Financing Sustainable, Climate Neutral Cities – The business case

16th November 2020

14:30-16:00 CET

Cleantech Scandinavia
join the future now

SEI Stockholm Environment Institute

Stockholm School of Economics
MISUM

Photo credit: Robert Bye / Unsplash

Welcome!

There is no lack of sustainable, climate friendly and smart technologies, but there seems to be challenges to implement and upscale them in city structures. Could finance be a barrier?

- **November 2nd**: Selected cities shared their experiences, progress and challenges in developing a sustainable, climate neutral city; with a specific focus on the financing need and potential solutions
- **November 9th** : Different private financial institutions providing their perspectives picking up from the needs expressed in the previous workshop
- **November 16th**: Focus on tools and funding mechanisms to meet the financial needs of cities to become more sustainable
- **Now**: the business case and looking forward
- We (SEI, Cleantech Scandinavia and SSE-SIR Misum) - Viable Cities' Finance project (2020-2022), funded by Viable Cities

#SustainableCities #SmartCities

Our panelists today

- JULIO LUMBRERAS; Mission Board for Climate Neutral and Smart Cities
- ROBERT WESTERDAHL; Partner at Material Economics
- JORN VERBEECK; Head of Research and Innovation at Global Covenant of Mayors for Climate & Energy (GCoM)
- ALICE CHARLES; Lead, Cities, Infrastructure & Urban Services, World Economic Forum
- ROLAND HUNZIKER; Director, Sustainable Buildings & Cities, World Business Council for Sustainable Development (WBCSD)
- LIISA RAASAKKA; Head of the EIB Group Office for Sweden

Agenda

14:30 Introduction to the session and recap of previous sessions

- Fedra Vanhuyse, Head of Societal Transitions – Senior Research Fellow at Stockholm Environment Institute

14:40 Presentations from guest speakers

- Robert Westerdahl with an overview of cities' financial needs
- Jorn Verbeeck on Global cities and Citizens as agents of change
- Liisa Raasakka on the role of public banks
- Roland Hunziker on Innovation in business models and conditions to attract business investments
- Alice Charles on the effect of COVID-19: rethinking traditional revenues and financing mechanisms to deliver sustainable cities
- Julio Lumbreras on the Mission board's proposed instruments to leverage investments/funding

15:20 Q&A session between moderator and panellists; selected questions from the audience

15:55 Concluding remarks

- Fedra Vanhuyse

House rules

- Use the Q&A chat function to post your questions for the Q&A session at 14:00 CET
- Please state your name and organization/country
- Be short and clear

Recap from the previous sessions

Our panelists

THE CITY PERSPECTIVE

- **Gustaf Landahl,** Head of Department of Planning and the Environment, City of Stockholm;
- **Frans-Anton Vermast;** Senior Strategy Advisor Low Carbon and Connected Urban Planning, Amsterdam City
- **Bud Braughton;** Smart Columbus Project Manager
- **Serge De Gheldere;** Lead at Futureproofed & Klimaatzaak; Member of the Board and Executive Committee of Leuven2030

THE PRIVATE FINANCIERS' PERSPECTIVE

- **Carl-Emil Lindholm,** Director, Infranode
- **Heimen Visser,** Fund Manager, PrimeVest Capital Partners
- **Helena Olin,** Head of Real Assets, AP2
- **Kristoffer Aanerud Nielsen,** Advisor, Climate & Sustainable Finance, SEB

FUNDING MECHANISMS

- **ALANUS VON RADECKI,** Head of Competence Team Urban Governance Innovation at the Fraunhofer Morgenstadt Initiative
- **ISABELLA LONGO,** Project Director (BIT Habitat) at Barcelona City Council
- **LIZA ROSE CIROLIA,** Senior Researcher at the African Center for Cities
- **MAYUR MUKATI,** Senior Associate Sustainable Finance Solutions at Sustainalytics
- **WILL SIBIA,** Founder at URBS

Discussion points from previous sessions

Overall:

1. Large investment need to become climate neutral (e.g. new infrastructure and refurbish infrastructure built in the 60's- 70's)
2. National legislation needed to push the sustainable agenda at city level. Be bold: asking for forgiveness instead of permission when it comes to implementing the sustainability agenda
3. Sustainability: environmental and social -> coherent impact investment framework for investing in cities lacking (including direct and secondary impacts); need to look at job creation also

Different incentives and ways of working:

1. **Current investment portfolio vs additionality**: LGs focus on existing financing needs and existing costs vs. private financiers looking for new investment opportunities. LGs need to balance the accounts. However, private financiers could help LGs to find new revenue streams from investments by assessing future functionalities of assets
2. **Return on investments**: LGs (especially AAA-rated ones) vs. private financiers (look for risk return)
3. **Partnership and ownership of assets**: LGs owning and controlling the assets/ doing everything on their own vs. collaboration with private investors. Different cities have different levels of competency. Incentive needed for LGs to step into special purpose vehicle/ neutral entity facilitator that contracts all partners. Are LGs facilitator in scaling pilots or do they have another role? Not a lot of cities are ready to pull together large partnerships for the investment scale needed

Way forward could be…:

1. Public procurement: LGs have quite substantial budgets; is an instrument to channel investment – aside from bonds or loans or grants
2. For cities with lower credit worthiness/ investments with low return: pooling investment for the cities themselves; or for declining and rural cities: help from bigger cities, get back-up from public banks?
3. Regulatory holiday for pilot projects?

Today’s panelists

Robert Westerdahl

Partner, Material Economics

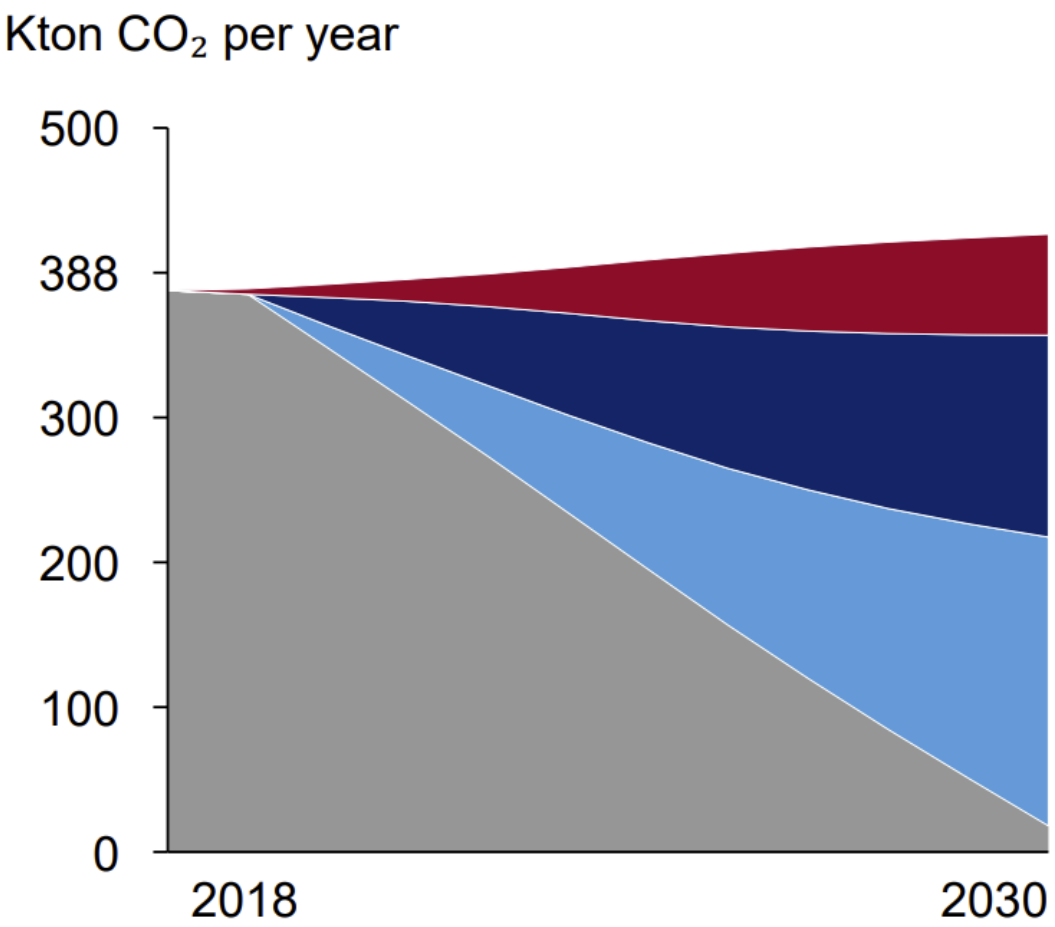
Financing the climate transition for cities

Robert Westerdahl

MATERIAL ECONOMICS

Climate neutral Transport, Buildings and Electricity by 2030

CO_2 reduction per area to 2030 for city of 100'000, excluding scope 3 emissions



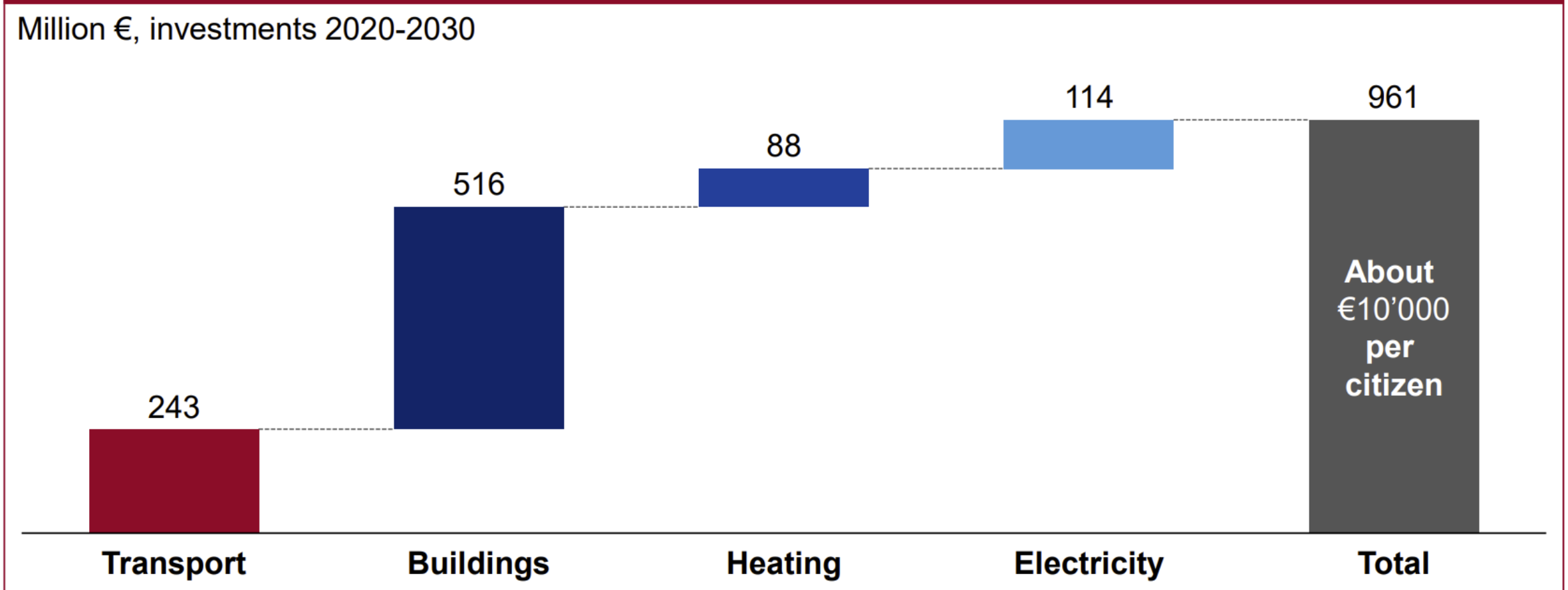
Transport	Electrification, public transport, active mobility, remote working
Buildings and heat	Buildings renovation, heat-pumps, solar heating, zero emission district heating
Electricity	Rooftop solar, utility-scale wind, solar, electricity storage, grid investments

Source: Material Economics modelling

MATERIAL ECONOMICS

Additional investments needed of €10’000 per citizen

Total additional investment need for a city with population of 100’000, by sector



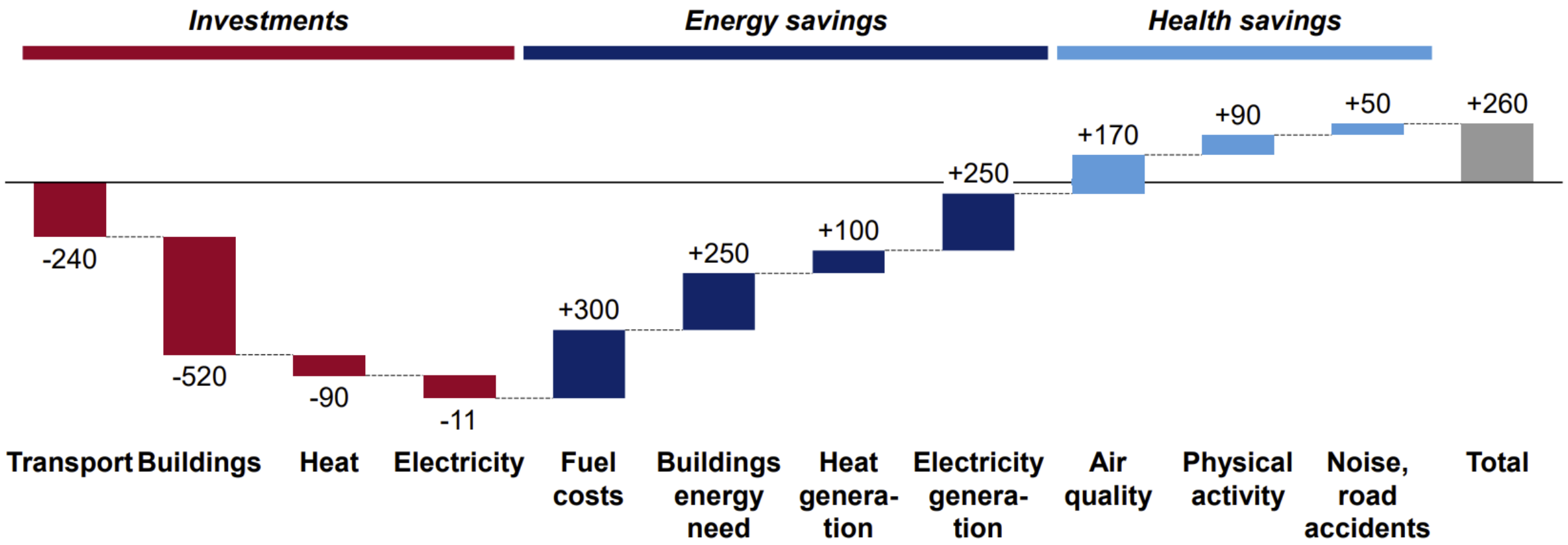
Source: Material Economics modelling

MATERIAL ECONOMICS

Climate action can yield a positive economic case

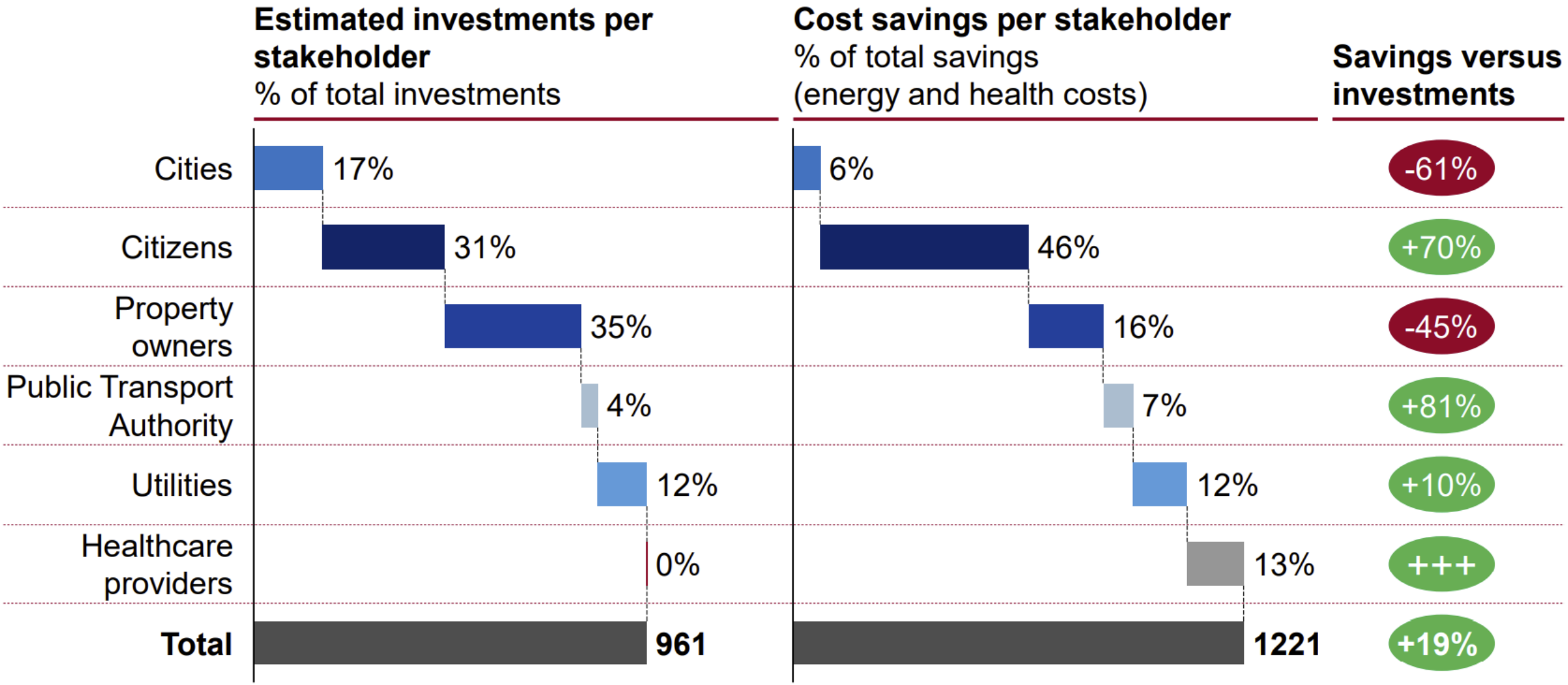
The economic case for climate neutrality for a city of population 100’000

Million €, Net Present Value, 2020-2050



MATERIAL ECONOMICS

Cities represent only 17% of the investments needed – they need to catalyze and accelerate the change required across all stakeholders



MATERIAL ECONOMICS

Thank you!

Robert Westerdahl
Partner, Material Economics

robert.westerdahl@materialeconomics.com

MATERIAL ECONOMICS

Jorn Verbeeck

Head of Research and Innovation at Global Covenant of Mayors for Climate & Energy (GCoM)

Financing Sustainable, Climate Neutral Cities
The Business Case

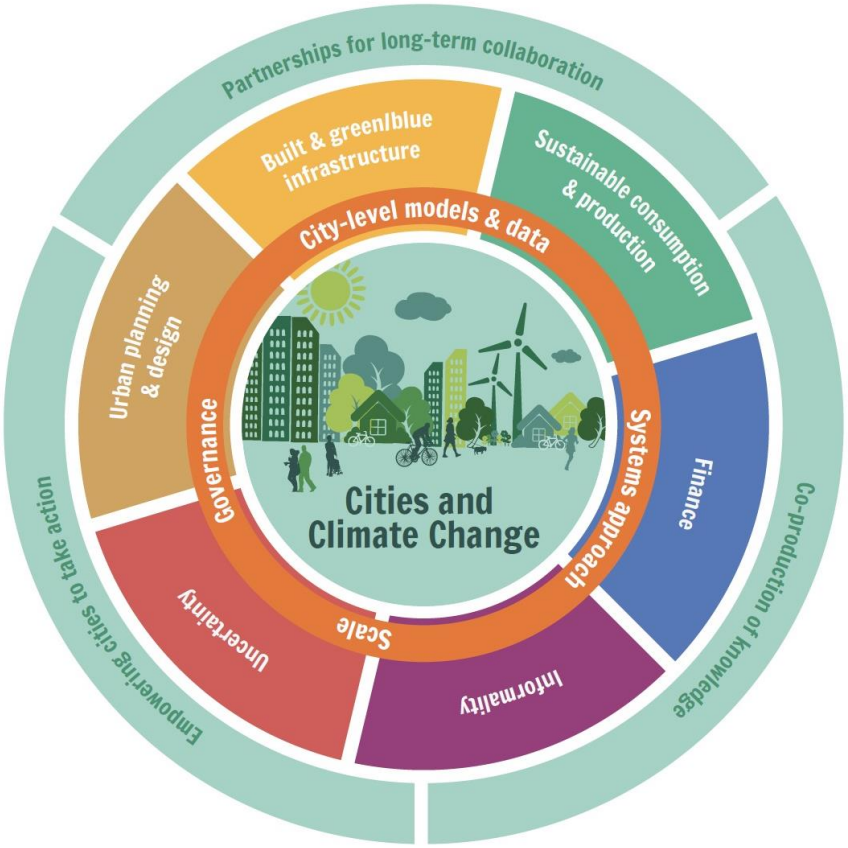
Jorn Verbeeck, Head of Research & Innovation, Global Covenant of Mayors, for Climate and Energy (GCoM), Brussels, Belgium

#Innovate4Cities
@Mayors4Climate

All experiences are different! This is a path of reference that you can adapt to your own situation.

www.globalcovenantofmayors.org

From R&I priorities to actionable knowledge



Graphic design by Amanali Cornejo V
(copied from WCRP report 2019 with appropriate permissions)

Cities and Climate Change Science Conference Edmonton, 2018

Gaps by Topical areas

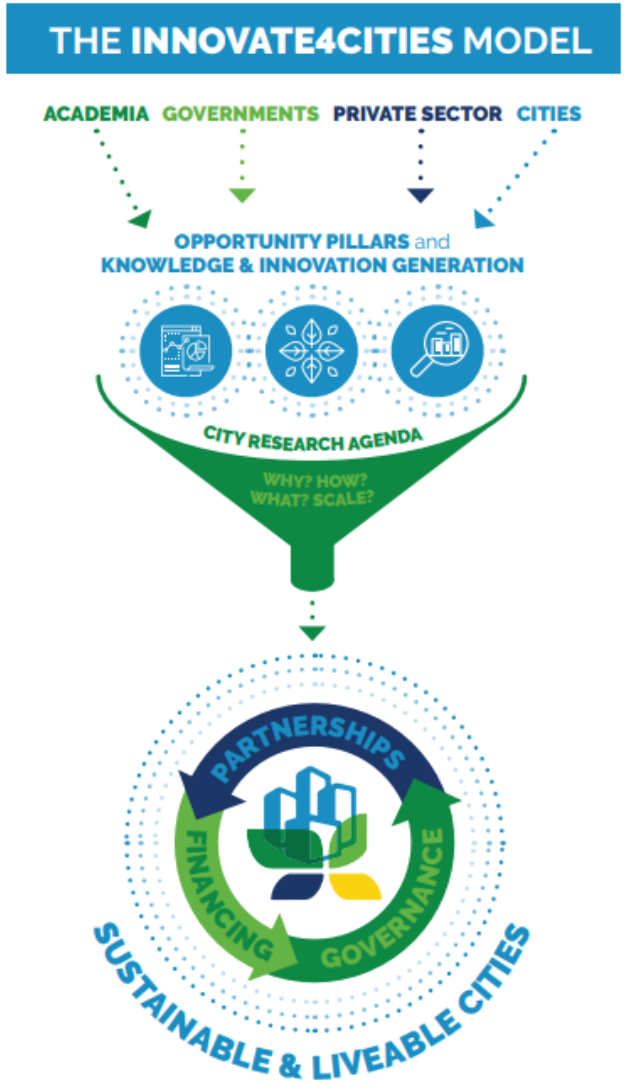
- Informality
- Urban Planning and design
- Built and blue/green infrastructure
- Sustainable production and consumption
- Finance
- Uncertainty

Gaps in Cross Cutting Issues and Knowledge Gaps

- Systems approach
- Governance and Institutions
- Scale
- Observation, data, modelling, scenarios – city scale

Gaps in Delivery Approaches

- Knowledge co-design and co-production
- Empowering cities to take action
- Fostering long-term science-policy-practice collaborations



Importance of data & language:

- Insight in what priorities & opportunities are
- Who has which data and which data architecture allows moving forward
- Whether all actors understand each other (e.g. procurement)

Tailormade approach:

- Supply & demand are important
- City power and capability: (de)centralized approaches
- Phase of the climate action journey

Key entry points for city action:

- Urban planning and design
- Buildings
- Energy and transportation
- Waste, water, and food

Policy and finance instruments:

- Access to finance and de-risking investments
- Multilevel governance dynamics (e.g. vertical integration)
- City climate action commitments, progress, and incentives
- Public procurement methods to prioritize sustainability

Evidence and tools for city action:

- Innovation and measuring innovation
- Data aggregation
- Emissions forecast
- Communications and stakeholder
- Engagement processes

City context:

- Resilience and adaptation strategies
- Vulnerable communities and informal settlements
- Governance landscapes
- Intermediary cities

City DNA & building blocks:

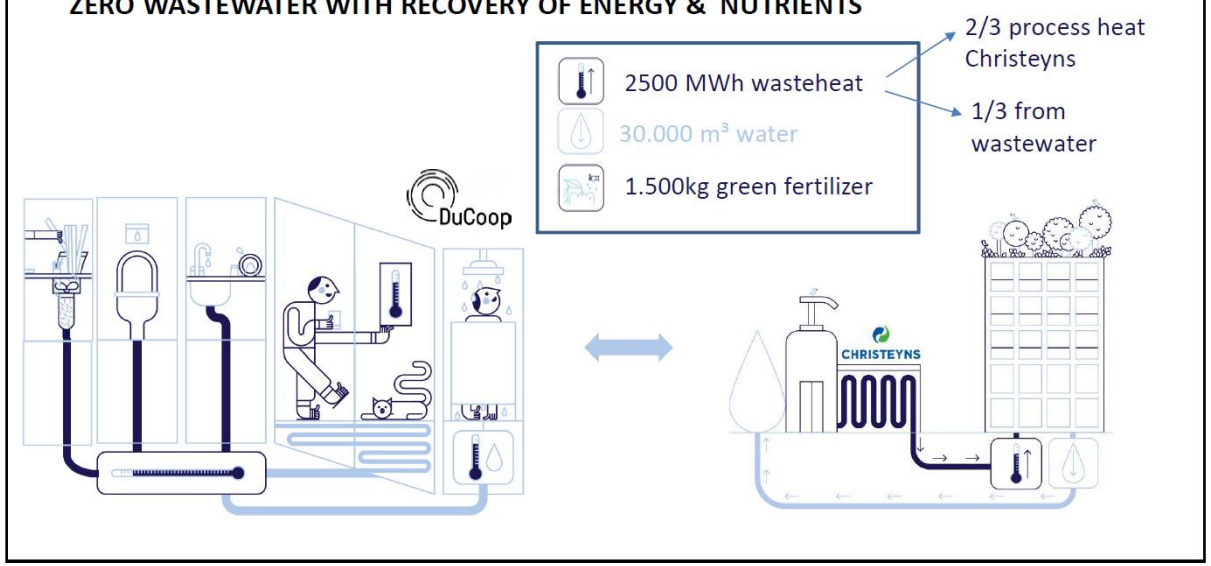
- City narrative: resilient cities, smart cities, doughnut cities, NBS, …
- Window of opportunity
- Citizens as asset holders in terms of data (bottom-up), knowledge (co-creation), buildings (performance), finance (pension funds, green combo funds), …

Iteration, dissemination, accelerating, scaling:

- Mastering the mission and the matrix
- Co-benefits as a standard
- ‘Pilots’, barriers, enablers
- Peer-to-peer approaches
- Learning network
- Multi-stakeholder partnerships
- Governance
- Leapfrogging

ZAWENT UITGELEGD

ZERO WASTEWATER WITH RECOVERY OF ENERGY & NUTRIENTS



Liisa Raasakka

Head of the EIB Group Office for Sweden

European Investment Bank

The EU bank

Smart City Business Forum 2020

Financing Sustainable, Climate Neutral Cities, 16th of November 2020, 14.30-16.00

Liisa Raasakka
Head of Stockholm EIB Group Office, EIB

What is “inside” the EU Urban Agenda?

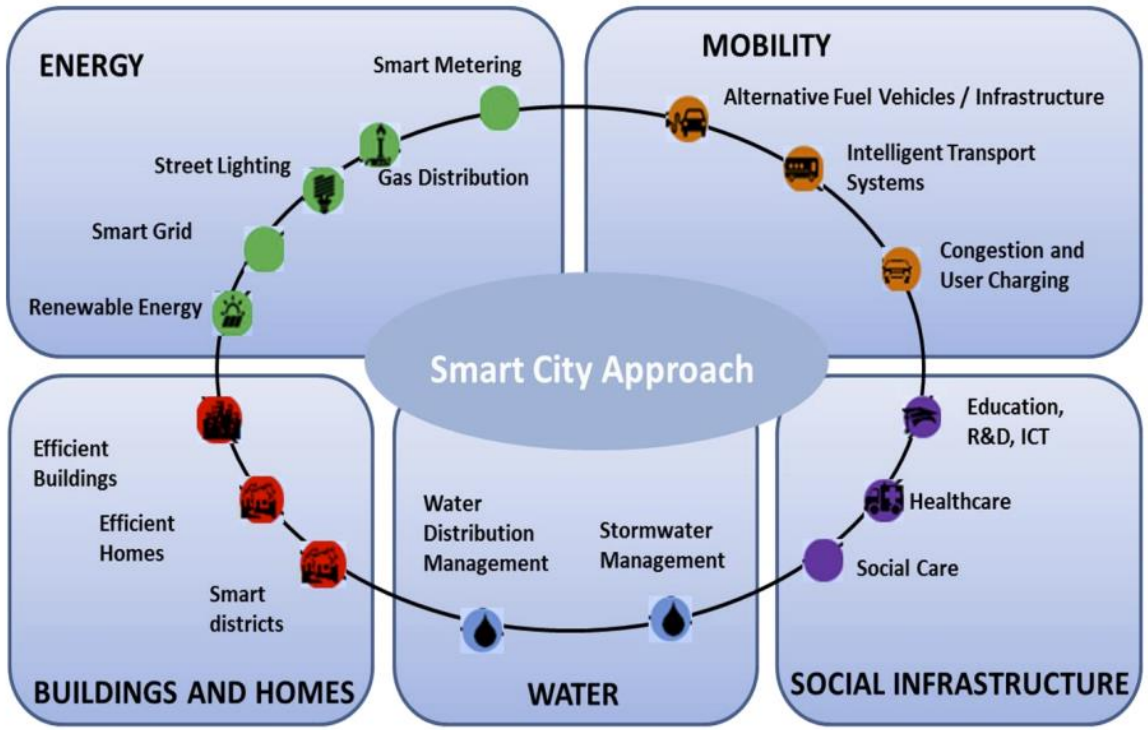
Inclusive Cities	Green Cities	Smart Cities
• Jobs and skills in the local economy* • Urban poverty • Housing* • Inclusion of migrants and refugees* • Cultural heritage* * = Partnership in which EIB active	• Sustainable use of land and Nature-Based solutions* • Circular economy* • Climate adaptation* • Energy transition*	• Urban mobility* • Air quality* • Digital transition • Innovative and responsible public procurement • Security*

1. **The Priority Themes and Partnerships**
2. **The agenda for action:** Better Funding, Better Knowledge, Better Regulation
3. **The calls for action:** In the Pact of Amsterdam, Ministers invite EIB to:
   - Help develop better funding approaches in the urban context
   - Contribute to the Partnerships especially better funding and better knowledge.
   - Reflect, where relevant, the outcomes of the Urban Agenda for the EU in its urban lending, grant-loan blending and advisory services

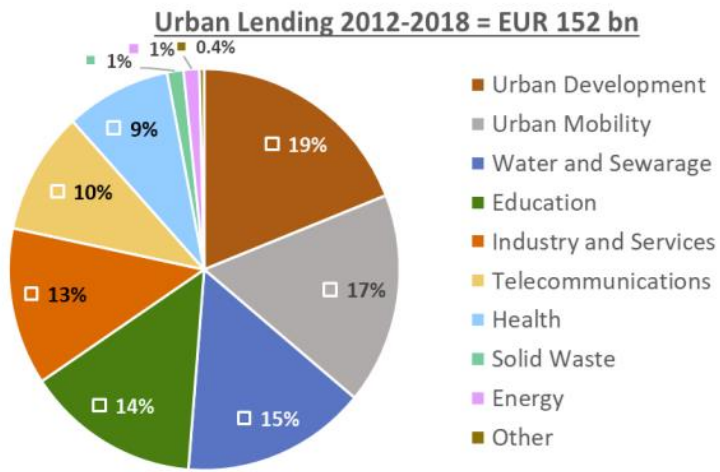
   (*New Leipzig Charter of December 2020, promotion of integrated urban development approach with special emphasis on deprived urban neighbourhoods)*

=> Urban lending now a mainstream investment area under EIB public policy goals in areas of cohesion, infrastructure, environment, climate action.

EIB urban lending



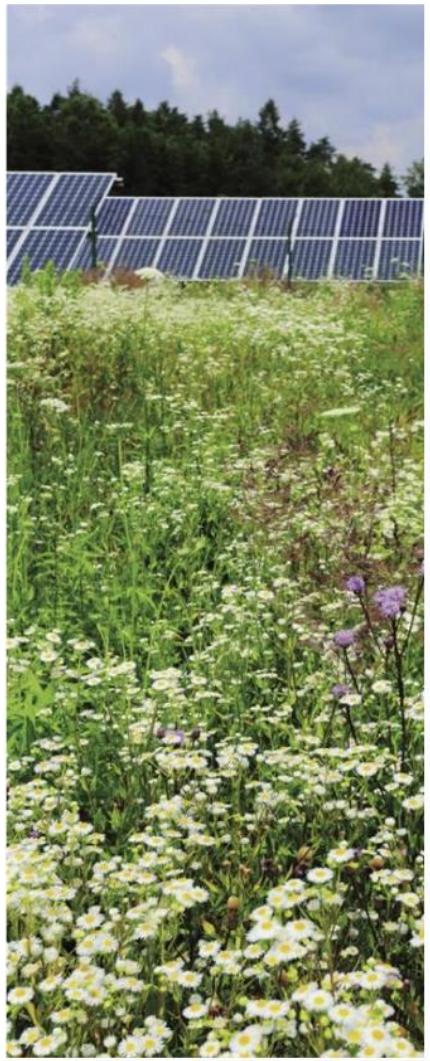
- EUR 150 bn of urban lending 2012-18
- EUR 50 bn urban climate finance 2012-18
- Urban is approx 1/3 of total EIB lending
- 40% of climate lending
- EUR 14 billion outside EU 2012-18



Public Banks : Rationale

- Cities are responsible for a major share of public investment and crucible for innovation – huge scope
- Public banks have a huge role in financing municipal investment in Europe. They often have strong credit ratings on which basis they can raise funds on the capital markets and make them available at long maturities and with attractive pricing to cities.
- EIB invests alongside and considers them essential partners. Common urban agenda public policy goals – catalytic role
  - National public banks can leverage EIB funding to reach smaller towns
  - National public banks have country and sector knowledge can combine with EIB international experience in synergy
  - National public banks can co-finance or co-invest
  - Potential synergies in providing urban advice
- EIB is also working together with public sector banks to foster common principles and approaches – for example we set up a Joint Initiative on Circular Economy (JICE) to aim at developing common principles for circular economy financing.

Looking ahead: the EIB Group as the EU Climate Bank



1. From billions to trillions. EIB Group will aim to help unlock at least **EUR 1 trillion of investment for climate action & environmental sustainability by 2030**.

2. Increasing EIB's own financing for climate action and environmental sustainability to a share of **50% for by 2025**.

3. **Aligning** all the EIB Group's financing activities with the principles and goals of the **Paris agreement by the end of 2020.**

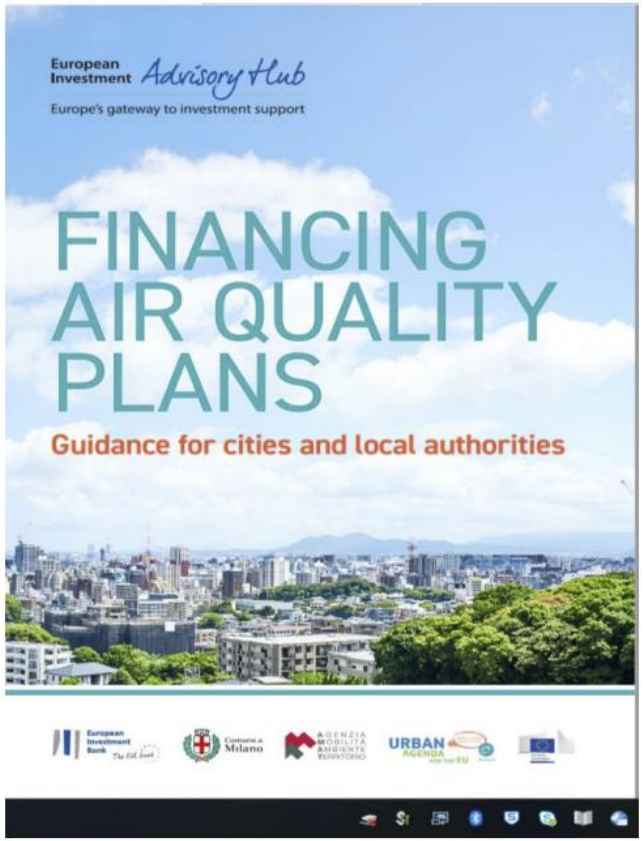
EIB has launched its Climate Bank Roadmap guide activities 2021-2025

Pandemic resilience and city climate co-benefits

Theme	Investment	Pandemic Resilience Benefits	Climate Benefits
Overall urban resilience	Multi-sector resilience planning-led investments	• Enhance resilience to pandemics across multiple sectors	• Enhance climate adaptation and reduce vulnerability to key climate risks
Sustainable urban development	Urban regeneration, slum upgrading, multipurpose public spaces, greening	• Enhance possibilities for social distancing in the public space	• Resource efficiency, adaptation measures
Air quality	Investments in air pollution reduction from industry, housing, public transport, heating and cooling	• Correlation between COVID-19 and air quality impacting respiratory system etc.	• CO_2 reduction through increased efficiency
Waste management	Investments in recycling, circular economy, improved waste management	• Improved hygiene and sanitation • Reduced risk of spreading from contamination	• Resource efficiency improvements and reduced emissions from incineration and landfills
Sustainable mobility	Public and non-motorized transport	• Improving sanitation of public transport, reduced crowding, cycling	• CO_2 reductions from vehicle emissions
Water supply and wastewater	Investments in water supply and sewerage	• Improved sanitation, hygiene	• Energy savings e.g. reduced pumping costs, water resource efficiency
Affordable housing	Climate-smart (e.g. EDGE compliant) housing	• Reduce overcrowding, facilitate isolation,	• Energy efficiency improvements, CO_2

Climate and Pandemic Co-benefits – Examples

Milan – Air Quality



Barcelona - Distancing

The Superblocks Plan (increase of pedestrian and open/green areas) regenerates neighborhoods, promotes walking/cycling, reduces air pollution, and provides more space for social distancing in response to COVID-19.

Alice Charles

Lead, Cities, Infrastructure & Urban Services, World Economic Forum

New York Pre-COVID Agreed City Budget

- **Programs**
- Public Safety
- Education, Libraries
- Social Services
- Environmental Protection
- Transportation Services
- Parks, Recreation
- Housing
- Health
- Rents from civic properties

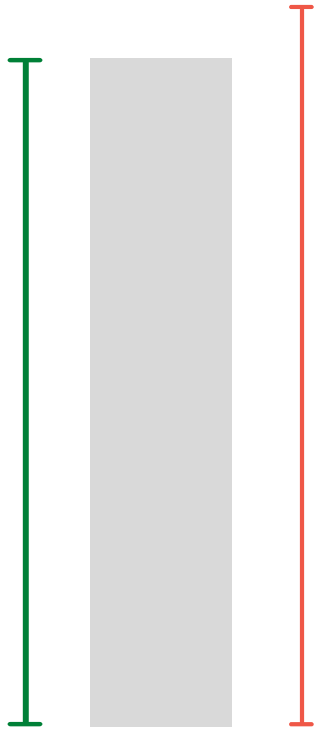
- **Taxes**
- Real Estate Taxes
- Sales and Use Taxes
- Personal Income Taxes
- Other Taxes
- Investment Income
- Grants contribution

Revenue

$95.8 B

Deficit

$1.7 B



Expenses

$97.5 B

- **Basic Services & Programs**
- Public safety
- Community development
- Community services
- Public works
- General administration

$97 B

Debt Investment

Source:
Independent Budget Office of the City of New York

New York Projected Budget Deficit due to COVID-19

- 4 billion revenue lost from public transit, toll revenues, taxes (6.7 billion in 2021, -10.5%) and pension investment loss depending on ROI.

- **0.97 b**

- **1.1 b**

- **2.9 b**
- **12.2% drop real property transfer taxes**

Deficit

$8.078 B

Revenue

Expenses

$97 B

- **1.15 b**

0.597 b

- **0.48 b**

0.151 b

- Additional 2.378 billion Covid-19 Spending since September 8th, 2020.

Source:
Independent Budget Office of the City of New York

And yet Cities need to deliver Climate & Resilient Infrastructure

- Cities account for the majority of the world's population and carbon footprint. Achieving carbon neutrality and building towards sustainability will require a collaborative and systemic approach to climate mitigation and adaptation financing with the consideration of social justice in these actions.

Required Transformations	Potential Technical Solutions
New standards for systemic efficiency will drive the design of new **buildings** and retrofit of existing building stock to reduce energy and health burdens of disadvantaged population and meet future environmental and health outcomes.	▪ Improve efficiency of building fixtures and subsystems: lighting, heating, cooling, ventilation, water ▪ Circular economy to ensure sustainable supply chain and low-embodied energy of building materials ▪ Connected buildings to ensure resource efficiency at a city level
Updating **power networks** and transitioning to **renewable sources** in a socially equitable manner will transform the **urban energy supply**, while advances in technology will unlock demand and supply for alternate fuel sources.	▪ Local, low-carbon, renewable energy ▪ District energy systems (thermal & electric) ▪ Distributed generation (solar, thermal) ▪ Centralized generation (solar, wind, tidal) ▪ Smart grids, micro grids, and localized storage capacity
Investment in **mass transit, alternative modes of transportation, and electrifying mobility** will democratize access, while advances in technology will change public preferences and behavior.	▪ Mass transit solutions (rail and BRT) ▪ Infrastructure to promote biking and walking ▪ Electrification of personal, public, and fleet vehicles ▪ Smart mobility, autonomous vehicles, and sharing economy
Update of aging water systems and expanding water service to underserved population will enhance supply-side efficiency and integrated management can optimize use of **water resources** in stressed environments.	▪ IoT technology for smart systems management and treatment optimization ▪ Water reuse within closed loop building systems ▪ Green/Blue infrastructure to manage stormwater ▪ Integrated water management to support diverse land use
Increasing urban resource efficiency requires **circular supply chain** to divert and reduce waste, while technological advances can improve safety and sustainability of management, treatment, and disposal.	▪ Circular management of diverse waste streams ▪ Waste-to-energy systems ▪ Enhanced material sorting and recycling ▪ Nutrient recycling through treatment byproduct

What cities must do to attract finance?

Financial institutions have made bold and welcomed commitments to Environmental, Social and Governance **(ESG),** pledging to accelerate climate, socially responsible and mission-oriented financing, which creates an opportunity for cities.

The **Coalition for Urban Transition** estimates that the investments required to reduce urban emissions by 90% would be US$1.83 trillion (about 2% of global GDP) per year, but this would generate annual savings worth US$2.80 trillion by 2030 and US$6.98 trillion by 2050.

A **lack of available finance** is not the critical inhibitor for investment. **Inadequate policy, bureaucratic hurdles, undeveloped technical expertise, governance and institutional systems for developing projects** are **some of the major barriers** that **prevent funding at scale**.

Financial institutions advise that there is a lack of **'bankable projects',** that is projects with a structure and risk profile in line with financers expectations. If financiers are **not satisfied with the structure and risk/return profile of a project,** they will **either not invest** or ask for **risk mitigation measures**, which can add to the project costs.

Cities will need to collaborate with financiers, **to build the capacity to deliver projects that are bankable** and **capable of being financed at scale**.

Roland Hunziker

Director, Sustainable Buildings & Cities, World Business Council for Sustainable Development (WBCSD)

Financing Sustainable, Climate-Neutral Cities

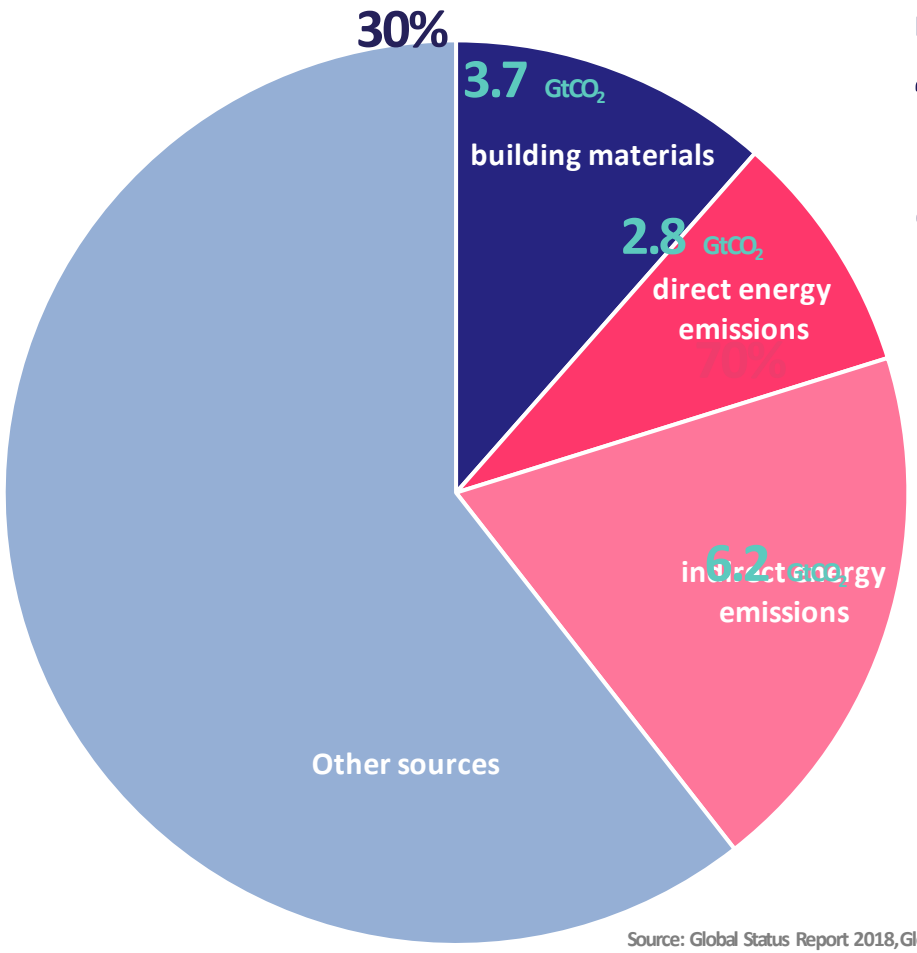
A perspective from WBCSD
16 November 2020

wbcsd

WBCSD – Business leadership for a sustainable future

200 global companies united around a common vision creating a world in which over 9 billion people are all living well and within planetary boundaries by 2050

The Built Environment has a high carbon footprint



The building sector represents approx.

40% global energy-related GHG emissions

= 13 $GtCO_2$

Every 5 days

a surface of the size of Paris is built

Source: Global Status Report 2018, Global Alliance for Building and Construction

GOAL

ACHIEVE NET-ZERO EMISSIONS ACROSS THE BUILT ENVIRONMENT LIFECYCLE BY 2050.

Operation - Net Zero :

- *2030: all new buildings*
- *2050: all buildings*

Embodied carbon:

- *2030: at least -40% CO2 emissions*
- *2050: Net Zero*

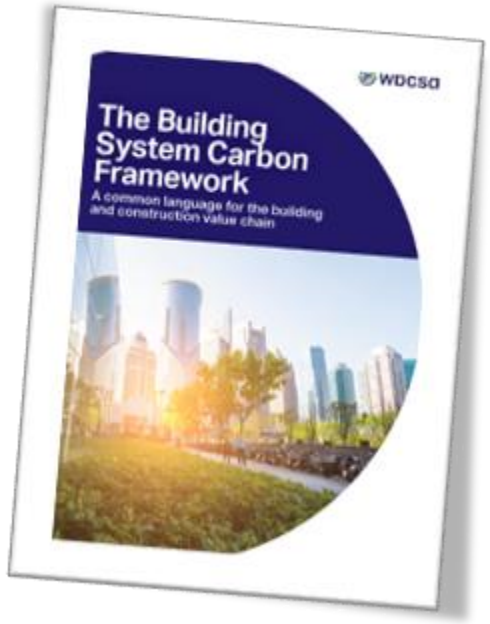
Global Alliance for Buildings and Construction

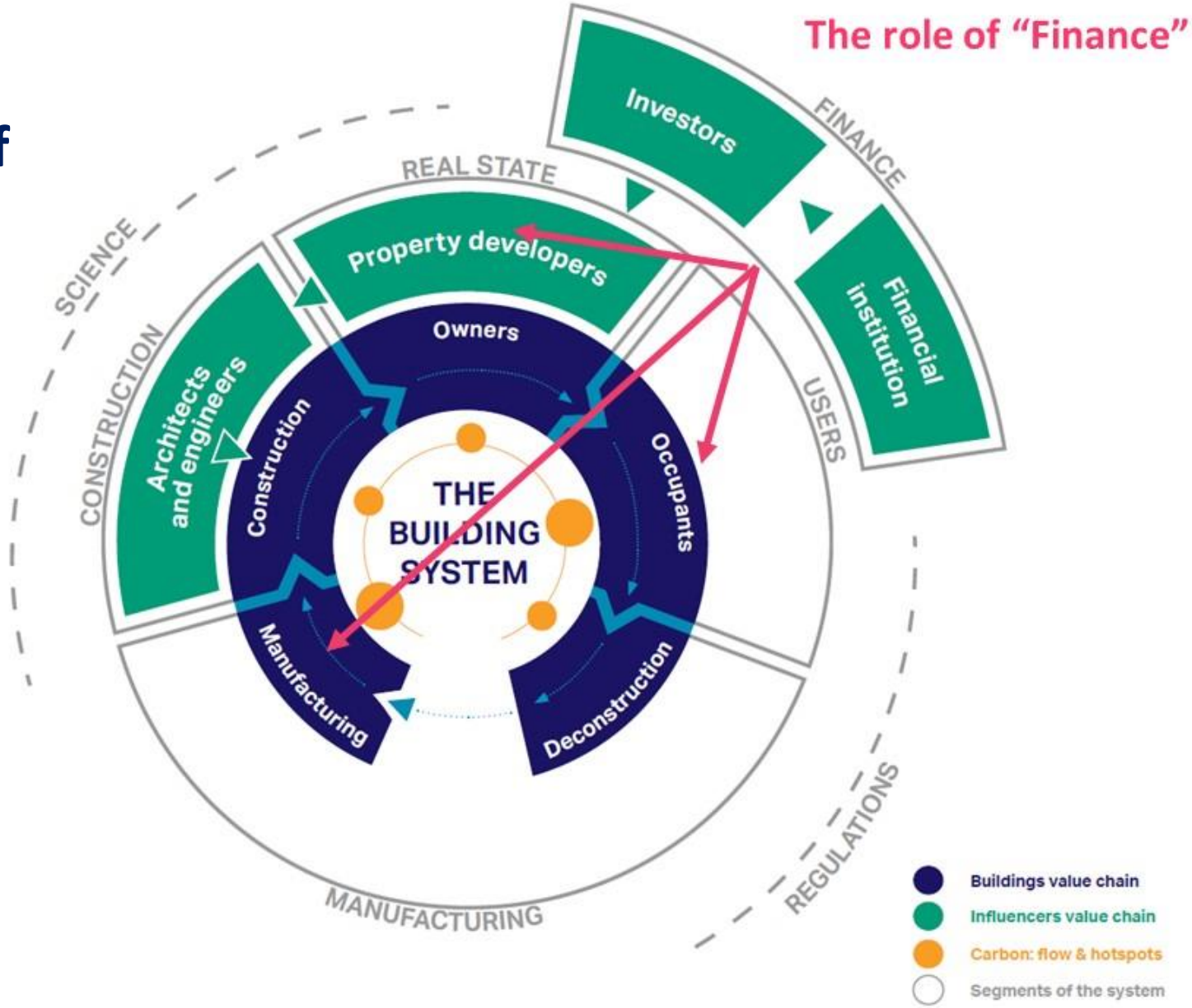
WORLD GREEN BUILDING COUNCIL

WE MEAN BUSINESS

“System collaboration”

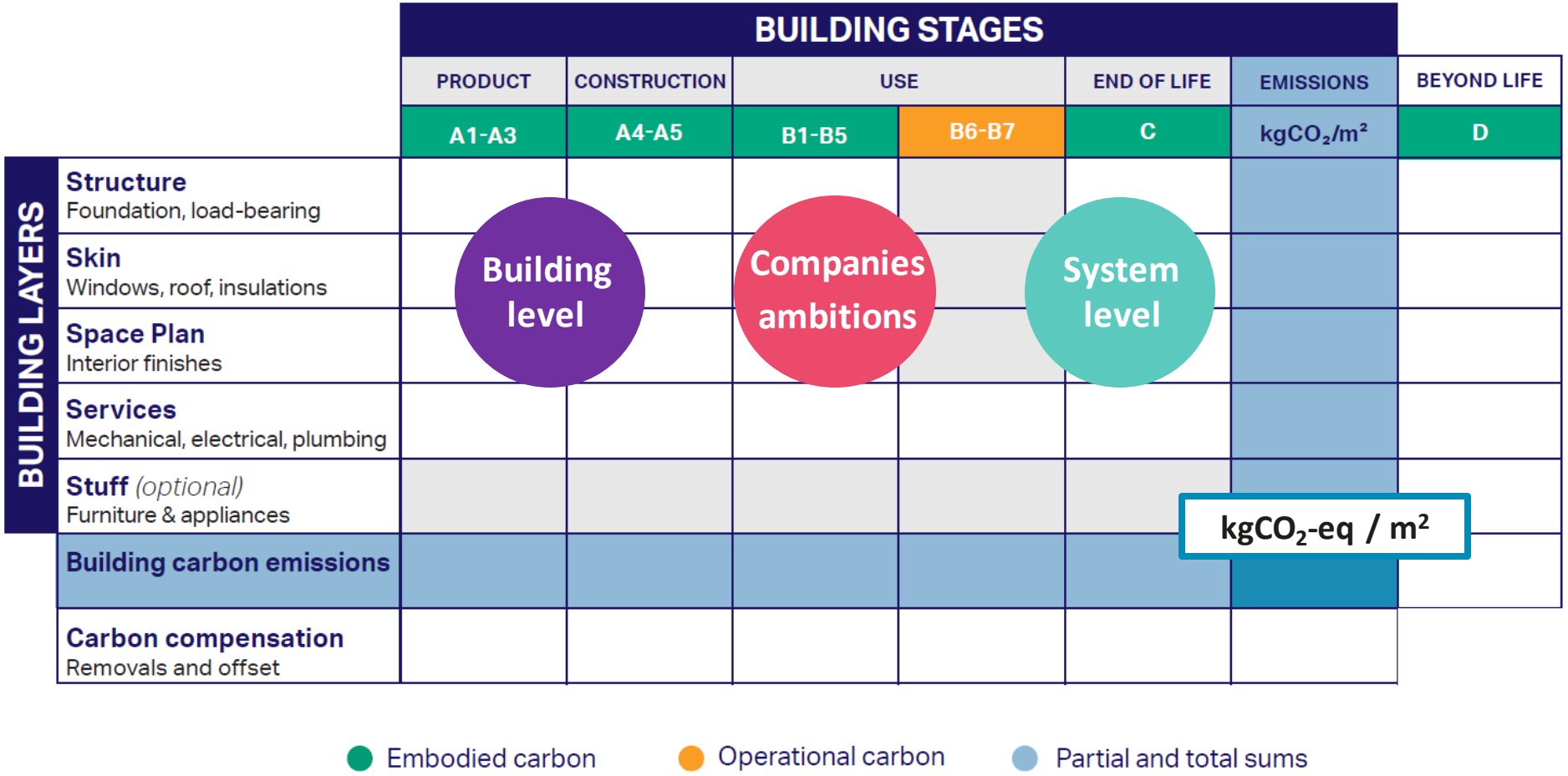
Roles and responsibilities of different actors in the value chain





Building System Carbon Framework

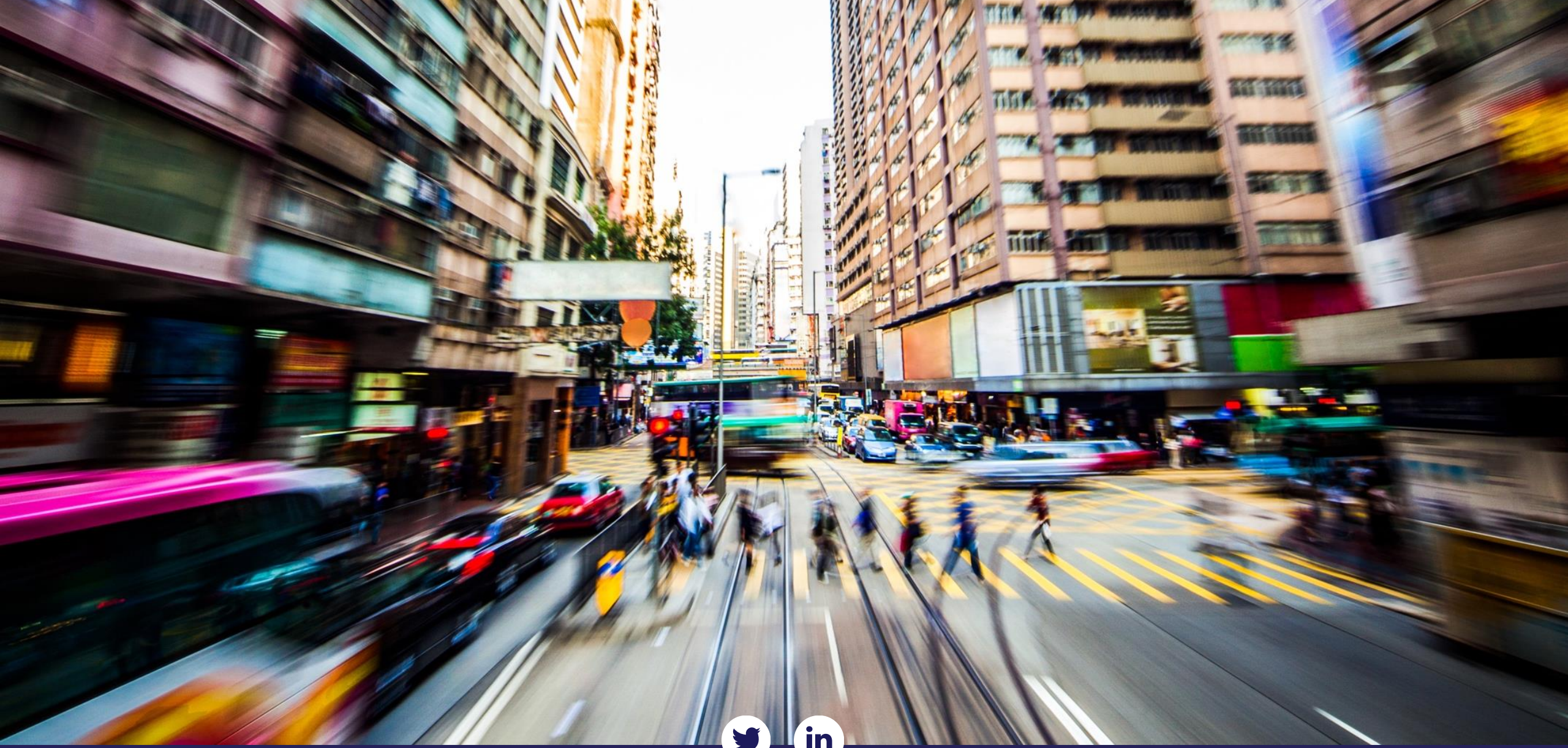
Common metric and language by using a whole building life-cycle carbon approach



- Coherently address all emissions in the building system
- Focalize attention on getting to “net zero” across the whole life-cycle
- Enable performance-based regulation to allow for innovation across building stages
- Highlight “carbon transaction” alongside cost transaction

Towards climate-neutral cities

- From business case to “value case”, starting with carbon/CO_2e – common language
- We need to overcome high transaction costs associated with the development of “good” projects
- This requires collaboration by all stakeholders within a city and beyond
- We need a new type of delivery organization to align interests and action between city, business and citizens



wbcsd

Julio Lumbreras

Mission Board for Climate Neutral and Smart Cities

European Commission

Horizon Europe Missions

Climate Neutral and Smart Cities

#HorizonEU #EUmissions

Julio Lumbreras
Universidad Politécnica de Madrid
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This presentation is based on the Commission Proposals for Horizon Europe and the draft legal texts on Horizon Europe agreed between the European Parliament and the Council in March/April 2019. It does not represent the official view of the European Commission.

Research and Innovation

MISSION AREAS:

Climate-neutral and smart cities

Soil health and food

Healthy oceans, seas, coastal and inland waters

Cancer

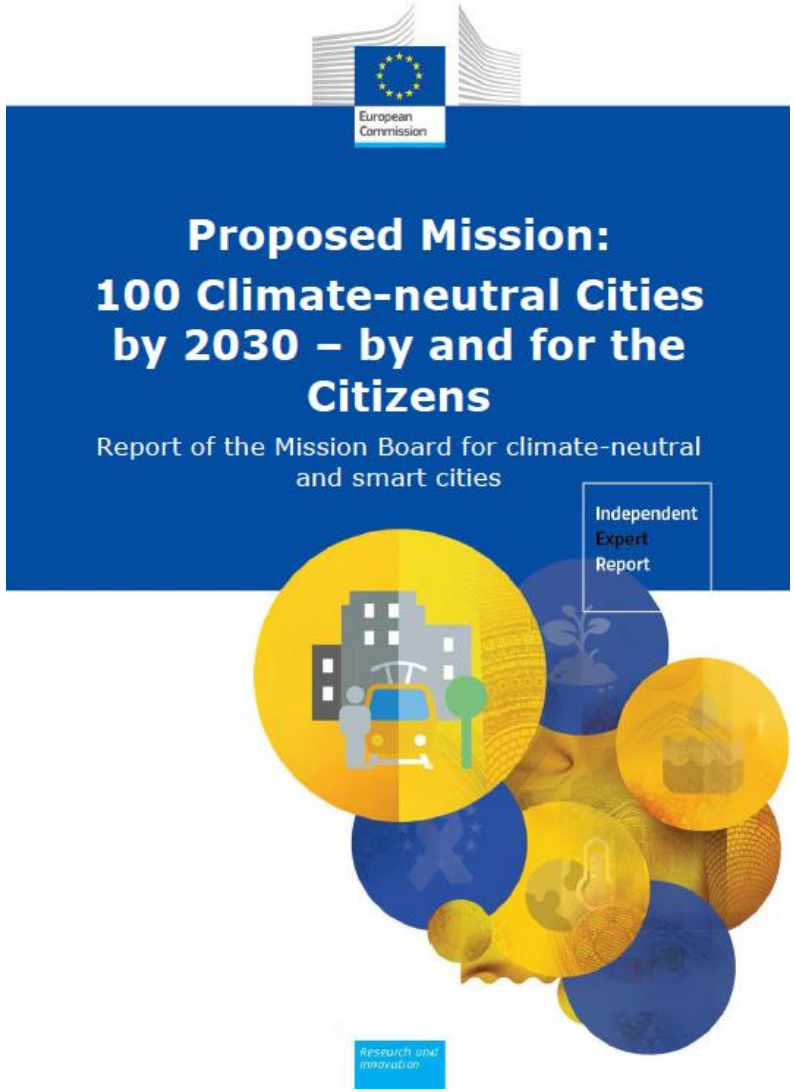
Adaptation to climate change, including societal transformation

#HorizonEU

European Commission

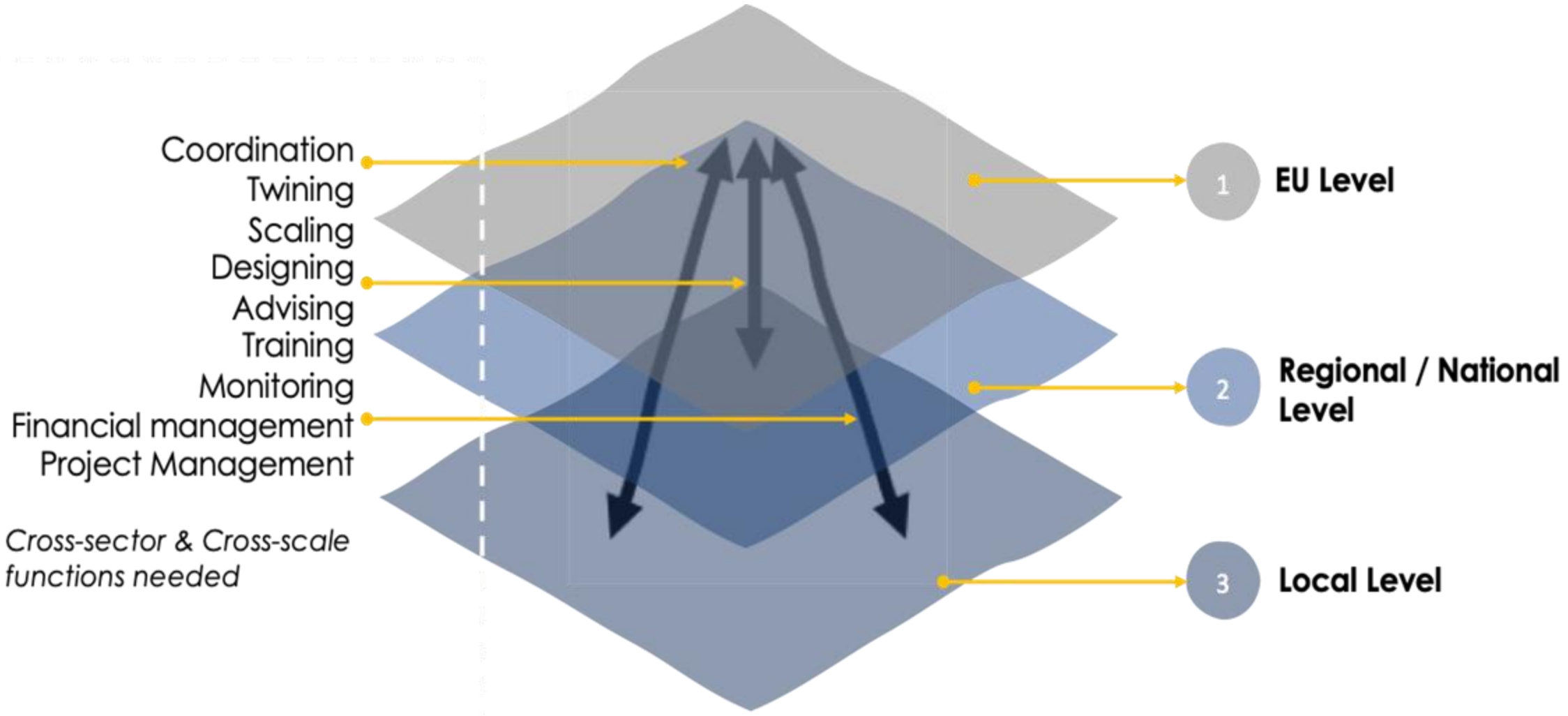
- Be **bold and inspirational**, with wide societal relevance
- Indicate a **clear direction**: targeted, measurable and time-bound
- Spark **innovation across disciplines**, sectors and actors
- Be based on a **bottom-up approach** of multiple solutions

#MissionCities



- Systemic transformation
- A new model of city governance

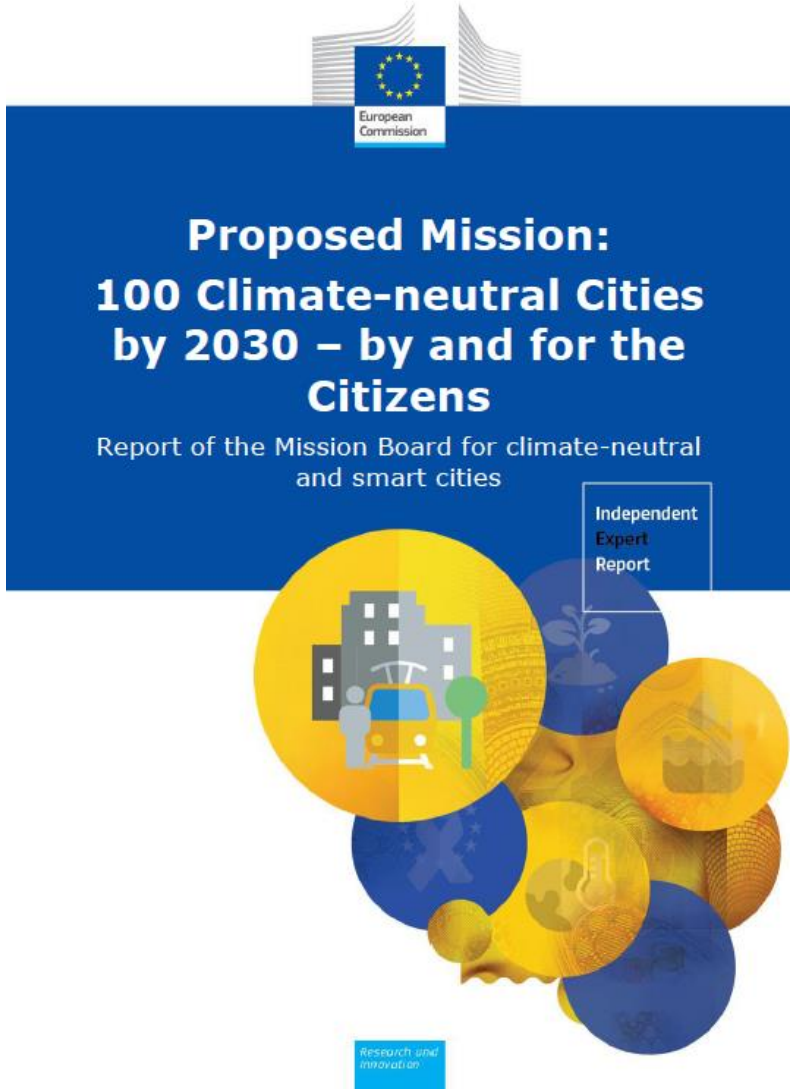
#MissionCities



STAKEHOLDERS at all levels: private, public, R&I, civil society

INSTRUMENTS: financial, regulatory, taxation, procurement, incentives

#MissionCities



- Systemic transformation
- A new model of city governance
- A new role for the citizens
- Climate City Contract as the delivery mechanism
- A new role for innovation, experimentation, and learning

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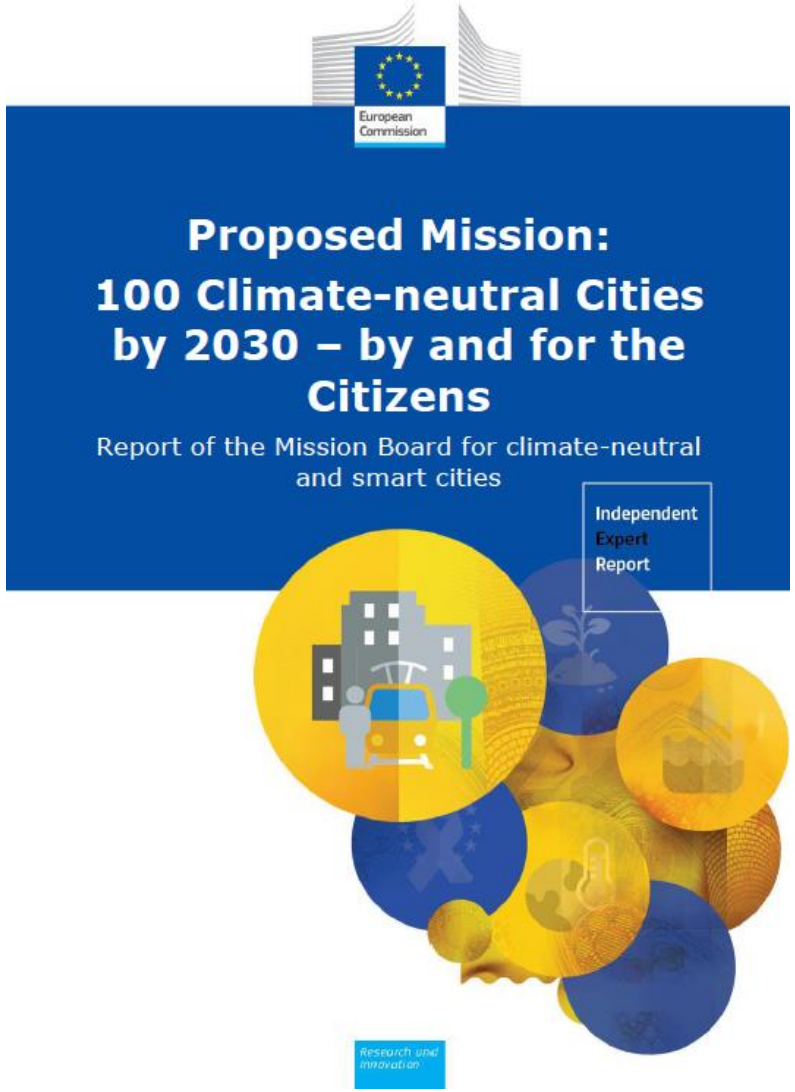

- Systemic transformation
- A new model of city governance
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- A new role for innovation, experimentation, and learning
- A new form of funding and financing:

Who should invest?

< 17%

PUBLIC INVESTMENTS

Local/national/EU budget
Grants (direct subsidies)
Investment loans (subsidized)
Framework loans (subsidized)
Equity funds (i.e. Sovereign)
Public Procurement
Guarantees

PRIVATE INVESTMENTS

COMPANIES:

Sustainable funds
Private equity funds
Venture risk funding
Guarantees
Priv. companies investm. (CAPEX or Equity)

CITIZENS:

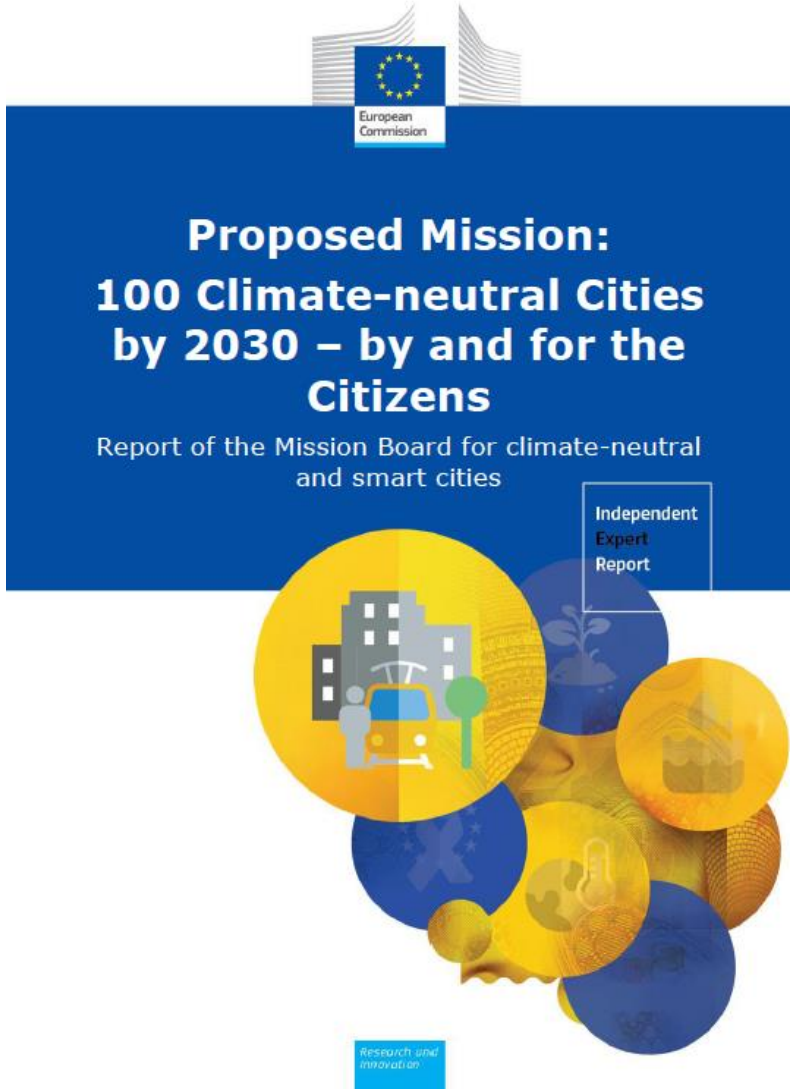
Investment in private assets
Crowd-funding
Donations
Philanthropy

HYBRID

Private-Public Investment Vehicle

Source: Lumbreras, 2020

#MissionCities



- A new model of city governance
- A new role for the citizens
- Climate City Contract as the delivery mechanism
- A new role for innovation, experimentation, and learning
- A new form of funding and financing:
  - One-stop-shop
  - Lending and blending facility
  - 10% EU MFF
  - Mission label

Concluding remarks

Concluding remarks

- Substantial financing gap – with investment needed and returns per type of stakeholders different (e.g. Sustainable investment in transportation, heating and electricity: cities have to invest 17 % with a 6 % return, whereas for citizens it's a 31 % investment for a 46 % return) → how to bring everyone on board?
- Cities: procurement, permits and licensing → a lot of power
- Use a combination of financing tools and incentives and add all levels: local, regional, national, European.
- Revenue sharing model; blended financial solutions; asset recycling
- Measuring other benefits and value capturing (e.g. health, social): how to integrate this in the model? → importance of taking a life-cycle approach
- Accountability: to be decided in climate city contracts – but cities competitive, so do get involved!

Next:

Do contact us if you want to feed in your opinion on Viable Cities' Finance – fedra.vanhuyse@sei.org


Thank you!