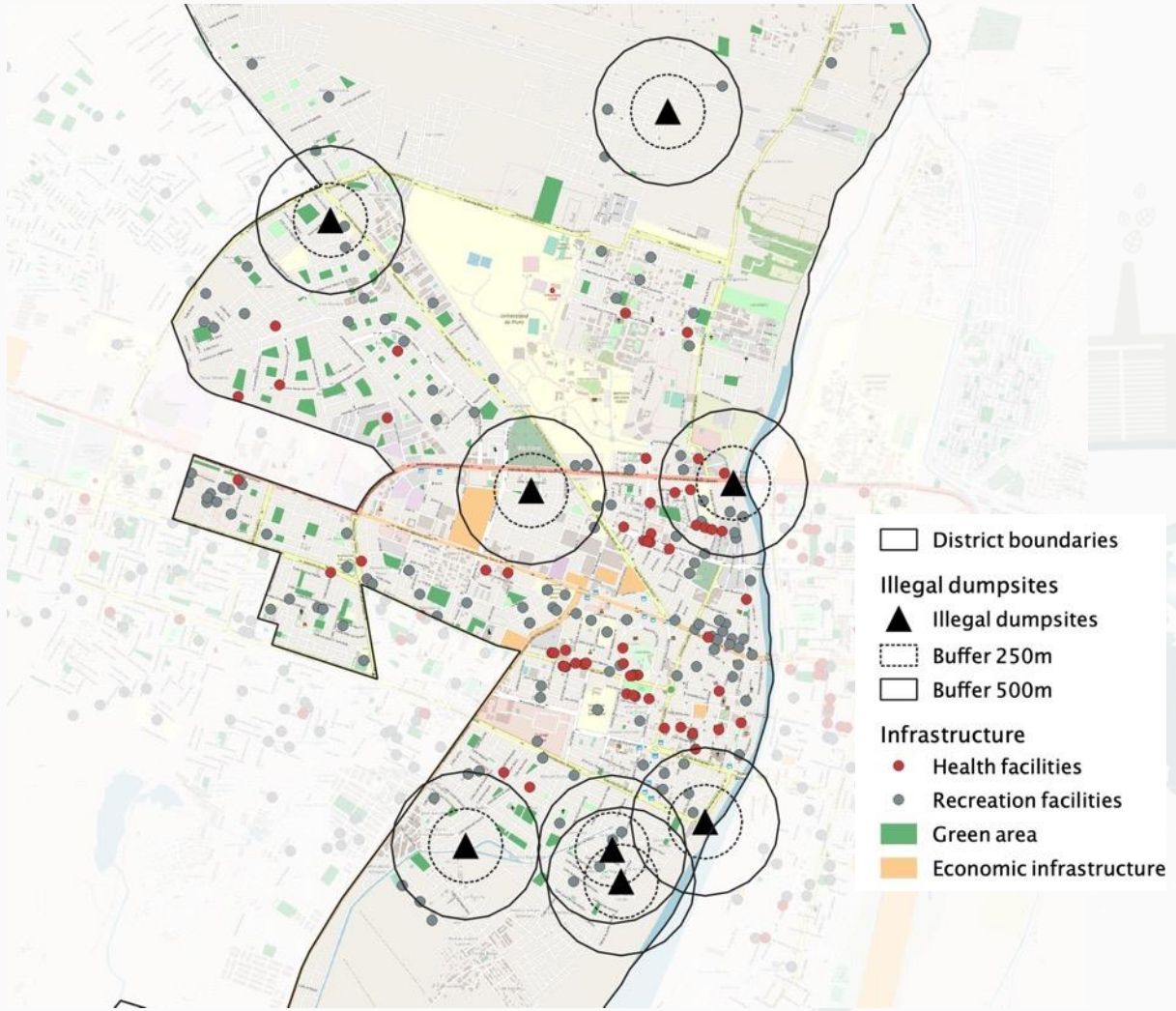
Capacity building Drone. May 2022

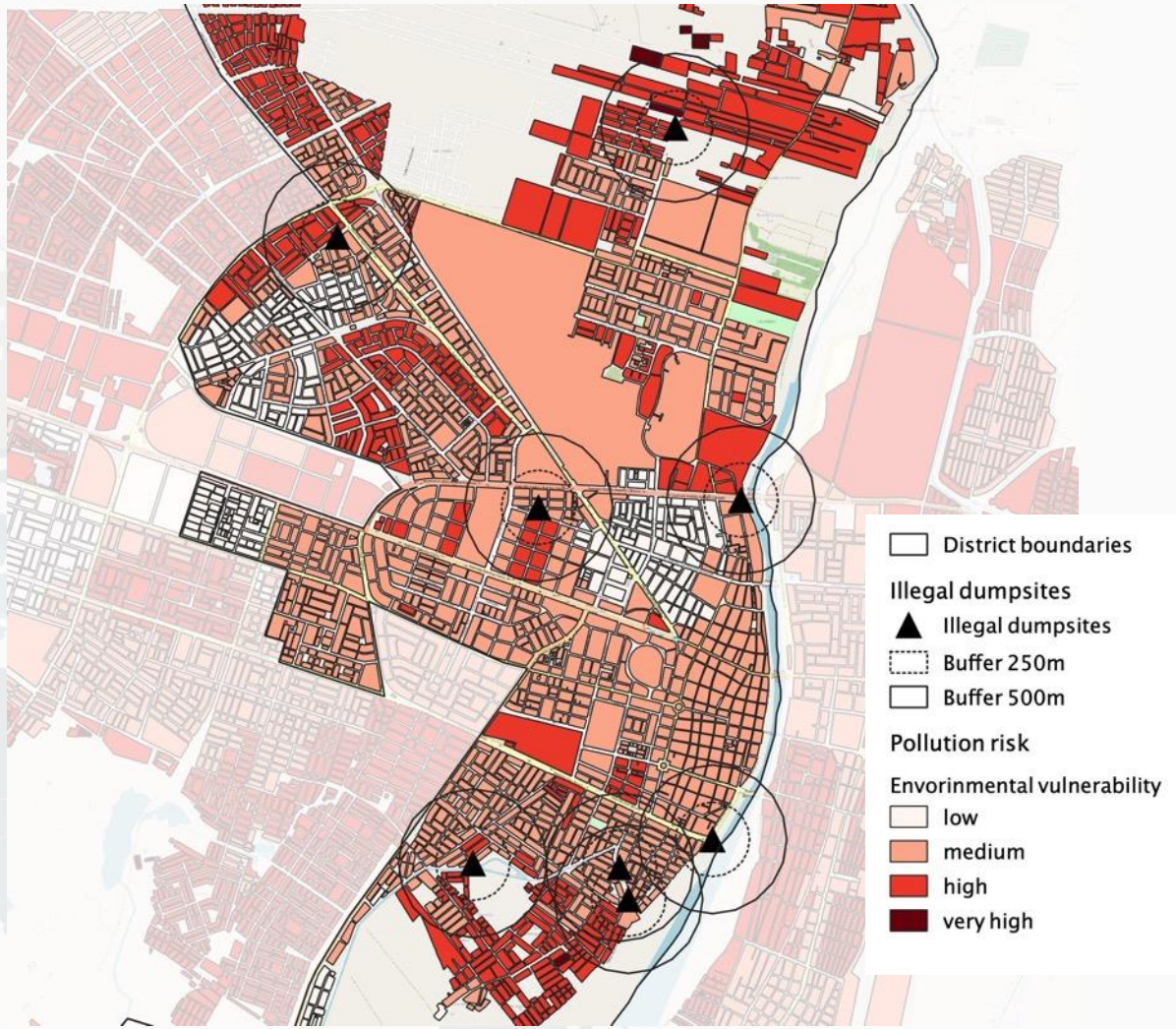
Data base. Evaluation range to evaluate intervention sites

Proposed categories	Specific measure	Radio	Evaluation range		
			1 point	2 points	3 points
Participation	Educational infrastructure	250 m	0–2 units	3–4 units	>5 units
Population	Density	500 m	0–1,500 hab.	1,500–4,000 hab.	>4,000 hab.
Accessibility	Centrality	-	Within the area	-	-
	Road system	-	Local roads	Collector or arterial roads	Intersection of two or more
Pollution risk	Environmental vulnerability	-	Within low-risk zone	Within risk zone	Within high-risk zone
	Waste collection coverage	-	Within waste collection route	-	-
Physic vulnerability	Rain flood risk	-	High rain flood risk	Moderate rain flood risk	Low rain flood risk
	River flood risk	-	High river flood risk	Moderate river flood risk	Low river flood risk
	Blind basins	-	Blind basins are not present	-	-
Infrastructure	Green area	250m	0–5,000 m2	5,000–10,000 m2	>10,000m2
	Recreation facilities	250m	0 units	1–2 units	>3 units
	Health facilities	250m	0 units	1–2 units	>3 units
	Relevant economic infrastructure	500m	0 units	1–2 units	>3 units
Basic services coverage	Water	-	Not connected to the water network	-	Connected to the water network
	Electricity	-	Connected to the energy network	-	Connected to the energy network



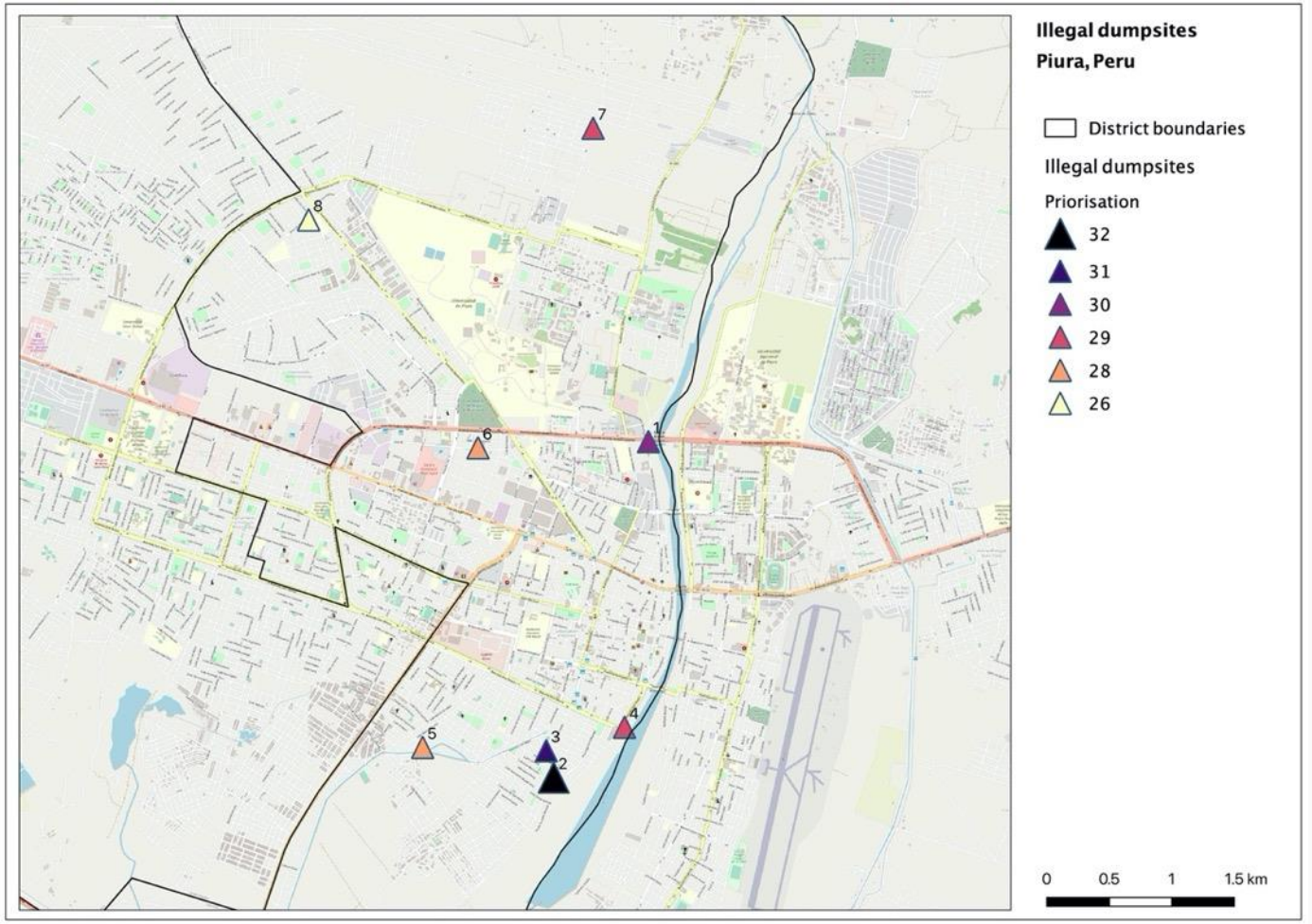
Selection of space according to criteria





Evaluation of the potential sites in Piura. Score per category

Small illegal dump site	Partic.	Pop.	Accessibility		Pollution risk		Physic vulnerability			Infrastructure				Basic services coverage		Scoring
	Educational infrastructure	Density	Centrality	Road system	Environmental vulnerability	Waste collection coverage	Rain flood risk	River flood risk	Blind basins	Green area	Recreation facilities	Health facilities	Relevant economic infrastructure	Water	Electricity	
1	2	1	2	3	1	3	1	1	3	2	1	2	2	3	3	30
2	**3**	**3**	**2**	**1**	**1**	**3**	**2**	**1**	**3**	**3**	**2**	**1**	**1**	**3**	**3**	**32**
3	2	3	2	1	1	3	2	1	3	3	2	1	1	3	3	31
4	1	1	2	3	1	3	2	1	3	3	2	1	2	1	3	29
5	1	3	2	1	1	3	2	2	1	2	2	1	1	3	3	28
6	1	1	2	1	1	1	2	2	3	2	3	1	2	3	3	28
7	1	1	1	2	1	3	3	2	3	3	1	1	1	3	3	29
8	1	2	1	1	1	3	2	3	3	1	2	1	1	1	3	26



Location

Drainage located in the human settlement 18 de Mayo.

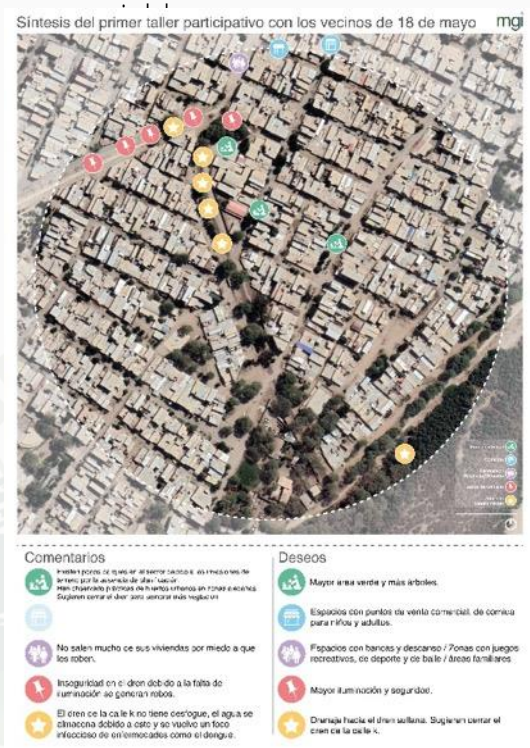
Situation today

Summary of participatory workshops

Recognition of the environment

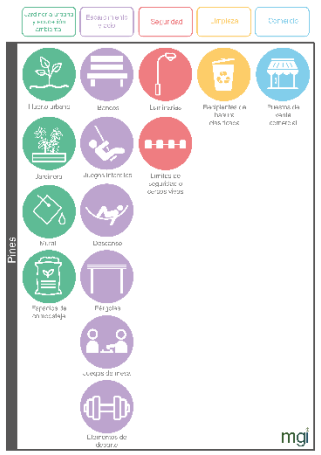
Workshop with students

First workshop with



Idea development

Second workshop with

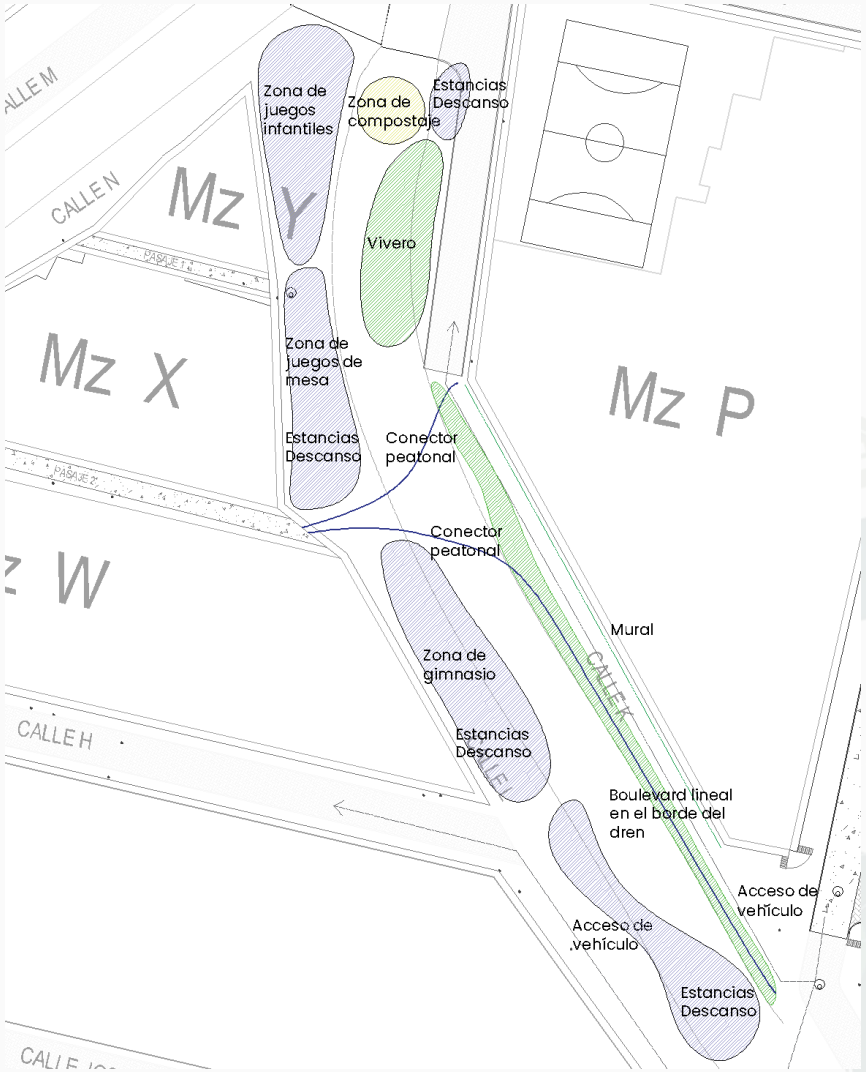


Discussion design

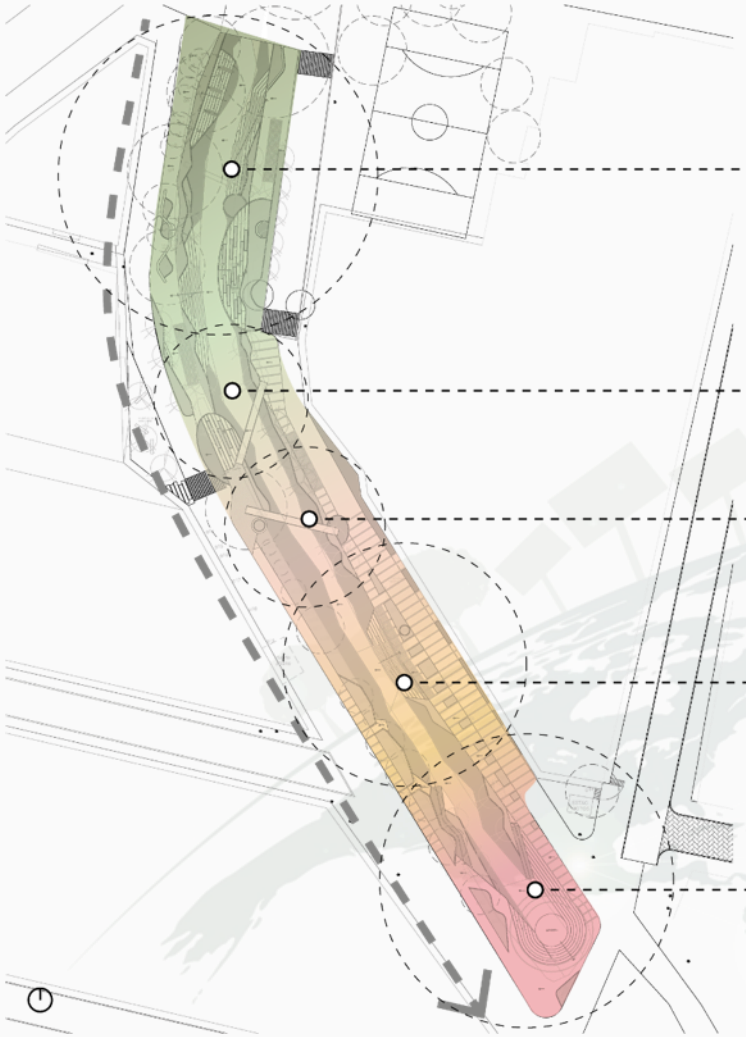
Third workshop with


Javier
Cecil

Zoning of the proposal



Stages of the proposal



First stage — *Close link to school, community hall and sports hall*

Second stage — *Connecting element that leads to a nearby point of the school and other collective elements.*

Thirs stage — *Connecting element leading to the linear route with a view of murals with environmental quotes.*

Forth stage — *Space linked to housing, mural and linear pedestrian route*

Fifth stage — *Collective space for meeting and welcoming users*

Depending on the budget, it could be envisaged to develop up to phase two.

hasta la fase 2

Visualisation of second bridge to the murals.

Visualisation of the first bridge to the school.

Visualisation from the lower part of the drain towards the second bridge.

Visualisation of the gardening area.

Contribution. Social, environmental, economic

PROJECT COMPONENT	CONTRIBUTION	RESULTS (OUTCOMES, SHORT AND MEDIUM TERM)
C1 - Demonstration of strategic and digital urban planning (GIS)	Environmental, economic, social	Demonstration and analysis of the urban space to select the site to implement the project, as an example of sustainable urban planning.
	Economic	Demonstration of an interdisciplinary and inter-managerial project
	Economic	Updated cartographic base in a centralised digital GIS data system in the municipality
	Economic, social	Maps available to the public and citizens
		Capacity building around the use of a GIS tool and the analysis of spatial data
C2 - Conversion of ilegal dumpsite into new green areas for the city	Envorinmental	New public space / green area
	Envorinmental, social	Elimination of a micro-dumpsite
	Social, economic	New meeting place
C3 - Events and campaigns to raise the profile of the conversion intervention	Social	Recognition and use of the new public space by citizens
C3 - Events and campaigns to promote recycling	Social	Good habits are promoted
C4 - Anchoring, continuity and scaling	Environmental, social, economic	Reconversion of other micro-dumps in the city
	Envorinmental	Optimisation of water resources Increased green coverage of the city
	Economicl, social	Citizen security
	Economic	Recycling of items from micro-dumpsites

Impact-based project ideas

PLANET:

Improving urban territorial planning and applying concepts of sustainability, resilience, and adaptation to climate change. Minimization on a long-term the impact of natural catastrophes such as FEN and climate change. Identification of elements that cause alterations in the microclimate, so that related data can be gathered to understand and plan the urban ecosystems strategically.

PEOPLE:

Strengthen municipality's capacity to solve the city's problems using a GIS tool that improves urban data, and information efficiency and management.

Indirect contribution towards improving other relevant aspects for people, such as health, education and reduction of vulnerability in the long term through strategic urban planning.

Figure Source: Own elaboration

Impact-based project ideas

GOVERNANCE:

Development of an cartographic base in a centralized municipal digital GIS data system, increasing efficiency and enabling work and data transfer between different departments, providing a systematic order avoiding overlapping. It supports the efforts of the national government to foster GIS-based datasets and platforms development. The generated maps are available to the public and citizens to involve the community, empower and raise citizens' interest around actual and new plans and projects in the city.

PROSPERITY:

Cost-effective impact by saving time, money, and personnel assets in obtaining data for the creation of projects. It enhances connectivity and supports innovative and environmentally friendly initiatives.

Figure Source: Own elaboration

Impact-based project ideas

PROPAGATION:

Methodology that can be replicated in other districts of the metropolitan area, the region and the country. The use of GIS tools can be scalable within the districts, e.g., including other digital platforms such as those utilized by the energy or water companies, or on the provincial level incorporating more data on neighboring districts and extending its area of influence.

Co-benefits

The project includes capacity-building activities to develop competencies and skills around digital and strategic urban planning, thus increasing the potential to solve problems and be prepared for the upcoming climate change challenges. In a long-term, it is expected that the use of GIS will be integrated as university or school subjects, aiming to create a spatial understanding of data-driven organization and development information and fundamental aspects defining project design and implementation organization models.

Figure Source: Own elaboration

Impact of the GIS project in Piura. Overview of the project

AREA	ITEM	INDICATOR	UNIT	REFERENCE VALUE	SOURCE
1. AM (Action mitigation)	1.1.	City green coverage per capita	m2/inhab.	1,20	MINAM / WHO
	1.2.	Percentage of micro-landfills around a 500m radius in the urban area of the district	%	0,51	Municipalidad Provincial de Piura / Mapping
	1.3.	Soil: Land consumption rate in relation to population growth rate	coeficiente	1,64	WWF - Periferi Perú
	1.4.	Air: Air quality		-	DIGESA / SENAMHI / MINAM / DIRESA / MPP
	1.5.	Household waste per day	tons/day	220,74	MINAM
	1,6	Plastic waste per capita	kg/inhab/day	0,15	MINAM
	1,7	Organic waste	kg/inhab/day	0,24	MINAM
	1,8	Total household waste generation	kg/inhab/day	0,60	MINAM
	1,9	Coverage of urban collection service	%	95,00	MINAM / SIGERSOL
2. AP (Action People)	2.1.	Number of people accessing the project within a 500m radius	unit	13505,00	Mapping
	2.2.	Percentage of green area planted	%	Depend on the design area	Mapeo satelital
	2.3.	Reduction of area polluted by solid waste	%		Municipalidad Provincial de Piura
	2.4.	Percentage of thermal comfort areas by existing green infrastructure	%	Depend on the design area	Mapping
3. Governance	3.1.	Reduction of municipal spending on solid waste management	%		Municipalidad Provincial de Piura
	3.2.	Reduction of energy expenditure for street lighting through the implementation of solar energy.	unit		Municipalidad Provincial de Piura
4. Prosperity	4.1.	Reducción del gasto municipal destinado a manejo de residuos solidos	%		Municipalidad Provincial de Piura
	4.2.	Reducción del gasto energético por alumbrado público a partir de la implementación de la energía solar	%		Municipalidad Provincial de Piura
5. Propagation	5.1.	Points with potential for replicability	unit	23,00	Municipalidad Provincial de Piura
	5.2.	Increasing green infrastructure	%		Municipalidad Provincial de Piura

First Stone Activity 15-04-23

What is the vision for the city after this pilot implementation? What comes next and which things are emerging thanks to the MGI project?

World could face record temperatures in 2023 as El Nino returns

El Nino, Climate Change To Breach World's New Average Temperature Record In 2023? Here's What Experts Say

El nino is characterised by a slow down of the winds blowing west along the equator and warm water being pushed east which creates warmer surface ocean temperatures.

By: ABP News Bureau | Updated at : 20 Apr 2023 03:15 PM (IST)

FOLLOW US:

Apr 19, 2023 - Energy & Environment

Rapidly developing El Niño set to boost global warming

Andrew Freedman, author of Axios Generate

Senamhi prevé presencia de El Niño global a partir de octubre de este año

Fenómeno El Niño global de mediana a fuertes intensidad afectará toda la costa del Pacífico desde este año y se podría extender hasta inicios del 2024.

El Niño global afectará toda la costa del Pacífico, según el Senamhi. Su presencia llegaría al Perú a partir de octubre y podría extenderse hasta inicios del 2024. (Foto: Andina)

¿Qué es el Niño global y por qué Perú sería de los países más afectados?

El Niño costero llegará a suelo peruano entre abril y mayo de este año. Mientras que el Niño global en diciembre de 2023 y enero de 2024, señaló la presidenta Dina Boluarte. ¿Estamos preparados?

Future steps for Piura

Guide for future project financing and funding

Meetings with Ministry of Housing Peru

Coordination with Geo Portal for future planning activities

CONTACT

MORGENSTADT GLOBAL SMART CITIES INITIATIVE
GLOBAL APPROACH – LOCAL SOLUTIONS

Stella Schroeder
Local City Lab leader
University of Piura
stella.Schroeder@udep.edu.pe

Oscar Guillen
Experto Energia Piura
University of Piura
oscar.guillen1690@gmail.com

University of Stuttgart
Institute for Human Factors and Technology Management IAT

Fraunhofer

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PILOT PROJECT SALTILLO

Gabriela de Valle, Carmina Villarreal, Dr Eduardo Santillán

IMPLAN & Tec de Monterrey

City Lab Saltillo – Pilot project presentation

Restoration and integration of Blue-green infrastructure

University of Stuttgart
Institute for Human Factors and Technology Management IAT

Fraunhofer

IMPLAN
INSTITUTO MUNICIPAL DE PLANEACIÓN SALTILLO

Tecnológico de Monterrey

MGI Final Conference 2023

May 9th, 2023

Supported by:

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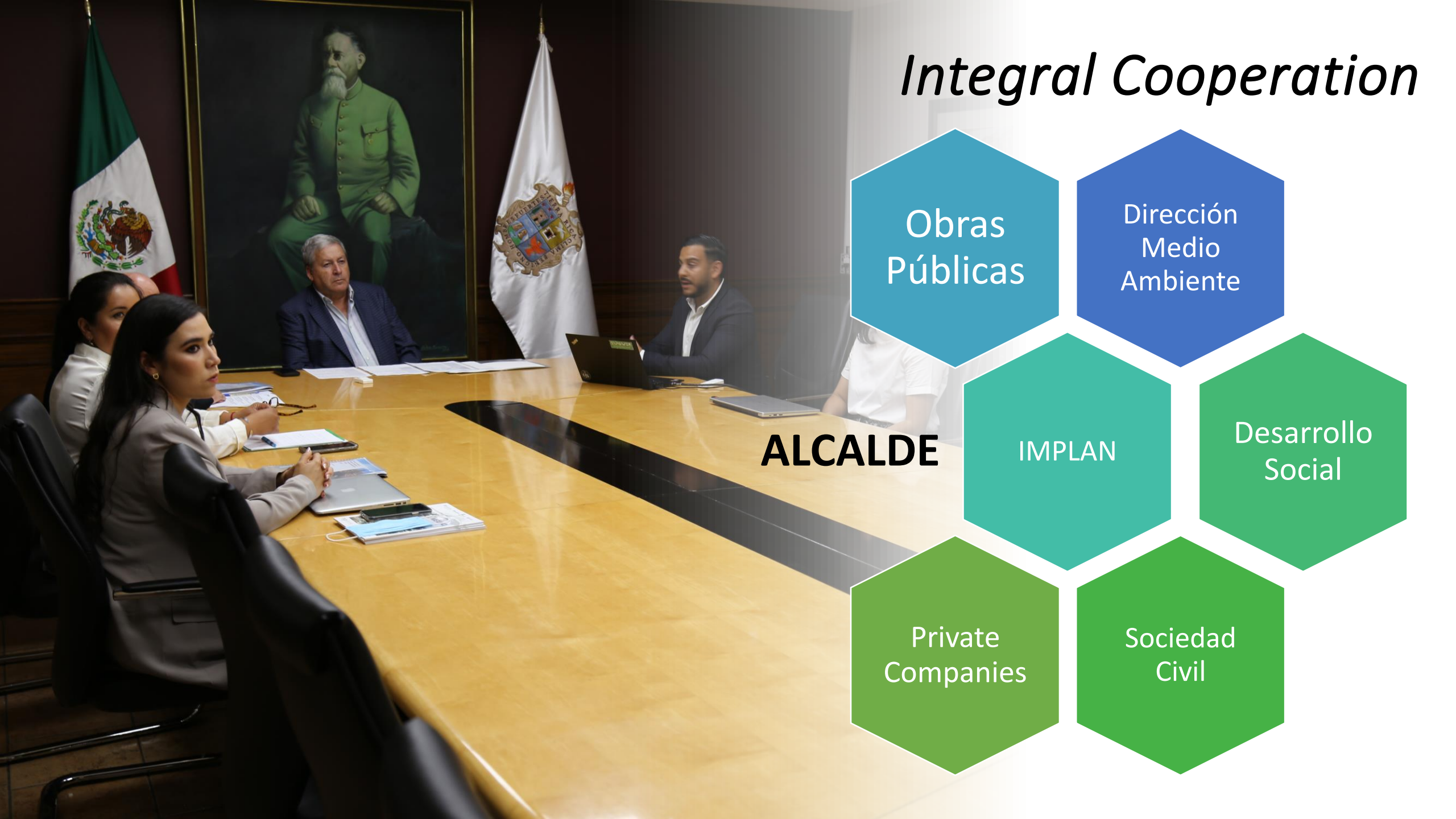
PRIORITIZATION AND SELECTION OF PILOT PROJECT

Water sector — 10 Project ideas

Energy sector — 10 Project ideas

Mobility sector — 10 Project ideas

Restoration and integration of Blue-green infrastructure (BGI)



Integral Cooperation

Obras Públicas

Dirección Medio Ambiente

ALCALDE

IMPLAN

Desarrollo Social

Private Companies

Sociedad Civil

LOCATION AND SITE CHARACTERISTICS

PUBLIC SPACE IN BRISAS NEIGHBOURHOOD

ABOUT SITE´S PROBLEMS

- Floodings due to heavy rains.
- Infrastructure damages and neighbours complaints.
- Accessibility problems to the neighbourhood when flooded.
- Lack of quality public spaces and green permeable areas.

ABOUT SITE´S PROBLEMS

ABOUT SITE´S PROBLEMS

PILOT PROJECT SELECTED

Restoration and integration of Blue-green infrastructure (BGI)

Vegetation

Infiltration basin

Rain garden

Impermeable pavement

Project Objective:
Restore and integrate Blue-Green Infrastructure into the urban space in Saltillo, as a mitigation and adaptation measure for climate change and for a sustainable urban development.

PILOT PROJECT SELECTED

Restoration and integration of Blue-green infrastructure (BGI)

Expected Benefits:

- Better green public space
- Better urban trees
- Improve permeable area = sponge effect
- Retention and captation the stormwater and rainwater
- Improve the water infiltration to the ground (Aquifer recharge)
- Reduce pluvial flood in the area

Why is this pilot relevant for the city?

Environmental

Increased infiltration to the aquifer
More and better green area

Economical

Solution to the flooding problema, and more resources for the project.

Social

Avoid risk and flooding of home and road.

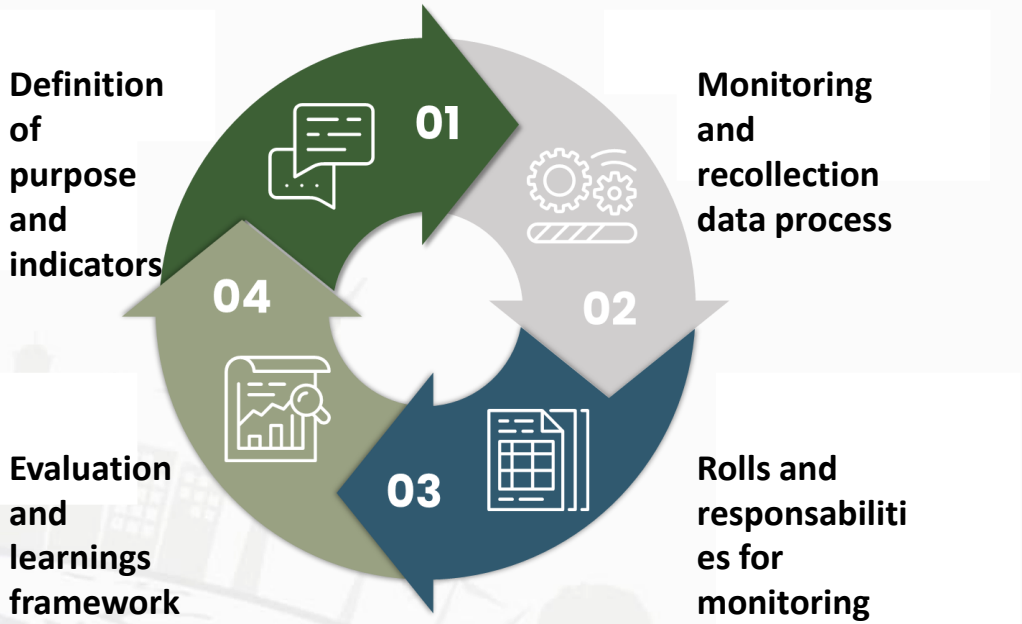
Recreational and social space.

VIDEO

Next steps: Monitoring

Neighborhood committee

- training
- institutional linkage



Quantification of hydrological impact

- *Ongoing review of flooding and housing damage*

Vision of Saltillo

THANK YOU FOR YOUR ATTENTION

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MORGENSTADT GLOBAL SMART CITIES INITIATIVE
GLOBAL APPROACH – LOCAL SOLUTIONS

M.Sc. Catalina Diaz
City Lab leader

M.Sc. Gabriela de Valle
City Lab local leader

M.Sc. Carmina Villarreal
City Lab local leader support

Dr. Eduardo Santillán
Local academic expert

University of Stuttgart
Institute for Human Factors and Technology Management IAT

IMPLAN
INSTITUTO MUNICIPAL DE PLANEACIÓN SALTILLO

Fraunhofer

Tecnológico de Monterrey

Supported by:

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IKI INTERNATIONAL CLIMATE INITIATIVE

on the basis of a decision by the German Bundestag

AGENDA – AFTERNOON

13:00 – 14:00 Pilot project implementations
Local partners & experts

14:00 – 14:20 Smart city financing
Maria Baez, Frankfurt School of Finance – City financing advisor

14:20 – 14:35 **Coffee break**

14:35 – 14:55 Prague's perspective: How cities learn and transform through experimentation
Tomáš Vácha, OICT Smart Prague – Head of International Department

14:55 – 15:00 Acknowledgements and end of online program

15:00 – 16:00 Site visits for audience on site

16:00 – 17:00 Closure