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The role of enjoyment and affective arousal in air pollution and climate change decision-making

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Net Zero by 2030

Transport - 45% reduction in vehicle miles

Energy – renewable energy for heating and hot water and no fossil fuels for all households

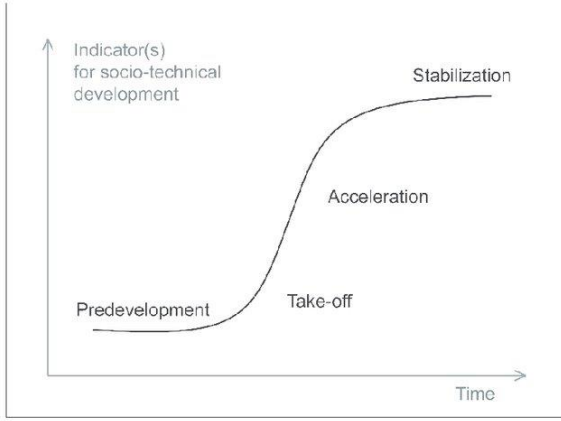
Waste – at least 65% of all waste is repaired, recycled or reused

Nature – enhance biodiversity by 30% through nature restoration, protection and enhancement

https://www.bristolonecity.com/wp-content/uploads/2020/02/one-city-climate-strategy.pdf

Socio-technical transitions

	Endogenous Niche Momentum	Regime Tensions
Techno-economic	price/performance improvements as a result of R&D, learning by doing, scale economies, complementary technologies, and network externalities	technical failures, disruption of infrastructures, accumulating negative externalities (e.g., CO_2 emissions)
Business	new entrants or incumbents from other sectors are more likely to drive radical innovation than traditional incumbents. Their success may lead to "innovation races" when other firms follow a first mover	shrinking markets, economic difficulties in incumbent industries, loss of confidence in existing technologies and business models, reorientation toward alternatives
Social	growing support coalitions and constituencies improve available skills, finance, and political clout	disagreement and fracturing of social networks, defection of key social groups from the regime
Political	advocacy coalitions lobby for policy changes that support the niche innovation such as subsidies and supportive regulations	eroding political influence of incumbent industries, declining political support, removal of supportive policies, introduction of disruptive policies
Cultural	positive discourses and visions attract attention, create cultural enthusiasm, and increase socio-political legitimacy	negative cultural discourses undermine the legitimacy of existing regimes (e.g., coal and climate change, diesel cars, and air quality)



Geels et al 2017
The Socio-Technical Dynamics of Low-Carbon Transitions - ScienceDirect

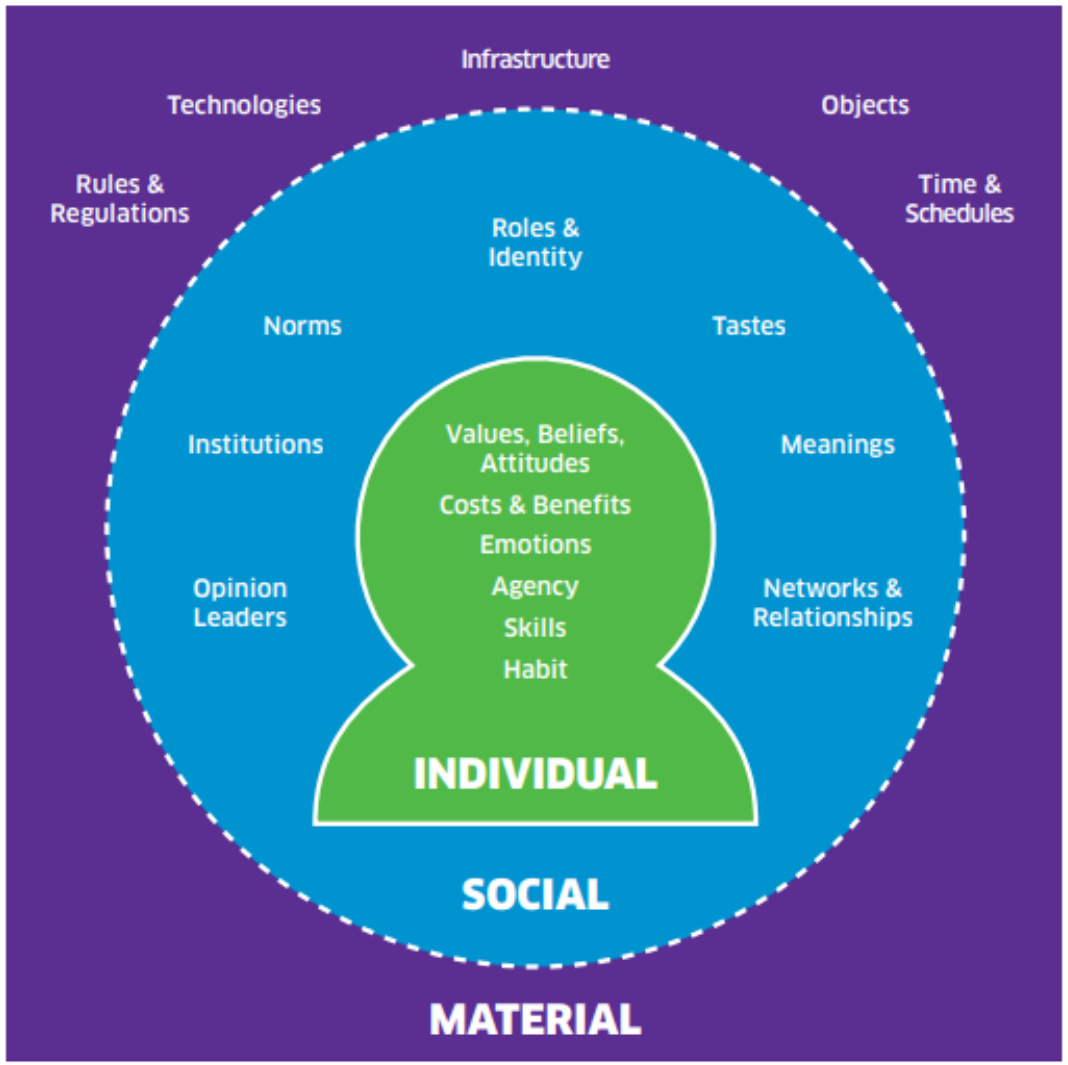
A just transition?

Action to enable a 'just' transition tries to combat inequality to bring about fairer outcomes as the world transitions to net zero carbon
emissions, maximising the benefits of climate action and minimising the negative impacts for workers and communities.

- Procedural
- Distributive
- Recognition
- Restorative

Abram, S., Atkins, E., Dietzel, A., Jenkins, K., Kiamba, L., Kirshner, J., … Santos Ayllón, L. M. (2022). Just Transition: A whole-systems approach to decarbonisation. *Climate Policy*, *22*(8), 1033–1049.

FIGURE 1
FACTORS THAT INFLUENCE BEHAVIOUR IN THE INDIVIDUAL, SOCIAL AND MATERIAL CONTEXTS ('THE ISM MODEL')



THE INDIVIDUAL CONTEXT

This includes the factors held by the individual that affect the choices and the behaviours he or she undertakes. These include an individual's values, attitudes and skills, as well as the calculations he/she makes before acting, including personal evaluations of costs and benefits.

THE SOCIAL CONTEXT

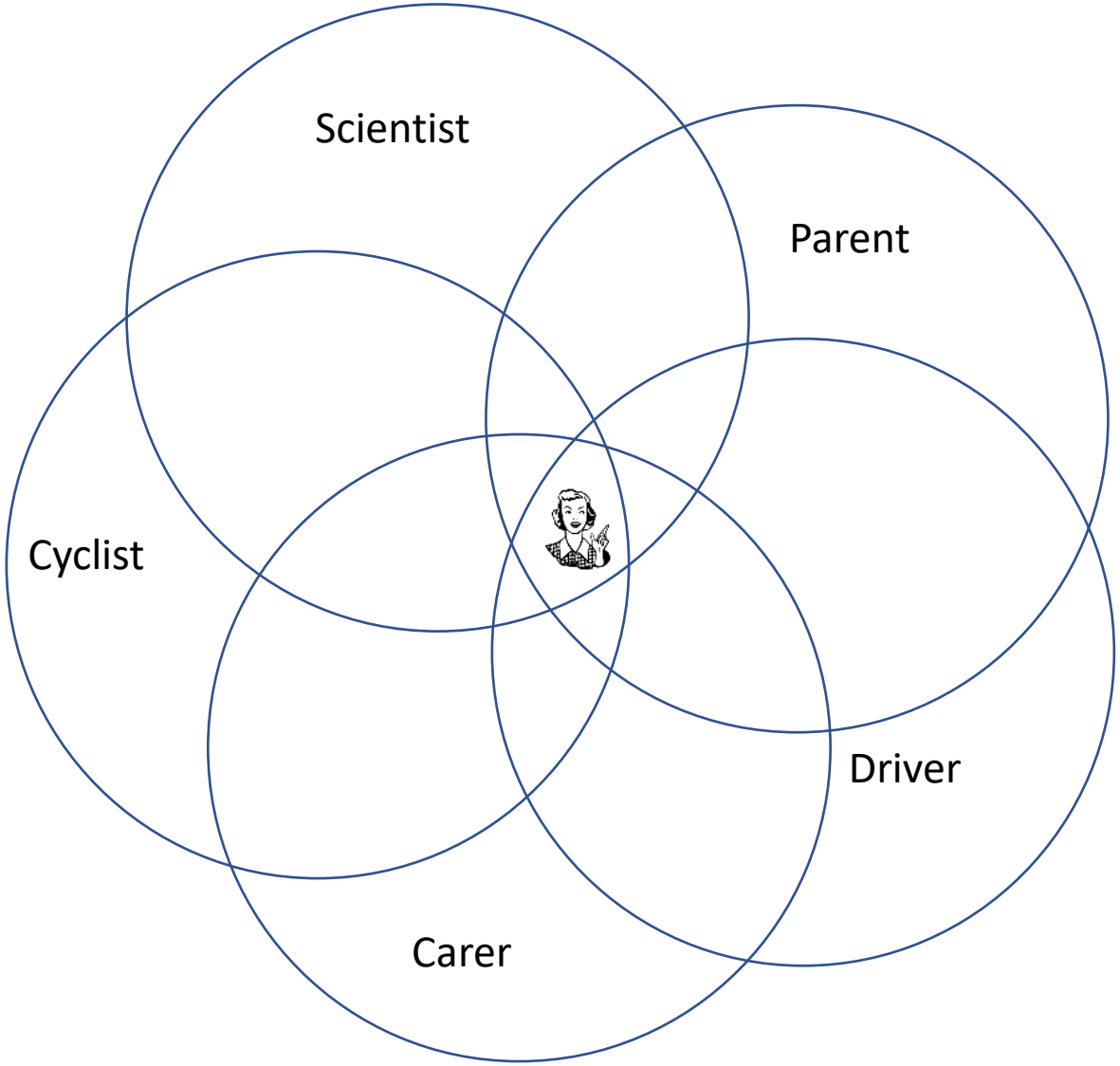
This includes the factors that exist beyond the individual in the social realm, yet shape his or her behaviours. These influences include understandings that are shared amongst groups, such as social norms and the meanings attached to particular activities, as well as people's networks and relationships, and the institutions that influence how groups of individuals behave.

THE MATERIAL CONTEXT

This includes the factors that are 'out there' in the environment and wider world, which both constrain and shape behaviour. These influences include existing 'hard' infrastructures, technologies and regulations, as well as other 'softer' influences such as time and the schedules of everyday life.

Influencing Behaviours - Moving Beyond the Individual : A User Guide to the ISM Tool (www.gov.scot)

Demographic and geographic communities



Chatterton, T. and Wilson, C. (2014) The 'Four Dimensions of Behaviour' framework: A tool for characterising behaviours to help design better interventions . Transportation Planning and Technology, 37 (1). pp. 38-61. ISSN 0308-1060

Social Cognitive and Social Identity Theories

"An individual's learning is not only related to their personal capabilities and experience, but also to their observations of others within the context of social interactions, experiences, and outside media influences".

Fogg-Rogers, L., Sardo, A.M., Boushel, C. (2017). Robots vs Animals: establishing a culture of public engagement and female role modelling in engineering higher education. *Science Communication*

Social identity theory

1) Social categorization
2) Social identification
3) Social comparison
4) Social badges – in groups and out group

Tajfel, 1979

Social cognitive theory

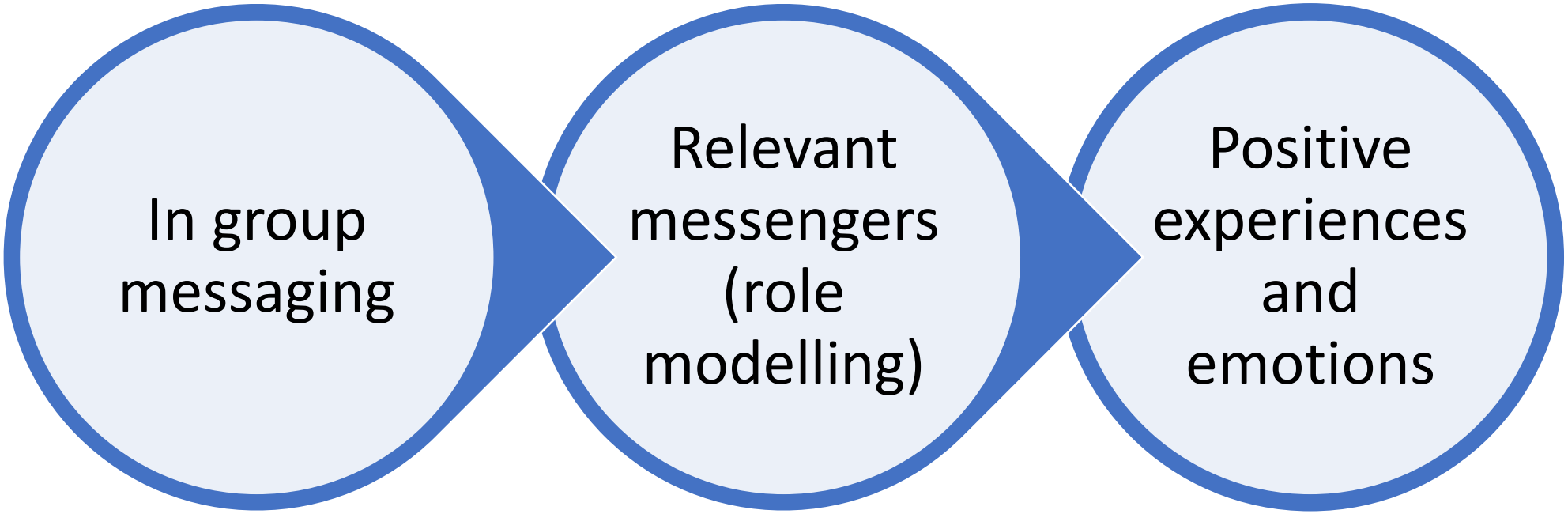
a) Vicarious experiences
b) Mastery
c) Verbal persuasion
d) Emotional arousal

Bandura, 1977

Social Learning

"An individual's learning is not only related to their personal capabilities and experience, but also to their observations of others within the context of social interactions, experiences, and outside media influences".

Fogg-Rogers, L., Sardo, A.M., Boushel, C. (2017). Robots vs Animals: establishing a culture of public engagement and female role modelling in engineering higher education. *Science Communication*



Citizen-led air pollution reduction in cities

Everyday, air pollution and carbon emissions are produced through our commutes to work, by heating our homes, or through our daily lifestyles.

The ClairCity aim was to create a major shift in public understanding towards the causes of poor air quality, inviting citizens to give their opinions on air pollution and carbon reduction to shape the cities of the future.

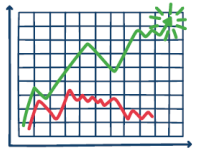
The project ran from 2016-2020 in 6 countries.

How the ClairCity process engages with a city & its citizens

Phase 1: Establish the Baseline Evidence

Benchmarking behaviour

Quantify the baseline



Assessment of policy

Phase 2: Citizen and Stakeholder Engagement & Co-creation of Scenarios

The GreenAnt app

City Events

Public engagement and awareness

Community films

Schools Engagement: My City, School, & Home

ClairCity Skylines Game

Mutual Learning Workshop

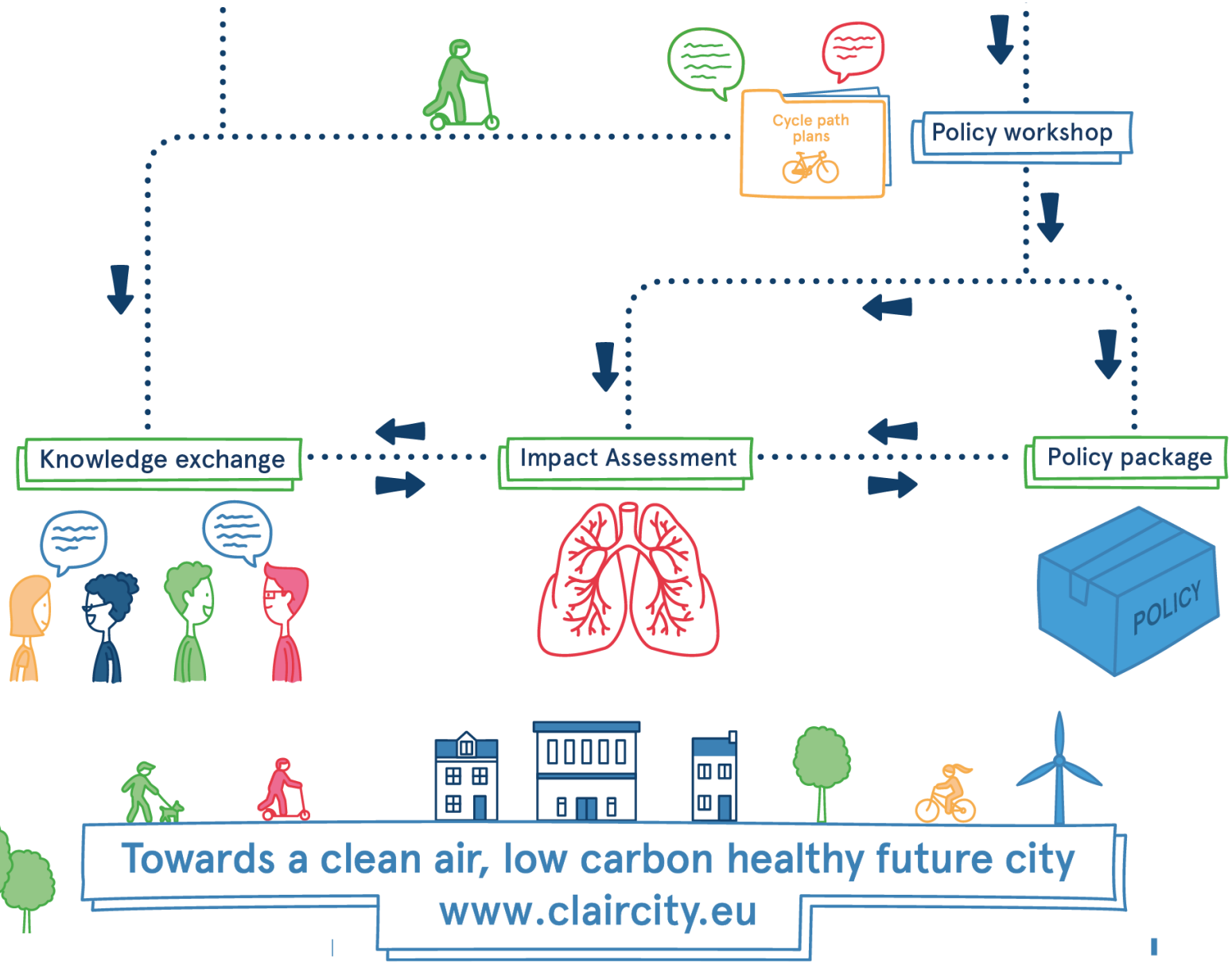
Citizen and Stakeholder Engagement & Co-creation of Scenarios

Delphi Method

Stakeholder dialogue

How the ClairCity process engages with a city & its citizens

Phase 3: Quantified Policy Package & Knowledge Exchange



Towards a clean air, low carbon healthy future city

www.claircity.eu

Research Questions

Question 1: Who did the project engage with?

Question 2: How well did the project raise awareness of air pollution, carbon emissions and health?

Question 3: Are people who have engaged with the project planning to or doing something different? (e.g. walking instead of driving, planning to contact their council

Question 4: What differences can we see across countries, demographics and Communication Platforms?

Objective 1: Determine participants' age, gender, level of education and country of origin

Objective 2: Examine whether the project engaged with the identified audiences

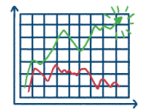
Objective 3: Investigate if the project has reached any other audiences

Objective 4: Examine indicators of awareness, attitudes, knowledge and skills

Objective 5: Examine indicators of planned behaviour

Objective 6: Examine audience make-up between the Platforms and Cities

Objective 7: Stratify indicators of awareness, attitudes, knowledge, skills and planned behaviours according to Platforms and Cities



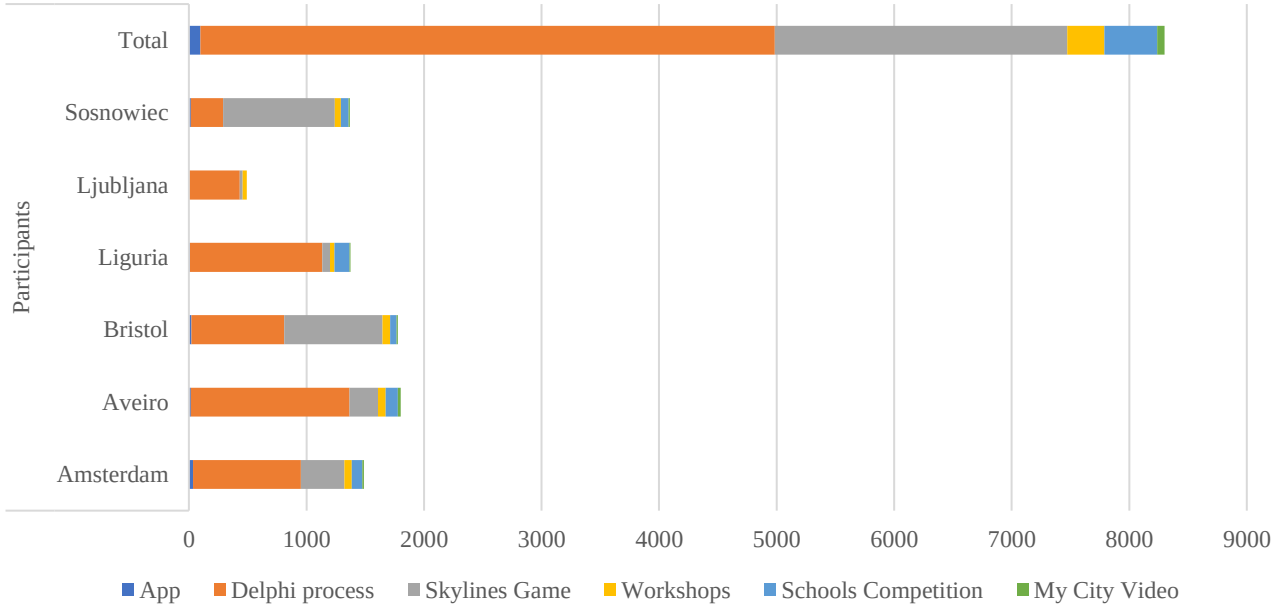
Evaluation methods

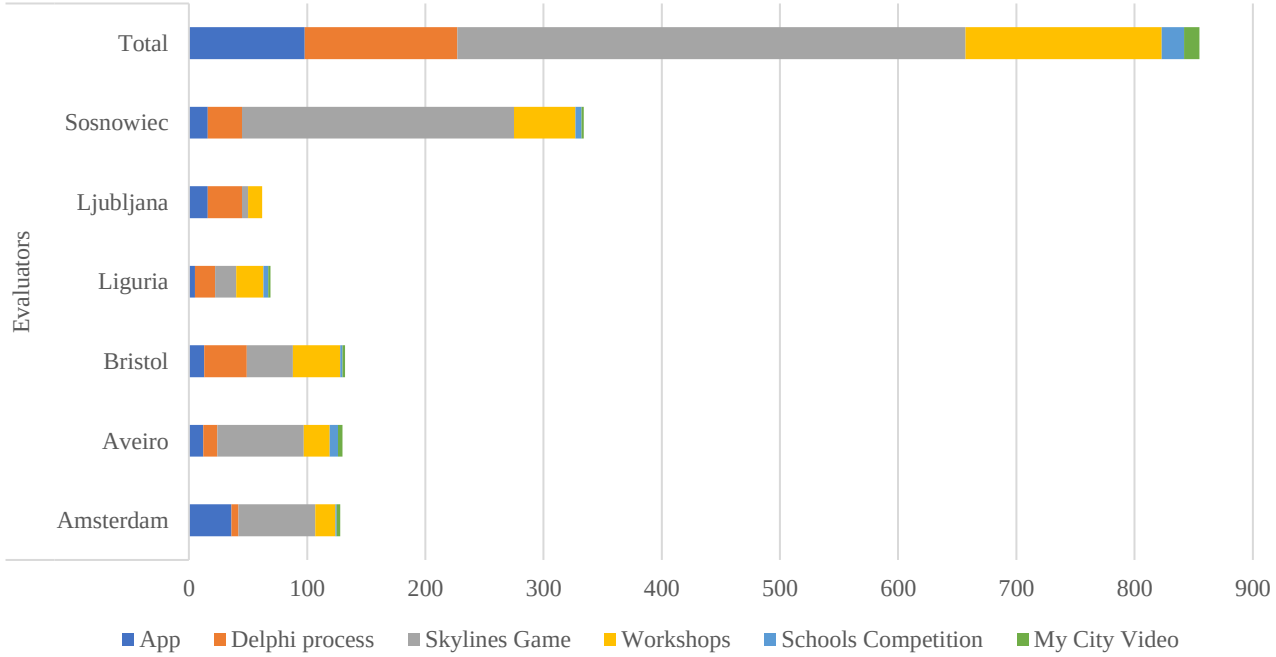
Engagement method and recruitment	Intended audience	Evaluation method	Topics assessed
Delphi process – advertisement and self-selection, some targeted recruitment	Ordinary citizens (over 18) Expert Stakeholders	Online survey	Age, Gender, Education, Enjoyment, Understanding, Behaviour
Skylines Game – advertisement and self-selection	Young people (aged 13-17) Ordinary citizens (over 18)	Pop-up mini survey	Age, Gender, Expertise, Enjoyment, Understanding, Behaviour
App – targeted recruitment	Ordinary citizens (over 18)	Pop-up mini survey	Enjoyment, Understanding, Behaviour
Schools Competition – targeted recruitment	Young people (aged 13-17) Teachers	Online survey for teachers	Age, Enjoyment, Behaviour
My City Videos – targeted recruitment	Older adults (over 60)	Online survey	Age, Gender, Enjoyment
Workshops – advertisement and self-selection, some targeted recruitment	Ordinary citizens (over 18) Expert Stakeholders	Paper and online survey	Age, Gender, Education, Enjoyment, Understanding, Behaviour

Evaluation results

8302 engagement participants

855 evaluation returns



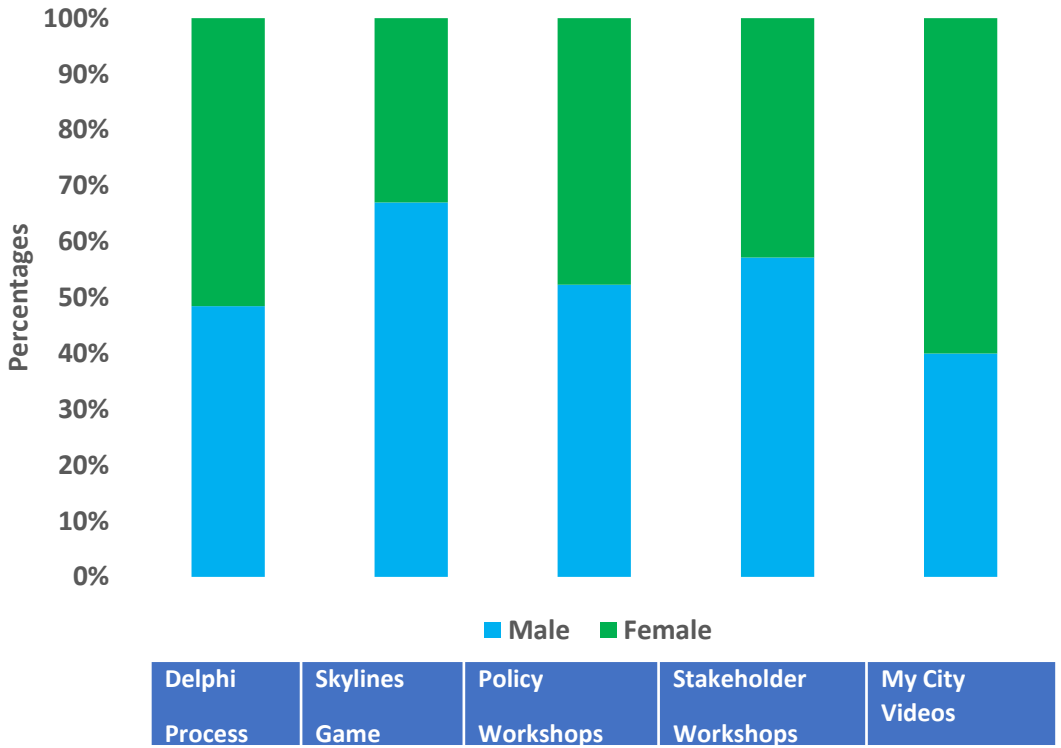


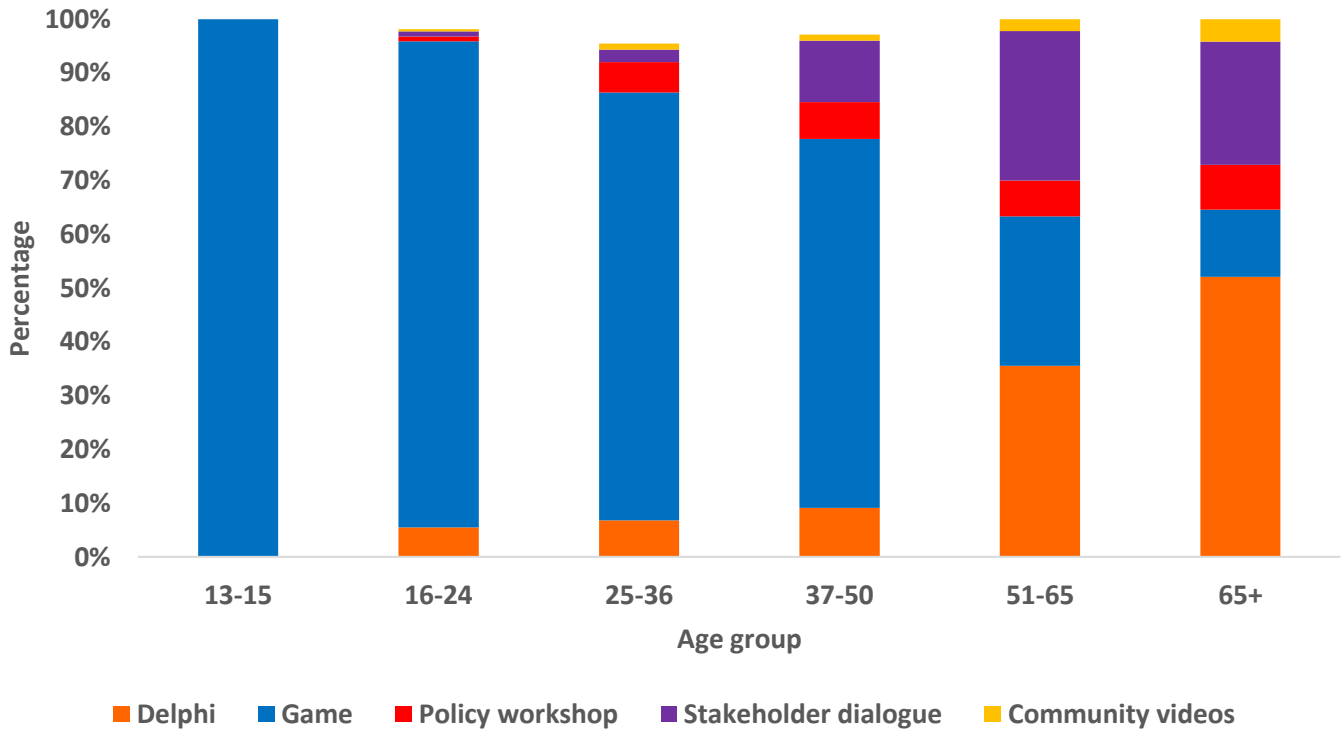
Participant characteristics

62.5% Men

25% 16-24

81% workshop participants older men





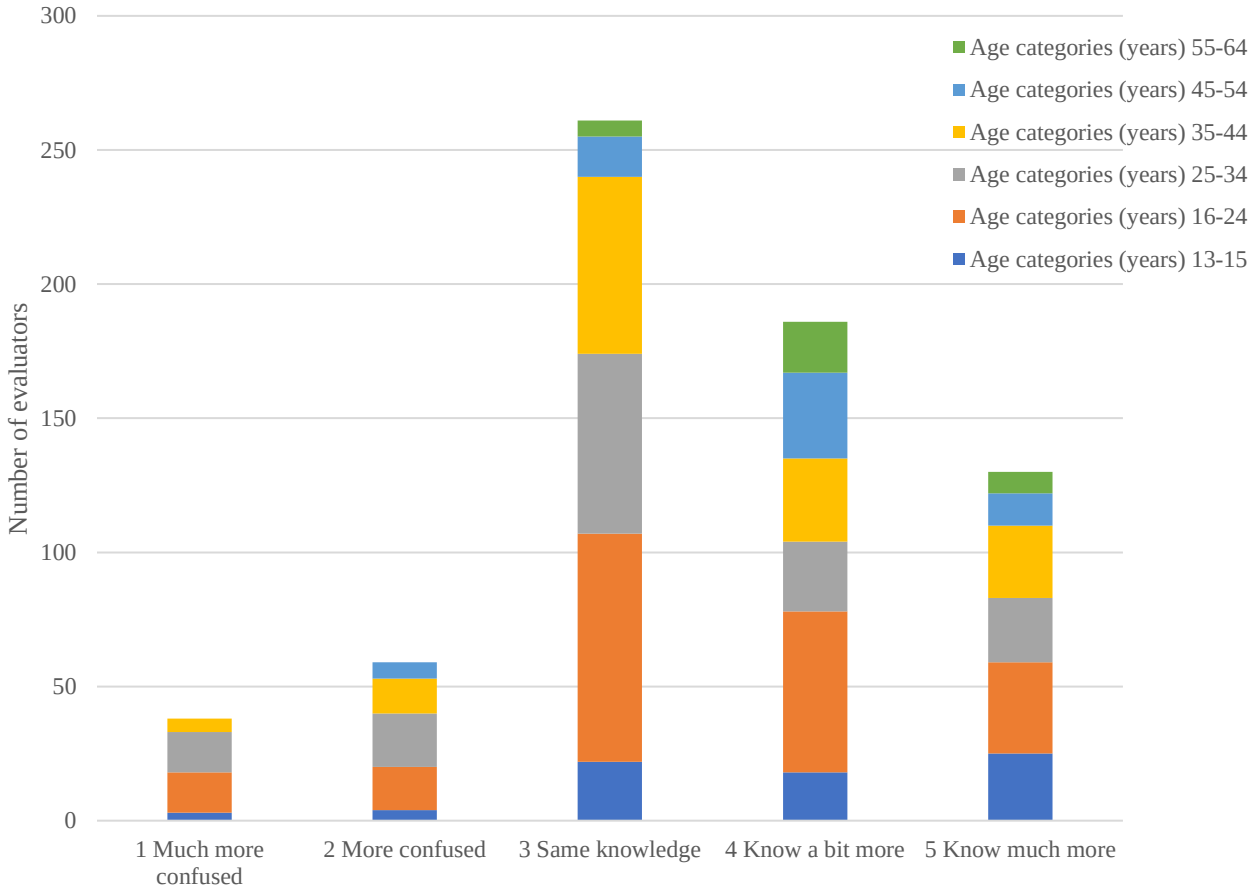
Understanding and behaviour change

74% intend to change their behaviour

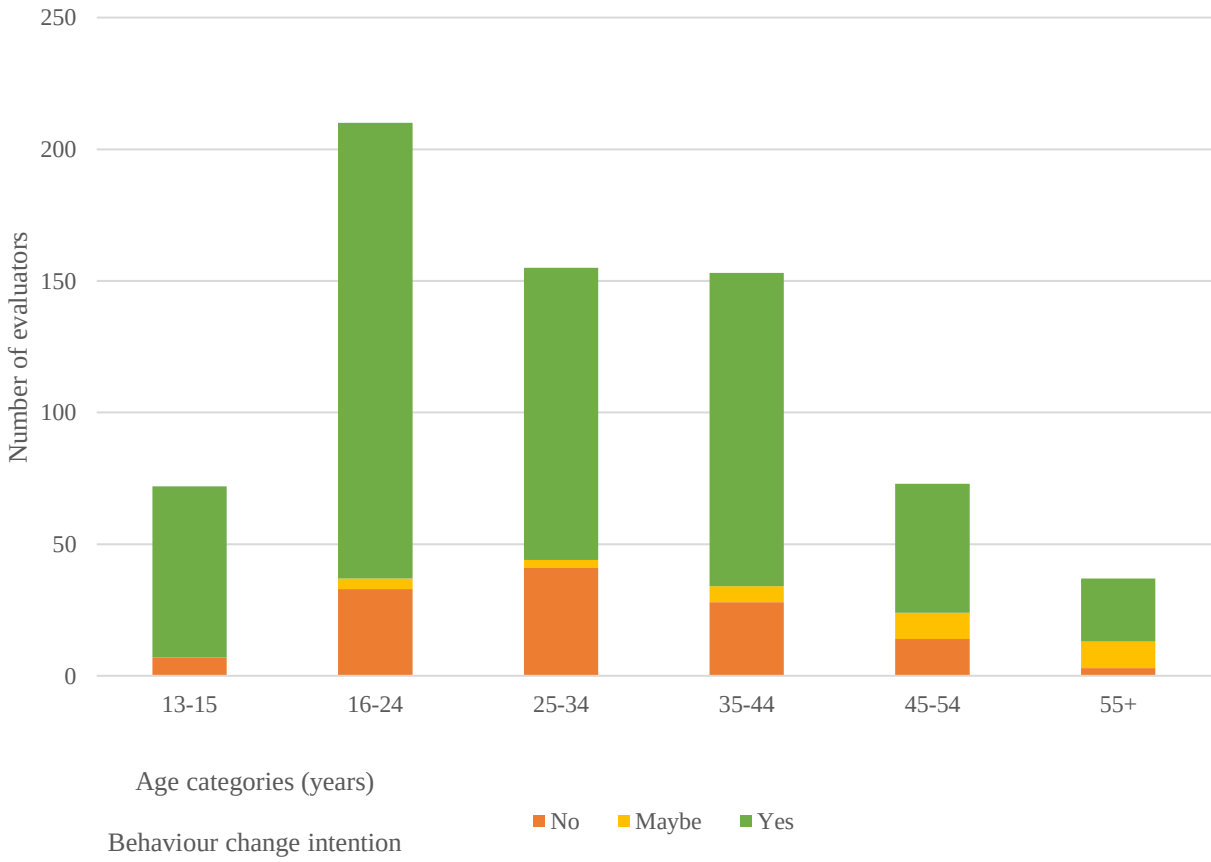
98% found policy workshop useful

21% knowledgeable before playing

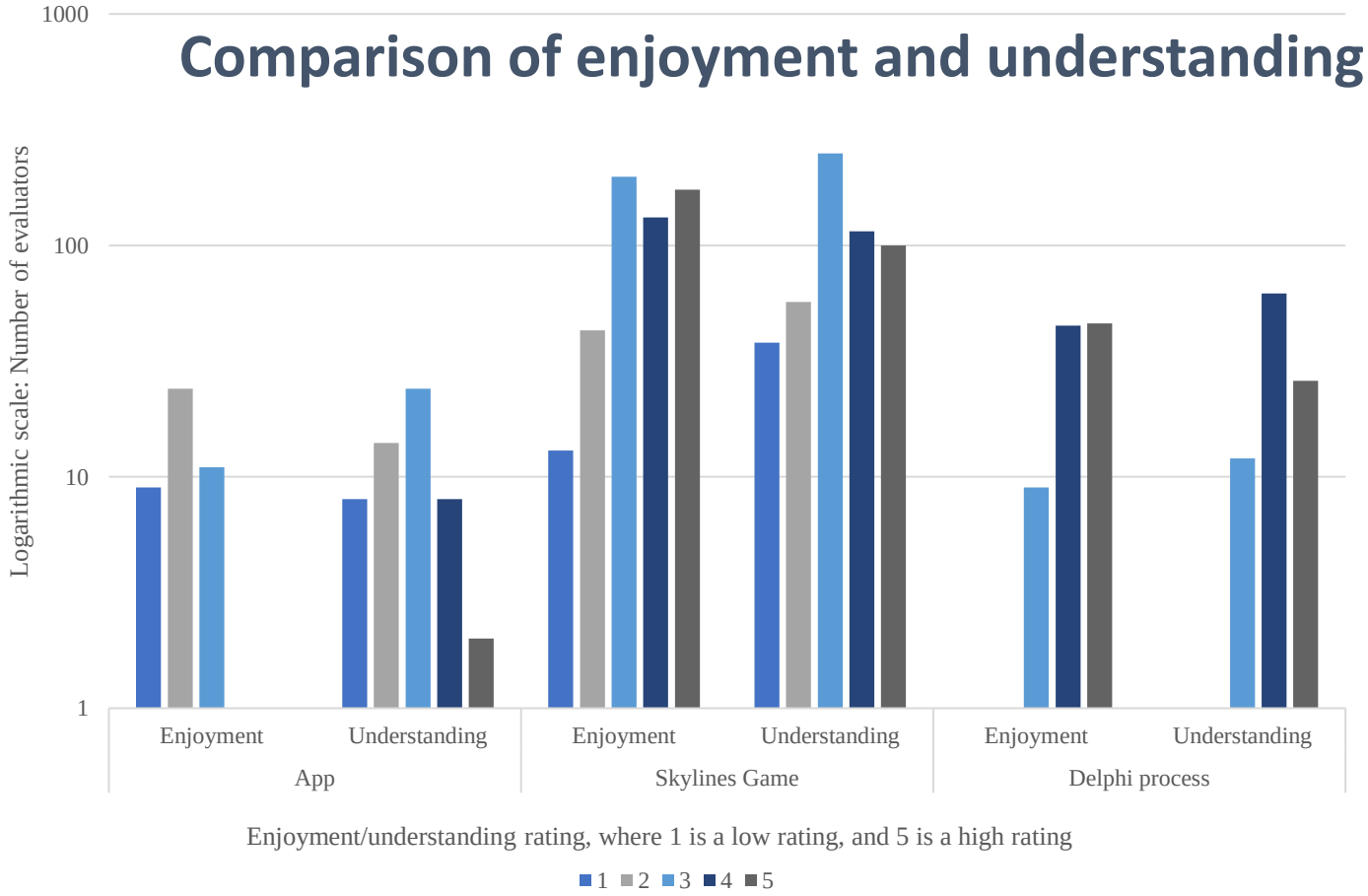
Understanding across age categories

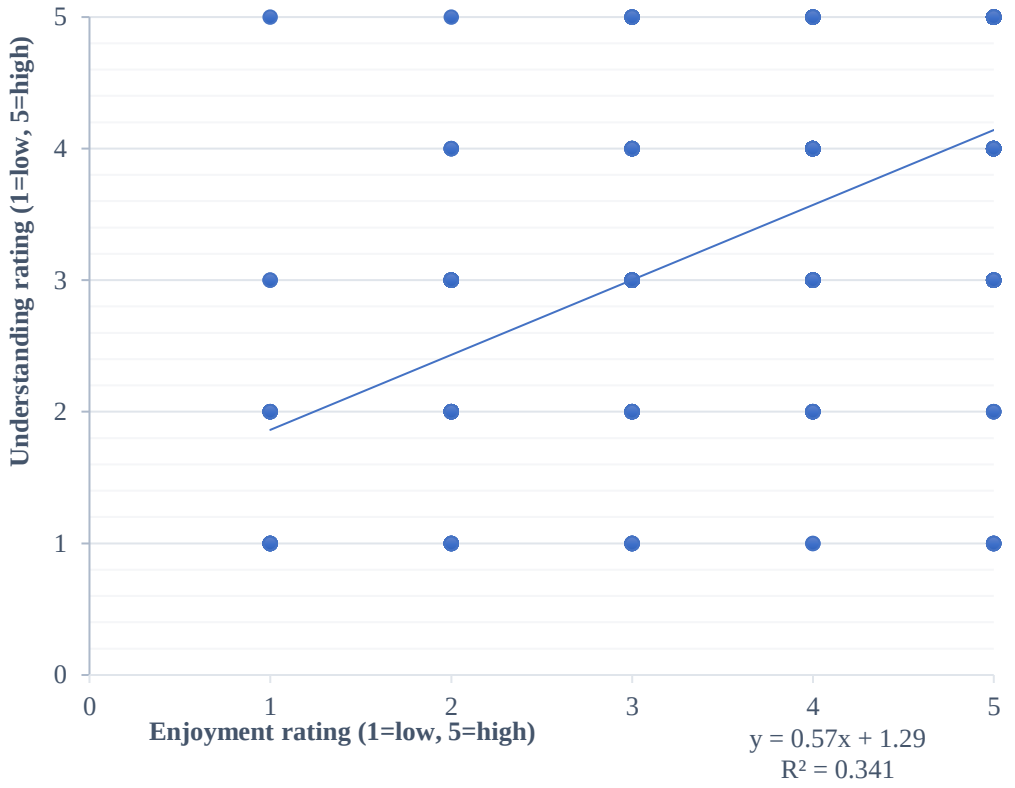


Behaviour change intention across ages

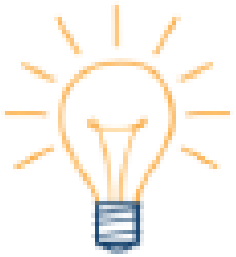


Enjoyment and Understanding



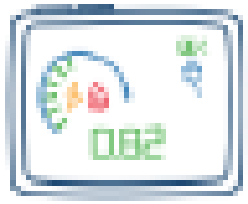


Evaluation findings



Activity enjoyment was significantly positively correlated to understanding.

A Multiple Regression Analysis was conducted to test if Age, Gender, Education, or Enjoyment predicted Understanding levels. The overall regression was **statistically significant (R^2 = .105, F(4,91) = 2.656, p=.038).** Gender, Education, and Age (in this test) were not statistically significant. It was found that **Enjoyment significantly predicted Understanding (β = .257, p=.021)** with a positive relationship; this may mean that the more participants enjoyed the activity they took part in, the more they reported that their understanding of air quality had improved, or equally, the more participants learnt from the activity, the more they reported enjoying it.

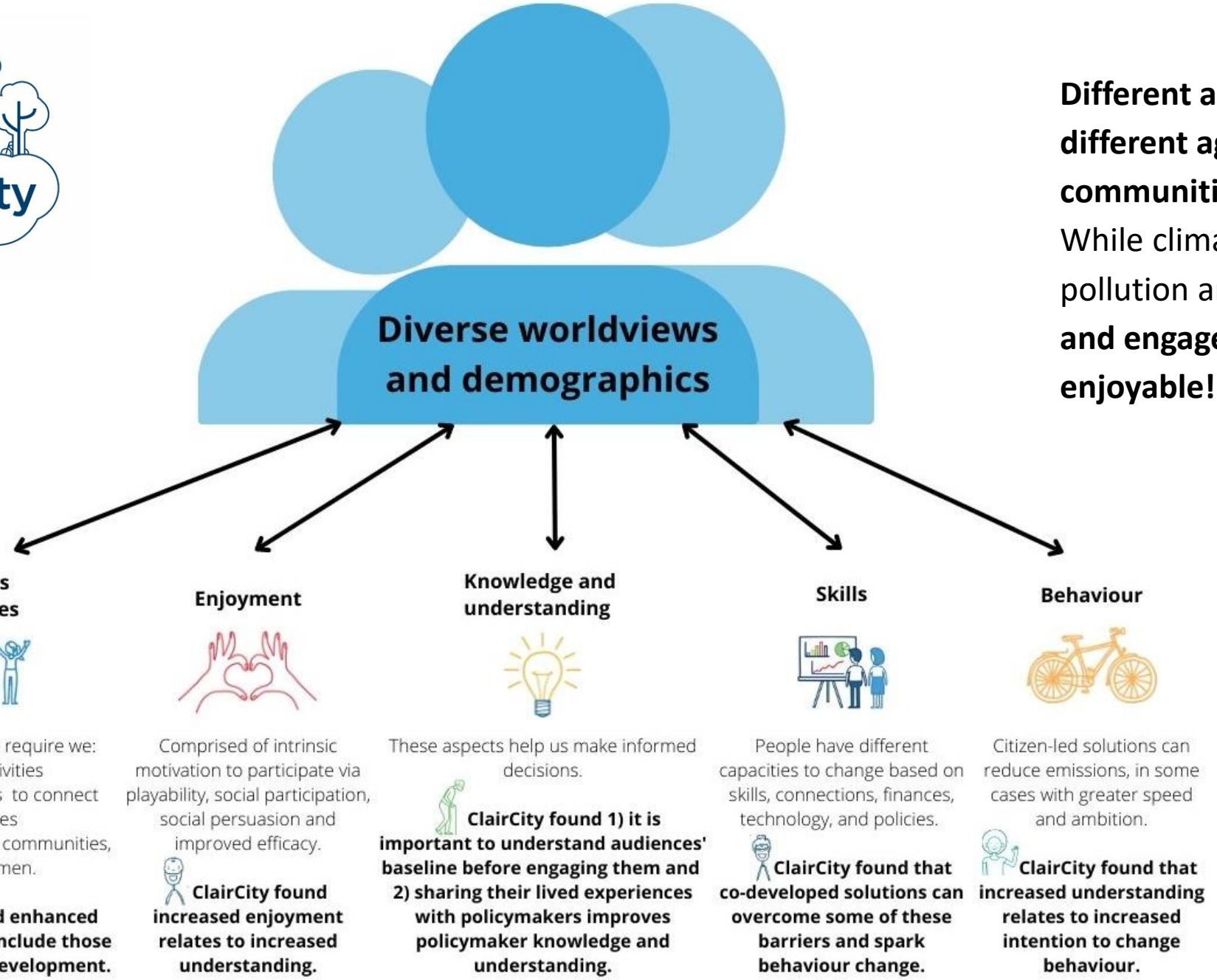


Understanding was significantly positively correlated to behaviour change intent.

A Spearman correlation coefficient was computed to assess the relationship between participants' understanding of air quality following the activities and their intentions to change their behaviour. There was a **positive correlation between the two variables [rs(716) = .401, p<.001]** i.e. the more participants reported that their understanding had improved, the more likely they were to say they were going to change their behaviour.

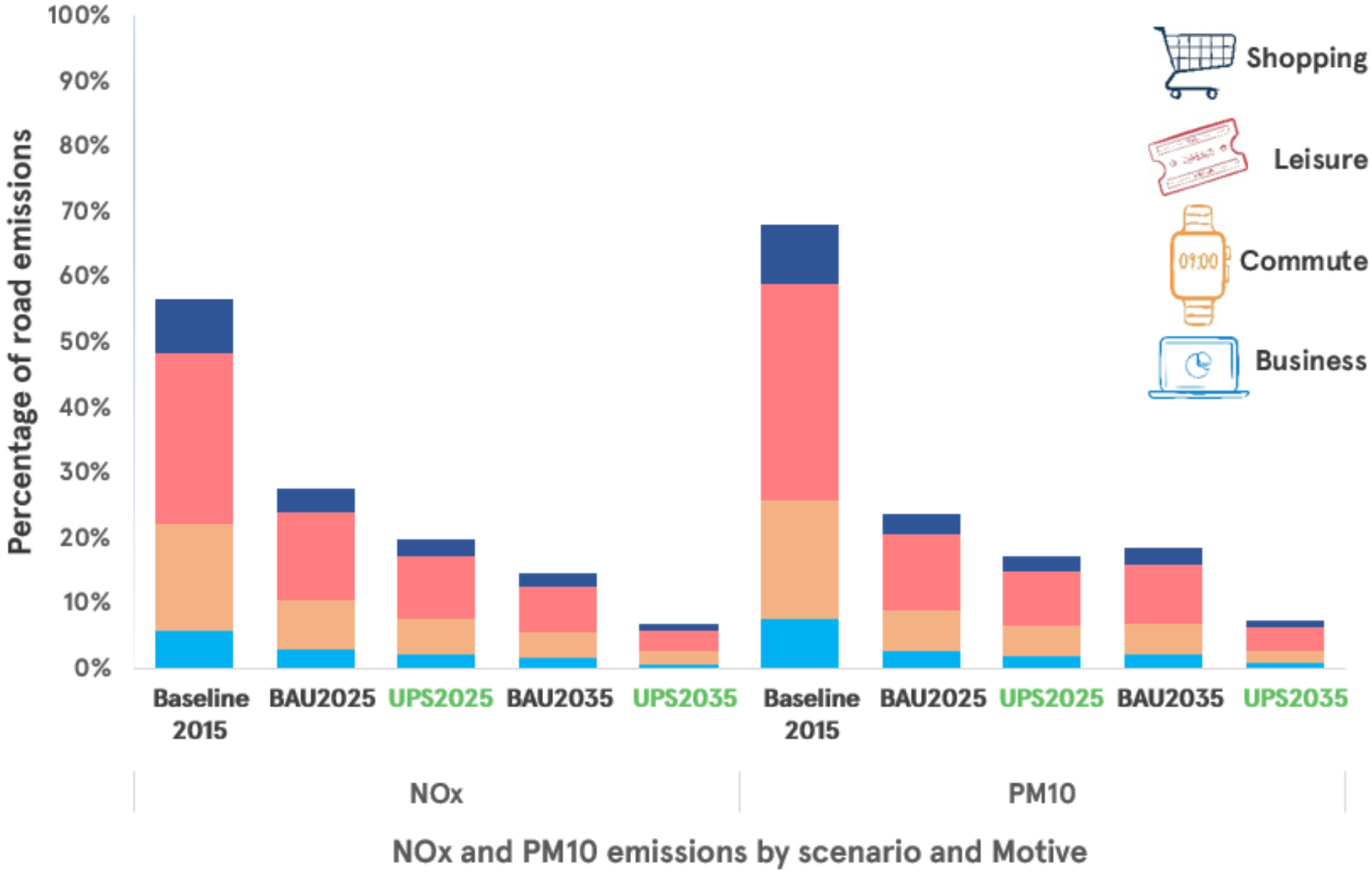
Different activities appeal to different ages, genders and communities.

While climate change and air pollution are serious topics, **learning and engagement needs to be enjoyable!**



Fogg-Rogers, Sardo, Csobod, Boushel, Laggan, and Hayes. (2024). Citizen-led emissions reduction: enhancing enjoyment and understanding for diverse citizen engagement with air pollution and climate change decision making. ***Environmental Science and Policy.***

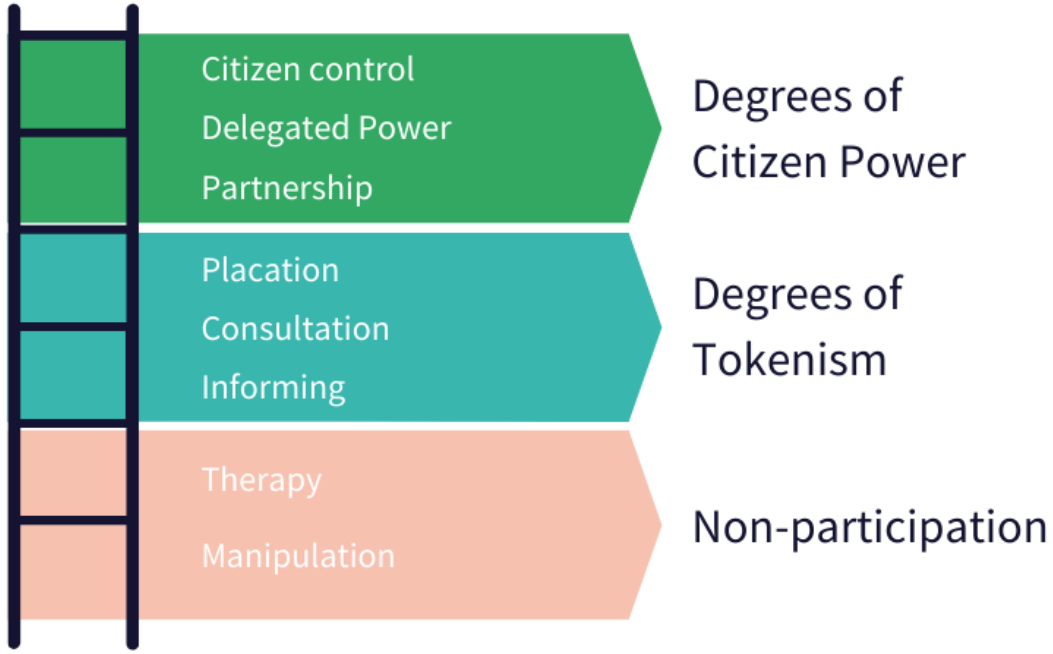
Citizen involvement in policymaking can reduce emissions faster than business as usual



Fogg-Rogers, L.; Hayes, E.; Vanherle, K.; Pápics, P.I..; Chatterton, T.; Barnes, J.; Slingerland, S.; Boushel, C.; Laggan, S.; Longhurst, J.. Applying Social Learning to Climate Communications—Visualising 'People Like Me' in Air Pollution and Climate Change Data. *Sustainability* **2021**, *13*(6) 3406 *doi.org/10.3390/su13063406*

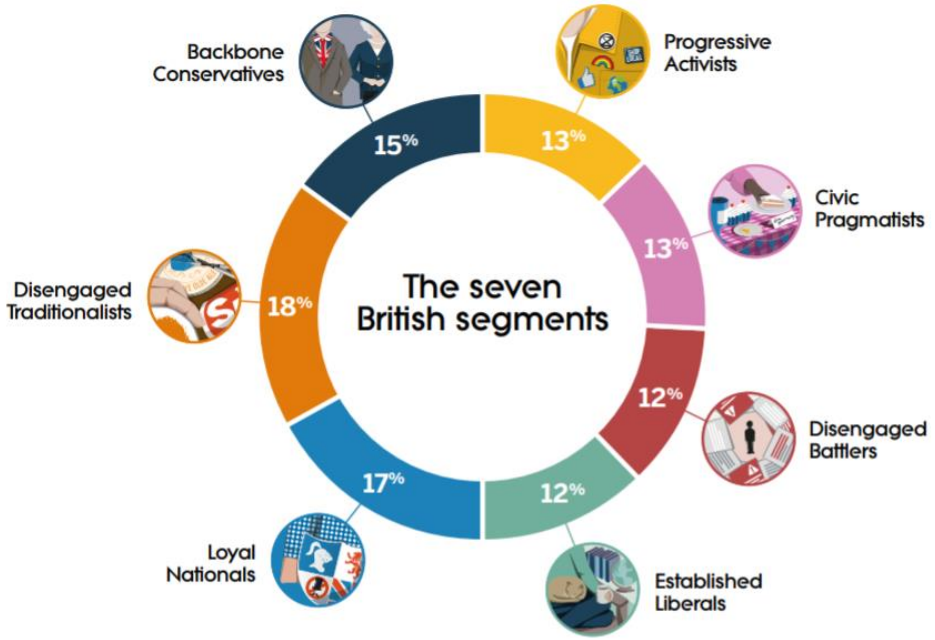
From consultation to co-development

Arnstein's Ladder of Public Participation



People like me can take climate action

- **Diverse communities need representation in climate/air pollution policymaking**
- **Climate action needs to connect to co-benefits that resonate with people's lives**
- **Social learning involves affective arousal, vicarious experience, and verbal persuasior from in groups**



Engage diverse participatory methods for emissions reductions

Surveys

Engages more educated people. Need to focus on policy setting type questions as well as policy shaping. Can complement other approaches.

Serious games

Engages young people, in particular young men. Appeals to those with less expertise on the topic.

Educational challenges and videos

Fun ways to involve communities, perhaps as a precursor to community workshops.

Community workshops

Designed with and for communities. Can focus on specific issues and be light touch or in depth.

Policy workshops

Engages older people with higher expertise.

Fogg-Rogers, Sardo, Csobod, Boushel, Laggan, and Hayes. (2024). Citizen-led emissions reduction: enhancing enjoyment and understanding for diverse citizen engagement with air pollution and climate change decision making. *Environmental Science and Policy.*

Community resources

www.claircity.eu/take-action/community-activator

@Claircity

www.claircity.eu/take-action/educator

http://www.claircity.eu/take-action/science-communicator/

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