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# ClairCity – Main Lessons and Next Steps

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Citizens at the  
Centre

# The ClairCity concept...

Where and what?



Who and why?



ClairCity

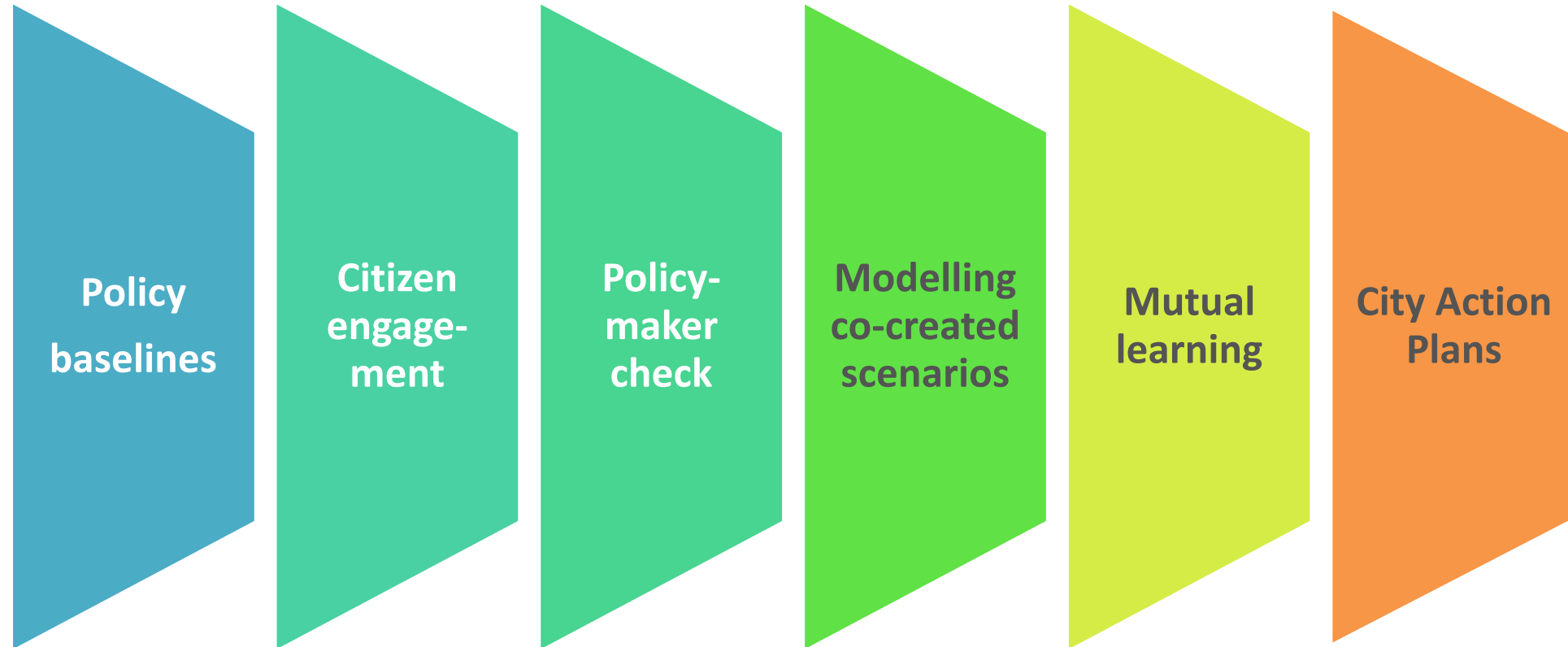


# Project Aim & Objectives

1. To put citizens' behaviour and activities at the heart of air quality and carbon management and policy making;
2. To develop a suite of innovative toolkits for enhanced quantification, engagement and impact evaluation;
3. To ensure that future city policies are reflective of citizens visions for their future city



# The ClairCity Process



# Policy Baselines

Each City is different, basic policy frames are the same

Bristol

Amsterdam

Ljubljana

Sosnowiec

Aveiro Region

Genoa / Liguria



Amsterdam

**818,736**  
citizens  
involved across  
6 cities and  
regions



**82**  
Policy makers  
consulted

**132**  
stakeholders  
involved in Mutual  
Learning Workshop



**65**  
Older people  
filmed



**4887**  
citizens involved  
in Delphi  
process



**>7,613**  
direct  
engagements



**>1000**  
children engaged  
in public events  
and lessons

**447**  
school children  
engaged in My  
School, My City,  
My Home  
competition



# ClairCity engagement process

# Citizen Policy Preferences

Overall, citizens support current policy directions, but support acceleration and more ambitions

Better public transport

Cheaper public transport

Cleaner buses / replacement of old fleet



Limit parking for cars

Encouraging e-mobility

Car-free city centres / banning diesel cars



More cycling infrastructure and parking

More space for pedestrians / walking



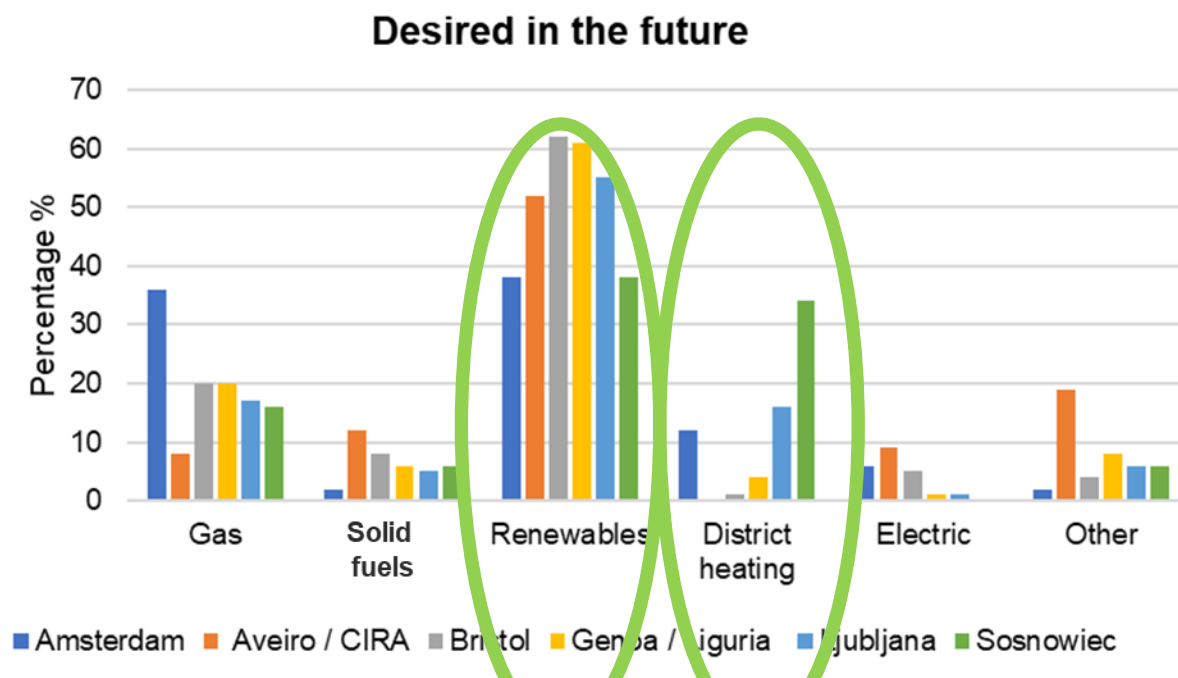
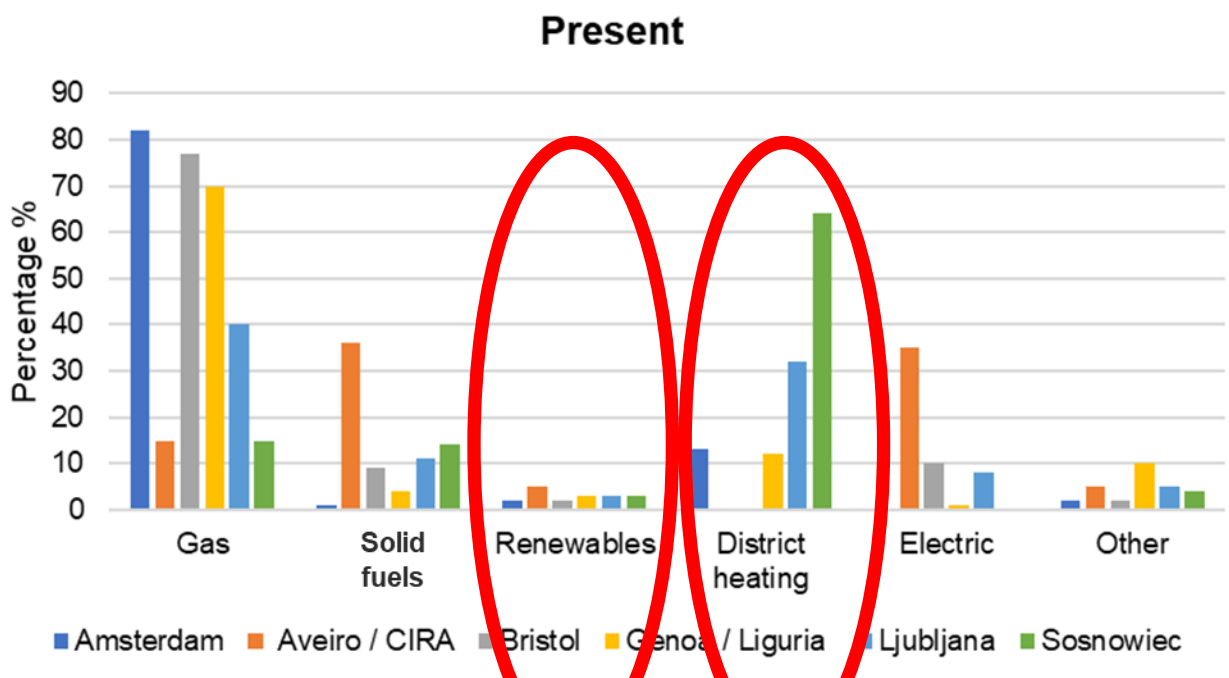
Accelerate the uptake of solar panels

Replace domestic heating systems



# Citizens Own Behavioural Change

Citizens not always see their own behaviour change in the direction that policy makers would like





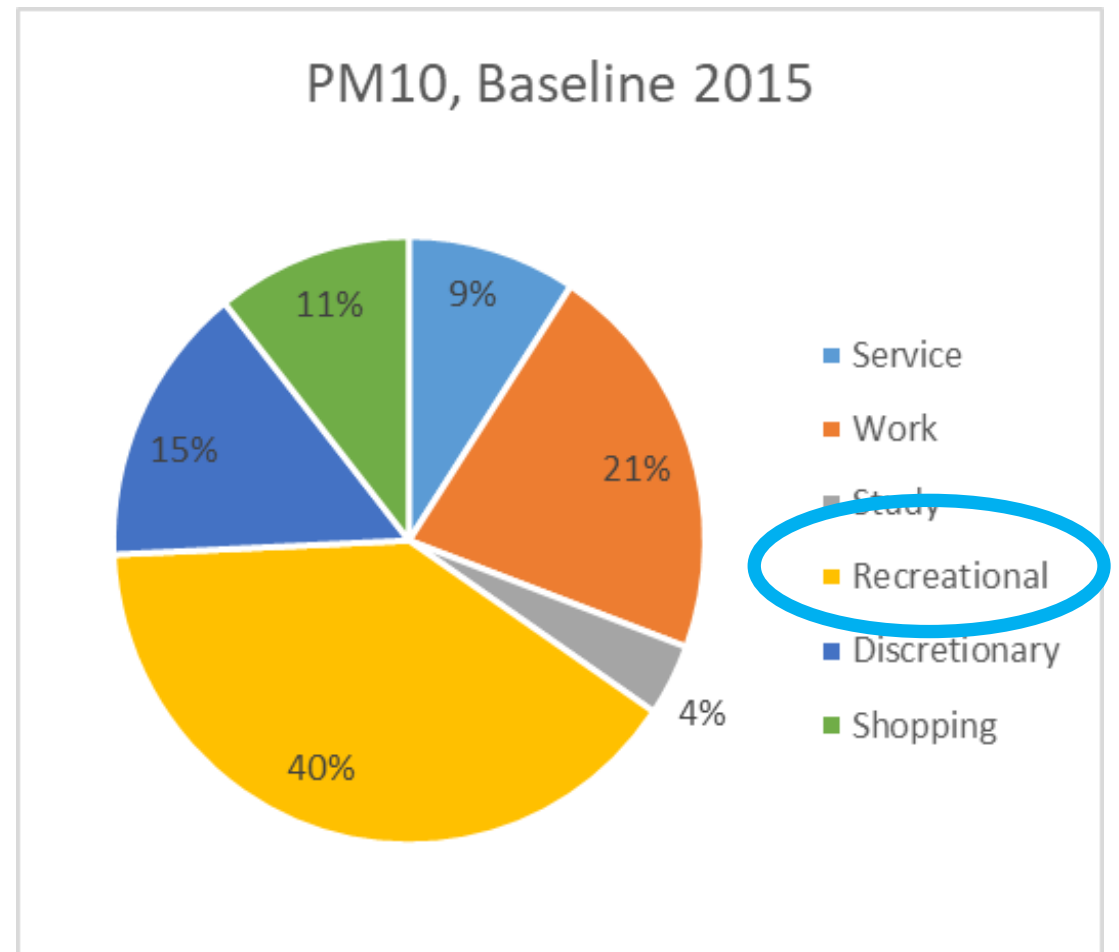
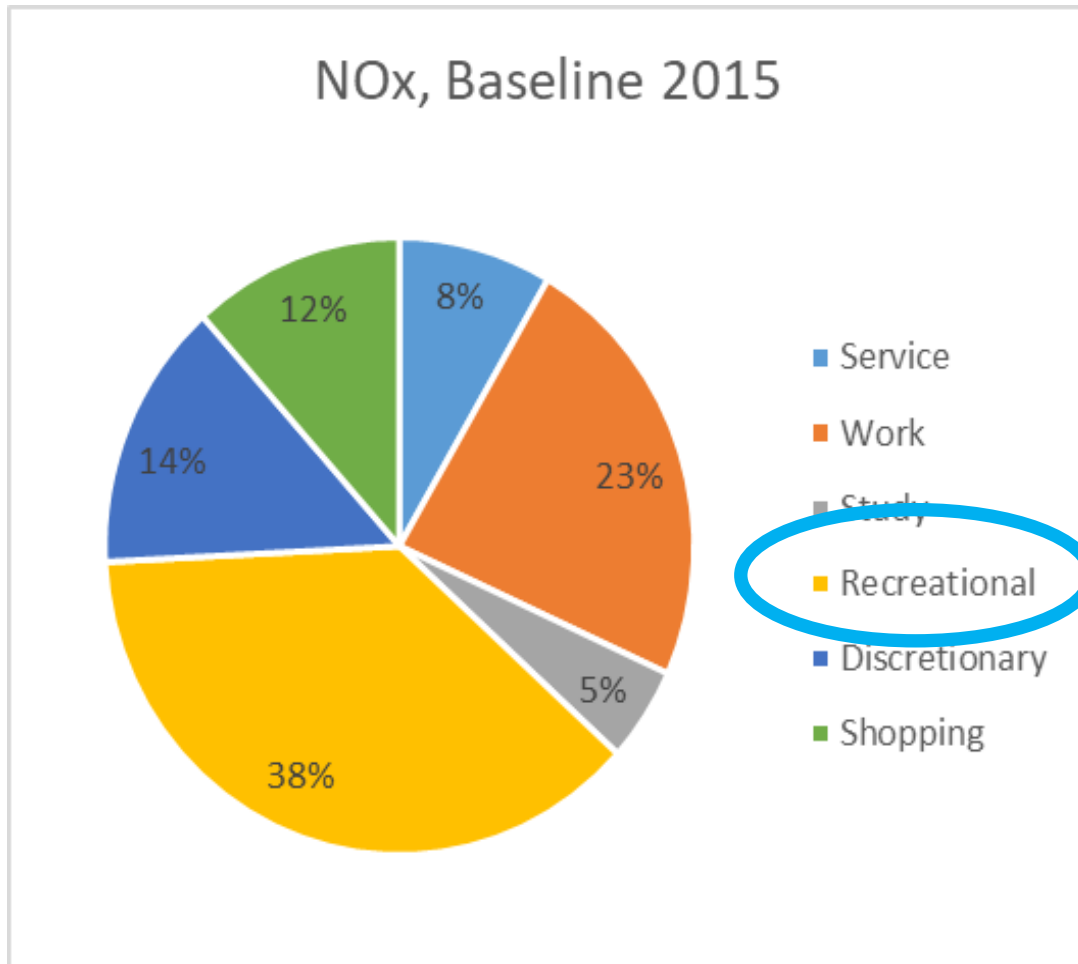
# Policy Workshops: Co-creation of scenarios

- Some cities restrict ambitions of citizens more than others

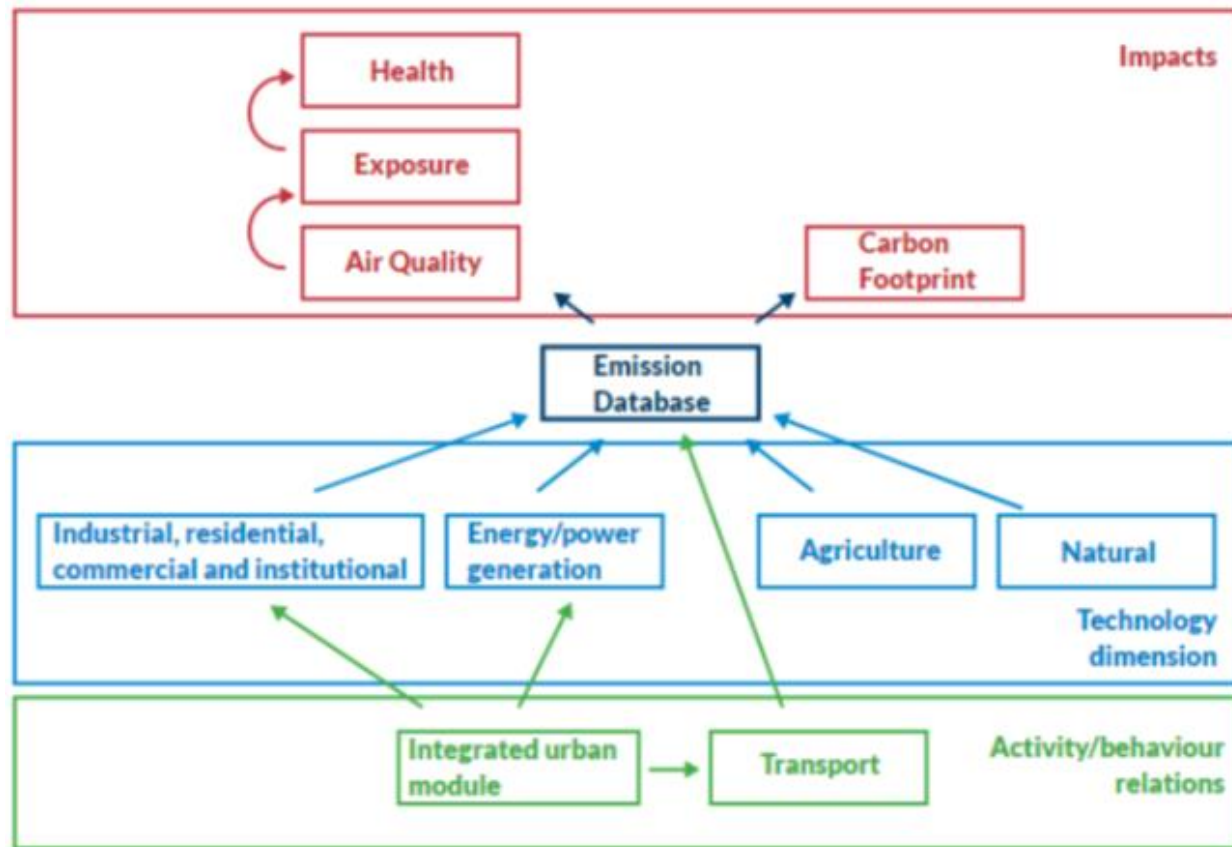


# ClairCity behavioural modelling

Bristol transport emissions from behavioural practices of citizens



# ClairCity scenario modelling



## Emission database:

- 2015 “Baseline emission scenario” for  $\text{NO}_x$ ,  $\text{PM}_{10}$ ,  $\text{PM}_{2.5}$  and  $\text{CO}_2$
- Future emission scenarios for 2025, 2035 and 2050:
  - “Business as Usual” (BAU) policy scenarios compared to
  - Co-created “Unified Policy Scenarios” (UPS)

130 datasets on the data portal consisting of several “data-resources” available at <https://claircitydata.cbs.nl/>

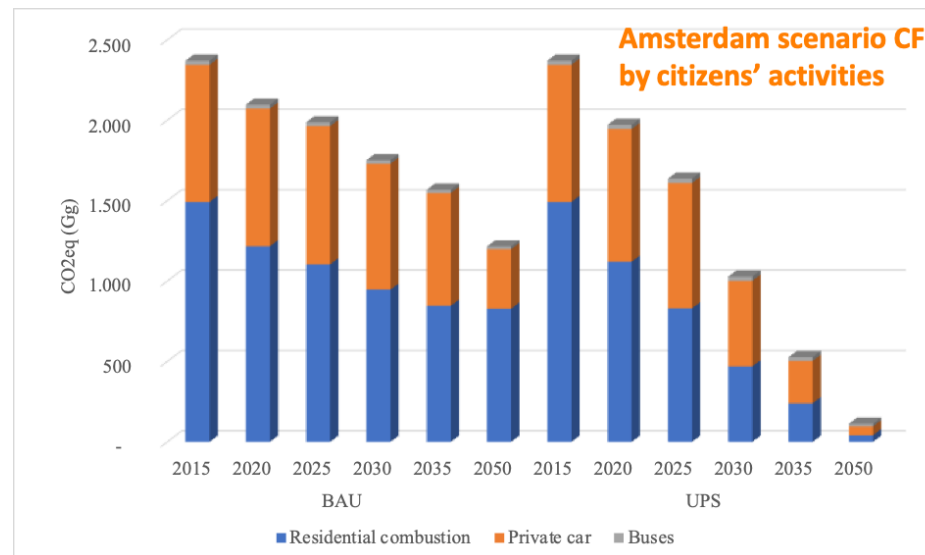
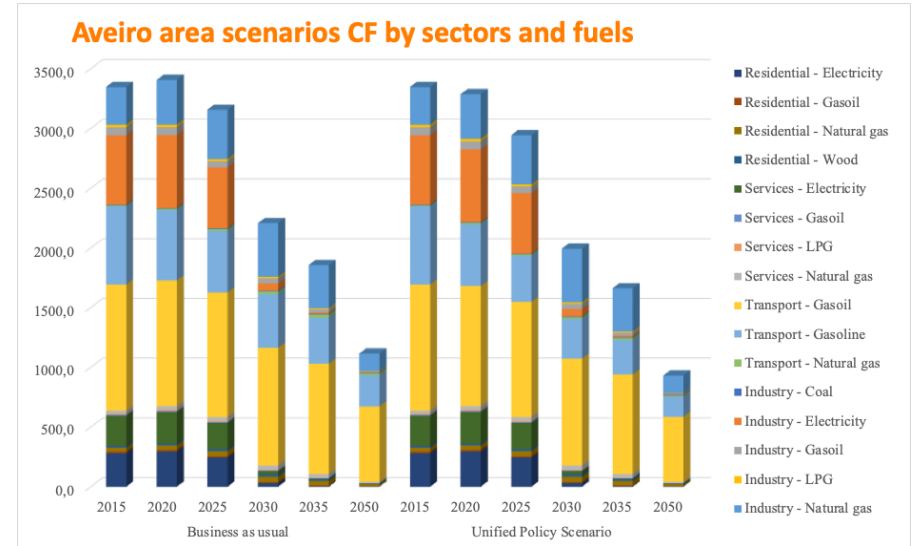
# Modelling in ClairCity - Carbon footprint

LCA CO<sub>2</sub>eq emissions

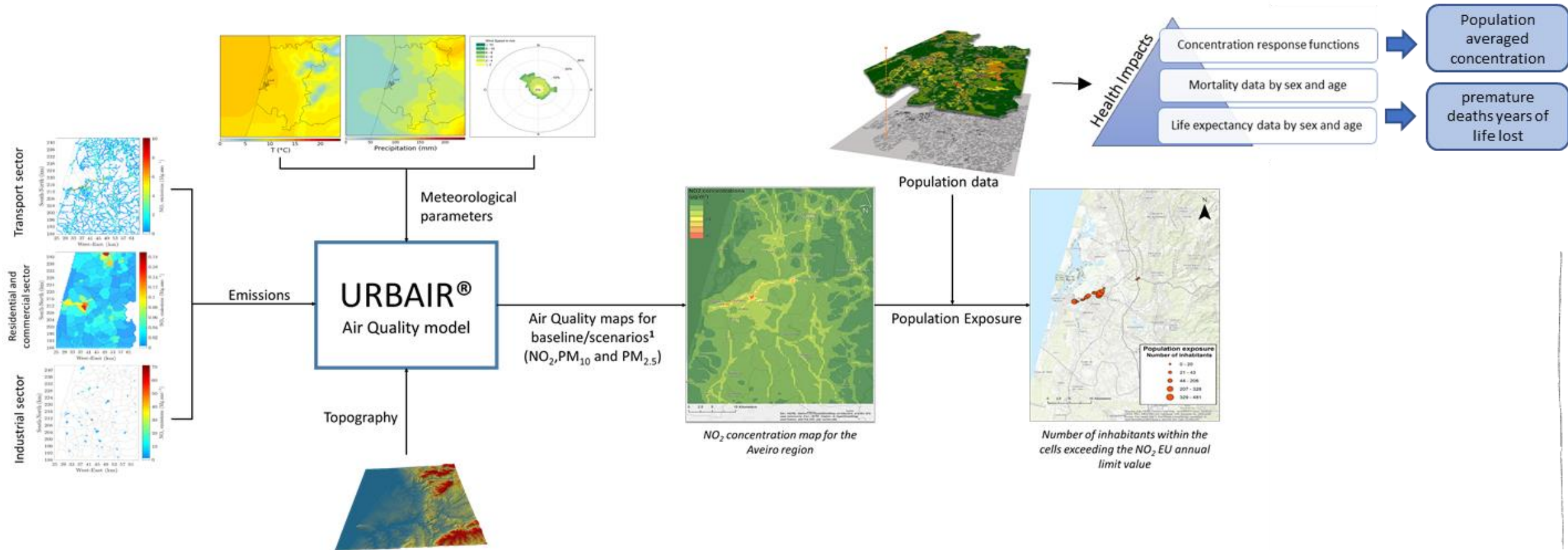
Carbon Footprint

- originate from sources located **within the city boundary**
- occur from the use of electricity supplied by grids which **may or may not cross city/region boundaries**

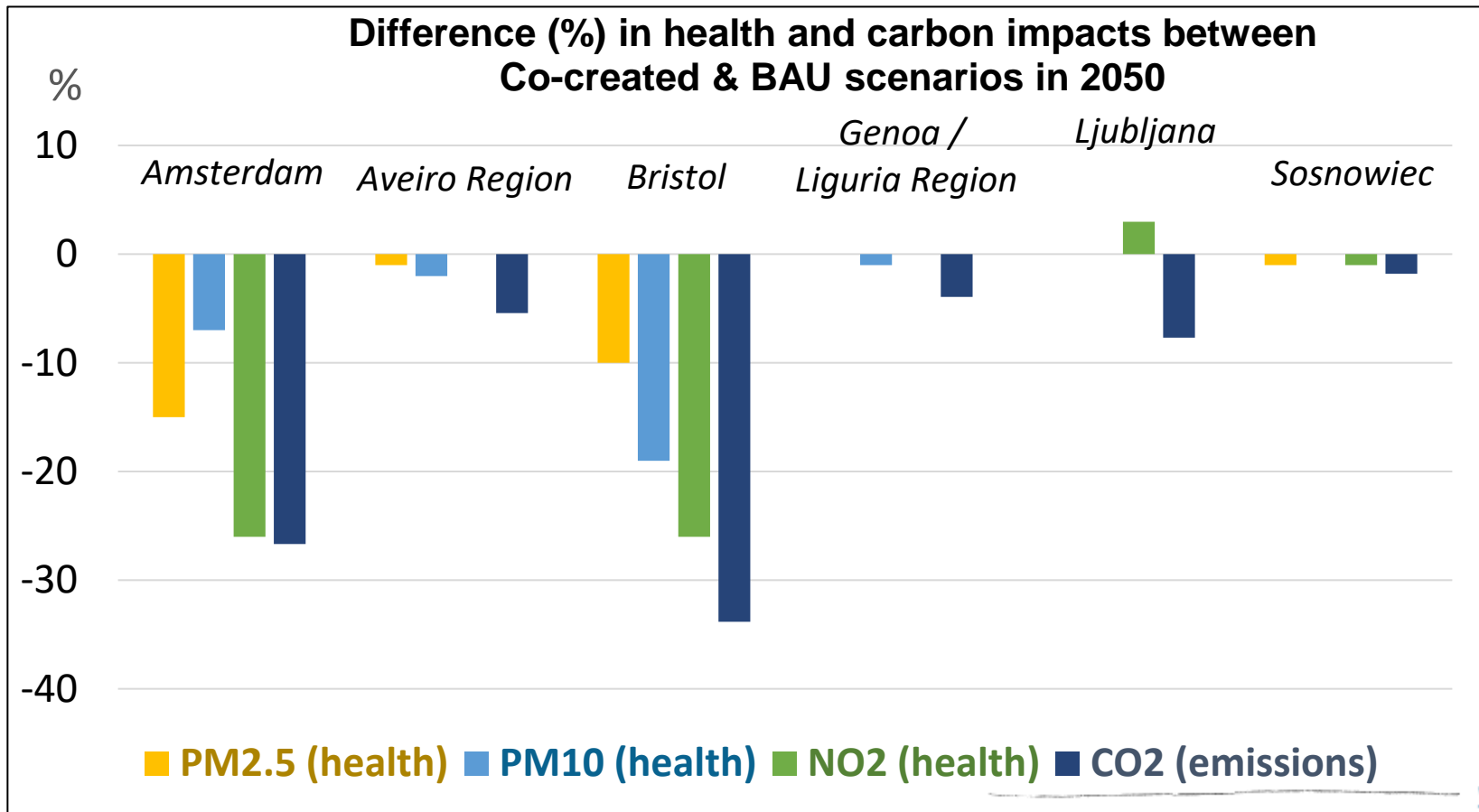
- Baseline
- Business as usual (BAU) scenario
- Unified Policy Scenario (UPS)



# Modelling in ClairCity – Impacts



# Co-created scenarios: Reduction of emissions and concentrations & improvement of health



# The Result: Action Plans for each City/Region

## The ClairCity Sosnowiec Action Plan For citizen-inclusive air quality and carbon policies



## The ClairCity Sosnowiec Action Plan For citizen-inclusive air quality and carbon policies

ClairCity is an EU research project which aimed to raise awareness about air pollution and carbon emissions in our cities and regions, looking at how our behaviour contributes to the problems and affects the air we breathe. Uniquely, the project put the power in the hands of residents to determine the best local solutions.

Air quality in Sosnowiec is of greater concern than in most European cities. PM10 and benzopyrene are the main air pollutants. Derived from inefficient heating systems and poor-quality fuel (e.g. domestic coal, wood) use in winter, and in some cases household waste, the problem is seasonal. Sosnowiec has important coal reserves and coal is commonly promoted by its national government as a domestic energy source. In addition, coal is also the cheapest fuel option for citizens. Transport emissions (largely NOx) come from predominantly diesel cars, buses and freight vehicles. In addition to these pollutants, NO<sub>2</sub> is exceeding its limit values in Sosnowiec.

To reduce air pollution from heating, the city is renovating buildings, expanding district heating and offering heavy subsidies (80%) to modernise coal-powered home heating systems. A regional anti-smog resolution has also laid out stricter rules on solid fuel quality. Regarding transport, Sosnowiec has a well-developed tram and bus infrastructure, a programme to upgrade buses and trams, and an online public transport information system. As well as a new city bike-sharing scheme and the construction of the city's first bike paths, new park and ride facilities are planned.

In light of this context, ClairCity examined the possible future impacts of citizens' policy preferences and implementation possibilities against these regional targets. By investigating citizens' current behaviours, their preferred future behaviours and their preferred future policy measures, this brief aims to inform policymaking in the Sosnowiec.



The full report can be accessed here:  
[www.claircity.eu/reports](http://www.claircity.eu/reports).



### Our current behaviours create air pollution

Current heating and travel practices substantially contribute to air pollution and carbon emissions in the city. The majority (64%) of Sosnowiec citizens are on district heating networks, with gas and solid fuel use at 15% and 14% each, respectively. Solid fuel use is mainly coal and otherwise wood. Meanwhile, a relatively high percentage of citizens 'always' use a car at present for commuting to work (41%) and going shopping (41%). Almost half the population use public transport 'always' for going to work and leisure activities.

### Future behaviours encourage sustainability

There is a large mismatch between current heating behaviour and how citizens would like to heat their homes in the future. While district heating (non-renewable) is currently predominant (64%), several citizens would rather heat their homes differently in the future. When asked about their preferences, a strong swing of citizens towards renewable energy is perceived (from 1% now to 38% in the future), away from district heating and solid fuel. The majority of respondents want to stay away from solid fuel. However, citizens are primarily resistant to change as the high costs associated with the sale of new stoves are prohibitive, i.e. the cost of a new heating system and the higher fuel costs of gas compared to coal.

There is continued support for current transport behaviour. Over 40% of citizens go to work, shopping and leisure always by car and there is virtually no willingness to change modes in the future. Virtually the same number of people using a car at present, would like to use a car in the future. The main barrier for car users to switch to alternative modes concern time, distance and a lack of services. For commuting, a latent demand for greener cars was found and several active travellers would like to cycle instead in the future.

### Preferred future policies

Using the Delphi survey process, workshops, and innovative Skylines game for mobiles, ClairCity asked citizens about the types of policy measures they would support to reduce air pollution and carbon emissions. A total of 1,500 local stakeholders, primarily citizens, were engaged during this process in Sosnowiec. Their favourite policy measures concerned public transport, including awareness raising to stimulate a modal change towards public transport and active travel.

Sosnowiec citizens are not generally keen on measures that would impact private cars with the exception of restricting the most polluting vehicles. Citizens want the government to incentivise in EVs and also wish to have cycling infrastructure expanded. The pace at which cycling developments are happening will probably lead to realising the citizens' highest ambitions.

The citizens showed ClairCity that there is strong willingness for change regarding heating behaviour provided that the price difference between current and possible future alternative fuels becomes smaller. For them, the replacement of old domestic heating systems is a priority.



### Citizen-led policies

- | Policy area   | Detailed policy measure   |
|---|---|
| 1 Make public transport free/cheaper                | Free public transport on days with high level of air pollution by 2020                            |
| 2 Reduce emissions from public transport            | Replace 10% public transport fleet with zero-emission vehicles by 2030                            |
| 3 Improve the public transport service/connectivity | 90% public transport journeys on schedule and most areas catered for by 2020                      |
| 4 Create/increase cycle lanes and infrastructure    | 20 km of new cycle lanes and 15 new cycle parking spaces by 2020                                  |
| 5 Encourage/incentivise electric vehicles           | Replace 10% cars with EVs and 100 EV charging points installed by 2025                            |
| 6 Restrict (polluting) vehicles                     | Ban diesel cars from city centre on days with level of air pollution by 2050                      |
| 7 Modal shift from private car to public transport  | 80% shift to public transport or active travel by 2025  |
| 8 Reduce emissions from domestic heating            | Ban on domestic coal heating in districts with the highest concentration of air pollution by 2025 |
| 9 Replace old domestic heating systems              | Replace 100% heating systems >10 years old by 2021  |
| 10 Reduce industrial emissions                      | Reduce industrial emissions by 25% by 2025  |

## Sosnowiec's future air quality and climate

### Future health impacts

The policy measures were ratified by local policy makers before their impact was modelled and compared to business as usual (BAU) for 2025, 2035 and 2050. ClairCity found that citizens' measures lead to a significant decrease of NOx emissions over time mainly due to decreasing transport emissions, and a similar downward trend of PM emissions until 2050, albeit more moderate. The reduction of residential emissions as a result of the ambitious replacement of residential heating systems adds further to the decrease in NOx. Promisingly, the researchers found that the citizen scenario reduces the number of premature deaths from air pollution by 41% for NO<sub>2</sub>, 21% for PM10, and 19% for PM2.5 by 2050.



### More to be done

However, neither scenario lead to compliance of legal EU limit values for PM and NO<sub>2</sub> everywhere in Sosnowiec, not even by 2050. For the citizen scenario, this is partly explained by the fact that policy makers choose less ambitious policies for the citizens measures. To ensure the health of Sosnowiec citizens is ensure more stringent measures are required.

Financial barriers – on both the city as well as citizens side – are perhaps the main factor hindering the greening of public transport, private car-fleet and residential heating. There is also little in the way of air quality monitoring, with only a single national air quality monitoring station in Sosnowiec, and a few passive collectors. A shift in priorities to invest in improving local and national air quality is urgently needed.

### Action plan for a clean air, zero carbon future

Based on the findings from the ClairCity process, the team suggest the following strategy for Sosnowiec: Promote renewable energy and raise awareness on the negative health effects of biomass burning.

Measures could include: supporting rooftop solar PV and local citizen cooperatives for renewables and increasing rooftop solar on public buildings; increasing awareness that district heating can be a positive environmental option, if connected to renewables, waste heat or geothermal, alongside information on the dangers of putting policies forward, in addition to the 'seasonality' of domestic heating pollution and 'better living' framing, for example, by stressing the side benefits to overall quality of life.

Improve public transport coverage and frequency, facilitate cycling through expanding the current cycling network and infrastructure and promote these. Measures include: improving services, including connections to suburban districts and neighbouring cities; expanding the urban cycling infrastructure so everyone can access; a transport card/ticketing system covering all public transport; bike rental close to bus and train stops; subsidising bike purchase for poorer groups; campaigns to communicate changes and promote health benefits.

Introduce measures to discourage car use and incentivise electric vehicles (EV). Measures include: restrictions of parts of the city to cars; limiting parking spaces in the city centre and making parking more expensive (fees which can fund further transport measures); subsidising EV and ensuring there are enough charging points; making parking free for EV vehicles (and charging high fees for conventional cars).

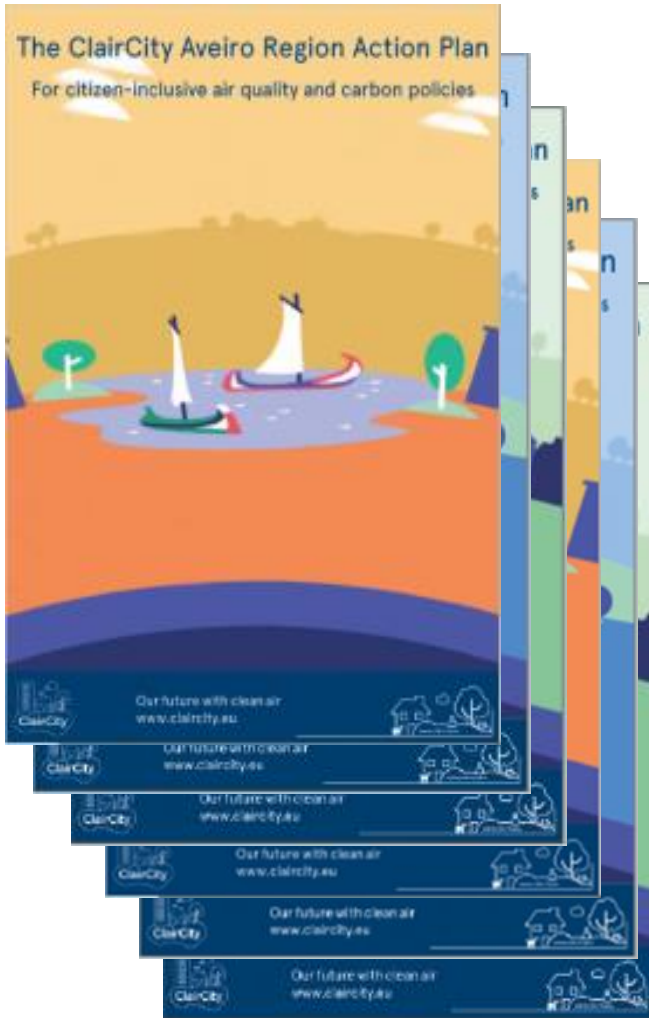
The 'health' frame should be as much as possible exploited when implementing air quality and carbon related policies. This is essential in order to encourage citizens to act, and defend and justify any stricter government rules for domestic heating systems and/or fuels. 'Climate' can also be used as hook as well for putting policies forward, in addition to the 'seasonality' of domestic heating pollution and 'better living' framing, for example, by stressing the side benefits to overall quality of life.

Work closely together with NGOs to create citizen awareness. Education and awareness raising are important to motivate and engage with citizens to shift to sustainable mobility and heating modes. NGOs can play an important role in creating public awareness around air quality. Close cooperation of policy makers with the local NGOs (in Sosnowiec, Smog-Alert) can be a way to engage with citizens.



# Main lessons for other cities

## The ClairCity method helps to



1. Formulate policies that are supported by citizens and checked for implementation possibilities by policy makers
2. Tailor policies to specific behavioural practices and identify barriers and enabling factors for change
3. Identify gaps between planned policies and citizens' willingness to change behaviours

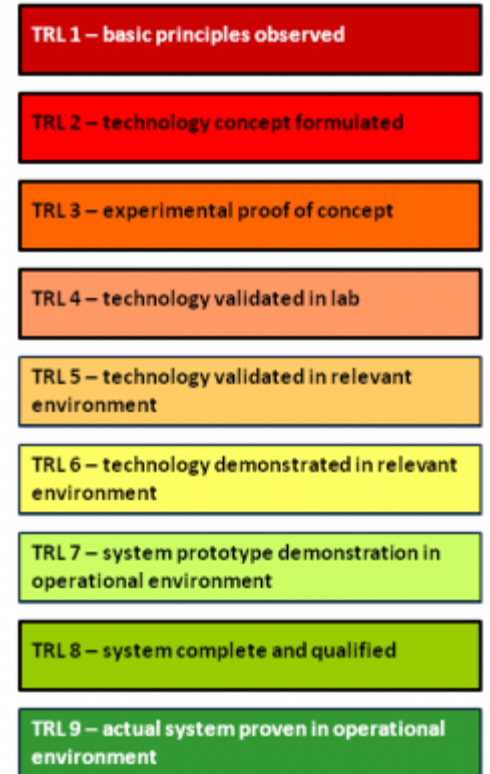


# Next steps

## Scaling up – From TRL 6 to 9

- Faster and cheaper implementation – towards a quick-scan
- Make citizens engagement outcomes fully representative
- Benchmark ClairCity modelling outcomes to local modelling

Are there Volunteer Cities prepared to join the next ClairCity step?



# Resources

**Phase 3: Quantified Policy Package & Knowledge Exchange**

We collated the evidence and lessons learned from Phase 1 and Phase 2 to create a quantified, bespoke, citizen-led and citizen-inclusive policy packet for each city. This entailed we:

- Knowledge exchange:** Gathered transferable lessons and steps for better practice based on the experiences of the ClairCity project; and made the lessons learnt known to other stakeholders.
- Impact Assessment:** Rapidly quantified the effects of the final UPS.
- Policy package:** Summarised the findings and delivered the political possibilities and effects of these possibilities to each city.

**The result...**

- 776,252 Twitter Impressions
- 89,478 policies selected as ClairCity Skyline
- 2,287 online citizens surveys completed
- 1,000s of young people engaged
- 23,254 website visitors

**For a future with clean air**  
FOR PARTNER CITIES:  
SENIWICK, LACHINA PERION, LARUNJA, BRISTOL, AMSTERDAM, AVEIRO REGION  
PARTNERED BY  
EUROPEAN UNION  
HORIZON 2020

**The ClairCity Methodology**

For citizen inclusive decision-making

Get in touch if this would work well for your city!  
claircity.eu  
claircity@uwe.ac.uk

**The ClairCity Bristol Action Plan**  
For citizen-inclusive air quality and carbon policies

Our future with clean air  
www.claircity.eu

**The ClairCity Amsterdam Action Plan**  
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**The ClairCity Aveiro Region Action Plan**  
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# Thank you for your attention

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