NET ZERO CITIES

EU MISSION PLATFORM

CLIMATE NEUTRAL AND SMART CITIES

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Call for Pilot Cities Cohort 3: Monitoring, Evaluation, Learning & Sensemaking

13 February 2024

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Welcome

Call launched:

- Call Guidelines published
- Submission platform open
- Supporting documents published (Call Guidelines, Financial Guidelines; Guidebook; Application templates and pro formas) – **Updated version of Impact Framework template and indicators list will be uploaded soon!**

Scheduled webinars:

- Tuesday 23 January (1100 CEST): Ambition & Approach, technical information
- Tuesday 6 February (1100 CEST): Eligibility and Assessment Criteria
- **Tuesday 13 February (1100 CEST): Monitoring, Evaluation, Learning & Sensemaking**
- Wednesday 21 February (1100 CEST): Boot Camp & Twinning Cities Learning Programme

Register for all at the NZC website: www.netzerocities.eu (*Pilot Cities Programme page*)

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Housekeeping

This Webinar…

Is addressed to Mission Cities who **are not** yet a Pilot City within the Pilot City Programme and wish to undertake two-year, systems innovation-oriented pilot activities.

REC This event is being recorded

Q&A Use the Q&A functionality to ask questions

Re/Name yourself and include your city and department

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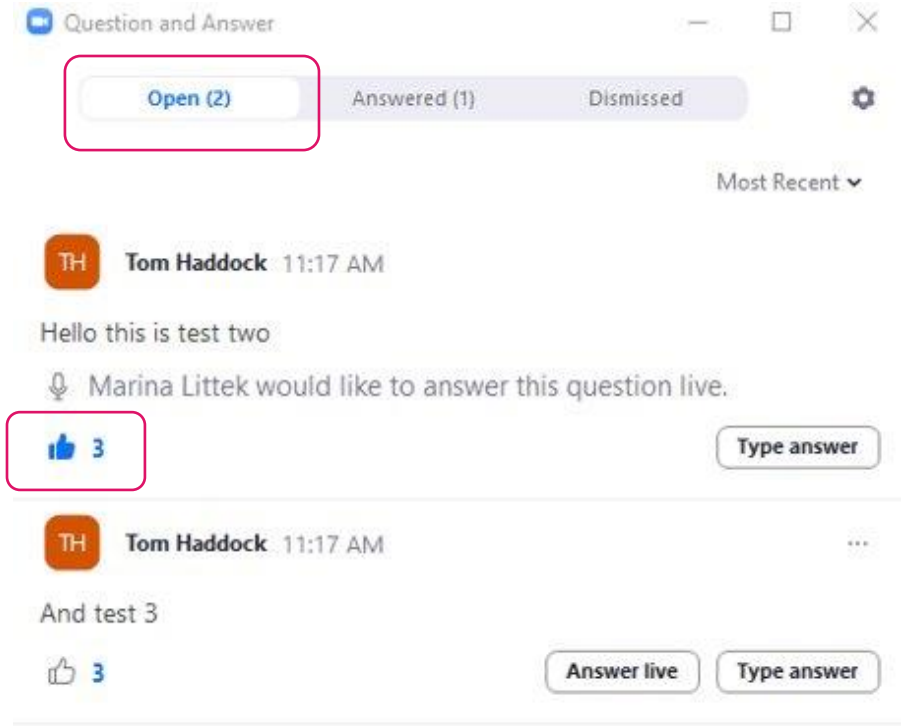
How to use the Q&A

1) Type down your questions

2) Vote up the questions



We request questions to be relevant to the content of today's webinar

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Disclaimer

- Please note that the following slides are non-binding and for reference only. The NetZeroCities Pilot Cities Call Guidelines as available on the NetZeroCities website remain the definite official document.

- Make sure you read the most up-to-date Call Guidelines available on our website including all associated documents before starting your application.

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Overarching communication – **LGI** – Clea Prieto

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Key speakers for today

Nikhil Chaudhary

Strategic Learning & Impact Lead

EIT Climate-KIC

Ghazal Etminan

Thematic Coordinator & Senior Research Engineer

AIT Austrian Institute of Technology

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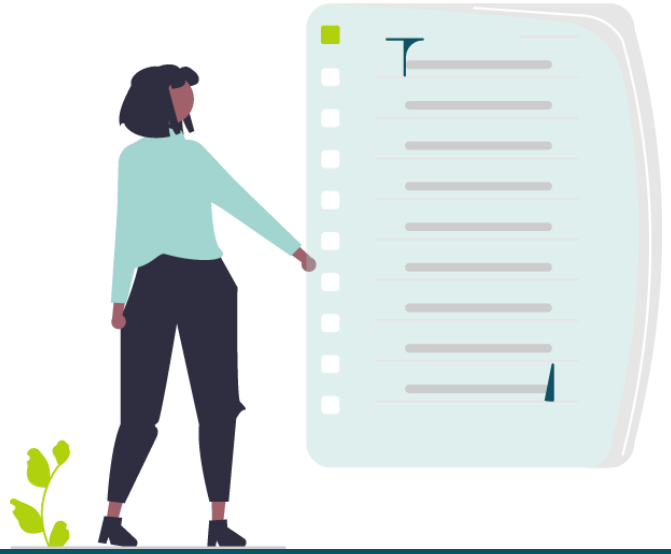
Today’s agenda

- Introduction and Housekeeping: 5 mins
- **NZC Impact Framework** to create your impact logic and pathways: 15 mins
- **PCP Indicators Set** to measure and report direct & indirect impacts:15 mins
- **Sensemaking & Peer-to-peer Learning** to enable reflexive governance: 10 mins
- **Guided tour** of the Impact Framework **template (Sections 1-3):** 10 mins
- **Closing and next steps:** 5 mins



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Creating an ‘Impact Framework’ to enable Monitoring, Evaluation & Learning (MEL)

Nikhil Chaudhary, EIT Climate KIC

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Recap: Assessment Criteria for ‘Impact’

Criterion	Description
Pilot activities’ (learning / reflexive) governance (10 points)	• **Reflexive governance:** The proposed governance model fosters transparency and accountability, actively contributes to the implementation of the pilot activities, and engages a diverse range of relevant participants with appropriate roles. (5 points) • **Governance for learning:** Governance activities support and enable learning and reflection, to drive development and improvement of pilot activities. (5 points)
Pilot activities’ outcomes and direct/indirect impact (20 points)	• **Direct impact:** The proposal outlines substantive, direct impact it aims to have on city-level **GHG emissions across one or more emission domains**, as a proportion of the city's overall emissions profile. (5 points) • **Indirect impact or co-benefits:** A wide range of co-benefits of the pilot activities is identified **(from a provided catalogue and/or, where applicable, bespoke ‘non-standard’ co-benefits)** and the link demonstrated, **with relevant indicators to measure outcomes and impact** beyond the scope of direct implementation. (5 points) • **Indicator selection:** Relevant **and balanced set of** indicators have been **selected from a provided catalogue (and/or, where required, bespoke ‘customised’ indicators elaborated)** for the pilot activities’ intended **direct impact and co-benefits**, with appropriate proposed monitoring of indicators (including how to measure). (5 points) • **Pathways to climate-neutrality:** The city **outlines how they would expect their pilot activities to unlock pathways (i.e., create enabling conditions for long-term change beyond the direct scope of the project) by achieving short-term or medium-term outcomes to transition towards climate-neutrality.** (5 points)
Pilot activities’ scalability, replication, and risk management (15 points)	• **Scalability of impact:** The proposal outlines how the pilot activities could be **expanded**, and the impact this **expansion (scaling)** would have (at intervals/over time) upon city-wide **GHG emissions**. (5 points) • **Replication and transferability:** The proposal presents detailed assumptions for how learning in and through the pilot activities will be captured and disseminated to support potential transferability and/or replication to other cities across the EU. (5 points) • **Risk management:** The **proposal identifies** risks related to both the practical implementation of the pilot activities and the potential indirect impacts and outcomes (such as related to co-benefit factors), with adequate **mitigation and appropriate** contingency measures. (5 points)

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Recap: Assessment Criteria – ‘Impact’

- **Learnings from interventions** are continuously captured, measured, and fed into pilot activities, policies and new actions
- Promoting and **systemising learning outputs or insights** to make them scalable and transferable
- Envisioning **multi-dimensional and systemic impacts** from pilot activities at an early stage
- **Co-benefits** as additional impacts or positive side-effects of climate mitigation or adaptation interventions - a meaningful integration of co-benefits can help **build interdepartmental collaboration** and support for direct climate action by highlighting **impacts on the everyday lives of citizens**
- **Multi-level & reflexive governance** approach that fosters transparency, inclusion, accountability as integral to implementation to **drive development and improvement** of pilot activities

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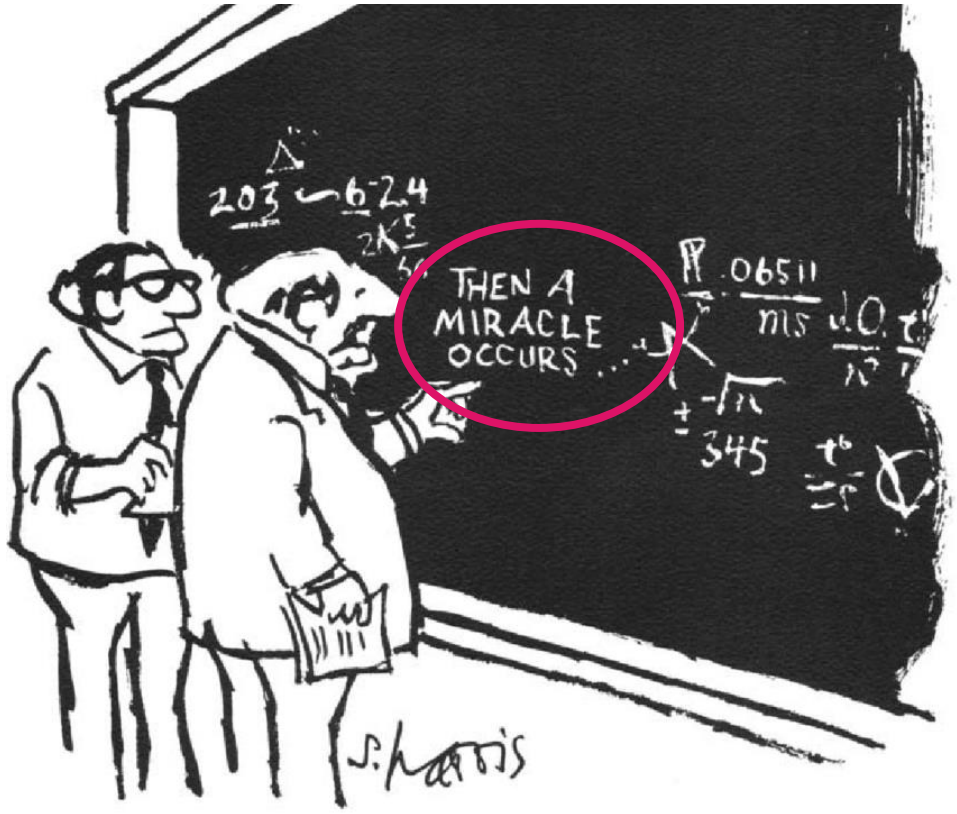
Impact Framework (aka Impact Logic): why needed?

- Systemic impacts are **complex, multi-dimensional, uncertain, non-linear** and may take a long time to occur
- Many co-benefits are **subjective** (governance, behaviour change, social impact etc.) and difficult to define
- Steps to achieve some critical impacts may be outside the city's **control or mandate**
- Need to agree on a shared understanding of what 'good' looks like and **build consensus**
- Look for the right evidence and data for realising and **communicating** impacts to all stakeholders
- **Continuously** measure change as it happens, not after!



Cartoon by Sydney Harris Inc.

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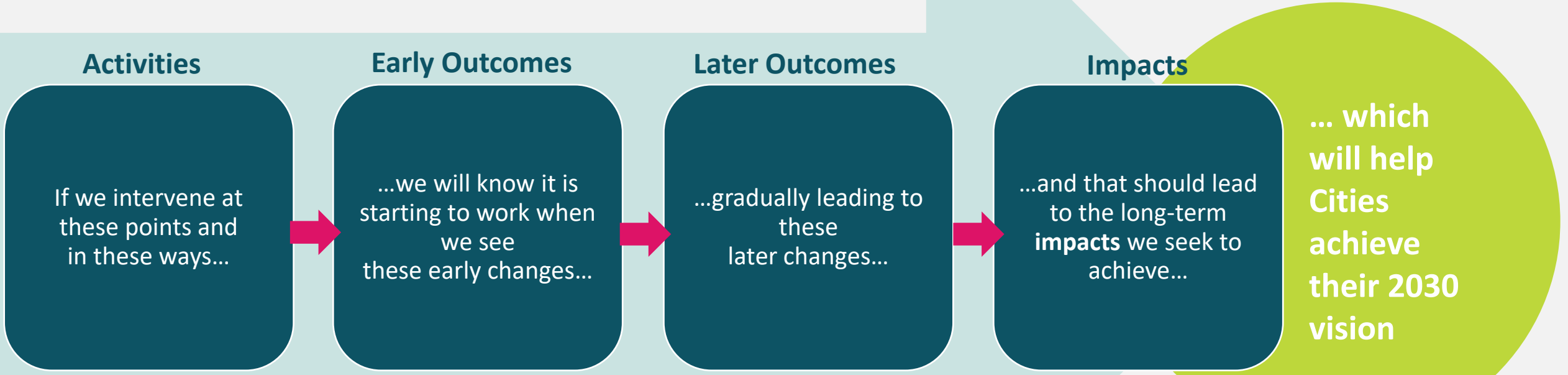
‘Impact Pathways’ tell a story about how systemic transformation is expected to unfold…

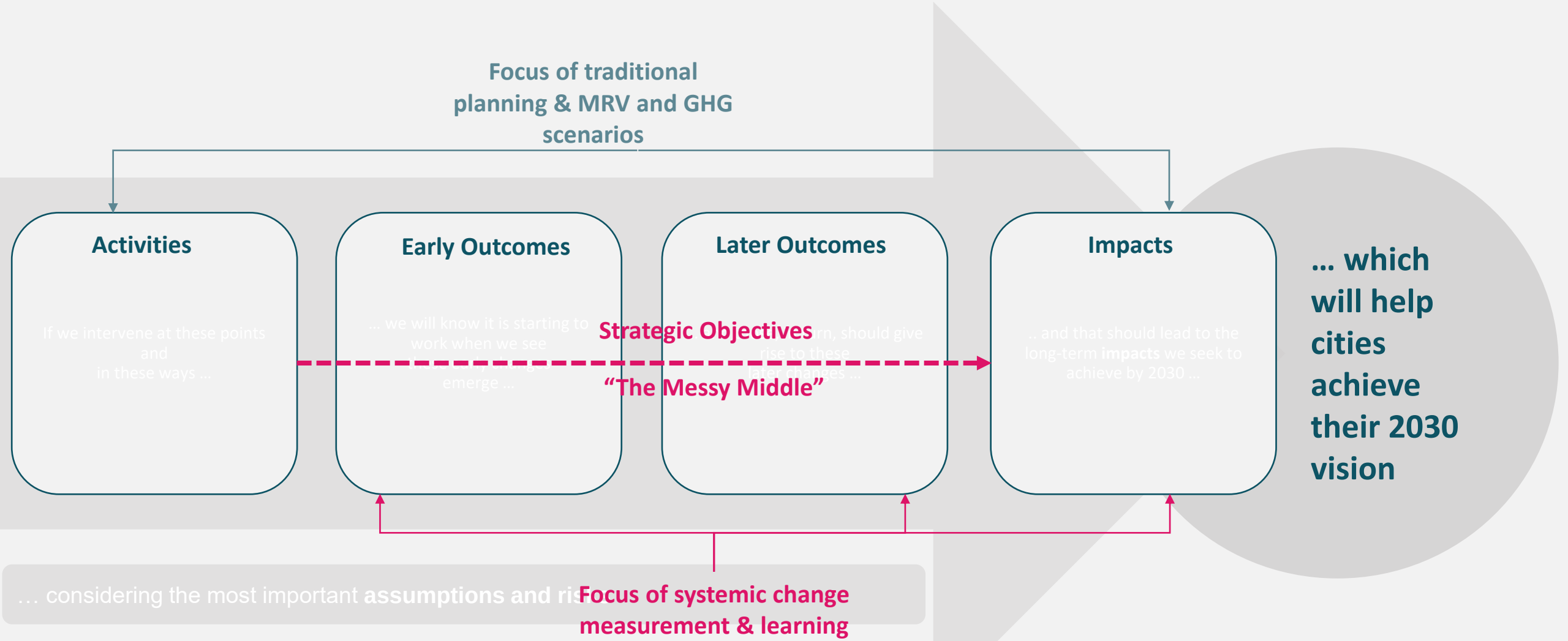
Fundamental and connected mechanisms through which complex long-term systems transition is envisioned and managed



… while considering the most important assumptions and risks

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

…to allow us to evaluate outcomes as they happen, not only whether the final target was (or wasn't) achieved



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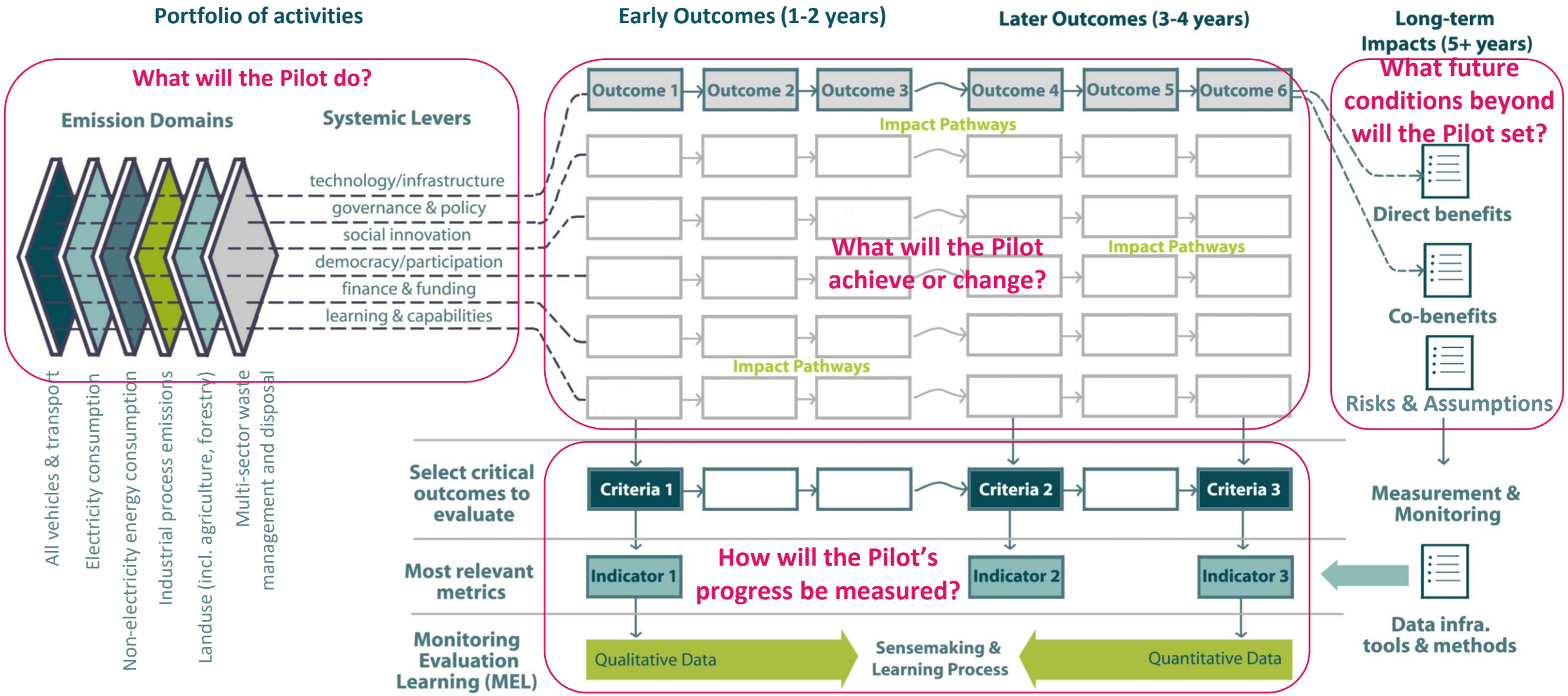
NZC Impact Framework



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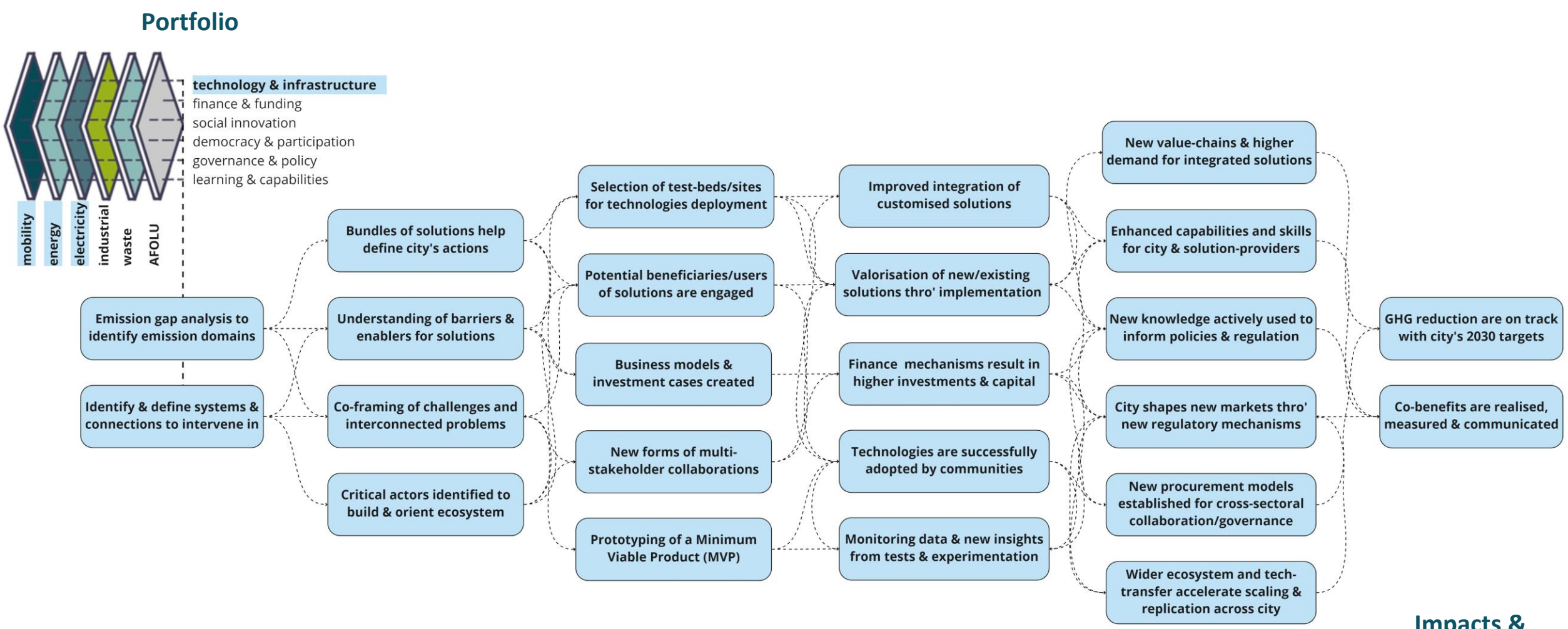
Impact Pathways example 01 – Technological innovation & infra.



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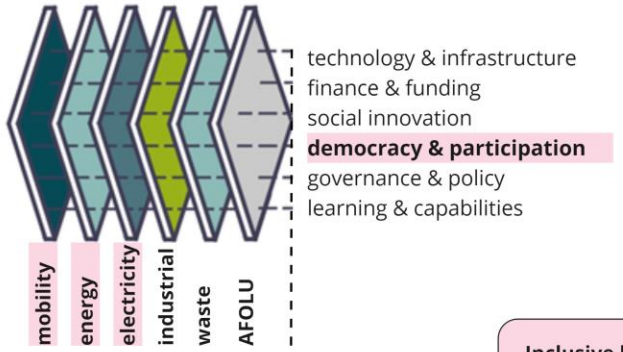
Impact Pathways example 02 – Citizen participation

Portfolio



Activities

- Understand needs of citizens & communities to contribute to city's climate action
- Rapidly grow number of engaged actors to enable the city's entire ecosystem
- Set up infrastructure (funding, expertise, networks) for bottom-up climate action

Early Outcomes (1-2 years)

- Inclusive knowledge helps shape & co-design actions
- Coalitions of actors have well-defined roles to co-design & co-implement climate action
- Capacity building creates a balance of both technical and participation expertise
- Funding with both clear goals and exploration possibilities for cross-sectoral projects
- Democratic innovation establishes processes to deliberate & build consensus
- Citizens' understanding of democratic systems improved
- City develops governance capacity to coordinate & orchestrate networks
- Civic imagination results in co-creation & dissemination of shared narratives
- Democratic vision & action is established as basis for long-term thinking in communities

Later Outcomes (3-4 years)

- Deliberative democracy & distributed agency tested and legitimised thro' city's portfolio
- Dialogue & consensus-building helps citizens' frame their inputs to climate policy/actions
- Citizens see effects of democratic empowerment through their role in influencing solutions
- Citizens experience democratic agency by seeing decisionmakers' responsiveness to their inputs
- Distributed agency & implementation of tangible actions results in co-benefits
- Decision-makers accept & trust citizens' capacities to tackle and support complex issues
- Citizens' engagement/input enables decision-makers to adopt a long-term approach
- Mainstreaming of democratic practice & culture across decision-makers & authorities
- Community partnerships & citizens' role helps establish distributed governance
- Civil society orgs become a trusted voice in marginalized communities
- Scaling up of demonstrated solutions begins across grassroots communities

Impacts & Co-benefits

- Increased competencies, capacities, and capabilities for democratic climate action
- Democratic actions are well-resourced as a long-term priority
- Enhanced participatory culture & processes ensure consent & inclusion in decision-making
- More socially-inclusive climate action with enhanced legitimacy for citizens/communities

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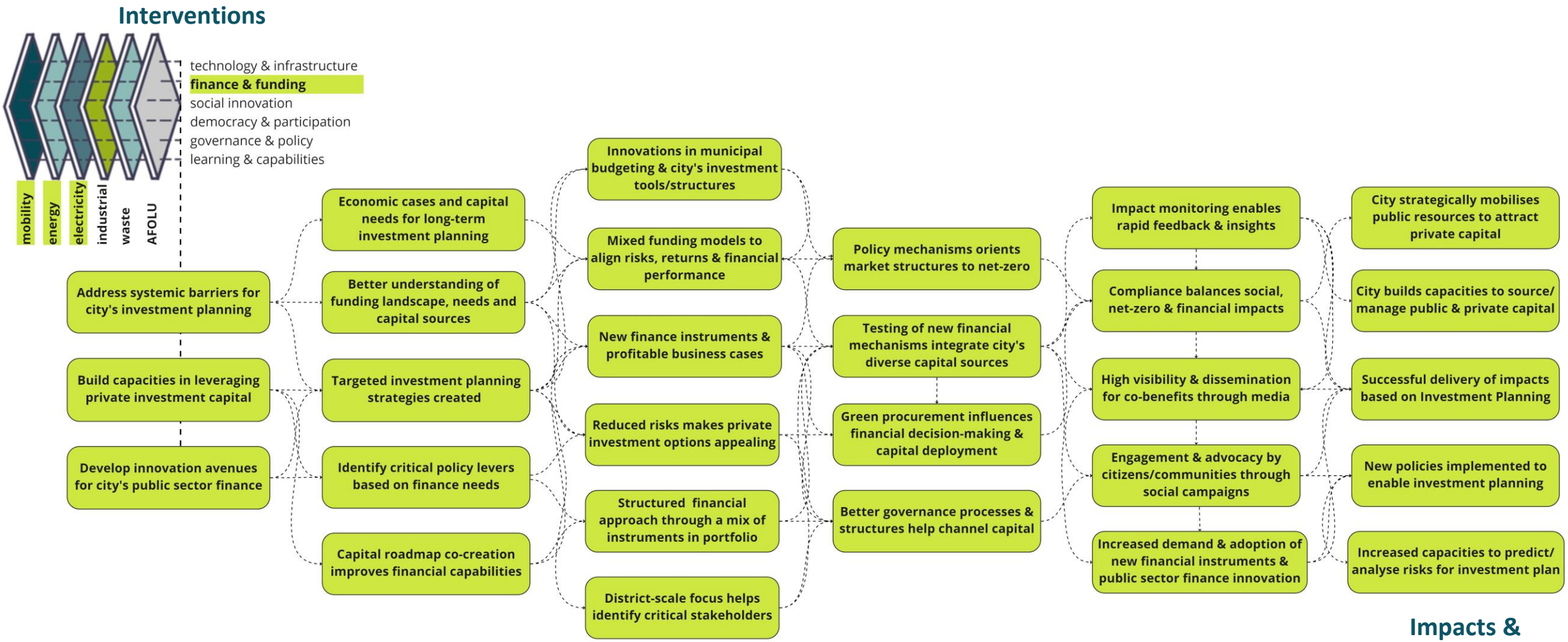
Impact Pathways example 04 – Finance innovation & funding



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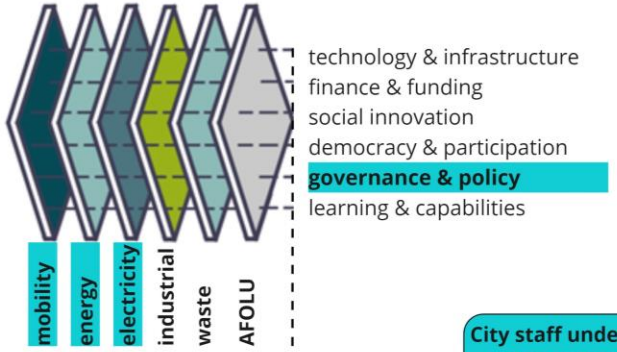
Impact Pathways example 05 – Governance & policy innovation

Interventions



Portfolio

- City begins to integrate/align commitments, Action Plan & testing (Pilots) towards mission
- City identifies systemic barriers for transforming & reimagining the role of city authorities
- City identifies capacities and capabilities needed for institutional transformation

Early Outcomes (1-2 years)

- City staff understand & begin to adopt relevant governance models into their practices
- Trans-dept. collaborations set up for climate mission/targets to be a cross-cutting issue
- New ways of organising multi-actor, multi-level collaborations are successfully tested
- Mission support helps city raise ambition, codify commitments, iterate actions through learning
- City's leadership starts becoming distributed, collaborative and enabling
- City's participatory mechanisms influence admin, budgeting & operational procedures
- City tests and iterates with innovative & long-term policies and/or regulatory mechanisms
- Local, regional and multi-level governance networks support & enhance the city & actors' agency

Later Outcomes (3-4 years)

- Enhanced public sector capabilities deliver innovative, agile policies that responds to systemic risks
- Decision-making processes are transparent, deliberative, and implemented with diverse actors
- Citizens & communities actively participate in policy/regulatory design and implementation
- Continuous learning & reflection enables rapid feedback of insights into decision-making processes
- City maintains continuity of climate actions across multiple admin, election, political cycles
- Multi-level governing structures are networked, cross-sectoral and organised around the mission
- Budgeting & procurement become transparent & adaptive, to allow for inclusion of feedback/learning
- City's steering role as intermediary and orchestrator of networks is established and practiced
- Co-design and co-delivery of public services maximizes of public value and social impacts

Impacts & Co-benefits

- Visionary, long-term and distributed leadership constantly aligned to the mission goals
- Collaborative governance mechanisms with an enhanced culture of participation
- Adaptive or reflexive governance based on real-time insights, evidence and knowledge
- Multi-level governance through national, regional and local actors' networks yields climate impacts

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Outcome (during PCP 2-years)		Impact (after PCP 2-years)
Shared understanding of success	⟷	Objective targets of success
How is change happening?	⟷	Measure change ex-post
Short-term / medium-term	⟷	Long-term
Process: How / Who / Where / Why?	⟷	Indicators: What?
Manage risks / uncertainty	⟷	Accountability / Compliance
Backstories	⟷	Success stories
Improve and adapt	⟷	Build evidence / report results
Qualitative insights	⟷	Quantitative data

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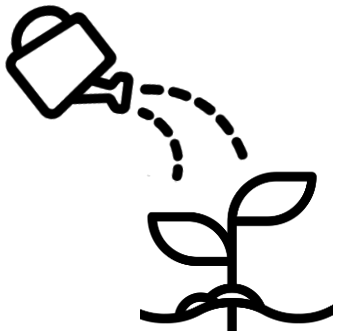
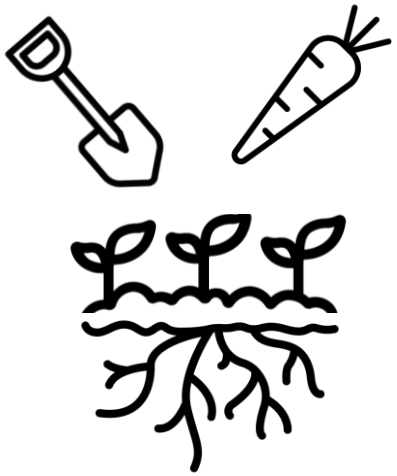
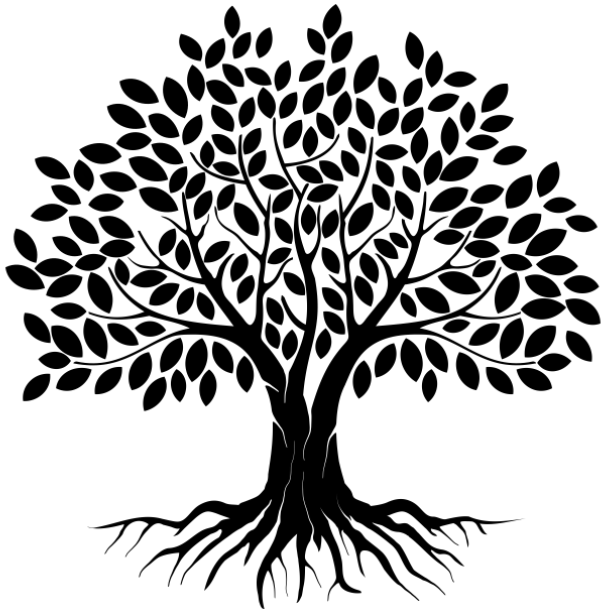
Pilot Cities ‘gardening’ for systemic transformation:

Think of your Impact Framework as your Pilot’s timeline & contribution







Sowing

2024

Today

Watering / Sprouting

2025

Year 1-2

Rooting / Tending

2026

Year 2-4

Thriving

2027 & beyond

CCC Vision

Portfolio of Activities / CCC Objectives

Short-term Changes?

Mid-term Changes?

Long-term Impacts Direct & Co-benefits

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Starting points for creating your Impact Logic…

- What **changes** (outcomes) is the Pilot seeking?
- Which **benefits/impacts** is the Pilot aiming to achieve?
- When does the Pilot expect to achieve these changes (**earlier and later**)?
- Where and under what **conditions** 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 when 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)**

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Guiding Questions to finalise your Impact Logic

- Does this set of outcomes sufficiently capture the ***intent or goal*** of the Pilot? 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 Logic elements? Any existing evidence or data sources? If not, what are the ***evidence gaps***?
- How do the planned ***activities*** connect and contribute to the outcomes?
- Which are the common outcomes ***across multiple levers***? How could similar outcomes be clustered into combinations as a single bold impact statement for coordinated interventions?

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Some helpful resources with weblinks:

- MOTION Handbook: Developing A Transformative Theory Of Change (Transformative Innovation Policy Consortium)
- MOVE21: Reflective Monitoring Guide
- Impact Pathways: Tracking and communicating the impact of the European Framework Programme for research and innovation (2019) and short presentation here (2018)
- Reflection Methods: Tools to make learning more meaningful - Practical Guide for Trainers and Facilitators (Wageningen University & Research)
- Hivos Theory of Change thinking in practice: A stepwise approach
- Building a Culture of Learning at Scale: Learning Networks for Systems Change. A Scoping Paper (Orange Compass for the Paul Ramsay Foundation)
- Building a Culture of Learning: Teaching a Complex Organization How to Fish. The Foundation Review, 11(1).
- Measurement for Learning: Values & Principles (Centre for Public Impact)
- Human Learning Systems reports and related resources (Centre for Public Impact)
- UNDP Sensemaking Workshop and Facilitation Guide

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Q&A

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NZC Integrated Monitoring system & PCP Indicators

Ghazal Etminan,
AIT Austrian Institute of Technology

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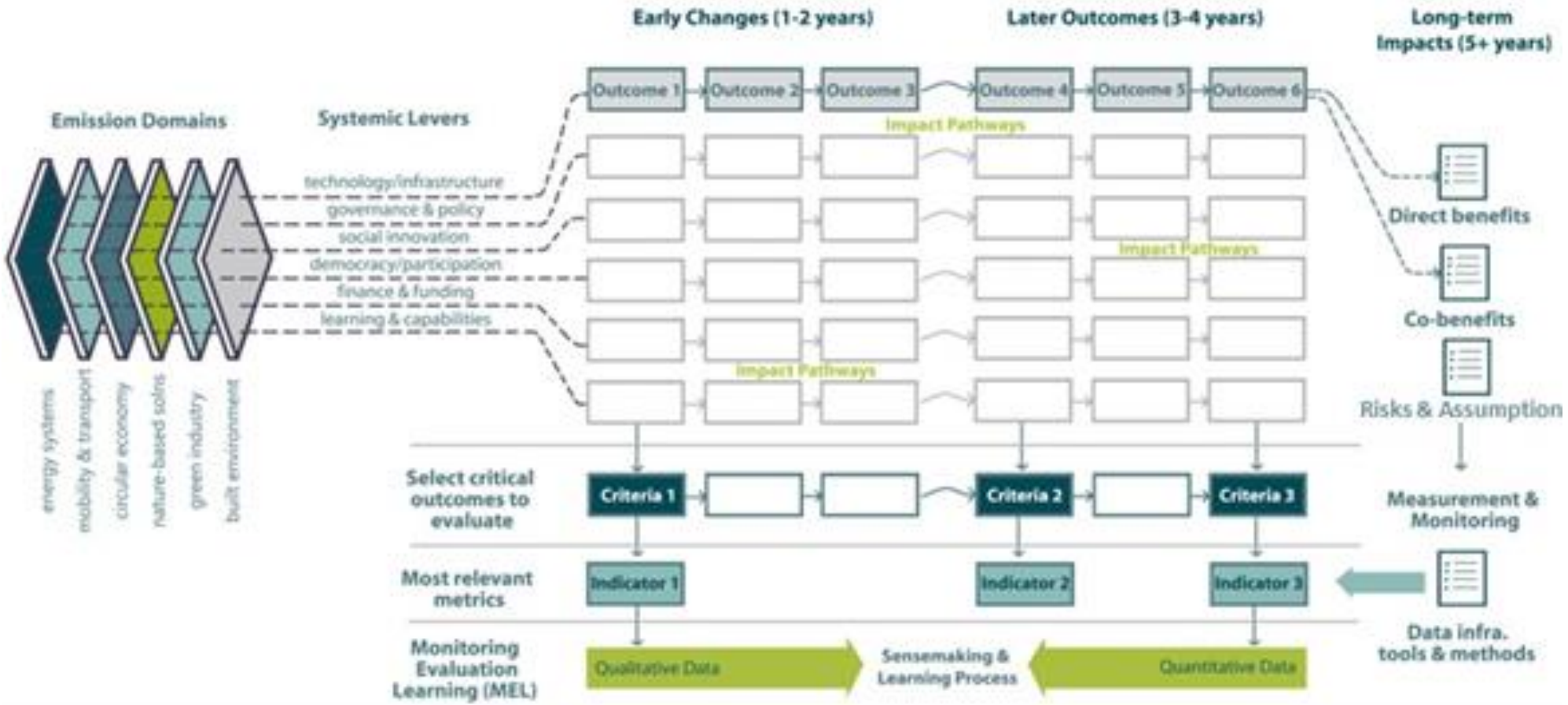
Our Starting Points: The Impact Pathways and the Integrated Monitoring System



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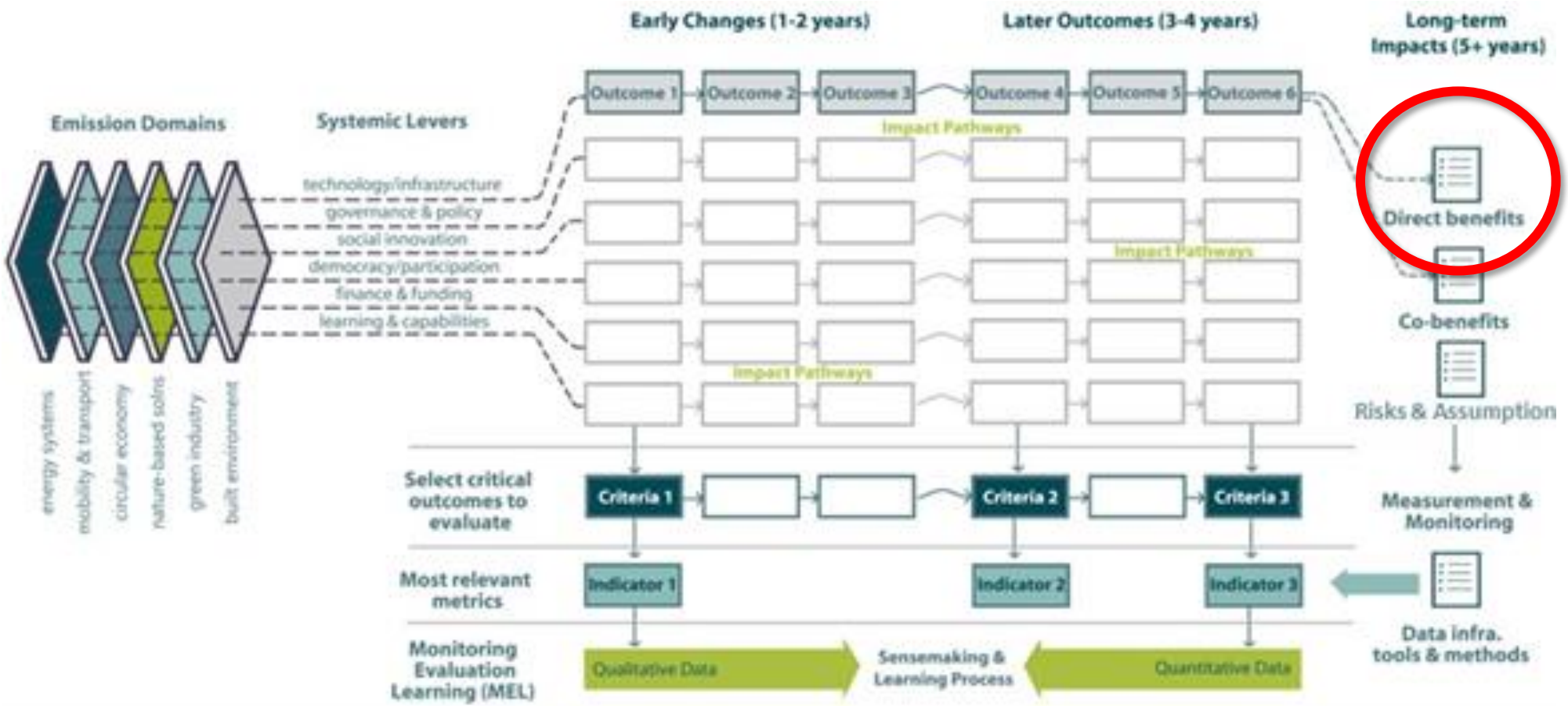
DOMAIN	SUBDOMAIN	INDICATOR NAME	UNIT OF MEASUREMENT
Greenhouse Gas Emissions (GHG)	Stationary Energy	GHG emission from stationary energy	t CO2 equivalent
		Energy use by fuel/energy type within city boundary	MWh/year
	Transport and Mobility	GHG emission from transport	t CO2 equivalent
		Fuel consumption for in-boundary transportation per fuel type	MJ/kg/kWh
	Waste and Water	GHG emission from waste	t CO2 equivalent
		Mass of waste processed per end-of-life treatement type within city boundary	t CO2 equivalent
		Mass of waste processed per end-of-life treatement type outside city boundary	t CO2 equivalent
	Industrial Processes and Product Use (IPPU)	GHG emission from IPPU	t CO2 equivalent
		Emission generation potential per unit of input/output for industrial processes within the city boundary	CO2 equivalent per kg of production
		Emissions from non-energy product use	T CO2 equivalent
	Agriculture, Foresty and other Land Use (AFOLU)	GHG emission from AFOLU	t CO2 equivalent
		Net annual rate of change in carbon stocks per hectare of land	t CO2/ha
	Energy Generation	Local RES energy production	MWh
		Energy Autonomy	%
Public Health & Environment	Air quality	PM2.5 concentration levels	µg/ m3
		PM10 concentration levels	# of days
		NO2 concentration levels	µg/ m3
	Noise pollution	% of population exposed to night-time noise (Lnight) >= 50 dB	%
		% of population exposed to avg. LDEN >= 55dB	%
	Road safety road safety	Road Deaths	# of deaths / 100,000 inhabitants
		Traffic safety active modes	# of deaths / 1000,000,000 trips
	Urban Heat Island (UHI) effect Temperature Increase and Heatwave Incidence	Urban Heat Island (UHI) Effect	°C UHImax
		Mean value of daily maximum temperature (TXX)	°C TXX
		Mean value of daily minimum temperature (TNN)	°C TNN
		Heatwave (HW) incidence	# of HW in summer
	Physical and mental well being	Wellbeing of citizens (questionnaire)	Likert scale
	Liveability, attractiveness & aesthetics of the built environment	Green Spaces	hectares / 100,000
		Quality of public spaces	# (rating from 0 to 10 of overall satisfaction with green and non-green public spaces)
	Equitable & affordable access to housing	Affordabilty of Housing	% of households
		Fuel poverty	% of households
Social Inclusion, Innovation, Democracy and Cultural Impact Co Benefits	Citizen & communities' participation	Openness of public participation processes	% of processes
	City capacities for participation / engagement	Policy support for promoting climate neutrality	# Number
		Citizen involvement in co-creation/co-design of climate neutrality actions	# Number
	Improved social justice	GINI coefficient	#
	Social cohesion, gender, equality & equity Functioning of democratic institutions	Inclusion of different social groups	Likert (number)
		Voter participation	% of people
	Social Innovation	Skills and Capacity Building – Social Innovation Experts	# Number
		Skills and Capacity Building - Social Innovation skills development activities	# Number
		Empowerment and Inclusion – Inclusion and Collaboration	# Number
		Funding for Social Innovation initiatives for climatFunding for Social Innovation initiatives for climate neutrality	# Number (euros)
	Behavior change towards low carbon lifestyle and practice	Energy consumption per household	KWh
		Modal share of green transport modes and public transport)	%
Economy	Investment in R&I	Research intensity	%
	Number of skilled jobs & rate of employment	Green jobs	% of jobs
		Youth umemployment rate	% of people
	Economic thriving	GDP	Gross Domestic Product	€/cap
	Technological readiness & rate of adoption	Adoption rate of key climate neutral technologies	%
	Local entrepreurship & local businesses / ventures	Climate-Neutral City Start-ups	#/100.000
		New businesses registered	#/100.000
		Surviving number of new companies registered after year 3	#/100.000
Resource Efficiency	Waste management and efficiency	Recycling rate of municipal waste	%
	Deployment of material cycles & circular economy	Recycling rate for specific material streams	%
		Circular Material Use Rate (CMU)	%
		Resource Productivity	Euro/Weight
	Water management	Household water consumption	litres/capita/day
		% of urban wastewater meeting the UWWTD requirements	%
	Sustainable and resilient food production	Local food production	%
		Food waste volume	t/cap
	Land use management practice	Growth rate of urbanized land	m²/capita/year
		Brownfield use	% of km2
	Urban Forestry, Plantation & Improved Plant Health	Percentage of tree canopy within the city	% of the municipal area
	Ecological awareness	Citizen's awareness regarding sustainabilty and the environment	Likert scale
		Pro-environmental identity	Likert scale
Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of households and buildings with reduced energy consumption as a consequence of installing smart energy metres	% of households
		% of households and buildings with reduced water consumption as a consequence of installing smart water meters	% of households
		% of municipal buildings equipped with building energy management systems	% of public buildings
	EGovernment	% of city services available online	% of total services
		Improvement in online government services	Likert Scale
	Access to information	Business-to-government (B2G) data sharing	# of Private Datasets Shared with the City / Local Authority
	Urban Data Platforms	Usage of Urban Data Platforms	# Users /Day
		User Satisfaction with Urban Data Platforms	User Satisfaction Score (Likert Scale)
Finance and Investment	Public Spending	Capital Invested in Climate Action Projects	EUR million
		Budget Assigned to Climate Action Projects	% of City Budget
		Capital Invested in Climate Action Projects per Capita	EUR thousand
	External Spending	Capital Invested in Climate Action Projects	EUR million
		Coverage of Climate Finance Gap	% of Capital Deficit Covered
	Capital Efficiency	Emission Return on Invested Capital	EUR million
	Fiscal Responsibility	Cost Coverage	% of Costs Covered

Mandatory/ recommended indicators (see indicator name)

Required

Recommended

Direct Benefits….



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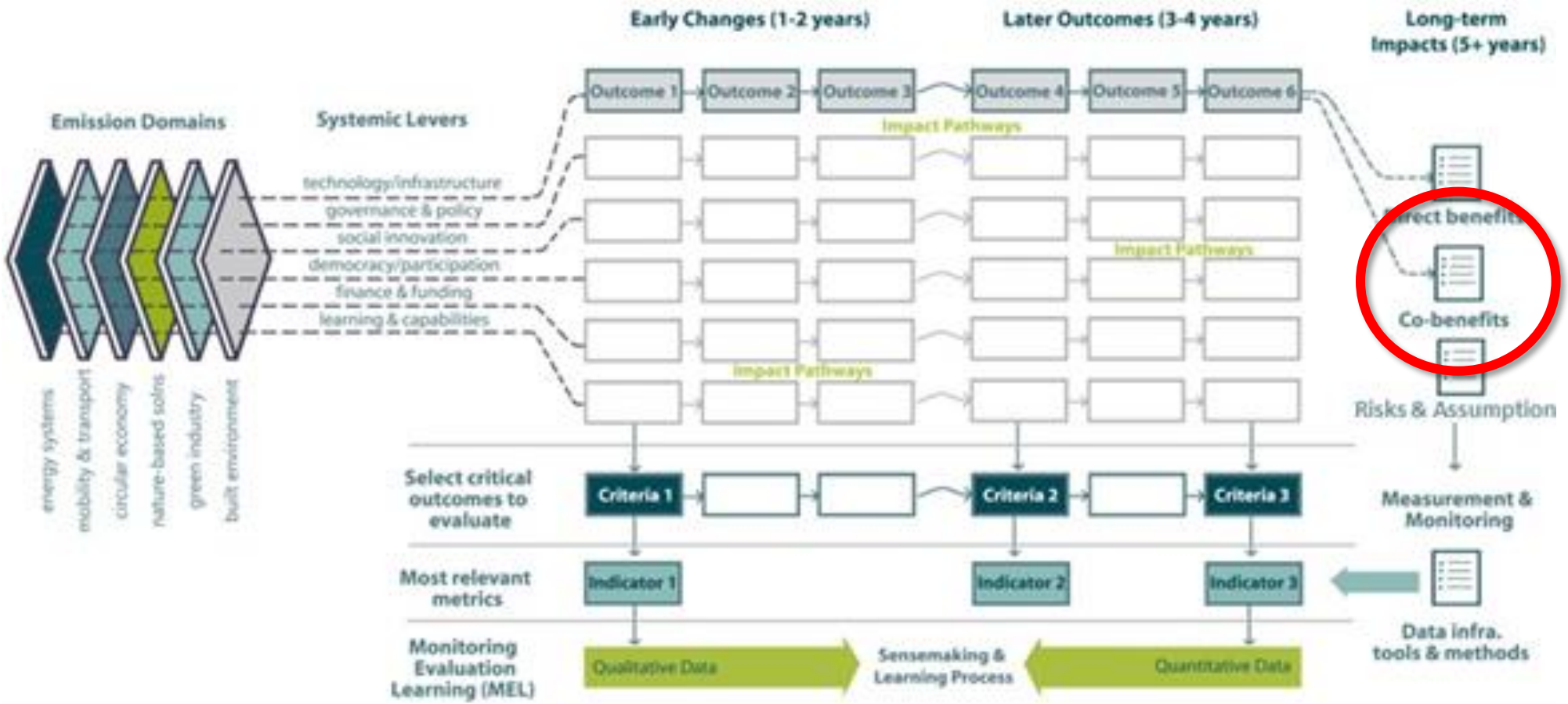
		Mean value of daily maximum temperature (TXX)	°C TXX
		Mean value of daily minimum temperature (TNN)	°C TNN
		Heatwave (HW) incidence	# of HW in summer
	Physical and mental well being	Wellbeing of citizens (questionnaire)	Likert scale
	Liveability, attractiveness & aesthetics of the built environment	Green Spaces	hectares / 100,000
		Quality of public spaces	# (rating from 0 to 10 of overall satisfaction with green and non-green public spaces)
	Equitable & affordable access to housing	Affordabilty of Housing	% of households
		Fuel poverty	% of households
Social Inclusion, Innovation, Democracy and Cultural Impact Co Benefits	Citizen & communities' participation	Openness of public participation processes	% of processes
	City capacities for participation / engagement	Policy support for promoting climate neutrality	# Number
		Citizen involvement in co-creation/co-design of climate neutrality actions	# Number
	Improved social justice	GINI coefficient	#
	Social cohesion, gender, equality & equity Functioning of democratic institutions	Inclusion of different social groups	Likert (number)
		Voter participation	% of people
	Social Innovation	Skills and Capacity Building – Social Innovation Experts	# Number
		Skills and Capacity Building - Social Innovation skills development activities	# Number
		Empowerment and Inclusion – Inclusion and Collaboration	# Number
		Funding for Social Innovation initiatives for climatFunding for Social Innovation initiatives for climate neutrality	# Number (euros)
	Behavior change towards low carbon lifestyle and practice	Energy consumption per household	KWh
		Modal share of green transport modes and public transport)	%
Economy	Investment in R&I	Research intensity	%
	Number of skilled jobs & rate of employment	Green jobs	% of jobs
		Youth umemployment rate	% of people
	Economic thriving	GDP Gross Domestic Product	€/cap
	Technological readiness & rate of adoption	Adoption rate of key climate neutral technologies	%
	Local entrepreurship & local businesses / ventures	Climate-Neutral City Start-ups	#/100.000
		New businesses registered	#/100.000
		Surviving number of new companies registered after year 3	#/100.000
Resource Efficiency	Waste management and efficiency	Recycling rate of municipal waste	%
	Deployment of material cycles & circular economy	Recycling rate for specific material streams	%
		Circular Material Use Rate (CMU)	%
		Resource Productivity	Euro/Weight
	Water management	Household water consumption	litres/capita/day
		% of urban wastewater meeting the UWWTD requirements	%
	Sustainable and resilient food production	Local food production	%
		Food waste volume	t/cap
	Land use management practice	Growth rate of urbanized land	m²/capita/year
		Brownfield use	% of km2
	Urban Forestry, Plantation & Improved Plant Health	Percentage of tree canopy within the city	% of the municipal area
	Ecological awareness	Citizen's awareness regarding sustainabilty and the environment	Likert scale
		Pro-environmental identity	Likert scale
Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of households and buildings with reduced energy consumption as a consequence of installing smart energy metres	% of households
		% of households and buildings with reduced water consumption as a consequence of installing smart water meters	% of households
		% of municipal buildings equipped with building energy management systems	% of public buildings
	EGovernment	% of city services available online	% of total services
		Improvement in online government services	Likert Scale
	Access to information	Business-to-government (B2G) data sharing	# of Private Datasets Shared with the City / Local Authority
	Urban Data Platforms	Usage of Urban Data Platforms	# Users /Day
		User Satisfaction with Urban Data Platforms	User Satisfaction Score (Likert Scale)
Finance and Investment	Public Spending	Capital Invested in Climate Action Projects	EUR million
		Budget Assigned to Climate Action Projects	% of City Budget
		Capital Invested in Climate Action Projects per Capita	EUR thousand
	External Spending	Capital Invested in Climate Action Projects	EUR million
		Coverage of Climate Finance Gap	% of Capital Deficit Covered
	Capital Efficiency	Emission Return on Invested Capital	EUR million
	Fiscal Responsibility	Cost Coverage	% of Costs Covered

Mandatory/ recommended indicators (see indicator name)

Required

Recommended

…and Co-Benefits



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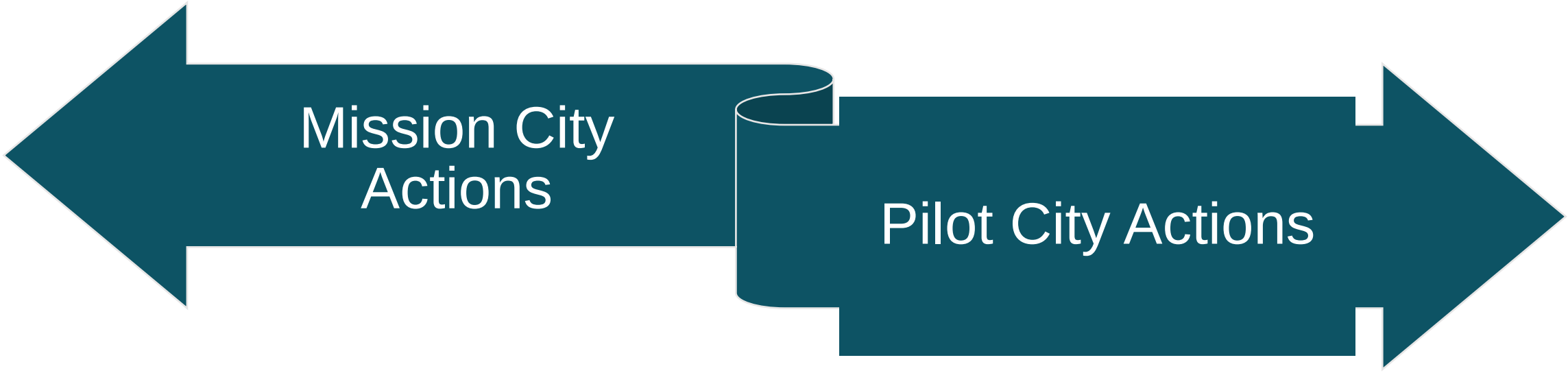
DOMAIN	SUBDOMAIN	INDICATOR NAME	UNIT OF MEASUREMENT
Greenhouse Gas Emissions (GHG)	Stationary Energy	GHG emission from stationary energy	t CO2 equivalent
		Energy use by fuel/energy type within city boundary	MWh/year
	Transport and Mobility	GHG emission from transport	t CO2 equivalent
		Fuel consumption for in-boundary transportation per fuel type	MJ/kg/kWh
	Waste and Water	GHG emission from waste	t CO2 equivalent
		Mass of waste processed per end-of-life treatement type within city boundary	t CO2 equivalent
		Mass of waste processed per end-of-life treatement type outside city boundary	t CO2 equivalent
	Industrial Processes and Product Use (IPPU)	GHG emission from IPPU	t CO2 equivalent
		Emission generation potential per unit of input/output for industrial processes within the city boundary	CO2 equivalent per kg of production
		Emissions from non-energy product use	T CO2 equivalent
	Agriculture, Foresty and other Land Use (AFOLU)	GHG emission from AFOLU	t CO2 equivalent
		Net annual rate of change in carbon stocks per hectare of land	t CO2/ha
	Energy Generation	Local RES energy production	MWh
		Energy Autonomy	%
Public Health & Environment	Air quality	PM2.5 concentration levels	µg/ m3
		PM10 concentration levels	# of days
		NO2 concentration levels	µg/ m3
	Noise pollution	% of population exposed to night-time noise (Lnight) >= 50 dB	
		% of population exposed to avg. LDEN >= 55dB	%
	Road safety road safety	Road Deaths	# of deaths / [illegible] inhabitants
		Traffic safety active modes	# of deaths / 1000,0[illegible]000 trips
	Urban Heat Island (UHI) effect Temperature Increase and Heatwave Incidence	Urban Heat Island (UHI) Effect	°C UHImax
		Mean value of daily maximum temperature (TXX)	°C TXX
		Mean value of daily minimum temperature (TNN)	°C TNN
		Heatwave (HW) incidence	# of HW in summer
	Physical and mental well being	Wellbeing of citizens (questionnaire)	Likert scale
	Liveability, attractiveness & aesthetics of the built environment	Green Spaces	hectares / 100,000
		Quality of public spaces	# (rating from 0 to 10 of overall satisfaction with green and non-green public spaces)
	Equitable & affordable access to housing	Affordabilty of Housing	% of households
		Fuel poverty	% of households
Social Inclusion, Innovation, Democracy and Cultural Impact Co Benefits	Citizen & communities' participation	Openness of public participation processes	% of processes
	City capacities for participation / engagement	Policy support for promoting climate neutrality	# Number
		Citizen involvement in co-creation/co-design of climate neutrality actions	# Number
	Improved social justice	GINI coefficient	#
	Social cohesion, gender, equality & equity Functioning of democratic institutions	Inclusion of different social groups	Likert (number)
		Voter participation	% of people
	Social Innovation	Skills and Capacity Building – Social Innovation Experts	# Number
		Skills and Capacity Building - Social Innovation skills development activities	# Number
		Empowerment and Inclusion – Inclusion and Collaboration	# Num[illegible]
		Funding for Social Innovation initiatives for climatFunding for Social Innovation initiatives for [illegible]	[illegible]mber (euros)
	Behavior change towards low carbon lifestyle and practice	Energy consumption per household	KWh
		Modal share of green transport modes and public transport)	%
Economy	Investment in R&I	Research intensity	%
	Number of s[illegible]ed jobs & rate of empl[illegible]ent	Green jobs	% of jobs
		Youth unemployment rate	[illegible] people
	Economic thriving	GDP	Gross Domestic Product	€/cap
	Technological readiness & rate of adoption	Adoption rate of key climate neutral technologies	%
	Local entrepreurship & local businesses / ventures	Climate-Neutral City Start-ups	#/100.000
		New businesses registered	#/100.000
		Surviving number of new companies registered after year 3	#/100.000
[illegible]esource Efficiency	Waste management and efficiency	Recycling rate of municipal waste	%
	Deployment of material cycles & circular economy	Recycling rate for specific material streams	%
		Circular Material Use Rate (CMU)	%
		Resource Productivity	Euro/Weight
	Water management	Household water consumption	litres/capita/day
		% of urban wastewater meeting the UWWTD requirements	%
	Sustainable and resilient food production	Local food production	%
		Food waste volume	t/cap
	Land use management practice	Growth rate of urbanized land	m²/capita/year
		Brownfield use	% of km2
	Urban Forestry, Plantation & Improved Plant Health	Percentage of tree canopy within the city	% of the municipal area
	Ecological awareness	Citizen's awareness regarding sustainabilty and the environment	Likert scale
		Pro-environmental identity	Likert scale
Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of households and buildings with reduced energy consumption as a consequence of installing smart energy metres	% of households
		% of households and buildings with reduced water consumption as a consequence of installing smart water meters	% of households
		% of municipal buildings equipped with building energy management systems	% of public buildings
	EGovernment	% of city services available online	% of total services
		Improvement in online government services	Likert Scale
	Access to information	Business-to-government (B2G) data sharing	# of Private Datasets Shared with the City / Local Authority
	Urban Data Platforms	Usage of Urban Data Platforms	# Users /Day
		User Satisfaction with Urban Data Platforms	User Satisfaction Score (Likert Scale)
[illegible]Finance and Investment	Public Spending	Capital Invested in Climate Action Projects	EUR million
		Budget Assigned to Climate Action Projects	% of City Budget
		Capital Invested in Climate Action Projects per Capita	EUR thousand
	External Spending	Capital Invested in Climate Action Projects	EUR million
		Coverage of Climate Finance Gap	% of Capital Def[illegible] Covered
	Capital Efficiency	Emission Return on Invested Capital	EUR mill[illegible]
	Fisca[illegible]esponsibility	Cost Coverage	% [illegible]s Covered

Mandatory/ recommended indicators (see indicator name)

Required

Recommended

The difference between the monitoring Mission City actions and Pilot activities



- Aligned with EU Mission
- Described in CNC Action Plan
- Strategic
- Timeline: 2030

- Resposing to local needs
- VERY specific
- Implementation-oriented
- Timeline: Two years after project kick-off

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Modification of the Indicator System needed!

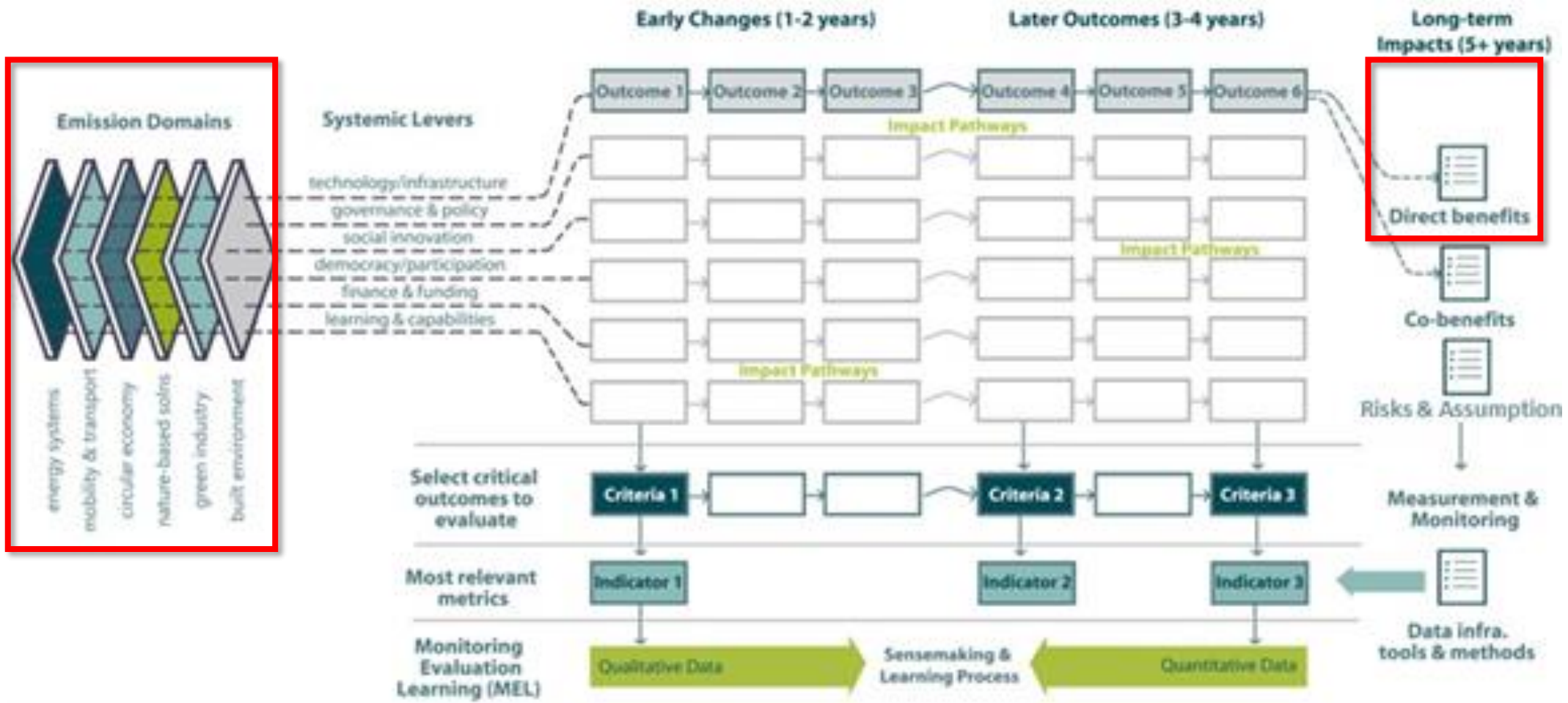
Indicators for CNAP 02019

Mandatory

Optional

DOMAIN	SUBDOMAIN	INDICATOR NAME	UNIT OF MEASUREMENT
Greenhouse Gas Emissions (GHG)	Stationary Energy	GHG emission from stationary energy	t CO2 equivalent
		Fuel combustion within city boundary	MJ
	Transport	GHG emission from transport	t CO2 equivalent
		Fuel consumption for in-boundary transportation per	MJ
	Waste	GHG emission from waste	t CO2 equivalent
		Mass of waste processed per end-of-life treatement type	t
		Mass of waste processed per end-of-life treatement type	t
	Industrial Processes and Product Use (IPPU)	GHG emission from IPPU	t CO2 equivalent
		Emission generation potential per unit of input/output for	CO2 equivalent per kg of production
	Agriculture, Foresty and other Land Use (AFOLU)	GHG emission from AFOLU	t CO2 equivalent
		Net annual rate of change in carbon stocks per hectare of	t CO2/ha
	Grid-supplied energy (electricity, heat, steam or cooling)	GHG emission from grid supplied energy	t CO2 equivalent
		Grid specific emission factor	g CO2/
		Grid loss factor	
Public Health & Environment	Improved air quality	PM2.5 concentration levels	µg/ m3
		PM10 concentration levels	# of days
		NO2 concentration levels	µg/ m3
	Reduced noise pollution	% of adult population with high Sleep Disturbance	%
	Increased road safety	Road Deaths	# of deaths / 100,000
		Traffic safety active modes	# of deaths / 100,000,000of trips
	Reduced heat island effect	Urban Heat Island	°C UHImax
	Enhanced physical & mental well being	Wellbeing of citizens (questionnaire)	Likert scale
	Enhanced liveability, attractiveness & aesthetics of the built environment	Green Spaces	hectares / 100,000
		Quality of public spaces	#
	Equitable & affordable access to housing	Affordabilty of Housing	% of households
		Fuel poverty	% of households
		Diversity of Housing	#
Social inclusion, democracy & cultural impact	Enhanced citizen & communities' participation	Openness of public participation processes	% of projects
	Improved city capacities for participation / engagement	Trainings on SI for climate neutrality	# of civil servants trained
		Cross-departmental task forces or design thinking teams	# of participants
	Improved social justice	GINI coefficient	#
	Improved social cohesion, gender, equality & equity	Inclusion and collaborations	#
	Improved functioning of democratic institutions	Voter participation	% of people
	Improved access to information	Open data sets	# of OGD data sets on climate neutrality shared
		Increase in online government services	Likert scale
	Behavior change towards low carbon lifestyle and practice	Energy consumption per household	kWh
		Modal share of green transport modes (walking, biking and public	%
		Household expenditure portfolios	€
Economy	Increased investment in R&I	Research intensity	%
	Increased number of skilled jobs & rate of employment	Green jobs	% of jobs
		Unemployment rate	% of labour force
	Increased economic thriving	GDP	Gross Domestic Product	€/cap
	Increased technological readiness & rate of adoption		Adoption rate of key climate neutral technologies	%
	Local economic activity & global connectivity		European and international partnerships on climate-neutral	#
			International events held	#/100.000
	Increased local entrepreurship & local businesses / ventures		Climate-Neutral City Start-ups	#/100.000
			New businesses registered	#/100.000
	Mainstreaming of new economic models like proximity & sharing economy		Innovation hubs	# of innovation hubs / 100,000
Circular economy	Improved waste management and efficiency		Municipal waste generated per capita	t/cap
			% of municipal waste landfilled	%
			Domestic material consumption	t
	Increased deployment of material cycles & circular economy		Recycling rate of municipal waste	%
			Recycling rate for specific material streams	%
			Circular Material Use Rate (CMU)	%
			Resource Productivity	Euro/Weight
	Enhanced w[illegible]		[illegible] consumption	[illegible]
			[illegible]	[illegible]
			[illegible]	[illegible]
			Local food production	%
	Sustainable food production		Food waste volume	t/cap
			[illegible]	[illegible]
	Improved [illegible] practice		[illegible] rate [illegible]	m²/cap/year
			Brownfield use	% of km²
	Energy		Energy independence	%
			Increase in local renewable energy production	% in kWh
Biodiversity	Increased Urban Forestry, Plantation & Improved Plant Health		Percentage of tree canopy within the city	% of the municipal area
	Increased non-invasive species & polinators		Change in the number of species of birds in built-up	% of change in species
	Increased ecological awareness		Citizen's awareness regarding sustainabilty and the	Likert scale
			Ecological habitat connection	Likert scale
	Enhanced ecological habitat connection		Structural connectivity of green spaces	ha
	Improved nature restauration		Percentage of protected natural areas, restored and naturalized, on public land	%

Pilot City Indicators for Direct Benefits



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GHG Emissions (12 indicators)

DOMAIN	SUBDOMAIN	INDICATOR	SUGGESTED UNIT OF MEASUREMENT
Greenhouse Gas Emissions (GHG)	Total GHG emissions	Total greenhouse gas emissions per year	t CO2 equivalents / year
	Stationary energy	GHG emission per year from stationary energy per year	t CO2 equivalents / year
	Transport	GHG emission from transport per year	t CO2 equivalents / year
	Waste	GHG emission from waste per year	t CO2 equivalents / year
	Industrial processes and product use	GHG emission from industrial processes and product use per year	t CO2 equivalents / year
	Agriculture, forestry and land use (AFOLU)	GHG emission from agriculture, forestry and land use per year	t CO2 equivalents / year
	Grid supplied energy	GHG emission from grid supplied energy per year	t CO2 equivalents / year
	Energy Consumption	Change in the total energy consumption per year	kWh/year
	Energy Efficiency	Change in energy efficiency over the lifetime of the project	%
	Share of Renewable Energies	Change in the energy mix over the lifetime of the project	%
	Carbon capture and residual emissions	Amount of permanent sequestration of GHG within city boundary	t CO2 equivalents / year
	GHG emissions	Change of the greenhouse gas emissions per sector during the lifetime of the project	t CO2 equivalents / year

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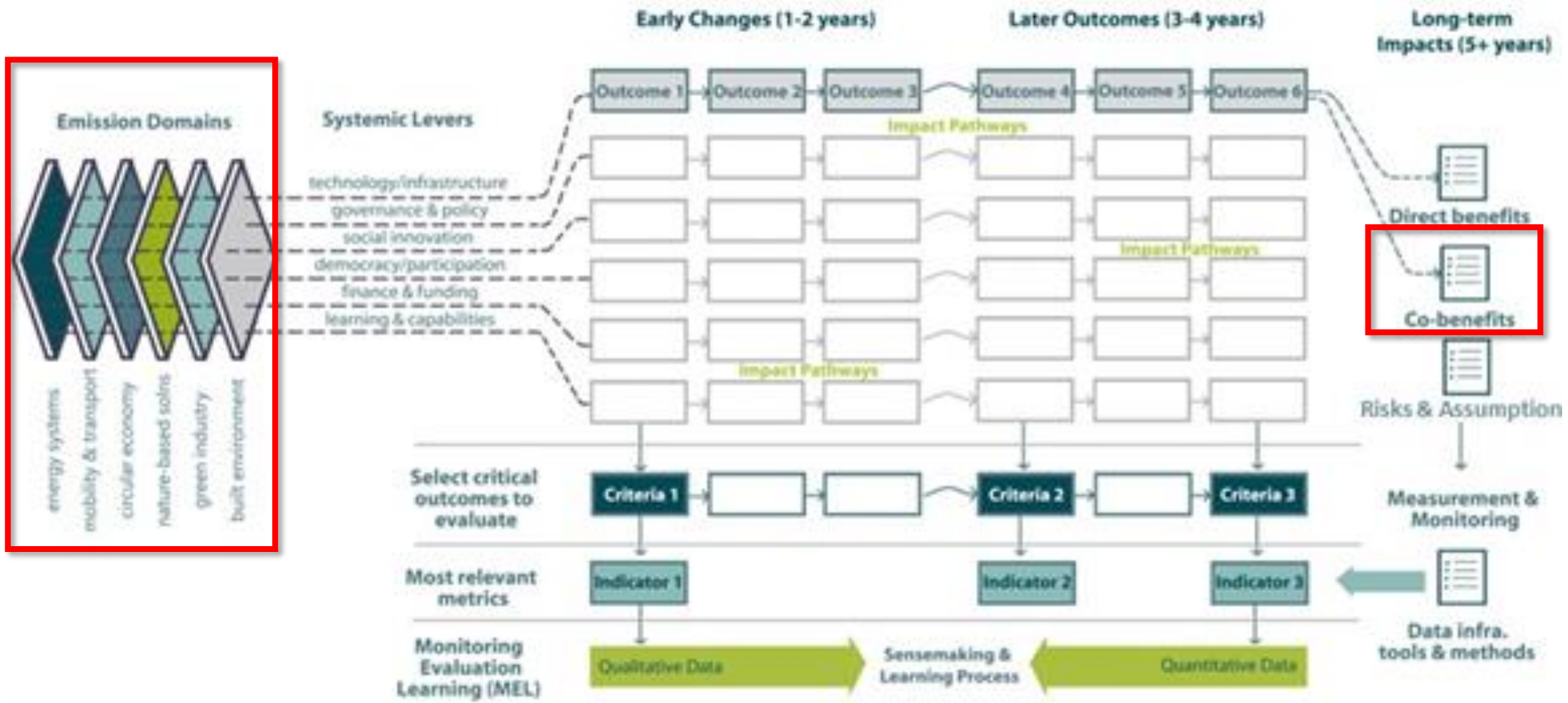
Pilot City Indicators for Co-Benefits



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Public Health & Environment

DOMAIN	SUBDOMAIN		INDICATOR	SUGGESTED UNIT OF MEASUREMENT
Public Health & Environment	Air quality		Improved air quality	Highest annual mean of PM2.5 concentration recorded [µg PM2.5/ m³]
	Noise		Reduction of noise pollution	% of population exposed to avg. LDEN > 55dB (annual average)
	Health		Improved physical and mental wellbeing	Likert scale; 5 scales to be determined in local survey
	Quality of Life		Perceived change in the quality of life	Likert scale; 5 scales to be determined in local survey

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Social Inclusion, Innovation, Democracy and Cultural Impact

DOMAIN	SUBDOMAIN	INDICATOR	SUGGESTED UNIT OF MEASUREMENT
Social Inclusion, Innovation, Democracy and Cultural Impact	Citizen & Communities Participation	Improved citizen participation	# of citizens engaged through the Pilot activities
	Capacity of the public administration	Improvement in skills and awareness	# of public officers trained through the Pilot activities
	Social cohesion	Affordability of housing and energy	% of disposable household income spent on housing and energy
	Digitalisation	Improved acceptance of digital solutions	total # of users per digital solution
	Social Innovation	Number of participative activities implemented per stakeholder group	total # of counseled activities
	Scientific or Communication Outreach of the project	Scientific publications, social campaigns etc	total # of scientific publications
	Upscaling & Replication	Number of follow-up projects or districts	total # of follow-up projects

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Economy

DOMAIN	SUBDOMAIN		INDICATOR	SUGGESTED UNIT OF MEASUREMENT
Economy	Investment in R&I		Improved investments in climate change action	€ invested over the lifetime of the pilot project
	Skilled Jobs & Employment		Newly created sustainable jobs	total # of newly created jobs
	Technological readiness		Number of solutions suggested for implementation in local strategies	total # of impemented solutions over the lifetime of the project
	Local Entrepreneurship & Local Businesses		Creation of Start-ups, accelerators or tech innovation	total # of start ups created during the lifetime of the project
	Increase in Efficiency		Savings in working time achieved	Working hours / per year saved
	Revenues generated		Revenues generated by the project	total € during the lifetime of the project excluding funding

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Resource Efficiency

DOMAIN	SUBDOMAIN	INDICATOR	SUGGESTED UNIT OF MEASUREMENT
Resource Efficiency	Waste management and efficiency	Urban waste reduction; Biowaste recovery	% of recycled domestic waste of the total domestic waste generation
	Circular Economy	Re-use of material during construction or renovation	% of recycled construction material of the total construction material used in the process
	Water Management	Improved water management	Household water consumption [l /capita/day]
	Land use management	Improved land use management practices (e.g. urban greening)	m² of public green space / inhabitant

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Biodiversity

DOMAIN	SUBDOMAIN		INDICATOR	SUGGESTED UNIT OF MEASUREMENT
Biodiversity	Urban Forestry Plantation and Improved Plant Health		Percentage of tree canopy within the city	% of the municipal area
	Non-Invasive Species and Pollinators		Change in the number of species of birds in built-up areas	% of change in species
	Ecological Habitat Connection		Structural connectivity of green spaces	Degree of physical ("structural") connectivity between natural environments within a defined urban area

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Digitalisation and Smart Urban Technology

DOMAIN	SUBDOMAIN	INDICATOR	SUGGESTED UNIT OF MEASUREMENT
Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of households and buildings with reduced energy consumption as a consequence of installing smart energy meters	% of households
		% of households and buildings with reduced water consumption as a consequence of installing smart water meters	% of households
		% of municipal buildings equipped with building energy management systems	% of public buildings
	EGovernment	% of city services available online	% of total services
	Access to information	Business-to-government (B2G) data sharing	# of Private Datasets Shared with the City / Local Authority
	Urban Data Platforms	Usage of Urban Data Platforms	# Users / Day

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Finance and Investment

DOMAIN	SUBDOMAIN	INDICATOR	SUGGESTED UNIT OF MEASUREMENT
Finance and Investment	Public Spending	Capital Invested in Climate Action Projects per Capita	EUR thousand
	External Financing	Capital Invested in Climate Action Projects from External Finance	EUR million
	Capital Efficiency	Emission Return on Invested Capital	EUR million

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Indicators for Pilots

DOMAIN	SUBDOMAIN	INDICATOR	SUGGESTED UNIT OF MEASUREMENT
Greenhouse Gas Emissions (GHG)	Total GHG emissions	Total greenhouse gas emissions per year	t CO2 equivalents / year
	Stationary energy	GHG emission per year from stationary energy per year	t CO2 equivalents / year
	Transport	GHG emission from transport per year	t CO2 equivalents / year
	Waste	GHG emission from waste per year	t CO2 equivalents / year
	Industrial processes and product use	GHG emission from industrial processes and product use per year	t CO2 equivalents / year
	Agriculture, forestry and land use (AFOLU)	GHG emission from agriculture, forestry and land use per year	t CO2 equivalents / year
	Grid supplied energy	GHG emission from grid supplied energy per year	t CO2 equivalents / year
	Energy Consumption	Change in the total energy consumption per year	kWh/year
	Energy Efficiency	Change in energy efficiency over the lifetime of the project	%
	Share of Renewable Energies	Change in the energy mix over the lifetime of the project	%
	Carbon capture and residual emissions	Amount of permanent sequestration of GHG within city boundary	t CO2 equivalents / year
	GHG emissions	Change of the greenhouse gas emissions per sector during the lifetime of the project	t CO2 equivalents / year
Public Health & Environment	Air quality	Improved air quality	Highest annual mean of PM2.5 concentration recorded [µg PM2.5 / m³]
	Noise	Reduction of noise pollution	% of population exposed to avg. LDEN > 55dB (annual average)
	Health	Improved physical and mental wellbeing	Likert scale; 5 scales to be determined in local survey
	Quality of Life	Perceived change in the quality of life	Likert scale; 5 scales to be determined in local survey
Social Inclusion, Innovation, Democracy and Cultural Impact	Citizen & Communities Participation	Improved citizen participation	# of citizens engaged through the Pilot activities
	Capacity of the public administration	Improvement in skills and awareness	# of public officers trained through the Pilot activities
	Social cohesion	Affordability of housing and energy	% of disposable household income spent on housing and energy
	Digitalisation	Improved acceptance of digital solutions	total # of users per digital solution
	Social Innovation	Number of participative activities implemented per stakeholder group	total # of counseled activities
	Scientific or Communication Outreach of the pro...	Scientific publications, social campaigns etc	total # of scientific publications
	Upscaling & Replication	Number of follow-up projects or districts	total # of follow-up projects
Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of households and buildings with reduced energy consumption as a consequence of installing smart energy meters	% of households
		% of households and buildings with reduced water consumption as a consequence of installing smart water meters	% of households
		% of municipal buildings equipped with building energy management systems	% of public buildings
	EGovernment	% of city services available online	% of total services
	Access to information	Business-to-government (B2G) data sharing	# of Private Datasets Shared with the City / Local Authority
	Urban Data Platforms	Usage of Urban Data Platforms	# Users /Day

Standardised Indicators

Economy	Investment in R&I	Improved investments in climate change action	€ invested over the lifetime of the pilot project
	Skilled Jobs & Employment	Newly created sustainable jobs	total # of newly created jobs
	Technological readiness	Number of solutions suggested for implementation in local strategies	total # of implemented solutions over the lifetime of the project
	Local Entrepreneurship & Local Businesses	Creation of Start-ups, accelerators or tech innovation	total # of start ups created during the lifetime of the project
	[illegible]	Savings in working time achieved	Working hours / per year saved
	Revenues generated	Revenues generated by the project	total € during the lifetime of the project excluding funding
Finance and Investment	Public Spending	Capital Invested in Climate Action Projects per Capita	EUR thousand
	External Spending	Capital Invested in Climate Action Projects from External Finance	EUR million
		Coverage of Climate Finance Gap	% of Capital Deficit Covered
	Capital Efficiency	Emission Return on Invested Capital	EUR million
	Fiscal Responsibility	Cost Coverage	% of Costs Covered
Resource Efficiency	Waste management and efficiency	Urban waste reduction; Biowaste recovery	% of recycled domestic waste of the total domestic waste generation
	Circular Economy	Re-use of material during construction or renovation	% of recycled construction material of the total construction material used in the process
	Water Management	Improved water management	Household water consumption [l /capita/day]
	Land use management	Improved land use management practices (e.g. urban greening)	m² of public green space / inhabitant
Biodiversity	Urban Forestry Plantation and Improved Plant Health	Percentage of tree canopy within the city	% of the municipal area
	Non-Invasive Species and Pollinators	Change in the number of species of birds in built-up areas	% of change in species
	Ecological Habitat Connection	Structural connectivity of green spaces	Degree of physical ("structural") connectivity between natural environments within a defined urban area

+

Project-specific Customised Indicators

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7 Steps towards successful Pilot Monitoring

1. Check the list of indicators provided by NetZeroCities and select those indicators that are relevant for your project
2. Do not forget to include indicators on the climate effect / GHG emission reduction, this is mandatory!
3. Define additional indicators that you consider relevant to assess tangible impacts of your project.
4. Get feedback from the NetZeroCities PCP team and update your indicator system
5. Check the availability of the data sets necessary to calculate the indicators
6. Define responsibilities in your local team and organize the streams of data
7. Kick-off data collection after successful selection and initiate impact assessment!

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Q&A

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Guided Tour:
Filling the Impact Framework template

Section 1 (GHG impact) & Section 2 (Co-benefits)

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Before we take a tour of the Impact Framework template…

- See it as your canvas for detailing your impact pathway to achieve the vision…
- Then fill in the template with the details of what you intend to measure, and how?
- …and, in order to drive this, what you will target in the timeline of the Pilot activities (2 years) – to test your impact hypothesis/assumptions and learn from this journey…

*But please bear in mind **the Assessment Criteria** in the Call Guidelines!*

Ultimately, it is against these points that your Impact Framework will be assessed in the application stage.

Following selection, we will work with you to refine your impact framework, and what/how you will measure progress, impact, outcomes (to learn)

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What does Impact Framework template cover?

Call for Proposals:

Call for Pilot Cities, Cohort 3 (2024) – NetZeroCities

Impact Section Template

Name of Your Project/City

This document covers proposals for funding under Horizon Europe, Grant Agreement number: HORIZON-RIA-SGA-NZC-101121530

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Table of Contents

Introduction to NZC PCP Impact Framework Template 4

1 Direct Impacts 6

1.1 Long-term GHG Impacts (Standardised) 6

1.2 Long-term GHG Impacts (Customised according to city/project) 7

2 Indirect Impacts or Co-benefits 8

2.1 Co-benefits (Standardised) 8

2.2 Co-benefits (Customised according to city/project) 9

3 Outcomes to unlock pathways to climate-neutrality 10

3.1 Early and Later Outcomes (Customised according to city/project) 10

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Direct Impacts Section

1 Direct Impacts

Question: How are the Pilot activities expected to reduce the city's GHG emissions? What is the intended impact and emissions decrease profile, over the duration of the Pilot activities, and as a proportion of the city's overall emissions profile? (Up to 500 words)

Please use the following section to capture the specific GHG and non-GHG long-term impacts and indicators for your Pilot activities or interventions.

1.1 Long-term GHG Impacts (Standardised)

Please use this section to capture the GHG and non-GHG long-term impacts of your Pilot activities or interventions and refer to NZC PCP Indicator Set for further details.

Activity or Intervention name	GHG Emission Domain	Emission Sub-domain	Quantitative indicator	Metric/unit of measurement *(How will this impact be measured?)*
Please add as applicable	**Select one or more from –** ▪ All vehicles and transport (mobile energy) ▪ Consumption of electricity generated for buildings, facilities, & infrastructure ▪ Consumption of non-electricity energy for thermal uses in buildings & facilities ▪ Land use (including agriculture, forestry, and other land uses) ▪ Multi-sector waste management and disposal ▪ Industrial process emissions	**Select from as applicable –** ▪ GHG emissions ▪ Total GHG emissions ▪ Stationary energy ▪ Transport ▪ Waste ▪ Industrial processes and product use ▪ Agriculture, forestry, and land use (AFOLU) ▪ Grid supplied energy ▪ Energy Consumption ▪ Energy Efficiency ▪ Share of Renewable Energies ▪ Carbon capture and residual emissions	Select from the suggested list of 12 indicators in NZC PCP Indicator Set as applicable	Select from suggested list of units in NZC PCP Indicator Set or add your own as applicable

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PCP Indicator Set (45 Standardised Indicators to select from)

	GHG Emissions/Impact Domain	Subdomain	Indicator	Suggested Unit of Measurement
1	Greenhouse Gas Emissions (GHG)	Total GHG emissions	Total greenhouse gas emissions per year	t CO2 equivalents / year
2	Greenhouse Gas Emissions (GHG)	Stationary energy	GHG emission per year from stationary energy per year	t CO2 equivalents / year
3	Greenhouse Gas Emissions (GHG)	Transport	GHG emission from transport per year	t CO2 equivalents / year
4	Greenhouse Gas Emissions (GHG)	Waste	GHG emission from waste per year	t CO2 equivalents / year
5	Greenhouse Gas Emissions (GHG)	Industrial processes and product use	GHG emission from industrial processes and product use per year	t CO2 equivalents / year
6	Greenhouse Gas Emissions (GHG)	Agriculture, forestry and land use (AFOLU)	GHG emission from agriculture, forestry and land use per year	t CO2 equivalents / year
7	Greenhouse Gas Emissions (GHG)	Grid supplied energy	GHG emission from grid supplied energy per year	t CO2 equivalents / year
8	Greenhouse Gas Emissions (GHG)	Energy Consumption	Change in the total energy consumption per year	kWh/year
9	Greenhouse Gas Emissions (GHG)	Energy Efficiency	Change in energy efficiency over the lifetime of the project	%
10	Greenhouse Gas Emissions (GHG)	Share of Renewable Energies	Change in the energy mix over the lifetime of the project	%
11	Greenhouse Gas Emissions (GHG)	Carbon capture and residual emissions	Amount of permanent sequestration of GHG within city boundary	t CO2 equivalents / year
12	Greenhouse Gas Emissions (GHG)	GHG emissions	Change of the greenhouse gas emissions per sector during the lifetime of the p	t CO2 equivalents / year
13	Public Health and Environment	Air quality	Improved air quality	Highest annual mean of PM2.5 concentr
14	Public Health and Environment	Noise	Reduction of noise pollution	% of population exposed to avg. LDEN >
15	Public Health and Environment	Health	Improved physical and mental wellbeing	Likert scale; 5 scales to be determined
16	Public Health and Environment	Quality of life	Perceived change in the quality of life	Likert scale; 5 scales to be determined
17	Social Inclusion, Innovation, Democracy and Cultural Impact	Citizen & Communities Participation	Improved citizen participation	# of citizens engaged through the Pilot
18	Social Inclusion, Innovation, Democracy and Cultural Impact	Capacity of the public administration	Improvement in skills and awareness	# of public officers trained through the
19	Social Inclusion, Innovation, Democracy and Cultural Impact	Social cohesion	Affordability of housing and energy	% of disposable household income spe
20	Social Inclusion, Innovation, Democracy and Cultural Impact	Digitalisation	Improved acceptance of digital solutions	total # of users per digital solution
21	Social Inclusion, Innovation, Democracy and Cultural Impact	Social Innovation	Number of participative activities implemented per stakeholder group	total # of counseled activities
22	Social Inclusion, Innovation, Democracy and Cultural Impact	Scientific or Communication Outreach of the project	Scientific publications, social campaigns etc	total # of scientific publications
23	Social Inclusion, Innovation, Democracy and Cultural Impact	Upscaling & Replication	Number of follow-up projects or districts	total # of follow-up projects
24	Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of households and buildings with reduced energy consumption as a consequence of installing smart energy metres	% of households
25	Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of households and buildings with reduced water consumption as a consequence of installing smart water meters	% of households
26	Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of municipal buildings equipped with building energy management systems	% of public buildings
27	Digitalisation and Smart Urban Technology	EGovernment	% of city services available online	% increase of total services
28	Digitalisation and Smart Urban Technology	Access to information	Business-to-Government (B2G) data sharing	# of Private Datasets Shared with the Ci
29	Digitalisation and Smart Urban Technology	Urban Data Platforms	Usage of Urban Data Platforms	# Active Users / Day
30	Economy	Investment in R&I	Improved investments in climate change action	€ invested over the lifetime of the pilot
31	Economy	Skilled Jobs & Employment	Newly created sustainable jobs	total # of newly created jobs
32	Economy	Technological readiness	Number of solutions suggested for implementation in local strategies	total # of impemented solutions over th
33	Economy	Local Entrepreneurship & Local Businesses	Creation of Start-ups, accelerators or tech innovation	total # of start ups created during the li
34	Economy	Increase in Efficiency	Savings in working time achieved	Working hours / per year saved
35	Economy	Revenues generated	Revenues generated by the project	total € during the lifetime of the projec
36	Finance and Investment	Public Spending	Public Capital Invested in Climate Action Projects	EUR thousand/million or % increase
37	Finance and Investment	External Financing	Capital Attracted and Invested in Climate Action Projects from External Finance	EUR thousand/million or % increase
38	Finance and Investment	Capital Efficiency	Emission Reductions Return on Invested Capital	EUR thousand/million [Total Capital In
39	Resource Efficiency	Waste management and efficiency	Urban waste reduction; Biowaste recovery	% of recycled domestic waste of the tot
40	Resource Efficiency	Circular Economy	Re-use of material during construction or renovation	% of recycled construction material of th used in the process
41	Resource Efficiency	Water Management	Improved water management	Household water consumption [litres/c
42	Resource Efficiency	Land use management	Improved land use management practices (e.g. urban greening)	m² of public green space / inhabitant
43	Biodiversity	Urban Forestry Plantation and Improved Plant Health	Percentage of tree canopy within the city	% of the municipal area
44	Biodiversity	Non-Invasive Species and Pollinators	Change in the number of species of birds in built-up areas	% of change in species
45	Biodiversity	Ecological Habitat Connection	Structural connectivity of green spaces	Degree of physical ("structural") connec environments within a defined urban a

Less is more!

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Direct Impacts Section

1.2 Long-term GHG Impacts (Customised according to city/project)

Please use this section to capture the quantitative GHG impacts of your Pilot activities or interventions (those not included in NZC PCP Indicator Set).

Activity or Intervention name	GHG Emission Domain	Emission Sub-domain	Quantitative indicator	Metric/unit of measurement *(How will this impact be measured?)*
Please add as applicable	Select one or more from – ▪ All vehicles and transport (mobile energy) ▪ Consumption of electricity generated for buildings, facilities, & infrastructure ▪ Consumption of non-electricity energy for thermal uses in buildings & facilities ▪ Land use (including agriculture, forestry, and other land uses) ▪ Multi-sector waste management and disposal ▪ Industrial process emissions	Please add your own as applicable	Please add your own as applicable	Please add your own as applicable
Please add/remove rows as applicable				

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Co-benefits Section

2 Indirect Impacts or Co-benefits

Question: Which co-benefits or other indirect long-term impacts do the Pilot activities expect to achieve in your city, in addition to GHG-emissions reduction? (Up to 500 words)

Please use the following section to capture the specific co-benefits or long-term indirect impacts of your Pilot activities.

2.1 Co-benefits (Standardised)

Please use this section to capture the co-benefits of your Pilot activities or interventions and refer to NZC PCP Indicator Set for further details.

Activity or Intervention Name	Domain	Sub-domain	Quantitative or qualitative indicator	Metric/unit of measurement *(How will this impact be measured?)*
Please add as applicable	**Select from as applicable –** ▪ Public Health and environment ▪ Social Inclusion, Innovation, Democracy and Cultural Impact ▪ Digitalisation and Smart Urban Technology ▪ Economy ▪ Finance and Investment ▪ Resource efficiency ▪ Biodiversity	Select from 31 recommended Co-benefit Sub-domains from the NZC PCP Indicator Set (please see excel spreadsheet in the Application Templates section of the Call website)	Select from the suggested list of 33 indicators in NZC PCP Indicator Set or add your own as applicable	Select from suggested list of units in NZC PCP Indicator Set or add your own as applicable
Please add/remove rows as applicable				

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Co-benefits Section

2.2 Co-benefits (Customised according to city/project)

Please use the following section to capture the Co-benefits of your Pilot activities or interventions (those not included in NZC PCP Indicator Set).

Activity or Intervention name	**Describe Co-benefit related to this activity or intervention**	**Emission Domain(s)**	**Lever(s)**	**Custom quantitative or qualitative indicator**	**Custom metric/unit of measurement *(How will this impact be measured?)***
Please add as applicable	Please add your own as applicable	**Select one or more as applicable –** ▪ All vehicles and transport (mobile energy) ▪ Consumption of electricity generated for buildings, facilities, & infrastructure ▪ Consumption of non-electricity energy for thermal uses in buildings & facilities ▪ Land use (including agriculture, forestry, and other land uses) ▪ Multi-sector waste management and disposal ▪ Industrial process emissions	**Select one or more as applicable –** ▪ Technology and infrastructure ▪ Governance and policy ▪ Financing and funding ▪ Social innovation ▪ Democracy and participation ▪ Learning and capabilities ▪ Data and digitalisation ▪ Procurement	Please add your own as applicable	Please add your own as applicable
Please add/remove rows as applicable					

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Q&A

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Creating a Sensemaking and Learning process to put insights into practice

Learning (& applying) while doing

Nikhil Chaudhary, EIT Climate KIC

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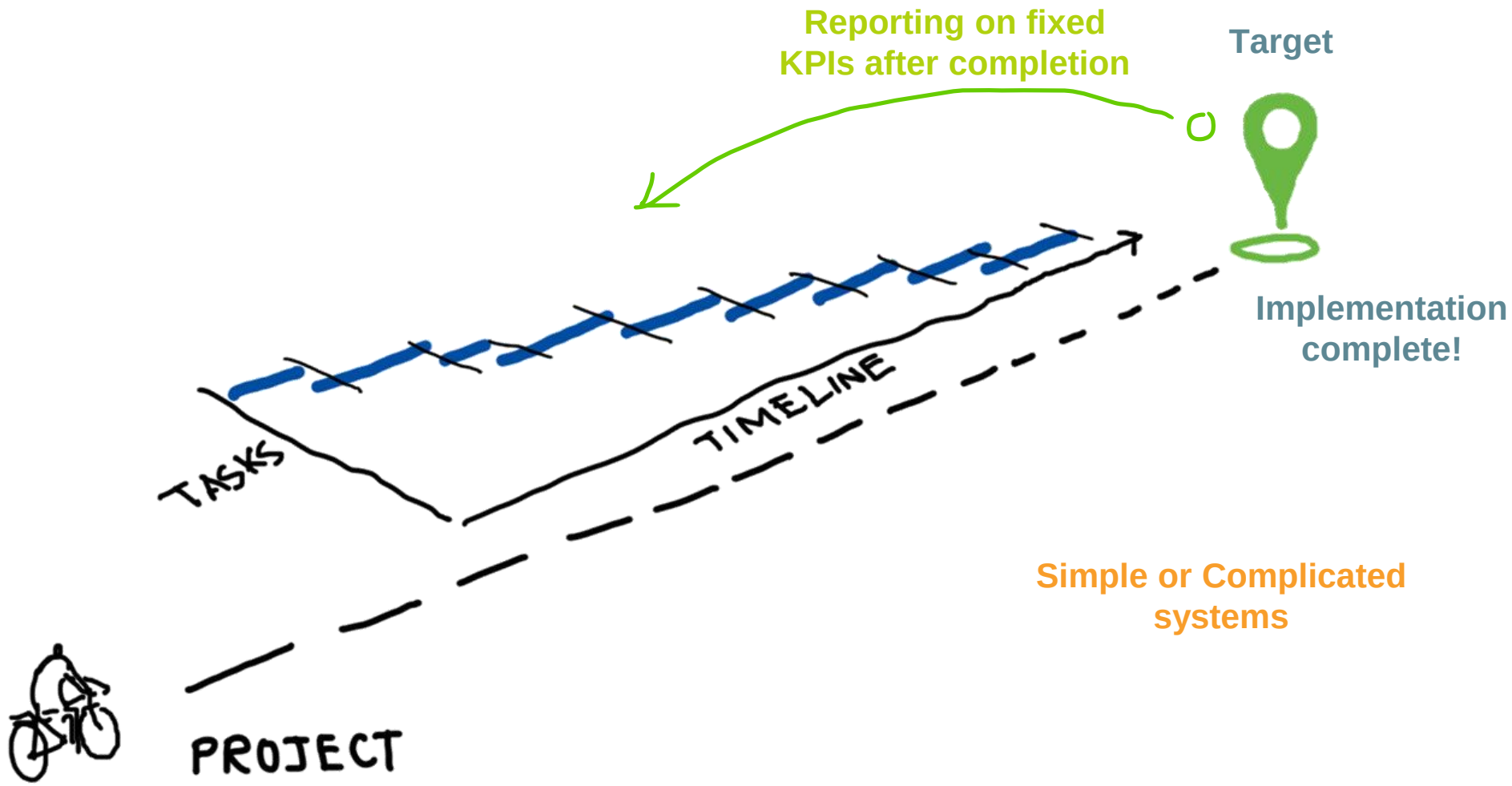
Traditional planning and reporting results…



Simple or Complicated systems

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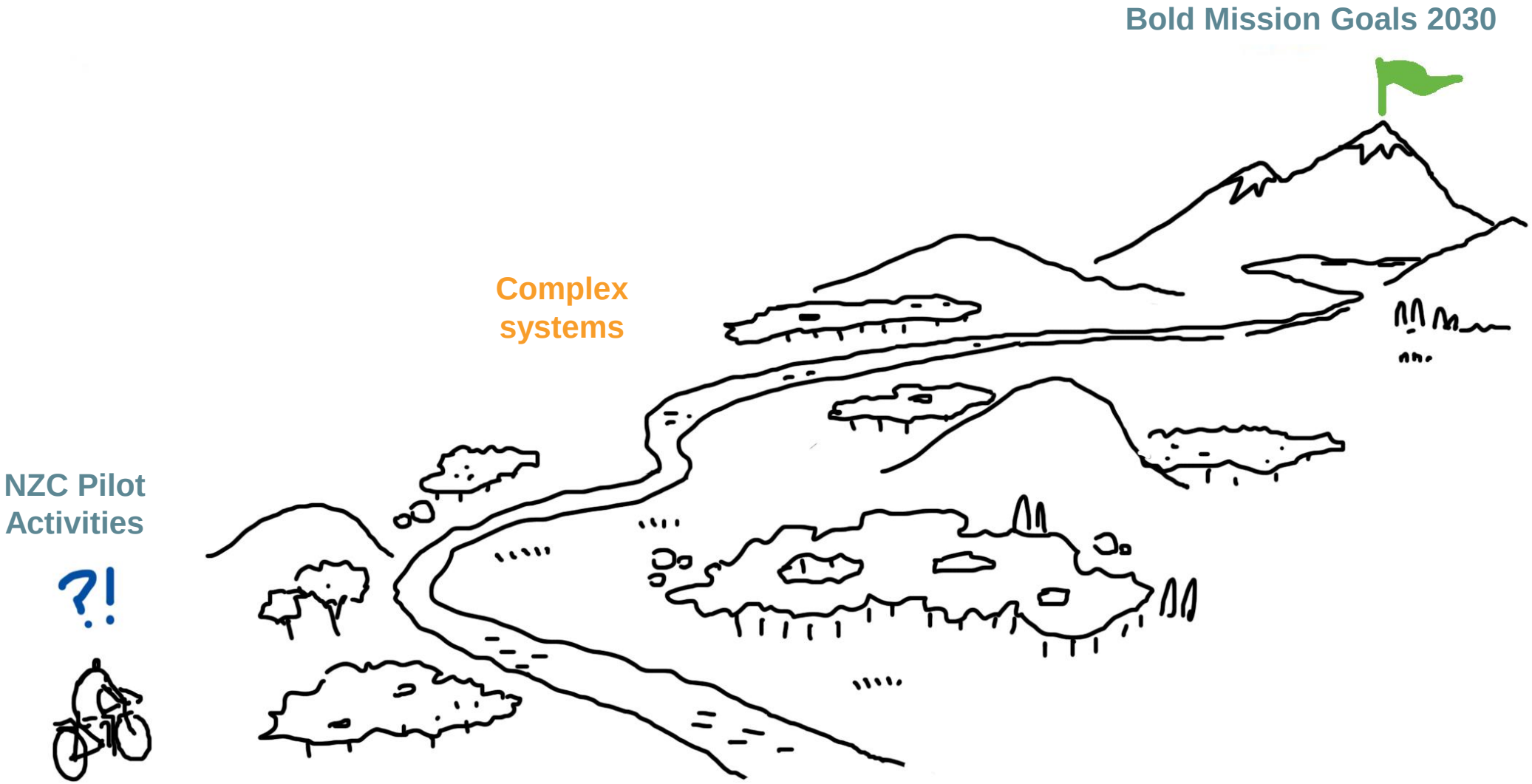
Monitoring and intervening in non-linear processes and complexity…



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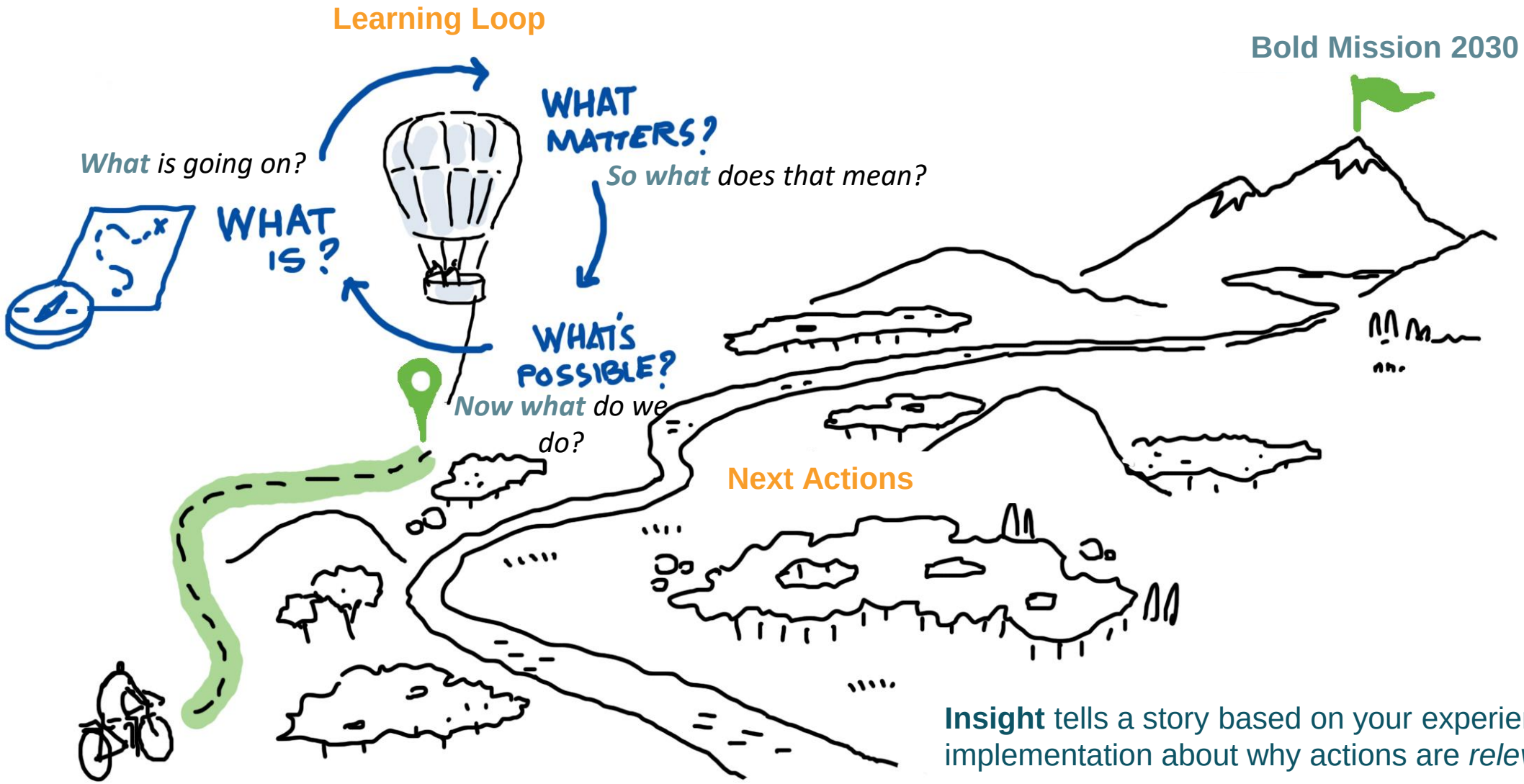

Insight tells a story based on your experience/ implementation about why actions are *relevant*

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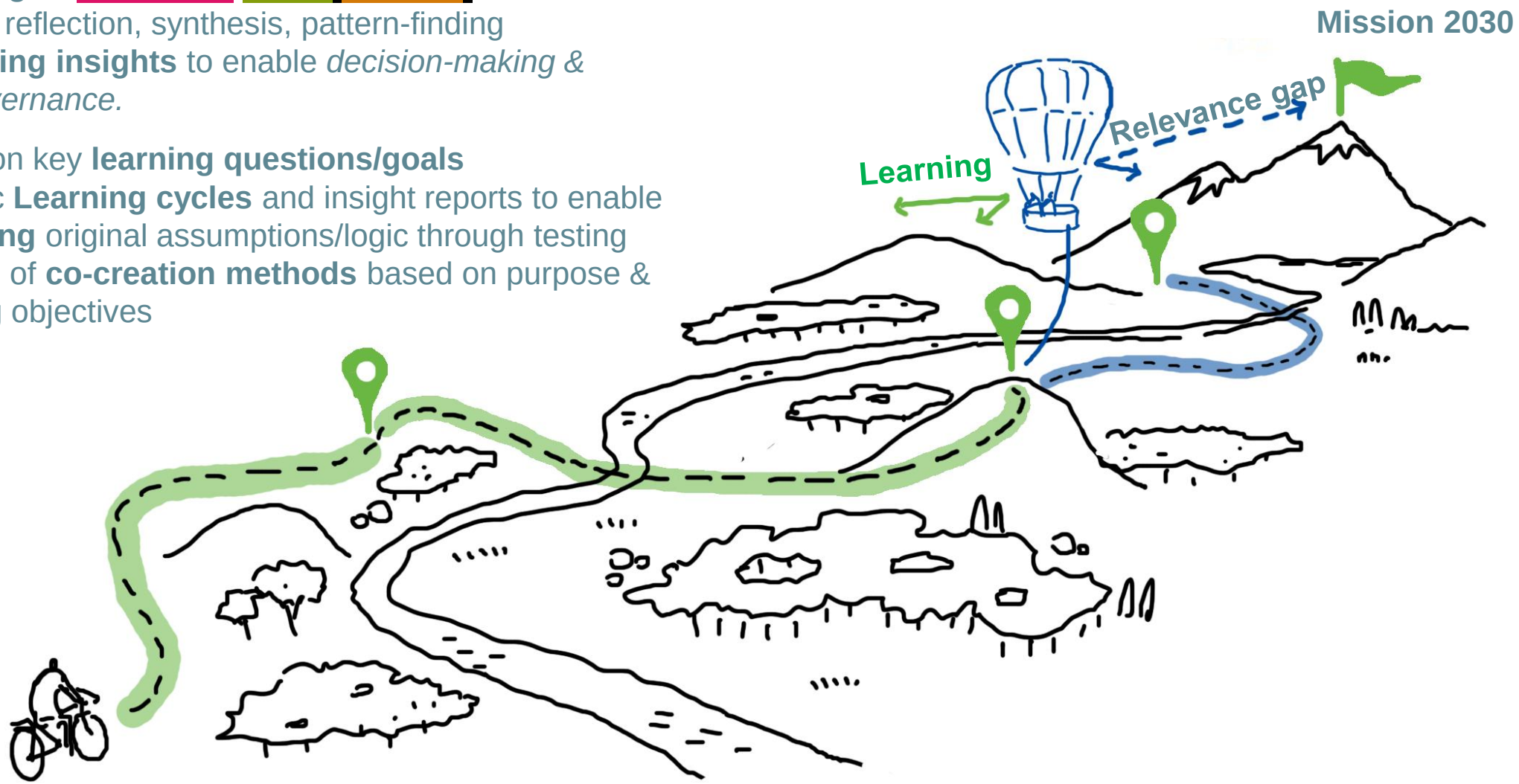
Sensemaking as a continuous learning process to…

Sensemaking: A **structured** **social** **process** of observation, reflection, synthesis, pattern-finding and **generating insights** to enable *decision-making & reflexive governance.*

- Based on key **learning questions/goals**
- Periodic **Learning cycles** and insight reports to enable **reframing** original assumptions/logic through testing
- A range of **co-creation methods** based on purpose & learning objectives



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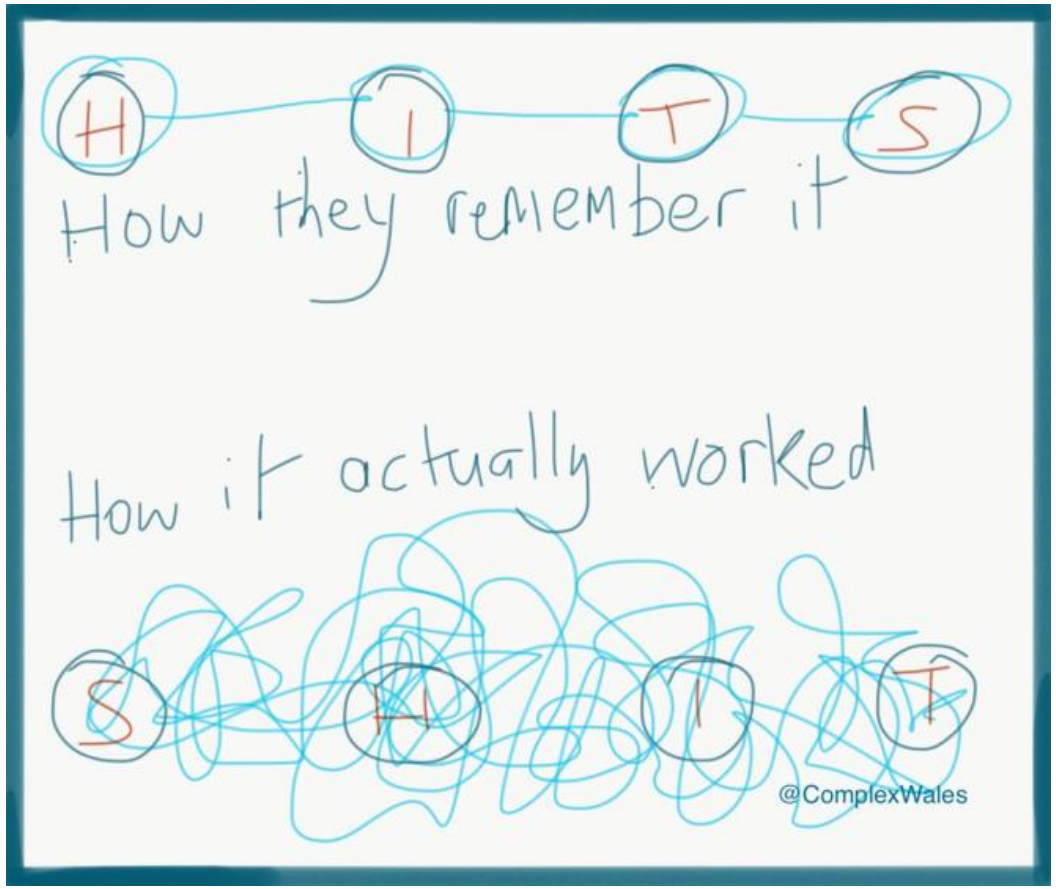
What do we mean by ‘Strategic Learning’ for NZC PCP?

- Understand **what works**, in what contexts, for whom and why?
- Support direct and rapid **course correction** of **decision-making** and testing
- Link to building of **capabilities/ capacities** of all stakeholders
- **Evaluate** and generate **evidence/knowledge** on the scalability and transferability of interventions across contexts
- Enable **knowledge sharing** with the network to learn collectively (also from failures and barriers)
- Reflect on **‘how’** stakeholders learn through **sensemaking cycles and ‘learning goals’**



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Mixed methods evidence for MEL

Mixed Method Diagnostic Evidence

Qualitative Evidence

- Medical history
- Current symptoms
- Scans
- Biopsies
- Other qualitative diagnostics

Quantitative Evidence

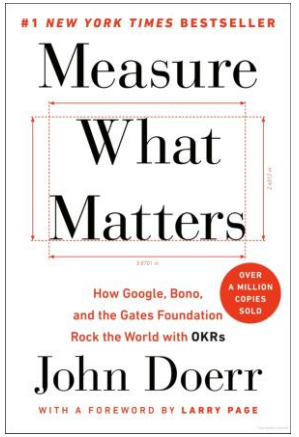
- Blood & urine tests
- Blood pressure
- Other quantitative diagnostics

Synthesis & Diagnostic Interpretation

Clinical judgement:

Synthesis & interpretation of the qualitative & quantitative evidence as a set for each health condition

Plan for treatment & progress tracking (relative to initial diagnostic baselines)



… to measure & learn from what matters

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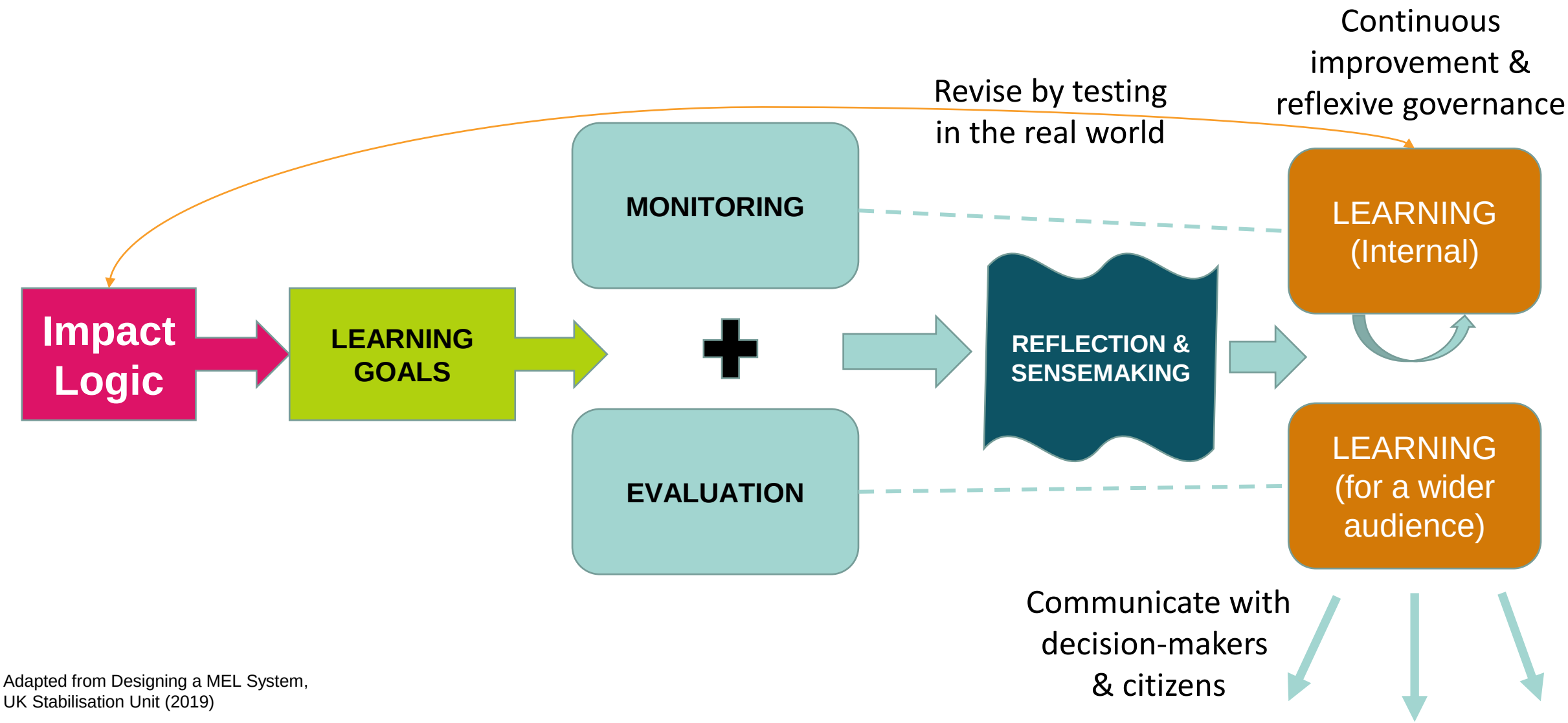
Impact Framework to support your MEL



Adapted from Designing a MEL System, UK Stabilisation Unit (2019)

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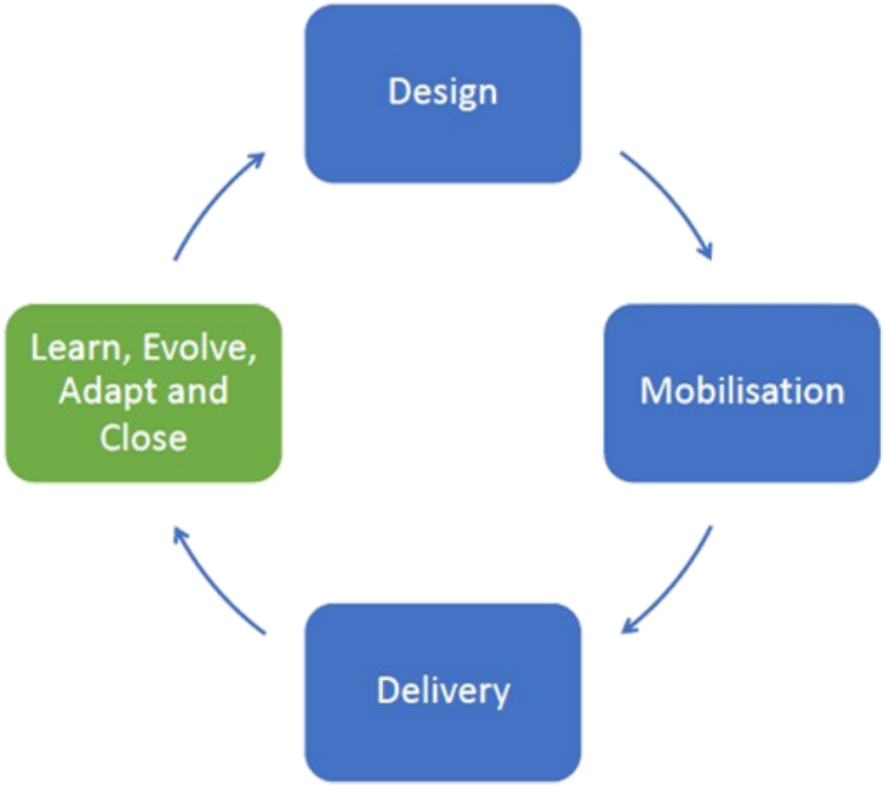
What does this mean for NZC learning activities?

Traditional Project Cycle



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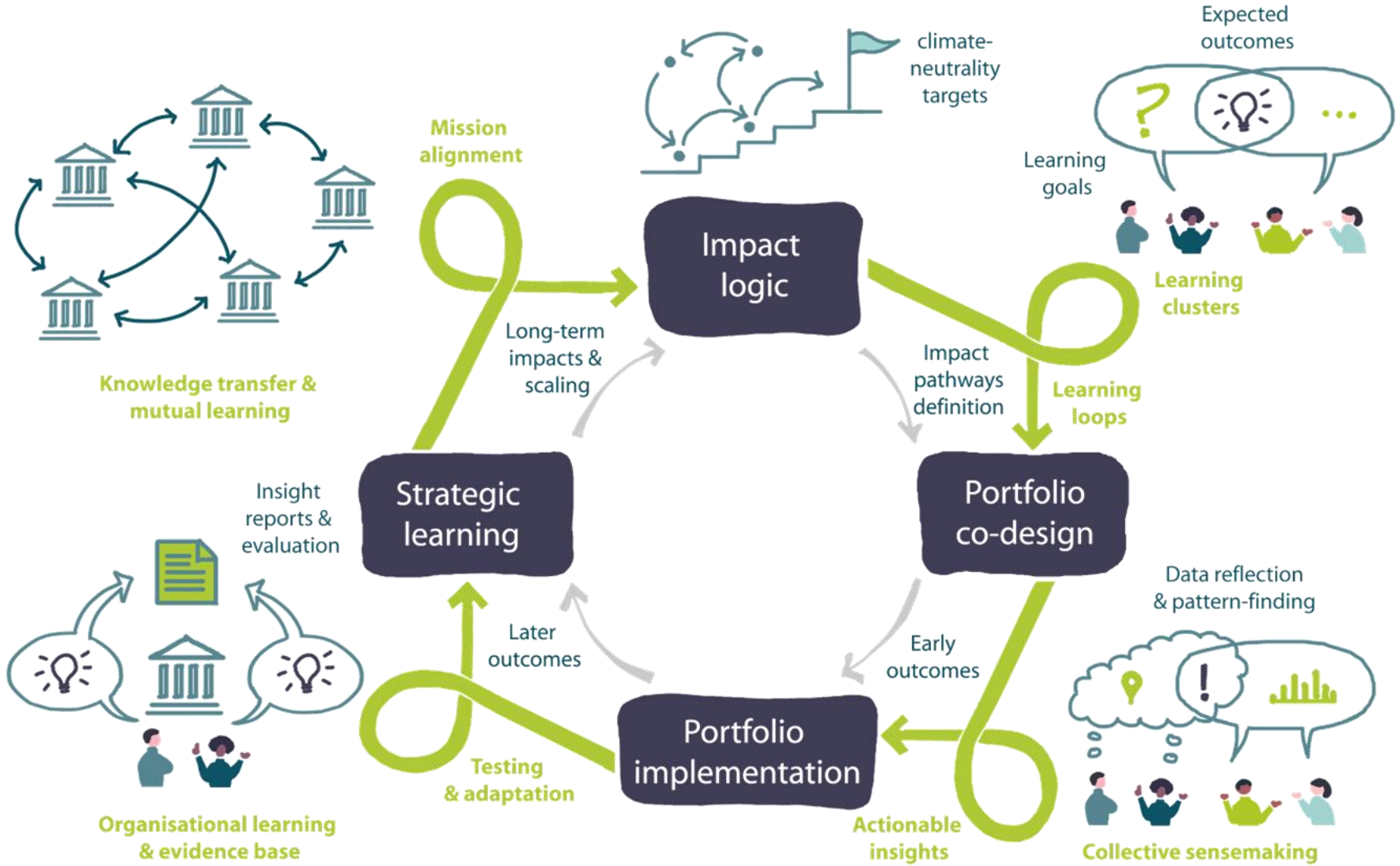
Strategic Learning Cycle supported by NZC PCP



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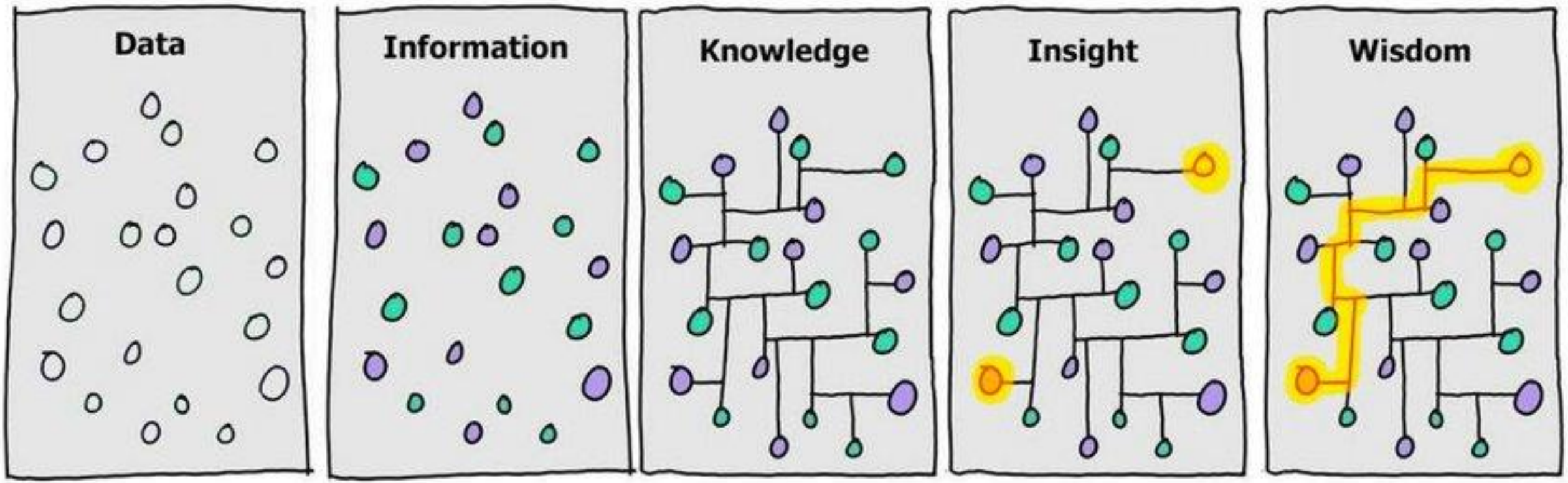
…to move from (only) data reporting to generating insights and wisdom!



Cartoon by David Somerville

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Guided Tour:
Filling the Impact Framework template

Section 3
(Early & Later Outcomes aka Impact Pathways)

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Outcomes Section 3 (descriptive text)

3 Outcomes to unlock pathways to climate-neutrality

Question: What or how do you think the Pilot activities will enable change in your city within and beyond their direct scope, on your pathway towards climate-neutrality? (Up to 750 words)

Please use the following section to outline your qualitative outcomes based on your Pilot activities. These descriptive outcomes should ideally also cover the changes beyond the direct scope of Pilot activities, for e.g., how will the long-term change and its momentum be sustained beyond the 2-year project timeline? For detailed explanations on Impact Pathways and what do we mean by Early (short-term) or Later (medium-term) Outcomes, please refer to the 'NZC Theory of Change' or previous webinars on the topic of 'impact pathways' or 'MEL' on the NZC Portal.

3.1 Early and Later Outcomes (Customised according to city/project)

Activity or Intervention name	Select relevant Lever(s) of Change	Describe an Early Outcome related to this activity or intervention.	Describe a Later Outcome related to this activity or intervention, beyond the direct scope of the activity.
Please add as applicable	**Select one or more as applicable –** ▪ Technology and infrastructure ▪ Governance and policy ▪ Financing and funding ▪ Social innovation ▪ Democracy and participation ▪ Capacities and capabilities ▪ Data and digitalisation ▪ Procurement	Please describe as applicable	Please describe as applicable
Please add/remove rows as applicable			

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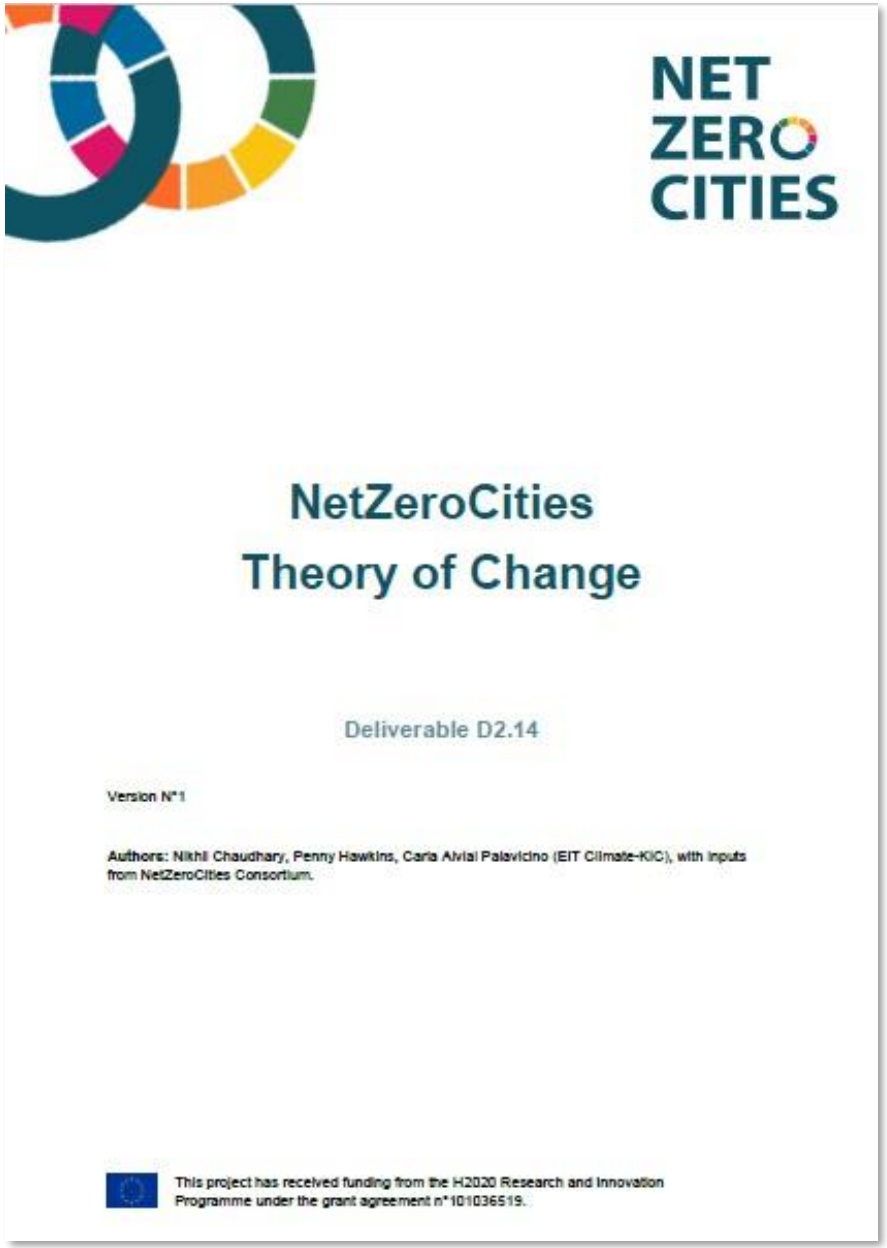
A Useful Resource

- Selecting key outcomes based on systemic levers **(over 150 outcomes mapped by NZC)**
- Guidance on how to operationalise your impact pathways for MEL & Sensemaking
- Framing your impact narrative for consensus-building & communication on systemic climate-neutrality

Please contact your City Advisor for a copy



NET ZERO CITIES

NetZeroCities
Theory of Change

Deliverable D2.14

Version N°1

Authors: Nikhil Chaudhary, Penny Hawkins, Carla Alvial 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

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.

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Any final questions or comments?

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Q&A

The Call & System

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Summary

- Prepare / navigate (recommendations):
  - **Register** with the Submission system – familiarise yourself with the set-up and invite collaborators. Read the guidance. Ask questions!
  - **Attend** the webinars
  - Download the **templates** and share with colleagues / collaborators.
- Support:
- pilotcities@netzerocities.eu
  - Feel free to consult the FAQ and Instructions here or use the system's ticketing system if you have any technical issues/questions

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Thank you!

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Get in touch with NetZeroCities!

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