

NET ZERO CITIES



EU MISSION PLATFORM

CLIMATE NEUTRAL AND SMART CITIES



Funded by
the European Union



Design Your City's Net Zero Strategy: Online Planning Lab

NetZeroCities online course for all cities

September 16th- December 11th 2025





28/10/2025

Module 4 – Core Session

Levers of change: Technical solutions, social innovation and multi-actor collaborations





<https://netzerocities.app/resource-4501>

MODULE 1	Core The NetZeroCities program, service offering, systemic approach, what works for Mission Cities	Spotlight 1 NetZeroCities Orientation	Spotlight 2 Shaping Climate Narratives		Spotlight 3 Climate City Contracts	
MODULE 2	Core Developing a transition team, mapping and activating the ecosystem	Spotlight 1 Transition team & climate leadership	Spotlight 2 Engaging the private sector		Spotlight 3 Citizen engagement for systemic climate action	
MODULE 3	Core Developing the city's action plan for climate neutrality	Spotlight 1 Reporting and MEL	Spotlight 2 Co-Designing a Climate Portfolio		Spotlight 3 Using NetZeroPlanner to Support Climate Planning, MEL, and Implementation Management to Achieve Net Zero Goals	
MODULE 4	Core Levers of change: Technical solutions, social innovation and multi-actor collaborations	Spotlight 1 Passive solutions to reduce energy demand in buildings	Spotlight 2 Systemic energy transition at buildings, districts and city level	Spotlight 3 Data-driven approaches to energy transition in buildings and districts	Spotlight 4 Mobility: Behavioural change and digital solutions	Spotlight 5 Scope 3 and other emission domains
MODULE 5	Core Increase finance knowledge of the public administration & learn about options to finance projects	Spotlight 1 Preparing a pipeline of projects for external financing	Spotlight 2 Different investor groups and the key priorities and returns profiles for each and instruments		Spotlight 3 Financing the ambition: Learning from Mission Cities	
MODULE 6	Core Multilevel governance, national platforms and policy strategies	Spotlight 1 Policy and regulations innovation	Spotlight 2 Public procurement – national specificities		Spotlight 3 Just transition	





Housekeeping



Stay muted unless you are invited to speak.



Raise your hand before speaking.



Stay engaged: We invite you to keep your camera on.



Use the chat for questions and to introduce yourself.



Change your Zoom name to include your city.



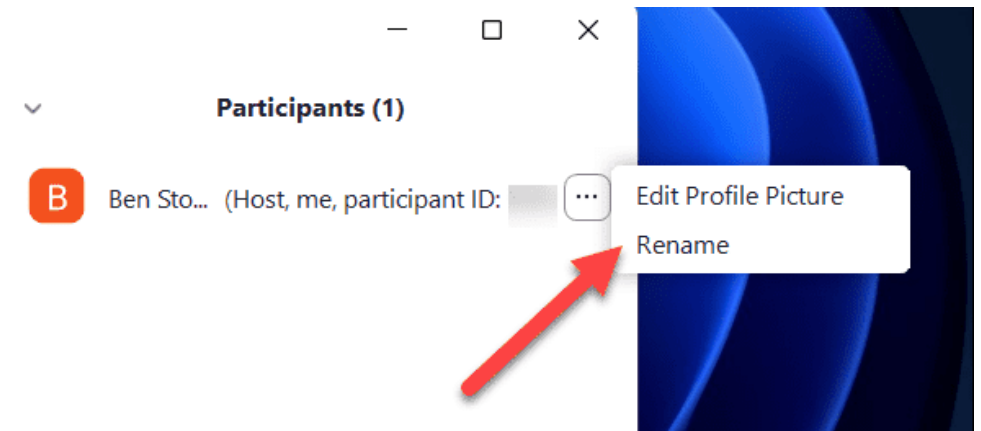
Activate Closed Captions to keep up with the speakers.





Renaming

- In the meeting controls toolbar, click on **Participants**. 
- Hover your mouse over your name, then click **More** or the **ellipsis icon**.()
- Click **Rename**. A pop-up box will appear.
- In the pop-up box, enter your display name.
- Click **Change**.

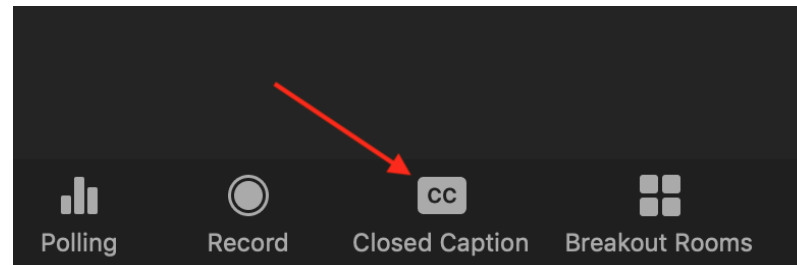




Activating Closed Captions

- In the meeting controls toolbar, click the **Show captions** icon. ()
- Captions will automatically appear above the meeting controls toolbar.

***Caption language:** Please do not change the spoken language of the meeting, as captions will change for everyone.





Participation

This course is intended for all EU (and Horizon affiliated countries) cities that do not yet have (or aim to improve) a climate Action Plan for the city

- It's open to any municipality as well as to consultants, experts, regional authorities, etc.
- The course guides cities into developing a climate action plan | No funding available for participating cities
- This course is NOT for students
- After each session, facilitators remain online for Q&A

26 online sessions
of which 6 are core
sessions

Tuesday 9.15-11.00 and
Thursday 13.15-15.00

Participation is **free**





Certification

Free

Municipalities that **attend all 6 core sessions** will obtain a certificate of attendance for the city issued by the NetZeroCities project

30€

Participants who **attend all 6 core sessions can obtain** a certificate of attendance issued by **Universidad Politecnica de Madrid**



Online ceremony on December 11th 2025

In-person ceremony at the City Conference in Turin May 2026





Recordings and activities

- All participants who sign up for the program receive an email **after each module with the video recording** of the sessions and additional useful information.
- Before joining each session, you will be requested to agree with the course privacy policy, provide **permission for recording** and details of your municipality or profile to be able to issue the attendance certificates.
- The program is structured into **six modules**, each offering 4-6 hands-on sessions led by expert practitioners and cities. Each session will have an interactive component, in which you can share your questions and experiences.

Q: Can you participate in single sessions?

A: Yes! If you sign up for the course, you will receive communications and links to all the sessions. All sessions are held on Zoom (online). All participants who sign up for the program receive an email after each module with the video recording of the session and additional useful information.

Q: What is the level of English proficiency required?

A: Participants can ask questions in their own (European) language in the chat.

DISCLAIMER: Before joining each session, you will be requested to agree with the course privacy policy, provide **permission for recording** and details of your municipality or profile to be able to issue the attendance certificates.





Sign-up and Portal Group

What should you do now?

There is **no deadline** for applying to the course. All sessions are held on Zoom, and you can join the Zoom meeting through the link provided in this email or in the course program page on the NetZeroCities portal.

1. **[SIGN UP NOW](#)** for Zoom sessions and **ADD** them to your **CALENDAR**
2. Read carefully the [online pages for each session](#) and **register** in advance for each of the sessions on the Zoom platform.
3. Join the dedicated group for this course to interact with other participants: [Design Your City's Net Zero Strategy: Online Planning Lab](#)





Faculty

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Maria Giorda



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Cecilia Sanz



Alexandru Buftic



David Brito



Jonatan Viejo



Marcial Silva



Anette Olovborn



Piotr Magnuszewski, Ph.D.



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Module 4 Agenda



	Tuesday Oct 28th	Thursday Oct 30th	Friday Nov 7th	Tuesday Nov 11th	Thursday Nov 13th
9:00-11.00 CET	Levers of change: Technical solutions, social innovation and multi-actor collaborations			Spotlight 4 Mobility: Behavioural change and digital solutions	
13:00-15.00 CET		Spotlight 1 Passive solutions to reduce energy demand in buildings	Spotlight 3 Data-driven approaches to energy transition in buildings and districts		Spotlight 5 Scope 3 and other emission domains
15:00-16.30 CET		Spotlight 2 Systemic energy transition at buildings, districts and city level			





Warm-up Activity

Let us know in the chat the number of the lever you personally feel most connected to in your work

1 Technology/infrastructure

2 Governance & Policy

3 Social Innovation

4 Democracy/Participation

5 Finance & funding

6 Learning & capability





28/10/2025

Module 4 – Core Session

Levers of change: Technical solutions, social innovation and multi-actor collaborations





Session Agenda

1. Emission and impact domains
2. What are Mission Cities planning in their Action Plans?
An analysis
3. Levers of change | Focus on Social innovation
4. Interactive activity
5. Further tools and resources and wrap-up



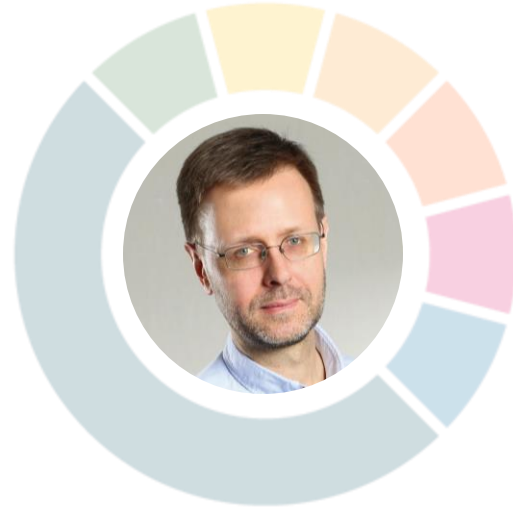


Lecturers



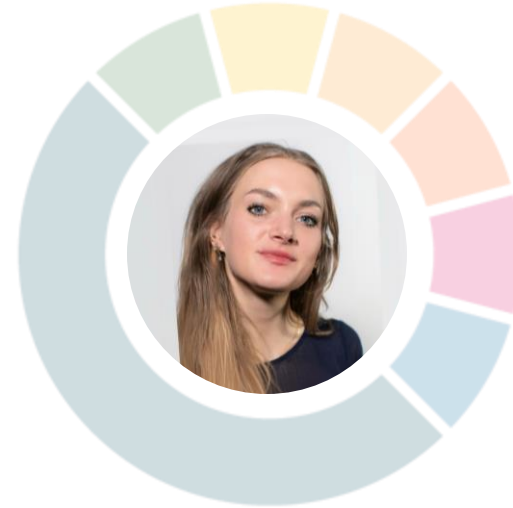
**Prof. Sabrina Bresciani,
Ph.D**

Politecnico di Milano



**Piotr Magnuszewski,
Ph.D.**

Centre for Systems Solutions



**Mira Conci,
Ph.D.**

Climate KIC



Angelica Gomez

Politecnico di Milano



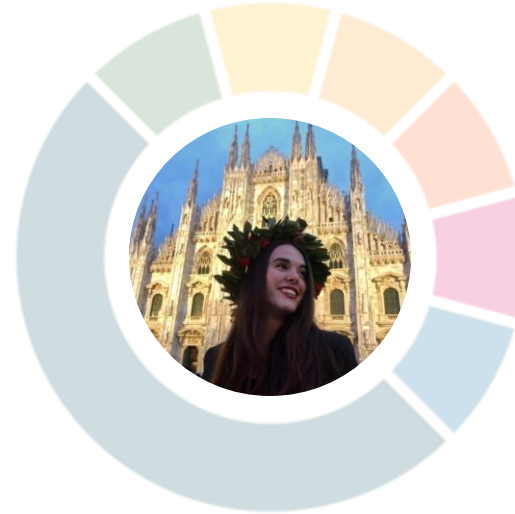


Lecturers



Rohit Mondal

Politecnico di Milano



Morgan Ricard

Politecnico di Milano





**" EVERY DISASTER MOVIE STARTS WITH THE
GOVERNMENT IGNORING A SCIENTIST "**





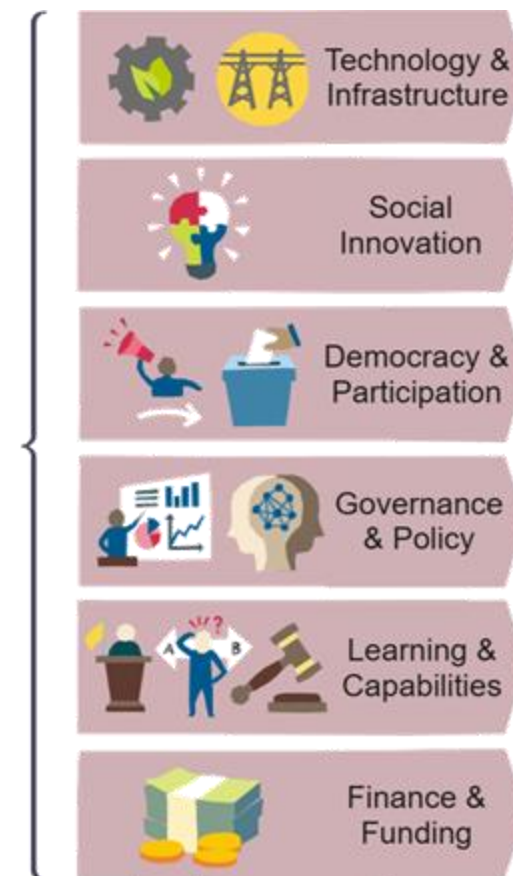
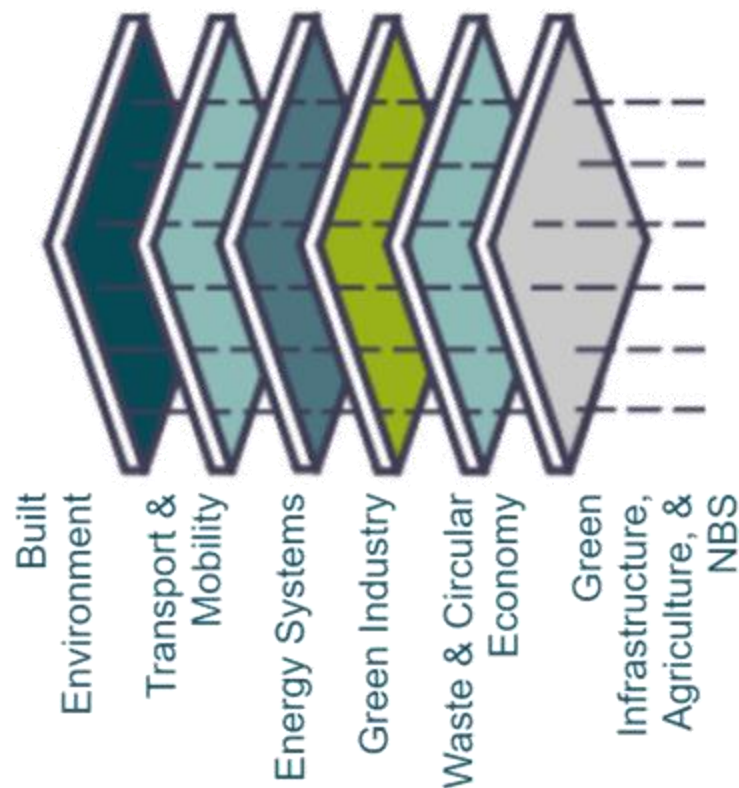
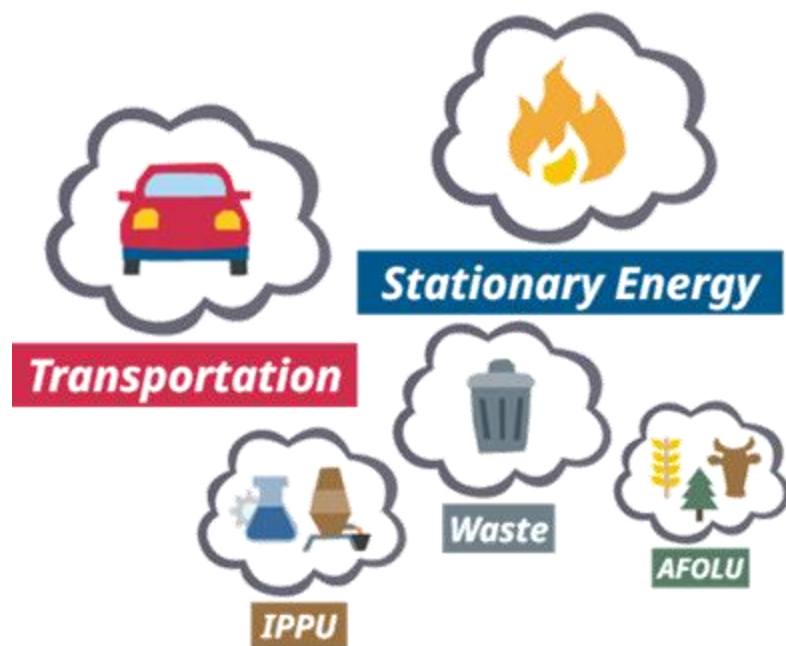
Session Agenda

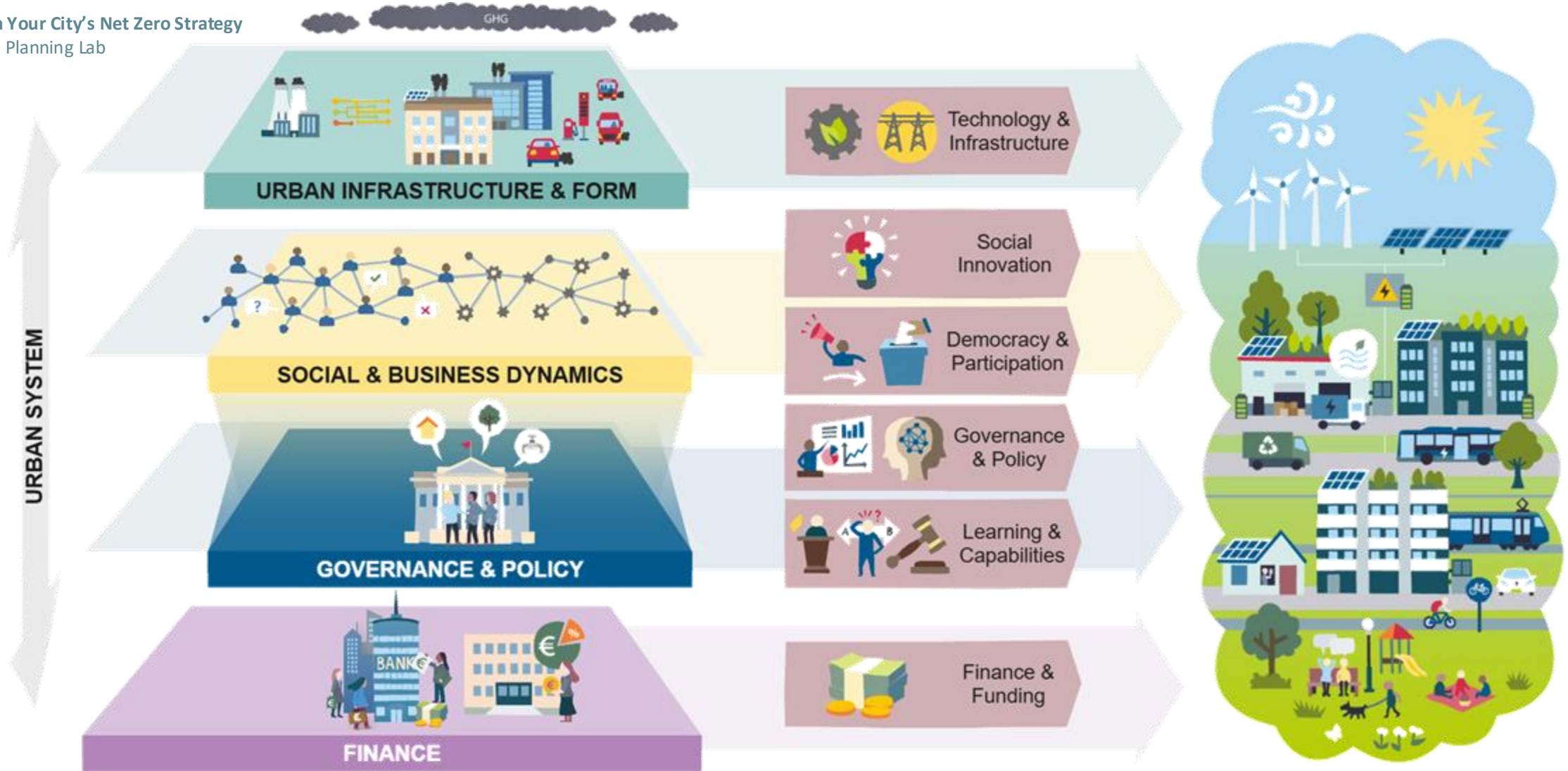
1. Emission Domains, Solution Themes and levers of change
2. What are Mission Cities planning in their Action Plans?
An analysis
3. City testimonial: Kalamata
4. Levers of change | Focus on Social innovation
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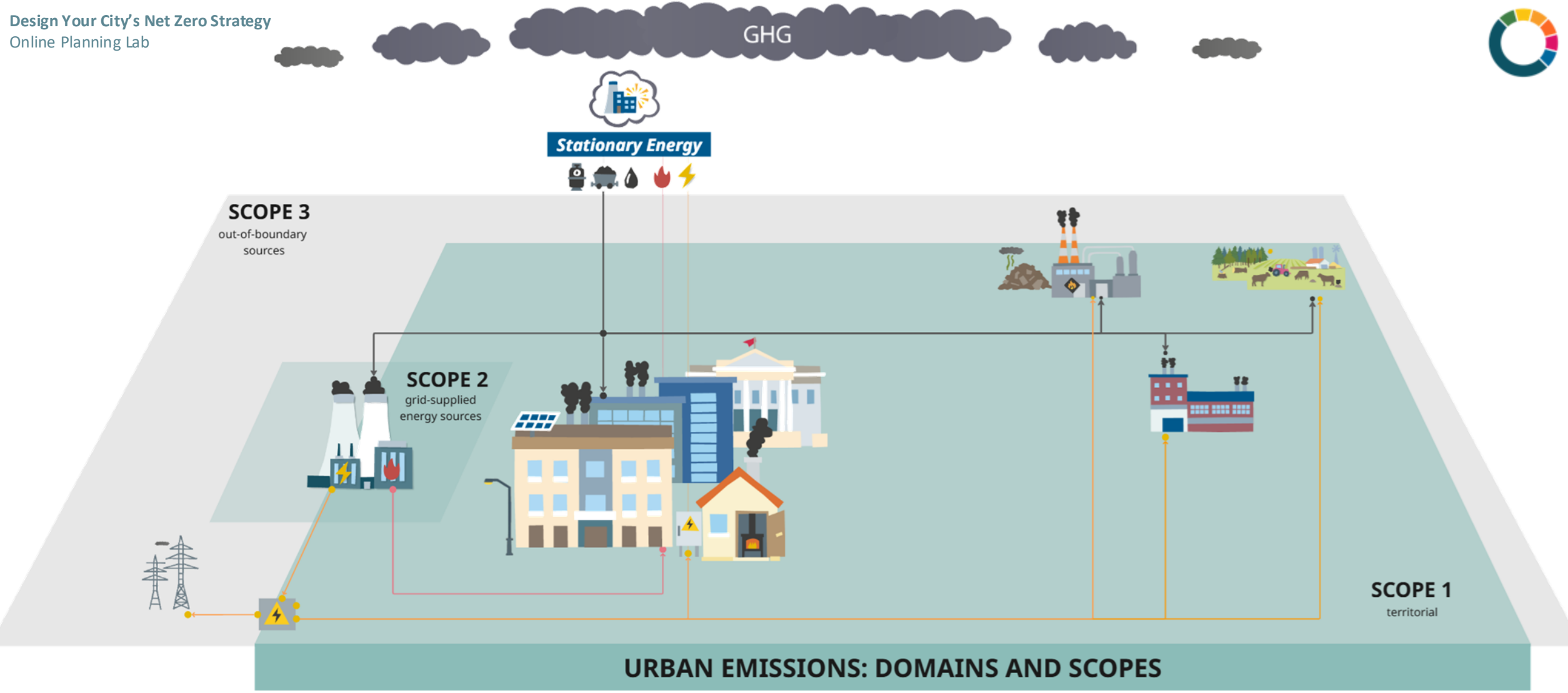


Emission domains, solution themes, and levers of change













SCOPE 3
out-of-boundary
sources



SCOPE 1
territorial

URBAN EMISSIONS: DOMAINS AND SCOPES



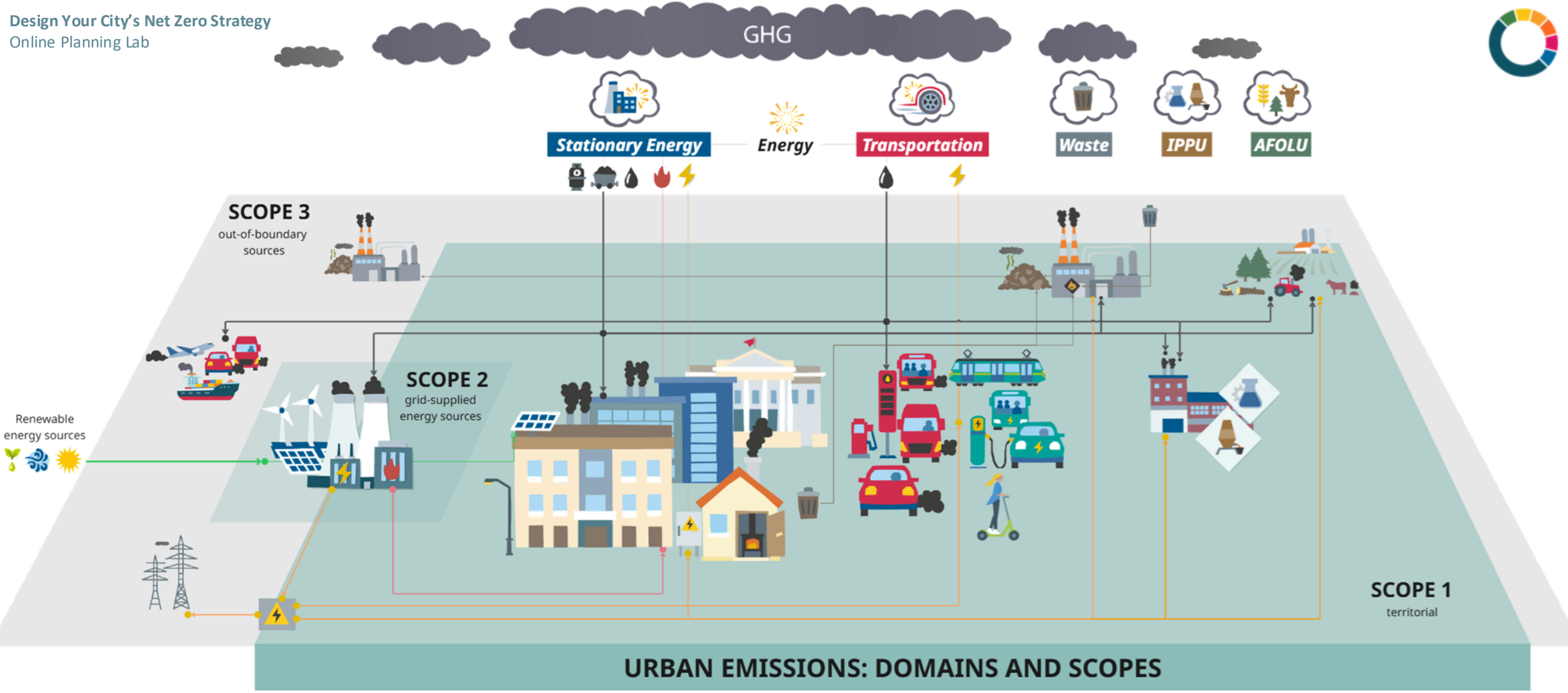


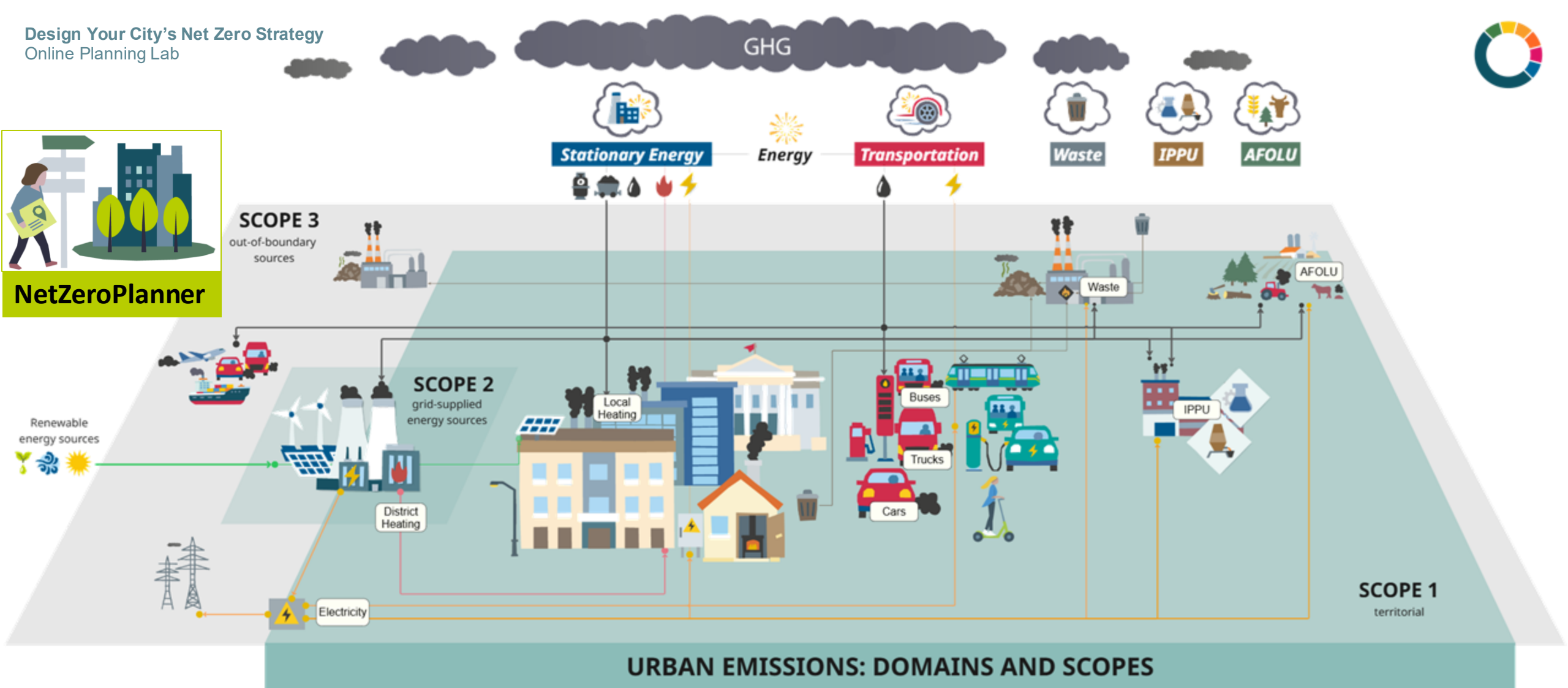
SCOPE 3
out-of-boundary
sources

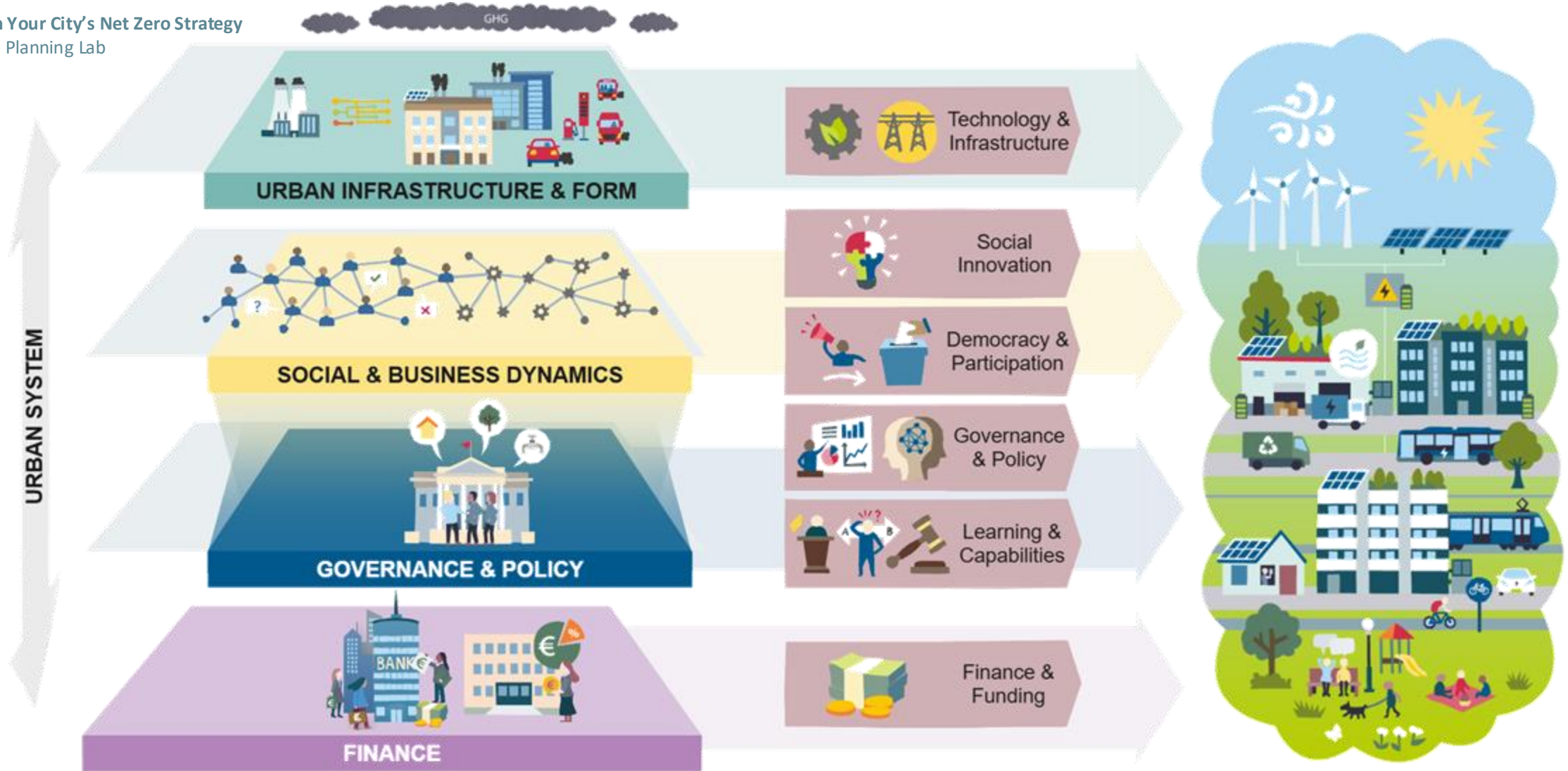


SCOPE 1
territorial

URBAN EMISSIONS: DOMAINS AND SCOPES



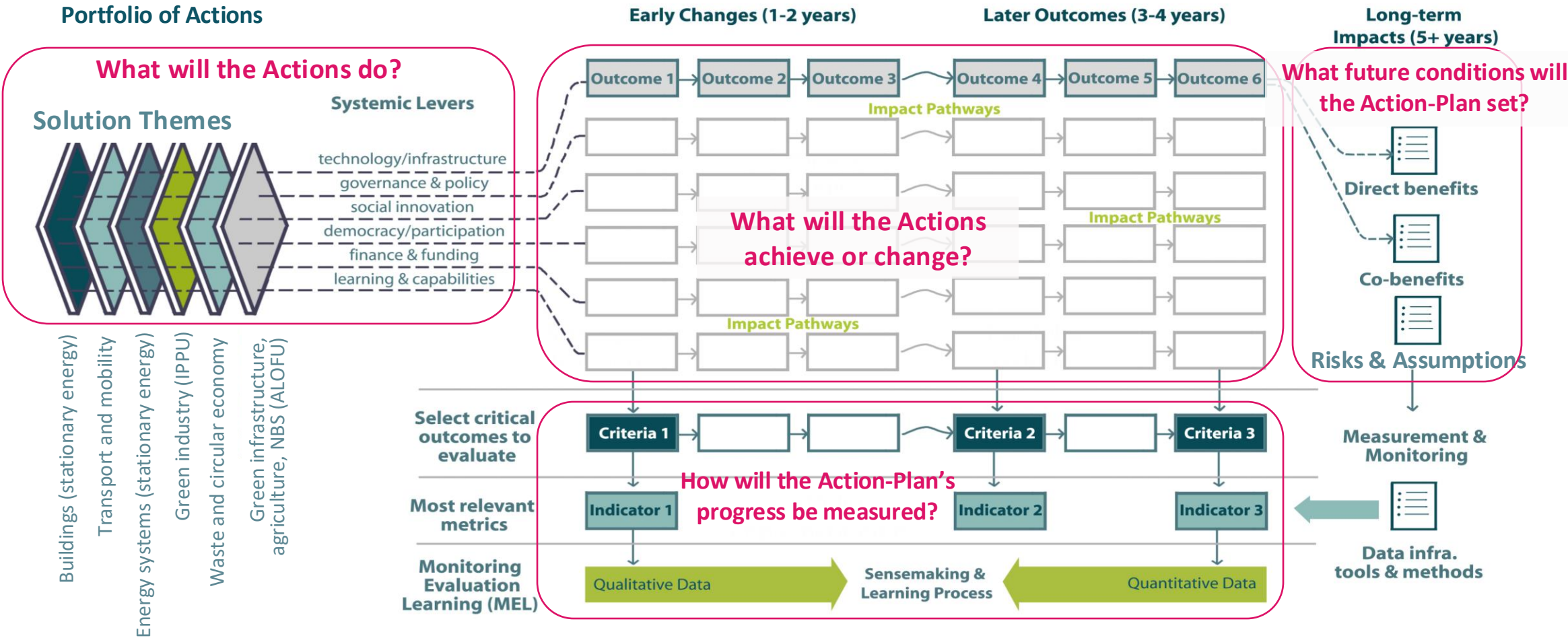








NetZeroCities Impact Framework



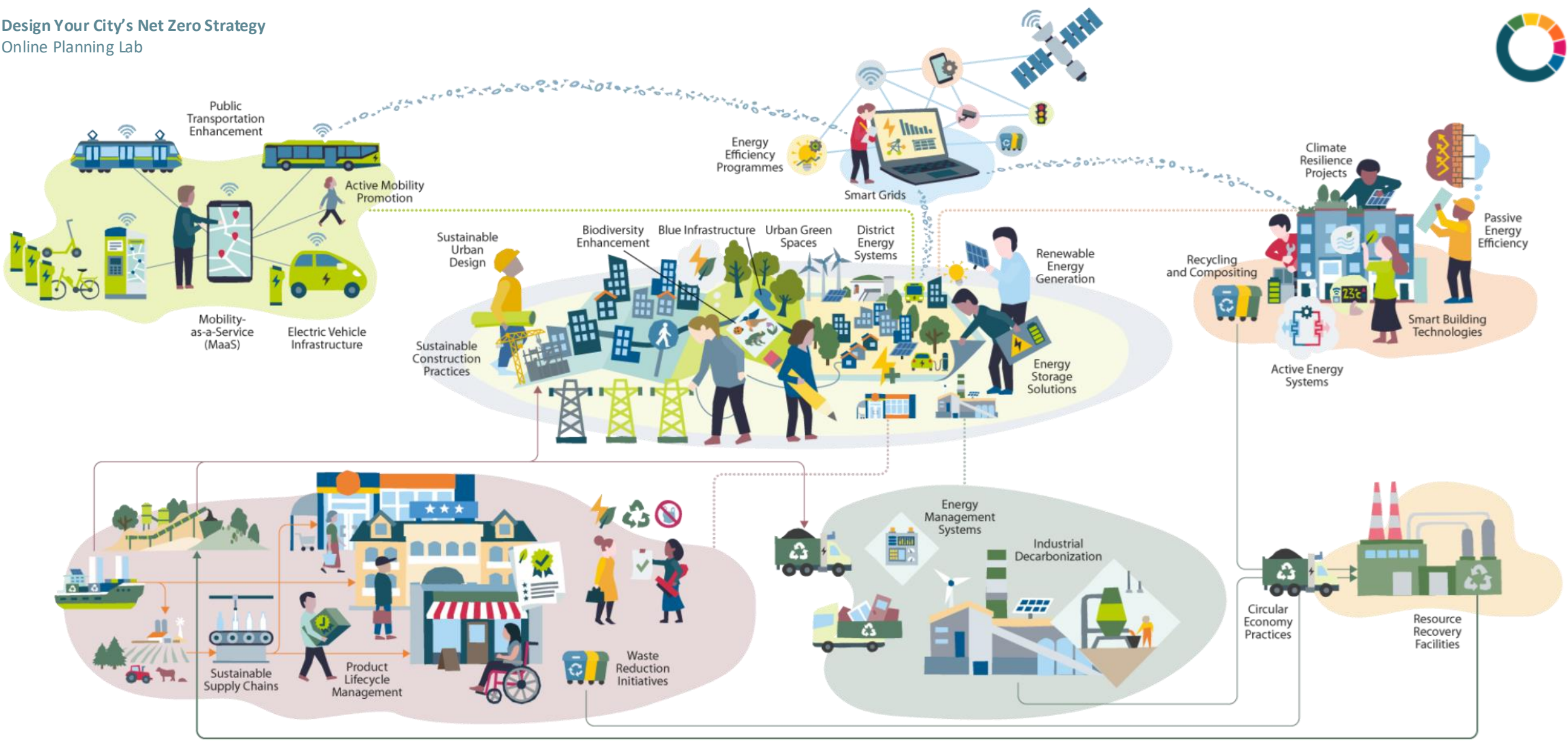


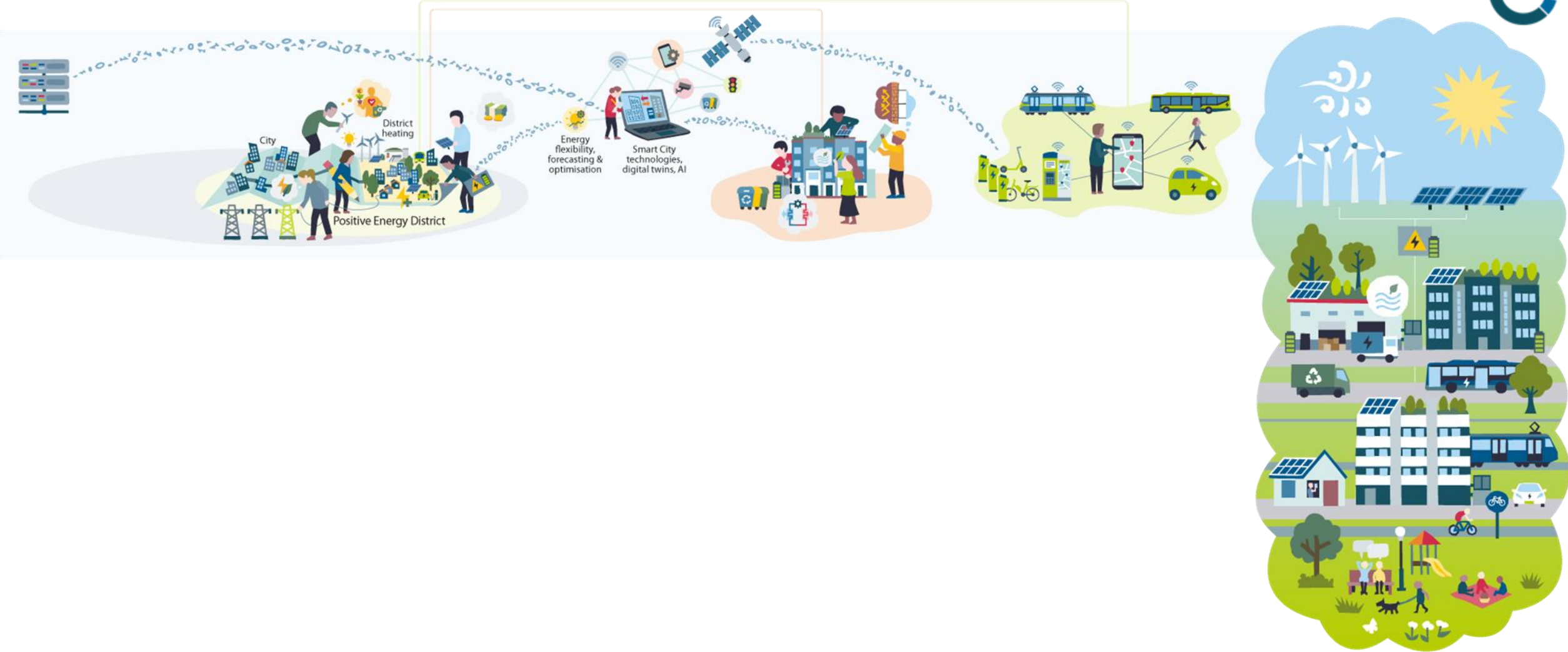
Technology
and
Infrastructure

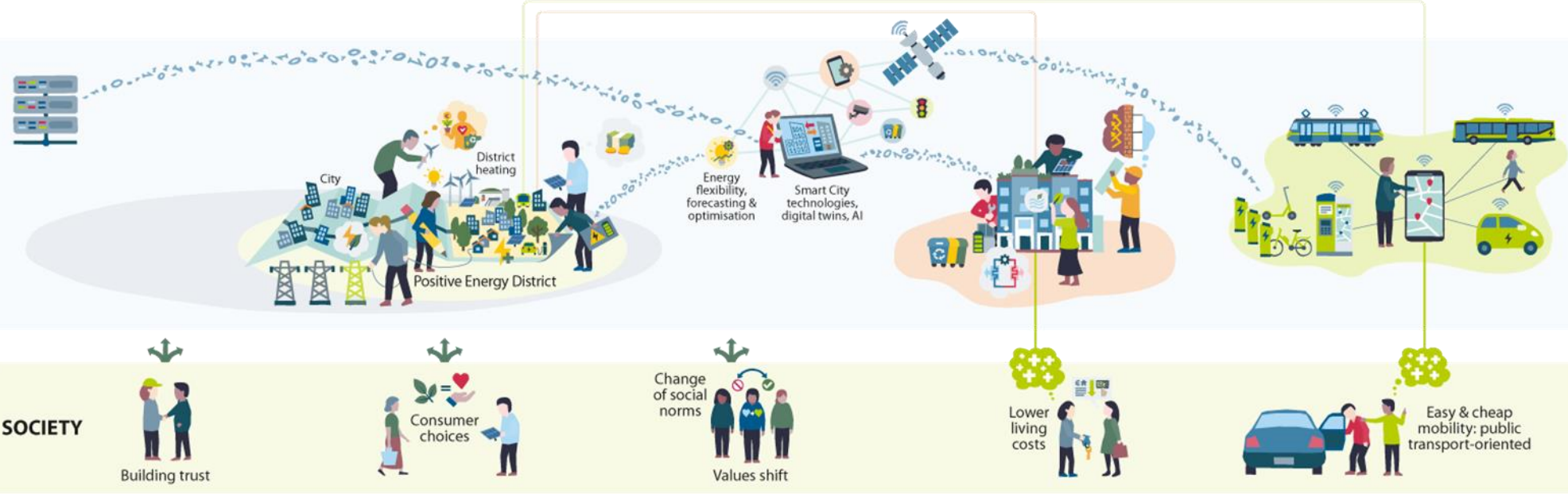
Solution Themes

- Built Environment
- Transport & Mobility
- Energy Systems
- Green Industry
- Waste & Circular Economy
- Green Infrastructure, Agriculture,
& Nature Based Solutions (NBS)



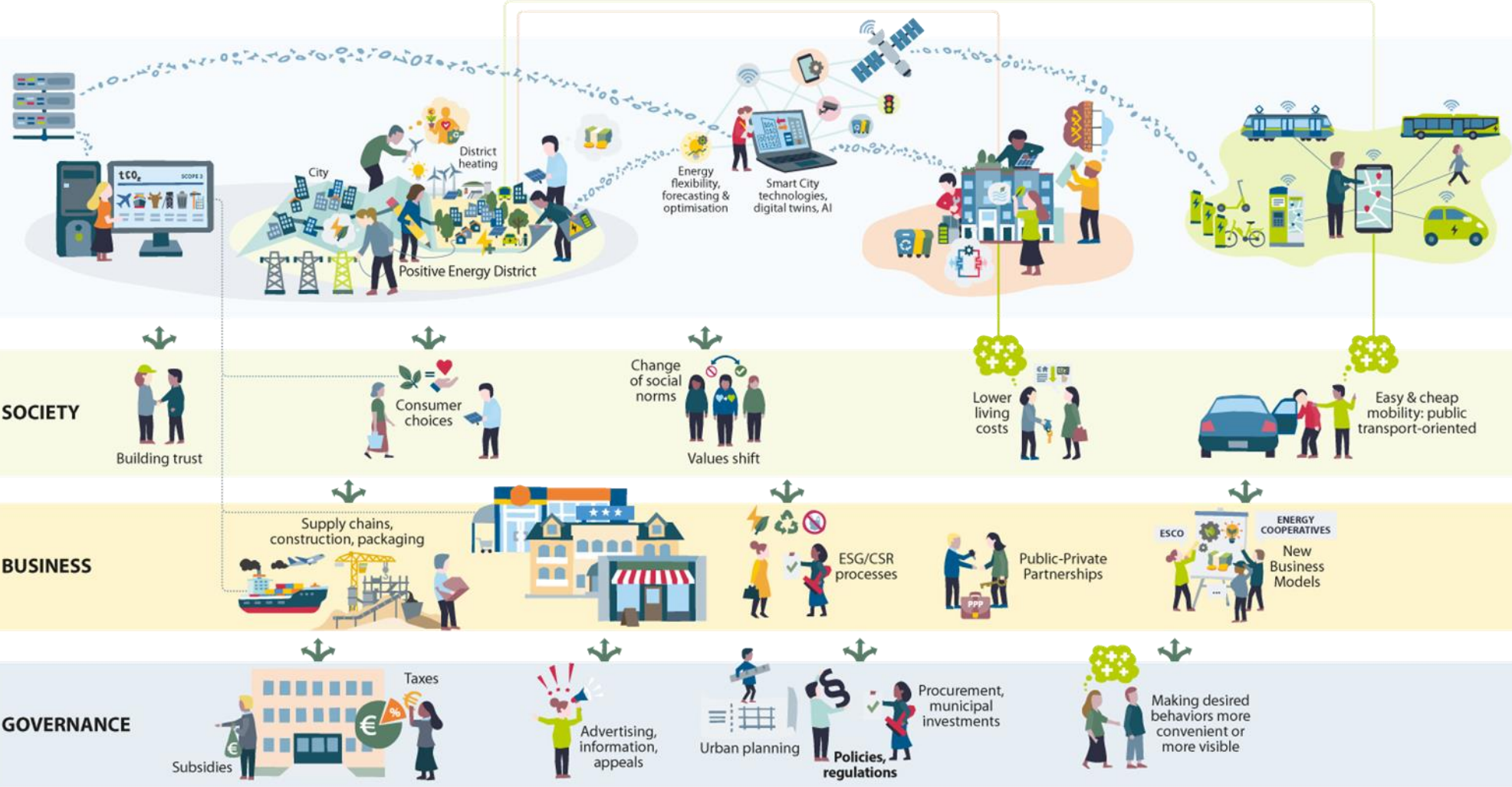


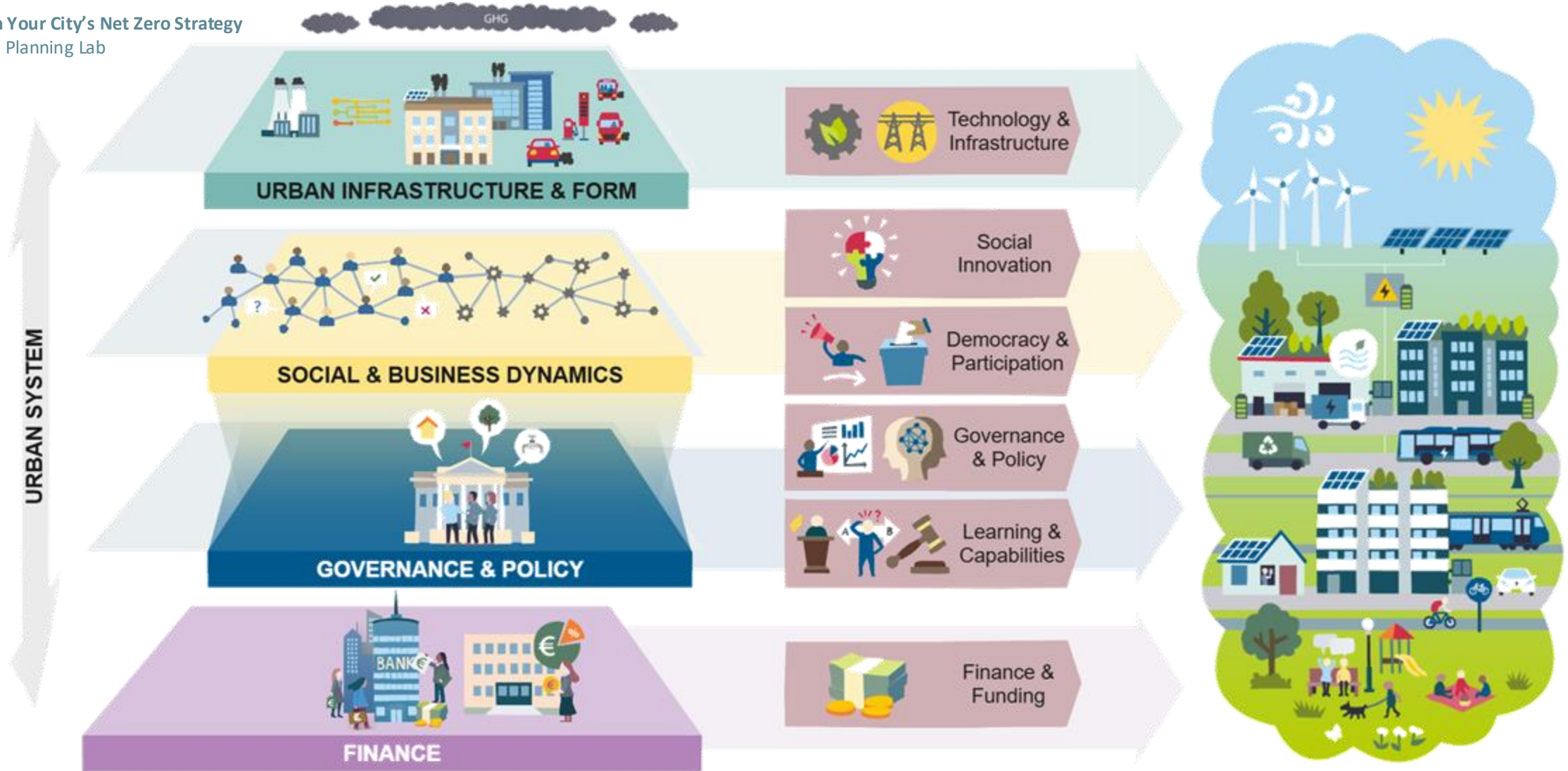














Session Agenda

1. Emission Domains, Solution Themes and levers of change
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Planning an action portfolio

1) Identify and 2) address

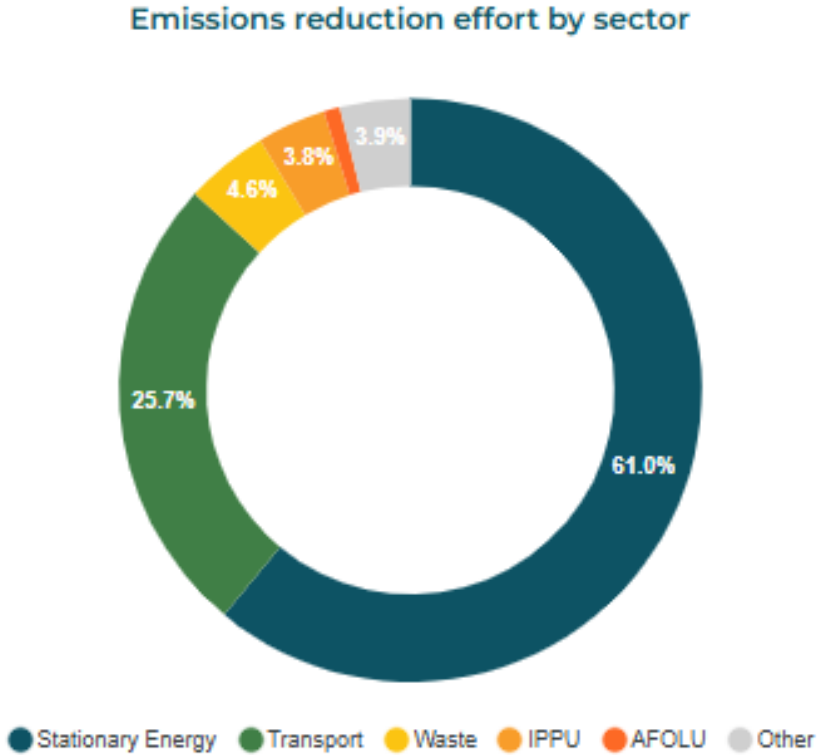
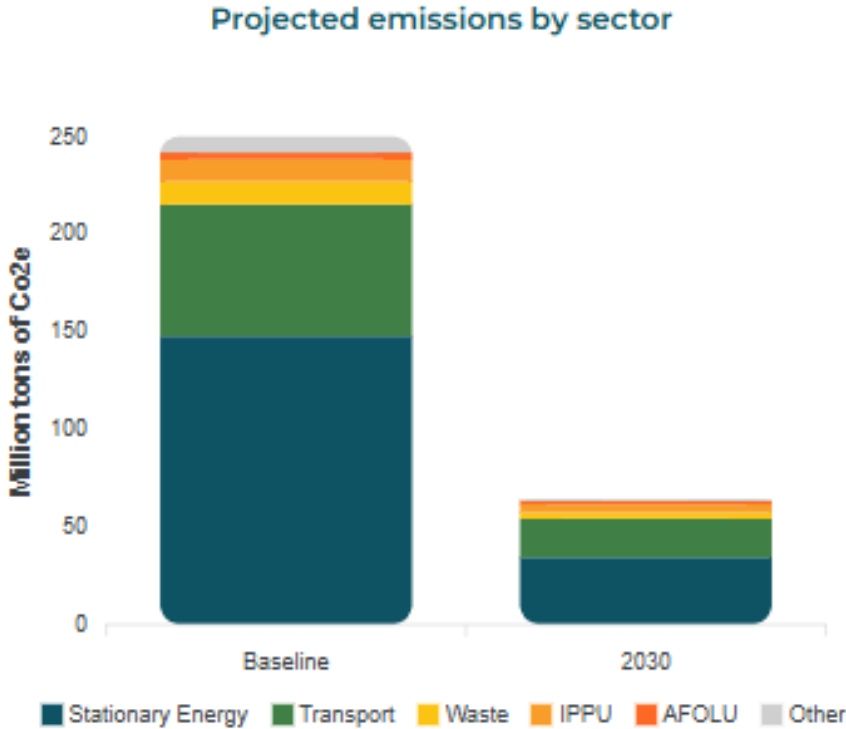
- Sources of GHG emissions
- Opportunities for GHG emissions reduction
- Unavoidable (residual) emissions by 2030





Sources of GHG emissions

Interestingly, this distribution holds for cities across all size and geographical categories
Source: NZC Barometer





Opportunities for GHG emissions reduction

GHG emissions come from activities = use of resources

To reduce emissions, we have to **shift activities**:

- **Avoid/reduce** at source, e.g.
 - --> Shifting from car use to bike or walking
 - --> Reducing the need for thermal energy with insulation
- **Replace** resources for less emissions-intensive ones, e.g.
 - --> Shifting from fuel to green electricity

These can be seen as “objectives”, “hard” interventions, or the final desired change.

As we have seen in the previous session, cities might use simulation tools such as the NetZeroPlanner to model the effect of physical changes in the urban system to GHG emissions.





Opportunities for GHG emissions reduction

Starting from the activities and resource use inventories and multiplying by the emissions factor of each resource, cities can plot their climate neutrality journeys in terms of 'hard' interventions

Example 1: Shifting from car use to bike or walking

- From $10\text{km} * 150\text{gCO}_2\text{eq/km} = 1.5\text{kgCO}_2\text{eq}$ --> to $10\text{km} * 0\text{gCO}_2\text{eq/km} = 0\text{kgCO}_2\text{eq}$

IMPORTANT DISCLAIMER: We are neglecting upstream (Scope 3) emissions for the





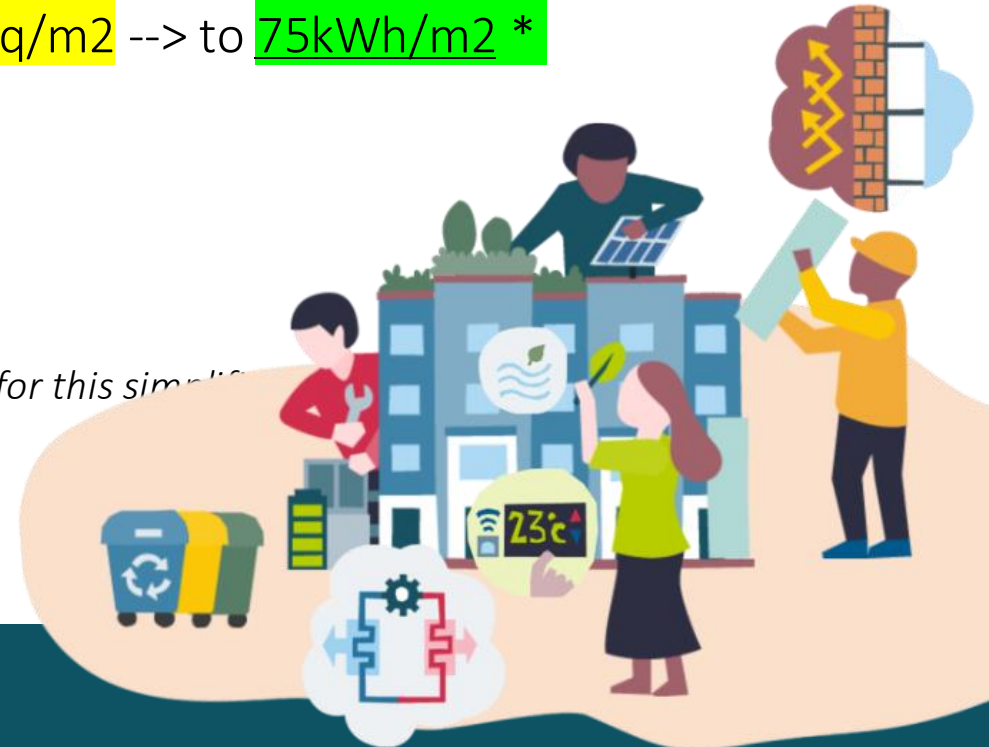
Opportunities for GHG emissions reduction

Starting from the activities and resource use inventories and multiplying by the emissions factor of each resource, cities can plot their climate neutrality journeys in terms of 'hard' interventions.

Example 2: Reducing the need for thermal energy with insulation

- From $150\text{kWh/m}^2 * 200\text{gCO}_2\text{eq/kWh} = 30\text{kgCO}_2\text{eq/m}^2$ --> to $75\text{kWh/m}^2 * 200\text{gCO}_2\text{eq/kWh} = 15\text{kgCO}_2\text{eq/m}^2$

IMPORTANT DISCLAIMER: We are neglecting upstream (Scope 3) emissions for this simple calculation.





Opportunities for GHG emissions reduction

Starting from the activities and resource use inventories and multiplying by the emissions factor of each resource, cities can plot their climate neutrality journeys in terms of 'hard' interventions.

Example 3: Shifting from fuel to green electricity

- From $75\text{kWh/m}^2 * 200\text{gCO}_2\text{eq/kWh} = 15\text{kgCO}_2\text{eq/m}^2$ --> to $75\text{kWh/m}^2 * 0\text{gCO}_2\text{eq/kWh} = 0\text{kgCO}_2\text{eq}$

IMPORTANT DISCLAIMER: We are neglecting upstream emissions





Opportunities for GHG emissions reduction

To shift activities, e.g.: Shifting from **car use** to **bike or walking**

Cities have several **levers of change** or 'enabling' interventions at disposal. In this case, e.g.:

- ✓ **Governance and policy tools:** Establish and enforce a Low Emissions Zone
- ✓ **Financial and fiscal incentives:** Increase parking or access fees, increase attractiveness of walking and cycling paths
- ✓ **Skills, capability, and capacity building, behavioral change:** Cultural events and information campaigns for less car use
- ✓ **Stakeholder engagement and social innovation:** innovation in social practices (i.e., sharing economy)

Activating multiple levers of change at once gives best chances of successful intervention implementation..





Opportunities for GHG emissions reduction

From the analysis of CCCs to date, cities are overwhelmingly taking into account '**hard**' interventions, while '**enabling**' interventions are less in focus.

This could either mean that most actions don't need any enabling factor for implementation (i.e. they are already set in the budget or development plan of stakeholders responsible), or that there are potential gaps or 'weaknesses' in the implementation plan.

Source: NZC Barometer

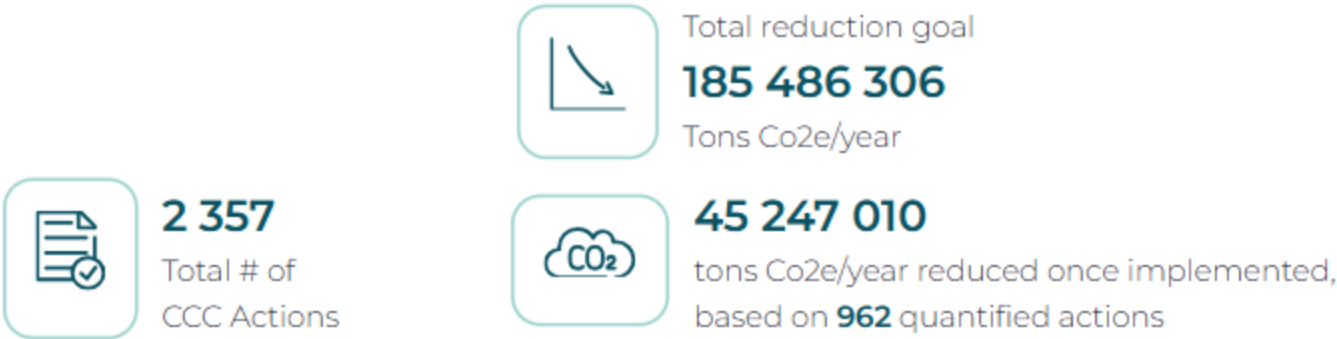
Number of actions per sector and law





Opportunities for GHG emissions reduction

Looking at available data, we note that there does not seem to be coherence between the **emissions gap** cities are aiming at covering, **quantification of emissions reductions** from portfolios of interventions, and **funding** identified.

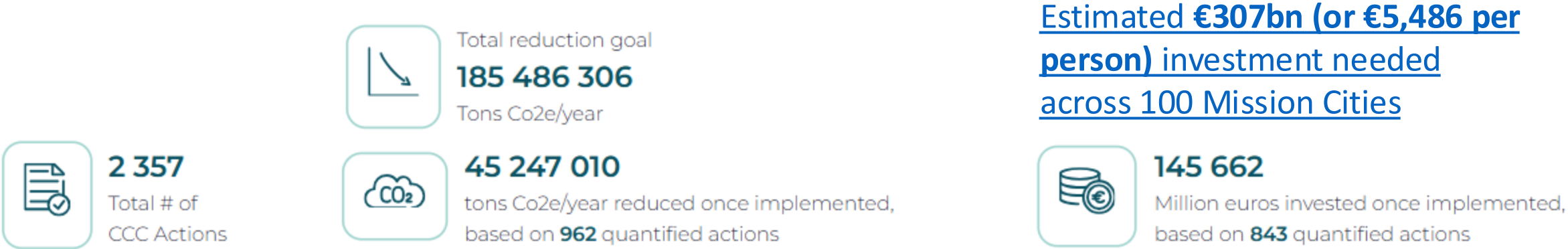


Source: NZC Barometer



Opportunities for GHG emissions reduction

Looking at available data however, we note that there does not seem to be coherence between the **emissions gap** cities are aiming at covering, **quantification of emissions reductions** from portfolios of interventions, and **funding** identified.



Cities are strongly encouraged to work on aligning targets, reductions, and investment plans.



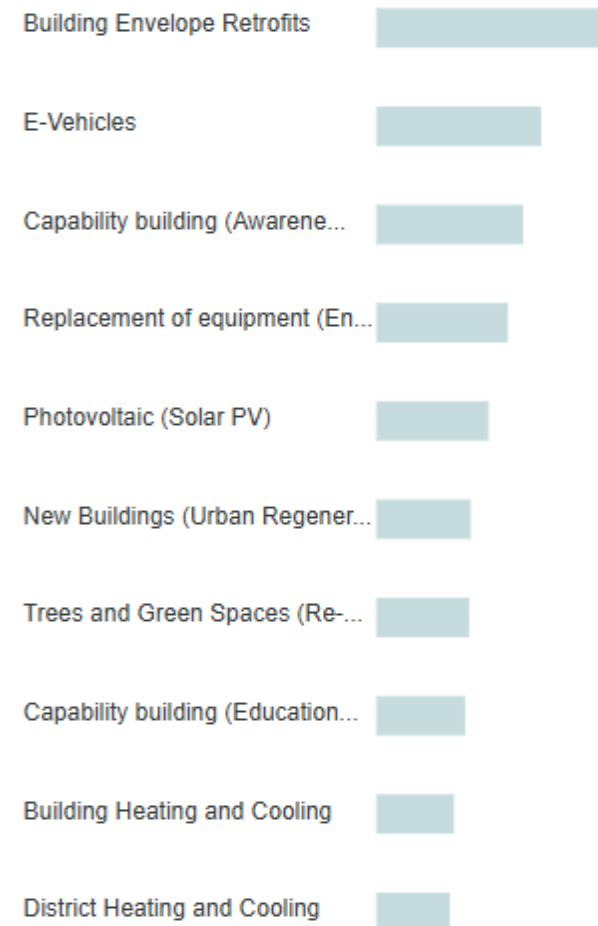


Opportunities for GHG emissions reduction

Coherently with identified emissions sources, when we look at what Mission Cities are planning, we see that the most addressed intervention is **building envelope retrofits**, followed by **e-vehicles**, and **PV** installation in terms of 'hard' interventions.

Increasing **energy efficiency** is a mixed tag for equipment replacement but also better energy management.

By far the most addressed enabling factor is **capability building** through either 'awareness' or 'education'.



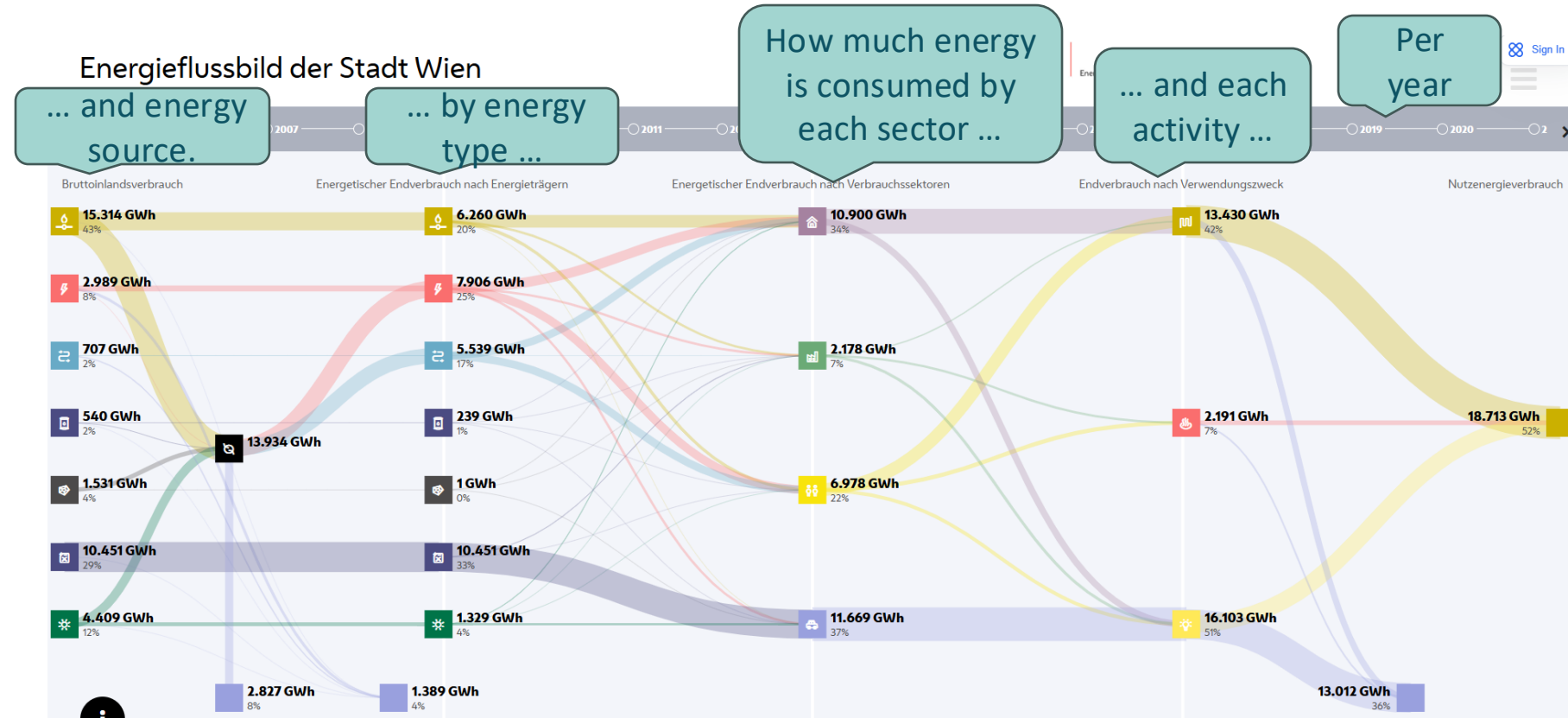
Source: NZC Barometer





Opportunities for GHG emissions reduction

Cities might wish to visualise the need for 'hard' interventions using 'Sankey diagrams', which are helpful for scenario modeling.



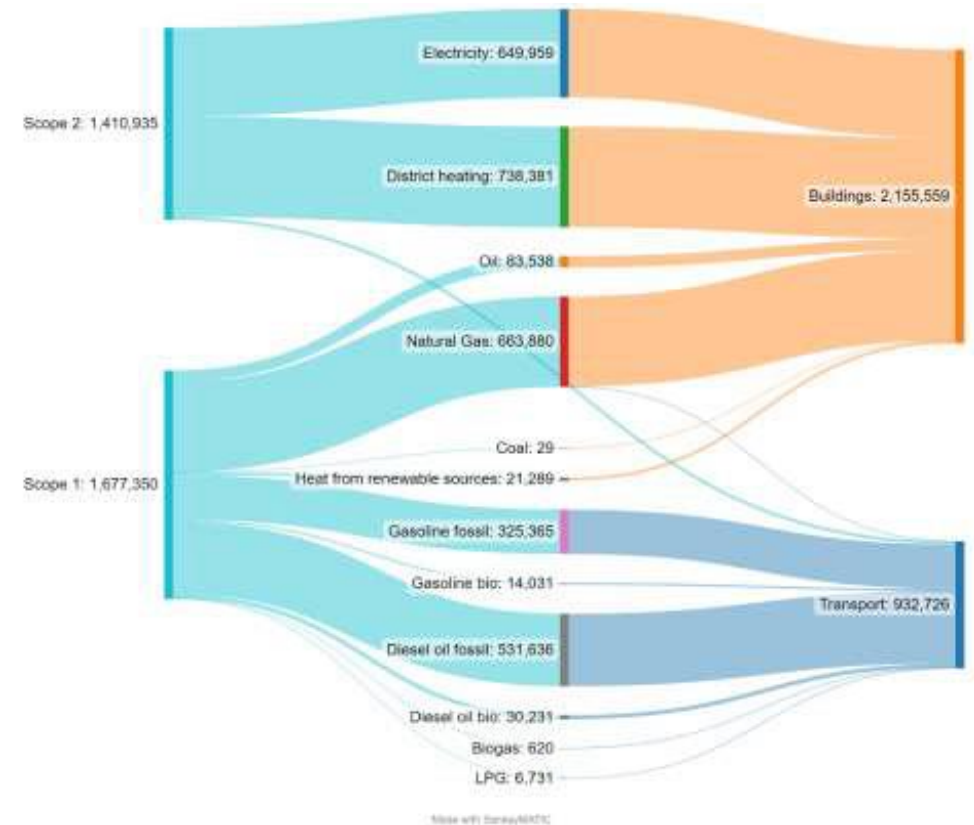


Opportunities for GHG emissions reduction

In Heidelberg's Sankey diagram, the relationship between **emissions (scopes)**, **energy sources (fuels)**, and **energy use (sectors)** clearly shows the intervention points towards decarbonisation.

The city can work on a) lowering energy use and b) shifting fuels towards those with lower emissions factors.

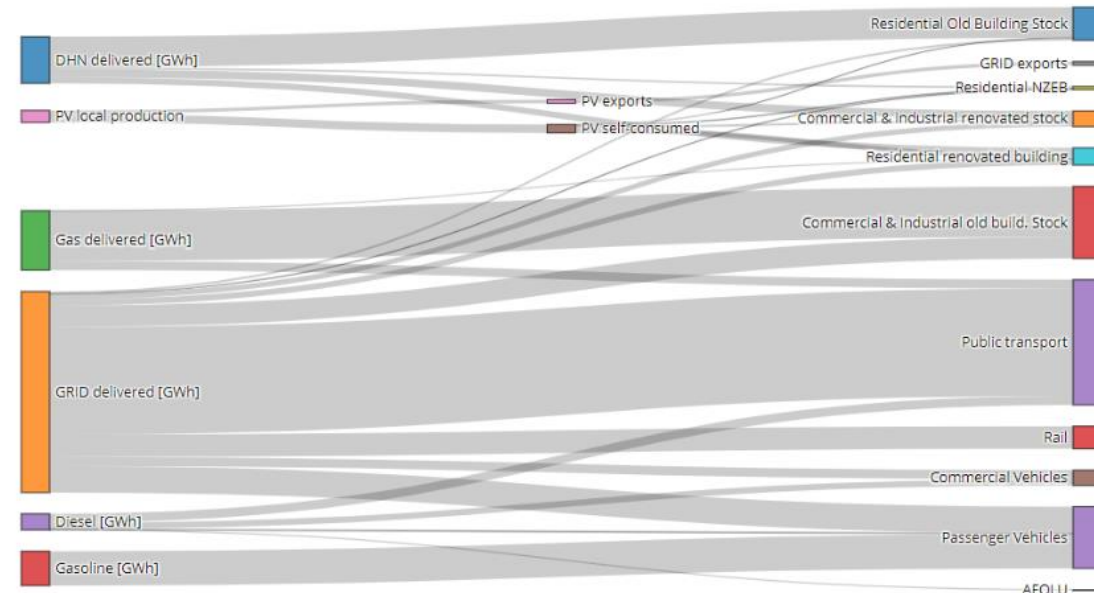
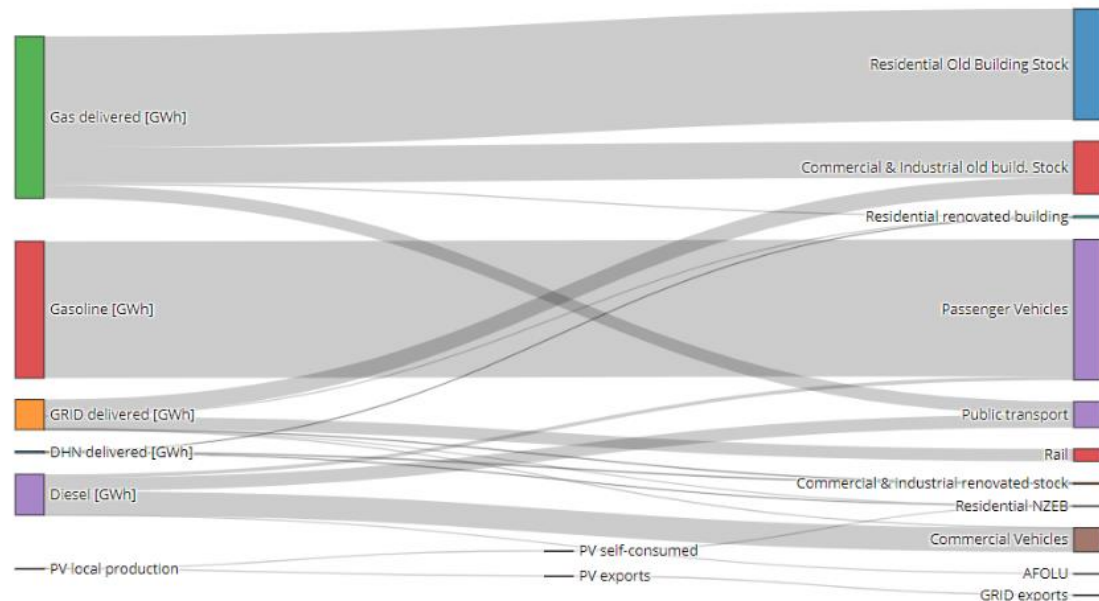
The essential condition is for energy needs to be met at point of consumption, while related GHG emissions are as low as possible.





Opportunities for GHG emissions reduction

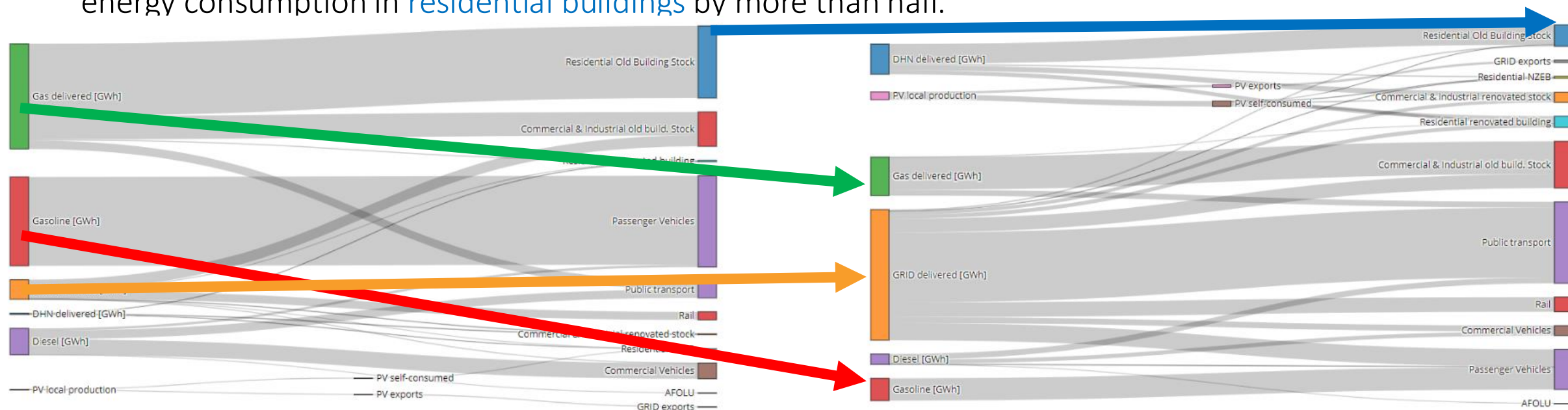
Here, we created a sample visual for a fictional city: you can see the shift in both energy sources (on the left) and energy consumption (activities, on the right) forecasted between 2019 and 2030.





Opportunities for GHG emissions reduction

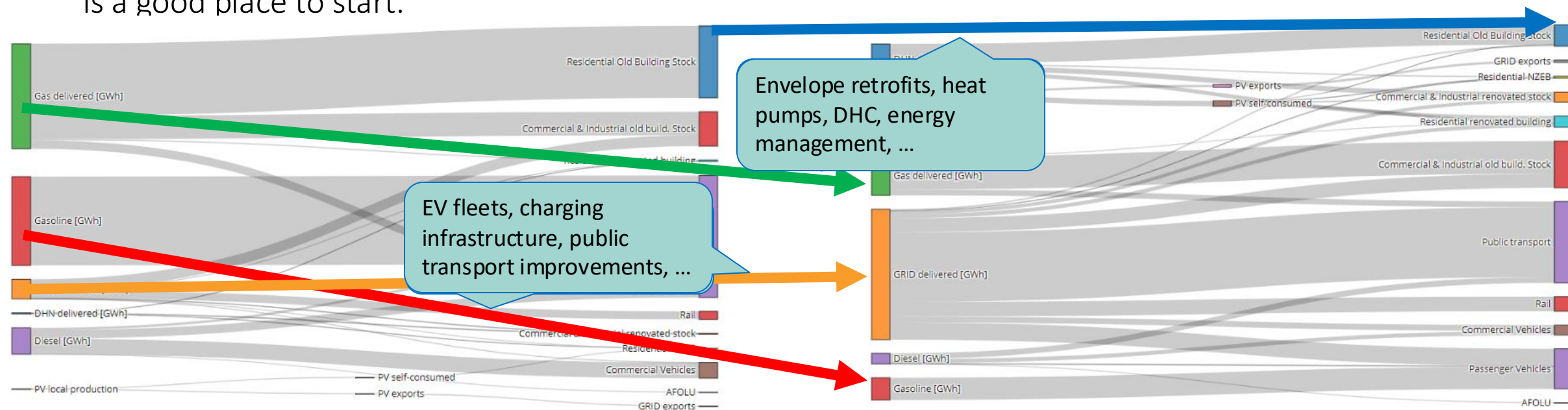
In this fictional scenario, we observe a drastic reduction in the use of **natural gas** and **gasoline**, with a radical increase in **electricity** use, especially due to replacement of **transport** fuel, coupled with a fall in energy consumption in **residential buildings** by more than half.





Main opportunities for GHG emissions reduction

There are many references on available technical solutions to address each required activity shift. On the NetZeroCities Portal, cities can access the Solution Outliner. Among others, the [Smart Cities Marketplace](#) is a good place to start.

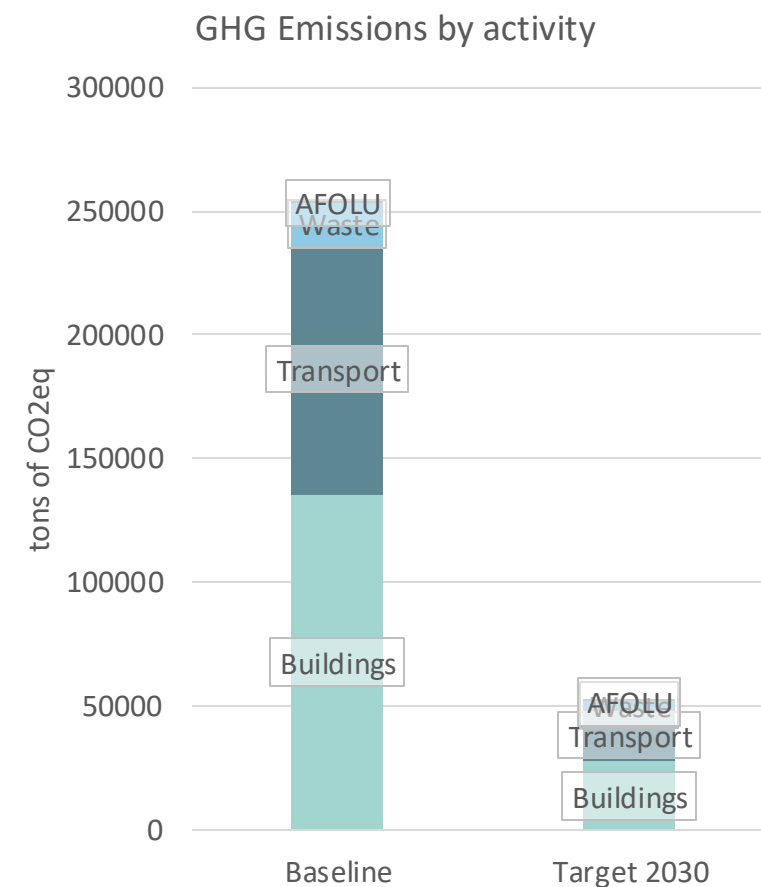
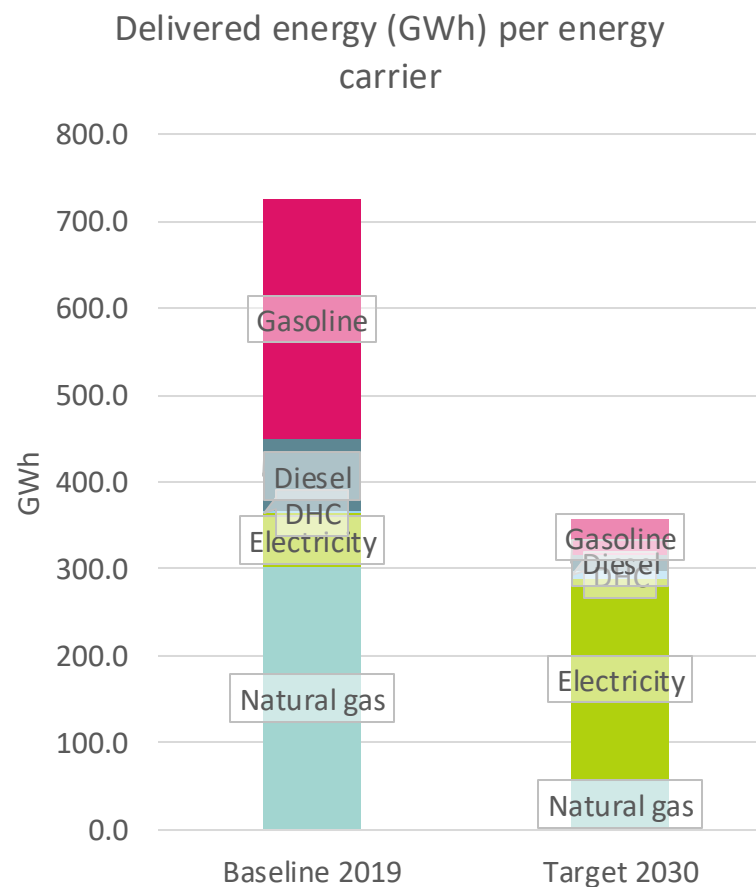




Opportunities for GHG emissions reduction

This way, our fictional city is able to reduce GHG emissions by more than 80% between 2019 and 2030, while final energy consumption is about halved.

A different mix of energy sources can alter these results and represent a different climate neutrality pathway.

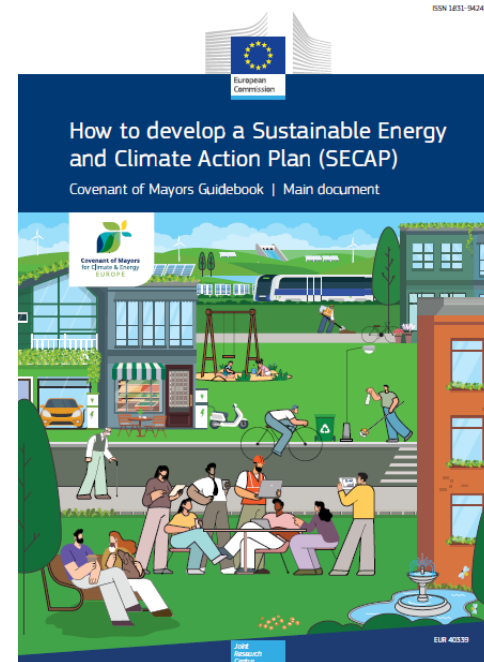




Opportunities for GHG emissions reduction

EU policy/regulatory frameworks already prescribe several intervention points relevant for cities CAPs. Cities can align with these when building action portfolios and modelling scenarios.

- **Energy Efficiency Directive (EU) 2023/1791** – Requires regional and local authorities to prepare local heating and cooling plans, among others. DHC decarbonisation by 2050.
- **Renewable Energy Directive (EU) 2023/2413** - Sets binding national target for RES in heating and cooling, improves cross-sector collaboration DHC / grid planning and infrastructure development.
- **EPBD recast (2024)** - Zero-emission buildings by 2030 (public) / 2033 (all), mandatory whole-life LCA, introduces renovation passports.
- The new **Electricity Market Design Directive** allows public bodies to participate in renewable energy sharing schemes. Also note the new **trans-European transport network regulation** (TEN-T), the **Directive on urban wastewater treatment**, the **Regulation on Nature Restoration**, the **ETS2** (new carbon pricing for buildings & road transport from 2027) feeding into the **Social Climate Fund** (2026) ...





Opportunities for GHG emissions reduction

To plot their pathways, cities might wish to model the **sensitivity** of their plans as a whole (and of each action / intervention or measure) to **individual enabling conditions, factors, or levers of change**.

For some of these factors, cities can choose to use **behavioral change models** (e.g. COM-B methodology).

In the example below, ‘hard’ interventions are influenced by ‘soft’ parameters representing

		Activity parameter	2023 Baseline	2027	2028	2029	2030	2031	2032
Hard' measures / ob	Reduction of energy consumption	TWh	11.31	10.6	10.0	9.4	8.8	8.3	7.8
Soft' factors / levers	Trend improvement in the energy efficiency of heating methods	%	-36%	-1%	-1%	-1%	-1%	-1%	-1%
	Energy savings through desired or induced sobriety	%		-3%	-3%	-3%	-3%	-3%	-3%
	Evolution of regulations on the energy performance of existing buildings	%		-2%	-2%	-2%	-2%	-2%	-2%
Hard' measures / act	5000 social housing renovated per year with an average on energy efficiency	TWh		-0.02	-0.04	-0.06	-0.08	-0.10	-0.12
Soft' factors / levers	Maintaining financing capacity	%		100%	100%	100%	100%	100%	100%
	Maintaining external aid (State)	%		100%	100%	100%	100%	100%	100%
	Capacity of construction companies to meet demand	%		100%	100%	100%	100%	100%	100%



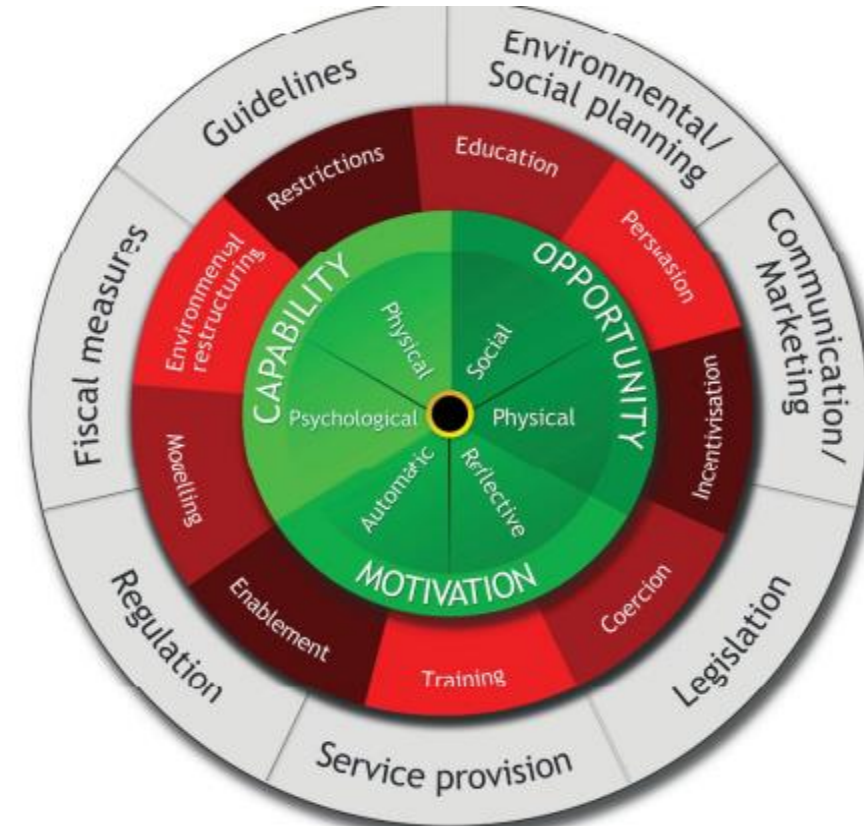
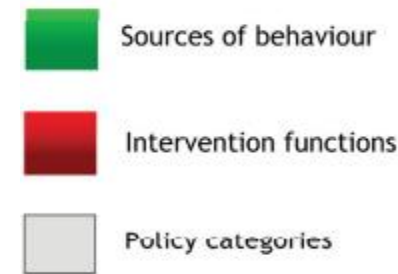


Opportunities for GHG emissions reduction

To model behavioral change or 'soft' interventions, cities might use assumptions based on e.g. the COM-B methodology.

This method creates an **adoption factor** for **affected population** based on

- **Capacity:** skills/knowledge, physical ability, access to equipment (survey scales; training completion; % homes with smart thermostats).
- **Opportunity:** infrastructure & price signals (bike lanes km per capita; heat pump installer density; time cost; incentives; defaults).
- **Motivation:** attitudes, norms, intentions (Likert scales; sign-ups/pledges; community challenges).



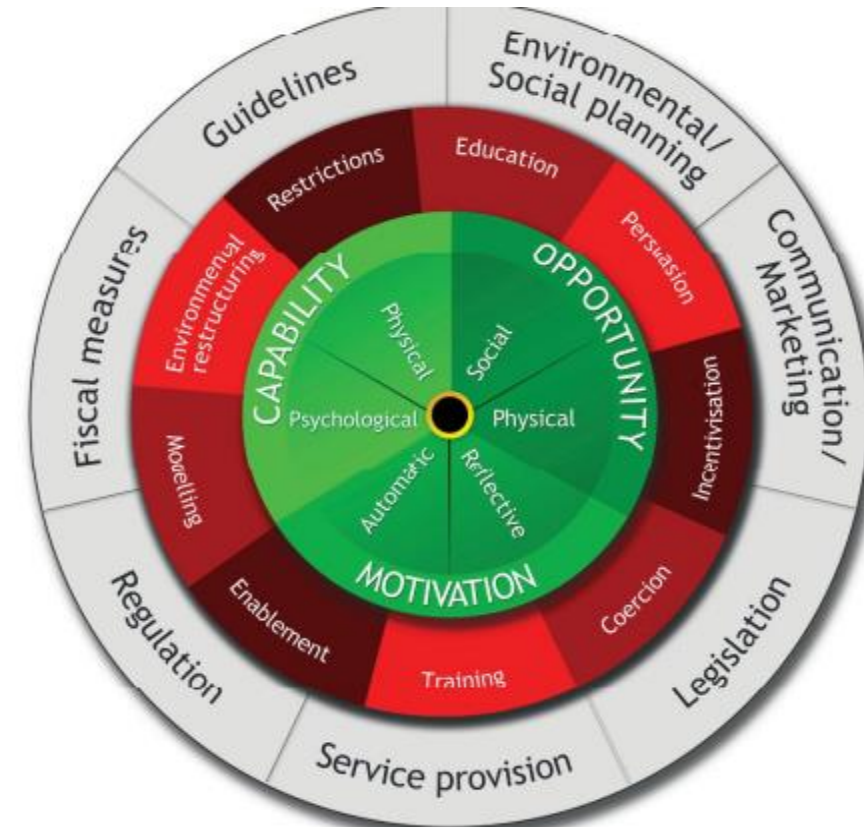
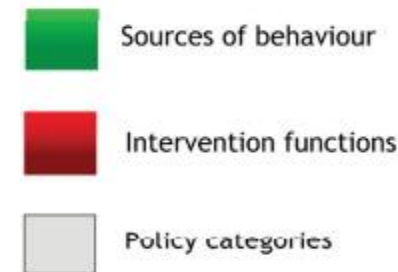


Opportunities for GHG emissions reduction

For example, based on e.g. historical or statistical data, we could expect an e.g.

- 80% rate of adoption for interventions such as bans,
- 50% for major infrastructure development,
- 30% for fiscal or financial incentives,
- and >15% for e.g. targeted education campaigns, communication or awareness.

Several resources track intervention results which can provide helpful benchmarks or comparable values.

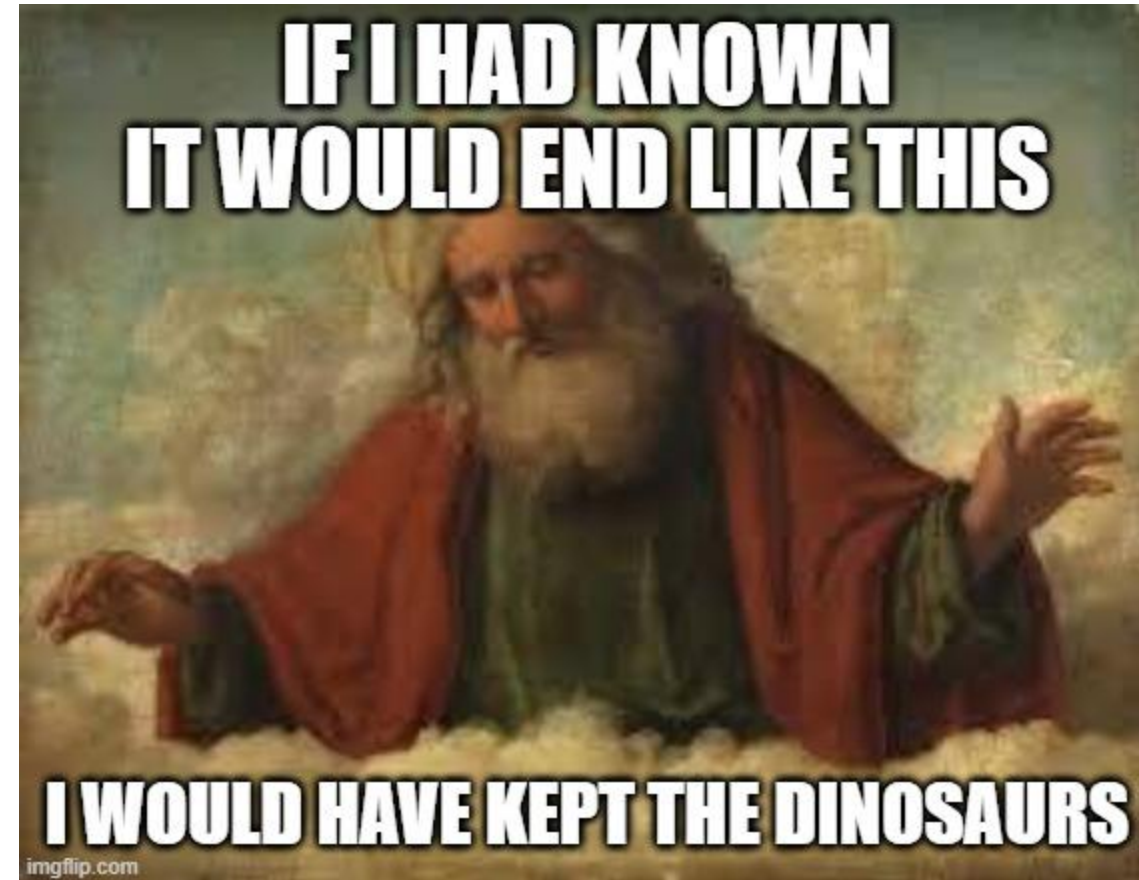




Residual emissions

Within the 100 Climate-Neutral and Smart Cities Mission framework, residual emissions can be defined as those emissions remaining **after all technically and economically feasible opportunities for emissions abatement have been implemented** (Steg et al., 2022).

Indicatively, residual emissions should stay below a ceiling of 20% of a recent baseline in the framework of the Cities Mission (European Commission, 2021g)
→ This ceiling is an orientation not a prescription !





Residual emissions

To address residual emissions and achieve net-zero, the Cities Mission aligns with the **EU Carbon Removals Certification Framework (CRCF)**, which categorises carbon removals in three key areas:

- **Carbon Farming**, such as soil carbon and afforestation/reforestation.
- **Permanent Carbon Storage/Removal** such as Biochar Carbon Removal (BCR), Direct Air Capture and Storage (DACs), Enhanced Rock Weathering (ERW), and Bioenergy with Carbon Capture and Storage (BECCS).
- **Carbon Storage in Products** such as wood-based construction materials and concrete (where the carbon is stored for 35 years).

Another way to compensate for residual emissions is to offset emissions by removing emissions somewhere else. This can be done through carbon credits.





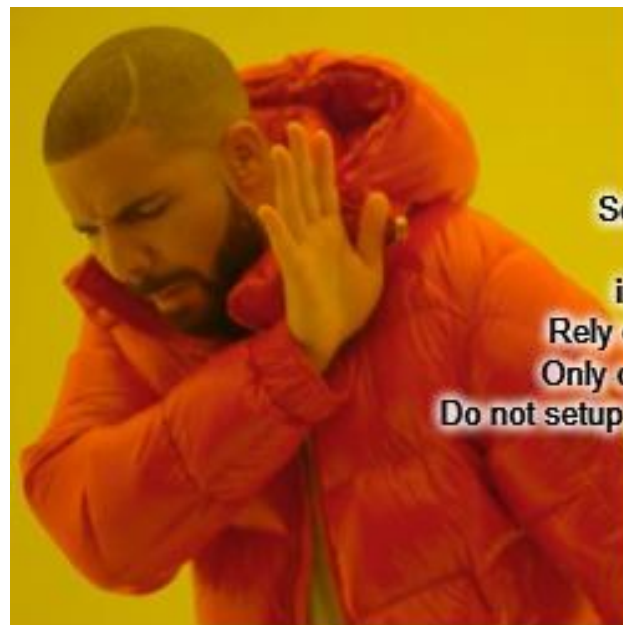
Residual emissions

- Apply an analytical approach to the identification of residual emissions in net-zero targets.
- Prioritise emissions reduction at source and use high-integrity emissions compensation.
- Report emissions transparently and avoid double counting.
- Select compensation strategies based on local characteristics and availability, considering co-impacts, time to maturity and cost effectiveness.
- Diversify strategies to distribute risks and benefits, while avoiding over-reliance on a single method.
- Verify the net effect of selected solutions by considering all associated positive and negative emissions.
- Engage in knowledge exchange to stay updated on best practices and emerging methodologies.





Residual emissions



Set 20% as mathematical target
Rely on compensation
instead of reduction at source
Rely on a single compensation method
Only count the positive reduction effects
Do not setup learning groups and dedicated networks



Identify residual emissions analytically
Report transparently and avoid double counting
Select strategies based on multiple criteria
Diversify strategies to distribute risks and benefits
Consider all associated positive and negative impacts
Engage in knowledge exchange and stay up to date

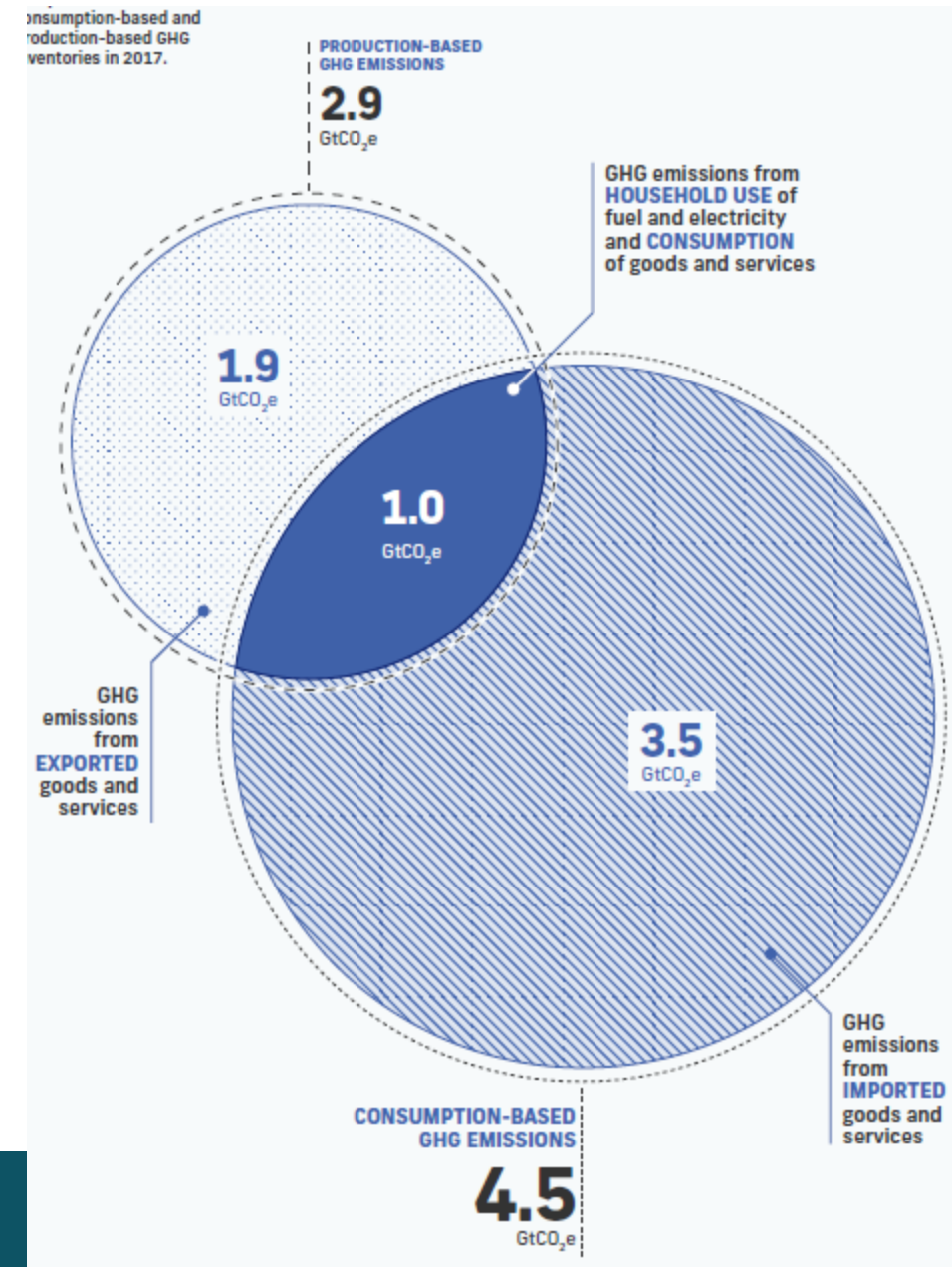




Scope 3 / Consumption-based emissions

“85% of the emissions associated with goods and services consumed in C40 cities are generated outside the city”

<https://www.arup.com/insights/the-future-of-urban-consumption-in-a-1-5c-world/>





Scope 3 / Consumption-based emissions

Consumption-based emissions represent a broad range of categories, with many different goods and services that contain varied source emissions and require different interventions.

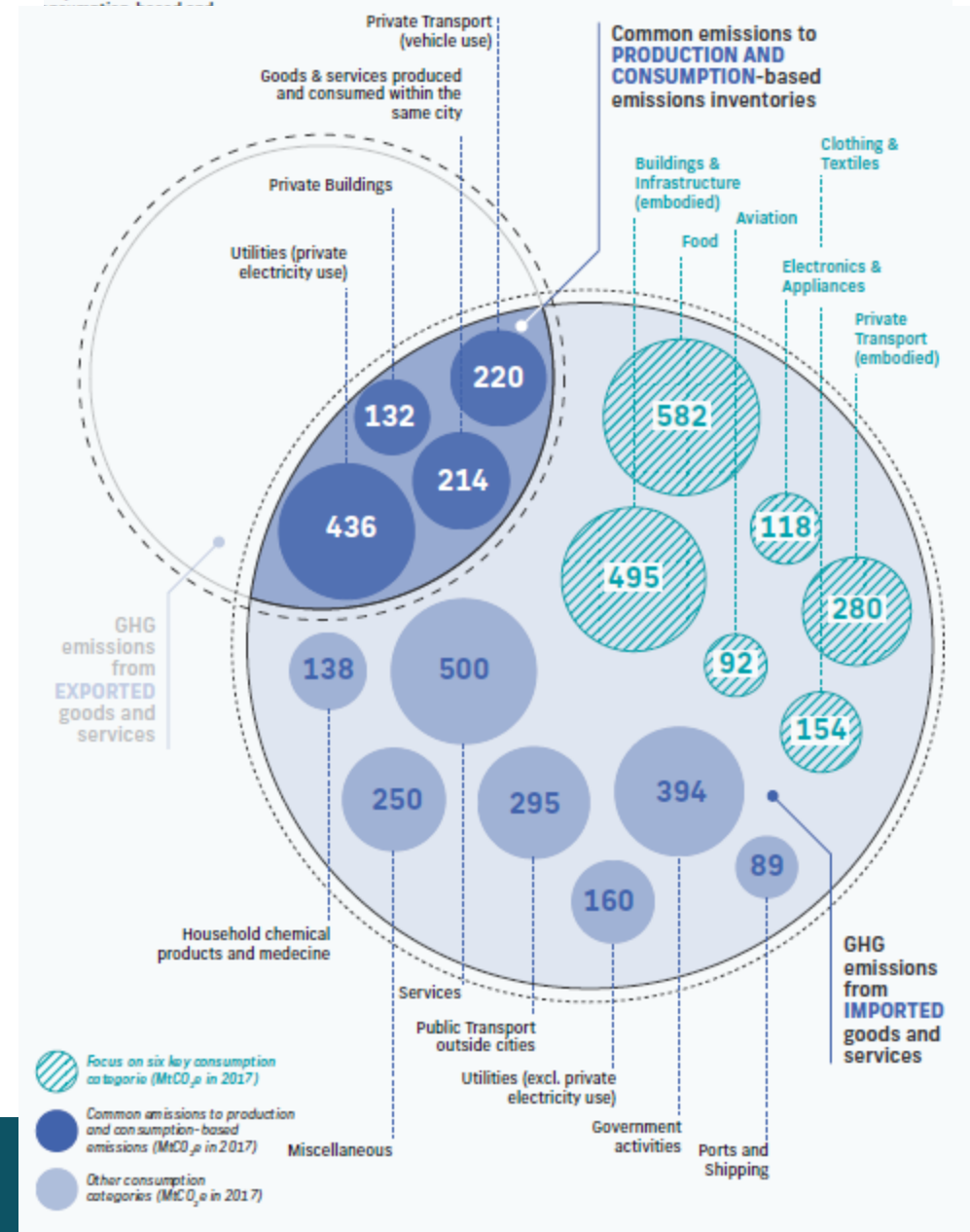
Key consumption categories: food; buildings and infrastructure; clothing and textiles; electronics and appliances; private transport and aviation.

Key interventions for the decarbonisation of value chains are lowering the carbon intensity of

- energy generation → shift to renewables

- material production → shift to a (local) circular economy and close material loops

<https://www.marp.com/insights/the-future-of-urban-consumption-in-a-circular-world>

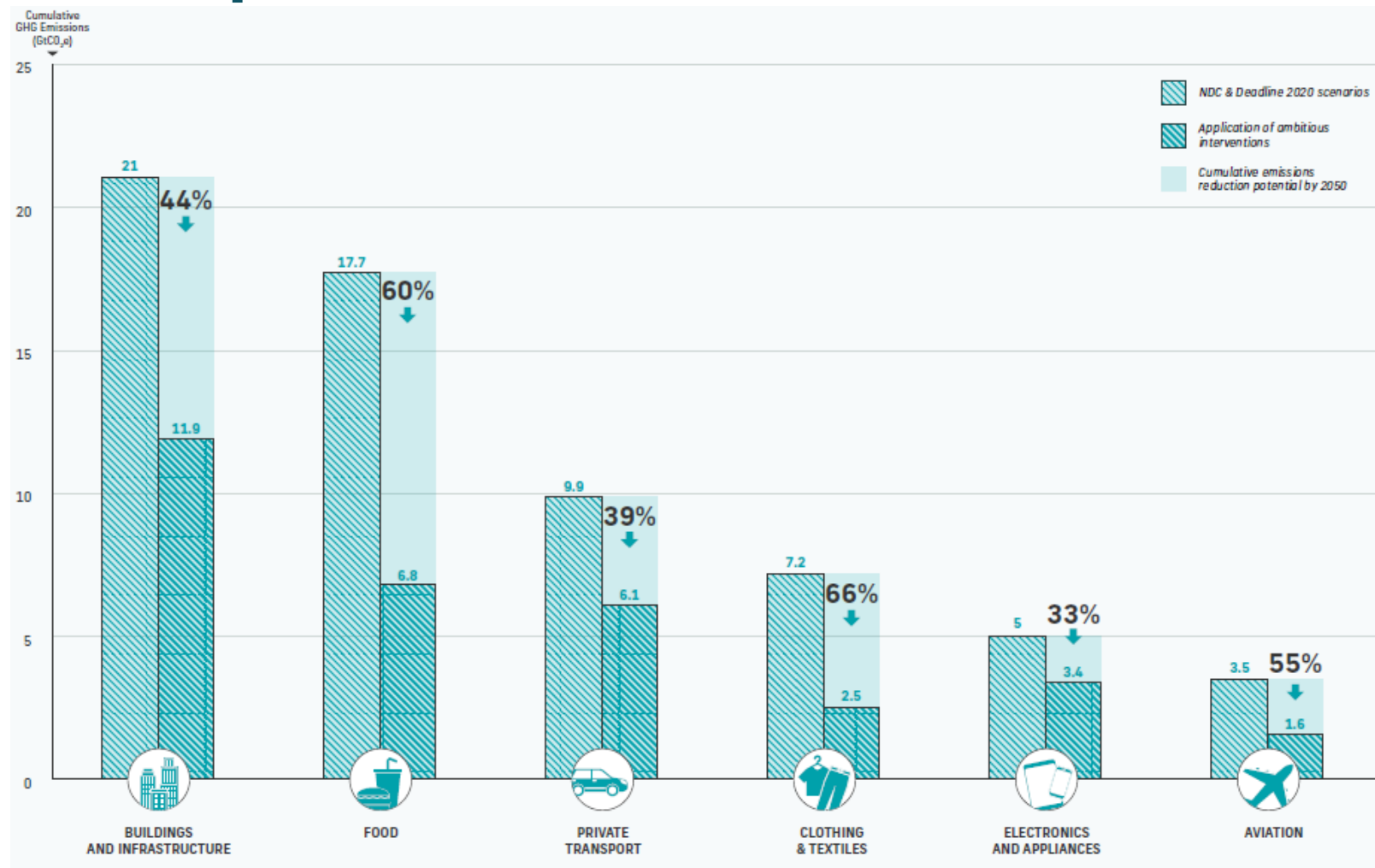




Scope 3 / Consumption-based emissions

Cumulative emissions reduction potential by 2050 across six consumption categories

<https://www.arup.com/insights/the-future-of-urban-consumption-in-a-1-5c-world/>





Scope 3 / Consumption-based emissions

What can cities do?

- **Circular procurement** for municipality and partners → Use framework agreements / buying clubs with other cities or regions to shift markets (e.g. for low-carbon construction, catering, apparel, digital infrastructure).
- **Land use and building permits** → Cap embodied carbon per m² for real estate developers, implement circularity & reuse zoning incentives and requirements.
- Tie all subsidies / grants / permits (not only construction) to lifecycle carbon thresholds → events, operating licenses, concessions, agreements
- Repair cafes and workshops, information events for citizens and the private sector.

<https://www.arup.com/insights/the-future-of-urban-consumption-in-a-1-5c-world/>

Consumption category	Consumption interventions
	• Reduce the number of new clothing items bought every year • Reduce supply chain waste
	• Dietary change: eat in line with health recommendations and lower meat and dairy consumption • Reduce household waste • Reduce supply chain waste
	• Reduce number of flights • Increase adoption of sustainable aviation fuel
	• Improve materials efficiency • Enhance building utilisation • Switch to lower carbon materials • Adopt low-carbon cement • Reuse building components
	• Reduce car ownership • Increase car lifespans • Increase material efficiency
	• Optimise lifetimes of IT equipment





Session Agenda

1. Emission Domains, Solution Themes and levers of change
2. What are Mission Cities planning in their Action Plans?
An analysis
3. City testimonial: Kalamata
4. Levers of change | Focus on Social innovation
5. Interactive activity
6. Further tools and resources and wrap-up





City testimonial: Kalamata

Vassilis Papaefstathiou

Civil engineer NTUA | MSc in
Architecture NTUA | MSc
in Environmental Planning of Cities and
Buildings

Deputy Mayor of Strategic
Planning and Climate
Neutrality Municipality of
Kalamata





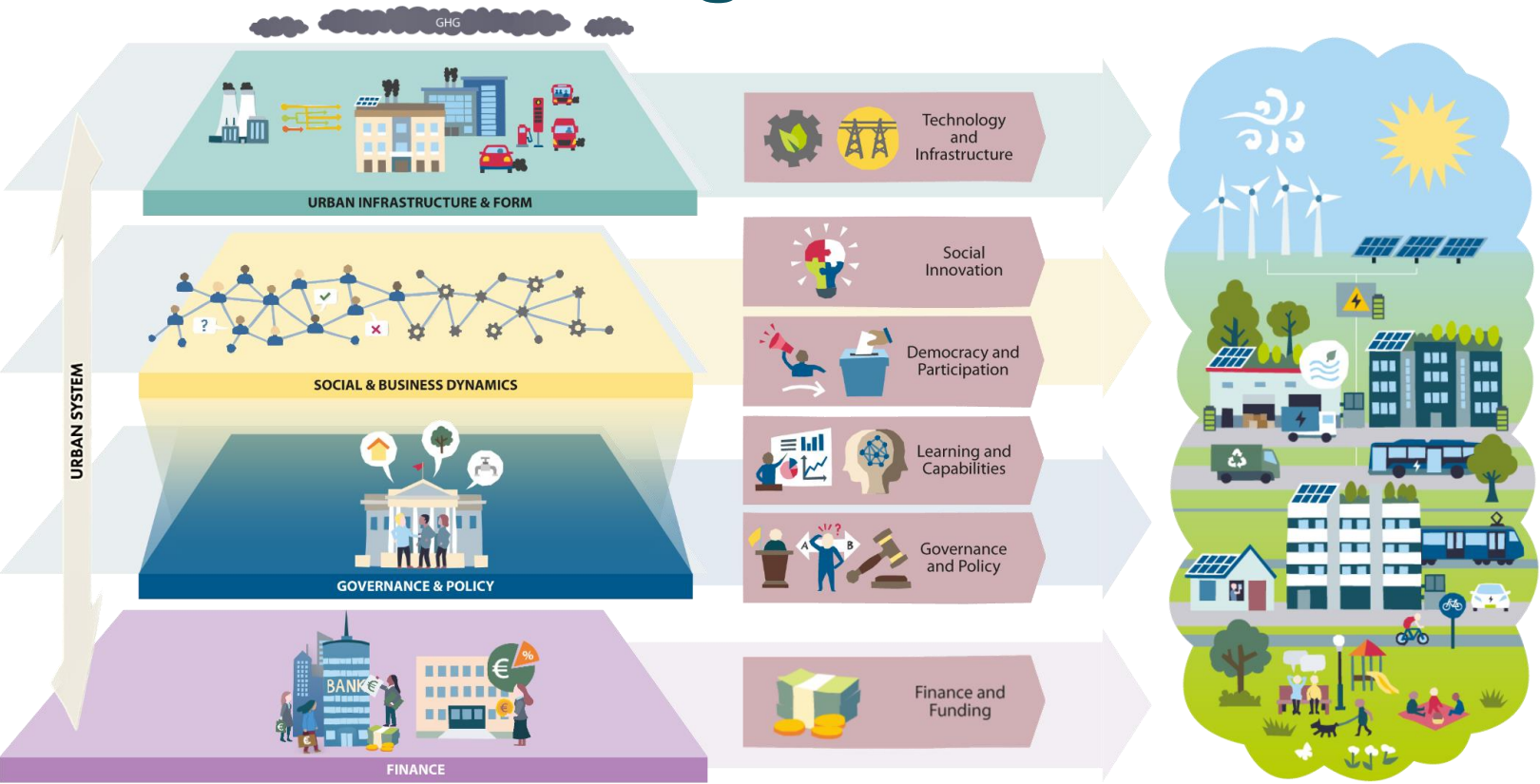
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Levers of change





Levers of change: Social Innovation

Social innovations are new ideas (products, services and models) that simultaneously meet social needs and create **new social relationships or collaborations** addressing the challenge of achieving climate-neutrality.

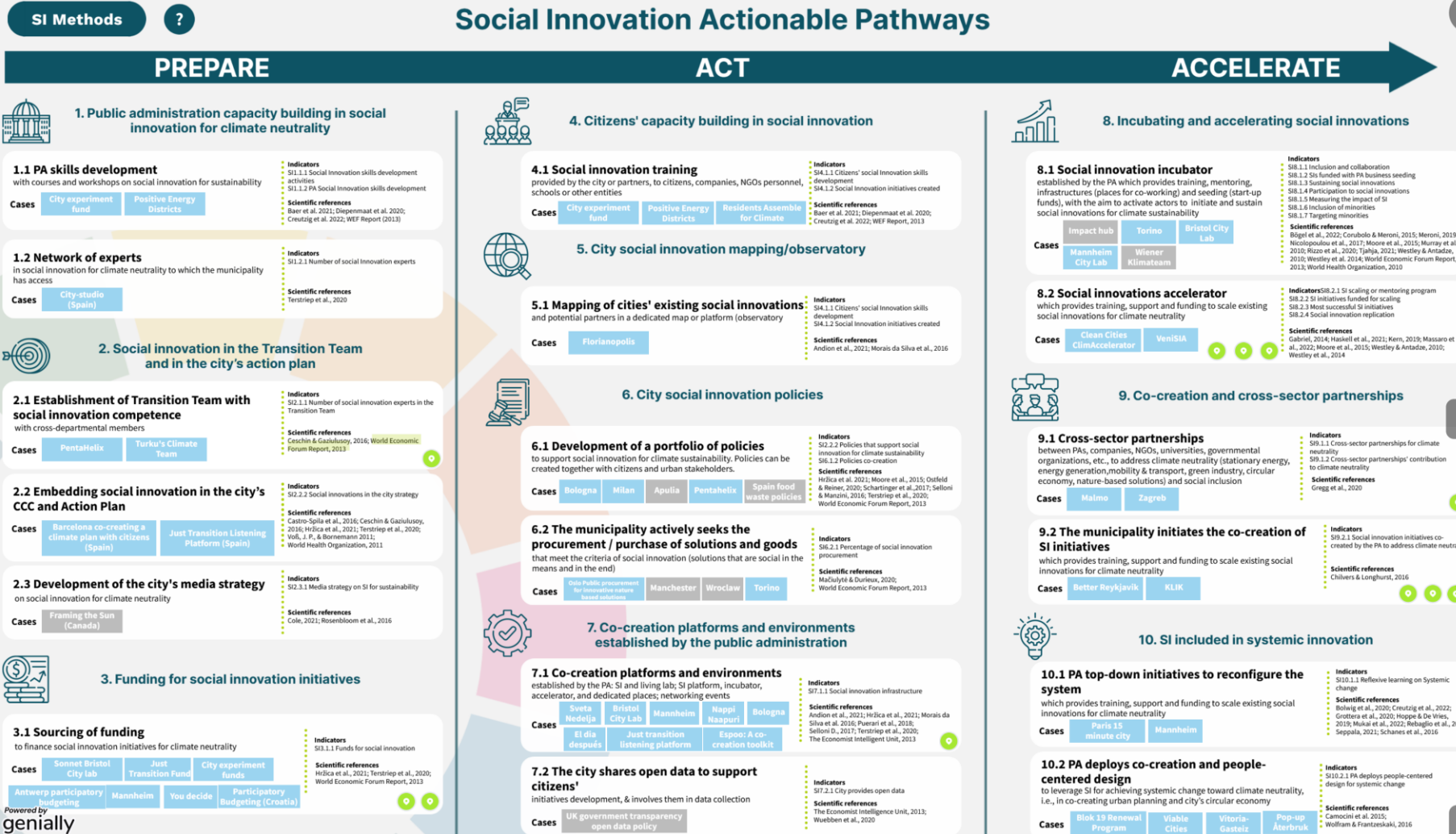
It uses **prototyping** and **quick experimentation** to create new products or services, or to implement innovative business models that improve community wellbeing and promote **behavioural change** by responding to local needs.

Related concepts: "multi-actor collaboration" ≠ "stakeholder engagement" ≠ "social entrepreneurship"





Levers of change: Social Innovation





Levers of change: Social Innovation

Built Environment:

Paris' annual Rooftop Festival engages citizens, designers, and policymakers in reimagining rooftops as spaces for greening, solar energy, and climate adaptation, supporting the city's broader ecological transition.

Mobility & Transport:

The Hungarian Cyclist Club's "Bicibusz" (Bike-Bus) initiative (Budapest) aims to enable children in Hungary to travel to school by bike or scooter in organised groups along set routes and times. Led by adult volunteers, these rides are fun, foster a sense of community, and promote a cleaner environment.

Energy Systems:

The Hague – Mariahoeve District: Social Innovation for building energy communities within neighbourhoods to transition from natural gas to grid-based electricity use through neighbourhood awareness and engagement workshops

Waste and Circular Economy:

Outdoor Recycling Centrer, Helsingborg: Outdoor recycling centres encourage circularity by transforming materials that would be discarded into resources for neighbourhood schools, with 50% of the city's schools and preschools already participating.

Industry:

The Clean Cities ClimAccelerator (Vienna, Madrid) fosters collaboration between early-stage startups and city stakeholders to co-develop clean technology solutions, enabling system-level social innovation for climate neutrality.

Agriculture, Green infrastructure and Nature Based Solutions:

Good food Hub, Porto: Linking local farmers to consumers, Good Food Hub aims to facilitate access to organic, local, and healthy food near citizens' workplaces, homes, or schools in Asprela.

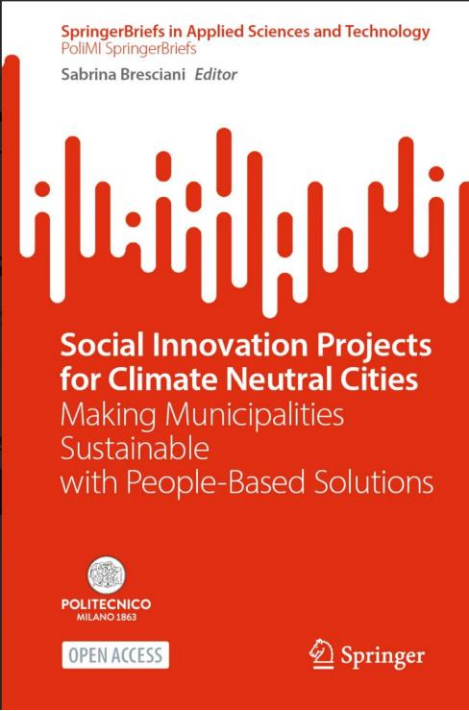




Levers of change: further resources on Social Innovation



Social Innovation CoP Webinar Behavioural Change & Social Innovation in Systemic Climate Transition



The Role of Social Innovation in Climate Neutrality	1
Francesca Rizzo and Tamami Komatsu	
Integrating Social Innovation in Cities' Portfolios of Action: Building Robust Ecosystems for (of) Collective Action and Social Impact	13
Kaisa Schmidt-Thome and Paul Mesarcik	
Strategizing for Climate Neutrality. How to Make Social Innovation Relevant in the City's Journey to Climate Neutrality	25
Marzia Mortati and Eugénie Cartron	
Social Innovation Scaling at Urban Level	53
Sabrina Bresciani and Cyril Tjahja	
Ten Social Innovation Case Studies to Address Cities' Challenges: Citizens Engagement, Energy and Behavioral Change	63
Sabrina Bresciani, Rohit Mondal, Kaisa Schmidt-Thome, and Francesco Michele Noera	
Activating Ecosystems for Change by Enriching the Civic "Soil" for Social Innovation. The Wiener Klimateam Project as a Case Study	75
Daniela Amann, Arild Ohren, Max Stearns, and Ilaria Mariani	
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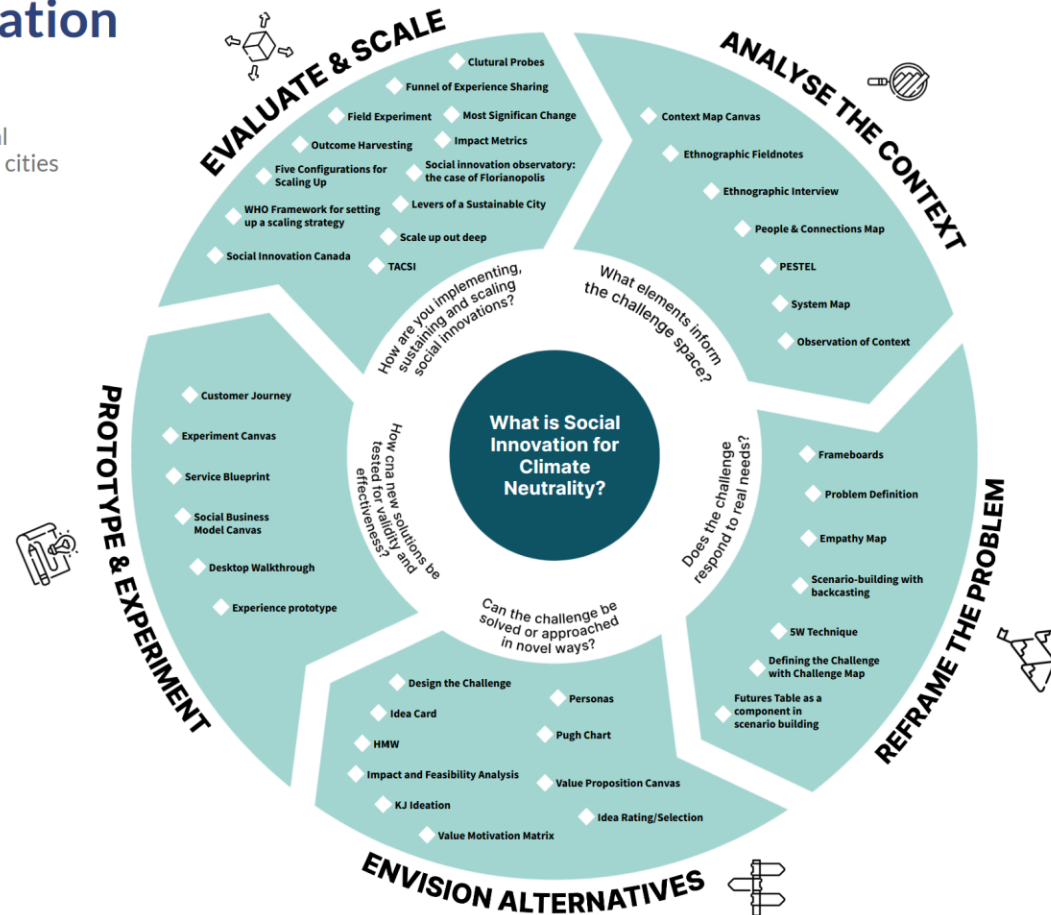




Levers of change: further resources on Social Innovation

Social Innovation Methods

Methods to implement social
innovation in projects and in cities



Download the Social
innovation for climate
neutrality [toolkit \(pdf\)](#)



Session Agenda

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6. Further tools and resources and wrap-up





Interactive activity

1. Join a breakout room, introduce yourself and your city
2. **Explore the visual map** to identify:
 - 1 or 2 solutions that can bring the biggest change in your city
 - Discuss in the group your choice and what are the related barriers and opportunities

<https://engage.socialsimulations.org/module4>





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Further tools and resources

NetZeroCities map of learning resources

Learning Online (Self-paced)			Online (synchronous)
Topic	In-depth resources	Tools	Hybrid Online Course
ALL CITIES NZC Portal Resources THE NZC SYSTEMIC INNOVATION APPROACH	The Systemic Approach		The NetZeroCities program, service offering, systemic approach, what works for Mission Cities
	Climate City Contracts		Climate City Contracts
	Climate Transition team		Developing a transition team, mapping and activating the ecosystem
	Climate Action Planning Integrated planning Adaptation		Core Session: City planning for climate neutrality Spotlight Session: Climate Action Plan in the urban planning system
	Impact Pathways and Monitoring GHG baseline, monitoring and co-benefits Impact pathways		Spotlight Session: Reporting and MEL
	Solution themes related to Emission domains		Levers of change: Technical solutions and multi-actor collaborations
	Buildings (Stationary energy)		Passive solutions to reduce energy demand in buildings
	Energy systems (Stationary energy)		Systemic energy transition at buildings, districts and city level
	Mobility and Transport		Mobility, behavioural change, public transport
	Waste and Circular economy		
EU National coordination platforms and learning opportunities	Green industry (IPPU)		
	NBS, green infrastructure and agriculture (AFOLU)		
	Other scope 3		Other emission domains and scope 3
	Levers of change		Levers of change: Technical solutions, social innovation and multi-actor collaborations
	Technology and infrastructures		Data-driven approaches to energy transition in buildings and districts
	Digitalisation Smart Cities		Citizen engagement for systemic climate action
	Stakeholder Engagement		Engaging the private sector
	Social Innovation Stakeholder-led innovations		Levers of change: Technical solutions, social innovation and multi-actor collaborations
	Financing the Ambition		Introduction to finance Preparing a pipeline of projects for external financing
	Governance and policies		Multilevel governance, national platforms and policy strategies
Other projects and initiatives NEB, SDGs	Inclusivity		Policy and regulation innovation
	Other projects and initiatives		Just transition





Further tools and resources

Solution Outliner



Please, select your city's ambitions to reduce GHG emissions:

Multiple selections

What are the co-benefits the city is looking for?

Multiple selections

What barriers is the city facing?

Multiple selections

Choose the city's enabling conditions:

Multiple selections

RESET

NET ZERO CITIES

List of feasible solutions 154 / 188					
SOLUTION	CATEGORY	SUBCATEGORY	BUNDLE	Link	Priority
United for Smart Sustainable Cities (U4SSC) Publications	Digital Solutions	Digital Public Goods	-		
Data strategy	Enabling instruments	Policy instruments	-		
Capacity building and engagement with municipalities to identify and co-create circular solutions and roadmaps	Enabling instruments	Educational, Capacity Building instruments	-		
15-minute city	Mobility and transport / Enabling instruments	Concept	-		
Integrated land use and urban planning with energy and climate	Enabling instruments	Planning instruments	-		
Local Digital Twin (Planning / Decision Making, cross-cutting)	Digital Solutions	Analytics modelling solutions	-		
Parking policies, management and fees, smart parking	Mobility and transport	Service solutions	-		
Photovoltaics	Stationary energy	RES and energy-harvesting solutions	Low carbon electrification		
Collective passenger transport	Mobility and transport	Service solutions	-		
Eco-districts / Green neighbourhoods	Stationary energy / Energy Generation	Concept	-		

CHECK PRIORITY

CHECK THE SOLUTIONS

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SOLUTION LIST

- Photovoltaics
- Collective passenger transport
- Eco-districts / Green neighbourhoods
- Mobility hubs
- Artificial Intelligence (AI) applications
- Shared micromobility
- GHG emissions / Scope 1, 2 & 3
- Decarbonisation Plans for Industry
- Mobility as a Service (MaaS)
- Platform Architecture
- Gender diversity considerations in

BACK

NET ZERO CITIES

Photovoltaics

AREAS TO REDUCE GHG EMISSIONS	CO-BENEFITS	ENABLERS	BARRIERS
Ambient energy Clean buses Cleaner/ efficient vehicles Congestion pricing schemes Digitalisation and smart city solutions Digitalisation and smart city solutions for transport Eco-driving (driving behaviour and style to reduce fuel consumption and emissions)	Better access to living areas Boost local business (km 0) Decrease future maintenance costs Enhance attractiveness of the cities Healthier and more attractive lifestyles Improve access to job opportunities Improve air quality Increase employment rate and Jobs Increase skill	Adequate and smooth public procurement process Appropriate regulatory framework Clear leadership Clear standards and interoperability frameworks in place Collaboration between governance levels Commitment documents/ action plans Consensus on priorities between	Barriers in developing bankable projects or partnerships that draw in funds. Capacities on monitoring; ex ante and ex post evaluation Empowering context for cities, what's the purpose behind? Why it matters Fragmented communication (e.g. departmentalized and along political party lines) leading to a lack of buy in from the

LINK TO THE FACTSHEET

LINK WITH CAPACITY BUILDING

SOLUTION BUNDLE

Low carbon electrification

SCALE RELATED BUNDLE

Building

CHECK OTHER SOLUTIONS IN THE BUNDLE

Link to the Bundle

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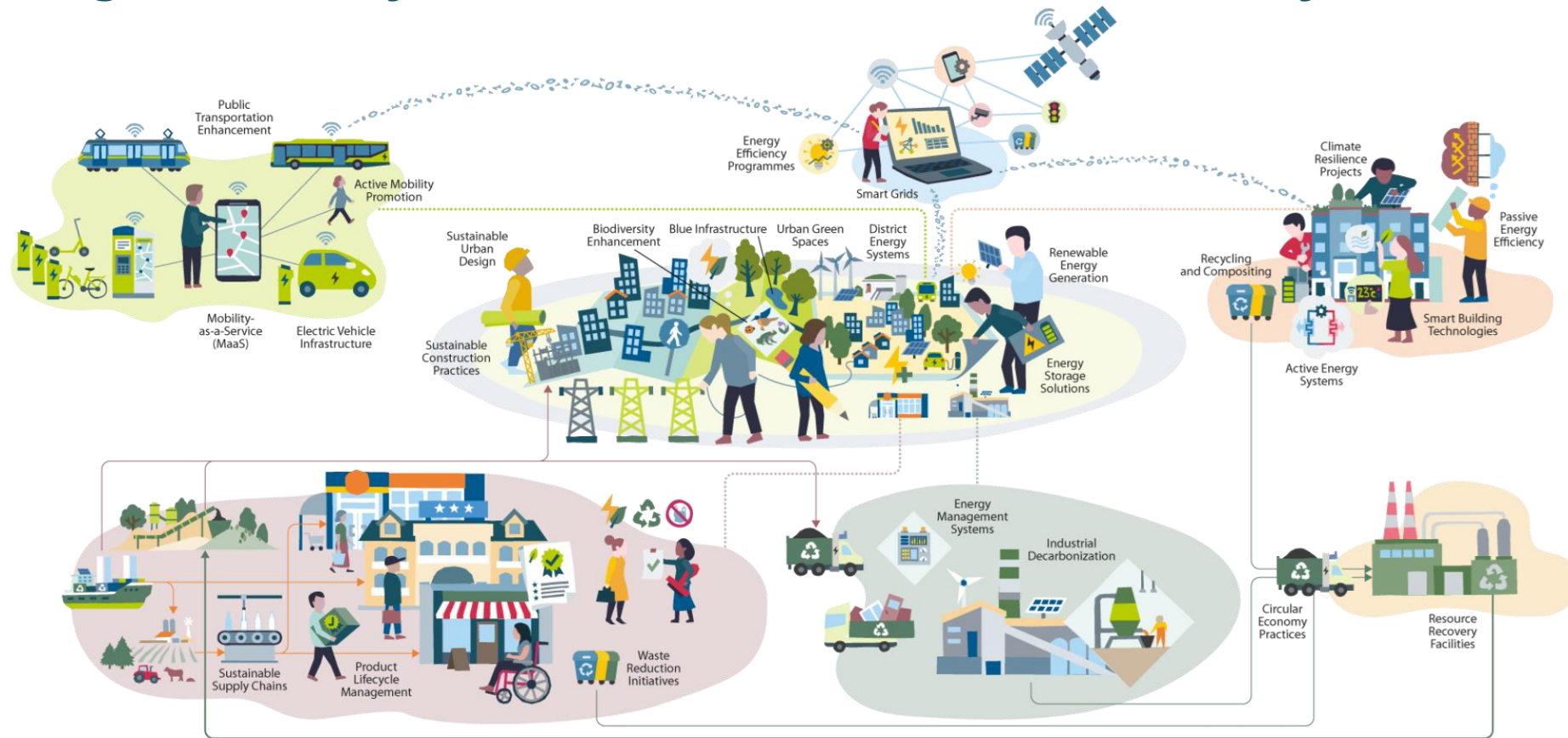
The NZC SOLUTIONS OUTLINER is a tool developed in order to support the Mission Cities in getting the most **ALIGNED SET OF SOLUTIONS** that could contribute to their transition towards neutrality. The service uses contextual parameters such as ambition, barriers, enablers and co-benefits to automatically present a **LIST OF PRIORITIZED SOLUTIONS**, from which the user can get more information (at the first version, on the solution itself and its related bundles).



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the European Union



The one thing I will always remember of what I learned today is...





More on solution themes in the next Sessions:



	Tuesday Oct 28th	Thursday Oct 30th	Friday Nov 7th	Tuesday Nov 11th	Thursday Nov 13th
9:00-11.00 CET	Core Levers of change: Technical solutions, social innovation and multi-actor collaborations			Spotlight 4 Mobility: Behavioural change and digital solutions	
13:00-15.00 CET		Spotlight 1 Passive solutions to reduce energy demand in buildings	Spotlight 3 Data-driven approaches to energy transition in buildings and districts		Spotlight 5 Scope 3 and other emission domains
15:00-16.30 CET		Spotlight 2 Systemic energy transition at buildings, districts and city level			





Feedback

What did you think of this session?
Let us know!

(Link also in chat)

Online Planning Lab. Feedback
form Module 4 Core Session





Contacts

NetZeroCities Help Desk

- Email
- Other contacts

This presentation has been designed using resources from Flaticon.com





Get in touch with NetZeroCities!



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www.netzerocities.eu



hello@netzerocities.eu



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Appendix

Which solutions are Misdifferent European countries planning in their Climate Action Plans





Stationary energy/Built environment

	Description	Countries	Type of Buildings	Level of Insulation	Main Actions	Additional Info
A Deep Renovation and High Standards	Strong renovation policies, advanced energy codes (NZEB or better), and major investment in energy retrofitting and climate adaptation	Germany, Austria, Netherlands, Denmark	Modern and Energy- efficient	High	Actions go beyond insulation: focus on urban space, tools and policies	Advanced strategies can be applied
B Progressive renovation with developing frameworks	National or local strategies are in place, but with limited coverage and funding	Germany, Austria, Netherlands, Denmark	Mixed: some efficient, some not	High	Similar to Group A: urban retrofitting and planning tools	Tools and funding support still being developed
C Low renovation rate and inefficient building stock	Old buildings with little renovation, low thermal efficiency, and weak regulations	Germany, Austria, Netherlands, Denmark	Old and inefficient	Low	Focus mainly on improving insulation and building envelope	Reducing energy demand is the main priority
D Focus on new buildings rather than renovation	High rate of new construction, but little action on existing buildings; fragmented regulations	Germany, Austria, Netherlands, Denmark	Very poor and outdated	Very Low	Mostly focused on fixing the building envelope	Big problems with building quality limit other actions





Energy systems

	Description	Countries	Type of Energy System	System Maturity	Main Actions	Additional Info
A Leaders in Renewables and Urban Electrification	High renewable penetration, widespread electrification, and smart infrastructure	Sweden, Austria, Denmark, Finland	Modern, electrified with RES and DH	High	Focus on optimisation; efficiency, renewables	Advanced DH (1th/5th gen); digitalisation already in place
B Advanced Transition but Gas-Dependent	Strong solar/wind uptake, but with structural reliance on gas	Spain, Italy, Portugal, Ireland	Solar-based, gas-dependent heating	Medium	Expand RES, improve efficiency, early smart tech	High solar use; storage and DH largely missing
C Strong Fossil Fuel Dependence	Legacy energy systems reliant on coal gas; low efficiency	Poland, Czechia, Hungary Bulgaria, Romania	Fossil-based DH with outdated infrastructure	Low	DH upgrades introduce RES and basic efficiency	High reliance on coal/gas: slow and costly transition
D Insular or Fragile Energy Systems	Energy isolation or vulnerability; limited grid integration	Cyprus, Malta, Latvia	Isolated grids, basic RES and efficiency	Very Low	Strengthen local RES and demand-side actions	No DH or smart grids: limited grid capacity and scalability





Green Infrastrcure and NBS

	Description	Countries	Type of NBS Integration	System Maturity	Main Actions	Additional Info
A Structured Green Cities	Green Urban Planning, NBS strategies, ecological corridors	Netherlands, Germany, Austria, Sweden	Structurally integrated green-blue networks	High	Climate resilience (50%), green & blue infra	Strong ecological corridors; multifunctional and connected urban ecosystems
B High Potential variable implementation	Cities with green space deficits but emerging local initiatives	Spain, Italy, Portugal, Greece	Patchy green interventions with local leadership	Medium	Green spaces (64%), low blue infrastructure	High potential but low coherence; implementation depends on city initiatives
C Low integration of NBS in Urban Planning	Green areas treated as isolated or decorative elements	Bulgaria, Slovakia, Romania, Poland	Isolated and decorative green elements	Low	Green spots (62%), minimal biodiversity & blue	NBS not linked to planning; weak strategic and ecological integration
D Ecosystem-based National Approach	Countries with territorial-rural integration of green solutions	Finland, Estonia, Slovenia	Ecosystem-based, territorial planning	Moderate	Balanced actions across domains	Few urban actions but embedded in national/regional ecological strategies





IPPU/Industry

	Description	Countries	Industrial Profile	System Maturity	Main Actions (by %)	Additional Insights
A Low-Carbon, High-Innovation Industry	Countries characterised by clean, technologically advanced industrial sectors supported by green technologies and circular economy models, such as industrial symbiosis.	Sweden, Austria, Finland, Germany	Advanced, low-carbon industry with strong R&D	High	Decarbonisation (80%), Energy Mgmt. (20%)	Prioritisation of tech-led decarbonisation; circularity yet to emerge as a priority
B Industrial Transition	Economies with energy-intensive sectors currently undergoing transformation and adopting decarbonisation measures.	Italy, Spain, France, Czechia	Traditional industry under transformation	Moderate	Decarbonisation (63%), Circularity (25%), Energy Mgmt. (13%)	Gradual shift; driven by regulation, innovation capacity still uneven
C Fossil-Dependent Traditional Industry	Countries with legacy industrial systems marked by high emissions, low efficiency, and continued dependence on fossil fuels.	Poland, Romania, Hungary, Bulgaria	Fossil-intensive legacy industry	Early	Supply Chains (100%)	Industrial inertia; innovation hindered by structural and economic limitations
D Post-Industrial/Service-Oriented Economies	Nations with limited industrial activity and a predominance of service-based economic structures, often with a lower industrial carbon footprint.	Ireland, Cyprus, Malta, Slovenia	Service-based or post-industrial economies	Not applicable	No reported actions	Low industrial weight; potential exists in green digital/tech sectors





Mobility and transport

	Description	Countries	Urban Mobility Profile	Transition Stage	Main Actions (by %)	Additional Insights
A Multimodal and Electrified Urban Systems	Efficient public transport, strong cycling and walking culture	Netherlands, Denmark, Austria, Germany	Dense, multimodal cities with mature infrastructure	Advanced	EV Infrastructure (43%), Active Mobility (27%), Public Transport (20%), MaaS (10%)	Integrated systems supported by infrastructure, policy, and social habits; strong modal balance
B Large Cities with Congestion and Active Transition	High car use but significant progress underway	France, Italy, Spain, Greece	Large cities with high car use and active planning	Moderate	EV Infrastructure (49%), Active Mobility (23%), Public Transport (16%), MaaS (12%)	Strong dependence on private cars persists; transitions supported by SUMP and urban policy reforms
C Low-Quality Networks and Polluting Fleets	Underdeveloped public transport, high fossil fuel reliance	Poland, Bulgaria, Romania, Croatia	Underserved networks with fossil-fuel reliance	Early	EV Infrastructure (50%), Public Transport (30%), Active Mobility (20%), MaaS (0%)	Limited investment capacity; reliance on EU funds; car dependency remains structurally embedded
D Small or Dispersed Urban Systems	Low-density cities with limited mobility options	Malta, Cyprus, Estonia, Slovakia	Low-density or dispersed systems with limited options	Contextual	EV Infrastructure (32%), Public Transport (24%), Active Mobility (24%), MaaS (20%)	Micro-mobility & digital tools compensate for scale limitations; flexible models gaining relevance





Waste and Circular Economy

	Description	Typical Countries	Circular Economy Profile	Implementation Stage	Main Actions (by %)	Additional Insights
A Advanced Circular Economy	High recycling rates, mature business strategies, well-developed infrastructure	Austria, Belgium, Germany, Netherlands	National strategies with integrated systems	Advanced	Recycling (45%), Lifecycle (18%), Recovery (18%), Prevention (18%)	Strong performance across all areas; now exploring full-cycle circularity
B Active Transition with City Strategies	Local improvements supported by city-led actions, emerging national policies	Spain, France, Italy, Portugal	Local innovation with partial national support	Moderate	Recycling (73%), Lifecycle (18%), Prevention (5%), Recovery (5%)	City-led efforts dominate; national frameworks still underdeveloped
C Low Recovery and Landfill Dependency	Outdated systems, weak infrastructure, strong reliance on landfilling	Romania, Bulgaria, Croatia, Hungary	Basic systems with landfill dependency	Early	Recycling (73%), Lifecycle (18%), Prevention (5%), Recovery (5%)	Compliance-driven recycling; lacking investment and local ownership
D Local Innovation and Pilot Projects	Small-scale circular initiatives, often led by communities or municipalities	Slovenia, Estonia, Lithuania	Community-led pilots and experimentation	Contextual	Recycling (67%), Lifecycle (17%), Prevention (17%), Recovery (0%)	Creative local models; scaling and institutionalisation needed

