

NET ZERO CITIES



EU MISSION PLATFORM

CLIMATE NEUTRAL AND SMART CITIES



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EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES



EU CITIES MISSION

Action plan Webinar

October 2022



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the European Union



Agenda

- 14:00-14:05** **Welcome and Introduction**
Thomas Osdoba – Climate KIC
- 14:05-14:25** **Walk-through of Action Plan Template**
Nikolai Jacobi – ICLEI Europe
- 14:25-14:40** **Operationalizing Impact Pathways**
Nikhil Chaudhary – Climate KIC
- 14:40-14:55** **Action planning: key methods and activities**
Ghazal Etminan & Wolfgang Loibl - AIT
- 14:55-15:25** *Break-out (parallel sessions – 1 round á 30 min., cities can choose)*
Part A: Current State Assessment
Part B: Portfolios of action
Part C: Social innovation, governance and finance
- 15:25-15:45** **Reports from break-out groups and open Q&A**
Group facilitators
- 15:45-15:55** **Mission Label**
European Commission
- 15:55-16:00** **Wrap-up and Outlook**
Thomas Osdoba – Climate KIC
- 16:00** End of webinar



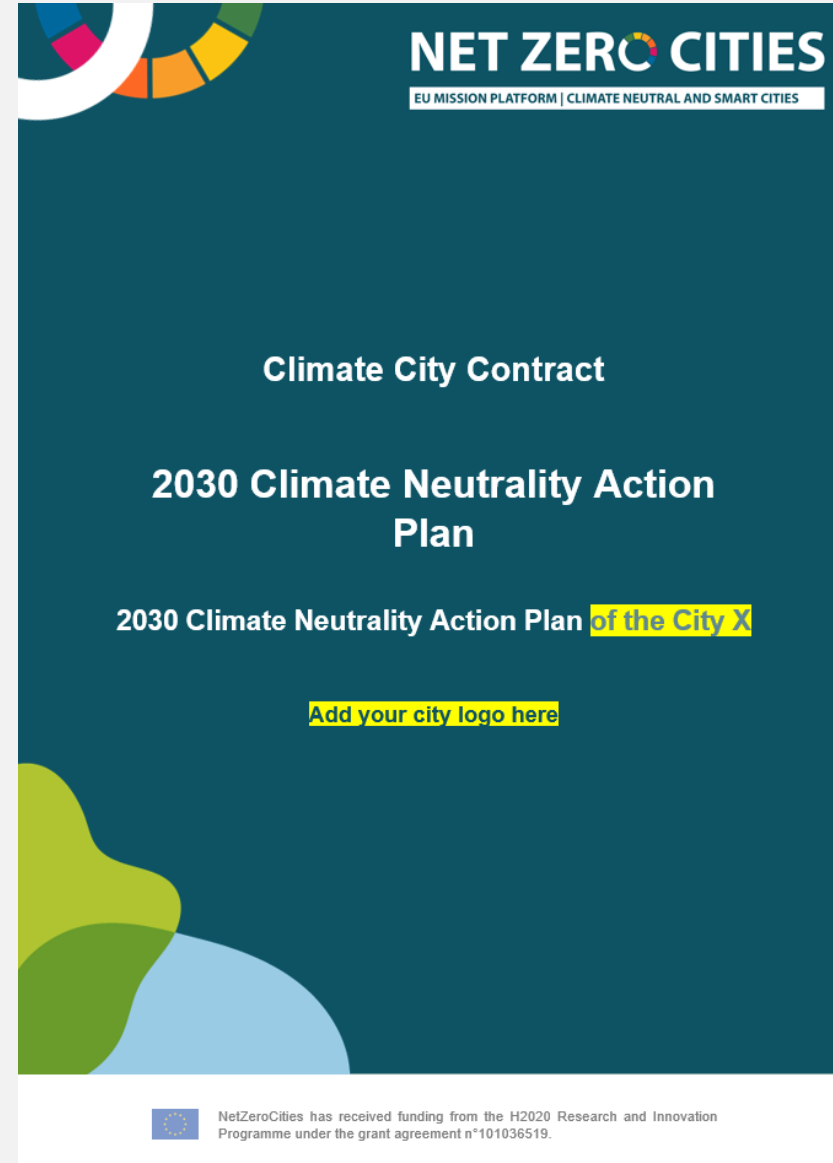


Walk-through of Action Plan Template

Nikolai Jacobi / ICLEI Europe
Senior Officer – Energy, Materials and Built Infrastructure

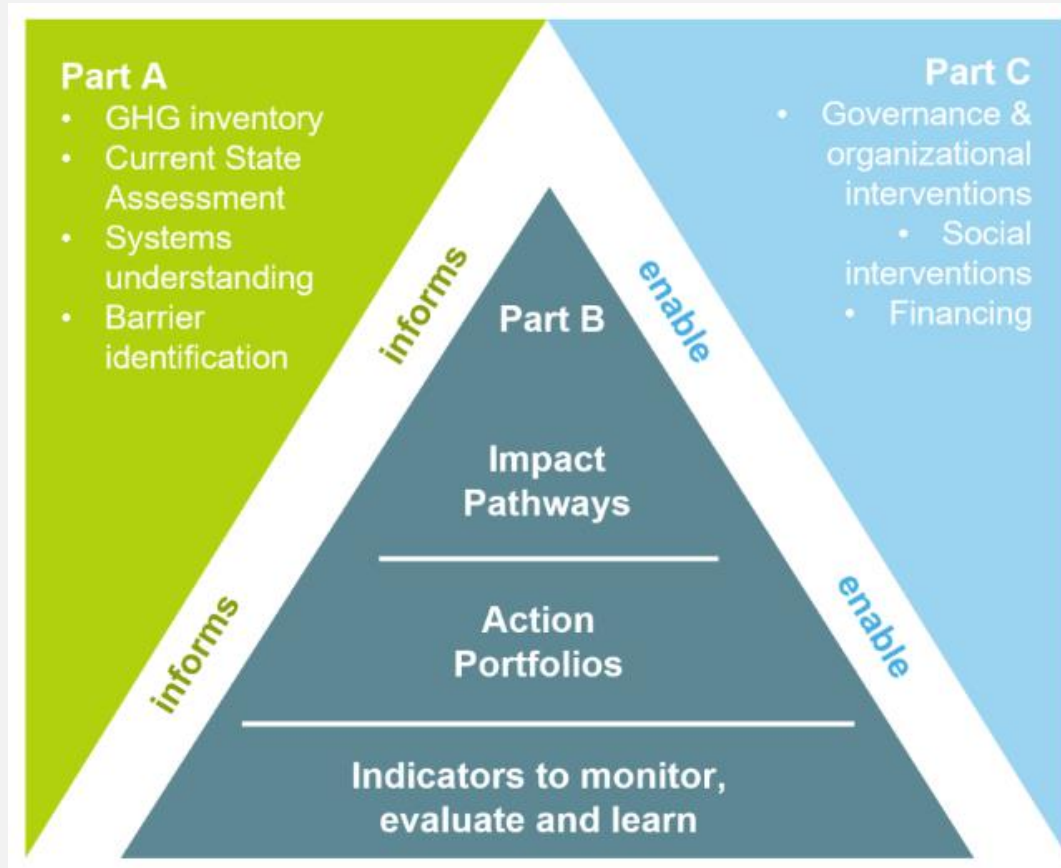


2030 Climate Neutrality Action Plan





Action Plan Outline



Part A - Current State of Climate Action

Module A-1
Greenhouse Gas
Baseline Inventory

Module A-2
Current Policies and
Strategies Assessment

Module A-3
Systemic Barriers to 2030
Climate Neutrality

Part B - Pathways towards Climate Neutrality by 2030

Module B-1
Climate Neutrality
Scenarios and Impact
Pathways

Module B-2
Climate Neutrality
Portfolio Description

Module B-3
Indicators for Monitoring,
Evaluation and Learning

Part C - Enabling Climate Neutrality by 2030

Module C-1
Organisational and
Governance Innovation
Interventions

Module C-2
Social and Other
Innovation Interventions

Module C-3
Financing of Action
Portfolio





Action Plan Design Principles

- Building on **existing strategies**, plans and processes
- Rooting in **multi-level governance** and deep stakeholder and citizen engagement
- Embracing **data-driven analysis**, decision-making, and visualization
- Using a **portfolio approach** to design, cluster and interlink climate actions
- Offering a **flexible** and modular guide
- Providing a solid foundation and **clear direction**
- The 2030 Climate Neutrality Action Plan is a **living document**





Part A – Current State of Climate Action

Part A “Current State of Climate Action” describes the point of departure of the city towards climate neutrality, including commitments and strategies of key local businesses, and informs the subsequent modules and the outlined pathways to accelerated climate action.



Module A-1: Greenhouse Gas Emissions Baseline Inventory



Outline: Module A-1 “Greenhouse Gas Emissions Baseline Inventory” should detail and describe the city’s latest GHG inventory to establish the emission baseline and to establish the emissions gap to 2030 climate neutrality according to the inventory specifications defined in the Cities Mission’s Info Kit for Cities.

Module A-1 covers:

- A-1.1: Final energy use by source sector
- A-1.2: Emission factors applied
- A-1.3: Activity by source sector
- A-1.4: GHG emissions by source sector
- A-1.5: Graphics and charts
- A-1.6: Description and assessment of GHG inventory

Examples/ Notes:

- GHG baseline inventories should cover emission sectors, gases and scopes as specific in the Mission Info Kit.
- The Mission will work with My Covenant & CDP/ICLEI to facilitate both reporting of baseline and monitoring inventories
- New/adapted GHG baseline inventories will need to be submitted in case there has been none reported yet, if the reported one is non-conform with Mission specifications, or if accounting year is older than 2018.



Module A-1: Greenhouse Gas Emissions Baseline Inventory



A-1.1: Final energy use by source sectors				
Base year				
Unit	MWh/year			
	Scope 1	Scope 2	Scope 3	Total
Buildings (Fuel type/ energy used)				
Transport (Fuel type/ energy used)				
Waste (Fuel type/ energy used)				
Industrial Process and Product Use (IPPU) (Fuel type/ energy used)				
Agricultural, Forestry and Land Use (AFOLU) (Fuel type/ energy used)				

A-1.2: Emission factors applied						
(please specify for primary energy type and GHG emission factor according to methodology used)						
For calculation in t or MWh of primary energy						
(Please indicate method used, e.g. GPC, IPCC, CRF, national etc.)						
Primary energy/ energy source	Carbon Dioxide (CO ₂)	Methane (CH ₄)	Nitrous Oxide (N ₂ O)	F-gases (hydrofluorocarbons and perfluorocarbons)	Sulphur hexafluoride (SF ₆)	Nitrogen trifluoride (NF ₃)
...

A-1.3: Activity by source sectors			
Base year			
	Scope 1	Scope 2	Scope 3
Buildings (Activity)			
Transport (Activity)			
Waste (Activity)			
Industrial Process and Product Use (IPPU) (Activity)			
Agricultural, Forestry and Land Use (AFOLU) (Activity)			



Module A-1: Greenhouse Gas Emissions Baseline Inventory



A-1.4: GHG emissions by source sectors				
Base year				
Unit	CO ₂ equivalent/year			
	Scope 1	Scope 2	Scope 3	Total
Buildings				
Transport				
Waste				
Industrial Process and Product Use (IPPU)				
Agricultural, Forestry and Land Use (AFOLU)				
Total				

A-1.5: Graphics and charts
(Please include visualisations of GHG emissions baseline)

A-1.6: Description and assessment of GHG baseline inventory
(Describe, assess, contextualise tables and charts above)



Module A-2: Current Policies and Strategies Assessment



Outline: Module A-2 “Current Policies and Strategies” should list relevant policies, strategies, initiatives or regulation from local, regional and national level, relevant to the city’s climate neutrality transition. Based on these and the baseline inventory outlined in Module A-1, this module should also identify the “emissions gap” as the gap towards climate neutrality 2030 to be addressed by the Action Plan.

Module A-1 covers:

- A-2.1: List of relevant policies, strategies and regulations
- A-2.2: Descriptive assessment of policies, strategies and regulations
- A-2.3: Emissions gap

Examples/ Notes:

- Examples for local relevant policies to list include, climate and energy action plans/strategies, other plans, e.g. for urban greening, waste etc., spatial planning regulations.
- Regional/national: include e.g. regulations related to construction, energy generation, finance and investment etc.
- Other impacting framework conditions



Module A-2: Current Policies and Strategies Assessment



A-2.1: List of relevant policies, strategies & regulations

Type	Level	Name & Title	Description	Relevance	Need for action
(regulation/policy/strategy/action plan)	(local, regional, national, EU)	(Name of policy/strategy/plans)	(Description of policy/strategy/plans)	(Describe relevance/impact on climate neutrality ambition)	(list any suggested action in relation – to be further picked in Module C-1)
...

A-2.2: Description & assessment of policies

(describe and assess listed policies, strategies, regulations etc. to add detail)

A-2.3: Emissions gap

	Baseline emissions (percentage)		Residual emissions / offsetting ¹		Baseline emissions reduction target ²		Emissions reductions in existing strategies ³		Emissions gap (to be addressed by action plan) ⁴	
	(absolute)	(%)	(absolute)	(%)	(absolute)	(%)	(absolute)	(%)	(absolute)	(%)
Buildings										
Transport										
Waste										
Industrial Process and Product Use (IPPU)										
Agricultural, Forestry and Land Use (AFOLU)										
Total										

¹ Residual emissions consist of those emissions which can't be reduced through climate action and are being offset. Residual emission may amount to a maximum of 20 % as stated by the Mission Info Kit.

² Baseline reduction target = Baseline emissions – residual emissions.

³ Emission reductions planned for in existing action planning and strategies should be quantified per sector.

⁴ Emissions gap = Baseline emission reduction target – Emissions reduction in existing strategies.



Module A-3: Systemic Barriers and Opportunities to 2030 Climate Neutrality



Outline: Module A-3 “Systemic Barriers to 2030 Climate Neutrality” should document the results of the stakeholder, systems and ecosystem mapping and identification of systemic barriers and opportunities.

Module A-1 covers:

- A-3.1: Systems and stakeholder mapping
- A-3.2: Descriptive assessment of systemic barriers and opportunities for climate neutrality
- A-3.3: Description/visualization of participatory model for climate neutrality

Examples/ Notes:

- Wide systems definition. Systems include e.g. infrastructural (public transport), entrepreneurial (branch guild, association etc.), social (school systems).
- The participatory model should provide a visual representation (e.g. map) of systems and stakeholders and what principle tangents of engagement and collaboration are.



Module A-3: Systemic Barriers and Opportunities to 2030 Climate Neutrality



A-3.1: Systems & stakeholder mapping				
(Fill out according to AP Guidance) – e.g.				
System description	Stakeholders involved	Network	Influence	Interest
...

A-3.2: Description of systemic barriers – textual elements
(Please fill out according to the Action Plan Guidance)

A-3.3: Description or visualisation of participatory model for the city climate neutrality – textual and visual elements
(Please fill out according to the Action Plan Guidance)





Part B – Pathways towards Climate Neutrality by 2030

Part B represents the core of the Action Plan, shaped by local authorities, local businesses and stakeholders, comprising of the most essential elements: impact pathways, strategic objectives, action portfolios and indicators for monitoring, evaluation and learning.



Module B-1: Climate Neutrality Scenarios and Impact Pathways



Outline: Module B-1 “Climate Neutrality Scenarios and Impact Pathways” should list systemic levers, early and late outcomes and direct and indirect impacts (co-benefits) (NZC Theory of Change)

Module A-1 covers:

- B-1.1: Impact pathways
- B-1.2: Description of impact pathways

Examples/ Notes:

- The impact pathways with its pre-identified levers for change, early and late outcomes and ultimately direct and indirect impacts, are not meant to be prescriptive, but are an instrument to structure the Action Plan to make sure its coherent designed actions are supporting strategic objectives towards net zero 2030.



Module B-1: Climate Neutrality Scenarios and Impact Pathways



B-1.1: Impact Pathways					
Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions)	Indirect impacts (co-benefits)
Energy systems	(Lever #1)	(Early change #1)	(Late outcome #1)	(direct impact #1)	(indirect impact #1)
		(Early change #2)	(Late Outcome #2)		
		(list more changes as needed)	(list more late outcomes as needed)	(list more direct impacts as needed)	(list more indirect impacts as needed)
	(list more levers as needed)
(apply structure above for each emission domain)					
Mobility & transport					
Waste & circular economy					
Green infrastructure & nature based solutions					
Built environment					
B-1.2: Description of impact pathways– textual and visual elements					
(Describe, visualise and contextualise pathways listed above)					



Module B-2: Climate Neutrality Portfolio Design



Outline: Module B-2 “Climate Neutrality Portfolio Design” should contain a project description for each intervention planned, including those interventions targeted at enhancing carbon sinks to address residual emissions.

Module A-1 covers:

- B-2.1: Description of action portfolios
- B-2.2: Individual action outline
- B-2.3: Summary of strategy/actions for residual emissions

Examples/ Notes:

- Actions developed should address the emissions gap (A-2)
- Actions should be developed and grouped per field of action
- Actions developed should include all types of interventions that are directed at achieving a certain direct impact (emission reduction) and/or indirect impact (co-benefits)
- Excluded are interventions addressing the social and governance-related framework conditions for climate neutrality. Those are covered elsewhere in the Action Plan.
- Actions should be developed in line with the portfolio approach suggested by NZC (reference to separate webinar)



Module B-2: Climate Neutrality Portfolio Design



B-2.1: Description of action portfolios - textual or visual		
Fields of action	Portfolio description	
	List of actions	Descriptions
Energy systems		
Mobility & transport		
Waste & circular economy		
Green infrastructure & nature based solutions		
Built environment		

B-2.2: Individual action outlines		
(fill out one sheet per intervention/project)		
Action outline	Action name	
	Action type	
	Action description	
Reference to impact pathway	Field of action	
	Systemic lever	
	Outcome (according to module B-1.1)	
Implementation	Responsible bodies/person for implementation	
	Action scale & addressed entities	
	Involved stakeholders	
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

B-2.3: Summary strategy for residual emissions	
(Detail how residual emission will be offset, if applicable)	



Module B-3: Indicators for Monitoring, Evaluation and Learning



Outline: Module B-3 “Indicators for Monitoring, Evaluation and Learning” should mainly contain a selection of indicators taken from the Comprehensive Indicator Sets developed by NZC per selected outcome or impact.

Module A-1 covers:

- B-3.1: Evaluation summary
- B-3.2: Indicator metadata

Examples/ Notes:

- Indicators should be selected from NZC Comprehensive Indicators sets
- Indicators are linked to outcomes and impact identified in the impact pathways
- Reporting on indicators selected is suggested to occur bi-annually starting with the end of the first iteration of the CCC
- Reporting on the Action Plan Progress may be part of the Mission Label process, however, the if and how around this is still being discussed. Reporting will likely occur through CDP/ICLEI & MyCovenant. The Mission Platform will not function as separate reporting platform



Module B-3: Indicators for Monitoring, Evaluation and Learning



B-3.1: Evaluation summary						
Outcomes/ impacts addressed	Action/ project	Indicator No. (unique identifier)	Indicator name	Target values		
				2025	2027	2030
(list early changes/ late outcomes and impacts to be evaluated by indicator)	(list action/ pilot project if applicable)	(indicate unique identifier)	(Insert indicator name)	(list one value per indicator)	(list one value per indicator)	(list one value per indicator)
...

B-3.2: Indicator Metadata	
(for each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	
Indicator Unit	
Definition	
Calculation	
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	[yes/no]
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1
Does the indicator measure indirect impacts (i.e. co- benefits)?	[yes/no]
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	[yes/no]
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to - according to Module B-1
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]
Data requirements	
Expected data source	
Expected availability	
Suggested collection interval	
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	





Part C – Enabling Climate Neutrality by 2030

Part C “Enabling Climate Neutrality by 2030” aims to outline any enabling interventions, i.e. with regard to organizational setting or collaborative governance models, or related to social innovations – designed to support and enable the climate action portfolios described in Module B-2 as well as aiming to achieve co-benefits outlined in the impact pathway (Module B-1).



Module C-1: Organisational and Governance Innovation Interventions



Outline: Module C-1 “Organizational and Governance Innovation Interventions” consists of a summary table, listing organizational and governance interventions and describing their impact (C-1.1) and a section for more detailed descriptions and comments (C-1.2).

Module A-1 covers:

- C-1.1: Enabling organizational and governance interventions
- C-1.2: Description of organizational and governance interventions

Examples/ Notes:

- Interventions described in module C-1 should address systemic barriers identified in A-3.
- Examples include interventions aiming at changing the organizational set-up (teams, reporting structures, work flows) within the municipality; or actions aiming at enhancing multi-level or governance or stakeholder collaboration.



Module C-1: Organisational and Governance Innovation Interventions



C.1.1: Enabling organisational and governance interventions					
Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
(indicate name of intervention)	(describe the substance of the intervention)	(indicate responsible)	(list all stakeholder involved and affected)	(describe how intervention enables climate neutrality)	(indicate how intervention helps achieve impact listed in Module B-1)
...
C-1.2: Description of organisation and governance interventions – textual and visual elements					
(Please provide here any further detail on listed interventions)					



Module C-2: Social and Other Innovation Interventions



Outline: Module C-2 “Social and Other Innovation Interventions” consists of a summary table, listing organizational and collaborative governance interventions and describing their impact (C-2.1) and a section for more detailed descriptions and comments (C-2.2).

Module A-1 covers:

- C-2.1: Enabling social innovation interventions
- C-2.2: Description of social innovation interventions

Examples/ Notes:

- Interventions described in module C-2 should address systemic barriers identified in A-3.
- Examples include actions aimed at addressing empowerment & inclusion, regulation and support, bottom-up initiatives and skill and capacity building.



Module C-2: Social and Other Innovation Interventions



C.2.1: Enabling social innovation interventions					
Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
(indicate name of intervention)	(describe the substance of the intervention)	(indicate responsible)	(list all stakeholder involved and affected)	(describe how intervention enables climate neutrality)	(indicate how intervention helps achieve impact listed in Module B-1)
...

C-2.2: Description of social innovation interventions – textual and visual elements
(Please provide here any further detail on listed interventions)



Module C-3: Financing of Action Portfolio



Outline: Module C-3 “Financing of Action Portfolio” should contain the list of action portfolios and interventions outlined in Modules B-2, and those from C-1 and C-2 **with cost implication** to provide a summary list of interventions that need to be unpacked in the Investment Plan.

Module A-1 covers:

- C-3.1: Summary of interventions with cost implication (to be unpacked in Investment Plan)

Examples/ Notes:

- The module should list all interventions outlined in B-2 and those within C-1 & C-2 that have a clear cost implication.
- These will be unpacked in the Investment Plan



Module C-3: Financing of Action Portfolio



C-3.1: Summary of interventions with cost implication (to be unpacked in Investment Plan)					
Action/ intervention name	Responsible entity and person	Start/end date	Field of action	Impact	Total cost estimated
(list action portfolios and interventions from Modules B-2, C-1 and C-2, which have a cost implication)	(indicate responsible entity and person)	(indicate start and end date of the activity)	(indicate the field of action the interventions belongs to)	(indicate impact - i.e. the GHG reduction/ co- benefit)	(indicate the total costs in €, estimated for the intervention)
...



Next CCC iterations



Plans for next CCC and Action Plan iteration – textual elements

(please add your text here)





Operationalising Impact Pathways

Connecting the Action-Planning process to
Strategic Objectives and Portfolio co-design

Nikhil Chaudhary
Strategic Learning Lead,
EIT Climate-KIC



Impact Pathways within Transition Map



- Adjust Goals & Pathways
- Revise portfolios
- Sensemaking

- Operational Planning
- Track Progress
- Link Actions

- Explore Actionable Pathways
- Connect Actions to Impact
- Select Indicators

- Future Scenarios
- Selection of Levers
- Connections & Relationships

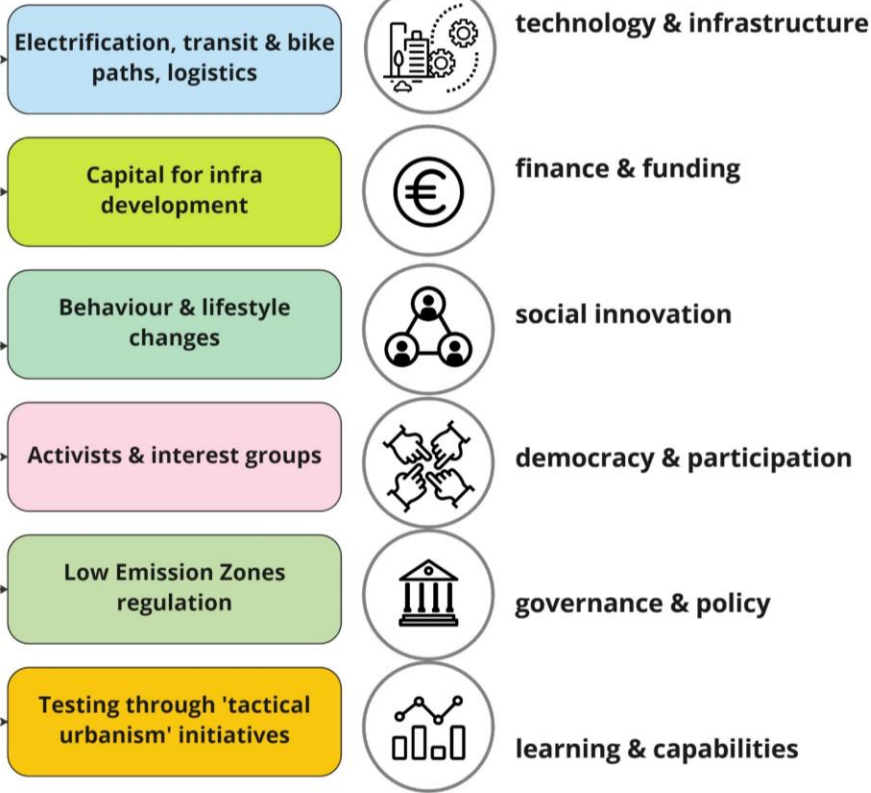
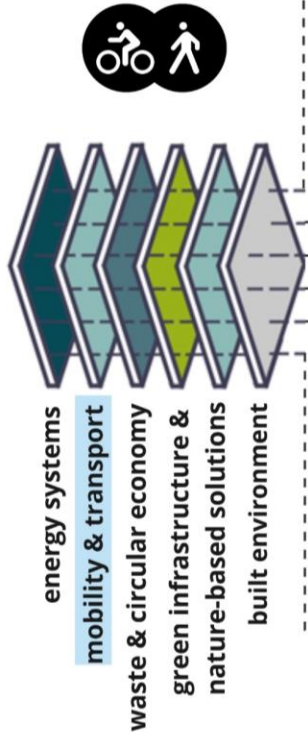


Step 1: Enabling actions through systemic levers as pathways

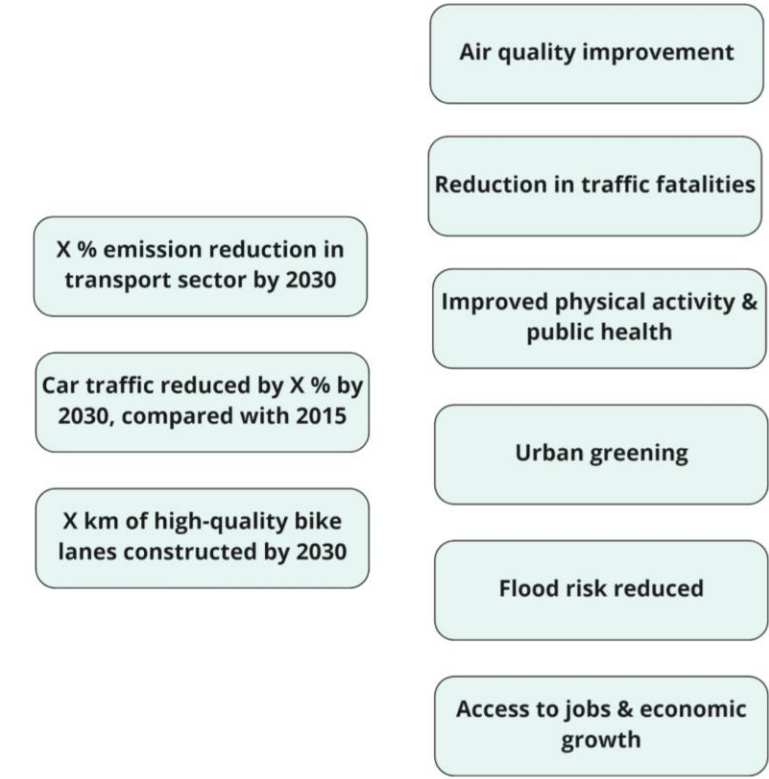


Field of Action

15-Min City Vision



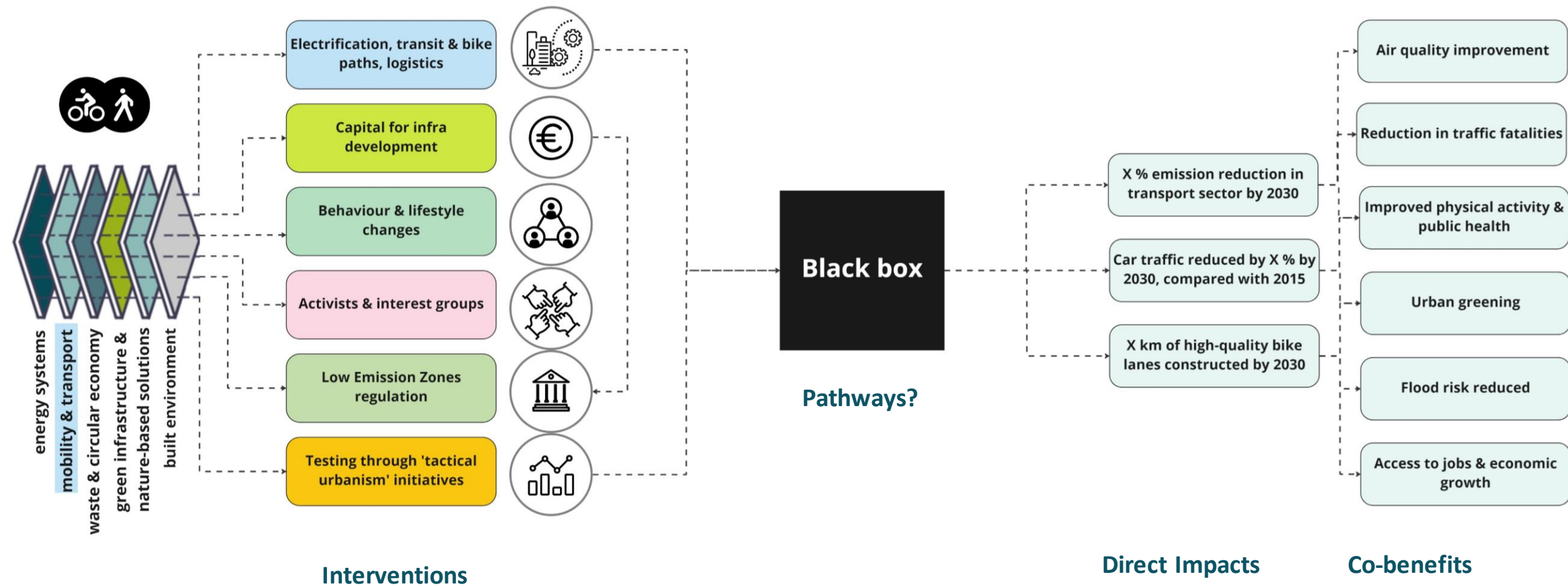
Portfolio



Interventions Selected Levers Direct Impacts Co-benefits



The black box (or messy middle) of strategic planning!



Step 2: What are the Action Plan's Early Changes?



Electrification, transit & bike paths, logistics



Customisation of technological solutions

Test-bed or district selection

?

?

Capital for infra development



Understanding of capital needs & landscape

?

?

Behaviour & lifestyle changes



Grassroots networks strengthened

Social entrepreneurship thro' accelerators

?

?

Activists & interest groups



Tactical Urbanism interventions

?

?

Low Emission Zones regulation



Testing of built environment & digital solutions



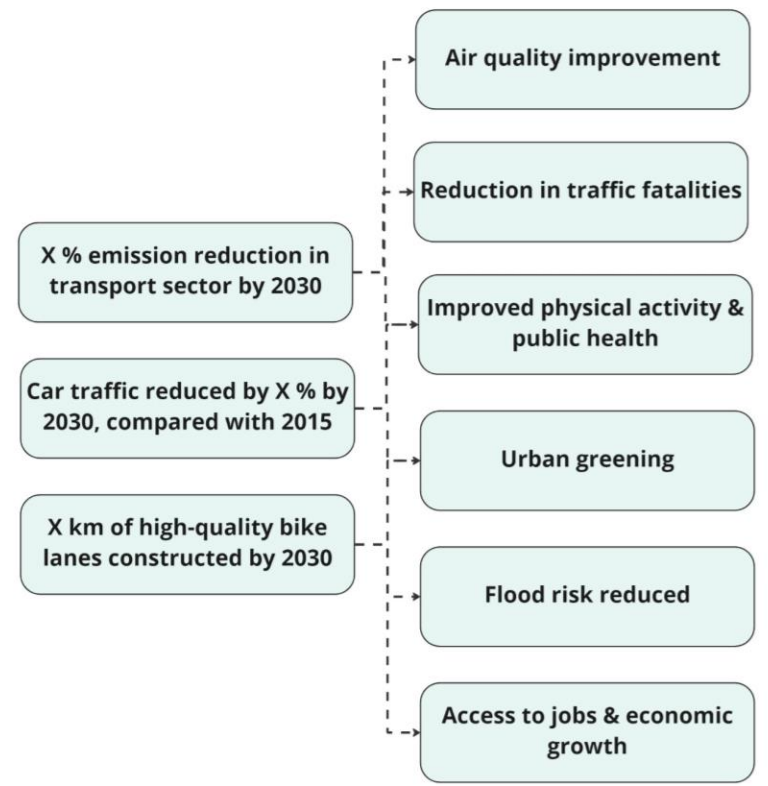
Action:
Mobility & transport

Early Outcomes
(1-2 years)

What is the Action-Plan's timeline?

Direct Impacts

Co-benefits



Step 3: What are the Action Plan's Later Outcomes?



Electrification, transit & bike paths, logistics



Customisation of technological solutions

Test-bed or district selection

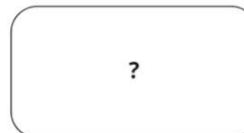
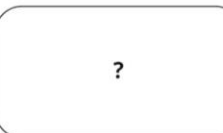
Successful testing, valorisation & adoption



Capital for infra development



Understanding of capital cost needs & landscape



Behaviour & lifestyle changes



Grassroots networks strengthened

Social entrepreneurship thro' accelerators

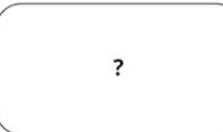
Enhanced trust, consensus & capabilities

Increased local job creation & social inclusion

Activists & interest groups



Tactical Urbanism interventions



Low Emission Zones regulation



Testing of built environment & digital solutions



X % emission reduction in transport sector by 2030

Car traffic reduced by X % by 2030, compared with 2015

X km of high-quality bike lanes constructed by 2030

Air quality improvement

Reduction in traffic fatalities

Improved physical activity & public health

Urban greening

Flood risk reduced

Access to jobs & economic growth

Action:
Mobility & transport

Early Outcomes
(1-2 years)

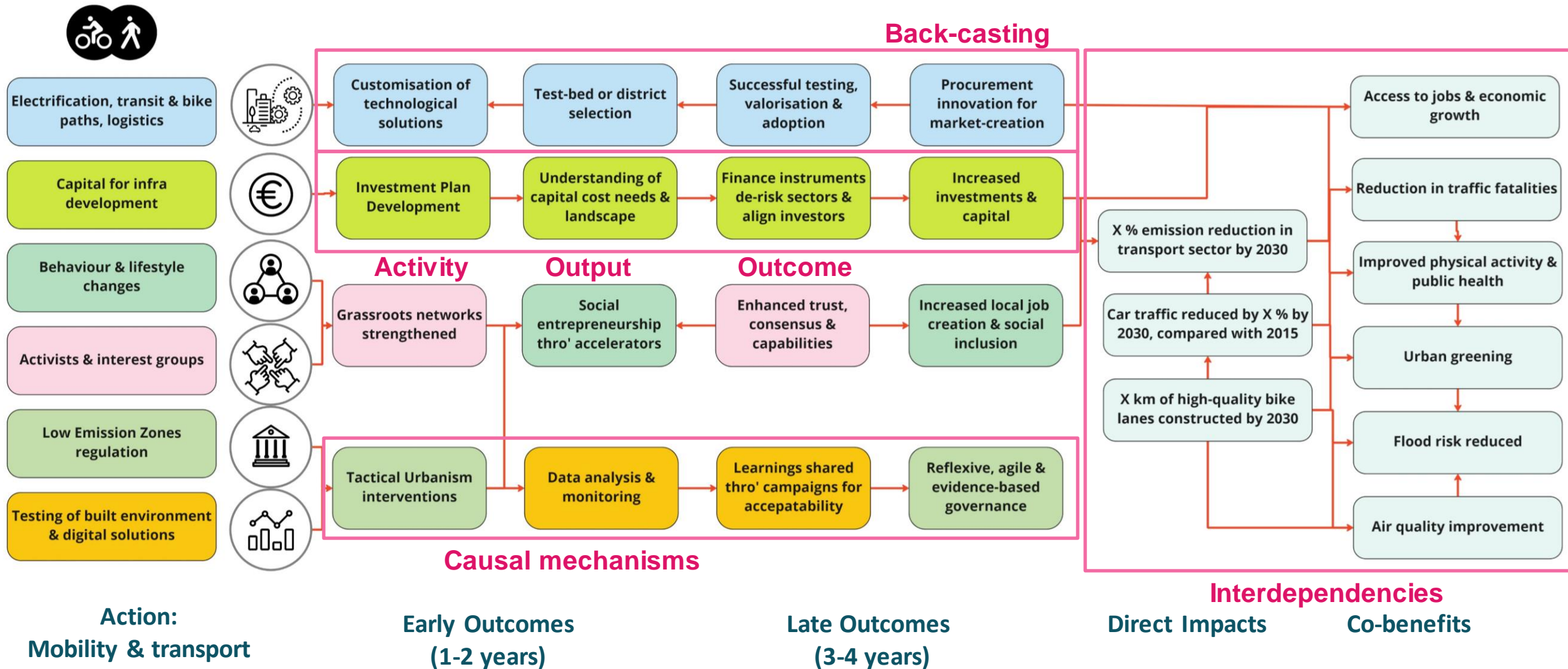
Late Outcomes
(3-4 years)

Direct Impacts

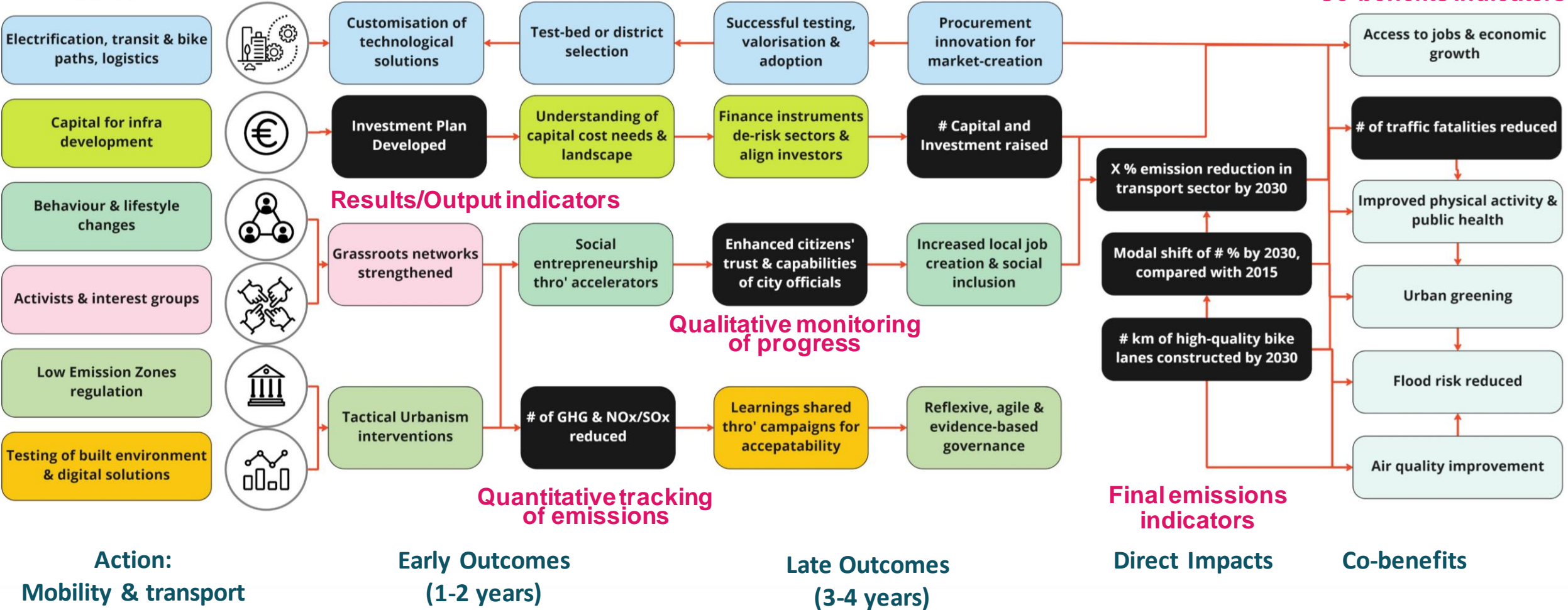
Co-benefits



Step 4: How are outcomes connected to impacts through pathways?



Step 5: Indicators/MEL for measuring progress along pathways

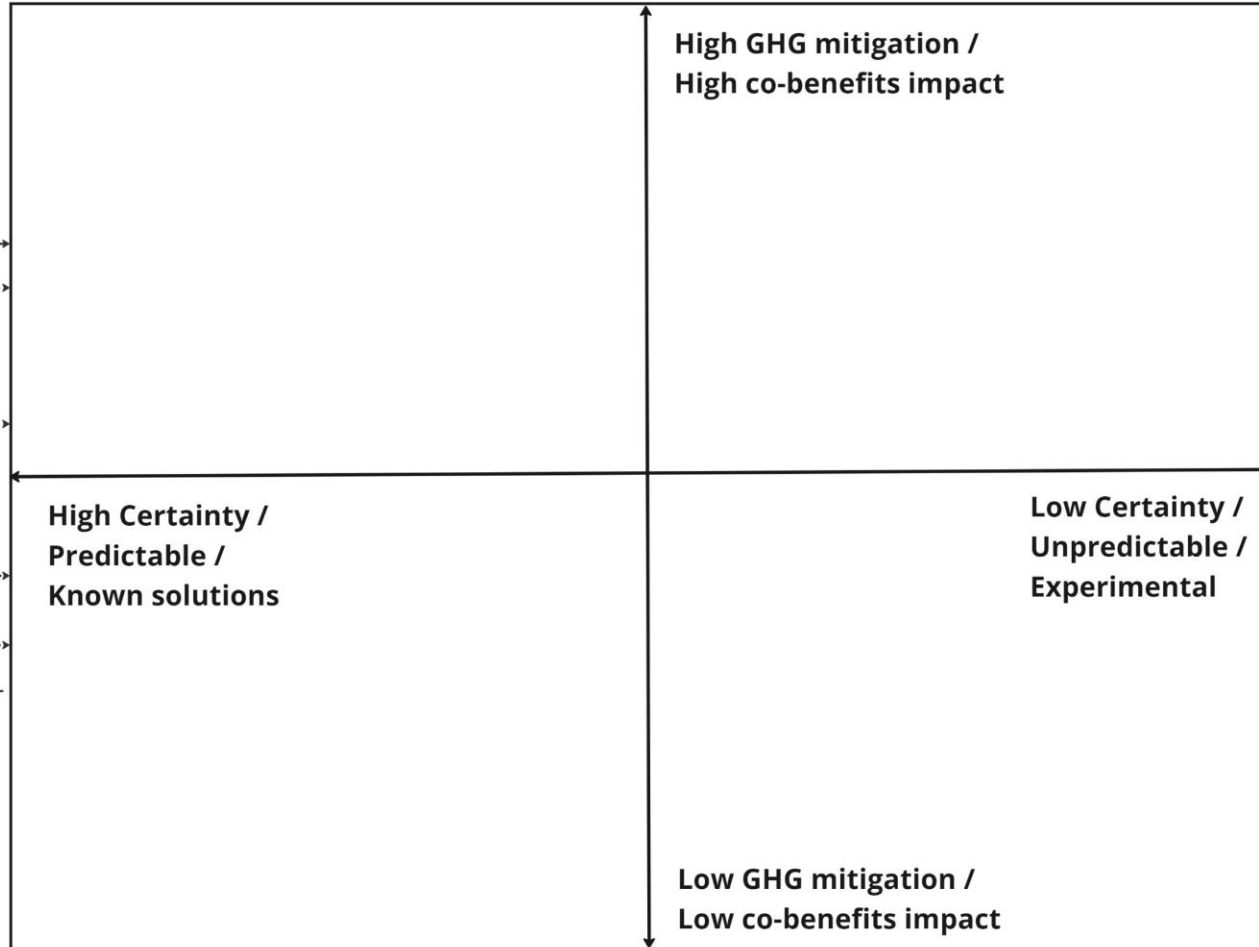
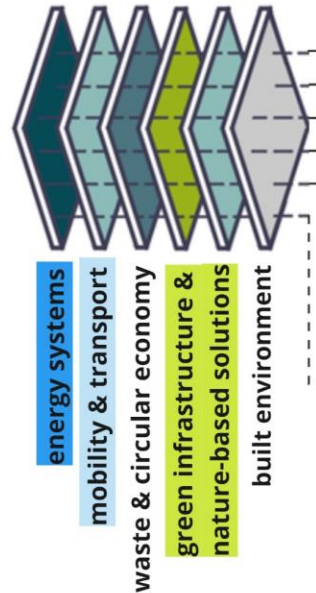


Step 6: Scenario-building for portfolio composition



Fields of Action

- 1] 15-min city
- 2] Deep retrofit
- 3] Green-blue infra
- 4] ...



Early Outcomes (1-2 years)

Later Outcomes (3-4 years)

X % reduction in electricity consumption by 2030

X % emission reduction in transport sector by 2030

Car traffic reduced by X % by 2030, compared with 2015

X km of high-quality bike lanes constructed by 2030

X sq. km of urban forest by 2030

Impacts & Co-benefits

Energy expenses reduction

Air quality improvement

Reduction in traffic fatalities

Improved physical activity & public health

Urban greening

Flood risk reduced

Access to jobs & economic growth

Access to jobs & economic growth



Step 7: Impact Pathways to prioritising actions & co-designing portfolio

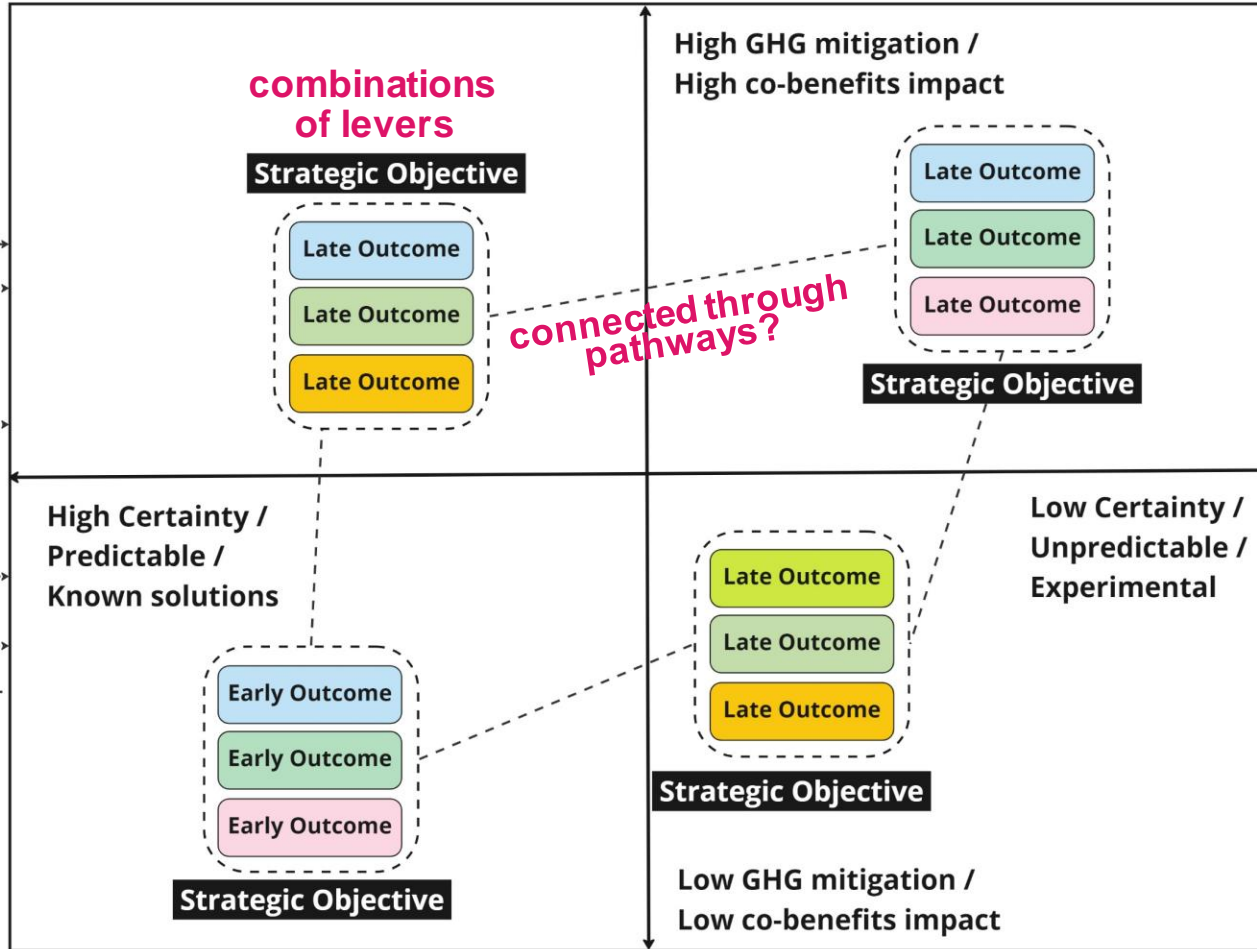


Fields of Action

- 1] 15-min city
- 2] Deep retrofit
- 3] Green-blue infra
- 4] ...

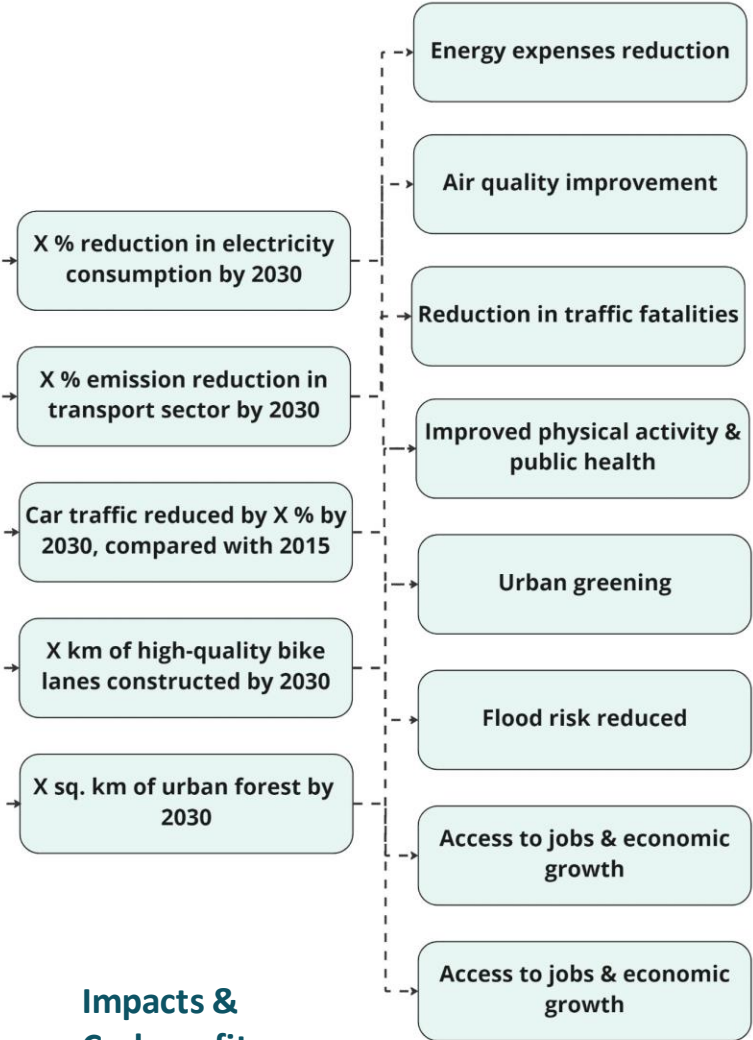


energy systems
 mobility & transport
 waste & circular economy
 green infrastructure &
 nature-based solutions
 built environment



Early Outcomes (1-2 years)

Later Outcomes (3-4 years)



Starting points for co-creating Impact Pathways



- What **changes** (outcomes) is the Action Plan seeking?
- How are the outcomes related to your city's **climate-neutrality Vision**?
- Which **co-benefits/impacts** is the Action Plan aiming to achieve?
- When does the Action Plan expect to achieve these changes (**earlier or later**)?
- Where and under what **conditions/contexts** is this going to happen?
- How do you think it will work in practice and how will one change **lead to** another?
- Which direct impacts and co-benefits occur **during** the changes begin to happen?
- What will your city and stakeholders and other partners do to make the changes happen (**activities or actions**)?
- Are there any **barriers** that may prevent making these changes happen? (**risks**)



Check-list for finalising Impact Pathways within the template




- Does this set of outcomes sufficiently capture the **intent or goal** of the Action Plan? If not, what's missing?
- Are the outcomes clearly and **specifically** defined? (i.e., one outcome statement)
- Are there any **gaps** in the impact pathways? (e.g., is there an intermediate outcome that needs to be included)
- Are the causal links as **mechanisms** for change clear? Can they be explained as a story?
- What's the **evidence** that supports the links between the various Impact Pathway elements? Any existing evidence or data sources? If not, what are the **evidence gaps**?
- How do the planned **activities/outputs** connect and contribute to the outcomes?
- Which are the common outcomes **across multiple levers and fields of action**?
- How could similar outcomes be **clustered or combined** as bold strategic objectives for coordinated actions?



Coming Soon!

- Aligning your strategic objectives or selecting/re-framing key outcomes (over 150 mapped by NZC)
- Step-by-step guidance on how to operationalise your impact pathways
- Framing your impact narrative for consensus-building & communication on systemic climate-neutrality




NetZeroCities Theory of Change

Deliverable D2.14

Version N°1

Authors: Nikhil Chaudhary, Penny Hawkins, Carla Añibal Palavicino (EIT Climate-KIC), with inputs from NetZeroCities Consortium.



This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Impact pathway 4: Democracy and participation

Impact narrative

The city initiates this pathway by understanding the critical role and needs of citizens and communities for building the 'backbone infrastructure' to enable democratic climate action. To radically multiply engaged actors, the city invests efforts in including diverse and especially marginalised actors and builds coalitions with clear aims and roles within the climate-neutrality mission. These participation efforts are supported by allocating essential resources and funding dedicated to cross-sectoral activities.

Consequently, as Early Changes, distributed networks of motivated communities emerge, with the city building capacities to successfully assume the role of orchestrating (instead of managing) emerging climate actions. This is followed by the co-design and implementation of democratic innovations (e.g., citizens councils, climate assemblies) that set up collaborative processes and spaces/forums for dialogue, deliberation, and consensus-building. As a result, strategic recommendations, shared narratives and collective visions are co-created and disseminated to firmly embed long-term goals for democratic action.

In terms of Later Outcomes, the cross-pollination between diverse sets of engaged actors leads to consensus-building & inform to citizens' inputs to policy and governance. At the same time, deliberative democracy tested through NZC actions legitimises its practice through city's portfolio of actions (like Pilot initiatives, Mission-plans). As citizens' inputs are accepted and implemented with co-benefits and tangible effects becoming visible, participative processes result in mutual trust and accountability for both the city as and the citizens. Action-learning and socialising of outcomes eventually enables institutionalisation of participatory culture/practices, scaling up from the grassroots, and more inclusive climate actions.

The following table summarises the impact logic for this lever as a suggested set of entry-points, outcomes, and impacts for cities to consider, modify or add additional ones as applicable to their specific contexts:

Entry Points (EP)	Early Changes (EC)		Later Outcomes (LO)		Impacts (I)
2022-23	1 to 2 Years		3 to 4 Years		5 Years (and up to 2030)
EP4.1 Build understanding of needs for centring of citizens & communities' critical role in city's climate action	EC4.1 Inclusive knowledge helps across cultural contexts actively shape the design and implementation of climate actions	EC4.5 Networks built, resourced, and start to show results, while ensuring orchestration role of the city	LO4.1 Democratic innovations and deliberative democracy tested and legitimised in practice through city's portfolio	LO4.6 Distributed governance makes decision-makers accept & trust citizens' capacities to tackle and support complex issues	I4.1 Democratic climate actions are better resourced as a long-term priority by the city
EP4.2 Radically multiply the number of actors and enable the whole city ecosystem to contribute to the climate transition	EC4.2 Coalitions of actors with real stakes & historically left out) brought together, have clearly defined roles to co-develop and co-implement climate actions	EC4.6 Democratic innovation establishes collaborative processes and spaces/forums for – dialogue, deliberation, deep listening, and consensus-building	LO4.2 Cross-pollination between diverse sets of engaged actors leads to consensus-building & inform to citizens' inputs to policy and governance	LO4.7 Citizen engagement and input enables decisionmakers to take a long-term approach beyond election cycles and feel confident in experimental approaches	I4.2 Increased competencies, capacities, and capabilities for democratic climate action for continuous & ongoing systems change

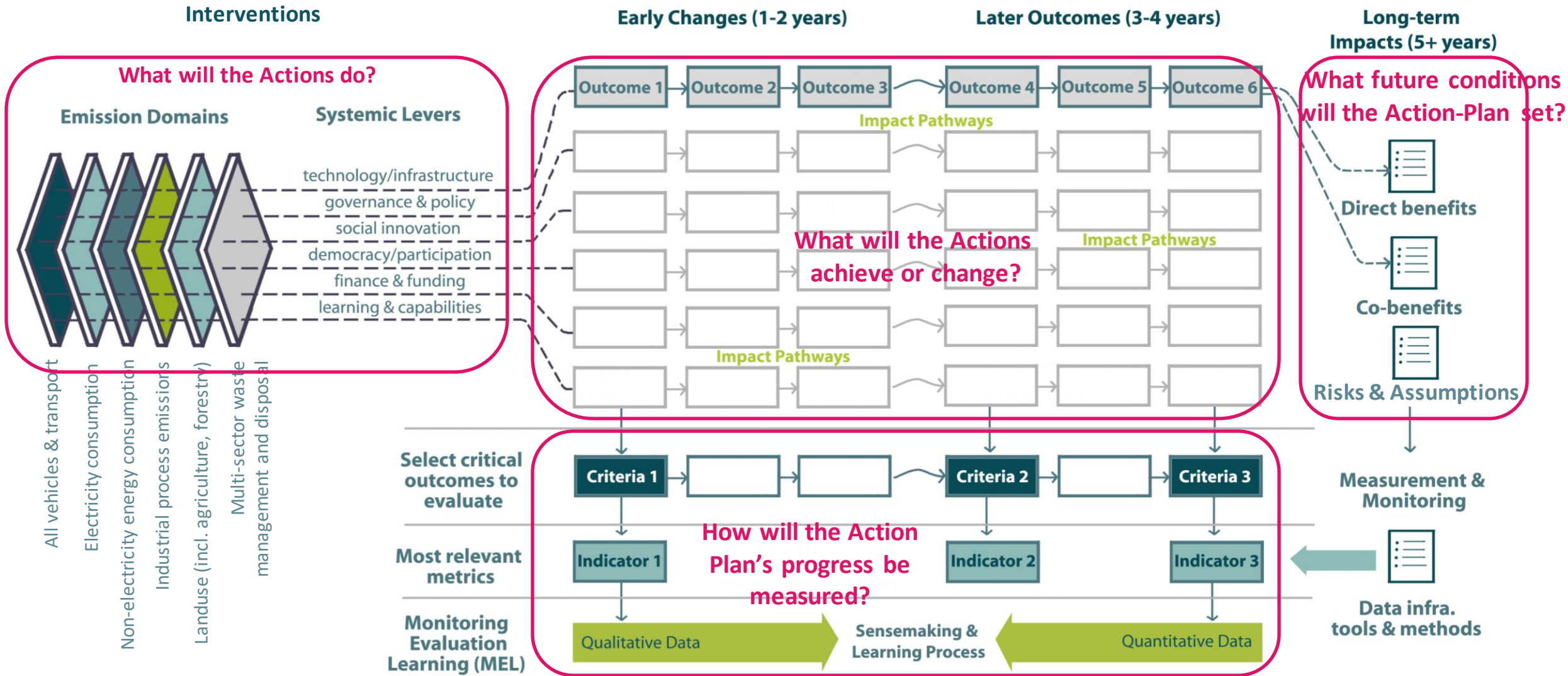
Outcomes table



This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.



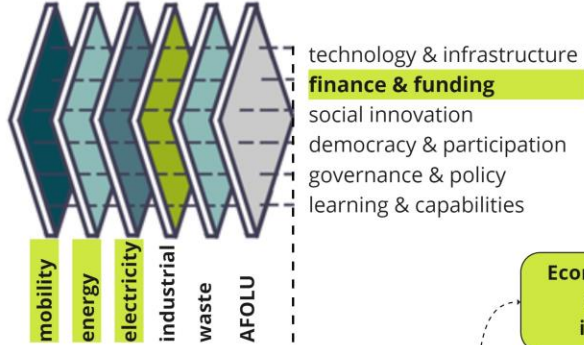
NZC Impact Framework



Impact Pathways example – Finance innovation & funding



Interventions





Any Questions?





Action planning: key methods and activities

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Senior Research Engineer / Business Developer in Carbon and Climate Neutral Cities

Wolfgang Loibl/ AIT

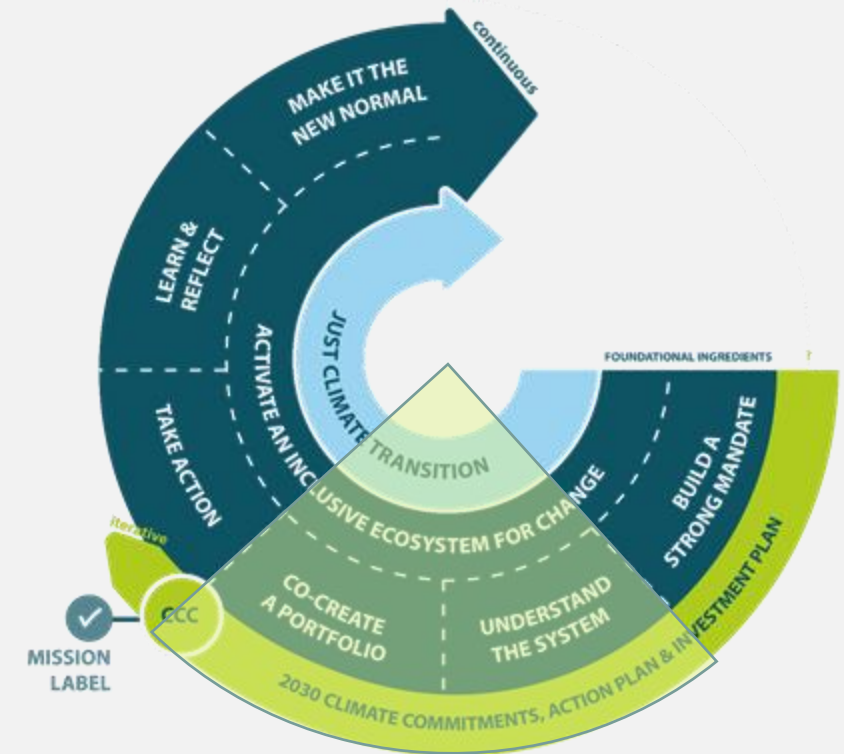
Sustainable Urban Development Consultant, Emission & Climate modeller, Policy advisor, Policy maker (Councillor)





Action planning: key methods and activities

- (1) System understanding:
Which framework conditions should be considered?
- (2) How to conduct the GHG emission inventory?
- (3) How to develop a portfolio of actions?

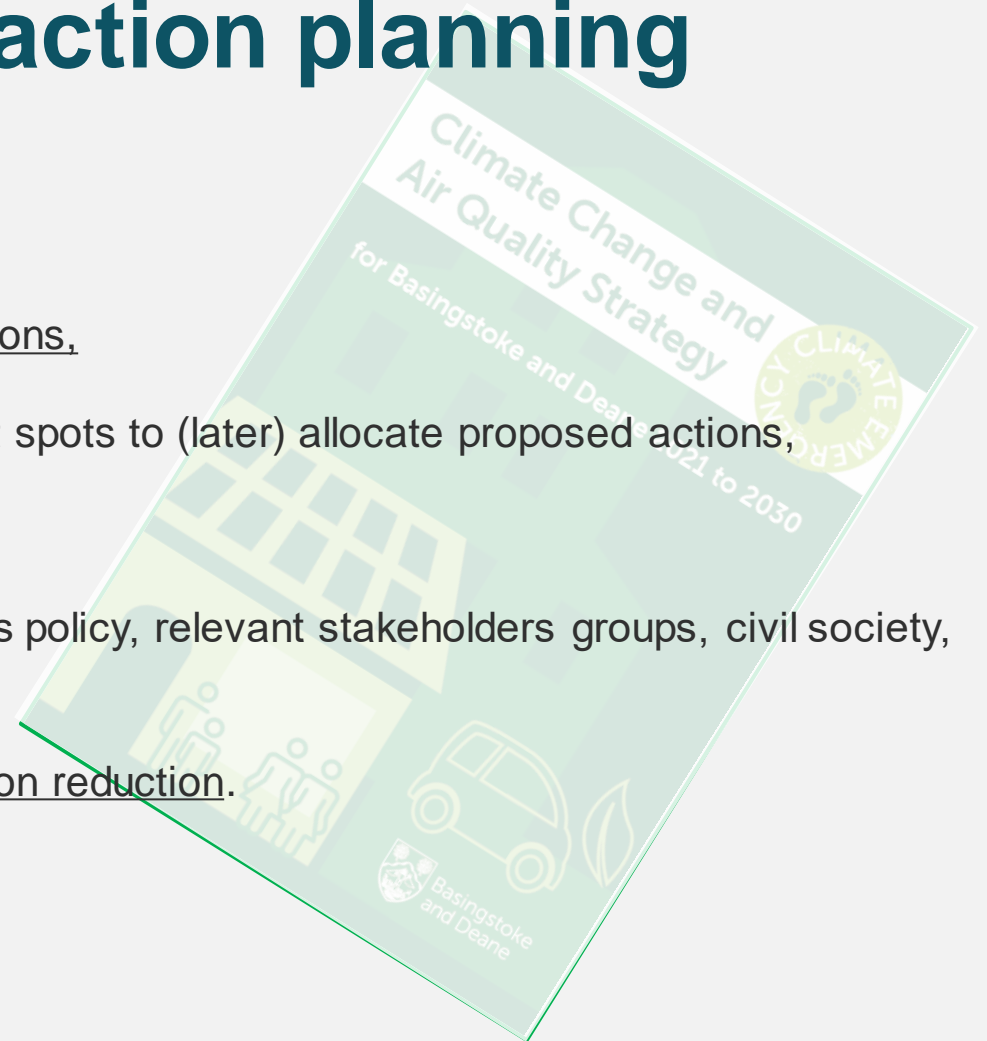




System Understanding: Framework conditions for action planning

Stocktaking necessary to gain all information for policy makers, authorities and stakeholders

- by identifying the framework conditions impacting GHG emissions,
- by addressing the areal emission distribution and emission hot spots to (later) allocate proposed actions,
- to understand the city's ecosystem, the governance system, its policy, relevant stakeholders groups, civil society, etc.),
- by identifying which framework conditions may support emission reduction.





Framework conditions influencing GHG emissions: physical/spatial urban system elements

Allocation of elements to identify barriers and leverage points

Topics

- Built up area / land use distribution
- Blue-green infrastructure / nature & recreation areas
- Urban density and function distribution
- Housing stock (age, insulation, heating systems, cooling)
- Industry
- Transportation infrastructure
- Mobility pattern
- Resources: stocks & flows
- Landfill
- Population development trends
- Inhabitants' social structure
-

References, data:

map, zoning map, urban development strategy documents
map
map, zoning map, population distribution / statistics
map; urban 3D model, housing stock statistics
map, employment data, production data, enterprise database
maps (roads, pedestrian areas, bus routes, rail network,)
traffic model, average traffic load pattern, milage statistics
map, recycling - & urban mining data,
map, waste deposit data
demographic data (spatially disaggregated where possible)
social data (spatially disaggregated where possible)

A. Petit-Boix et al., 2017





GHG-related framework conditions: Political-/Governance/social/ social innovation systems

Political foundations

- Strategies, concepts, vision
- Legal system, standards, tax system, subsidy system

Governance structure

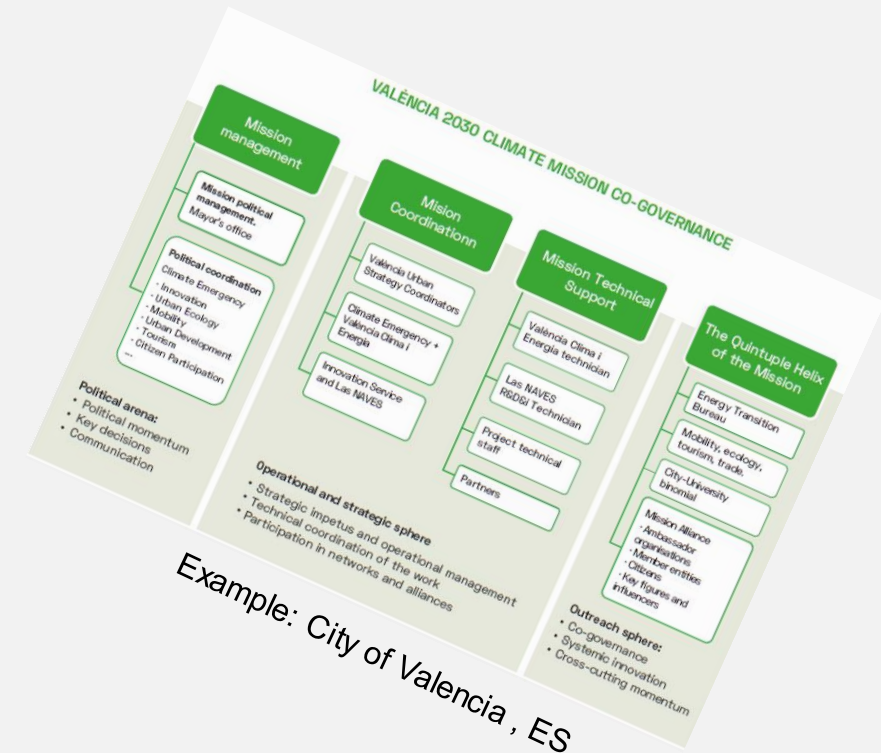
- Multilevel governance - distribution of decision power

Stakeholder groups contributing to mitigate emissions

- Citizens providing ideas and change behaviour
- Grassroot organizations – making opinions, overcome barriers

Innovation ecosystem

- Companies providing technologies & services affecting emission reduction
- Universities & research organizations pushing innovation
- And further



Example: City of Valencia, ES





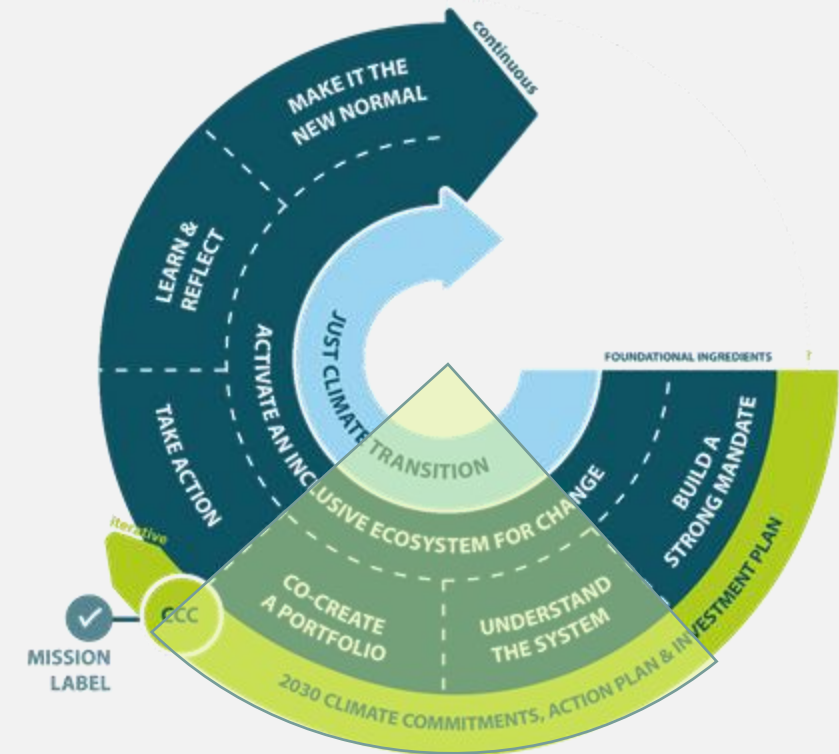
Action planning: key methods and activities

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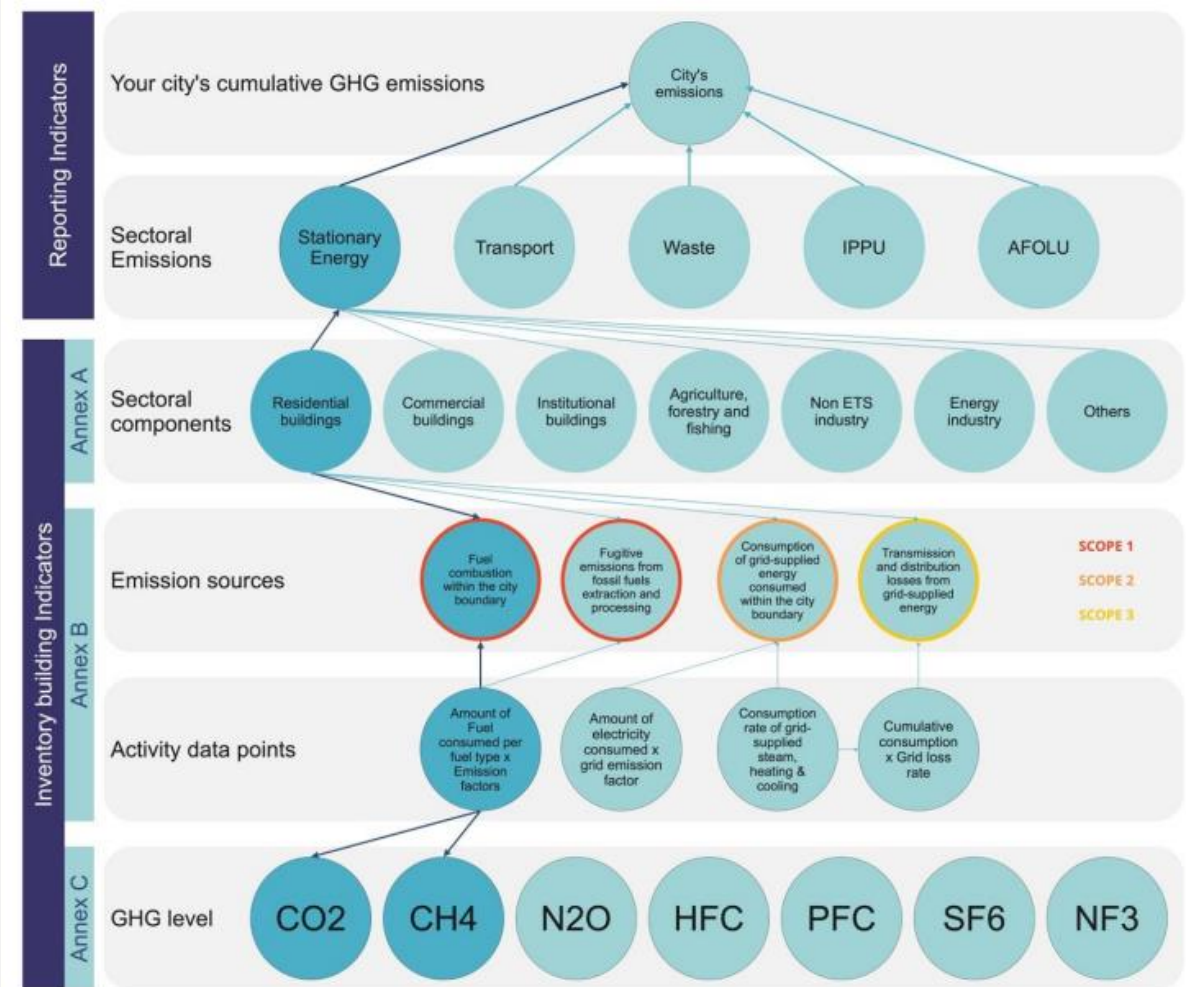
(3) How to develop a portfolio of actions?



How to conduct an GHG emission inventory!



- Emissions are either measured at their sources or calculated, based on emission-generating activities: all area- and line-based emissions are modelled, only big point-based ones are measured.
- Emission source groups are:
 - Buildings
 - Transport
 - Waste
 - Industrial processes and product use (IPPU)
 - Agriculture, forestry and other land uses (AFOLU)





How to conduct an GHG emission inventory!

- The GHG emission inventory must provide all emission numbers by emission sector and subsectors to tailor actions and measures to eliminate GHG emissions.
- The GHG-inventory total is the baseline for the city's net zero journey.
- Emission inventories must allow to document progress: changes of emission volume by emission source group over time!

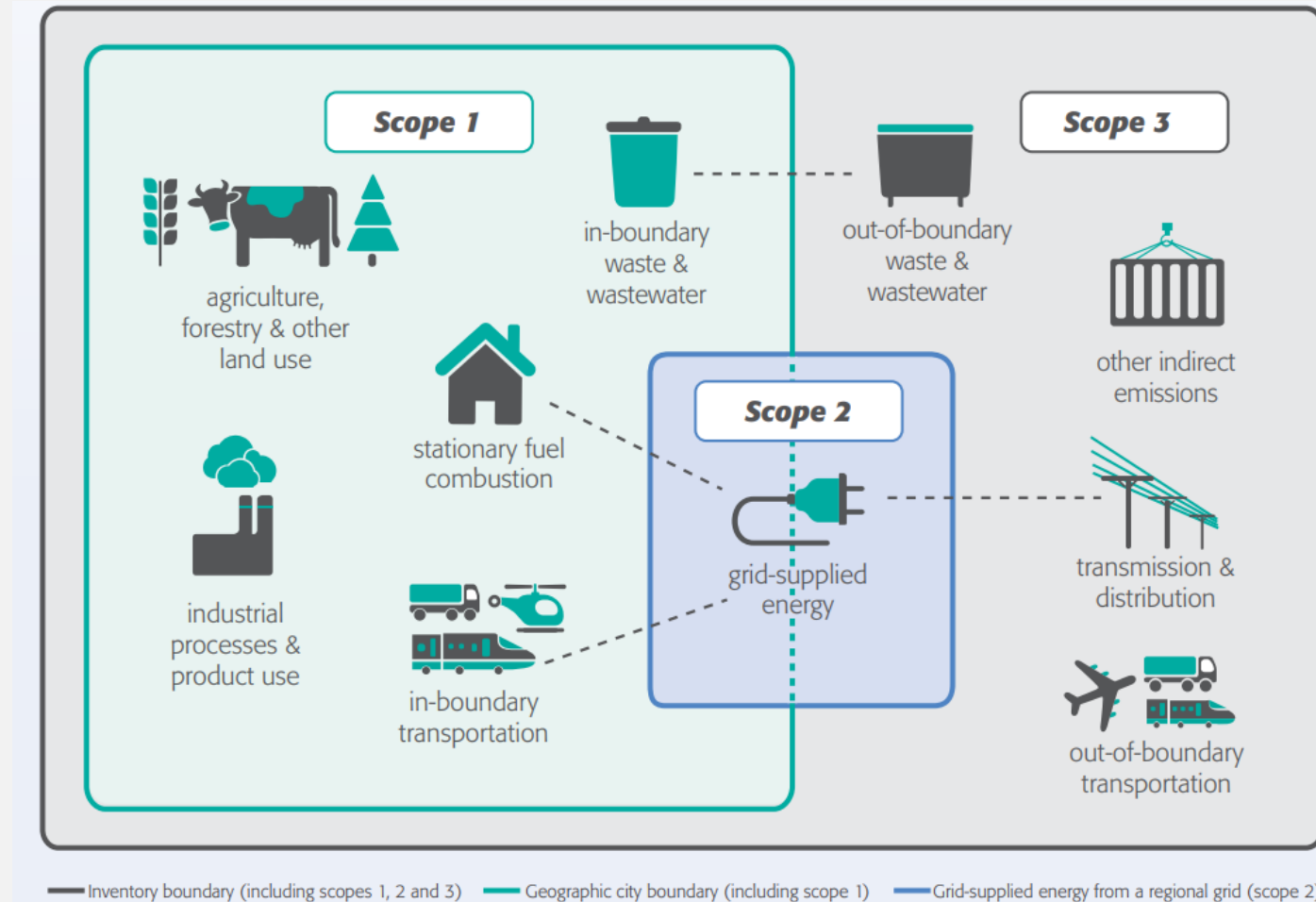
	Direct emissions (Scope 1)	Indirect emissions (Scope 2)	Out-of-boundary missions (Scope 3)
Buildings	Emissions from all buildings, facilities and permanent infrastructure / equipment (collectively referred to as 'stationary energy' and including public, private, residential and industrial sectors) within the city boundary (excluding EU ETS registered facilities) ³ .	Emissions from outside the city boundary due to the use of grid-supplied energy (electricity or district heating/cooling) within the city boundary	<i>Not applicable (Includes any residual emission sources in buildings and embodied emissions associated with the construction, materials, etc.)</i>
Transport	Emissions from on-road and rail (as a minimum) transport within the city boundary, disaggregated by municipal fleet, public transport, private and commercial transport.	Emissions from outside the city boundary due to the use of grid-supplied electricity used to charge electric vehicles	Recommended by 2030 (Includes emissions associated with vehicles manufacturing happening outside the city)
Waste	Emissions from waste generated and managed/ sent to landfill within the city boundary.	Not applicable	Emissions from waste generated within the city boundary but managed/ sent to landfill outside the city boundary.
IPPU	Emissions from GHGs used in, or as a by-product of industrial processes and products (if present / significant) ²	Not applicable	Not applicable
AFOLU	Changes in GHG emissions from any changes in land use giving rise to (sources) or sequestering (sinks) emissions (if significant) ²	Not applicable	Not applicable



How to conduct an GHG emission inventory!



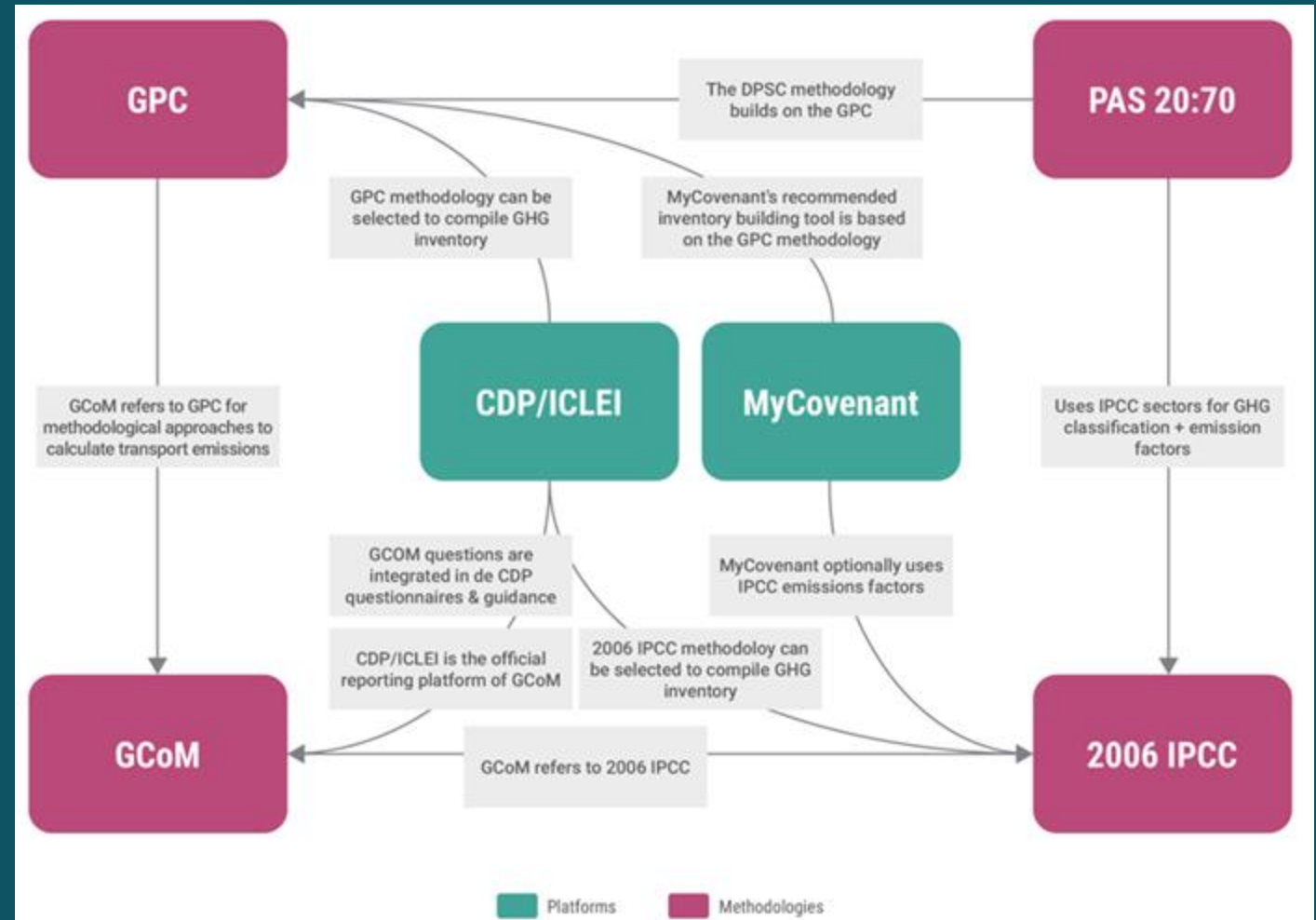
- Emissions must be allocated to certain territory / boundaries:
- **Scope 1** refers to direct emissions within the city boundary
- **Scope 2** refers to indirect emissions triggered through local activities but generated outside the city (e.g. energy supply)
- **Scope 3** refers to distant emissions triggered through out of boundary activities (e.g. transportation for export, flights)





There exist several inventory approaches and several reporting systems:


- The GPC methodology (following IPCC guidelines) is the basis for GHG emission inventories in the majority of Mission Cities.
- MyCovenant and CDP/ICLEI Track are the two most used reporting mechanisms of Mission Cities.



GHG Emission inventory building: guides and tools



- The GPC guide provides (among others) a complete overview how to set up the GHG emission inventory
- https://ghgprotocol.org/sites/default/files/standards/GPC_Full_MASTER_RW_v7.pdf
- Emissions can be calculated for each emission source in different ways, applying those activity data which can be provided by the city
- An Excel tool can be downloaded for GHG emission calculation (including all emission factors and CO₂e - factors):
- <https://ghgprotocol.org/calculation-tools>

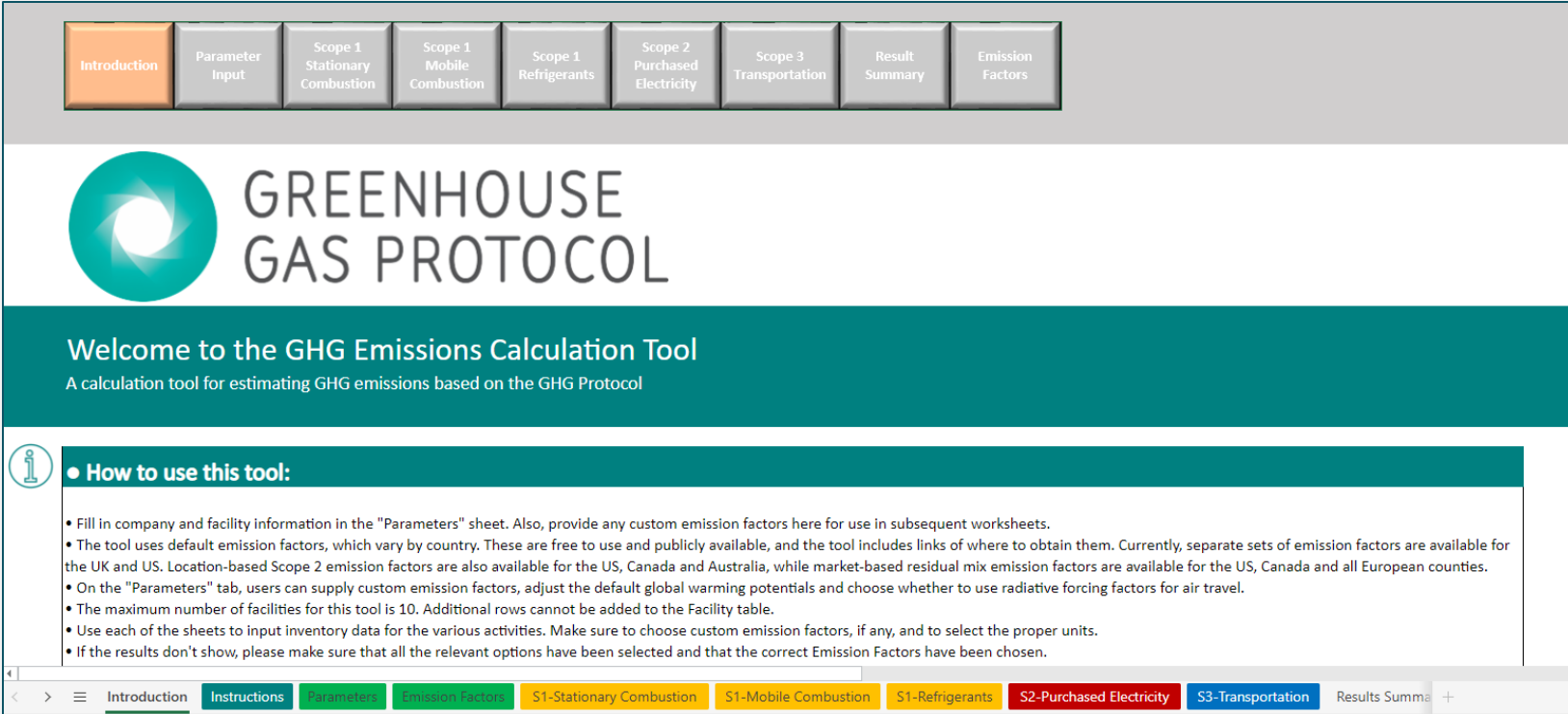


GHG Emission Calculation Tool

This tool is currently in beta version.

Download GHG Emissions Calculation Tool.xlsx

Date: March 2021



Introduction Parameter Input Scope 1 Stationary Combustion Scope 1 Mobile Combustion Scope 1 Refrigerants Scope 2 Purchased Electricity Scope 3 Transportation Result Summary Emission Factors

GREENHOUSE GAS PROTOCOL

Welcome to the GHG Emissions Calculation Tool
A calculation tool for estimating GHG emissions based on the GHG Protocol

How to use this tool:

- Fill in company and facility information in the "Parameters" sheet. Also, provide any custom emission factors here for use in subsequent worksheets.
- The tool uses default emission factors, which vary by country. These are free to use and publicly available, and the tool includes links of where to obtain them. Currently, separate sets of emission factors are available for the UK and US. Location-based Scope 2 emission factors are also available for the US, Canada and Australia, while market-based residual mix emission factors are available for the US, Canada and all European countries.
- On the "Parameters" tab, users can supply custom emission factors, adjust the default global warming potentials and choose whether to use radiative forcing factors for air travel.
- The maximum number of facilities for this tool is 10. Additional rows cannot be added to the Facility table.
- Use each of the sheets to input inventory data for the various activities. Make sure to choose custom emission factors, if any, and to select the proper units.
- If the results don't show, please make sure that all the relevant options have been selected and that the correct Emission Factors have been chosen.

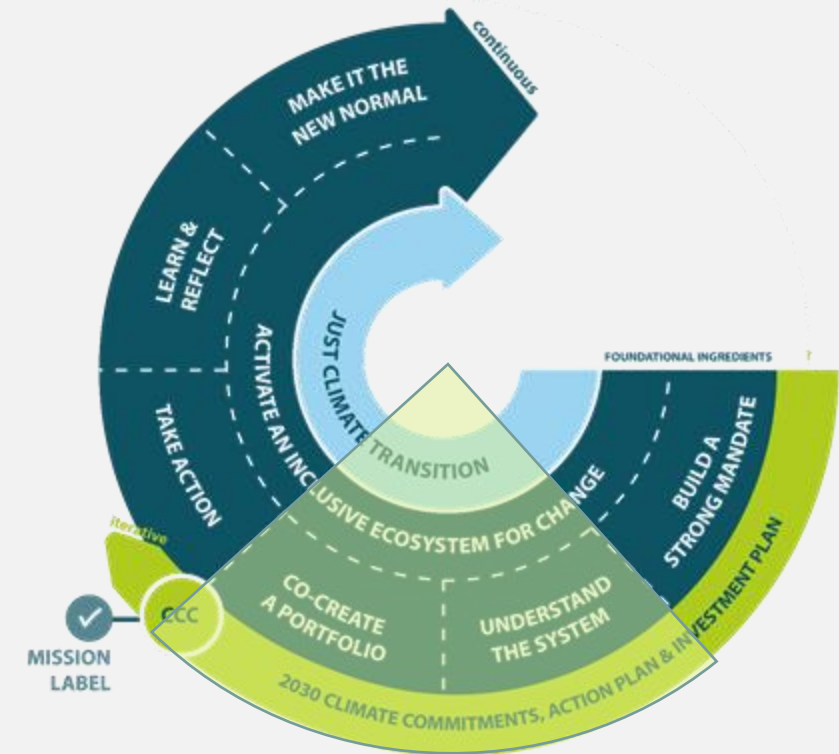
Introduction Instructions Parameters Emission Factors S1-Stationary Combustion S1-Mobile Combustion S1-Refrigerants S2-Purchased Electricity S3-Transportation Results Summary +





Action planning: key methods and activities

- (1) System understanding:
Which framework conditions should be considered?
- (2) How to conduct the GHG emission inventory?
- (3) How to develop a portfolio of actions?



How to develop a Portfolio of actions!



- The Portfolio should list the actions to remove GHG emissions on a project-by project-basis.
- Actions must comprise of a wide mix of measures: including / governance / policy / regulation / spatial / infrastructure/ technological / nature-based / financial / social innovation and capability building interventions, pushing GHG reduction.
- The Portfolio must be conducted through a co-design process to include all ideas for actions, enhance acceptance and gain interest of the stakeholders.

Valencia 2030 Climate Mission Constellation

Cities - Missions Areas

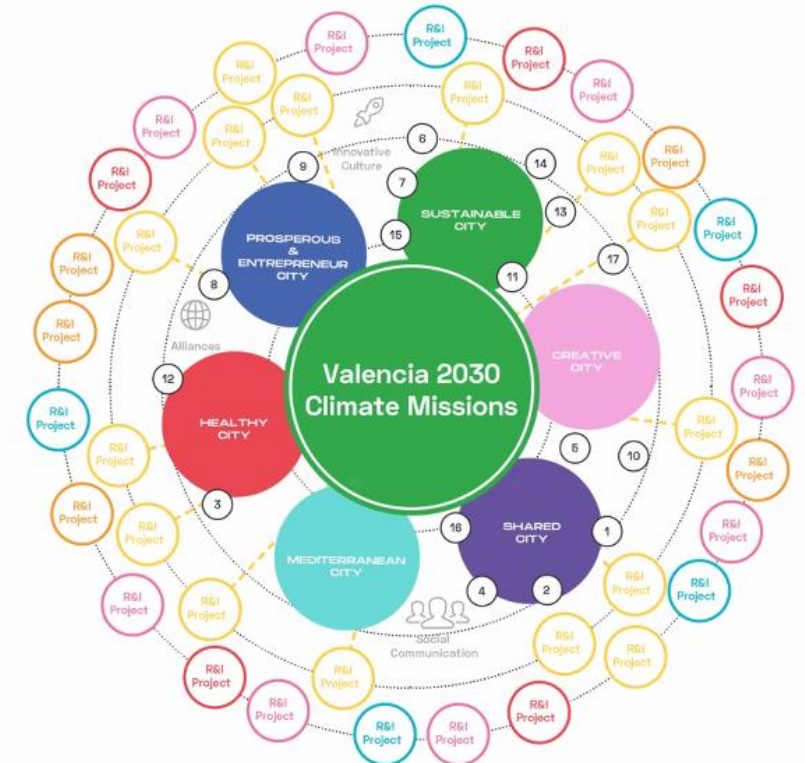
Healthy City
Sustainable City
Shared City
Prosperous & Entrepreneur City
Creative City
Mediterranean City

Five Helixes - R&I Projects

Academy, Research Centre & Tech Institutes
Civil Society & Citizenship
Private Sector & Corporations
Multilevel Public Sector
Mass Media

Sustainable Development Goals (United Nations)

1 No poverty
2 Zero hunger
3 Good health & well-being
4 Quality education
5 Gender equality
6 Clean water & sanitation
7 Affordable & clean energy
8 Decent work & economic growth
9 Industry, innovation & infrastructure
10 Reduced inequalities
11 Sustainable cities & communities
12 Responsible consumption & production
13 Climate action
14 Life below water
15 Life on land
16 Peace, justice & strong institutions
17 Partnerships for the goals



Portfolio co-design process



- For developing a comprehensive portfolio, intensive collaboration is necessary:
 - all who can contribute shall be involved through a Portfolio co-design process.
 - Portfolio working group(s) shall involve
 - stakeholders, citizens, experts, representatives from universities, and
 - those, required for implementation (landlords, companies, city administration, energy suppliers, investors, banks).



Portfolio co-design process



- The Portfolio-co-design shall be organised as a series of events,
 - Those events may be related to a certain topic (e.g. an emission source group), involving
 - those actors, who can or even must contribute to solve the problem, and
 - actor groups, which are affected by actions (e. g. passengers when discussing mobility actions, or tenants, when working on building refurbishment actions (insulation, heating)).
 - Public hearings may involve a larger number of stakeholders, if many citizens are affected.
 - Street level social innovation events (e.g. Hakathons or Living Labs can foster novel concepts).
 - Additional Online Information, to allow knowledge transfer and co-design involvement of citizens not able or willing to attend public events.



Action design



General interventions

- The cities shall first concentrate on local actions, where the city has influence (scope 1). All interventions to remove GHG emissions (avoid, cut, reduce, substitute), must be included in the portfolio, as a mix of measures or projects:
 - Organizational and governance innovation interventions
 - Physical/spatial interventions
 - Social interventions - Triggering change of behaviour
 - Other Interventions
 - Technical interventions
 - Nature-based interventions



Actions by emission source group (example)



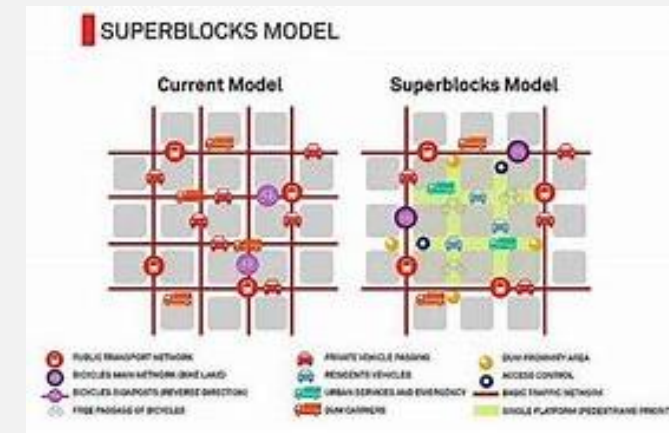
Transportation / Mobility

Current state:

- Intensive private car use for commuting and cargo
- Main road network shows all day heavy traffic loads
- Lacking public transport lines
- Less use of public transport

Mix of measures:

- **Urban Planning, Transportation Planning:**
 - Compact urban development and multifunctional land use
 - Establish superblocks with few roads for through-traffic
 - Establish attractive routes for non-motorized traffic reduces travel time and distance and enhances attractiveness for walking and cycling, etc.
- **Infrastructure:**
 - Establish a dens(er) network of public transport services
 - Enhance frequency of courses, and establish a system of hubs
 - E-vehicle charging facilities
- **Technology:**
 - e-vehicles for passengers and cargo, introduce new driverless transportation
- **Governance / legal restrictions, tax, subsidies, tariffs:**
 - Establish / enhance e-vehicle friendly taxation, subsidizing
 - Establish attractive tariff systems,
 - Establish regulations to stop fossil fuel use
 - Establish inner city access regulations
- **Social / Behaviour**
 - Changing mobility habits towards use of public transport and non-motorized transportation



The Portfolio of actions needs all information for implementation



All information required for implementation must be included into the Portfolio:

- Clear description of the action
- Relate to emission source group
- Identify emission source
- Identify emission reduction volume
- Allocate measure implementation
- Address affected population
- Address responsible emitters, required for implementation (companies, landlords, etc.)
- Estimate costs
- List further efforts
- Encounter barriers

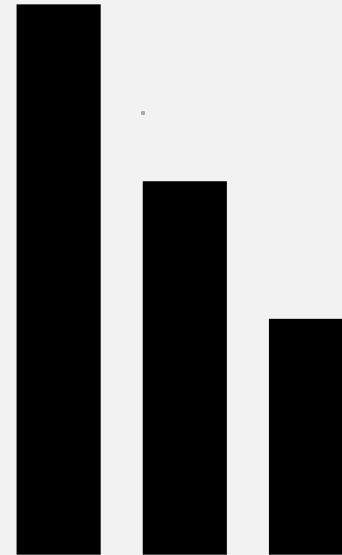
1. Project name
2. GHG emission sub-section (see Module A-1)
3. Removed / substituted energy, volume of fuel / energy carrier, energy equiv.
4. Generated renewable energy
5. GHG reduction volume by gas and CO₂e (see Module A-1)
6. Action type (e. g. org/gov., planning, technological/physical, social, nature (see Modules C-1,C-2.))
8. Action description
9. Extent, entities (e. g. area, buildings, flats, bus network-length, etc.)
10. Location of project implementation (reference to a map, narrative comments (e. g. district xy))
11. Affected citizens, households, workplaces, etc.
12. Responsible bodies for emissions / for action implementation
13. Costs (estimated: total and by CO₂e) (see Module A-1)
14. Further efforts, if any
15. Possible barriers and measures to overcome



Priority list of projects/ interventions to be implemented first



- The priority list must identify the most urgent projects with best cost-impact relation
- The list must show a timeline for project implementation, serving as information for finance planning.
- Actors responsible for implementation and financing must be addressed.
- Costs / investments must be estimated with the necessary detail.





Agenda

14:00-14:05 Welcome & introduction

14:05-14:25 Action Plan template walk-through

14:25-14:40 Operationalizing impact pathways

14:40-14:55 Action planning: key methods and activities

14:055-15:25 Break-out deep dive (3 parallel sessions)

Session A: Current state assessment

Session B: Portfolio of actions

Session C: Social innovation, governance and finance

15:25-15:45 Reports from Break-out groups, open Q&A

15:45-15:55 Mission Label (European Commission)

15:55-16:00 Wrap up and outlook





Breakout sessions

- on

Session A: current state assessment

Session B: Portfolio of actions

Session C: Social innovation, governance and finance

- Key questions:

- Would you like to reflect/share your experience on methods and approaches of Action Planning (related to the sessions topic)?
- Which immediate issues/challenges you are aware in the Action Planning Process?
- Which support do you need for Action Planning / achieving the CCC Label ?





Break-out session reporting;

Q&A on:

Current state assessment

Portfolio of actions

Social innovation, governance and finance





**Break-out
sessions (30
min. no changes)**

Room 1: Part A Current State Assessment

Room 2: Part B Portfolios of action

Room 3: Part C Social innovation, governance and finance





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MAIN ELEMENTS OF THE MISSION





VALIDATION OF CLIMATE CITY CONTRACTS

- **Balance:** quick and efficient, but thorough to inspire confidence
- Proposal to have **two cut-off dates per year**
- **Assessments:**
 - **Core Contract** (Commitments): Cities Mission Secretariat
 - **Climate Action Plan:** Joint Research Centre (JRC)
 - **Climate Investment Plan:** Small group of financial experts (contracted by but independent of NZC)
- Consultation of **Mission Board** and **Mission Owners Group** (Commission-internal)



BENEFITS ASSOCIATED TO MISSION LABEL

- **Work in progress**
- Examples from EU programmes:

- **LIFE programme**

Specification of award criteria (g) projects that build on or upscale the results of other projects funded by the LIFE Programme, its predecessor programmes or by other Union funds, are to benefit from a bonus in their evaluation.

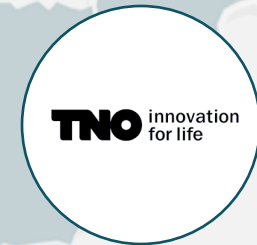
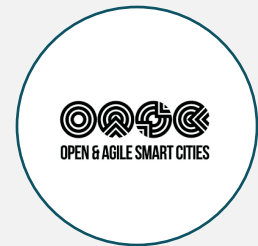
Strategic Integrated Projects - Climate Action

4. Urban or community-based action plans pioneering the transition to a climate neutral and/or climate resilient society, including climate-neutral cities plans and actions, **for instance in the context of the EU Mission ‘Climate neutral and smart cities’** and Sustainable Urban Mobility Plans.

- **Connecting Europe Facility**

The assessment of the award criterion “Priority and urgency” will, where relevant, also take into account:

- the new situation created by the Russian war of aggression against Ukraine;
- the Commission communication on Solidarity Lanes (COM/2022/217/Final);
- the “100 Climate Neutral and Smart Cities” announced by the Commission on 28 April 2022.



Get in touch with NetZeroCities!



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