



D3.4: Report on multiple benefits expected from Visionary Solutions

VARCITIES | Work Package 3, Task 3.2

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Table of Contents

List of figures	6
List of tables.....	7
Abbreviation list	8
Executive summary	9
1 Introduction.....	10
2 De-constructing the concept of “Visionary Solutions”	12
2.1. Nature-based Solutions	13
2.2. Digital Solutions	14
2.3. Socio-cultural Solutions	15
3 Identifying Visionary Solutions multiple benefits.....	16
3.1. Outcome analysis of EU projects	16
3.1.1. Mapping multiple benefits from Nature-based Solutions projects.....	19
3.1.2. Mapping multiple benefits from Digital Solutions projects.....	21
3.1.3. Mapping multiple benefits from Socio-cultural Solutions projects.....	22
3.2. Potential contributions to Sustainable Development Goals	25
3.3. Potential contributions to OECD Well-being Framework.....	27
4 Measuring Visionary Solutions multiple benefits	29
4.1. VARCITIES Nature-based Visionary Solutions	34
4.1.1. Recommended Key Performance Indicators for Nature-based Visionary Solutions .	34
4.2. VARCITIES Digital Visionary Solutions	36
4.2.1. Recommended Key Performance Indicators for Digital Visionary Solutions	37
4.3. VARCITIES Socio-cultural Visionary Solutions.....	37
4.3.1. Recommended Key Performance Indicators for Socio-cultural Visionary Solutions .	38
5 Guidelines for the implementation of VARCITIES monitoring and evaluation framework.....	41
5.1. Research questions formulated in the 1 st round of co-creation workshops.....	41
5.2. Research questions formulated in the 2 nd round of co-creation workshops	42
6 References	43



7 Annexes.....46



List of figures

Figure 1: Workflow of the Deliverable	11
Figure 2: The VS “umbrella” concept	12
Figure 3: The key challenges of Nature-based Solutions	13
Figure 4: The key challenges of Digital Solutions	14
Figure 5: The key challenges of Socio-cultural Solutions.....	15
Figure 6: Sustainable Development Goals.....	25
Figure 7: OECD Well-being Framework	27
Figure 8: Possible outcomes deriving from implemented VS	29
Figure 9: Temporal dimension of VS outcomes	30
Figure 10: Project proposal phase.....	32
Figure 11: Project planning phase	32
Figure 12: Project execution phase.....	33



List of tables

Table 1: List of reviewed EU projects on Nature-based Solutions.....	17
Table 2: List of reviewed projects on Smart City	18
Table 3: List of multiple benefits generated from Nature-based Solutions projects	19
Table 4: List of multiple benefits generated from Digital Solutions projects.....	21
Table 5: List of multiple benefits generated from Socio-cultural Solutions projects.....	22
Table 6: Potential contributions of VS to the SDGs	25
Table 7: Potential contributions of VS to the OECD Well-being Framework.....	28
Table 8: Most common tools used for impacts evaluation.....	30
Table 9: NBS-related Visionary Solutions for each pilot	34
Table 10: Key challenges addressed by NBS-related VS for each pilot.....	34
Table 11: Recommended KPIs for Nature-based VS.....	35
Table 12: Digital-related Visionary Solutions for each pilot	36
Table 13: Key challenges addressed by Digital-related VS for each pilot.....	36
Table 14: Recommended KPIs for Digital VS	37
Table 15: Socio-cultural-related Visionary Solutions for each pilot	37
Table 16: Key challenges addressed by Socio-cultural-related VS for each pilot.....	38
Table 17: Recommended KPIs for Socio-cultural VS	38



Abbreviation list

Term	Description
KPIs	Key Performance Indicators
NBS	Nature-based Solution/s
OECD	Organisation for Economic Co-operation and Development
SDGs	Sustainable Development Goals
VS	Visionary Solution/s



Executive summary

In an increasingly urbanised world, cities face several challenges and threats, struggling to propose credible urban futures and new opportunities for their citizens. The vision of the VARCITIES project is to implement real, visionary ideas – Visionary Solutions – and add value by establishing sustainable models for increasing the health and well-being of citizens, who are exposed to diverse climatic conditions and challenges in and around Europe. In particular, the objective of Work Package 3 is to provide a common knowledge baseline to guide and support local administrations in this process.

Accordingly, the present report contains an analysis of potential multiple benefits linked to the Visionary Solutions proposed by the pilot cities. It starts by reviewing existing EU-funded projects on Nature-based Solutions and Smart City paradigms to identify common key challenges (with the related multiple benefits) that suit the taxonomy of Visionary Solutions (i.e. green and/or technological solutions). Then it proposes an exercise to evaluate the impact of Visionary Solutions by associating every key challenge with the set goals of the United Nations (2030 Agenda for Sustainable Development) and the Organisation for Economic Co-operation and Development (OECD Well-being Framework). Finally, it focuses on multiple benefits estimation methods and introduces the drafted list of Key Performance Indicators (developed within the expert groups' activities of Work Package 7) that are going to be used during the monitoring process.

The results of this analysis show that pilot cities are properly running towards the set targets of the project. They are translating their visionary ideas into real solutions by fully exploiting them from a natural, digital, and socio-cultural perspective. As evidenced by the outcomes of the (subjective) exercise carried out in Section 3, these actions will potentially contribute to addressing several goals in terms of sustainable urban development. In particular, the main areas of intervention will be related to human and environmental interactions and the factors that affect the quality of life (such as health, well-being, safety, governance, etc.).



1 Introduction

Work Package 3, led by EURAC, provides the common knowledge framework needed to achieve visionary and integrated solutions for increasing health & well-being in cities. Specifically, within Task 3.2, Deliverable 3.4 aims to analyse the multiple benefits expected from the implementation of the Visionary Solutions proposed by the pilot cities.

This report is following Deliverable 3.5 which sets the guidelines for sketching Visionary Solutions. In this way, this preliminary work provides a descriptive framework that intends to guide cities through their choices, understanding how the implementation of certain actions can produce positive or negative effects considering their time of appearance (immediate or delayed) on their territory. From a broader perspective, the document aims to serve as a guide not only for VARCITIES pilot leaders and their local partners but also for cities and communities willing to develop similar solutions for citizens' health & well-being.

The work's purpose is to provide comprehensive methodological guidance for the conceptualization, identification, and quantification of multiple benefits. Closely related with the insights collected by TSI with the report "Lessons learned from other EU projects in contribution to Task 3.2", the document analyses the multiple benefits produced over time and generated by similar EU projects in the field of promoting Nature-based Solutions, digital solutions and socio-cultural solutions within urban contexts. Thereby, it sets a common basis for the analysis, evaluation and comparison of different multiple benefits linked to innovative green and/or technological solutions.

In detail, the deliverable is organized as follows:

- The first section theorizes and breaks down the “umbrella” concept of Visionary Solutions, providing an overview of their main aspects;
- The second section identifies the multiple benefits generated by similar EU projects over the past few years, understanding their potential contribution to SDGs and OECD Well-being Framework to implement health & well-being in urban contexts;
- The third section summarizes the proposed Visionary Solutions by each pilot city and the recommended Key Performance Indicators that can be used to quantify the impact of their multiple benefits;
- Finally, the fourth section suggests some guidelines for the implementation of the VARCITIES monitoring and evaluation framework (that will be finalized under Work Package 7), based on the inputs provided by Work Package 4 from the 1st and 2nd co-creation workshops on the theme of multiple benefits assessment.



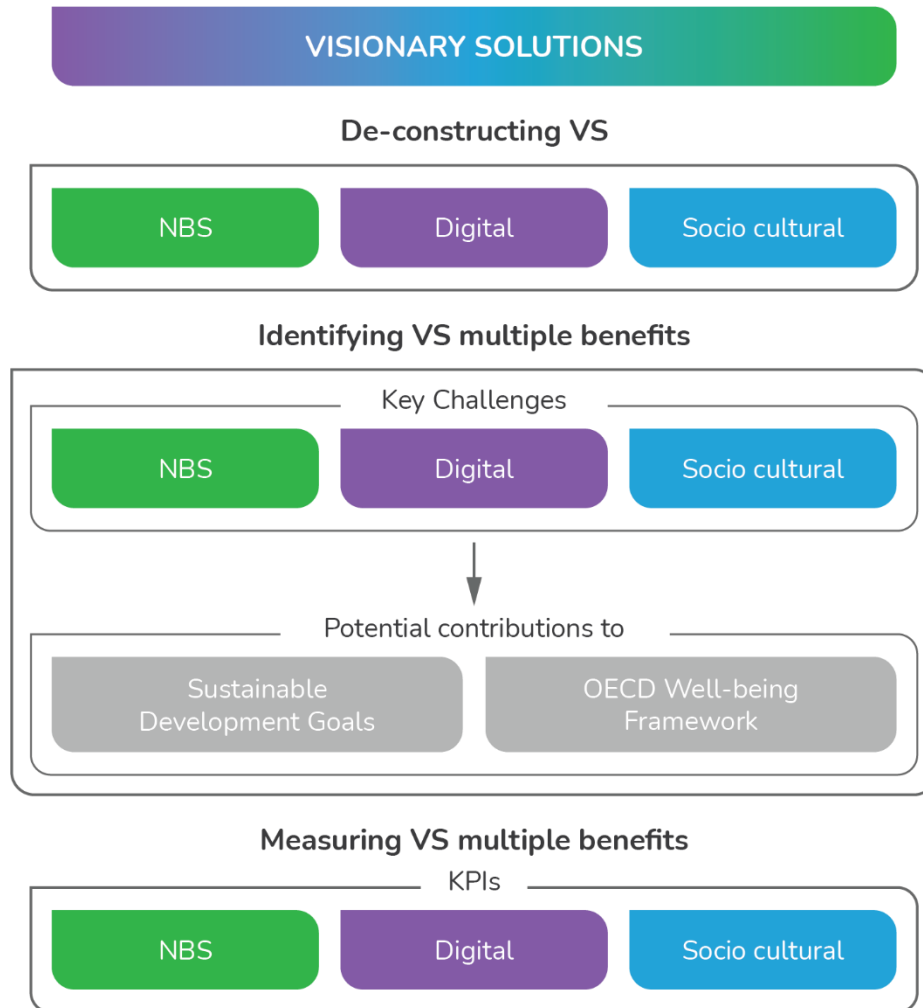


Figure 1: Workflow of the Deliverable. Source: own elaboration

2 De-constructing the concept of “Visionary Solutions”

The present chapter aims to define the concept of Visionary Solutions introduced by the VARCITIES project. As previously mentioned, Visionary Solutions are rooted in green and/or technological solutions. However, a proper definition is still lacking. The purpose of this section is to fill this gap, by breaking down the Visionary Solutions concept into their type of solutions (see Figure 2) – Nature-based Solutions, Digital Solutions, Socio-cultural Solutions – and analysing the potential multiple benefits expected from their implementation. To facilitate this process, the following subsections deepen each of these parts to better explain the combined use of natural elements, technological solutions, and socio-cultural actions to foster health & well-being in urban areas.



Figure 2: The VS “umbrella” concept. Source: own elaboration

2.1. Nature-based Solutions

Numerous definitions have been used to define the concept of Nature-based Solutions, the most common one comes from the International Union for the Conservation of Nature which describes them as “actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits” [1]. Since its first applications, this approach has always wanted to be seen as a way of supporting human life and activities over time, addressing different societal challenges in terms of ecosystem services provided: *Climate Resilience; Water Management; Natural and Climate Hazards; Green Space Management; Biodiversity Enhancement; Air Quality; Place Regeneration* [2].

Given the complexity of urban contexts, the need for a healthier environment is increasingly recognised as well as the importance of connecting urban with natural areas, particularly stressed during the COVID-19 pandemic. The recent sanitary crisis has offered an opportunity to re-think the relationship between man and nature and the possibility of channelling the urban technological transition to counteract climate change, support biodiversity, reduce pollution and improve the well-being of inhabitants [3]. VARCITIES acknowledges the complexity and the challenges of future cities and tries to advance innovation across different urban scales by fully exploiting nature-based solutions.

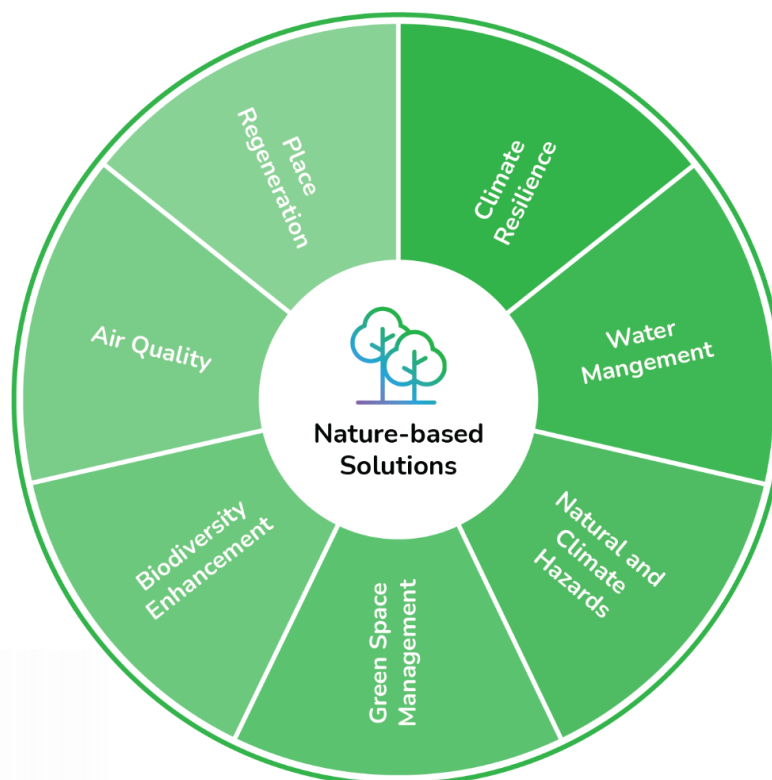


Figure 3: The key challenges of Nature-based Solutions. Source: own elaboration

2.2. Digital Solutions

Alongside the concept of Nature-based Solutions, another paradigm has become increasingly important to address environmental challenges, placing technological innovation at the core of urban policies: the Smart City concept [4]. In an increasingly urbanised world, cities face several threats and struggle to propose credible urban futures. Inevitably, these actions require a multi-scale approach that allows them to manage their development, support economic competitiveness, strengthen social and environmental cohesion and guarantee a higher quality of life for their citizens. Since its formulation, the notion of Smart City has grown in value, while several contradictory meanings are also attached to this word. Today, a Smart City is still often defined as “a place where traditional networks and services are made more efficient with the use of digital solutions for the benefits of its inhabitants and business” [4]. However, a smart city goes beyond the use of digital technologies for better resource use and fewer emissions. It aims to create synergies among different clusters and address some key challenges: *Sustainable Urban Mobility*; *Sustainable Built Environment*; *Integrated Infrastructures and Processes* [5]. But this requires the capability of exploiting big data and real-time information. One of the objectives of VARCITIES is to create an ecosystem of fully connected intelligent sensors and devices to help the pilot cities during the implementation and the evaluation phases.

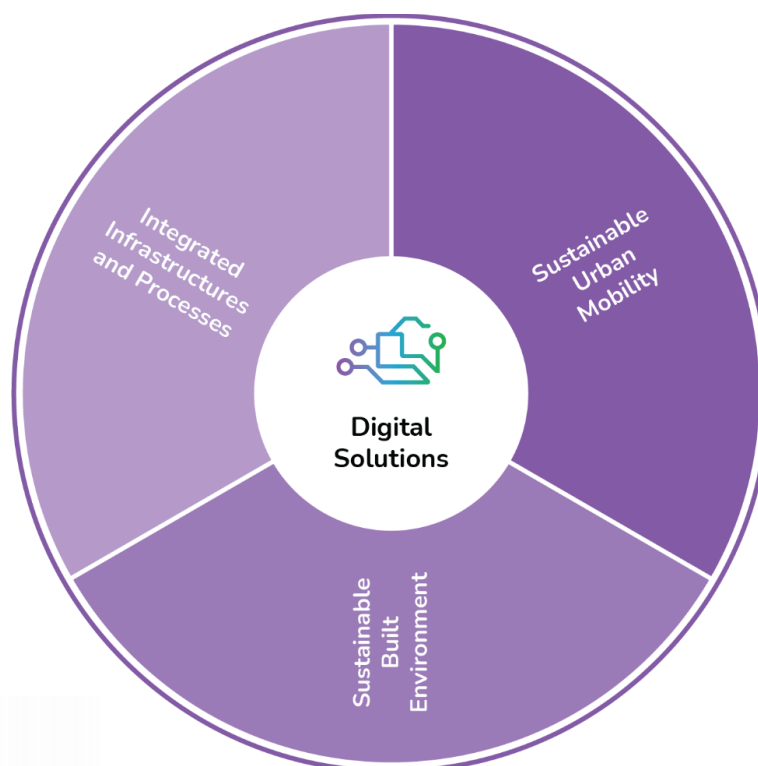


Figure 4: The key challenges of Digital Solutions. Source: own elaboration

2.3. Socio-cultural Solutions

Cities play a crucial role as engines of the economy, as places of connectivity, creativity, innovation, and as centres of services for their surrounding areas. However, cities are also places where problems such as unemployment, segregation and poverty are concentrated [6]. The innovative hybridization between nature-based and technological solutions advanced by the VARCITIES project highlights the importance of the socio-cultural dimension in addressing a bottom-up approach aimed at improving the health & well-being of all citizens. The proposed Visionary Solutions are focusing on public spaces, because of their pivotal role in successful urban design, envisioned as people-centered areas that support creativity, inclusivity, health, and happiness for the citizens. As in the case of Nature-based Solutions and Digital Solutions, also Socio-cultural solutions can address different societal challenges to deliver multiple benefits. The ones found in literature and relevant within the VARCITIES project are *Knowledge and Social Capacity Building*; *Participatory Planning and Governance*; *Social Justice and Social Cohesion*; *Health and Wellbeing*; *New Economic Opportunities and Green Jobs*; *Integrated Planning, Policies and Regulations*; *Business Models and Finance*; *Citizen Focus* [5], [7]. Visionary Solutions tightly integrate social and cultural dimensions to improve the health and well-being of citizens. The stakeholder engagement and co-creation process are critical elements in developing the project and in ensuring its uptake in cities/communities.



Figure 5: The key challenges of Socio-cultural Solutions. Source: own elaboration

3 Identifying Visionary Solutions multiple benefits

The aim of this paragraph is to understand what potential multiple benefits can be delivered with the implementation of the Visionary Solutions. In literature, we can find several definitions of multiple benefits and sometimes they overlap with the ones of co-benefits [8]. In general, the term “co-benefit” refers to any positive impact or effect, regardless of its intentionality, that exceeds the primary policy or project goal [9], while “multiple benefits” is used to indicate the wide range of positive outcomes that project implementation can bring in urban areas [10]. From what has been said, the substantial difference lies in the hierarchy attributed to the benefits: horizontal in the case of multiple benefits, vertical in the case of co-benefits [11], [12]. Concerning multiple benefits, a basic classification distinguishes between direct and indirect ones, depending on whether they are generated by resource improvements or by the project implementation [13].

Based on an outcome analysis of similar EU projects, in the next subsections, a list of potential multiple benefits from Nature-based, Digital and Socio-cultural solutions is proposed, to understand how they can contribute to the 2030 Agenda for Sustainable Development and the OECD Well-being Framework.

3.1. Outcome analysis of EU projects

To identify the potential multiple benefits delivered from the implementation of the Visionary Solutions, a literature review about the outcomes of similar EU projects has been conducted. Due to the characteristics of VARCITIES, both Nature-based Solutions projects and Smart City projects have been considered. This section deepens the insights collected with the report “Lessons learned from other EU projects, in contribution to Task 3.2”, to propose a list of multiple benefits that overarch the concept of Visionary Solutions. The Literature review covered the following key sources: Research Gate, Google Scholar, websites of Horizon 2020 projects and Scopus. After an in-depth investigation of 10 Nature-based Solutions projects (see Table 1) and 10 Smart City projects (see Table 2), the multiple benefits have been grouped by type of solutions (see Section 2) and relative key challenges:

- Nature-based Solutions: (*Climate Resilience, Water Management, Natural and Climate Hazards, Green Space Management, Biodiversity Enhancement, Air Quality, Place Regeneration*);
- Digital Solutions: (*Sustainable Urban Mobility, Sustainable Built Environment, Integrated Infrastructures and Processes*);
- Socio-cultural Solutions: (*Knowledge and Social Capacity Building, Participatory Planning and Governance, Social Justice and Social Cohesion, Health and Wellbeing, New Economic*

Opportunities and Green Jobs, Integrated Planning, Policies and Regulations, Business Models and Finance, Citizen Focus).

Table 1: List of reviewed EU projects on Nature-based Solutions

PROJECT	DURATION	OBJECTIVE
CLEVER Cities	2018-2023	"Apply a city centric approach, starting by key urban regeneration challenges and employing strong local partner clusters, to foster sustainable and socially inclusive urban regeneration locally, in Europe and globally" [14]
Connecting Nature	2017-2022	"Co-develop the policy and practices necessary to scale up urban resilience, innovation and governance via nature-based solutions" [15]
GROWGREEN	2017-2022	"Create climate and water resilient, healthy and livable cities by investing in NBS" [16]
NAIAD	2016-2020	"Operationalize the insurance value of ecosystems for water-related risk mitigation, by developing and testing concepts, tools and applications on 9 demo sites across Europe, under the common concept of NBS" [17]
Nature4Cities	2016-2021	"Create a comprehensive reference Platform for NBS, offering technical solutions, methods and tools to empower urban planning decision making" [18]
NATURVATION	2016-2021	"Develop our understanding of what nature-based solutions can achieve in cities, examine how innovation can be fostered in this domain, and contribute to realize the potential of nature-based solutions for responding to urban sustainability challenges by working with communities and stakeholders" [19]
OPERANDUM	2018-2022	"Deliver the tools and methods for the validation of Nature-Based Solutions in order to enhance resilience in European rural and natural territories by reducing hydro-meteorological risks" [20]
ThinkNature	2017-2019	"Develop a platform that supports the understanding and the promotion of NBS" [21]
UNaLab	2017-2022	"Develop smarter, more inclusive, more resilient and increasingly sustainable societies through innovative NBS" [22]
URBAN GreenUP	2017-2022	"Develop, apply and validate a methodology for Renaturing Urban Plans to mitigate the effects of climate change, improve air quality and water management and increase the sustainability of our cities through innovative nature-based solutions" [23]

Table 2: List of reviewed projects on Smart City

PROJECT	DURATION	OBJECTIVE
IRIS	2017-2023	"Connect interests of many different stakeholders in innovative business-models, allowing for upscale and replication of integrated solutions for sustainable cities" [24].
MAThUP	2017-2022	"Create and adopt solutions that can turn urban problems into smart opportunities to improve the citizens' quality of life and boost the local economies" [25].
mySMARTLife	2016-2021	"Develop of an Urban Transformation Strategy to support cities in the definition of transition models, as a suitable path to reach high level of excellence in its development process, addressing the main city challenges and progressing to the smart people and smart economy concepts" [26].
REPLICATE	2016-2021	"Accelerate the deployment of innovative technologies, organizational and economic solutions to significantly increase resource and energy efficiency, improve the sustainability of urban transport, and drastically reduce greenhouse gas emissions in urban areas" [27].
RUGGEDISED	2016-2021	"Create urban spaces powered by secure, affordable and clean energy, smart electro-mobility, smart tools and services" [28].
Sharing Cities	2016-2020	"Develop affordable, integrated, commercial-scale smart city solutions with a high market potential" [29].
SINFONIA	2014-2019	"Bolster public/private resources and provide European added value to already committed district refurbishment master plans of two middle sized European cities" [30].
SmartEnCity	2016-2021	"Develop a highly adaptable and replicable systemic approach towards urban transition into sustainable, smart and resource-efficient cities in Europe" [31].
SMARTER TOGETHER	2016-2021	"Find the right balance between smart technologies and organizational/ governance dimensions in order to deliver smart and inclusive solutions and to improve citizen's quality of life" [32].
STARDUST	2017-2022	"Pave the way towards the transformation of the carbon supplied cities into Smart, highly efficient, intelligent and citizen-oriented cities, developing urban technical green solutions and innovative business models, integrating the domains of

		buildings, mobility and efficient energy through ICT, testing and validating these solutions, enabling their fast roll out in the market” [33].
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3.1.1. Mapping multiple benefits from Nature-based Solutions projects

This subsection presents a list of the multiple benefits generated by the EU Nature-based Solutions projects analysed: *Nature4Cities*, *NATURVATION*, *NAIAD*, *ThinkNature*, *Connecting Nature*, *GROWGREEN*, *UNaLab*, *URBAN GreenUP*, *CLEVER Cities*, *OPERANDUM*.

Table 3: List of multiple benefits generated from Nature-based Solutions projects

<i>Key challenges</i> [7]	<i>Multiple benefits from Nature-based Solutions projects</i> [7]
Climate Resilience	<p>Removed carbon via storage in vegetation and/or soil: As well as reducing the amount of carbon in the atmosphere, NBS can also improve soil health and its ability to provide vital ecosystem services.</p> <p>GHG emissions reduced: NBS can mitigate climate change causes by reducing greenhouse gas emissions.</p> <p>Reduced heatwave incidence: NBS can keep cities cool during summer heatwaves, reducing the Urban Heat Island Effect.</p>
Water Management	<p>Reduced surface runoff following rain events: NBS can improve the hydrological response of urban areas to flooding hazards by reducing the flow of stormwater through drainage systems.</p> <p>Increased surface water storage and/or groundwater recharge: NBS can help to manage and optimize underground water storage by increasing resilience in dry periods or seasons of uncertain and variable climate conditions.</p> <p>Water quality improvement: As well as improving water management, NBS can contribute to removing pollutants, ensuring sustainable water treatments (up to drinking water supply).</p>
Natural and Climate Hazards	<p>Disaster resilience increased: Biodiversity and ecosystem services provided by NBS can help cities to recover after extreme weather events and to mitigate the effects of climate change.</p> <p>Disaster-risk informed development: While strategically conserving or restoring ecosystems and supporting livelihoods, NBS can support the investment in infrastructure systems to reduce disaster risk.</p>

Green Space Management

Mitigate risk to critical urban infrastructure:

NBS can decrease the vulnerability of cities in light of climate change by serving as proactive adaptation options for municipalities to mitigate the risks related to urban infrastructures.

Green space accessibility increased:

Besides their environmental impacts, NBS can provide satisfactory near-home recreation opportunities that diminish the need to travel for contact with nature.

Total green space within a defined area increased:

Integrating NBS in planning practices brings to a general quantitative increase in urban green spaces.

Biodiversity Enhancement

Improved quality of soil organic matter:

NBS may improve the quality of soil organic matter by incorporating green manure, slurry, or crop residues.

Improved ecological connectivity of urban green and blue spaces:

NBS can be used to create corridors or steppingstones and enhance the ecological connectivity of urban green and blue spaces, preventing biodiversity loss.

A higher number of native plant species:

Plants offer shelter and food for wildlife and support pollinators. NBS can increase native species richness by providing diverse habitats and food sources.

Increased animal and plant species diversity within a defined area:

Greater biodiversity in ecosystems, species, and individuals leads to greater stability. Increasing the number of species within a defined area through NBS can help us to counteract biodiversity loss and ecosystem collapse.

Air Quality

A lower number of days during which air quality parameters exceed threshold values:

NBS can reduce air pollution, as plants use carbon dioxide, produce oxygen, regulate humidity and trap particulate matter on leaves.

Reduced proportion of the population exposed to ambient air pollution:

NBS can bring positive health outcomes to urban residents, including better air quality.

Place Regeneration

Derelict land reclaimed for NBS:

NBS can be used to redevelop brownfield sites and increase the quantity and quality of urban green space.

Enhanced place attachment:

As well as enhancing natural capital, NBS can strengthen social capital by increasing the sense of place in the locals.



Increased recreational value of public space:

Public spaces are essential for citizens' health and life. NBS can help to increase their recreational and aesthetic value, improving the quality of urban furniture.

Incorporation of environmental design in buildings:

NBS can also be incorporated into building design to provide ecosystem services on a smaller scale.

Preservation of cultural heritage:

NBS can be used to preserve urban heritage by mitigating the deterioration of materials, improving the visitor experience, enhancing cultural values, and stimulating investments.

3.1.2. Mapping multiple benefits from Digital Solutions projects

This subsection presents a list of the multiple benefits generated by the EU Smart City projects analysed: *REPLICATE*; *Sharing Cities*; *SmartEnCity*; *SMARTER TOGETHER*; *mySMARTLife*; *RUGGEDISED*; *IRIS*; *MATchUP*; *STARDUST*; *SINFONIA*.

Table 4: List of multiple benefits generated from Digital Solutions projects

<i>Key challenges</i> [5]	<i>Multiple benefits from Digital Solutions projects</i> [13]
Sustainable Urban Mobility	<p>Reduced traffic congestion: Technology can help us to implement new e-mobility solutions to reduce traffic congestion (e.g. last-mile logistics).</p> <p>Data-driven development strategies: Digital Solutions, ranging from the spatial monitoring of particulate matter concentrations to a continuous mapping of mobility patterns, can provide a better understanding of the most efficient urban mobility strategy to be applied.</p>
Sustainable Built Environment	<p>Increased property value: Despite making the built environment more sustainable, Digital Solutions can positively affect the assets value of a building (rental or sale value).</p> <p>Building life-cycle costs reduction: Integrate Digital Solutions in building design can reduce construction, operation and maintenance costs.</p> <p>Resilience of energy infrastructures increased: Digital Solutions can help to create more resilient energy infrastructures by improving their efficiency and performance.</p> <p>Better environmental resource management: Digital Solutions can help to efficiently allocate environmental resources by reducing the negative effects of mismanagement.</p>

Integrated Infrastructures and Processes

Citizen science for environmental monitoring:

Citizens are producing valuable data about environmental phenomena, Digital Solutions can help public authorities to make more use of this valuable source of knowledge and positively impact the policy design process.

Local energy-supply chain development:

Digital Solutions can support the development of local energy supply chains (electricity and thermal energy sharing), contributing to the development of Positive Energy Districts.

Smart energy services establishment:

Digital Solutions can constitute a catalyst towards conceptualizing and generating innovative applications and services for energy services establishment and management

3.1.3. Mapping multiple benefits from Socio-cultural Solutions projects

Since the EU projects explored so far have also a socio-cultural dimension, i.e. the impact of Nature-based and Digital actions on the community, this subsection presents a list of the multiple benefits generated by both the EU Nature-based Solutions and Smart City projects analysed: *Nature4Cities*, *NATURVATION*, *ThinkNature*, *Connecting Nature*, *GROWGREEN*, *UNaLab*, *URBAN GreenUP*, *CLEVER Cities*, *NAIAD*, *OPERANDUM*; *REPLICATE*; *Sharing Cities*; *SmartEnCity*; *SMARTER TOGETHER*; *mySMARTLife*; *RUGGEDISED*; *IRIS*; *MATCHUP*; *STARDUST*; *SINFONIA*.

Table 5: List of multiple benefits generated from Socio-cultural Solutions projects

<i>Key challenges</i> [5], [7]	<i>Multiple benefits from Socio-cultural Solutions projects</i> [7], [13]
Knowledge and Social Capacity Building	<p>Increased citizen involvement in environmental educational activities: Socio-cultural Solutions can allow people to influence the outcome of plans and working processes that constitute the operations of governance.</p> <p>Support social learning regarding ecosystems and their functions: Recently, social learning has been recognized to enhance social-ecological systems' resilience. Socio-cultural Solutions can help to foster the adaptation to changing conditions.</p> <p>Increased openness of participatory processes: Socio-cultural Solutions can increase the possibility of local stakeholders being involved in the design process.</p> <p>Boosted empowerment: Socio-cultural Solutions can boost community development through the empowerment of the targeted population (e.g. women).</p>
Participatory Planning and Governance	

Social Justice and Social Cohesion

Public-private partnership activated:

Socio-cultural Solutions can promote collaborations to activate public-private partnerships or social enterprises

Support policy learning for mainstreaming NBS:

Policy learning processes can be used to support the comprehension of local interventions, like the implementation of NBS.

Enhanced trust in decision-making procedures and decision-makers:

Socio-cultural Solutions can increase the sense of confidence and trust in decision-makers.

Bridging and bonding activities promoted:

Bridging and bonding activities can be used to enhance the connection between different social groups.

Inclusion of different social groups in NBS projects:

NBS can foster social cohesion among typically excluded social groups and support social justice by providing equal access to neighbourhood green spaces.

Enhanced trust and solidarity within the community:

Socio-cultural Solutions can help us to increase trust and solidarity within the community and between citizens.

Health and Wellbeing

Level of outdoor physical activity improved:

Socio-cultural Solutions can increase the mental and physical health of citizens by stimulating motor activities.

Reduced chronic stress and cardiovascular diseases:

Socio-cultural Solutions can reduce Non-Communicable Diseases (NCDs) by providing a healthier urban environment.

Higher quality of life:

Socio-cultural Solutions can be used to encourage outdoor activities and enhance the quality of life by developing positive human interactions.

New Economic Opportunities and Green Jobs

Increased land and/or property value in proximity to vibrant space:

Assuming proximity to nature has an impact on property price, Socio-cultural Solutions can be used to promote spatial justice.

New jobs created:

The implementation of NBS can create new economic opportunities and jobs in the green sector by enabling low-carbon, resource-efficient and socially inclusive economic growth.

Increased retail and commercial activity in proximity to vibrant space:

As well as promoting spatial justice, Socio-cultural Solutions can be used to foster spatial cohesion.



Integrated Planning, Policies and Regulations

Innovation in processes and decision-making:

Socio-cultural Solutions can be used to introduce innovation in processes and to improve the effectiveness of the decision-making process.

Territorial attractiveness improved:

Frontrunner cities in the development of innovative solutions (from a natural, digital and socio-cultural perspective) can have an advantage over other cities attracting skilled people and investments.

Institutional relationship and networks created:

Creating institutional relationships and networks can offer the opportunity to learn and to adjust the experiences from other cities.

Business Models and Finance

Positive changes to local-tax revenue:

Socio-cultural Solutions can also have positive effects on the local-tax revenue, increasing public capital.

Easier loans conditions:

Large-scale interventions (encompassing NBS, Digital Solutions and Socio-cultural Solutions) can be interesting for banks and other investors and therefore can help to negotiate better financial conditions (e.g. lower interests).

Innovation in technology development and adoption:

Frontrunner companies and firms involved in the development and adoption of innovative solutions (from a natural, digital and socio-cultural perspective) can have a competitive advantage in the market.

Professional skills development:

Increased knowledge and know-how of innovative processes can help to face the challenge of adopting effective urban interventions.

Citizen Focus

Tackling fuel poverty:

Socio-cultural Solutions, like reducing energy expenses to an affordable level, can increase disposable income and tackle fuel poverty.

Users' awareness of energy-related issues increased:

Educational and communication activities can change positively stakeholders' and residents' energy behaviors and solutions' acceptance.

Enhancement of neighbourhood identity:

Socio-cultural Solutions can help to create a better image and sense of place in the neighborhood.



3.2. Potential contributions to Sustainable Development Goals

The SDGs are a collection of 17 interlinked global goals designed to be a blueprint to achieve a better and more sustainable future for all, that aim to balance the three dimensions of sustainable development (economic, social and environmental) [34].



Figure 6: Sustainable Development Goals. Source: [34]

This section aims to analyse the potential contributions of the Visionary Solutions to the SDGs. Every key challenge has been subjectively linked to one or more goals, depending on the area/s of intervention.

Table 6: Potential contributions of VS to the SDGs

Type of solutions	Key challenges [5], [7]	SDGs [34]
Nature-based solutions	Climate Resilience	Goal 12 Responsible Consumption and Production Goal 13 Climate Action
	Water Management	Goal 6 Clean Water and Sanitation Goal 13 Climate Action Goal 14 Life Below Water
	Natural and Climate Hazards	Goal 13 Climate Action Goal 14 Life Below Water Goal 15 Life On Land
	Green Space Management	Goal 3 Good Health and Well-being Goal 11 Sustainable Cities and Communities Goal 15 Life On Land

Digital solutions	Biodiversity Enhancement	Goal 14 Life Below Water Goal 15 Life On Land
	Air Quality	Goal 3 Good Health and Well-being Goal 11 Sustainable Cities and Communities Goal 13 Climate Action
	Place Regeneration	Goal 3 Good Health and Well-being Goal 11 Sustainable Cities and Communities
	Sustainable Urban Mobility	Goal 7 Affordable and Clean Energy Goal 9 Industry, Innovation and Infrastructure Goal 11 Sustainable Cities and Communities Goal 13 Climate Action
	Sustainable Built Environment	Goal 3 Good Health and Well-being Goal 7 Affordable and Clean Energy Goal 9 Industry, Innovation and Infrastructure Goal 11 Sustainable Cities and Communities
Socio-cultural solutions	Integrated Infrastructures and Processes	Goal 9 Industry, Innovation and Infrastructure Goal 11 Sustainable Cities and Communities
	Knowledge and Social Capacity Building	Goal 4 Quality Education Goal 5 Gender Equality Goal 10 Reducing Inequality
	Participatory Planning and Governance	Goal 10 Reducing Inequality Goal 11 Sustainable Cities and Communities
	Social Justice and Social Cohesion	Goal 1 No Poverty Goal 5 Gender Equality Goal 10 Reducing Inequality Goal 16 Peace, Justice, and Strong Institutions
	Health and Wellbeing	Goal 3 Good Health and Well-being
	New Economic Opportunities and Green Jobs	Goal 8 Decent Work and Economic Growth Goal 9 Industry, Innovation and Infrastructure
	Integrated Planning, Policies and Regulations	Goal 10 Reducing Inequality Goal 11 Sustainable Cities and Communities
	Business Models and Finance	Goal 8 Decent Work and Economic Growth Goal 9 Industry, Innovation and Infrastructure
	Citizen Focus	Goal 5 Gender Equality Goal 10 Reducing Inequality Goal 11 Sustainable Cities and Communities

Here some contextual considerations are needed. The SDGs are *global* goals, but the Visionary Solutions are *local* actions. So, while it is useful to align with the targets set by the UN, it is crucial to understand how the Visionary Solutions can contribute to achieving those targets. This requires proper metrics and indicators. To respond to this challenge and to support governments in localizing the SDGs, the OECD launched a program to support interested cities and regions in fostering a territorial approach to the SDGs by [35]:

- Measuring where they stand vis-à-vis the national average and their peers;

- Engaging a multi-level dialogue with their lower and upper levels of government to build consensus on who can do what, at what scale, and how;
- Sharing best practices and lessons from international experience.

As previously mentioned, cities and regions are going to have a crucial role to play in SDGs achievements. The targets proposed by the United Nations will not be reached without engaging and coordinating different government levels [35].

3.3. Potential contributions to OECD Well-being Framework

The OECD Well-Being Framework is a people-focused analytical tool that captures the distribution of outcomes and considers both the objective and subjective aspects of well-being to support the definition of public policies [36]. It includes 11 topics, reflecting what the OECD has identified as essential to well-being in terms of material living conditions and quality of life [36].

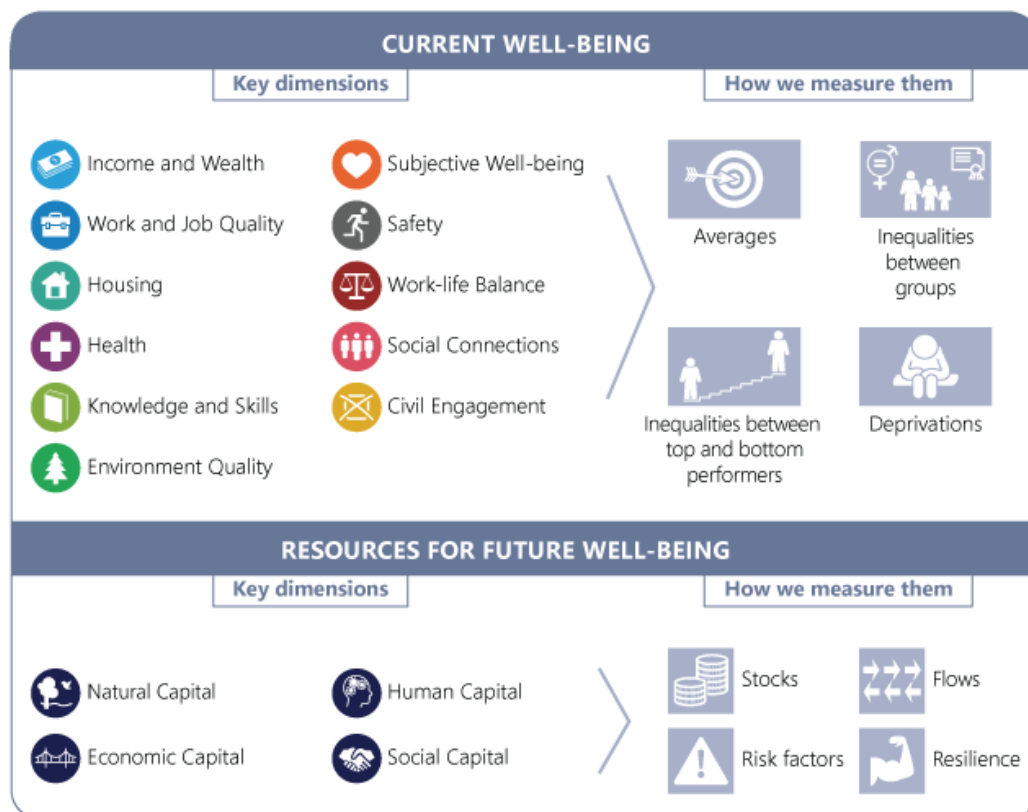


Figure 7: OECD Well-being Framework. Source: [36]

This section aims to analyse the potential contributions of the Visionary Solutions to the OECD Well-being Framework. Every key challenge has been subjectively linked to one or more goals, depending on the area/s of intervention.

Table 7: Potential contributions of VS to the OECD Well-being Framework

<i>Type of solutions</i>	<i>Key challenges</i> [5], [7]	<i>OECD Well-being Framework</i> [36]
Nature based solutions	Climate Resilience	6 Environment Quality 8 Safety
	Water Management	4 Health 6 Environment Quality 8 Safety
	Natural and Climate Hazards	6 Environment Quality 8 Safety
	Green Space Management	4 Health 6 Environment Quality
	Biodiversity Enhancement	6 Environment Quality
	Air Quality	4 Health 6 Environment Quality
	Place Regeneration	4 Health 6 Environment Quality
Digital solutions	Sustainable Urban Mobility	6 Environment Quality 8 Safety
	Sustainable Built Environment	3 Housing 6 Environment Quality
	Integrated Infrastructures and Processes	5 Knowledge and Skills
Socio-cultural solutions	Knowledge and Social Capacity Building	5 Knowledge and Skills 10 Social Connections
	Participatory Planning and Governance	10 Social Connections 11 Civil Engagement
	Social Justice and Social Cohesion	8 Safety 10 Social Connections 11 Civil Engagement
	Health and Wellbeing	4 Health 7 Subjective Well-being 8 Safety 9 Work-life Balance
	New Economic Opportunities and Green Jobs	1 Income and Wealth 2 Work and Job Quality
	Integrated Planning, Policies and Regulations	11 Civil Engagement
	Business Models and Finance	5 Knowledge and Skills
	Citizen Focus	9 Work-life Balance 10 Social Connections 11 Civil Engagement

4 Measuring Visionary Solutions multiple benefits

In many projects, and even more in the case of Visionary Solutions aiming to improve the health & well-being of citizens, cultural aspects may have to be considered and prioritized to understand what value means, considering dissonant heritages, minorities, and vulnerable age or fragile groups. This implies that the value created goes far beyond what can be captured in financial terms. Unlikely, in such cases, the financial value (usually easily measured and accounted for) is less relevant compared to other benefits of greater significance and importance. Therefore, it is important to take decisions concerning Visionary Solutions based on well-argued and competed for information about full impacts and to choose an adequate evaluation framework. Positive and negative outcomes, as well as those unintended, must be included [37].

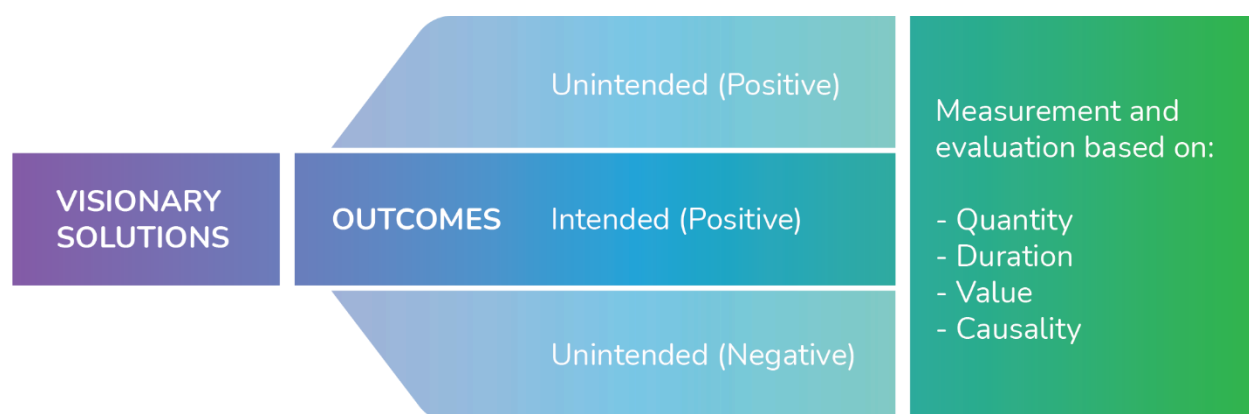


Figure 8: Possible outcomes deriving from implemented VS. Source: [37]

Outcomes rarely enter quantitative decision-support frameworks, often because the methodologies for their integration are lacking or not known. There are different measurement and evaluation tools that can be used to quantify and monetize these outcomes. Based for example on the duration, (Visionary Solutions) outcomes could be classified considering their time of appearance (immediate or delayed) and their interval (short or long). Figure 9 summarizes the temporal dimension of Visionary Solutions outcomes. It shows how an impact can appear immediately, when the measure is kicked off, or later, once the action is consolidated, and can continue for a long time or drop down quickly [13].

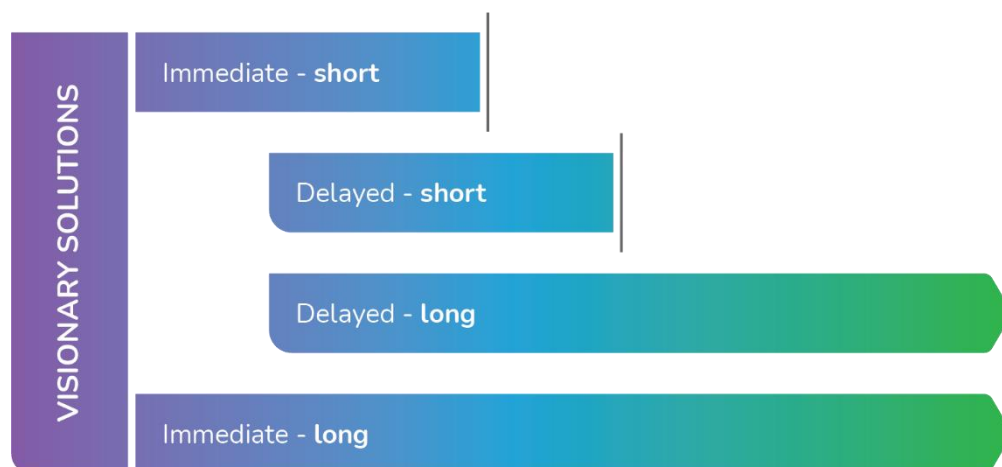


Figure 9: Temporal dimension of VS outcomes. Source: [13]

There is an extensive literature on tools to assess the impacts of a project. Some of them consider the effects of a given action in the market, others the effects in the society, while others the effects in the environment. The main difference is related to the purpose of the valuation and thus to the method applied. Table 8 summarizes common methods used to evaluate the impacts of urban planning interventions, each one characterized by specific KPIs.

Table 8: Most common tools used for impacts evaluation

Tools	Description
Cost-benefit Analysis (CBA)	A systematic approach to compare policy options or project alternatives by determining which has the greatest net benefit to society (the difference between total social benefits and total social costs) [38]
Cost-effectiveness Analysis (CEA)	A systematic approach to compare policy options by determining which is most effective in achieving a given objective for the least cost [38]
Multi-criteria Analysis (MCA)	A systematic approach to compare policy options or project alternatives by ranking them against a range of decision criteria [38]
Life-cycle Assessment (LCA)	An internationally standardised approach to quantify the environmental pressures related to goods and services (products), the environmental benefits, the trade-offs and areas for achieving improvements taking into account the full life-cycle of the product [39]
Integrated Assessment Modelling (IAM)	A class of models which simulate the interactions of human decision-making about energy systems and land use with biogeochemistry and the natural Earth system [40]

Environmental Impact Assessment (EIA)	A systematic approach to evaluate intended and unintended environmental impacts, both positive and negative, of planned interventions [41]
Social Impact Assessment (SIA)	A systematic approach to evaluate intended and unintended social impacts, both positive and negative, of planned interventions [42]
Health Impact Assessment (HIA)	A systematic approach to evaluate intended and unintended health impacts, both positive and negative, of planned interventions [43]
Social Return on Investment (SROI)	A method to identify how effectively a player uses its capital and other resources to create value for the community [44]

Within the VARCITIES project, Work Package 7 aims to define a protocol to ensure that the project will be continuously monitored in all its phases. In fact, one of the objectives of VARCITIES is to provide a holistic approach where monitoring is effectively carried out at all stages of the project: starting from the proposal phase (see Figure 10), moving to the planning phase (see Figure 11) and ending with the execution phase (see Figure 12). This protocol is intended to develop and establish an evaluation framework for health & well-being based on specific KPIs that aim to measure Visionary Solutions multiple benefits.



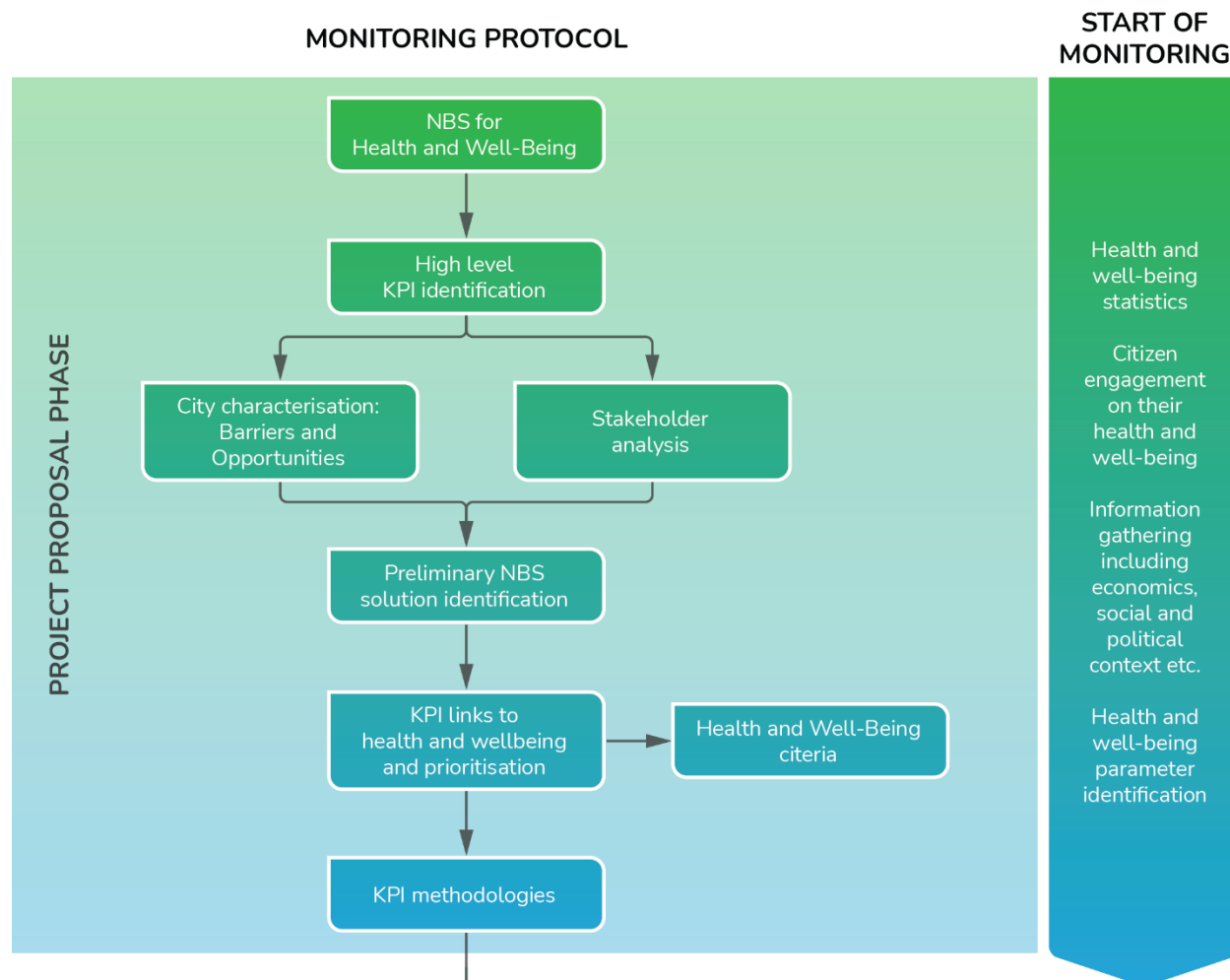


Figure 10: Project proposal phase. Source: based on WP7 elaboration

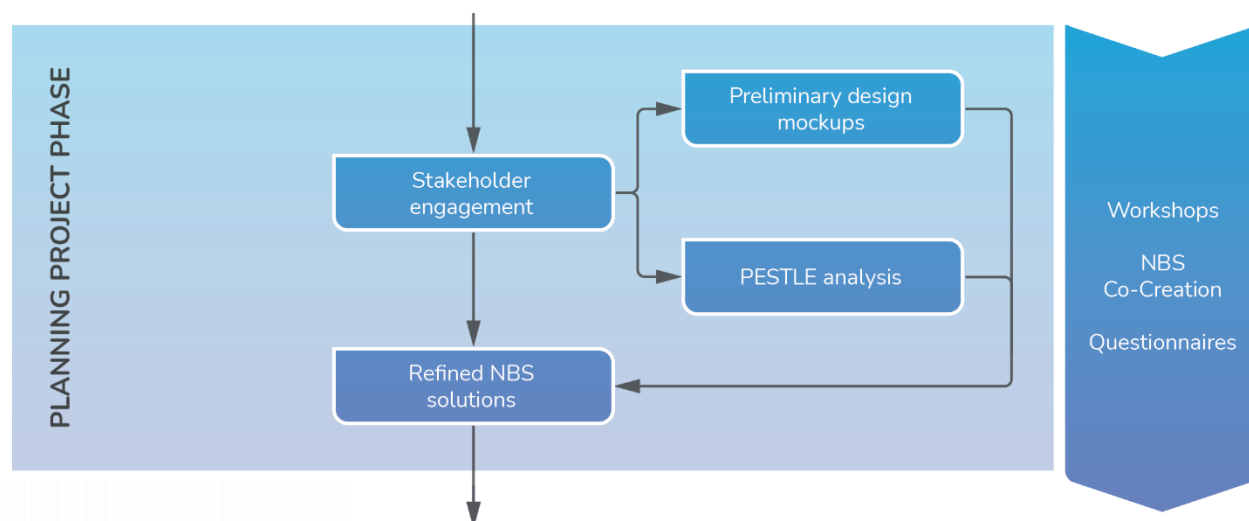


Figure 11: Project planning phase. Source: based on WP7 elaboration



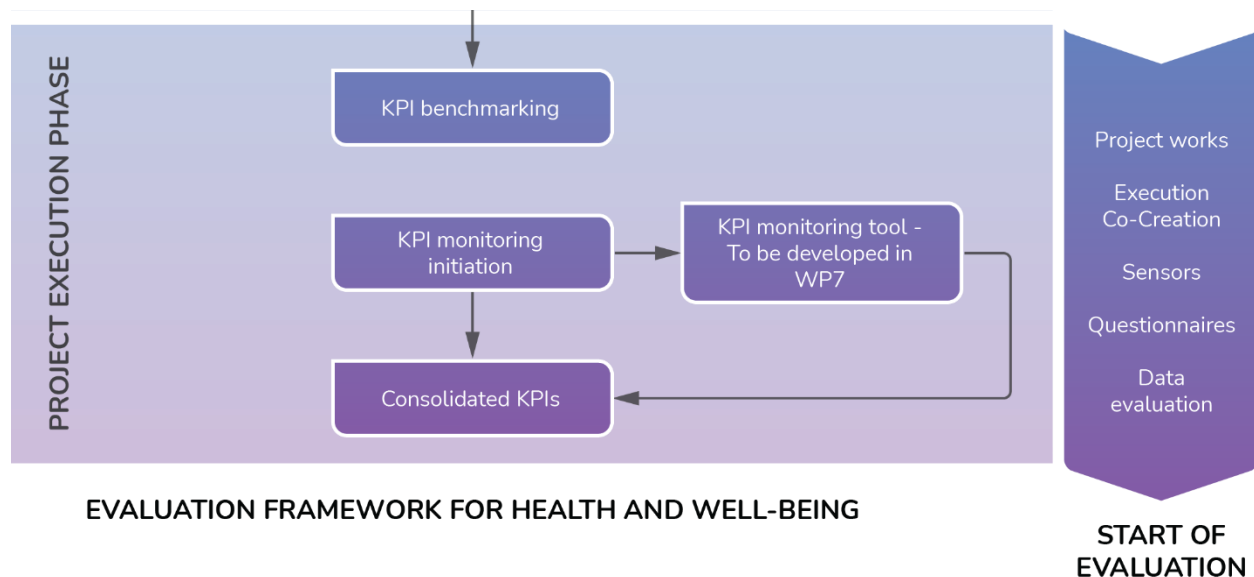


Figure 12: Project execution phase. Source: based on WP7 elaboration

The purpose of this section is to provide a list of recommended KPIs that can be used to quantify the impact of multiple benefits delivered by the Visionary Solutions of VARCITIES project. Given the “umbrella” concept of Visionary Solutions, KPIs have been grouped according to the sub-categories formerly identified (see Section 2).

More details on the Visionary Solutions proposed by each pilot are synthesized in Deliverable 3.5 Annexes and Deliverable 3.6, that provide information for the visual representation and management of Visionary Solutions. In the next months, Work Package 7 will substantiate the feasibility of this KPIs to ensure all indicators are specific, measurable, and realistic for achieving project objectives. Proper refinements will be made in collaboration with other project participants.

4.1. VARCITIES Nature-based Visionary Solutions

This subsection summarises the Nature-based Solutions-related Visionary Solutions proposed by the pilot cities (see Table 9) and the key challenges addressed (see Table 10). With this type of solutions, VARCITIES aims to increase the health & well-being of citizens exposed to different climatic conditions and challenges.

Table 9: NBS-related Visionary Solutions for each pilot

<i>Pilot</i>	<i>Visionary Solutions</i>
Skelleftea-SE	VS1: Build natural infrastructure to create urban resilience VS2: Creation of a wetland bed to increase biodiversity
Bergen-NO	VS3: Optimized urban park biodiversity
Dundalk-IE	VS2: Outdoor urban green learning and sensory garden for health & well-being
Novo mesto-SI	VS1: Brownfield remediation and greening with plant species indigenous to the nearby Natura 2000 areas VS2: Creating sustainable forest trails
Gzira-MT	VS1: Micro-greening interventions through a participatory design process

Table 10: Key challenges addressed by NBS-related VS for each pilot

<i>Key challenges</i>	<i>Skelleftea</i>	<i>Bergen</i>	<i>Dundalk</i>	<i>Castelfranco</i>	<i>Novo mesto</i>	<i>Gzira</i>	<i>Chania</i>	<i>Leuven</i>
<i>Climate Resilience</i>	VS1							
<i>Water Management</i>	VS2							
<i>Natural and Climate Hazards</i>	VS1							
<i>Green Space Management</i>		VS3	VS2		VS1, VS2	VS1		
<i>Biodiversity Enhancement</i>	VS2	VS3			VS1			
<i>Air Quality</i>								
<i>Place Regeneration</i>		VS3	VS2		VS1, VS2	VS1		

4.1.1. Recommended Key Performance Indicators for Nature-based Visionary Solutions

This subsection reports the list of recommended KPIs that have been drafted within Task 7.1 by VARCITIES and its twin projects' (IN-HABIT, GO GREEN ROUTES and euPOLIS) pilot leaders, to quantify the impact of Nature-based Visionary Solutions multiple benefits. Based on the expert groups' knowledge and literature reviews, a total of 10 KPIs was identified. The following table shows the type of indicator with the corresponding metric and unit of measurement.

Table 11: Recommended KPIs for Nature-based VS

Indicator	Metric	Unit of measurement
Carbon removed/stored by vegetation	C tons removed/stored by vegetation per unit area per unit time	C tons km ⁻² year ⁻¹
Measures of human comfort	Physiological Equivalent Temperature (PET), Predicted Mean Vote (PMV)	Various
Energy savings from smart and RES-based technology	Energy and C tons saved per unit time	kWh year ⁻¹ / C tons year ⁻¹
Water retention capacity by vegetation and soil	Water volume retention capacity by vegetation and soil per unit surface per unit time	m ³ km ⁻² s ⁻¹ or litres km ⁻² s ⁻¹
Water quality indicators (physical)	Water quality physical parameters: temperature, odour, taste, turbidity, transparency, colour	Various: turbidity (NTU), field temperature (°C)
Water quality indicators (chemical, biological)	PH, hardness, N and P levels, salinity, heavy metals, organic pollutants, dissolved O ₂ and CO ₂ , COD, BOD, saprobia index, Coliform index, phytoplankton index, etc.	Various (e.g. microgram/l)
Species richness and composition with respect to indigenous vegetation and local/national biodiversity targets	Population size of each species / n° of (new) species	Population size of each species / n° of (new) species
Physical air quality indicators	Average measured temperature and humidity (monthly, annual)	°C, %
Chemical air quality indicators	Annually average concentrations of SO ₂ , NO _x , PM _{2.5} , PM ₁₀ , O ₃ , CO, NH ₃ , Cl, CO ₂ , organic substances (including PAH)	µg of pollutant m ⁻³ , others (for each species)
Definition of parameters for (re)designing of green public spaces based on the well-being of users	Yes/no (parameters have been defined or not, to which degree, ...)	Description



4.2. VARCITIES Digital Visionary Solutions

This subsection summarises the Digital-related Visionary Solutions proposed by the pilot cities (see Table 12) and the key challenges addressed (see Table 13). With this type of solutions, VARCITIES aim to implement an entire ecosystem of fully connected intelligent sensors and devices.

Table 12: Digital-related Visionary Solutions for each pilot

<i>Pilot</i>	<i>Visionary Solutions</i>
Skelleftea-SE	VS3: Installation of smart lighting to contribute to an inviting environment and encourage activities in the park
Bergen-NO	VS1: A digitalized urban water park including city beach VS2: AR applications for inspiring more physical activities and area exploration
Dundalk-IE	VS3: Sensors on bikes and bike-stations
Castelfranco-IT	VS2: Analysis and monitoring of psychological well-being and quality of life for healthy individuals (young and elder), and physiological changes in people suffering from dementia (e.g., Alzheimer's disease) VS3: Full monitoring of microclimatic conditions in the different areas of the garden VS5: Implementation of ICT tools to support a rewarding experience of garden users and for the assistance of visitors with disabilities with the goal increasing safety while visiting the garden
Novo Mesto-SI	VS6: Adaptive and intelligent information system for visitors VS4: Integrated management of the facilities VS5: IoT solutions for measuring the health & well-being of visitors
Gzira-MT	VS2: Citizen science on air/noise quality to increase health & well-being awareness
Chania-GR	VS2: Sensors on bikes and bike-stations
Leuven-BE	VS2: Sensors for health and water measurements VS4: IoT infrastructure (screens) for smart lighting and noise VS5: Mobility-sensors to measure the pedestrian and bike flows

Table 13: Key challenges addressed by Digital-related VS for each pilot

<i>Key challenges</i>	<i>Skelleftea</i>	<i>Bergen</i>	<i>Dundalk</i>	<i>Castelfranco</i>	<i>Novo mesto</i>	<i>Gzira</i>	<i>Chania</i>	<i>Leuven</i>
<i>Sustainable Urban Mobility</i>		VS2	VS3				VS2	VS5
<i>Sustainable Built Environment</i>		VS1		VS2, VS3, VS5		VS2		VS2
<i>Integrated Infrastructures and Processes</i>	VS3			VS6	VS4, VS5			VS4

4.2.1. Recommended Key Performance Indicators for Digital Visionary Solutions

This subsection reports the list of recommended KPIs that have been drafted within Task 7.1 by VARCITIES and its twin projects' (IN-HABIT, GO GREEN ROUTES and euPOLIS) pilot leaders, to quantify the impact of Digital Visionary Solutions multiple benefits. Based on the expert groups' knowledge and literature reviews, a total of 5 KPIs was identified. The following table shows the type of indicator with the corresponding metric and unit of measurement.

Table 14: Recommended KPIs for Digital VS

Indicator	Metric	Unit of measurement
N° of installations at pilot sites	N° of installations	Number
Daily/monthly active users	N° of active users / N° of inhabitants	Number
N° of open data/sensor measurements available to the public	N° of open data/sensor measurements available to the public	Number
N° of sensors installed	N° of sensors / N° of inhabitants	Number
N° of apps available	N° of apps	Number

4.3. VARCITIES Socio-cultural Visionary Solutions

This subsection summarises the Socio-cultural-related Visionary Solutions proposed by the pilot cities (see Table 15) and the key challenges addressed (see Table 16). With this type of solutions, VARCITIES aim to put the citizens and the "human communities" at the centre of future cities' vision.

Table 15: Socio-cultural-related Visionary Solutions for each pilot

Pilot	Visionary Solutions
Skelleftea-SE	VS4: Educating and engaging citizens in the area to level up their awareness of climate change and the importance of biodiversity VS5: Creation of space in the park with bee hotels/insect habitats, permanent school-material
Bergen-NO	VS4: Bergen City Beach Health Effects Assessment
Dundalk-IE	VS1: Creation of outdoor learning pod between Dundalk library and museum quarter to showcase the newest technologies and host shared functions

Castelfranco-IT	VS1: Creation of garden access routes to ensure an improved access according to the needs of the garden users VS4: Development of a green public spaces (re)design toolbox and establishment of the “Local observatory on therapeutic effects of the green and blue area”
Novo mesto-SI	VS3: Interconnectedness of sports, recreational and therapeutic facilities
Gzira-MT	VS3: Urban biodiversity, education and engagement through a co-created community garden project
Chania-GR	VS1: Mobile urban living rooms
Leuven-BE	VS1: Riverside mobile urban living room for cultural activities VS3: Health trail with the “moving bench”, therapeutic sensory garden for elderly people

Table 16: Key challenges addressed by Socio-cultural-related VS for each pilot

Key challenges	Skelleftea	Bergen	Dundalk	Castelfranco	Novo mesto	Gzira	Chania	Leuven
Knowledge and Social Capacity Building	VS4, VS5		VS1			VS3	VS1	VS1
Participatory Planning and Governance	VS4	VS4		VS4		VS3	VS1	VS1
Social Justice and Social Cohesion								
Health and Wellbeing	VS5	VS4		VS1	VS3			VS3
New Economic Opportunities and Green Jobs								
Integrated Planning, Policies and Regulations					VS3			
Business Models and Finance								
Citizen Focus				VS1				VS3

4.3.1. Recommended Key Performance Indicators for Socio-cultural Visionary Solutions

This subsection reports the list of recommended KPIs that have been drafted within Task 7.1 by VARCITIES and its twin projects’ (IN-HABIT, GO GREEN ROUTES and euPOLIS) pilot leaders, to quantify the impact of Socio-cultural Visionary Solutions multiple benefits. Based on the expert groups’ knowledge and literature reviews, a total of 13 KPIs was identified. The following table shows the type of indicator with the corresponding metric and unit of measurement.

Table 17: Recommended KPIs for Socio-cultural VS

Indicator	Metric	Unit of measurement
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Recreational (number of visitors, number of recreational activities) or cultural (number of cultural events, people involved, children in educational activities) value of green spaces	N° of visitors / No. of recreational activities held per unit time	N° of visitors year-1 / N° of recreational activities year-1
Access of residents to cultural facilities on foot	Average distance or travel time to cultural facilities	km / min
Social learning concerning urban ecosystems and their functions/services	N° of learning supporting units distributed to the population (schools, adults, ...) / level of learning	N° of learning supporting units
Perceptions of citizens on urban nature	Counting visitors on net-based information board	N° of visitors
Citizen participation in the development and delivery of interventions	N° of people participating to development and delivery of interventions	N° of people / year
N° of activities involving children	N° of activities involving children	N° of activities involving children
Social background (education level, profession etc.) of people who have participated in the activities carried out under the project	N° of people per category (age, education level, profession, ...)	N° of people per category
Participation of individuals with functional disabilities	Average number of individuals with functional disabilities using facilities & participating in the activities carried out under the project per unit time	N° of individuals / year
The availability and distribution of parks or ecosystem services with respect to specific individual or household socioeconomic profiles landscape design	Surface area, social categorisation, fiscal revenue by consumption unit, Euclidean distance	Distance, n° of households in various categories
Feeling of improving the quality of life (the QoL questionnaire)	Quality of Life questionnaire	Scales' scores
Residential attachment and satisfaction	Residential attachment and residential satisfaction scale	Scales' scores
Anxiety levels	Anxiety assessed with self-report measures	Questionnaire

Affective status	Affective status assessed with self- reported measures	Questionnaire
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5 Guidelines for the implementation of VARCITIES monitoring and evaluation framework

Co-creation represents a fundamental component of the VARCITIES project. The co-creation workshops organised by pilot experts – supported by E2arch, Eurac and coordinated by Prospex Institute – are the occasions to present and co-design the solutions with local stakeholders. Section 5 presents the contribution of the co-creation workshop series (1st and 2nd workshop) to the identification of multiple benefits expected from Visionary Solutions.

The 1st round of workshops took place in June 2021 in the seven cities. The main goal was to introduce the Visionary Solutions to the local stakeholders to validate and refine them collectively, before starting the co-design processes.

The 2nd round of workshops, started while writing this Deliverable, ended in December 2021. The main goal was to finalise the co-design processes of the Visionary Solutions.

5.1. Research questions formulated in the 1st round of co-creation workshops

Purposes of the 1st round of co-creation workshops were to:

- Introduce VARCITIES project & pilot sites to the stakeholders;
- Present, validate and refine the first drafts of Visionary Solutions;
- Collect inputs on external factors that affect the implementation of the local Visionary Solutions;
- Collect inputs on stakeholder-driven KPIs for monitoring & evaluation framework;
- Present a first draft of the health & well-being platform;
- Collect inputs on preferred communication channels.

Among the different questions that have been posed during the 1st round of co-creation workshops, some were directed to discuss the future impacts of Visionary Solutions and to provide inputs on the proposed KPIs:

- To what extent do you believe the first draft of Visionary Solutions, if they are implemented using the feedback you provided during this workshop, will be effective in improving health & well-being in the area?
- In the end, when the solutions have been implemented, what should be the criteria to judge if they have been successful for improving health & well-being in your area? What factors should we be looking at?
- What other benefits do you think the Visionary Solutions could bring to your area?



Results of this sub-session led to a validation of the proposed versions of Visionary Solutions and a definition of success factors. The 1st round of co-creation workshops provided ex-ante inputs to the identification of multiple benefits, that have been used to adjust the implementation of Visionary Solutions. These outcomes are going to be summarized in detail with the upcoming Deliverable 3.3 “Report on local barriers and drivers to the implementation of Visionary Solutions in pilots”.

5.2. Research questions formulated in the 2nd round of co-creation workshops

Purposes of the 2nd co-creation workshops were to:

- (Re)introduce VARCITIES project & pilot site to the stakeholders;
- Present the updated versions of Visionary Solutions;
- Collect outputs from the context analysis and employ them to check the updated versions of Visionary Solutions;
- Present the updated version of health & well-being platform;
- Present upcoming dissemination activities.

Among the different questions that have been posed during the 2nd co-creation workshops, some were directed to discuss the future impacts of Visionary Solutions and to provide inputs on the proposed KPIs:

- To what extent do you believe the updated versions of Visionary Solutions, if they are implemented using the feedback you provided during this workshop, will be effective in improving health & well-being in the area?
- What do you believe will the most important impact of the Visionary Solutions on your local area once implemented?
- What are the expected impacts of the VARCITIES project on your organization/group or you as an individual?

Results of this sub-session led to a validation of the updated versions of Visionary Solutions and a review of the outcomes of the multiple benefits analysis here presented. The 2nd round of co-creation workshops provided ex-post inputs to the identification of multiple benefits, that have been used to re-adjust the implementation of Visionary Solutions. These outcomes are going to be summarized in detail with the upcoming Deliverable 3.3 “Report on local barriers and drivers to the implementation of Visionary Solutions in pilots”.



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7 Annexes

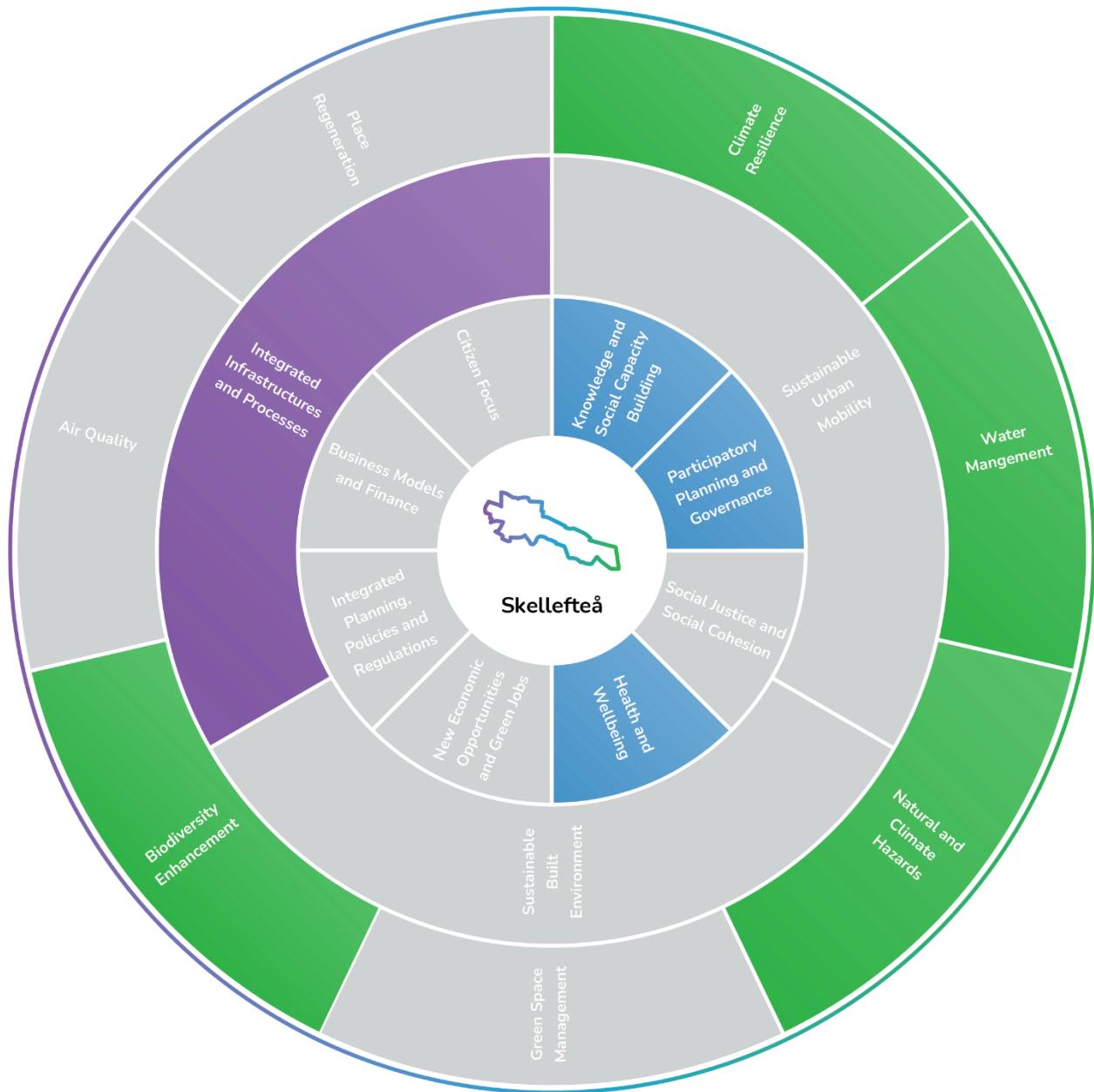
These annexes synthesise the potential multiple benefits expected from the implementation of the Visionary Solutions proposed by the pilot cities.

Each diagram illustrates the different key challenges addressed by VARCITIES visions, grouping them in:

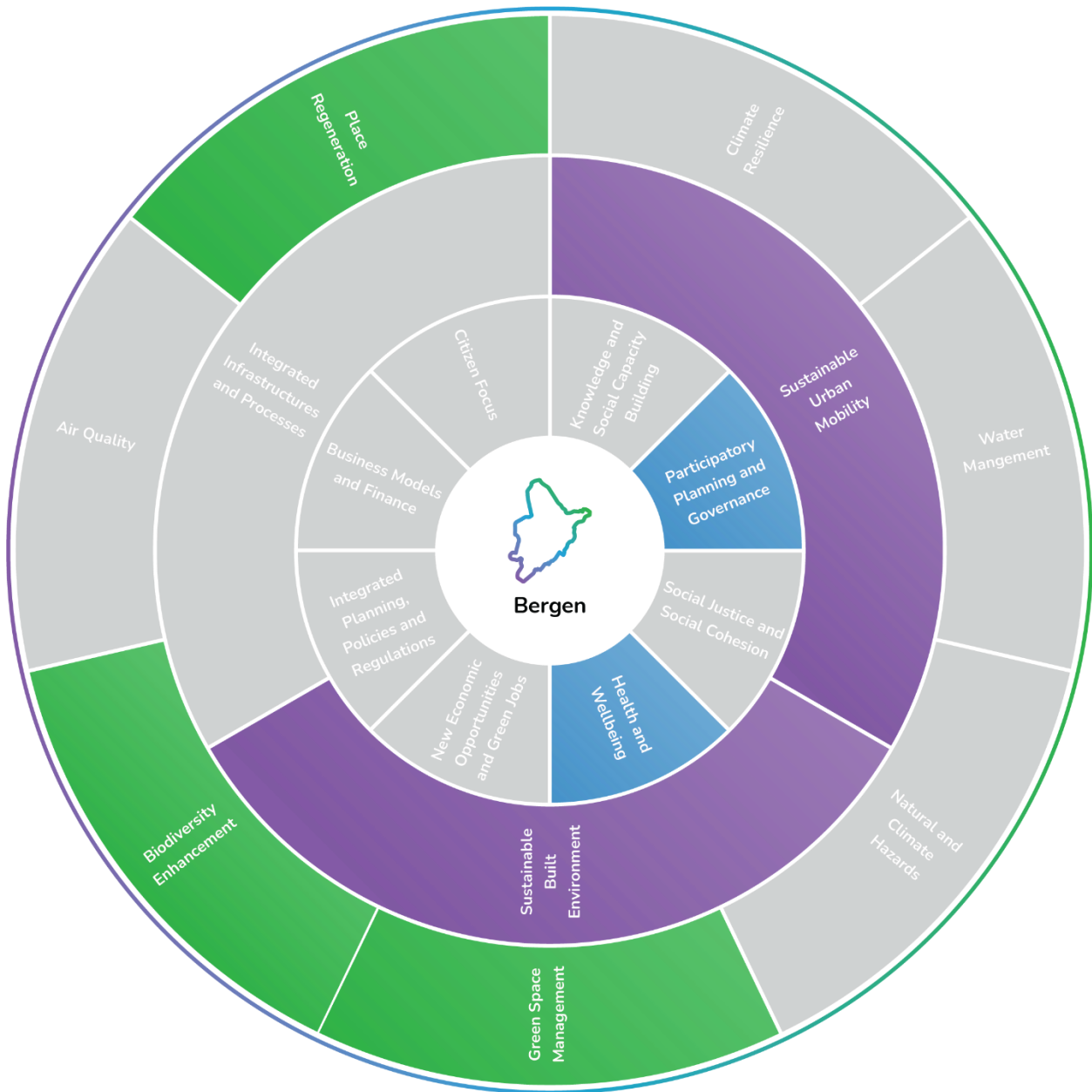
- Nature-based key challenges (in green);
- Digital key challenges (in purple);
- Socio-cultural key challenges (in blue).



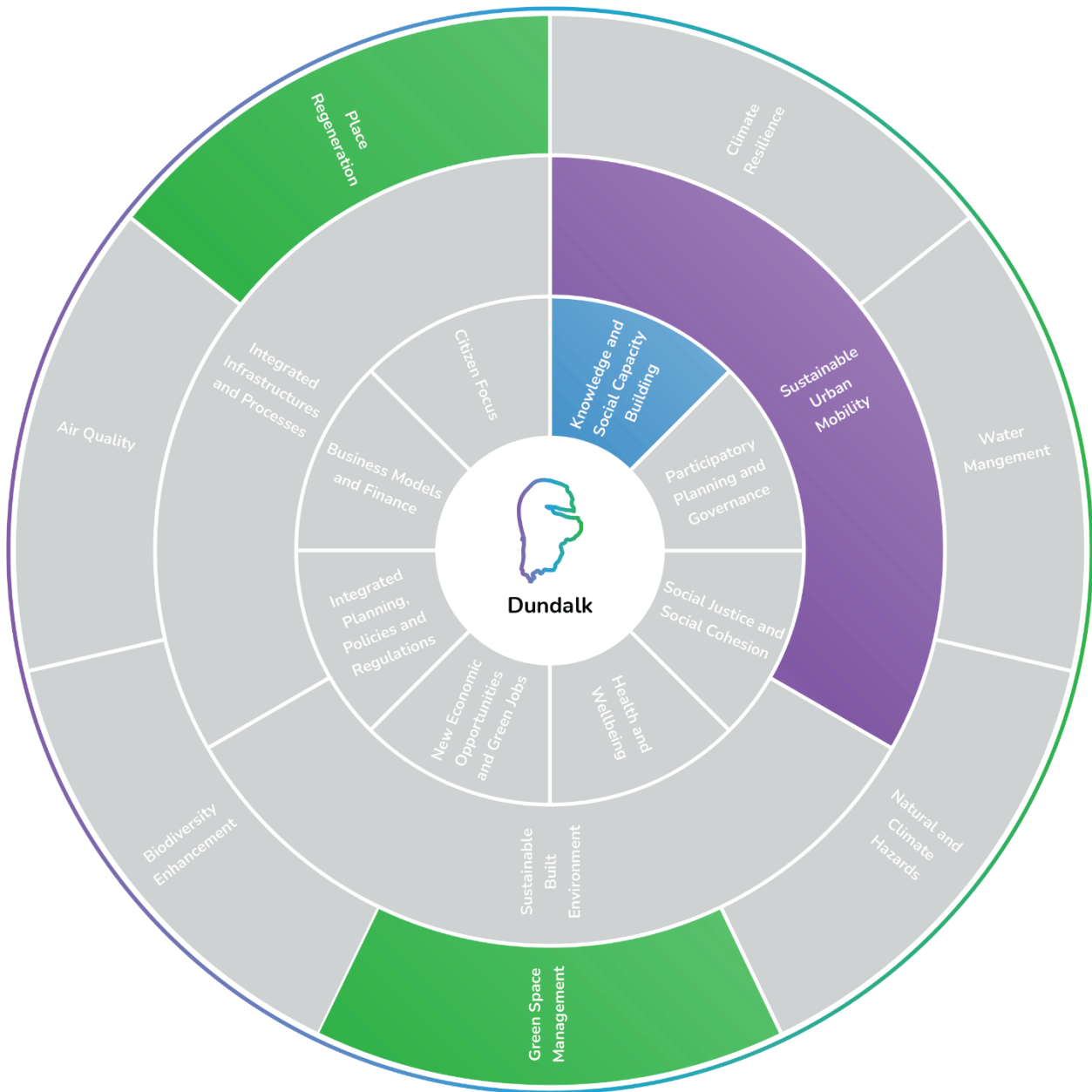
A – Potential multiple benefits of Skellefteå VARCITIES vision



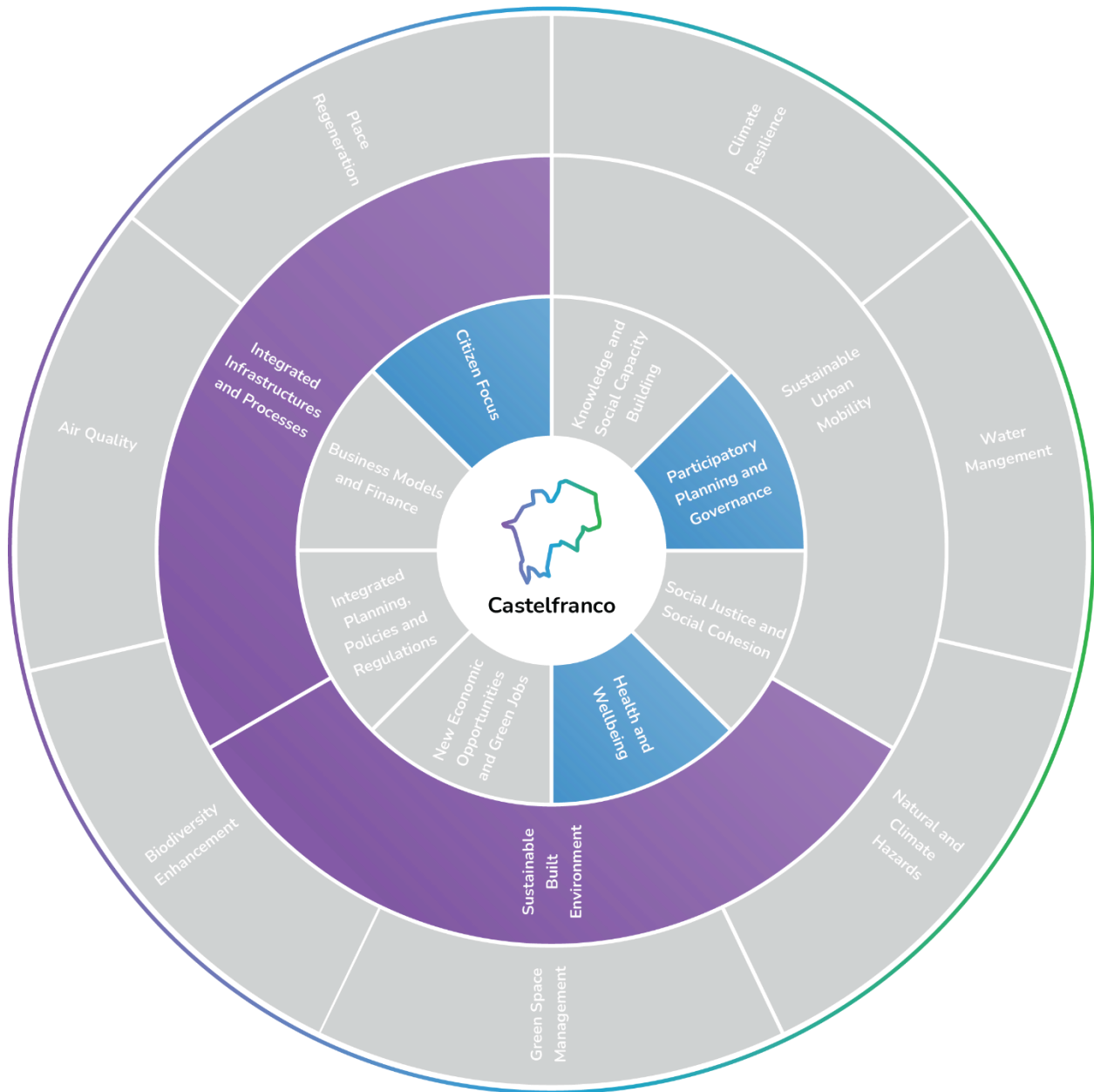
B – Potential multiple benefits of Bergen VARCITIES vision



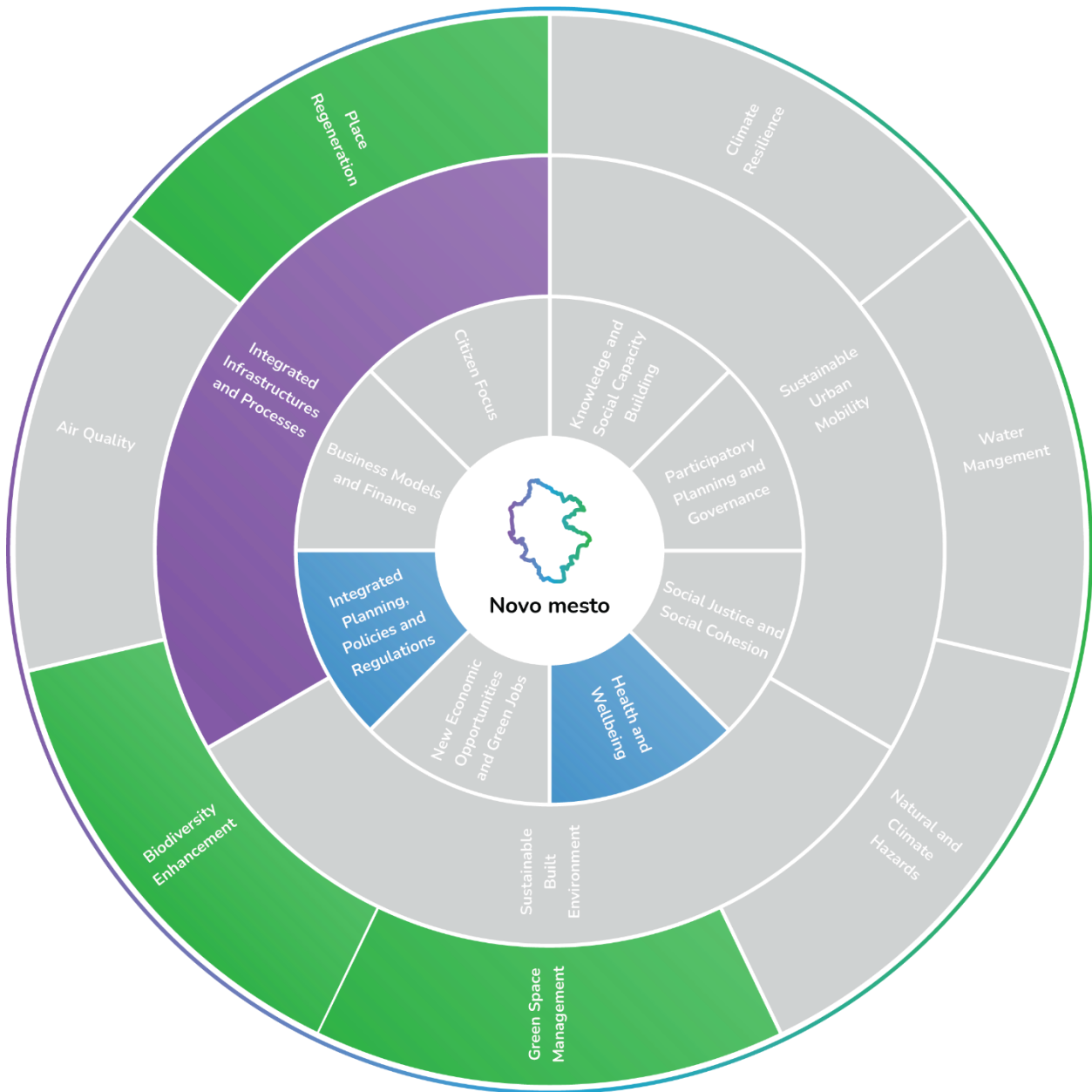
C – Potential multiple benefits of Dundalk VARCITIES vision



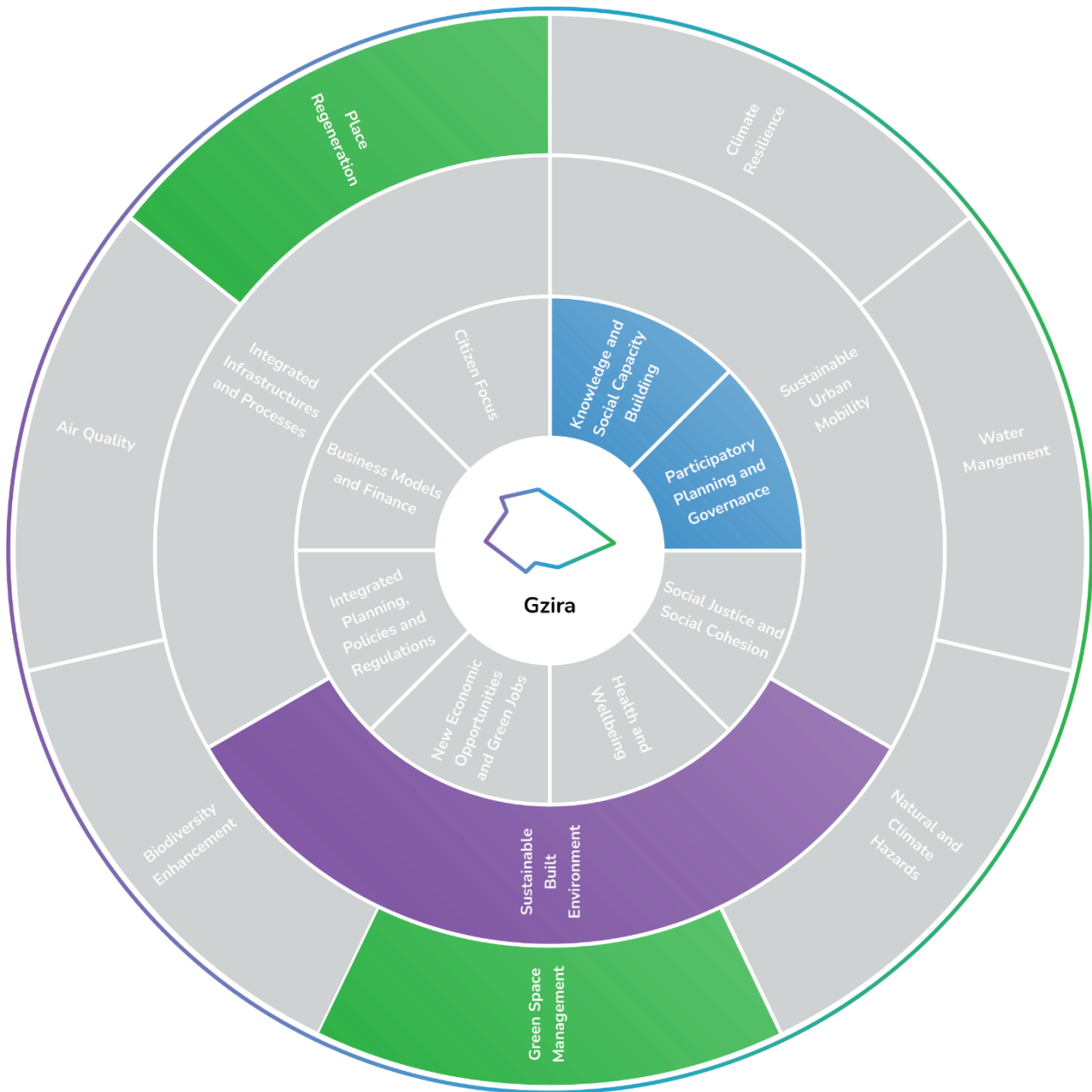
D – Potential multiple benefits of Castelfranco Veneto VARCITIES vision



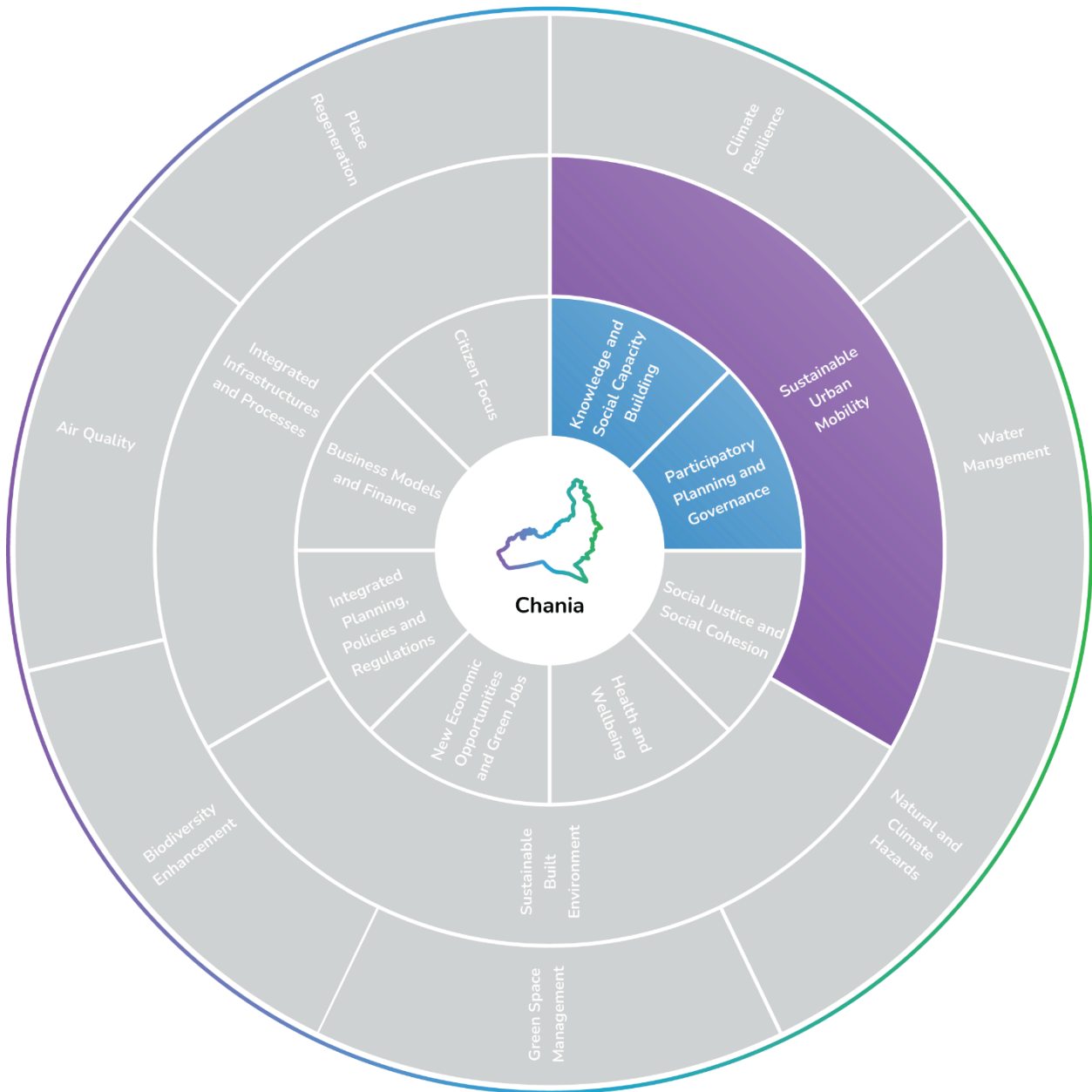
E – Potential multiple benefits of Novo Mesto VARCITIES vision



F – Potential multiple benefits of Gzira VARCITIES vision



G – Potential multiple benefits of Chania VARCITIES vision



H – Potential multiple benefits of Leuven VARCITIES vision

