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Smart City Governance - Integrating the Urban Nexus

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Driving transitions to net-zero “new-normal”

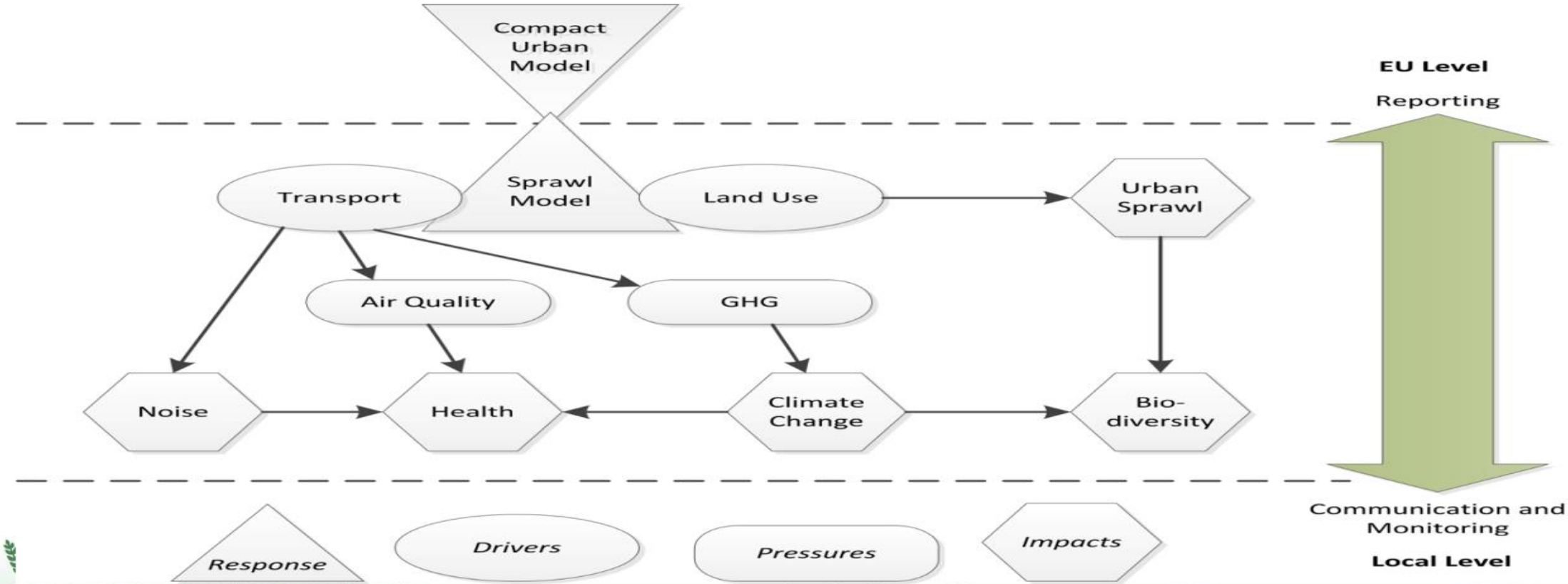
- The Pandemic has given rise to the notion of a “new-normal”, reflecting changes in attitudes and behaviours as Covid-19 has propelled cities through a decade of digital transformation overnight
- New opportunities for transition to net-zero communities have been identified in “new normal” ways of city living - but limitations of urban governance have also been exposed, demonstrating urgency for new solutions and the ways planning strategies are devised, developed and delivered
- Therefore city planners across Europe are now facing a common challenge: developing effective planning solutions and influencing the transformative capacity of cities to deliver on carbon neutrality whilst transitioning towards the post-pandemic “new-normal”

THE 15-MINUTE PARIS

“New normal” city visions

- New city visions are required to support specification of mitigation pathways to deliver city climate goals. Planning strategies based on ‘decarbonisation pathways’ at heart of a new governance delivering transformation to the “new normal” city
- Visions of the net-zero neighbourhood are emerging building the net-zero neighbourhood plan on 15-minute city and liveable neighbourhood concepts -- mixed urban land-use providing housing, employment, education, shopping, and cultural facilities within easy walking and cycling distance
- Delivery of these visions of “new normal” urban ecosystems requires integration of the complex and interconnected nexus of multiple policy objectives, and integrated assessment of spatial impacts in terms of socio-economic and environmental factors to secure the essential “win-win” policy co-benefits

urban complexity + integrated urban management



Smart city governance - integrating the nexus

What follows is a very brief overview of 3 research projects currently ongoing in which SPE together with local partners here in Bristol collaborate with pan-European cities, industry and research to address the challenges of the “new normal” city planning delivering climate change mitigation – these projects include:

- **TAP** - Triple Access Planning for Uncertain Futures (JPI Urban Europe 2021– 2024)

https://tapforuncertainty.eu

- **CURE –** Copernicus for Urban Resilience in Europe (Horizon 2020 Research and Innovation Action, European Commission, 2020 – 2022)

https://cure-copernicus.eu

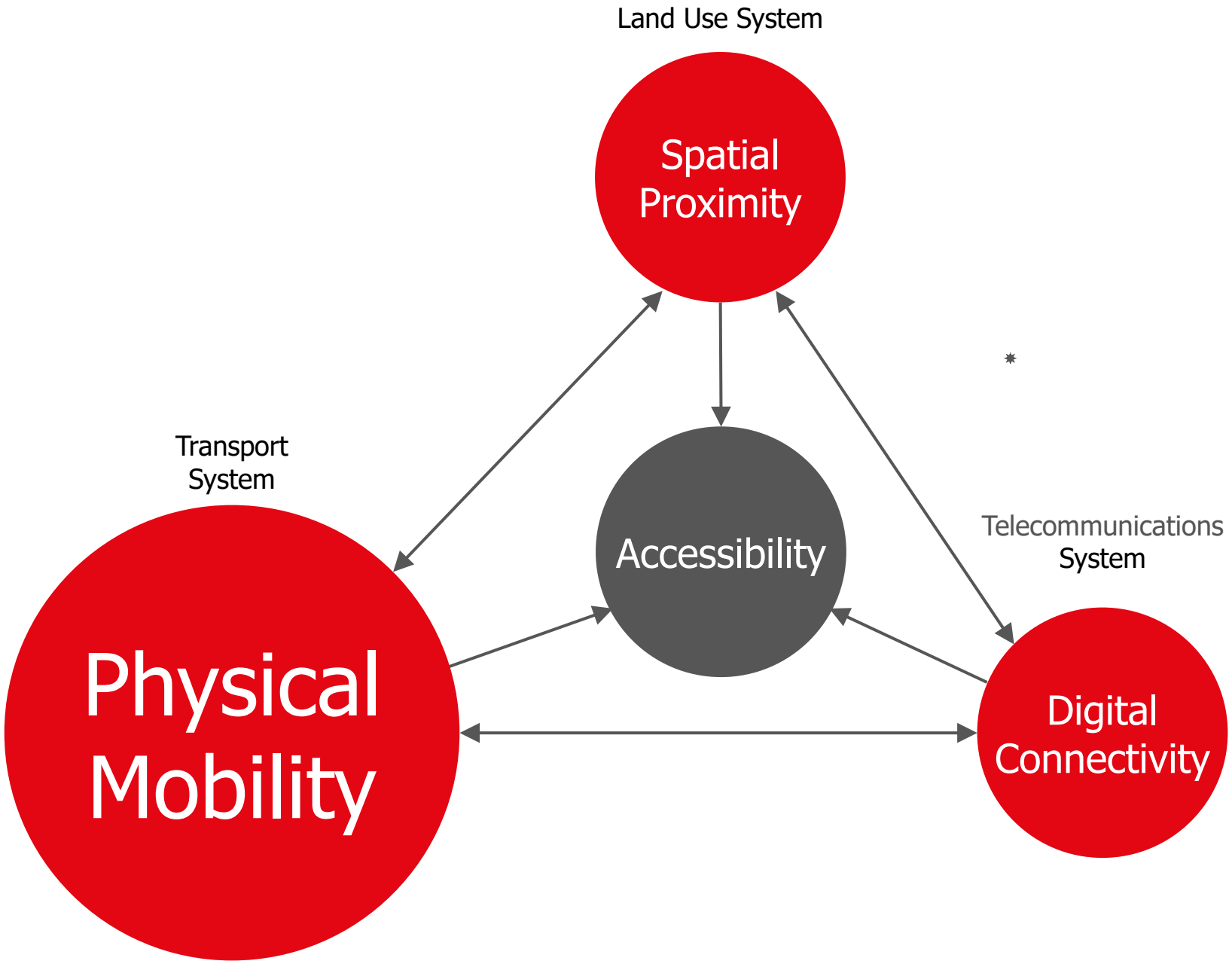
- **SUNEX –** food-energy-water nexus decision-making strategies for sustainable urban transitions (JPI Urban Europe – Belmont, 2018–2021)

https://jpi-urbaneurope.eu/project/sunex/

Triple **A**ccess **P**lanning for **Uncertain Futures**

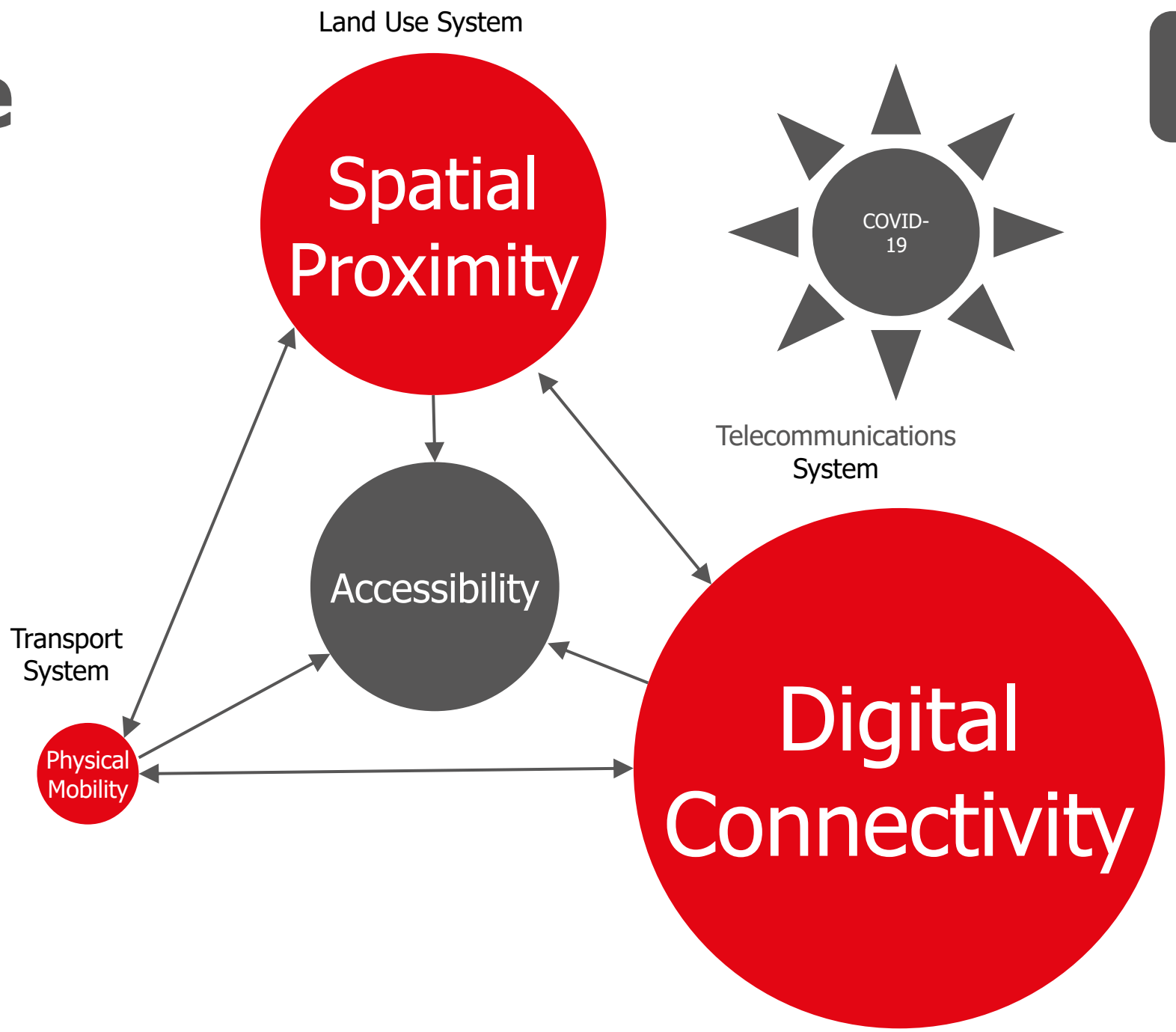
- A three-year pan-European project (2021-2024)
- Critically examining existing urban mobility planning
- Advancing guidance to improve the resilience and adaptability of sustainable urban mobility plans in the face of uncertainty
- Focusing upon the tripartite contribution to accessibility in our towns and cities of physical mobility, spatial proximity and digital connectivity

Past


Land Use System
Spatial Proximity
Transport System
Accessibility
Telecommunications System
Physical Mobility
Digital Connectivity

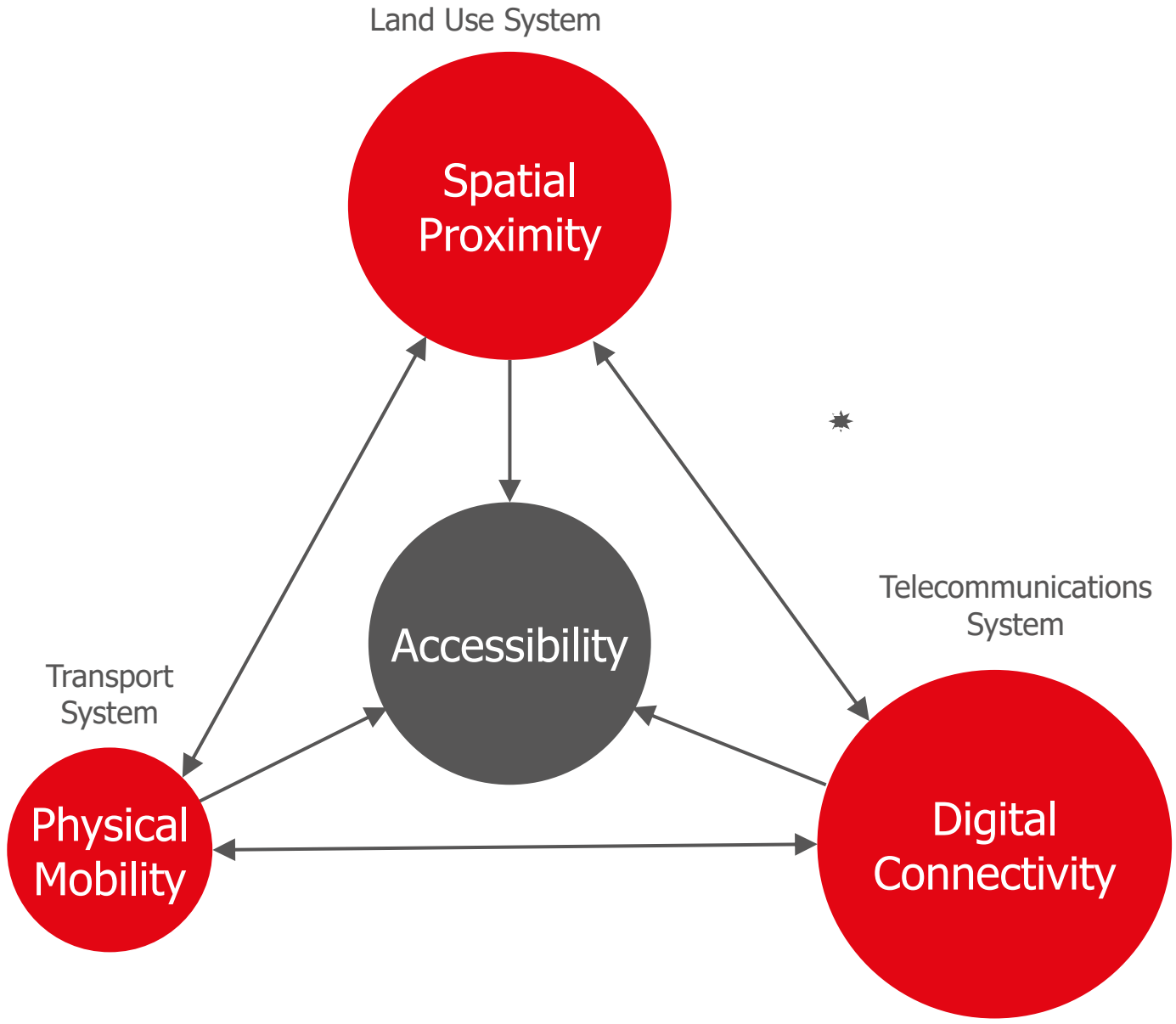
adaptable

Pandemic



resilient

Future



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Conventional approaches to mobility planning, based on the forecast-led paradigm, have led to unrealised expectations concerning alleviating problems such as congestion and delivering economic, social and environmental outcomes. Evidence shows plans become rapidly obsolete and lack resilience with regard to future changes. This project aims to improve Sustainable Urban Mobility Plans (SUMPs), addressing both the movement of people and goods, through two significant new considerations:

- *Triple Access Planning (TAP)* - future sustainable urban *accessibility* can be achieved through the transport system (physical mobility), the land-use system (spatial proximity) and the telecommunications system (digital connectivity); together constituting a Triple Access System (TAS).
- *Accommodating uncertainty* - unpredictable change dynamics such as demographics, economic developments, locational choices, regulatory context, technological breakthroughs, travel demand, and stakeholder behaviour can be explicitly taken into account in the plan, in terms of development and implementation.

This research project is highly collaborative and involves seven case study cities in five countries. Through a methodological approach that sequentially addresses theory, practice, design and application, *TAP for uncertain futures* guidance will be developed and evolved that complements existing SUMP guidelines. The project will strengthen resilience and adaptiveness in SUMPs by advancing theory and translating it into accessible, state-of-the-art, practical guidance.

Academic partners
University of the West of England, UK
Radboud University, Netherlands
Urban Planning Institute, Slovenia
KTH, Sweden
University of Cagliari, Italy

Case study city partners
1. Bristol City Council
2. Aberdeen City Council
3. Nijmegen City Council
4. City of Utrecht
5. City Municipality of Nova Gorica
6. Norrköping Municipality
7. Cagliari Metropolitan Council

National transport authority partners
Transport Scotland
Swedish Transport Administration

Consultancy partners
Mott MacDonald
MuConsult

Triple Access Planning for Uncertain Futures

Funded as part of the ERA-NET Urban Accessibility and Connectivity (ENUAC) initiative

CURE

Copernicus for Urban Resilience in Europe

CURE provides the means to cope with the Earth Observation data in the domain of sustainable and resilient urbanization, by combining products of different Copernicus Core Services. In this context, CURE develops a system, consisting of individual cross-cutting applications for climate change adaptation/mitigation, energy and economy, as well as healthy cities and social environments.

CURE contributes to the scientific and operational exploitation of the existing and upcoming European space infrastructure, by providing novel ideas on how Copernicus can promote valuable information for urban resilience.

http://cure-copernicus.eu

CURE - Copernicus for Urban Resilience in Europe

@H2020Cure

CURE H2020 Project

CURE - Copernicus for Urban Resilience in Europe

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 870337.

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Copernicus
is the European Union's Earth Observation Programme, looking at our planet and its environment for the ultimate benefit of all European citizens. CURE deploys its Core Services and develops cross-cutting applications for cities.
Urban
areas are exceptionally vulnerable to climate change and their vulnerability is increasing over time. City administrations are prompted to embed climate change mitigation and adaptation in both urban planning and development.
Resilience
has become an important necessity for cities, in order to properly preserve their functions and to adapt/transform their systems in the face of climate change.
Europe
promotes urban sustainability and resilience, as they are outlined in the New Urban Agenda and the European Green Deal.

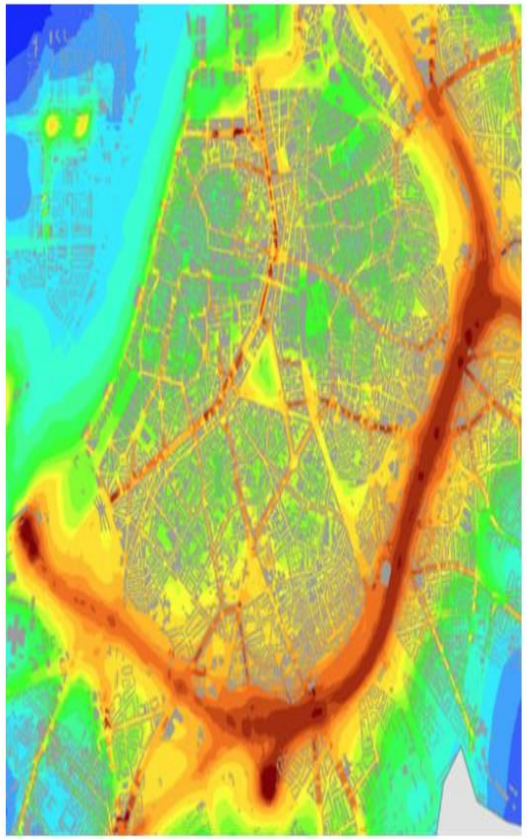
CURE cross-cutting Applications

AP	Cross-cutting applications	Berlin	Copenhagen	Sofia	Heraklion	Bristol	Ostrava	Basel	Munich	San Sebastian	Vitoria-Gasteiz
01	Local Scale Surface Temperature Dynamics (FORTH)	●	●	●	●	●	●	●	●	●	●
02	Surface Urban Heat Island Assessment (DLR)	●	●	●	●	●	●	●	●	●	●
03	Urban Heat Emissions Monitoring (UNIBAS)				●			●			
04	Urban CO_2 Emissions Monitoring (UNIBAS)				●			●			
05	Urban Flood Risk (GISAT)				●		●				
06	Urban Subsidence, Movements and Deformation Risk (GISAT)				●		●				
07	Urban Air Quality (VITO)			●		●	●				
08	Urban Thermal Comfort (VITO)		●	●			●			●	
09	Urban Heat Storage Monitoring (FORTH)				●			●			
10	Nature Based Solutions (TECNALIA)			●						●	
11	Health Impacts (socioeconomic perspective) (CWare)		●	●		●					

HEALTH IMPACTS (SOCIOECONOMIC PERSPECTIVE)

- **Developers:** CWare (Leader), Copenhagen Solution Lab
- **Area of Implementation:** Copenhagen, Sofia, Bristol

The enhancement of human health and the increase of human resilience through improved city planning are key challenges. Substantial health economic benefits can be achieved by creating healthy cities, where air quality remains below critical levels and health promoting aspects (such as walkability, bikeability and access to green areas) are prioritised in urban planning. In general, there is increasing evidence that these aspects have a positive effect on the disease profile of cities, e.g. the incident of obese, diabetes, respiratory diseases and cancer. For instance, Once a person is diagnosed with diabetes mellitus, the health costs increases twofold compared to a person without diabetes, equal to an additional cost of 15.000 € per year per patient. CURE has the potential to support the above prioritisations through its specific cross-cutting Health Impacts application, which uses health data (e.g. mortality, illness, demographic data) and links them with city living conditions.

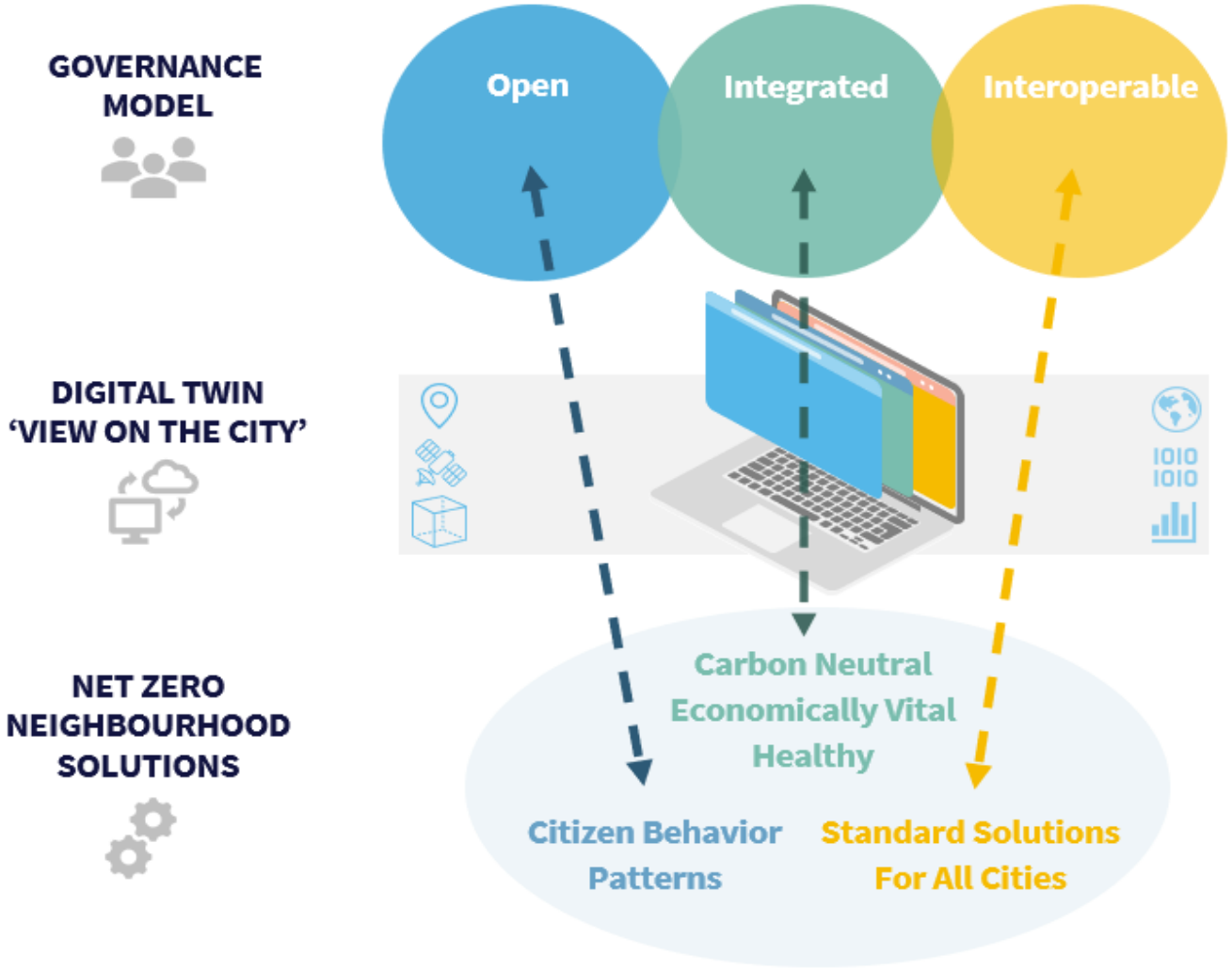


URBAN AIR QUALITY

- **Developers:** VITO
- **Area of Implementation:** Sofia, Bristol, Ostrava

Air pollution is one of the main environmental issues in urban areas. According to a recent report of the European Environmental Agency, more than 400.000 deaths in the EU are related to air pollution every year. Urban air quality is a multi-scale issue. Pollutant concentrations at street-level scale are influenced by regional (rural) background concentrations. Urban increments arise from local industrial and traffic sources, and an additional contribution comes from recirculation in street canyons. CURE proposes a solution, which captures the multi-scale aspect by incorporating several models into an integrated model chain. The application provides street-level (5m resolution) maps of nitrogen dioxide concentrations for entire urban areas, which allow stakeholders to identify pollution hotspots in the urban metropolitan region. Additionally, the model chain allows the assessment of pollution reduction measures, such as the introduction of low emission zones or pedestrian streets.

Net-Zero Neighbourhood Process



policy cycle – operationalising intelligence

SUNEX - (Sustainable Urban Food-Water-Energy Nexus)

- SUNEX will provide a modelling framework to assess the Food-Water-Energy System addressing the demand and the supply side.
- The objective is to develop efficient solutions for energy, water and food supply for urban regions.
- SUNEX will be demonstrated in 4 case study city regions and will finally provide policy guidelines for different physical and climatic framework conditions & consumption patterns

Berlin

Bristol

Doha

Vienna

Sustainable Urbanisation Global Initiative (SUGI)
FOOD-WATER-ENERGY NEXUS

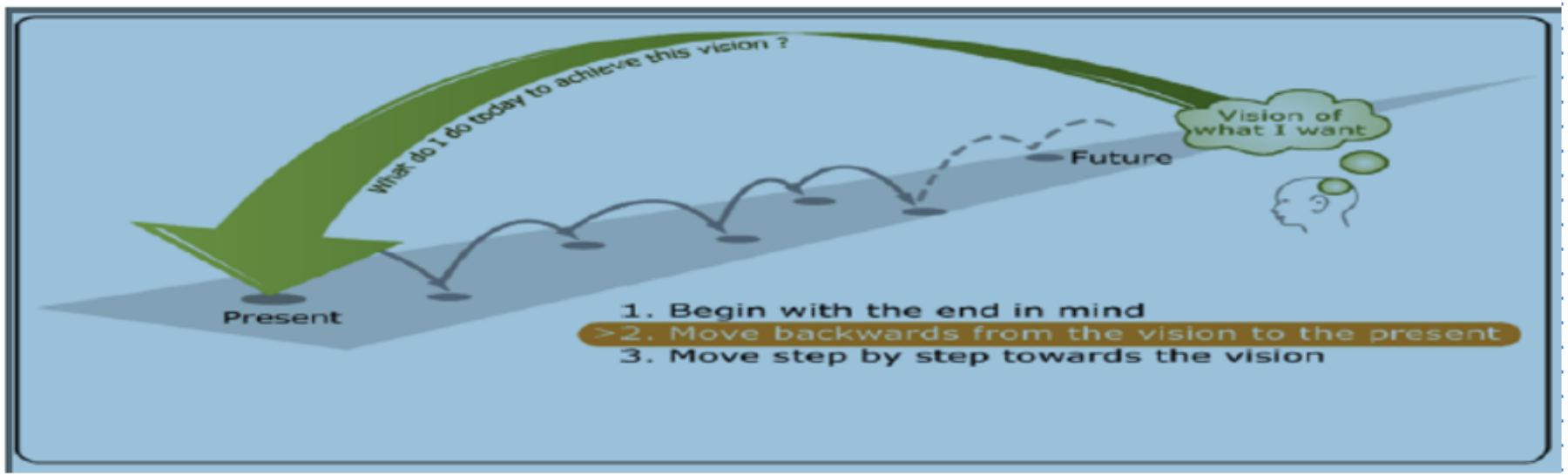
BELMONT FORUM

URBAN EUROPE

European Commission

FOOD, WATER AND ENERGY BACKCASTING FOR CARBON NEUTRAL BRISTOL

Backcasting works through envisioning and analyzing sustainable futures and subsequently by developing agendas, strategies and pathways how to get there." (Vergragt 2011:747)



St Georges, Bristol

21 November 2019

SUNEX BRISTOL STAKEHOLDER WORKSHOP

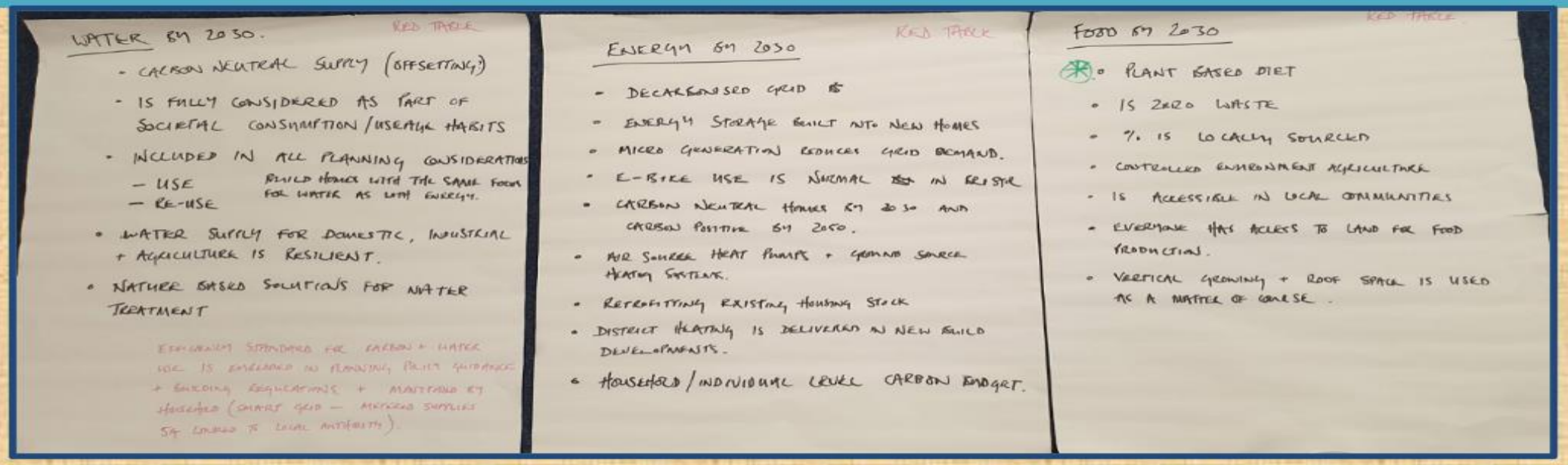
Sustainable Urbanisation Global Initiative (SUGI)
FOOD - WATER - ENERGY NEXUS

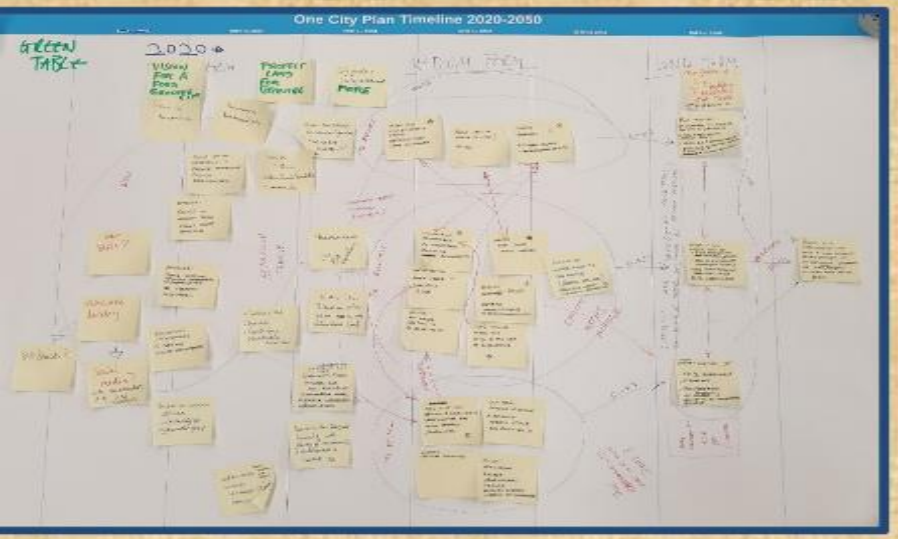
BELMONT FORUM

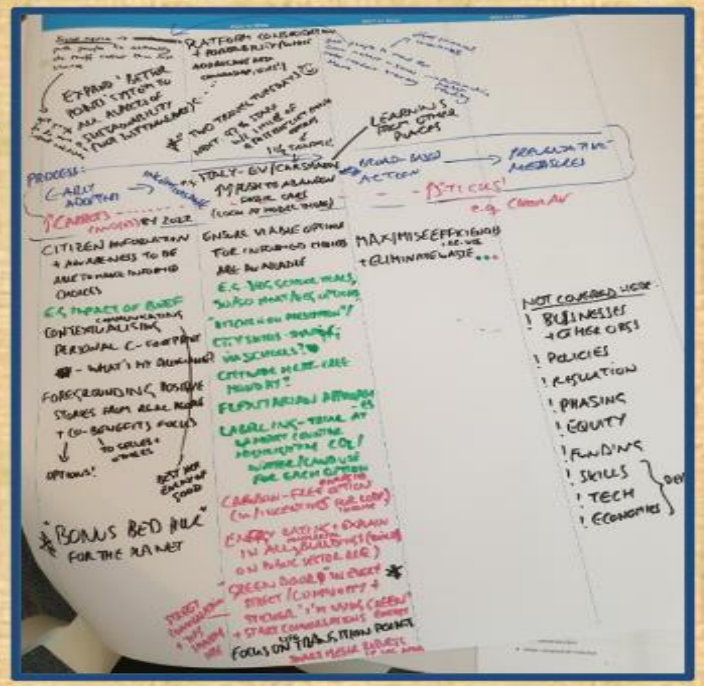
URBAN EUROPE

European Commission
Project No. 730254

Water, Energy and Food Pathways



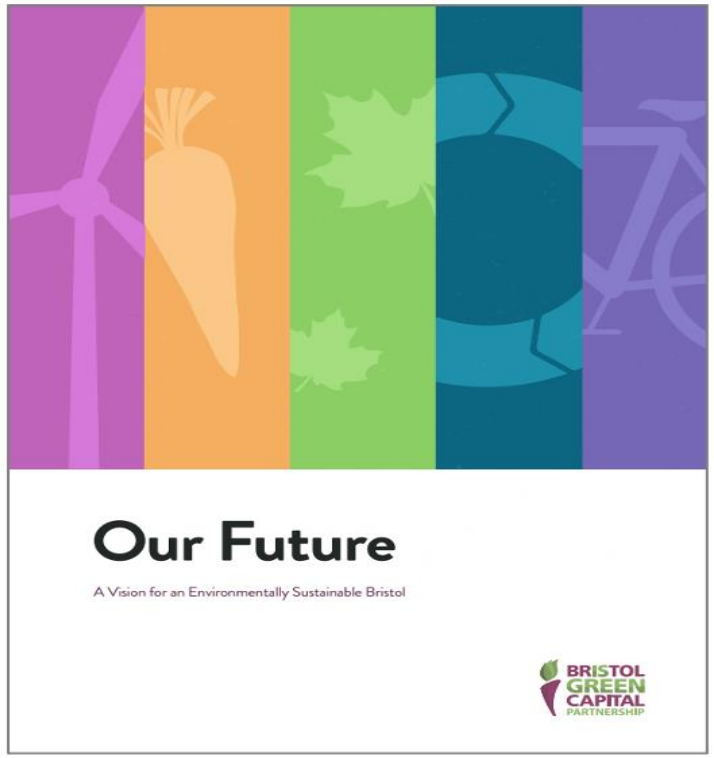




Our Future: A Vision for an Environmentally Sustainable Bristol

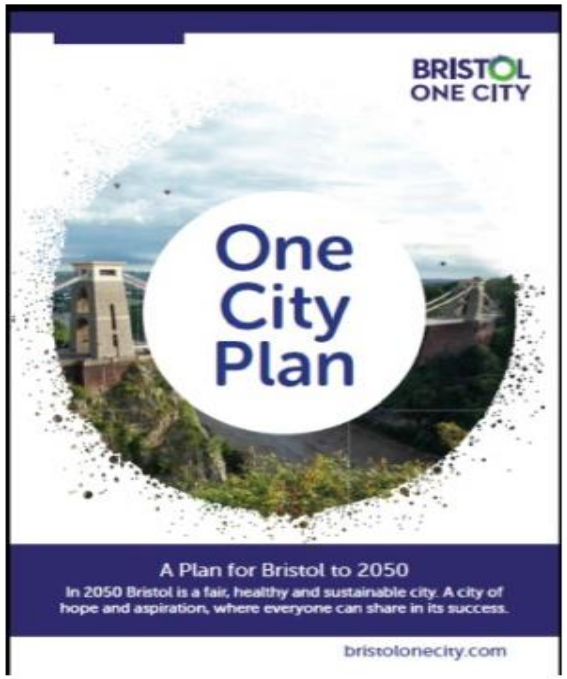
Headline Goals

- **Energy: Bristol's energy system is zero carbon by 2050**
- **Food: Everyone has access to healthy, ethical and sustainably produced food by 2050**
- **Nature:** Everyone in Bristol has access to a healthy natural environment by 2050
- **Resources: Bristol will have a circular economy by 2050**
- **Transport:** Everyone in Bristol can travel sustainably every day by 2050



Bristol: Lessons-learned and Recommendations to City Governance

- Novel “urban living lab” initiative for the city involving SUNEX partners UWE and Bristol Water, as well as city partners and associated stakeholders
- Clear input to both process and substance of the current review of the Bristol One City Plan
- Stakeholder engagement approach impactful for the Bristol City planning process and at the same time providing a rich resource of understanding investing the SUNEX policy guidelines specification



Going forward …….

- Continuing to work with local partners in the TAP and CURE projects in the development of smart city applications enabling urban governance decision-making process and promoting net-zero neighbourhoods
- Developing new proposals in the framework of EU Horizon Europe supporting the EU Mission Climate-Neutral and Smart Cities, including Bristol, promoting nature based solutions and active travel promoting net-zero “new normal” communities
- Driving stakeholder engagement linking Bristol with European partners via the forthcoming Brussels CURE Stakeholder Workshops October 14 and 17 2022 – hosted by CEMR (Council for European Municipalities and Regions) also on line!

Ursula **von der Leyen**, President of the Commission, said: *"The green transition is making its way all over Europe right now. But there's always a need for trailblazers, who set themselves even higher goals. These cities are showing us the way to a healthier future. We will support them on this! Let's begin the work today."*

The Cities Mission will receive €360 million of Horizon Europe funding covering the period 2022-23, to start the innovation paths towards climate neutrality by 2030. The research and innovation actions will address clean mobility, energy efficiency and green urban planning, and offer the possibility to build joint initiatives and ramp up collaborations in synergies with other EU programmes.

thank you