CONNECTIVE CITIES

# Planning for sustainable infrastructure: Institutional barriers to cross-sectoral collaboration

Partners of Connective Cities

Deutscher Städtetag

ENGAGEMENT GLOBAL
Service für Entwicklungsinitiativen

with its SERVICE AGENCY
COMMUNITIES IN ONE WORLD

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Commissioned by

Federal Ministry for Economic Cooperation and Development

- **A cooperation between:**

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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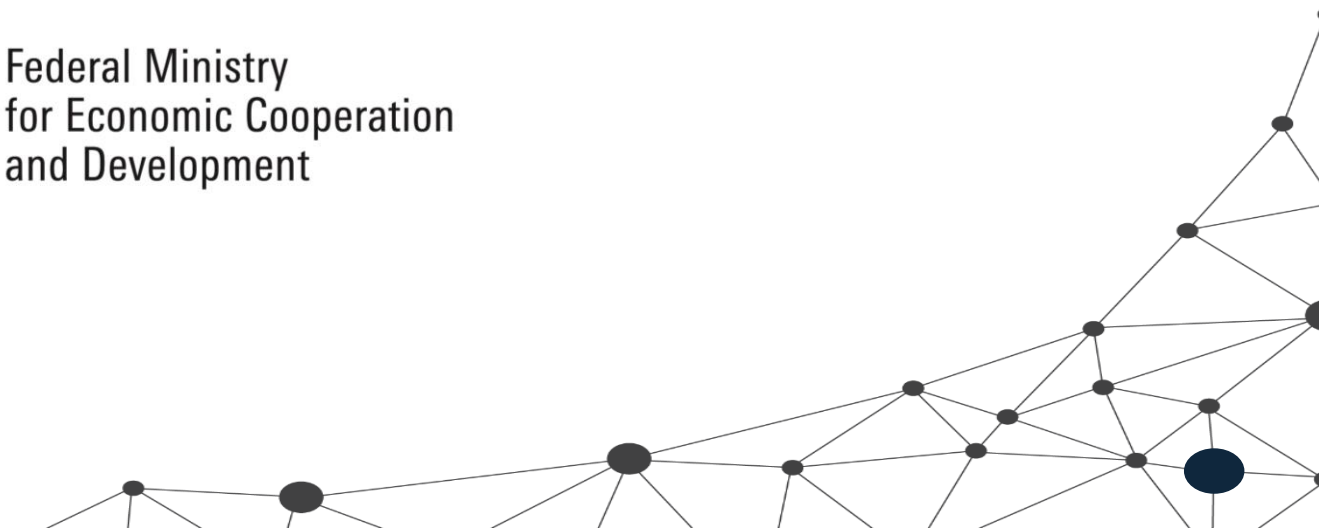


# OBJECTIVES

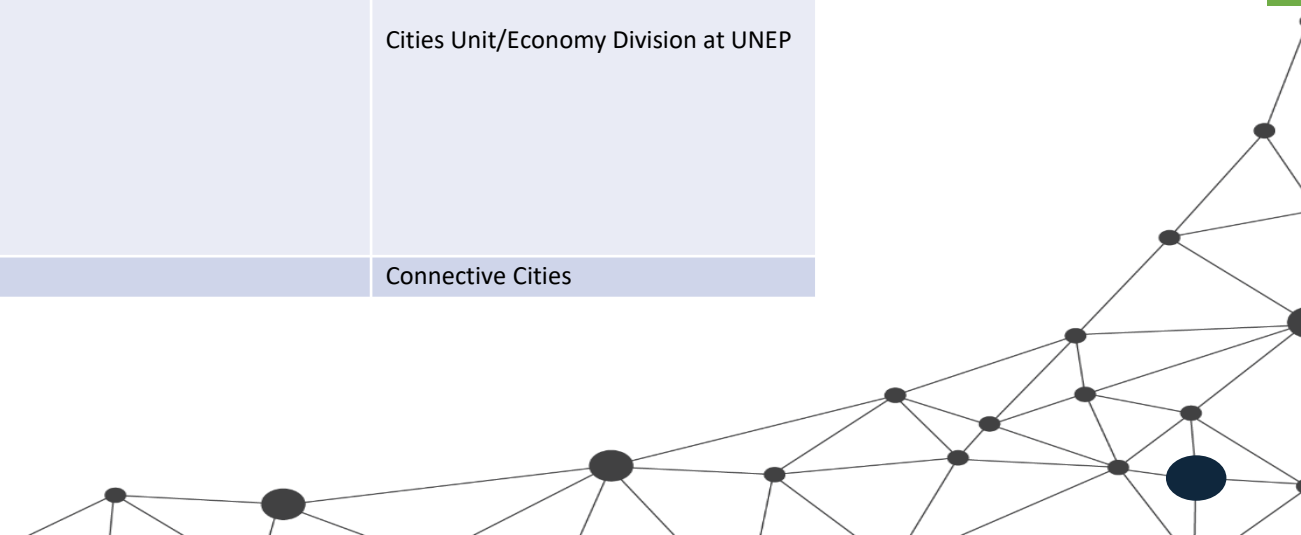
To facilitate worldwide **networking** between urban actors from politics, administration, business, science and civil society

To support a systematic and application-oriented **exchange** of experience on **good practices** and through **peer-to-peer-consultations and joint learning processes**

To support the development of innovative ideas for **urban change projects in different formats.**

# Regions and Networks

| Time (CEST) | topic | speaker |
|---|---|---|
| 10:00-10:10 | Opening remarks | Connective Cities Team |
| 10:10-10:30 | The Solutions Lab “Scalable Solutions for Sustainable Infrastructure”<br><br>(followed by Q&A) | Vanessa Bauer, Sustainable Infrastructure program at GIZ |
| 10:30-11:00 | Innovative and collaborative decision-making framework for integrated sustainable urban policy design: A case study of the Rhine-Ruhr area<br><br>(followed by Q&A) | Dr. Ani Melkonyan-Gottschalk, the Centre for logistics and traffic-Duisburg, Germany |
| 11:00-11:20 | Investing in Nature-based Solutions in Cities<br>(followed by Q&A) | Sharon Gil<br><br>Programme Management Officer<br><br>Cities Unit/Economy Division at UNEP |
| 11:20-11:30 | Closing Remarks | Connective Cities |



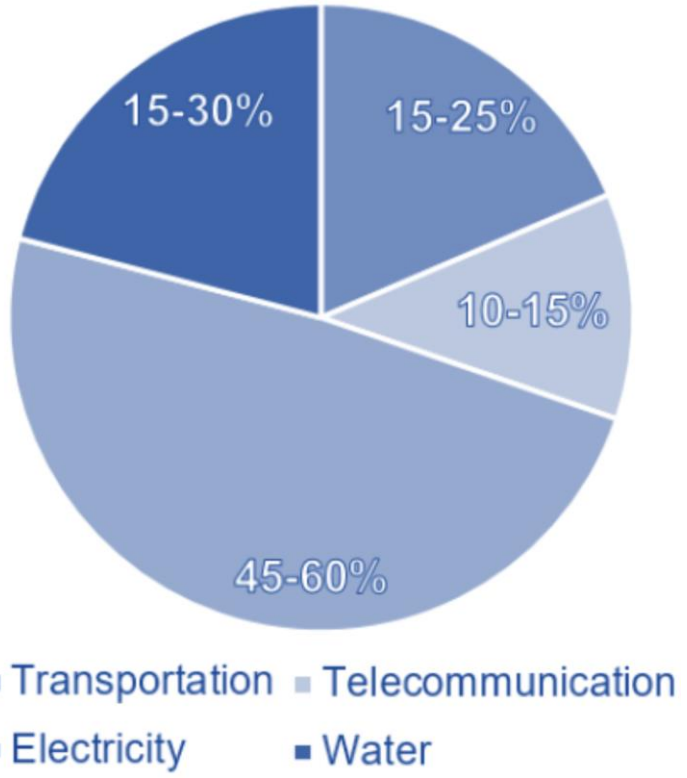
## *Infrastructure: Impacts on sustainable development*

- Infrastructure underpins human and economic development and is linked to all 17 SDGs
- influencing the attainment more than 90% of the 169 individual SDG targets.
- The construction and operation of grey infrastructure →70% GHG emissions.
- poorly planned infrastructure → exclusion
- Financial sustainability

## *Integrating Sustainability into infrastructure*

- Additional cost of SI → the net effect of these investments is very positive from social, economic and environmental perspectives e.g. the rise of economic growth

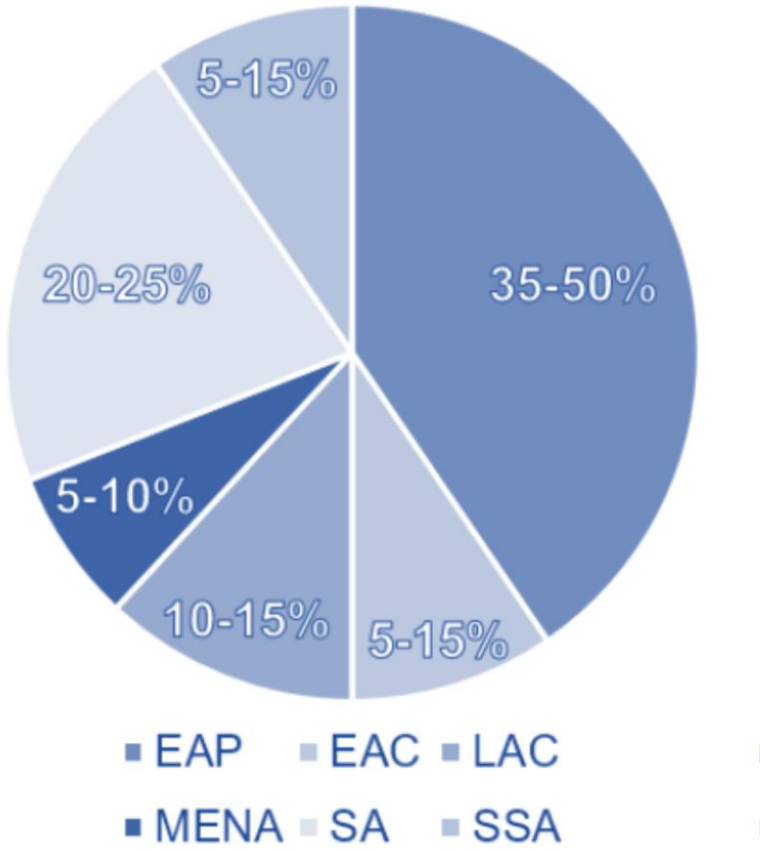
- The lifespan of infrastructure assets is often measured in decades, while infrastructure footprint is measured in centuries.




Estimated annual infrastructure investment in 2020 per sector

*An opportunity for a transition*

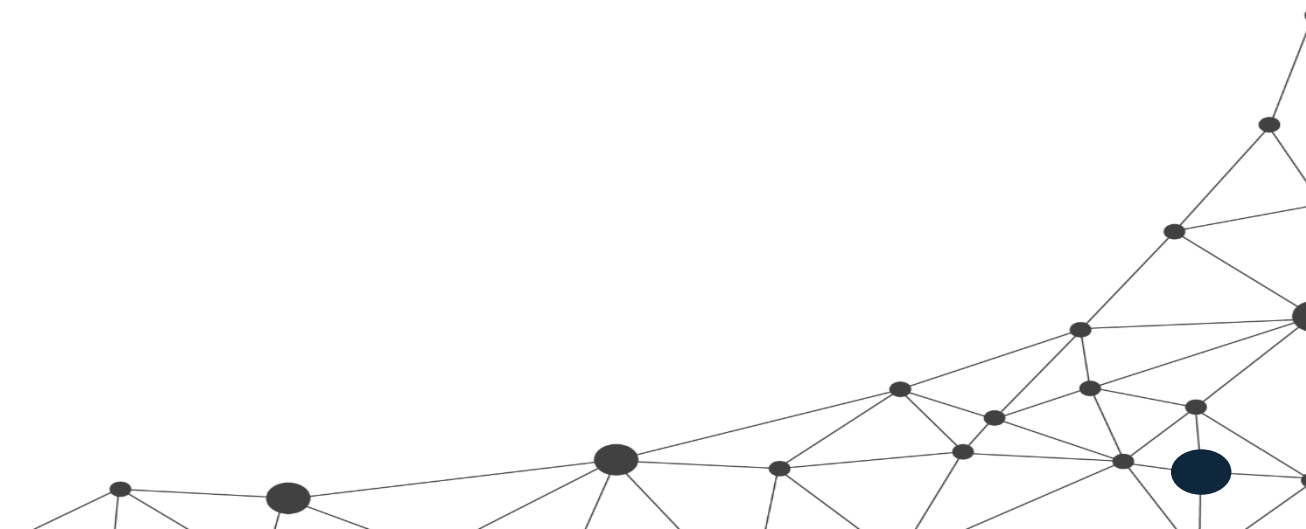
The majority of infrastructure that will exist in 2050 has not yet been built. It will take trillions of dollars of investment per year to build it, and this infrastructure will mainly be built in developing countries.




Estimated annual infrastructure investment in 2020 per Region

*Connective Cities dialogue:* ***'Participatory, Innovative and Sustainable Urban Infrastructure Decision Making'***

***How to overcome barriers to planning for integrated sustainable infrastructure and promoting cross-sectoral collaboration?***



- *What to expect:*

- Insights and experience on tools for ***integrating sustainability across the lifecycle*** *of infrastructure projects,* to help guide *DM towards the selection of more sustainable infrastructure projects.*
- *Innovative and collaborative decision-making framework to break down silos, and improve coordination between and within institutions — to facilitate and incentivize more interdisciplinary collaboration.*

**“doing infrastructure right” to “doing the right infrastructure”**
**that best meets service needs in a sustainable way.**

# **Vanessa Bauer,** Sustainable Infrastructure program at GIZ

The Solutions Lab “Scalable Solutions for Sustainable Infrastructure”

# Agenda

- Why Sustainable Infrastructure?
- The GIZ-GSI Solutions Lab
  - Integrated Upstream Planning Workstream
- The Sustainable Infrastructure Tool Navigator

# Why Sustainable Infrastructure?

- **Global Goals** — Infrastructure provides us with the services that enable societies to function and economies to thrive. Sustainable infrastructure contributes to all 17 SDGs of the 2030 Agenda (72 % of sub-targets) and is key for achieving the Paris Agreement.
- **State of play** — Inadequate transportation and energy networks, lack of basic sanitation facilities and insufficient communication infrastructure still affect billions of people.
- **Global infrastructure investment gap** — $15 trillion until 2040 (G20 Infrastructure Hub)
- **Challenge** — Simply “more infrastructure” may have negative impacts on people and planet.
- **Imperative** — Invest in “more sustainable infrastructure” (environmental, social, economic, institutional)

# The Solutions Lab

## Scaling for Sustainable Infrastructure

A joint initiative of GIZ and the Global Solutions Initiative

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# The GIZ-GSI Solutions Lab

Scaling for Sustainable Infrastructure

Launched in October 2019

25 Change Agents

10-Months Process

What hinders broad uptake of Sustainable Infrastructure Solutions?

Policymaking, Business, Finance, Academia and Civil Society

Multi-Stakeholder Journey in Partnership With **Global Solutions Initiative**

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# Workstreams

1. Sustainability considerations at the pre-project level through integrated, upstream planning

2. Integration of meaningful sustainability considerations at project pipeline level

3. Gender-smart infrastructure development

**WORK CENTERED AROUND 3 WORKSTREAMS**

Aim: Collecting and Sharing Expertise and Developing Scalable Solutions

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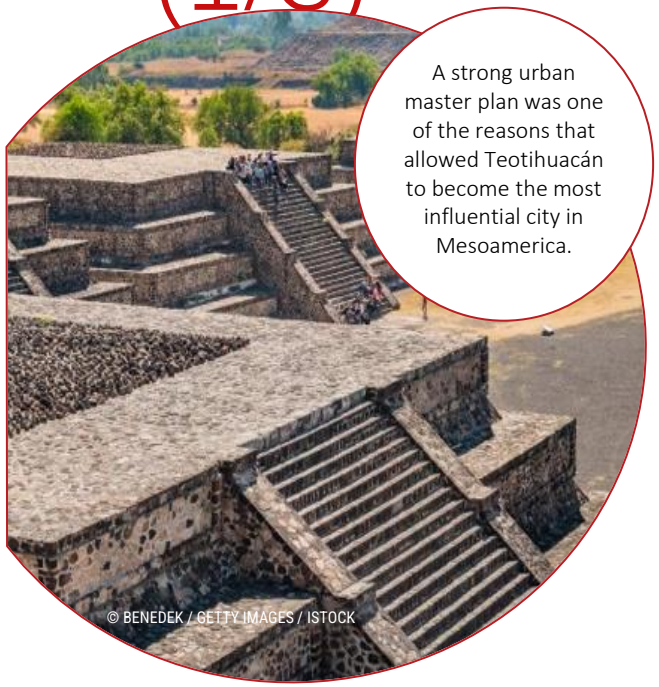
# Integrated Upstream Planning (1/3)




## The problem we identified...

- 2030 Agenda calls for integrated development approaches that consider interdependencies of sectors and regions
- Integrated upstream infrastructure planning offers potential savings of 40 %
- Yet, sustainability is often only addressed one infrastructure project at a time
- Result: Sustainable infrastructure development is limited to single infrastructure assets and fails to reap efficiency gains and positive spill-over effects from integrated planning approaches

## The implementation challenges we identified...

- Limited awareness and monitoring of possible efficiency gains
- Restricted funding in sector-siloed and project-driven budgets
- Lack of capacity to integrate planning of different sectors and complex technical models
- Insufficient data availability at necessary scale

# Integrated Upstream Planning (2/3)

## The solutions we identified…

- Situation of infrastructure investment decisions within broader context of long-term development strategies
- Policy reforms and adoption of integrated planning frameworks
- Employment of systems modelling tools that facilitate data-based decision making to ensure that infrastructure investments best balance sustainability considerations
- Strengthening of stakeholder engagement

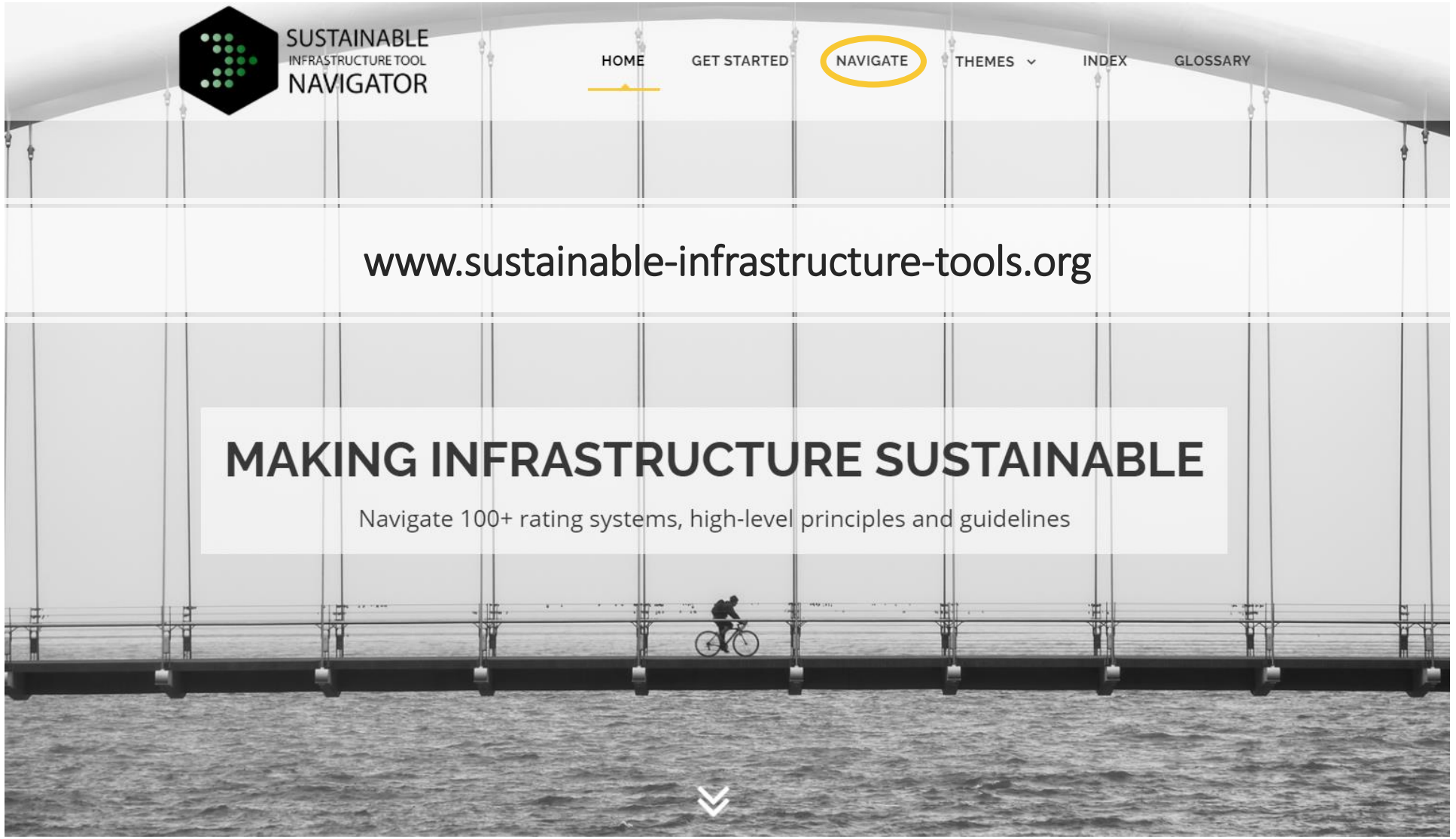
# Integrated Upstream Planning (3/3)

## Outputs and helpful resources

Guidance for public authorities to employ integrated upstream planning approaches (i.e. Guidance Note on Integrated Upstream Planning & T20 Policy Brief).

Events and experience exchange formats (i.e. Solutions Lab Event on Integrated Upstream Planning).

Systems modelling tools and data collection across sectors and regions (see Sustainable Infrastructure Tool Navigator)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MAKING INFRASTRUCTURE SUSTAINABLE
Navigate 100+ rating systems, high-level principles and guidelines

# Navigate our Tool Catalogue

Please search by keyword or use the filter options below to narrow down your search results. If you filter by sector also consider selecting “Tools applicable to all sectors”, i.e. tools that are not specifically targeted at any sector, but relevant for a broad range of application contexts.

Search Keyword

## Sectors
*multiple selection possible*

- Urban Planning
- Natural Infrastructure
- Energy
- Transportation
- Waste
- Water and Sanitation
- Food Systems
- Health
- ICT/Digital
- Buildings
- Tools applicable to all sectors

## Types of Tools
*multiple selection possible*

- Rating Systems
- Guidelines
- Sustainability Benchmarks
- Principles
- Economic / Financial Valuations
- Project Preparation Tools
- Modelling Tools
- Impact Assessments
- Standards

## Lifecycle Phases
*multiple selection possible*

- Enabling Environment
- Strategic Planning
- Prioritization
- Project Planning
- Concept Design
- Procurement
- Finance
- Detailed Design
- Construction
- Operation and Maintenance
- Decomissioning/Repurposing

## Themes
*multiple selection possible*

- Biodiversity
- Resource Efficiency
- Climate Change Mitigation
- Green Recovery
- Climate Change Adaptation
- Gender

## Open Source

- Yes
- No

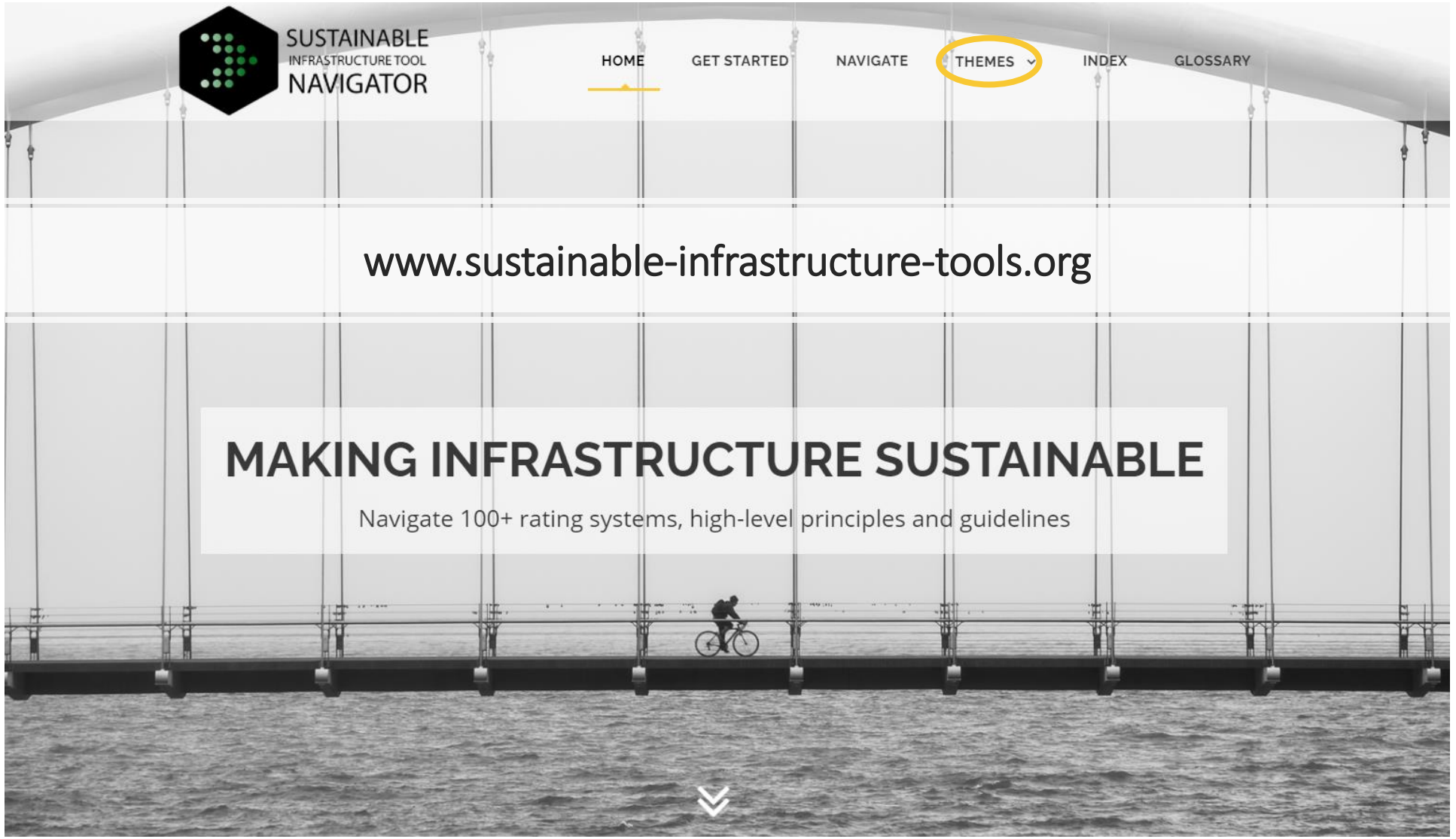
## Language Availability

Select


german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by
giz

UN environment programme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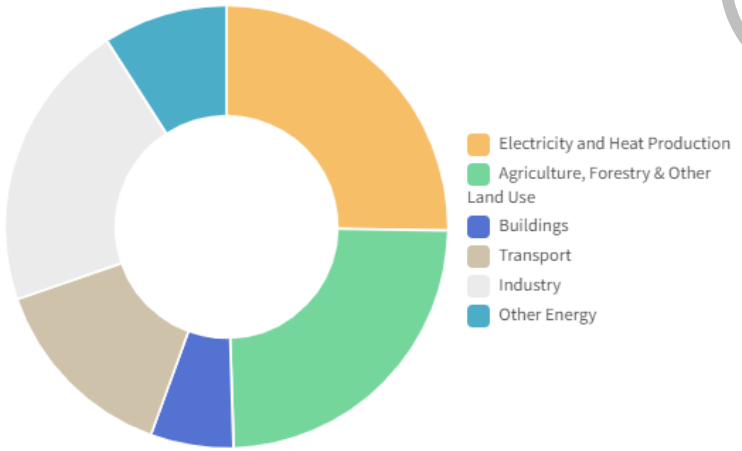
*Example: Climate Change*

# Global decarbonization, the pathway to survival

**Infrastructure worldwide and throughout history has directly contributed to the climate crisis**—accounting for 60-70% of global greenhouse gas emissions through transportation, buildings, electricity production and industrial processes, such as cement production and waste treatment. The carbon-intensive sectors that account for most of the world's energy infrastructure—coal, oil, and natural gas—are both ecologically destructive and economically inefficient in today's economic landscape—especially considering unpriced negative externalities associated with extraction, greenhouse gas emissions, air pollution, and human health effects.

## Contribution of infrastructure to global greenhouse gas emissions


Direct GHG emission shares (in % of total anthropogenic GHG emissions) per sector in 2010. Source: IPCC, 2018

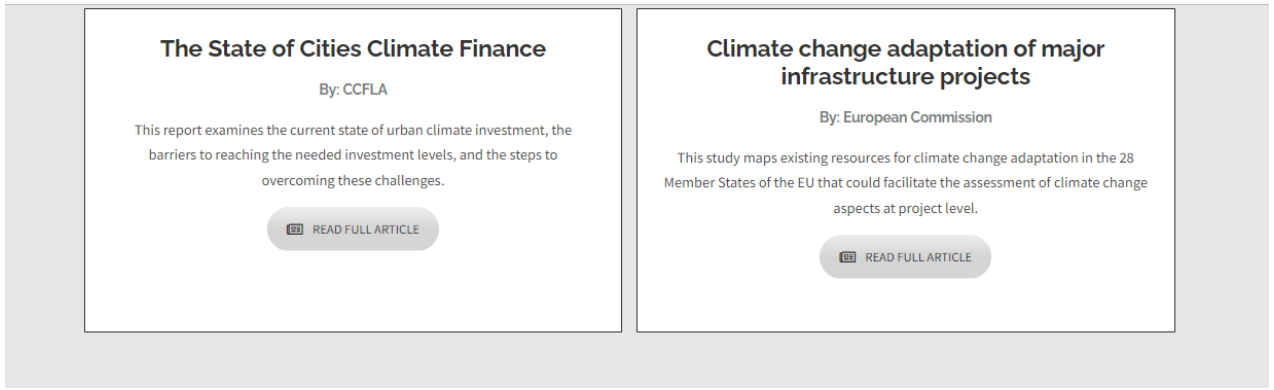
# Roadmaps for mitigation

**Sustainable infrastructure can play an enormous role in mitigating climate change and setting the world on a safe climate trajectory**. Renewable energy, smart electricity grids, high-speed railway systems, electric vehicles, and inclusive

Countless examples exist of infrastructure that decarbonizes the economy:

**Offshore wind farms**

*Resources and tools for each theme*




## Relevant sustainability tools

### Mitigation Tools

Urban Adaptation Support Tool

**Urban Adaptation Support Tool (UAST)**

The Urban Adaptation Support Tool (UAST) assist cities, towns and other local authorities in developing, implementing and monitoring climate change adaptation plans.

# Thank you!

## Contact Details

**Vanessa Bauer**
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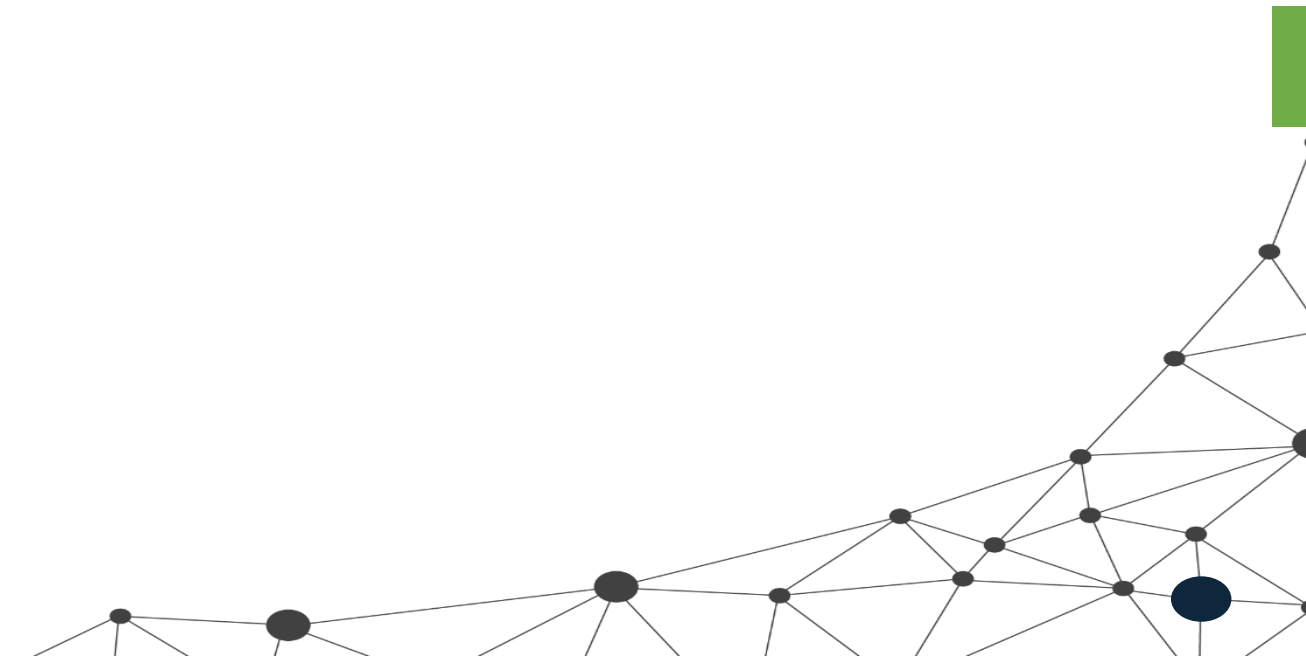
# Discussion



Centre for Logistics and Traffic

UNIVERSITÄT DUISBURG ESSEN

*Offen im Denken*

# Sustainable and Smart Cities

## *Transformation challenges and chances*

***Connective Cities***

***19.05.2022***


**PD. Dr. habil. Ani Melkonyan**

Private Docent at the Joint Centre of Urban Systems

Executive Director of Centre for Traffic and Logistics

International Expert at NASA LCLUC program

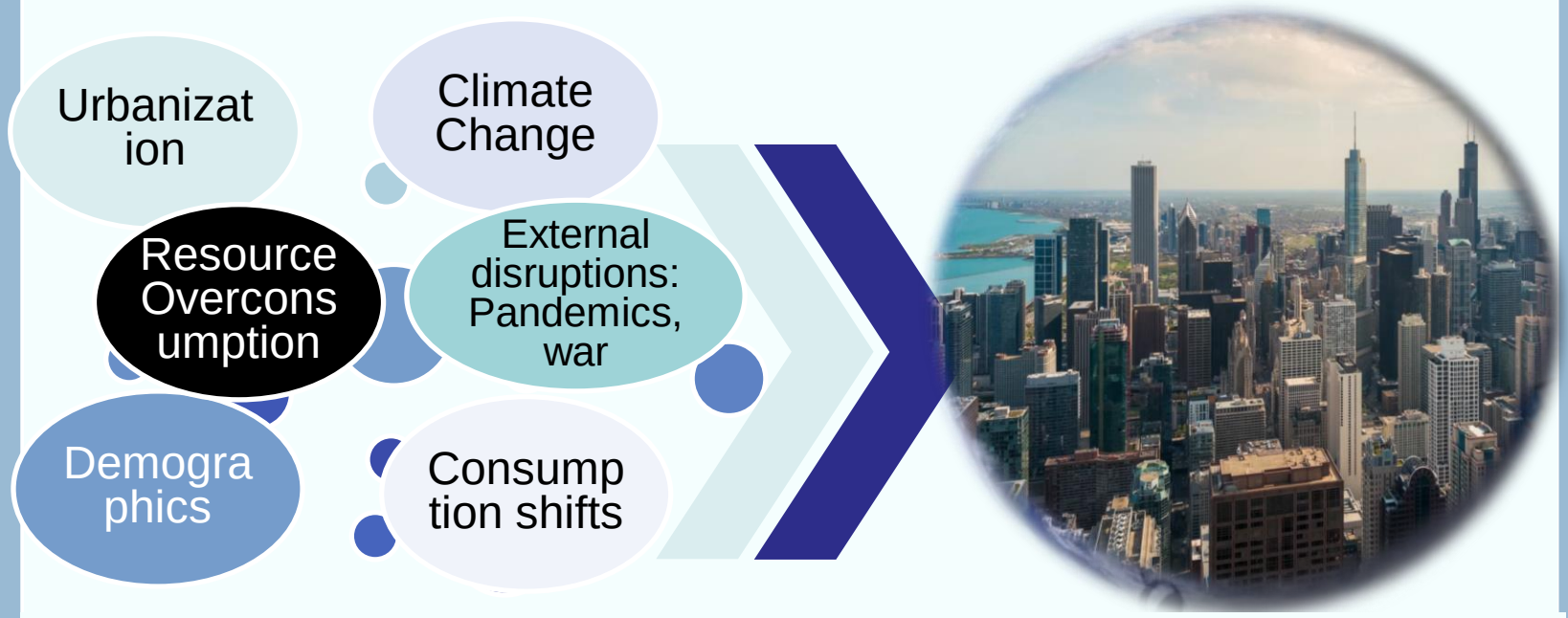
Visiting Professor at the University of Oklahoma

# Outline

1. **Background and Motivation**
2. Definitions of sustainable cities
3. Transformation to Sustainable/Smart Cities: Best Practices
4. Results of the project NEMO

## Background

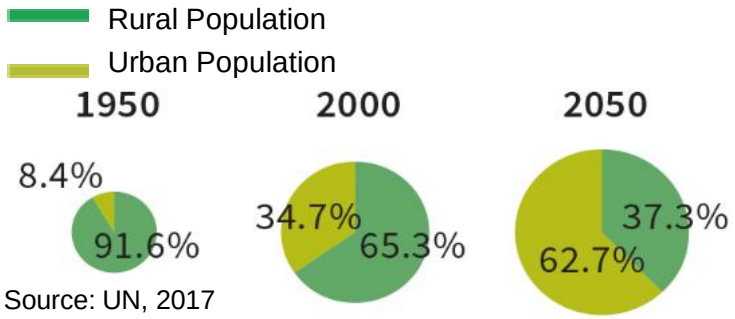
Humans as dominant force in the bio-physical living conditions




The urban setting represents a challenge and an opportunity for transformation towards net zero-carbon.

# Why do Cities matter in Global Climate?

Over **62 %** of the world pop. will live in cities by 2050, increasing energy use




Source: UN, 2017

Urban infrastructure accounts for **70 %** of global energy use


Cities account for **37- 49 %** GHG emissions

| Urban Group | Projected base case emissions growth from 2012-2030 megatonnes of $CO_2$ | Projected population in 2030 bns | Per Capita emissions in 2030 tonnes of $CO_2$ |
|---|---|---|---|
| Emerging Cities | 3230 | ~1.3 | ~7 |
| Small Urban Areas | 1220 | ~2.2 | ~4.6 |
| Established Cities | 390 | ~0.4 | ~12.1 |
| Global Megacities | 1050 | ~0.6 | ~7.1 |

Source: Oxford Economics Global 750 Cities database, 2018

Cities play and will continue to play a significant role in the future carbon emissions out to 2030, while being vulnerable towards climate change.

The main issues associated with citties

1. Urban Heat Island
2. Urban Sprawl

# Urban Heat Island (I)

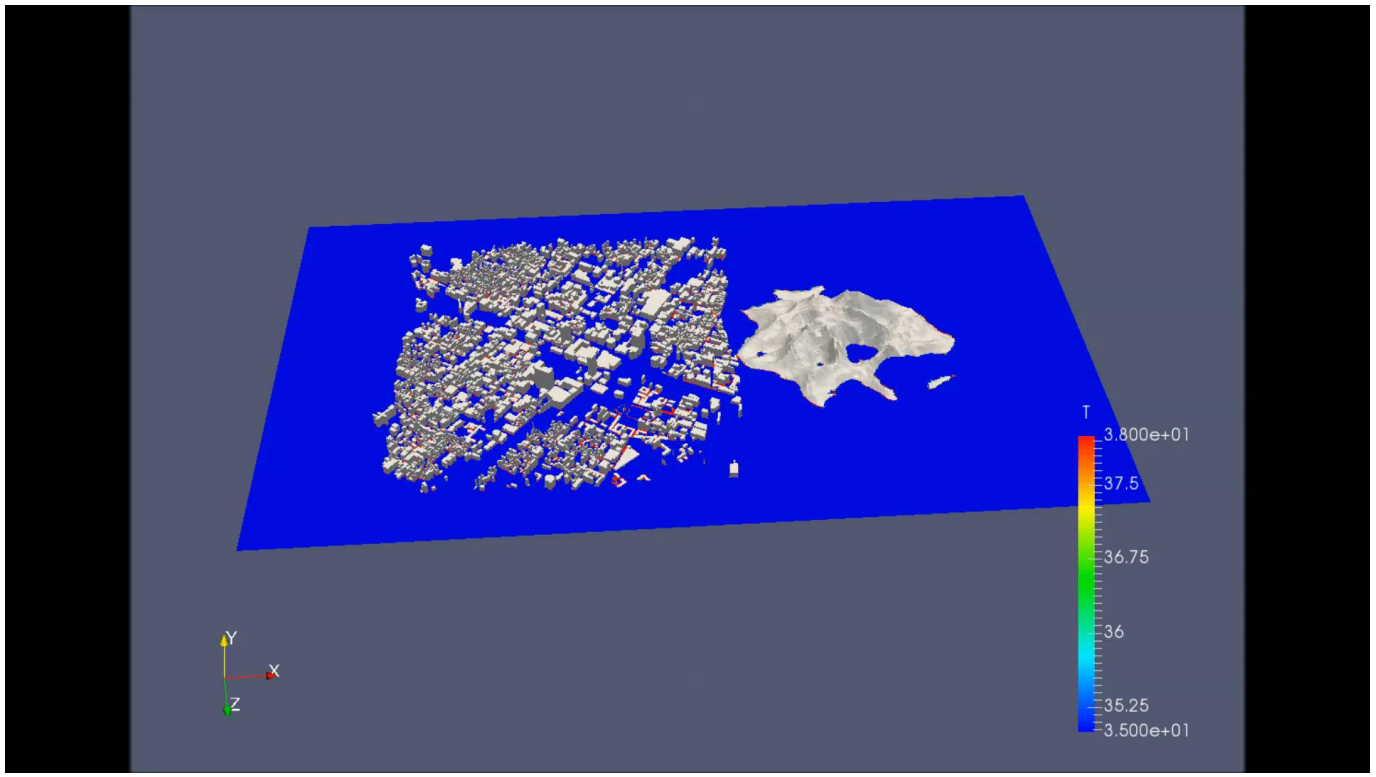
The most important features of “Urban Climate” are:

1. Changes in the radiation balance of the urban air and surfaces
2. Higher air temperatures
3. Lower atmospheric exchange and
4. Higher degree of atmospheric turbidity

## Urban Heat Island (UHI)

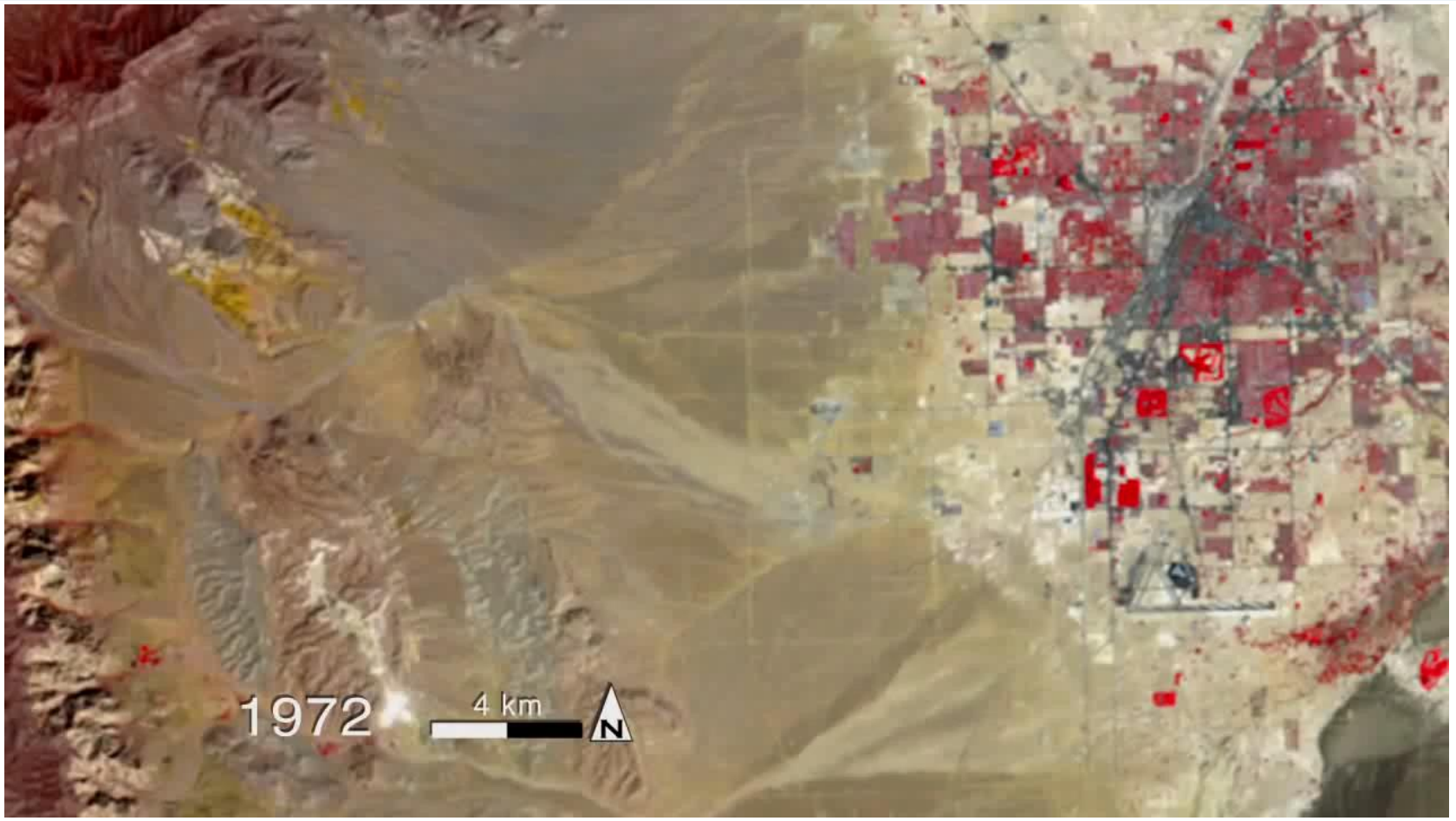
**Urban Heat Island** refers to urban air and surface temperatures that are higher than nearby rural areas. This temperature difference could be varied from *1-5 K or sometimes even more*.

# Urban Heat Island (UHI) in Montreal




UHI is modeled for downtown of Montreal with more than 4000 buildings and a mountain. The simulation has been done with CityFFD which is a semi-Lagrangian model equipped with turbulence model. The domain has more than 10 million grids and the running time is around 5 hours on a personal computer with 12 GB RAM.

# Urban Sprawl (II): Las Vegas



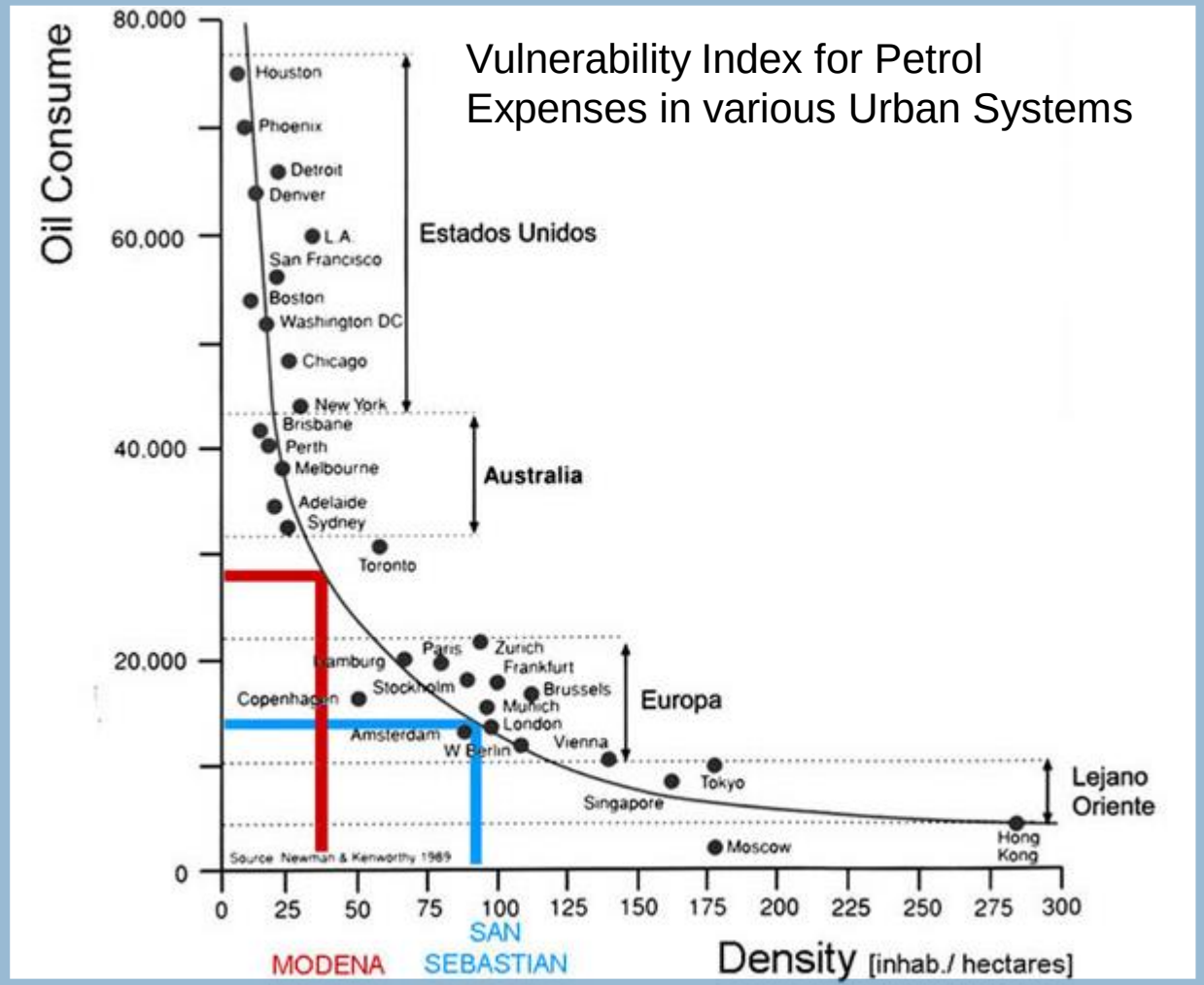

Source: LANDSAT Images of NASA, 2019

## Urban Sprawl

as "the uncontrolled spreading of urban developments (such as houses and shopping centers) on undeveloped land near a city".

# Why is ECO-COMPACT CITY more efficient than SPRAWL CITY?

1. it consumes less territory
2. it allows a correct density
3. it allows small retail to be on street and on square
4. it maximizes investment
5. it allows the creation of an efficient network of public utilities
6. it allows the creation of an efficient public transit system




http://www.ecocompactcity.org/home.html

# Outline

1. Background and Motivation
2. **Definitions of sustainable cities**
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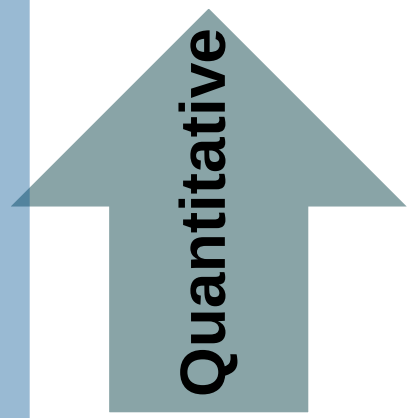
# Cities/Urban Areas are Ecosystems

## So instead, Cities, we speak about Urban Systems




Urban areas are the areas in which the human population reaches or exceeds densities of 186 people/km$^2$


Urban ecosystems comprise suburban and hinterland areas linked by corridors (transportation, utilities) or affected by the urban core

A **sustainable city** makes use of opportunities from current trends (e.g., digitalization, clean energy, sustainable finance), as well as innovative transport and mobility patterns, thus providing options for inhabitants to make more environmentally friendly choices, boosts sustainable economic growth, enabling cities to improve their service delivery.

Sources: Savic et al., 2005, Böschen, 2013; UN HABITAT III, 2017

Sources: Irwin et al., 2011; Zhou et al., 2014; Pan et al., 2018

# Sustainable Urban Area provides various functions/services

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# Transformation Process towards Sustainable/Smart Cities (I)

- New working market and working patterns
- Pollution, Climate Change, Resilience
- Good Governance
- Transparency, market openness
- Reputation, creating a brand attract business, talent and visitors

*Reasons for transformation towards Sustainable Urban Areas worldwide*

*Analysis of context variables for Sustainable Urban Areas*

- Structural factors (size and demographic density of cities)
- Economic development of the cities (attract human capital)
- Technology development (Investments in R&D)
- Environmentally friendly policies

- Demographic Change
- Immigration
- Urbanization
- Online Commerce
- Shared Economy Models
- Digital Divide
- Employment Trends
- Mobility trends
- Industry 4.0

*Understanding the Trends and Influencing Factors*

# Transformation Process towards Sustainable Urban Areas (II)

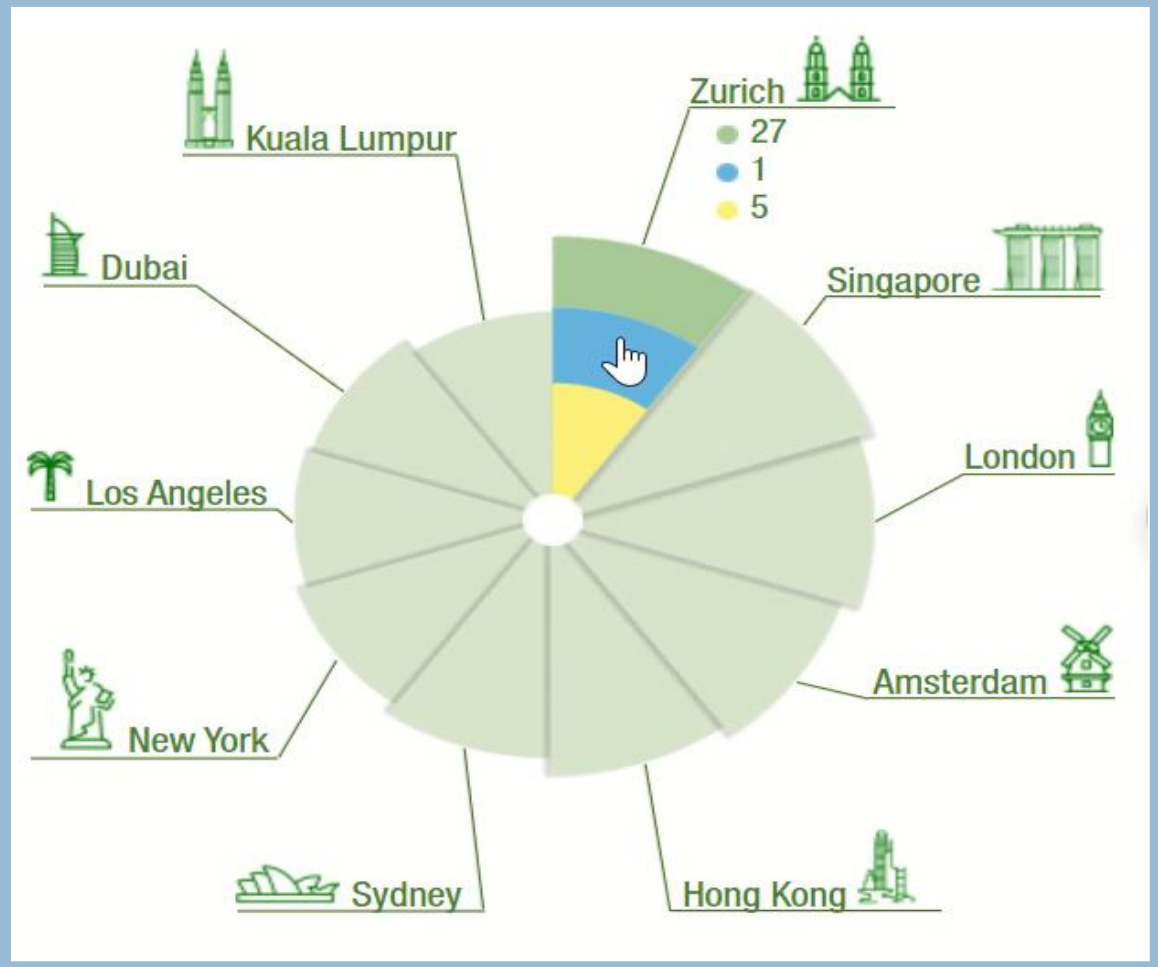
- **Hard Domains**
  Energy Networks, Air, Water, Waste, Natural Resources, Mobility and Transport, Buildings and Districts
- **Soft Domains**
  Government, Cultural Heritage, Education, Public Safety and Security, Healthcare, Social Inclusion

*Understanding the domains*

**Categories of Actions Integrated Planning**

- Community Building (inclusive collaborative environment, citizen participation)
- Strategic Framework (action plans, programs, guidelines, roadmaps, recommendations)
- Services and Applications (New IT technologies)

# Best practices of Sustainable Urban Areas




The social factors related to the quality of life of a city's inhabitants — health, work, and education.

The environmental factors related to the conditions which give a city its **'green label'** such as its level of pollution, its initiatives to promote recycling, the extension of green zones.

The economic prerequisite: The economic health enjoyed by the inhabitants of a city.

# Best practices of Sustainable Urban Areas
## Cross-Country Comparison

- Asian Cities (China, India, Taiwan, Sing, Korea) focus on hard domains because of (a) high level of pollution and (b) considerable economic development
- EU Cities on soft domains – human capital investments
- American cities are not driving the changes because of still low environmental regulation
- Small cities are good ecosystems to launch new experiments (Living Labs)
- Large cities usually face more critical needs and problems that entail digitization endeavors and they can attract technology vendors easily

# Outline

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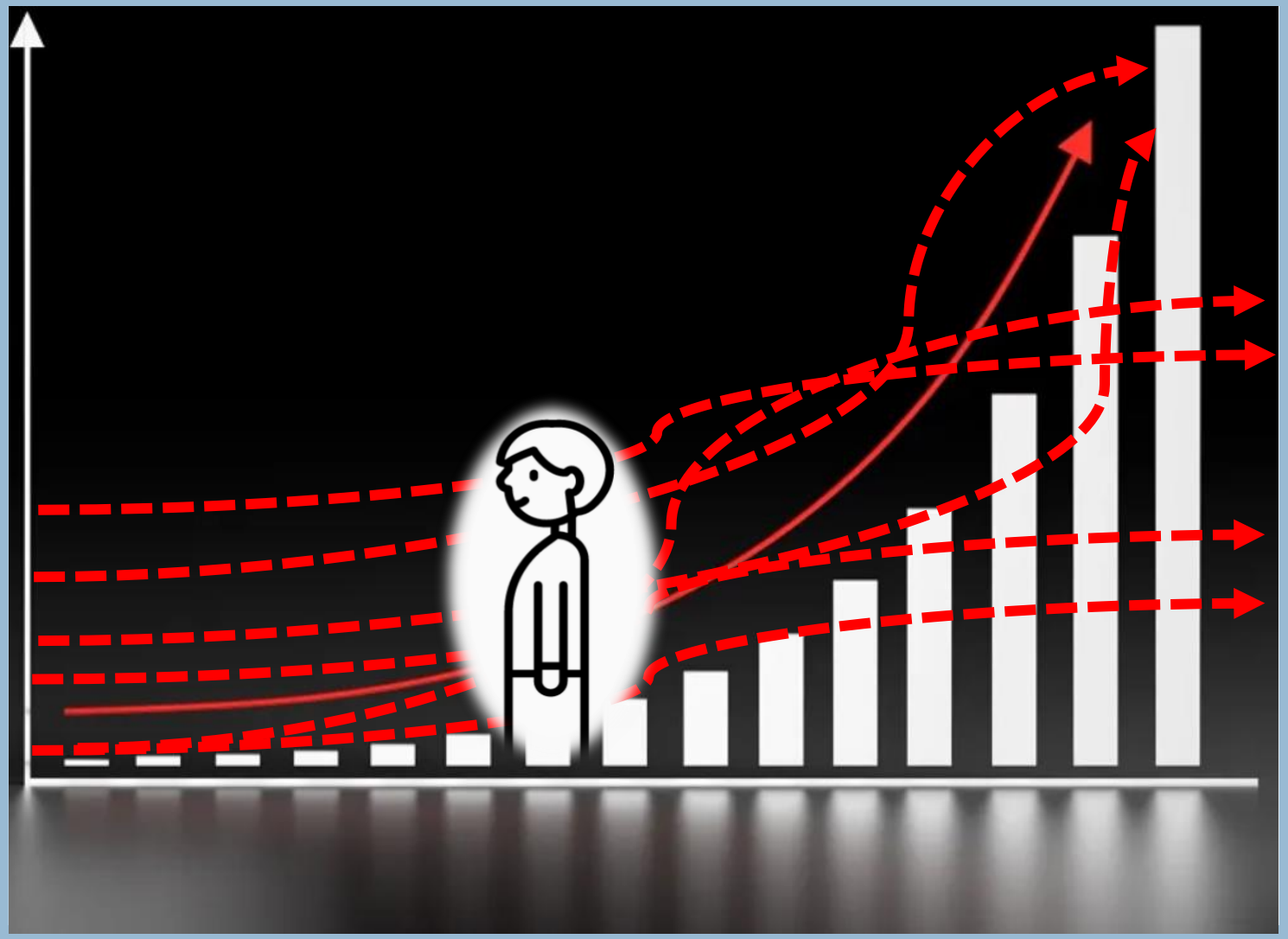
# Sustainable Urban Systems

## *Project New Mobility in Metropolitan areas (NEMO)*



### ‘Urban Nexus’ perspective

- Links (a) critical urban infrastructures and (b) all relevant stakeholders into **participative governance** structure through
- Horizontal and vertical Integration within **multi-layer, multi-criteria decision making systems**
- Societal issues are characterised by complex time evolutionary behaviour on multiple dimensions

# Sustainable Urban Systems

## *Project New Mobility in Metropolitan areas (NEMO)*


**Economic Viability of Public Investments**

Net cash flow
investment
revenue
Cost per ton
Current parking fare
Public transport attractiveness
Parking fare attractiveness
Withdrawal
Fuel

**Mobility dynamics**

leaving customers
obsolescence time
seed customers
Potential Customers
Customers
new customers
Market Size
sales size
would be word of mouth sales
customer sales effectiveness
sales
c advertising spending
fraction would be with real prospects
would be advertising sales
advertising effectiveness
Customer perception about sustainable practices
Implementation of sustainable practices
Adjustment Delay
Business sustainability
Productivity at workplace
Reduced cost of operations
Competitor fraction
Comp delay
Competitor effect
Profit per unit
Profits
Profit multiplier
Fraction invested towards sustainibility
Capital investments towards Sustainability
Energy

Melkonyan et al., 2017

female
Immigration
net immigration rate
Net Immigration
Population bet. 18-65
Geriatric rate
Population above 65
Adult deaths
Geriatric deaths
Adult mortality rate

**Population dynamics**

<Immigration>
Population density
Total cumulative distance traveled
<Livable area in Ruhr>
Area needed factor
Requirement
New area needed
Additional distance travelled per person
Effective city area

**stments in astructure, Land use**

Source: Melkonyan et al., 2019

# Sustainable Urban Systems: *NEMO Scenarios (I)*




## Smart City

- Interactive digital networks strengthen integrated multi-modal transport system: ***Cyber Infrastructure***
- Autonomous driving leads to a better public transportation: ***Public Transport Attractiveness***
- Intelligent parking reduces searching time causing reduced traffic: ***Parking Fare Attractiveness***
- Multi-purpose areas enhance social interaction: ***Social attractiveness of mixed-land use***
- Increased renewable energy production and its use in the mobility sector: ***Renewable Energy produced***

## Sustainable/Healthy City

- Environmentally aware citizens reduce consumption of energy-intensive products/services: ***Energy requirement/Capita***
- Sustainable lifestyles and high level of social interaction public participation in creating new urban planning concepts for more public room in the cities: ***mixed-used public spaces***
- Fossil fuels and parking in urban cores are expensive or banned, internalization of externalities as fiscal policy: ***$CO_2$ price***
- Soft mobility is dominant: ***Investment in public transport or bike infrastructure***
- Shared mobility business models are efficiently developed and accepted: ***Effect of car sharing***

# Sustainable Urban Systems*: NEMO Scenarios (II)*

## Peri-Urbanization

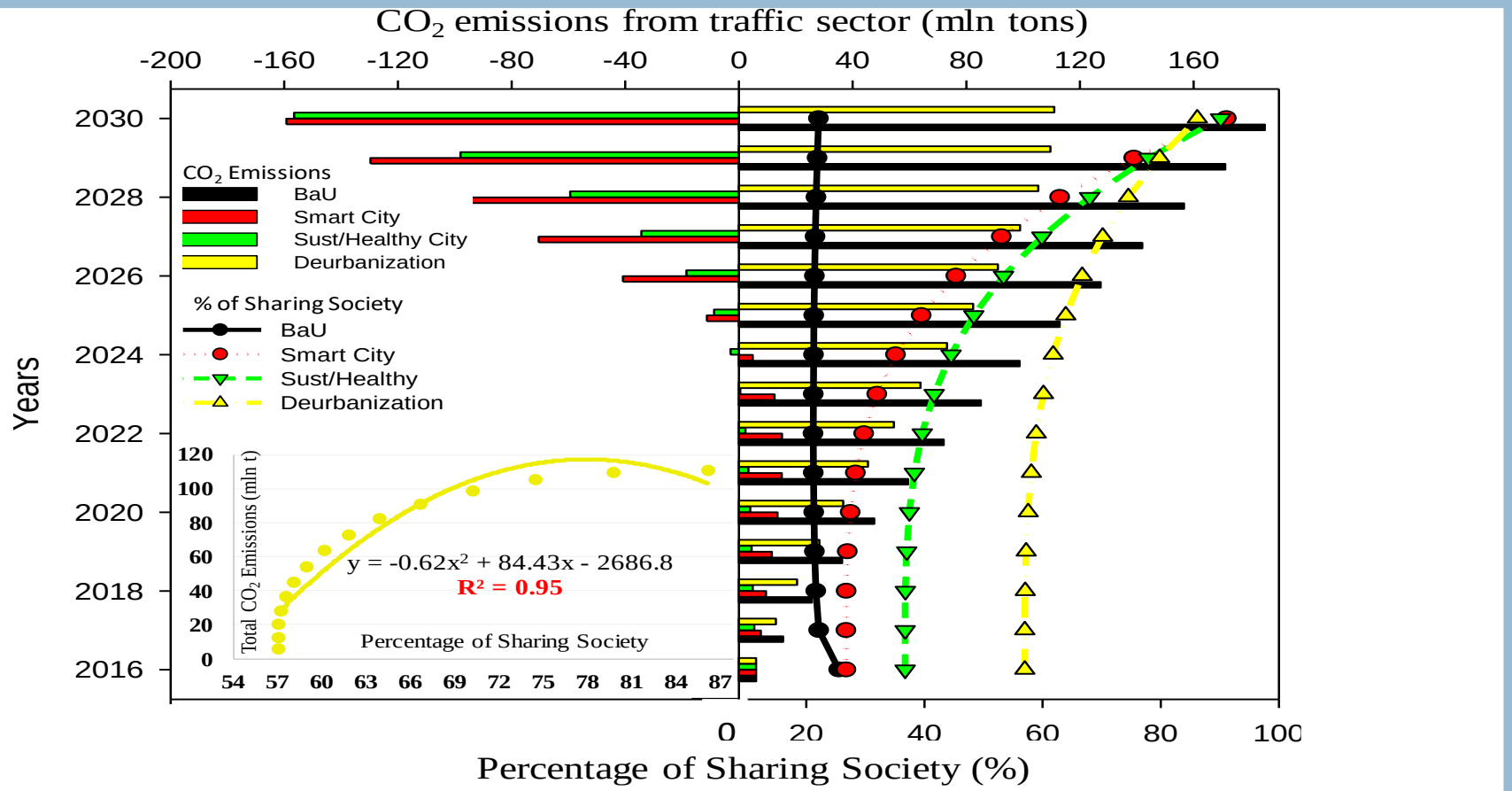
- Lack of investment in urban cores: ***Fraction of investments in urban infrastructure***
- Less economic growth accompanied with high living prices in urban cores: ***Development index***
- New digital technologies lead to more remote working job models and less commuting distances: ***Total cumulative distance travelled***
- Local actors are better off: ***Daily distance by car***


## Business as Usual

- Focus on private transport: ***Cars per person***
- No shared mobility concepts and less investments in public transport: ***high level of Air Pollution***
- High share of unemployment: ***Unemployment Rate***
- Inefficient spaces: ***Conversion to City area***
- Social disturbance: ***Unrest due to people problems***

# *NEMO* Simulation Runs; Carbon Emissions



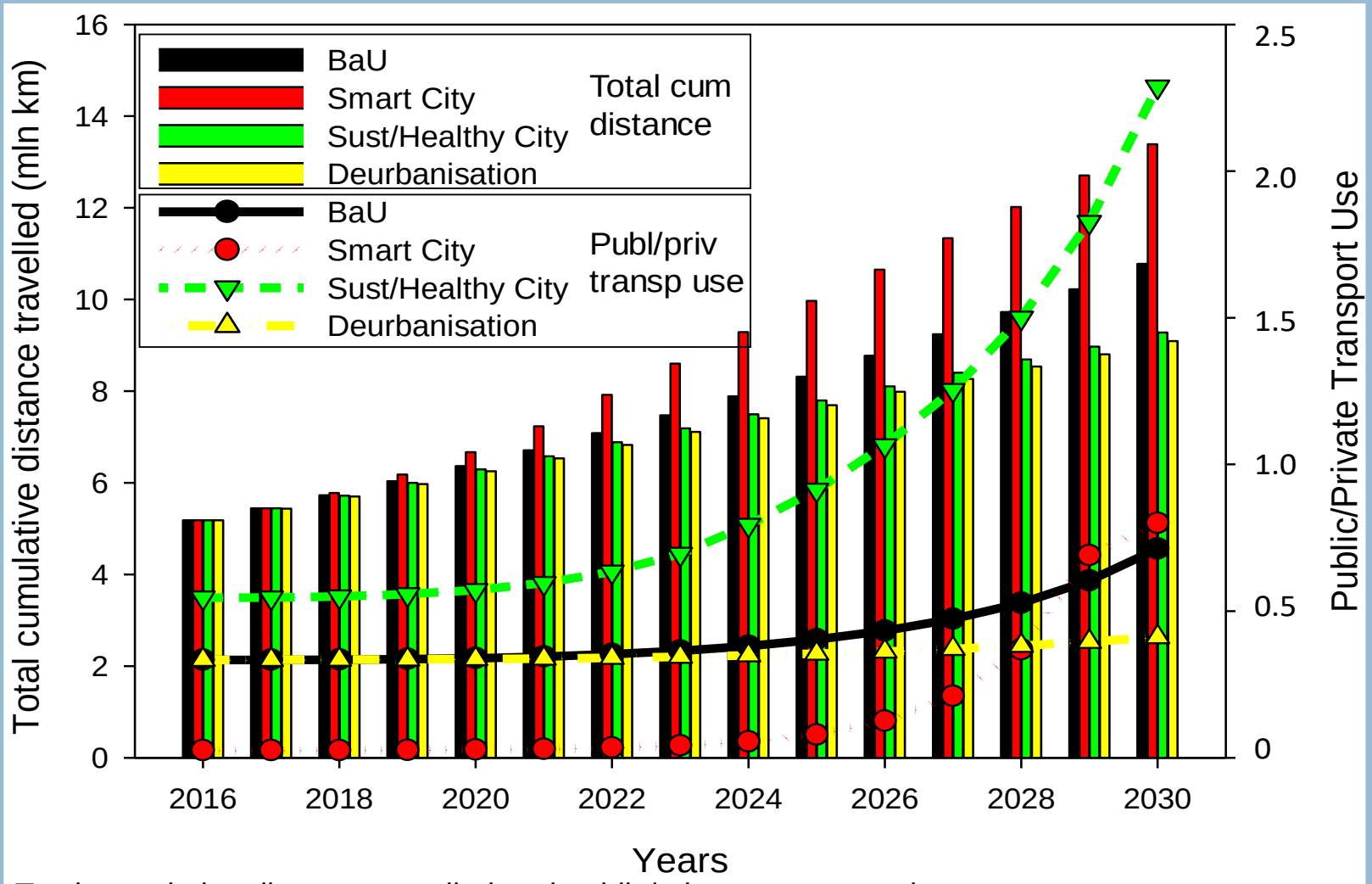



Percentage of sharing society and its impact on $CO_2$ emissions for scenarios BaU, Smart City, Sustainable/Healthy City, and Deurbanisation. Development of sharing society is presented as a scatter and line plot on the right-hand side. The inset graph displays the correlation between total $CO_2$ Emissions and the percentage of sharing society as simulated for the Deurbanization scenario.

Source: Melkonyan et al., 2019

1. The percentage of sharing society is the highest in the deurbanization scenario, but the increase of the percentage in the sharing population is the highest in the smart city scenario.
2. $CO_2$ emissions decrease sharply in Smart and Sustainable City scenarios.
3. $CO_2$ emissions increase in the scenario deurbanization, showing a positive correlation

# *NEMO* Simulation Runs; Total cumulative distance travelled



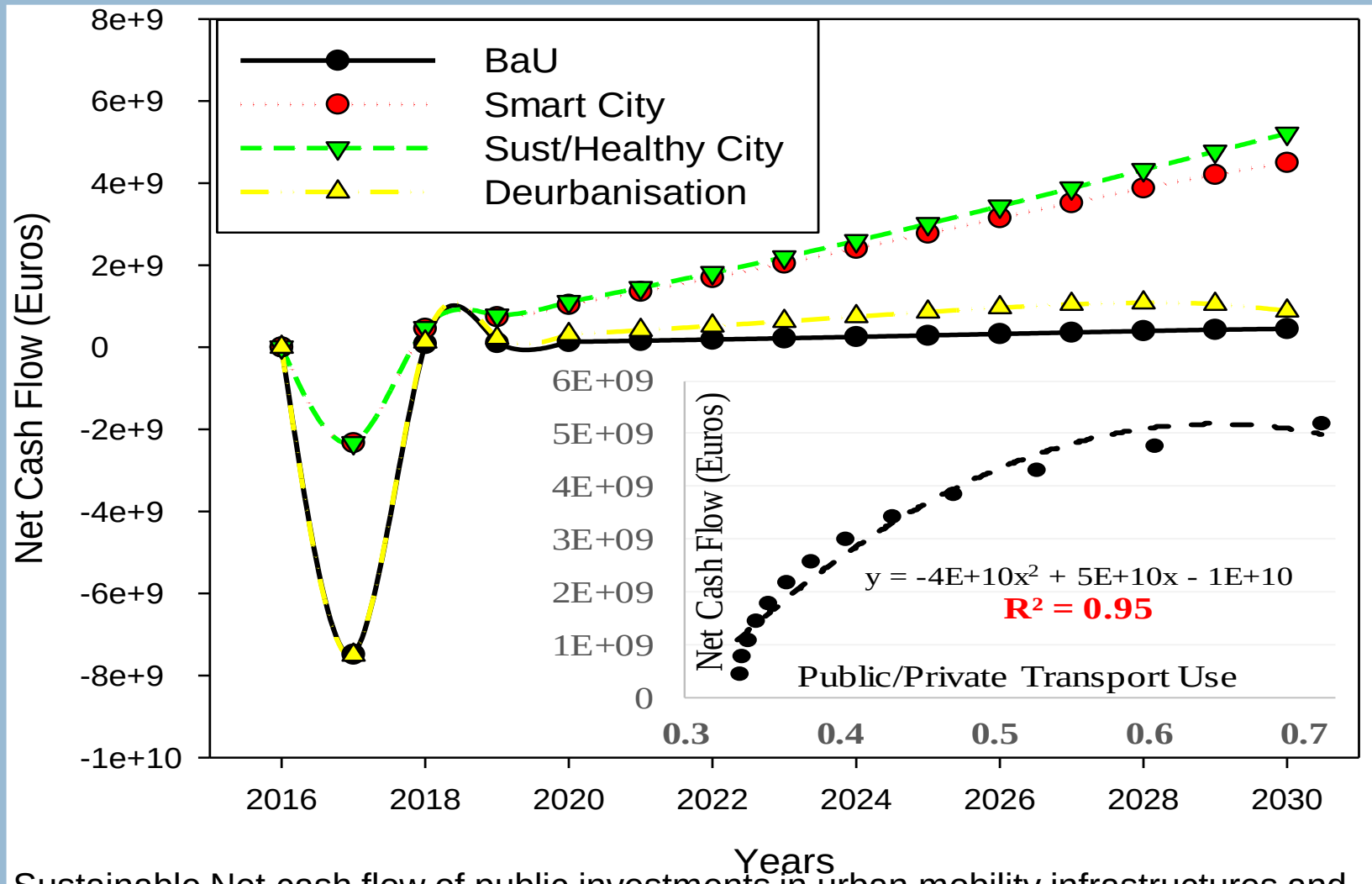

Total cumulative distance travelled and public/private transportation use

Source: Melkonyan et al., 2019

1. Due to the expansion of urban areas in the Smart City scenario, the distance driven increases significantly.
2. However, $CO_2$ emissions are saved in Smart City and Sustainable City scenarios. This is explained by
3. (a) modal - split: increasing, high share of public transport relative to private transport.
   b) efficient and targeted investments in urban systems

# *NEMO* Simulation Runs; Sustainable Net Cash Flow






Sustainable Net cash flow of public investments in urban mobility infrastructures and the correlation with the modal split for the Business-as-Usual scenario

Source: Melkonyan et al., 2019

1. SNCF depends on tax agreements of the state and $CO_2$ emissions saved.
2. Once the investment is made, it initially only leads to capital expenditures, then the SNCF increases significantly. This is particularly evident in the Smart City and Sustainable/Healthy City scenarios, where the most $CO_2$ emissions are saved.

# Sustainable Urban Systems*:* Project NEMO: Recommendations

1. The fraction of **renewable energy use in motorized** vehicles should be 80 %.

2. An increase from currently 1,000 Euros/person in public infrastructures investment to 3,500 Euros/person could lead to a decrease in total cumulative $CO_2$ emissions from 60 million tonnes to 20 million tonnes. A public infrastructure investment of **4,000 Euros/person** could lead to the mobility sector becoming $CO_2$-neutral.

3. Increasing the **attractiveness of public transportation** by improving quality, coverage, price, and timing of services could lead to direct savings of all the $CO_2$ emissions, making the transportation sector $CO_2$ neutral by the mid-2030s.

4. Transportation and Mobility sector along with Building and Energy sector is the key lever for transformation

Source: Melkonyan et al., 2019

**There are many good Best case examples for Sustainable/Smart Cities reflecting on Urban Logistics, Mobility, Energy, Construction, Education, Policy Making.**

# BUT……

**There are only a few circular activities in several Cities**
**and no Circular Cities**

**Ani Melkonyan**
**Executive Director of ZLV**

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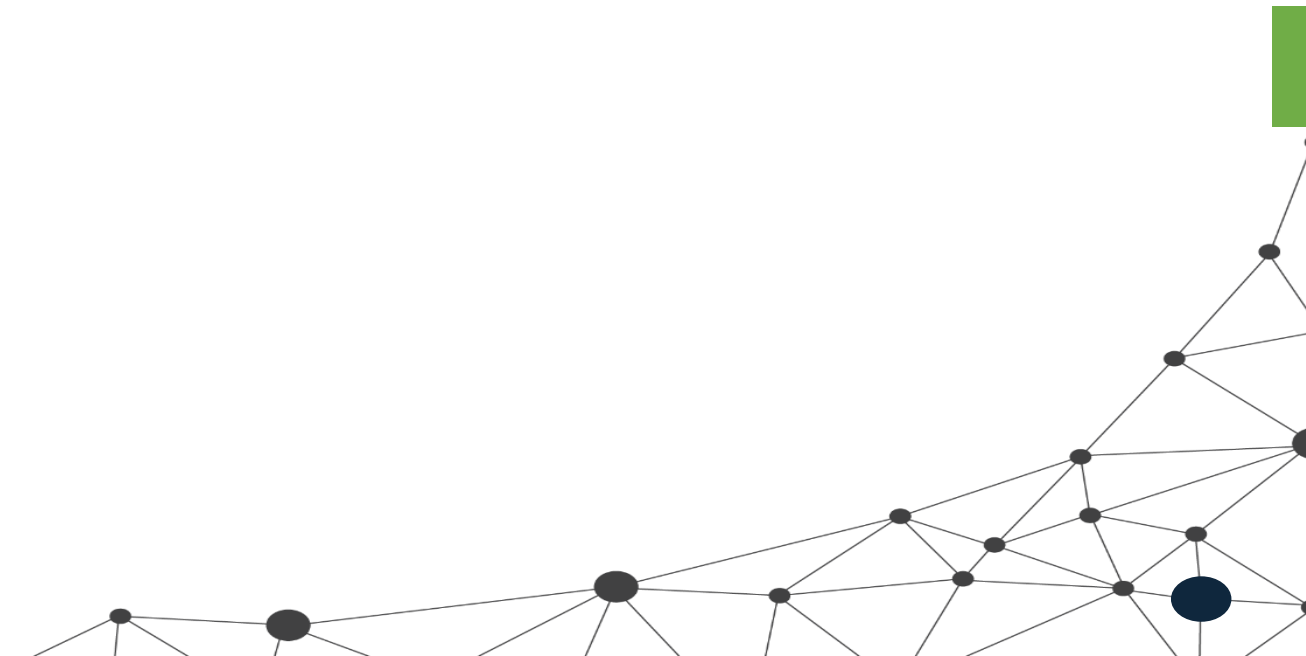
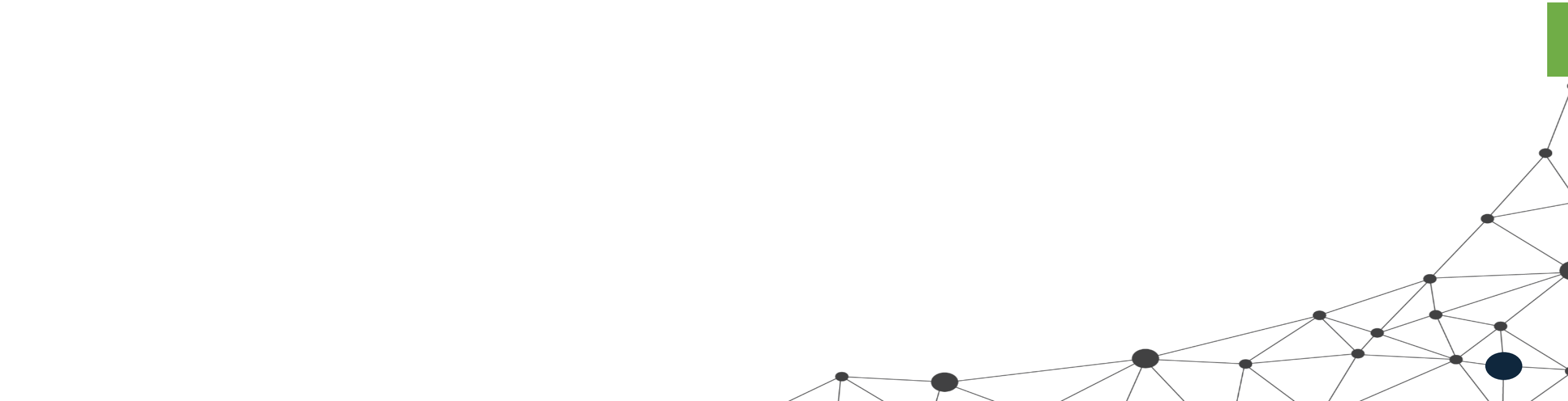
# Discussion



**Sharon Gil-** Programme Management Officer

*Investing in Nature-based Solutions in Cities*

Cities Unit/Economy Division at UNEP



# Investing in Nature-based Solutions in Cities

Sharon Gil, Programme Management Officer
Cities Focal Point / UN Environment Programme

# Nature-based solutions are key to ensure sustainable infrastructure development and green urban futures

City life is becoming the default human experience. Cities are engines for development, connect people and stand for innovation and opportunity.

But cities, and their expected growth, can also exacerbate some of the world's most serious environmental and socioeconomic challenges.

If we make our cities work with nature, we can address the triple crisis:

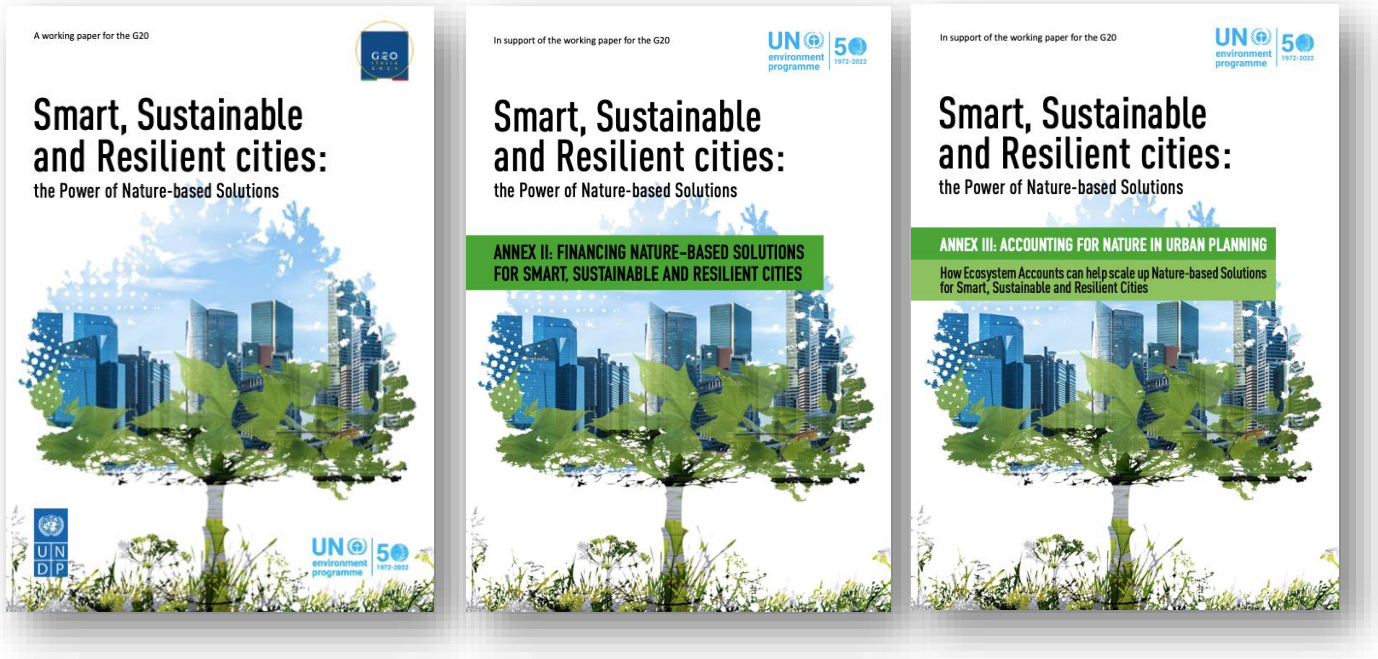
- biodiversity loss
- climate change
- Pollution

For healthy planet and healthy people.

# Building smart, sustainable and resilient cities means harnessing the power of nature.

Key theme promoted by Italy while holding G20 presidency.

Opportunity for Germany to promote NbS as part of G7 priorities.

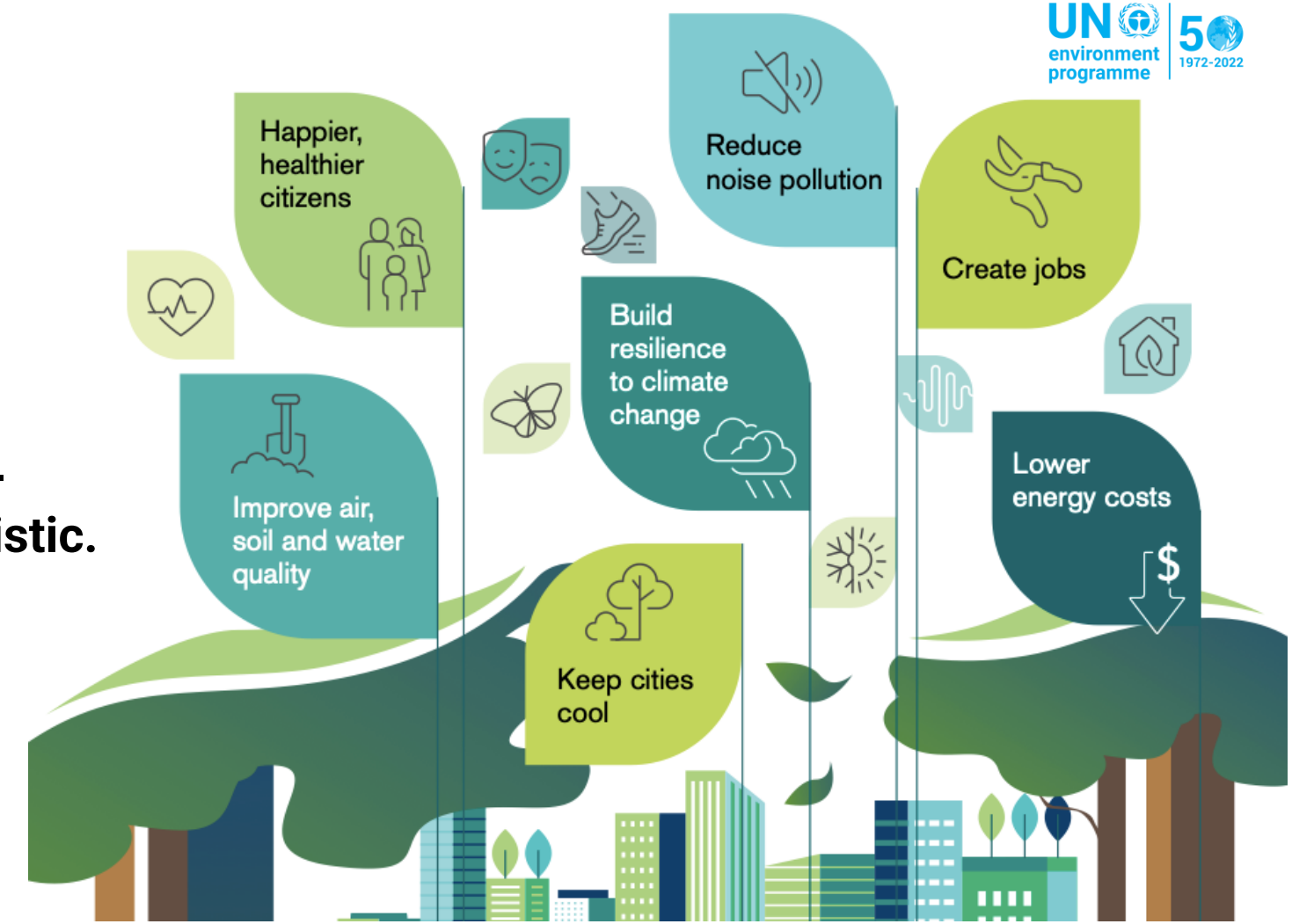



https://www.unep.org/resources/report/smart-sustainable-and-resilient-cities-power-nature-based-solutions

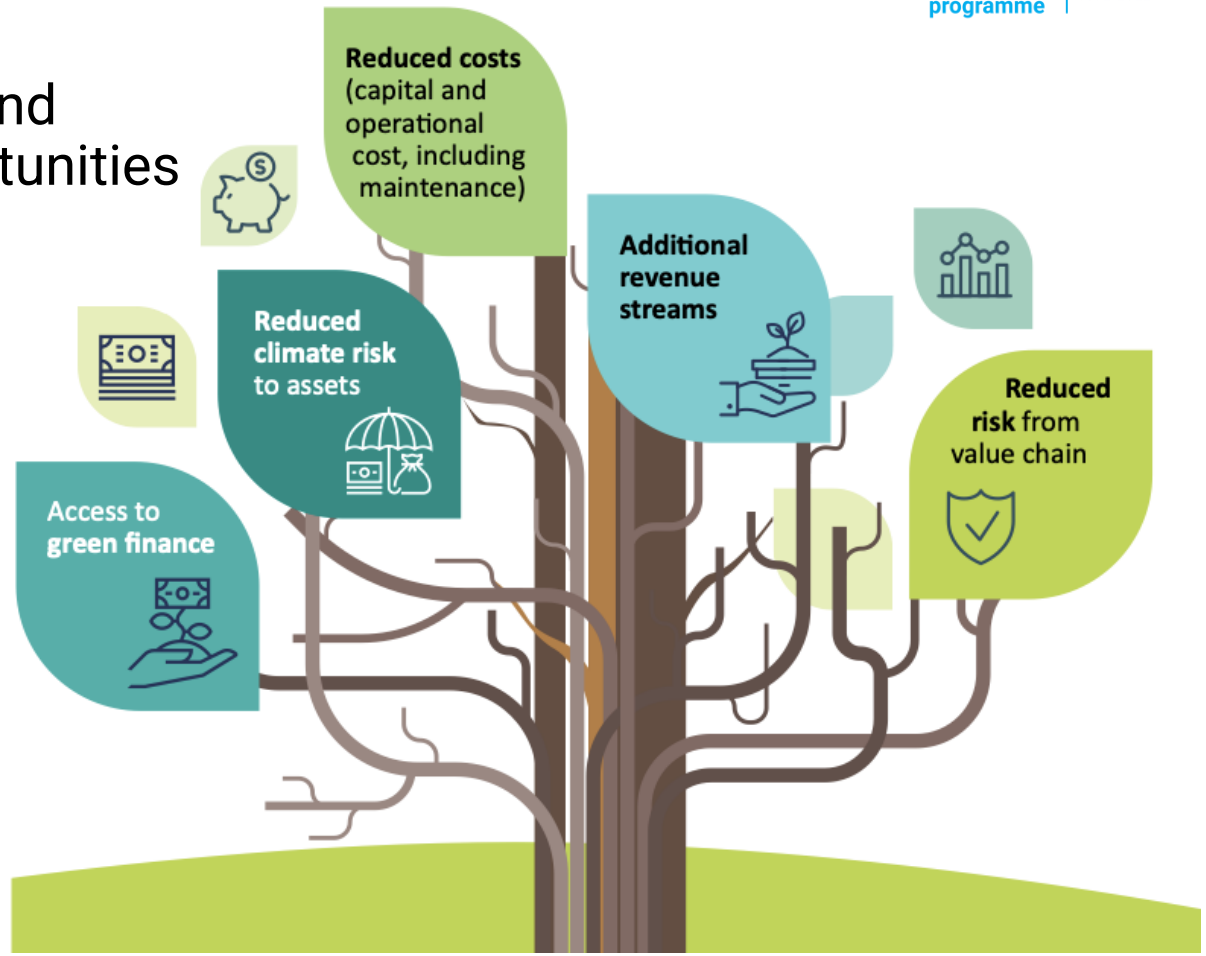
**Examples of the use of nature-based solutions to build more sustainable, resilient and just cities abound.**

**A key example is in Milan, Italy.**

**The benefits of nature-based solutions are multiple, cross-cutting and holistic.**



**Nature means business:**
it creates jobs and offers and offers key economic opportunities




**Did you know?**
Spending $583 billion on NbS for infrastructure could create more than 59 million jobs by 2030

While important lessons have been learned about what works, several barriers need to be overcome for nature-based solutions to deliver transformative change.

## Cities face institutional and financing barriers to implement and scale-up NbS

- Limited understanding of **benefits**, key to make the case for action and attract investments.
- Lack of **strong business models** and participation of the private sector.
- Lack of **data**, especially at the city level
- Lack of **coordination** and effective **multi-level governance**.

# How do we get from inspiring stories to NbS mainstreaming at scale?

- **Quantify benefits** to better value nature & ecosystem services.
- Ensure **stakeholder engagement** and **integrated planning.**
- Put in place **effective policy frameworks** to support development and maintenance
- **Ensure active participation of citizens** in planning and decision making

What's measured gets managed. Monitoring the impact of NbS will help to improve their implementation and make the case for expanding their use.

Local and national governments should work together to craft the right mix of incentives and regulation to create a supportive environment for the widespread application of NbS.

# THANK YOU
# Questions? Ideas?

**Get the UNEP-G20 Report**

**Contact**

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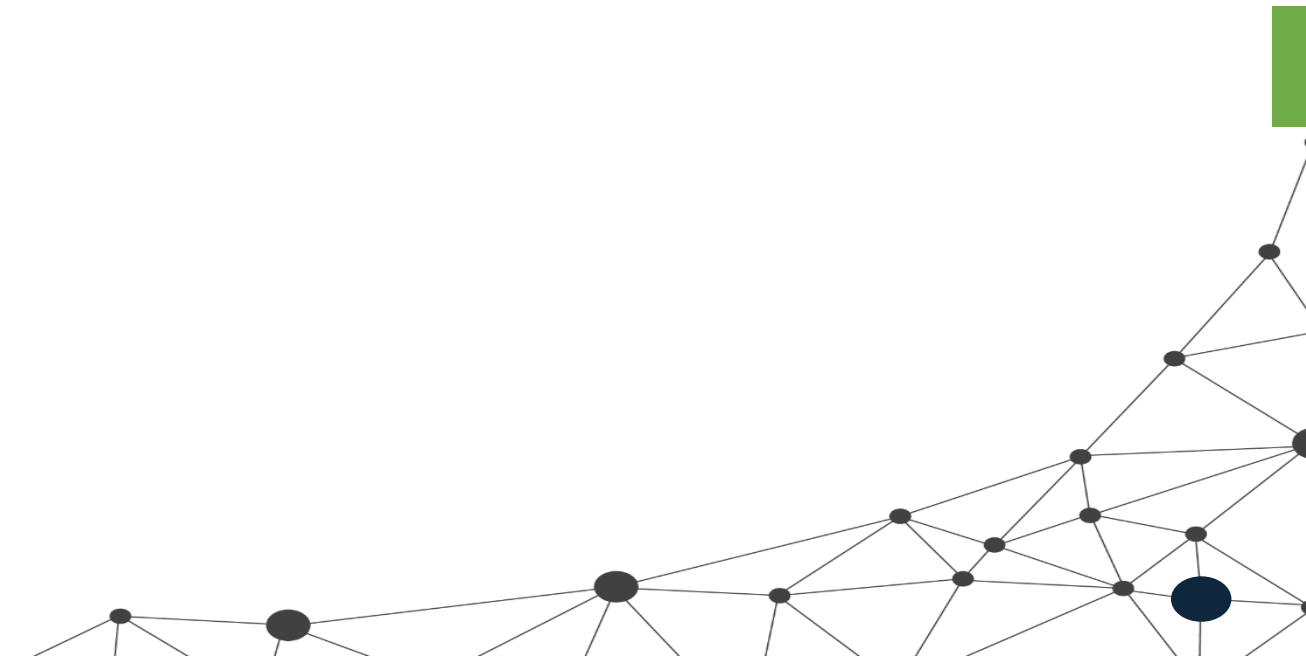
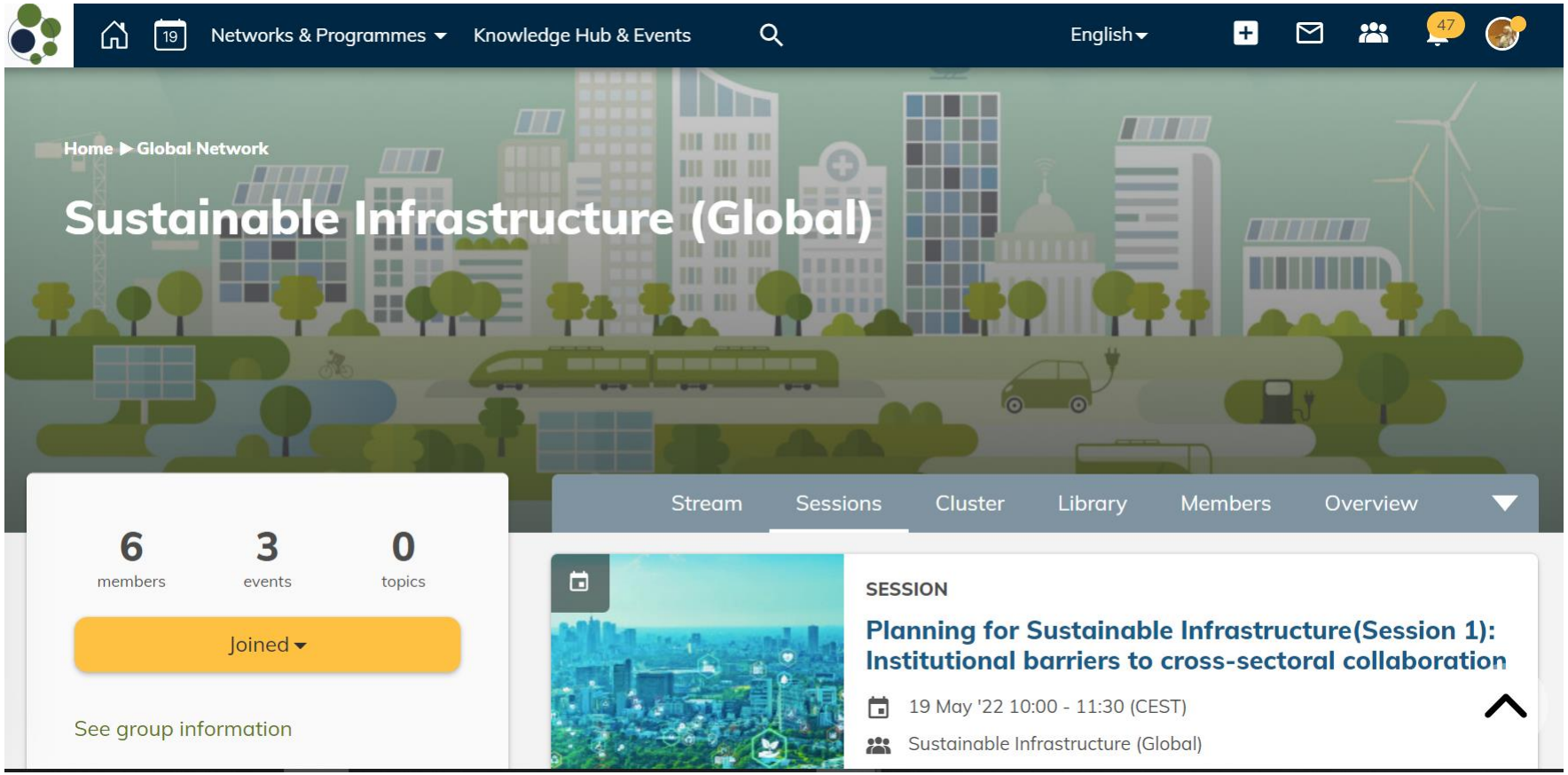
UN Environment Programme

Sharon.Gil@un.org

# Discussion



# Connective Cities Platform




https://community.connective-cities.net/en/group/199/events

# JOIN US AND STAY TUNED FOR MORE!