



Urban Pathways

ECOZONES – AN APPROACH FOR CO-DESIGNING, SCALING AND REPLICATING INCLUSIVE CLIMATE ACTION AT THE NEIGHBOURHOOD LEVEL



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Urban Pathways

Project concept

Project aims

The Urban Pathways project helps delivering on the Paris Agreement and the NDCs in the context of the New Urban Agenda and the Sustainable Development Goals. It has established a facility in close cooperation with other organisations and networks active in this area to support national and local governments to develop action plans and concrete implementation measures to boost low-carbon urban development. This builds on UN-Habitat's role as "a focal point on sustainable urbanisation and human settlements including in the implementation and follow-up and review of the New Urban Agenda". The project develops national action plans and local implementation concepts in key emerging economies with a high mitigation potential. The local implementation concepts are being developed into bankable projects, focusing on the access to urban basic services to create a direct link between climate change mitigation and sustainable development goals.

The project follows a structured approach to boost Low Carbon Plans for urban mobility, energy and waste management services that deliver on the Paris Agreement and the New Urban Agenda. The project works on concrete steps towards a maximum impact with regards to the contribution of urban basic services (mobility, energy and waste management) in cities to global climate change mitigation efforts and sustainable and inclusive urban development. This project makes an active contribution to achieve global climate change targets to a 1.5°C stabilisation pathway by unlocking the global emission reduction potential of urban energy, transport and resource sectors. The project will contribute to a direct emission reduction in the pilot and outreach countries, which will trigger a longer term emission reduction with the aim to replicate this regionally and globally to make a substantial contribution to the overall emission reduction potential.

This project implements integrated urban services solutions as proposed in the New Urban Agenda providing access to jobs and public services in urban areas, contributing to equality and social coherence and deliver on the Paris Agreement and the Sustainable Development Goals. This is the first dedicated implementation action oriented project, led by UN-Habitat to deliver on inclusive, low-carbon urban services. Securing sustainability and multiplier effect, the project aims to leverage domestic and international funding for the implementation projects that will follow from this initiative



Urban Pathways



Urban Pathways Project and Replication Cities

INTRODUCTION

Cities take up less than 4% of the Earth's surface yet they host 55% of the global population (UN World Urbanization Prospects 2018). Cities are also aggregators of materials and nutrients, accounting for 75% of natural resource consumption, 50% of global waste production, and 60- 80% of greenhouse gas emissions (UNEP-DTIE Sustainable Consumption and Production Branch, 2015). With the population of cities expected to increase by 2.5 billion between now and 2050, cities face a multitude of challenges. Socially, rapid urbanization has led to growing concerns about deteriorating health conditions. City governance and planning initiative failures can exacerbate urban problems—such as socioeconomic inequality, slums and informal settlements, urban sprawl, and the degradation of natural ecosystems— while also exposing the city to the localized effects of global climate change (World Bank, 2019). Nevertheless, the urban ecosystem brings opportunities which seek to decarbonize the urbanization process, promote resource-efficient growth, build compact cities, and enhance urban resilience. Cities are catalysts for economic growth, innovation, and employment. In an increasingly urban world, innovative planning and city management are essential to reduce inequality and achieve and implement the Paris Agreement, Sustainable Development Goals (SDGs), New Urban Agenda (NUA).

The COVID-19 pandemic has starkly exposed deep inequalities in cities and across cities in different regions of the world. Yet, urban spaces are the key to a decarbonized

transition, i.e. a green, resilient, and inclusive economic recovery. Resilience encompasses ecosystems, communities, economies; therefore, the current silo approach will not deliver the desired results of sustainable development; therefore, we need to move towards integrated and holistic perspectives. There is an urgent need for citizens to reframe and reconnect with the local environments, promote participatory urban planning, driving equitable and sustainable growth. This study promotes the concept of a city as an integrated ecosystem and suggests a tool underpinned by Circular Economy principles to catalyse the transformation in a local level.

Moreover, it is worth noting that neighbourhoods have gained importance among urban planners as the best scale to push forward a shift towards low-carbon and a more sustainable lifestyle. They are seen as spaces that could serve as catalysts and demonstration projects of sustainable planning, policy and design measures in urban areas. It is a shift of paradigm, from transit-oriented development to a people-oriented, decentralising city life and services. Accelerating urban productivity by restructuring neighbourhoods will enable to improve both living conditions and the environment. Two important definitions for circular cities are:

“a city that practices circular economy principles to close resource loops, in partnership with the city's stakeholders to realize its vision of a future-proof city”
(Prendeville et al, 2018)

“circular city embeds the principles of a circular economy across all its functions, establishing an urban system that is regenerative, accessible and abundant by design. These cities aim to eliminate the concept of waste, keep assets at their highest value at all times, and are enabled by digital technology.”

(Ellen MacArthur Foundation, 2017)

In the context of Urban Pathways, an inter-sectorial project funded by the International Climate Initiative (IKI) of the Federal Ministry of the Environment in Germany (BMU) – we are proposing the concept of EcoZones: a multi-functional framework to be implemented on a neighbourhood level, towards a circular approach for six key elements within cities:

- local development,
- social cohesion,
- sustainable mobility and public space,
- waste management,
- urban nature-based solutions and
- COVID-19 adaptation.

The objective of the framework is to be a practical tool, with a staged-implementation approach and which can be customized according to different cities and regions priorities, focusing on inclusiveness, where the shift to a circular economy considers the environmental, cultural, economic, political and social dimensions of different regional contexts.

The demonstration projects (living labs) are low investment solutions (LIS) and

effective solutions which will offer a scale for experimentation and will help to understand the system’s interactions within cities, to define circularity for each context and structure participatory action plans; and as outcomes, socio-environmental benefits in the short-term and strategic sustainable urban development on the middle/long-term.

It is important to highlight that the EcoZones concept integrates one important asset for a regenerative urban system, the connection with nature. Nature-based Solutions (NbS) serve as a multi-benefit infrastructure that meets core community needs while also providing co-benefits, building resilience and reducing disaster risk while delivering many other benefits: climate adaptation and mitigation; clean water and air; cooler streets; and access to green public spaces for recreation and physical, mental and spiritual well-being. (NbS) deliver important ecosystem services to urban dwellers and can also cost less than traditional infrastructure (WRI, 2019). More recently, ecosystem services and climate functions of cities have also been recognized as urban functions. The EcoZone framework was designed to harness NbS, reducing the environmental impacts while helping the surrounding areas to improve resiliency against a range of climate and disaster risks. The NbS dimension seeks to catalyse green recovery, throughout the following goals:

- Ecosystem restoration is facilitated and prioritized;
- Biodiversity is restored and protected, contributing to public health;

- Carbon sinks are optimized;
- Urban systems are better equipped to adapt to climate change impacts;
- Amenity value of nature is increased, contributing to health and well-being in the city.

The need to advance nature-based approaches is endorsed by many international agreements and initiatives such as the Sendai Framework for Disaster Risk Reduction, the Sustainable Development Goals (SDGs), and the Paris Climate Agreement. These agreements support an alignment of environmental and risk management goals to address the burgeoning needs of managing climate risk, to confront environmental degradation, to improve the adaptive capacities of vulnerable communities, and to advance public and private investment in disaster risk prevention and reduction (Reguero et al. 2020). Nature-based solutions for urban resilience can be applied across spatial scales and settings in and around cities. Examples include small scale green spaces on buildings, bioswales, and green corridors along streets and water bodies, urban parks and forests within city boundaries, and larger areas with wetlands and forests upstream or along the coast, sheltering cities from flooding and improving availability and quality of water. Figure 1 includes an overview of common NBS typologies.

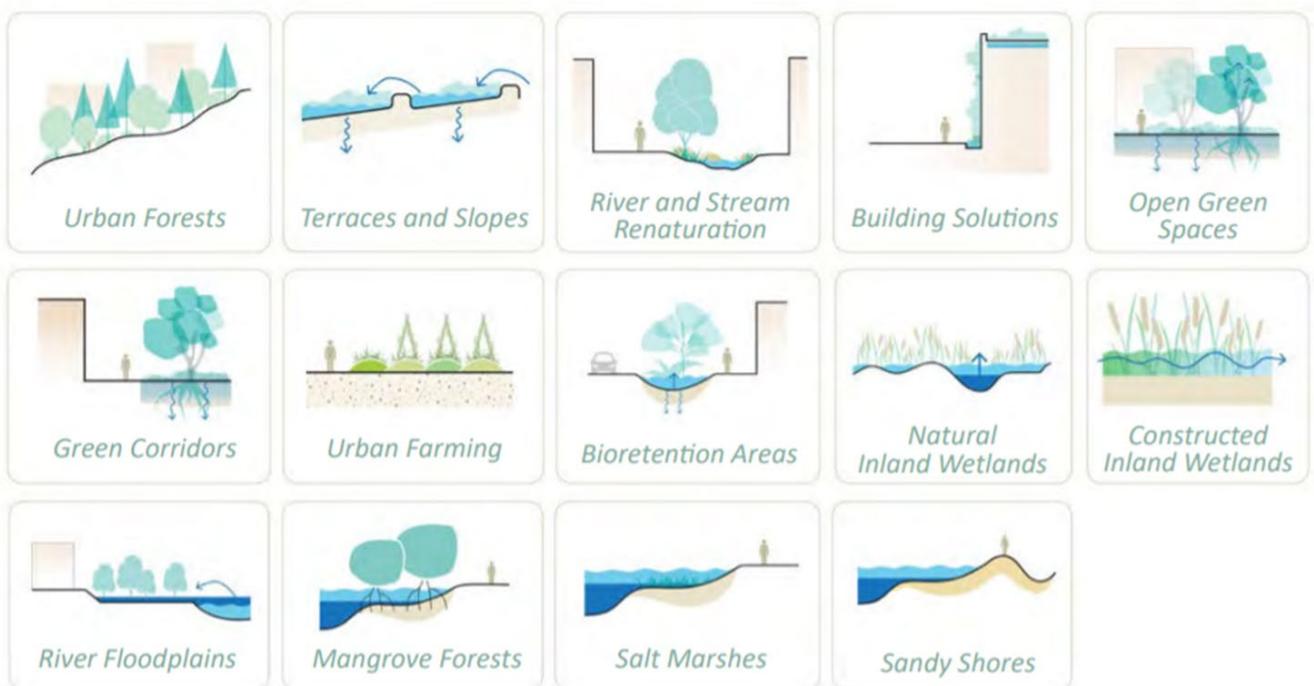


Figure 1. Diversity of nature-based solutions for urban application
(Source: World Bank, 2021)

THE VISION – BUILDING SUSTAINABLE, RESILIENT AND LIVEABLE CITIES

The EcoZone is based on six integrated dimensions envisioned for a local sustainable urban development, as illustrated in the causal loop diagram in Annex A. For each dimension, there are key topics to be addressed on a local level. Therefore, the six dimensions support the development of adaptation strategies for long-term resilience to better prepare cities for future shocks.

And as adaptation efforts need to be context-specific, local knowledge and the participation of local stakeholders in the adaptation process should play a major role. Figure 1 illustrates the components of the Ecozone framework.

More details regarding the methodologies and interventions will be explained further down in this concept note.



Figure 2. Diagram of the Ecozones components

ROADMAP

The different dimensions are suggested as separate modules which can be implemented in phases, depending on the local priorities and resources. Nevertheless, the six elements are interconnected and complementary, thus the effectiveness of the decarbonization transition depends on the framework implementation entirely. The modular approach enables flexibility and a variety of operation and response modes. Both the connectivity and openness of a system are key to achieving modularity. The modular strategy can be easily replicable (one of the streams at a time or all of them together), adapted to different regions, scaling up the solutions in a city-level.

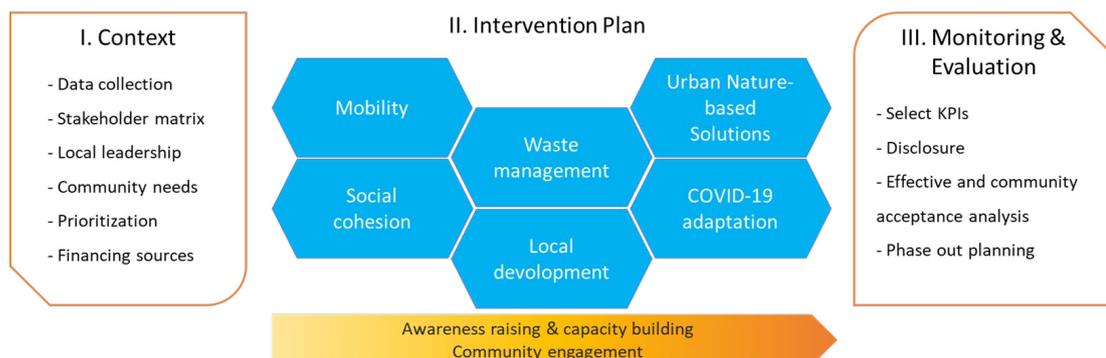
The roadmap below details the three-stage approach to implement the EcoZones that includes:

- I. Context of the neighbourhood – comprehensive diagnosis, to engage and mobilize the stakeholders, as well as to establish the needs and priorities and determine the feasibility of the living lab.
- II. Intervention Plan – after the communities' needs are decided on Stage I, the respective dimensions, methodologies, and activ-

ities for intervention are selected within a participatory approach.

- III. Monitoring & evaluation – during and after the implementation, key KPIs will be monitored to evaluate the pilot progress, the impact of the interventions, as well as the community acceptance. This stage's also a tool to demonstrate the feasibility of the project in a long-term and help decision-makers identify appropriate interventions to efficiently direct effort where performance may fall short or redirect effort to areas of greater need.

The cross-cutting processes of awareness raising & capacity building and community engagement are involved in every stage. For the first one, the focus will be scholars, as they play an important role to disseminate knowledge, transformative education, and research. For the second one, co-design approaches will be prioritized. Multi-stakeholder co-creation is decisive in the development of systemic, holistic, inclusive and sustainable practices and policies that enable cities to build resilience, adapt and prepare for climate change challenges.



Context

This initial assessment is decisive to acknowledge the relations between the region and the neighbourhood, the systemic processes and how it can be improved on a local level. The comprehensive assessment starts with data collection, to understand how each dimension has been managed, as well as the risks, opportunities, and main barriers. Integrated information will allow engaging the stakeholders and define together the priorities for that community and to structure the mitigation measures to overcome the limitations.

The second step is to map relevant stakeholders based on the degree to which they are impacted by the six dimensions, the planned interventions, as well as on their ability to influence to engage with different groups. Local leaderships are identified to support closely the implementation plan and assure that the stakeholders' concerns and expectations will be considered throughout the project.

Once the community is engaged, the next step is to identify and prioritise the needs and the aspects which have the greatest positive stakeholder impact, taking into account their perspectives as well as the areas where most of the value can be created. At this point, it is possible to structure the cross-sectoral partnerships to underpin the pilot.

The last step would be to define and assess financial sources. In general, financing sustainability interventions faces three interrelated challenges: (1) cities do not have the capital

they need to invest in projects; (2) there are insufficient recurrent revenues for city governments and urban service providers; and (3) cities and urban service providers lack access to market-based financing for urban infrastructure (World Bank, 2018). It's important to overview of the options and processes for financing a neighbourhood's action plan (PPP, international funds, etc and to specify the roles and responsibilities of the sectors involved (mainly public and private), nevertheless the EcoZones are low investment solutions (LIS).

Intervention Plan

The scope of the intervention plan is customized according to the priorities and boundaries defined on the context assessment. The six-module approach is based on the circular economy concept, where the full implementation of the six dimensions: mobility, waste management, NbS, social coherence, local development, and COVID-19 adaptation will close the loop across the neighbourhood functions & services. The principles of a circular economy are thus highly relevant to cities, yet for many, this is a new topic that at first is not easy to relate to city functions (Circle Economy, 2020). Therefore, the EcoZones concept is a practical tool to implement local low-cost solutions, based on the community needs and a holistic-systemic urban planning approach – a new design for thriving cities focused on the following principles:

- Low emissions
- Regenerated natural systems
- Improved urban health
- Maintain and generates value for the

communities

- Circular integration.

Most importantly, the framework suggests as the central and cross-cutting pillar “awareness-raising and capacity building” and “community engagement” to achieve greater impact and transformational change. To foster complex adaptive systems, networks play a crucial part in making cities more resilient. Knowledge is a powerful tool to support the young generation with the skills and values necessary to be adaptable, innovative, and purpose-driven in the new normal scenario. Under

the Urban Pathways project, it is intended to explore formal and informal educational tools to empower different target groups, especially scholar as already mentioned, making use also of digital mechanisms such as games, apps, broadcasts, as a means of democratization and universalization of knowledge on topics from global relevance (SDGs, NUA, Agenda 2030, etc) to local (six EcoZones’ dimensions).

The table below summarizes the six modules for the implementation plan, its objectives, respective methodologies, and examples of local interventions.



Dimension	Sustainable Mobility & public Space	Waste Management	Urban NbS
Objectives	<ul style="list-style-type: none"> - Improve mobility in the city - Promote intermodal mobility - Reduce travel times and allow greater frequency - Enhance of mobility services: extension and integration (connection to peripheral areas) - Microbility - Electric mobility 	<ul style="list-style-type: none"> - Increase the sorting at the source of recyclable and organic waste - Keep products and materials in use - Food waste prevention - Engage the informal sector - Urban mining - Increase the efficiency/retrofit the built environment 	<ul style="list-style-type: none"> - Reduce flooding and the urban heat-island effect - Reduce air temperature, air pollution and traffic noise - Regenerate natural systems - Enhance the social well-being of citizens - Build urban resilience - Prevention against extreme events and natural disasters
Methodologies	<ul style="list-style-type: none"> - Tactical urbanism - Sharing services 	<ul style="list-style-type: none"> - Composting - Upcycling - Zero waste - Eco-design - Hackathons 	<ul style="list-style-type: none"> - Green, blue and brown infrastructure - Natural infrastructure solutions
Interventions (examples)	<ul style="list-style-type: none"> - Limit the area - Protected bike and pedestrian areas for example through a Zone 30 - Cycling schools for women and children - Recreational bike lane - Narrow traffic lanes - Widen sidewalks and introducing 	<ul style="list-style-type: none"> - Urban gardens - Collecting campaigns for specific types of waste: e-waste, construction waste, expired medicines, etc - Recycling programme with neighbours, e.g. e-waste (Reciclatrón) or "Mercado del Trueque"- - Waste programme with schools - Pimp my carroça contest 	<ul style="list-style-type: none"> - Parks - Rain gardens - Greenroofs - Green bus stops - Green roofs/walls - Permeable paving - Green corridors



Dimension	Social cohesion	Local development	COVID-19 adaptation
Objectives	<ul style="list-style-type: none"> - Promote community engagement and citizen-led initiatives - Enhance community-driven co-design (tailored to local needs) - Disseminate the cultural ecosystem - Empower local leadership (especially women and youth) - Improve the accessibility (elderly and disabled) 	<ul style="list-style-type: none"> - Support local producers - Cross-sectoral collaboration - Boost local bioeconomy - Promote micro-entrepreneurship (especially women) - Social impact business - Engage the third sector - Outline the entrepreneurship potential of the low-income communities (favelas, slums) 	<ul style="list-style-type: none"> - Build back better / recover forward - Tackle fragility city systems - Guarantee a greater space for people to congregate safely - Mobilize the communities on the mitigation and adaptation measures (e.g. slums)
Methodologies	Collaborative design and planning: <ul style="list-style-type: none"> - Design thinking - Theory U 	<ul style="list-style-type: none"> - Fab Labs (?) - Partnerships with universities - Capacity building 	<ul style="list-style-type: none"> - Staged approach for reopening
Interventions (examples)	<ul style="list-style-type: none"> - Open-air Community Dinner - Open-air cinema - Concerts - Sports (running/bike marathons, football matches, etc) - Playground for kids - Philanthropy campaigns - Local artists: visual and art performances (e.g. Visões Urbanas Project - https://cartacampinas.com.br/2020/08/visoes-urbanas-projeta-imagens-coloridas-em-espacos-publicos-da-cidade/) 	<ul style="list-style-type: none"> - Local markets - Technical support on project management and funding calls for social impact projects - Provide expert mentoring for the micro-entrepreneurs - Establish a network of peer entrepreneurs - Local currency 	<ul style="list-style-type: none"> - Public services (new protocols) - Social distancing - Shift to walking and cycling

Monitoring & Evaluation

The M&E system seeks to identify the achievements in the implementation of local interventions, the mitigation of social and environmental impacts, local economic development, community engagement - as well as the results of those achievements. M&E helps determine if and how these interventions are strengthening the resilience

and circularity in urban contexts, improving wellbeing, and reducing inequalities.

By designing and implementing M&E systems as part of the Ecozones framework, it strengthens the accountability and reporting of local mechanisms, as well as gain insights into which are working and which are not, so they can adjust accordingly.

As part of the intervention plan, on the first step – “Context”, it will be defined a working group within the relevant stakeholders dedicated to structure the indicators and later coordinate the data collection and disclosure.

KPIs

The selected KPIs will track the progress and establish a systematic assessment of the interventions at a specific point in time. The KPI framework follows the Ecozone’s six dimensions and is divided into three categories:

- General – socioeconomic indicators which will characterize the local diversity.
- Core - some cross-cutting KPIs were

selected to structure a common basis for all EcoZones. These will be collected before, right after the intervention and every six months.

- Comprehensive - additional KPIs will be selected by the stakeholders from the range of options, considering the complexity of the different regions in which the pilots will be implemented.

It’s intended to set a common baseline for the KPIs, however, this will depend on the availability and quality of the information for each indicator category in the cities where the projects are being implemented.

General indicators

ID	Definition	Period	Source
#1	Age	Right before the intervention & 1,5 year later	Local assessments/ surveys
#2	Gender		
#3	Ethnic auto-identification		
#4	Nationality		
#5	Education		
#6	Occupation		
#7	Disabilities / special needs		

Core Indicators



Mobility

ID	Definition	Source
#1	Traffic flow	Local assessments/surveys
#2	No. accidents with fatalities/serious injuries	
#3	No. accidents with minor injuries/material damage	
#4	Walkability & public space assessment	
#5	Modal share	
#6	Perception of road safety	
#7	Temperature, noise, visual and air pollution	SCK
#8	GHG emissions (direct and indirect) – tCO ₂ e	Estimative – fuel consumption and vehicle efficiency



Waste Management

ID	Definition	Source
#1	Waste generated - recyclable	Municipality
#2	Waste generated - organic	Municipality
#3	Waste collection (organic and recyclable)	Estimative - number households and number of residents



Urban NbS

ID	Definition	Source
#1	Green spaces	Municipality
#2	Vulnerability - Risks (flooding, landslide, extreme heat, sinking)	Municipality
#3	Trees and urban vegetation/Land-use change	Municipality
#4	GHG emissions reduced or carbon stocks enhanced directly or indirectly	GHG emission inventory
#5	Area of ecosystems with improved conservation and sustainable use	Local assessments/surveys



Social cohesion

ID	Definition	Source
#1	Crime occurrence	Municipality
#2	Street cleanness	Local assessments/surveys
#3	Community engagement	Local assessments/surveys
#4	Desired interventions by the community	Local assessments/surveys



Local development

ID	Definition	Source
#1	Capacity building / workshops / meetings	Local assessments/surveys
#2	Economic activities in the area (incl. informal vendors)	Local assessments/surveys
#3	Access to jobs, opportunities and services	Local assessments/surveys



COVID-19 adaptation

ID	Definition	Source
#1	The ability for greater physical distancing to occur	Local assessments/surveys
#2	Safety on public transport modes	Local assessments/surveys
#3	Change of behaviour (urban mobility)	Local assessments/surveys

Comprehensive Indicators



Mobility

ID	Definition
#1	Active mobility
#2	Transport decarbonisation
#3	NOx emissions
#4	Particulate matter (PM) emissions
#5	Noise



Waste Management

ID	Definition
#1	Informal sector
#2	Upcycling
#3	Costs reduction – waste disposal



Urban NbS

ID	Definition
#1	Food produced (community urban gardens)
#2	Carbon storage or carbon sequestration in vegetation/soil
#3	Greenspace accessibility
#4	Greenspace distribution mapping



Social cohesion

ID	Definition
#1	Community-based adaptation and tactical urbanism activities
#2	Arts and culture activities
#3	Quality of urban furniture & infrastructure



Local development

ID	Definition
#1	Free wifi
#2	Capacity building / workshops / meetings
#3	Local entrepreneurship



COVID-19 adaptation

ID	Definition
#1	Public service provision
#2	Urban retreat areas
#3	Information flow and access to information
#4	Interregional collaboration

Measurement frequencies and periods

The assessments and comprehensive evaluations will be performed right before the interventions, right after, and a follow up every six months for 1,5 year.

Disclosure & Communication

The systematic and continuous collection of information will enable stakeholders to check whether an intervention is on track or achieving set objectives. Therefore, to promote transparency, community engagement and, also, to be an important aspect of good

governance, the key KPIs will be disclosure on:

1. Sites: Urban Pathways, NUA campus, Wuppertal Institute, Municipality, local NGOs
2. Social media: Instagram, Facebook, etc.
3. Factsheets (printed): public spaces, local markets, etc.

Alternative and inclusive formats will be designed to achieve different target groups, such as children, elderly, illiterate, special needs.

Effectiveness Analysis

After the implementation, the KPIs analysis will allow comparing the pilots in different regions and scenarios. Allied with the feedback from local residents and businesses, the comprehensive study of the results will determine if the interventions will become permanent and enable to scale-up in other regions.

Another crucial outcome is the phase-out plan to strengthen cities' economic, social and cultural environments, as well as build a fairer and more resilient urban model. The implementation of the living labs as prototypes and the sharing experiences will provide guidelines for decisionmakers to further develop policy instruments in a local level.

ANNEX A



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More information about the
Urban Pathways project can be found at:

WWW.URBAN-PATHWAYS.ORG