



D5.6 Social-Innovation Assessment Report

WP5 – Exploitation and Business

Deliverable Lead: EUREKA

Dissemination Level: Public

Deliverable due date: 31/08/2020

Actual submission date: 30/08/2020

Updated on 14/02/2021

Version 1.2



Document Control Page	
Title	Social-Innovation Assessment Report
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Description	This document provides a report of the estimated/anticipated Social-Innovation Impacts of the CLARITY project. The update provides an improved explanation of the methodology and reasoning for the indicator values and a new section with concrete impacts on the four demonstration regions.
Publisher	CLARITY Consortium
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Creation date	01/04/2020
Type	Text
Language	en-GB
Rights	copyright "CLARITY Consortium"
Audience	<input checked="" type="checkbox"/> Public <input type="checkbox"/> Confidential <input type="checkbox"/> Classified
Status	<input type="checkbox"/> In Progress <input type="checkbox"/> For Review <input type="checkbox"/> For Approval <input checked="" type="checkbox"/> Approved

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CLARITY Project Overview

Urban areas and transportation infrastructure are highly vulnerable to climate change. Smart use of existing climate intelligence can increase urban resilience and generate added value for businesses and society at large. Based on the results of FP7 (7th Framework Programme) climate change, future internet and crisis preparedness projects (SUDPLAN, ENVIROFI, CRISMA) with an average Technical Readiness LEVEL (TRL) of 4-5 and following an agile and user-centred design process, end-users, purveyors and providers of climate intelligence CLARITY co-create an integrated Climate Services Information System (CSIS) to integrate resilience into urban infrastructure and look into the way to adjust the CSIS to transport infrastructure.

As a result, CLARITY provides an operational eco-system of cloud-based climate services to calculate and present the expected effects of Climate Change (CC)-induced and -amplified hazards at the level of risk, vulnerability and impact functions. CLARITY offers what-if decision support functions to investigate the effects of adaptation measures and risk reduction options in the specific project context and allow the comparison of alternative strategies. Three Demonstration Cases showcase CLARITY climate services in different climatic, regional, infrastructure and hazard contexts in Italy, Sweden, and Austria; focusing on the planning and implementation of urban infrastructure development projects. A fourth Demonstration Case in Spain illustrates how the expected effects of CC hazards and risk can be assessed in the case of road transport infrastructure and the flexibility of the CSIS system to adapt to other sectors.

CLARITY provides the practical means to include the effects of CC hazards and possible adaptation and risk management strategies into planning and implementation of such projects, focusing on increasing CC resilience. Decision makers involved in these projects will be empowered to perform climate proof and adaptive planning of adaptation and risk reduction options.

Abbreviations and Glossary

A common glossary of terms for all CLARITY deliverables, as well as a list of abbreviations, can be found in the public document “CLARITY Glossary” available at CLARITY-H2020.eu.

The following table was generated from http://cat.clarity-h2020.eu/glossary?machine_name%5B%5D=abbreviations_and_acronyms on February 11th, 2019 and contains all the acronyms that are used in the project.

Name	Term description
AAO	Appraisal of Adaptation Options
CBA	Cost-benefit-analysis
CC	Climate Change
CCA	Climate Change Adaptation
CCH	Climate Change Hazards
CLARITY	Integrated Climate Adaptation Service Tools for Improving Resilience Measure
Climate-ADAPT	European Climate Adaptation Platform
CRISMA	Modelling crisis management for improved action and preparedness
CRM	Continuous Risk Management
CS	Climate Service
CSIS	CLARITY Climate Services Information System
DC	Demonstration Case
DM	Decision Maker
DoA	Description of the Actions (Annex 1 to the Grant Agreement)
DS	Decision Support
DSM	Digital Surface Model
DV	Dynamic Vulnerability
EC	European Commission
EE	Evaluation of Exposure
EGI	European Grid Infrastructure
EU-GL	Non-paper Guidelines for Project Managers: Making vulnerable investments climate resilient (Document)
FP7	7th Framework Programme
HC	Hazard Characterisation
HRL	High Resolution Layers
HW	Heat Waves
IA	Impact Assessment
IAAP	Integration of Adaptation Action Plan
IAO	Identification of Adaptation Options
ICC	Indicators, Criteria and Cost
ICT	Information and Communication Technologies
IPCC	Intergovernmental Panel on Climate Change
MCDA	Multi-Criteria Decision Analysis
MMU	Minimum Mapping Unit
MRU	Minimum Reference Unit
NDH	Natural Hazards
NGO	Non-Governmental Organization
RA	Risk Assessment
RCM	Regional Climate Model
SME	Small and Medium Enterprise

TC	Test Case
UrbanSIS	Climate Information for European Cities
US	User Story
VA	Vulnerability Analysis
VC	Vulnerability Curve
WP	Work Package

The following table contains EU-GL Methodology terms used in the CLARITY project. Complete description can be found in the “CLARITY Glossary” available at http://cat.clarity-h2020.eu/glossary?machine name%5B%5D=eu_gl_methodology_terms.

Name	Term description
Hazard	The potential occurrence of a natural or human-induced physical <i>event</i> or trend or physical <i>impact</i> that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, <i>service</i> provision, ecosystems, and environmental resources (IPCC, 2014). In the IPCC context, the term <i>hazard</i> usually refers to climate-related physical events or trends or their physical impacts. (IPCC, 2014).
Exposure	The presence of people, infrastructure, housing, production capacities and other tangible human assets in hazard-prone areas.
Vulnerability	The probability of a given element at risk, classified as part of a specific Vulnerability class, to be affected by a level of damage, according to a prefixed scale of damages, under a given hazard intensity (Glossary of the CLARITY Proposal).
Risk Analysis	Risk is the potential for consequences where something of value is at stake and where the outcome is uncertain, recognizing the diversity of values. Risk is often represented as probability of occurrence of hazardous events or trends multiplied by the impacts if these events or trends occur. Risk results from the interaction of vulnerability, exposure, and hazard. (IPCC, 2014). Risk Analysis is a systematic use of available information to determine how often specified events may occur and the magnitude of their likely consequences (CRISMA Project glossary).
Impact Scenario Analysis	In probabilistic terms choosing in a deterministic way one or more significant events, among actually occurred past events or as a result of numerical hazard simulation models, shall be obtained as damage evaluation following a specific event.
Adaptation Options	The array of strategies and measures that are available and appropriate for addressing adaptation needs. They include a wide range of actions that can be categorized as structural, institutional, or social (IPCC, 2014).
Decision Support	Functions that help in evaluating the data and deciding what to do.
Action Plan	Functions that help in establishing the report / implementation plan / guideline.
Integration	Integration of adaptation plan into the project.

1 Management Summary

This document, the “Social-Innovation Assessment Report” is a public deliverable D5.6 of Work Package 5 (WP5) of the CLARITY project, which is funded by the EU’s Horizon 2020 Programme under Grant Agreement number 730355. WP5 ensures an efficient and effective dissemination and exploitation of the project results.

The aim of CLARITY project is to provide **Climate Services enabling the urban and traffic planners to evaluate in advance the risks connected to the climate change, decide on adaptation options and document the process and the conclusion in a well-structured report.** This report identifies direct and indirect social and societal innovation impacts of the project.

CLARITY considers the effects of climate change, and many of the proposed measures have transversal effects which can imply a set of **co-benefits** (i.e. additional benefits beside the main positive effect deriving from the adaptation measure chosen by designers). Also, these co-benefits provide social-innovation implications, which is precisely what will be considered in this deliverable.

The structure of this deliverable contains:

- *The context of this Social-Innovation Assessment Report.*
 - The stakeholder that could benefit from the CLARITY methodology.
 - The areas of impact affected by CLARITY Climate Services.
- *A section presenting the different types of Social-Innovation Impacts.*
- *Social-Innovation Impacts generated by CLARITY per work package and summary for the whole project.*
- *The impact in the four pilot (Demonstration Cases) regions.*
- *Conclusions and outlook.*

Unsurprisingly, the key project impacts are in the fields of “delivery of urban (climate) services” and “minimizing social impacts of climate change”. Main expected co-benefits are in the field of “social justice”, “improved health” and building “new recreational areas”.

2 Context

Climate Changes, in addition to causing an economic decline, can have a significant impact on the environment. Heavy rainfall, for instance, can cause inundation episodes by combined sewer overflows as well as heat wave events can cause severe health damages on exposed population. In the first case, environmental adaptation measure, such as rainfall retention areas, can prevent important public infrastructure issues, and in the second case, specific adaptation measures can prevent important public health issues.

In addition, climate change events normally impact even on poverty and social welfare, since the lower income sectors of a city are extremely vulnerable to those hazards. And this social impact in terms of economic damage will be worse in the next years because of the increasing frequency and intensity of these type of events [1].

CLARITY's main objective is to enhance people and infrastructures' protection and security by implementing adaptation strategies having a positive impact as well as positive economic impact combat extreme climate events (Heat Waves, Heavy Rainfall).

CLARITY project approaches utilise ecosystem services and sustainable resource management reducing the risk through a reduction of element at risk (if possible) and/or of vulnerability of the elements at risk. CLARITY methodologies, *being robust solutions to multiple hazards*, can create multiple social and environmental benefits and enable social actors to deal with climate change in their specific tasks.

In fact, enhancement of urban ecosystems can create synergies between the climate change adaptation and the various ecosystem services that are beneficial for human health. For instance, adaptation measure through urban green can reduce the urban heat effect [2], improving the health condition to the most vulnerable population.

The social impacts of CLARITY project are expected to be very positive, both in a direct and an indirect way.

To be able to properly analyse these benefits, a complete list of the several types of social impacts being expected has been elaborated and it is presented in the following section.

In section 2.4 , this list is used to specify the CLARITY Social-Innovation Impacts.

2.1 Stakeholders

The identification of all the actors involved in land/urban planning process and the possible benefit that could arise from CLARITY methodology application has been done through the following phases:

1. Desk analysis of Territorial and Environmental Planning literature,
2. Contribution of the CLARITY Experts and CLARITY Reports.

Professional planners work in the public sector for governmental and non-profit agencies, and in the private sector for businesses related to land, community, and economic development. Through research, design, and analysis of data, a planner's work is to create a plan for some aspect of a community. This process typically involves gathering public input to develop the vision and goals for the community, e.g. by mean of "charrette"¹ - a facilitated planning workshop often used by professional planners to gather information from their clients and the public about the project at hand. Charettes involve a diverse set of stakeholders in the planning process, to ensure that the final plan comprehensively addresses the study area.

Stakeholder participation is a key concept within sustainable development. Stakeholder analysis is the process that identifies and prioritizes individuals, groups and organisations who are affected by or can affect decisions about land use planning and management. Consequently, integrated land use planning should involve them in the decision-making process as well as in plan implementation. The identified Stakeholders are reported in the Table 1:

Table 1: Stakeholders

Stakeholders	Benefit Impact
Local administrations	Urban planning enhancement introducing new rules for «new soil use» vs «soil re-use»
Public government	Inspiration for new laws or rules for: building and infrastructure design building industry (including the building materials)
Companies involved in public or private networks for public services providing (i.e. water, transportation, etc.)	New methodologies for networks design, monitoring and management
Companies involved in building industry	New methodology for building design and implementation
Companies involved in Building materials industry	New methodology for building materials development
Citizens	Simulation tools for well understanding the environment effects of a project before its implementation
Engineers, Architects, etc	Simulation tools for well understanding the environment effects of a project before its implementation

2.2 Areas of Impact

The CLARITY methodology, as addressing cities and regions in entire Europe, is generic to be applied to any combination of hazards and elements at risk of interest to the stakeholders. Using the CLARITY Methodology, practitioners can evaluate the effects of the adopted technical solutions (adaptation options) to reduce the impact (resulting from climate change hazards) on the elements at risk. **Direct project impact is thus on**

¹ <https://www.involve.org.uk/resources/methods/design-charrettes>

urban/regional planning capacity, whereas the indirect impacts arise from eventual implementation of the adaptation options recommended by the project/CLARITY online services.

CLARITY project has focused on application of this methodology to Climate Change related hazards, most notably to heat waves and pluvial floods (Table 2):

Table 2: Key hazards, elements at risk and impacts studied in CLARITY

Hazard	Element at risk	Impacts
Heat waves	Population	Excess mortality, thermal comfort, direct (e.g. hospitalization) and indirect (e.g. productivity loss) costs
Heat waves	Traffic infrastructure (roads, railways)	Maintenance costs
Pluvial floods	Traffic infrastructure (roads, railways)	Maintenance costs
Pluvial floods	Urban infrastructure (residential/commercial/industrial buildings), open build up spaces,	Direct (damage, repairs) and indirect (temporary and permanent loss of functionality) costs

These hazard/element at risk combinations were addressed both by the expert studies that were conducted in four pilot (Demonstration Case) areas and the CLARITY automated screening services that are available in large number of European regions, as indicated in Figure 1



Figure 1: European regions covered by CLARITY Advanced Urban Screening (in green)

Additional hazard/element at risk/impact triplets were considered in individual expert studies and preliminary assessments were made for applicability of the methodology and CLARITY online services to energy/green buildings and agriculture sectors.

2.3 Types of Social-Innovation Impacts

The implementation of the CLARITY methodology implies the adoption of adaptation strategies that help to cope with the current and future risks that may occur due to climate change.

The main goal of these strategies is the minimization of these kinds of risks over the identified elements at risk (*people, buildings, roads, infrastructures, vehicles, etc.*).

Nevertheless, as mentioned before, when adaptation strategies are implemented, direct benefits and unplanned benefits can be obtained. An unplanned benefit can be defined as a co-benefit resulting from an adaptation strategy. In other words, it results in an additional benefit, different from the one the strategy was initially targeted on, and which is not necessarily ‘climate related’.

Evidence suggests that citizens are more likely to take action on climate change, or more likely to support governments that take action on climate change, if the wider co-benefits of those actions are emphasised [3]. This effect is reasonably connected to the increased amount of total benefit associated to a specific adaptation measure, resulting in a better benefit/cost ratio. At the urban level, therefore, the potential use of adaptation measures can be the more effective the more citizens can perceive (directly on their daily lives) the results of benefits and co-benefits coming from the adaptation measures [4]. Several definitions can be found in literature for **co-benefits** such as:

- win-win situations,
- life-cycle benefits,
- triple-win scenarios,
- consequential benefits,
- ancillary benefits,
- mutual benefits,
- consequential life cycle impacts,
- etc.

The co-benefits should always be included in decision-support multicriteria analysis and in the CBA. For these reasons, CLARITY has presented [5] a list of co-benefits, grouped in three different types: **economic, social and environmental**, to be taken into account in the adaptation strategies and in the contribution given to the net benefit in the CBA.

In Table 3 the most relevant co-benefits for the CLARITY approach are summarized. They will be the base for the Social-Innovation Impacts identification for CLARITY presented in next section.

Table 3: Co-benefits linked to adaptation measures

Economic	Social	Environmental
<ul style="list-style-type: none"> • Employment generation • Operating and maintenance costs savings • Contribution to innovation of local supply chains • Greater value of real estate 	<ul style="list-style-type: none"> • Health and mortality impacts reduced • Greater accessibility of public spaces and services • Greater aesthetic value • Greater cohesion and inclusion of local communities 	<ul style="list-style-type: none"> • Better air quality • Reduction of greenhouse effect gas emissions • Better water collection and safety • Better water quality • Greater biodiversity • Greater control of erosion

In addition to the co-benefits highlighted in Table 3, there are additional social co-benefits, listed below, which complete the potential social benefits of adaptation measures:

- *Reduced Energy Losses,*
- *Stable delivery of essential services,*
- *Security for the vulnerable in cities impacted by drought,*
- *Improved access to clean water,*
- *Improved sanitation,*
- *Quality of life,*
- *Increased food security,*
- *Increased physical and mental health,*
- *Improved student performance,*
- *Reduce impact of future climate change events,*
- *Increased thermal comfort,*
- *Recreation.*

Looking at how climate change impacts are approached locally, the Urban Climate Plan for Barcelona [6] focuses on the climate hazards and risks that the city should consider, with a view on the social impact's aspects. All the proposed adaptation strategies have been assessed taking into account the following topics:

- **Health:** including air quality, an active life of the citizens, high quality green urban areas and guaranteeing health and welfare of the citizens;
 - **Social justice:** implementing policies that consider socioeconomic, gender, spatial and cultural diversity of the population;
 - **Safety and security:** allowing the citizens to live in a comfortable way, in green urban areas and safe spaces for all the population;
 - **Low carbon:** non-dependence on the fossil fuels for the generation of energy, products or services;
 - **Efficiency and renewable energy:** with sustainable mobility systems and taking advantage of circular economy for the use of resources;
- Citizens commitment:** with involvement of the population to take action to change the city and protect it for the future generations.

2.4 Methodological Approach to the CLARITY Social-Innovation Impacts

Starting from the different types of Social-Innovation Impacts (as described in the previous section) and taking into account the particularities of CLARITY project, the following categories have been defined in order to assess the CLARITY Social-Innovation Impacts:

- **IMPROVED HEALTH:** all impacts that either directly or indirectly contribute to secure and improve the health of people.
- **ACHIEVE SOCIAL JUSTICE:** some of the generated results may contribute to this in an indirect way considering that the most vulnerable people (because of their location, socio-economic situation or health) are, in general, in worse conditions facing climate change impacts. Thus, it is worth considering which of the results can directly or indirectly provide benefit in terms of social justice.

- **NEW RECREATIONAL AREAS:** specific solutions implemented may imply the creation of new green spaces (e.g. parks) that, positively contributing to quality of urban life, are considered as a positive social impact.
- **DELIVERY OF URBAN ADMINISTRATION SERVICES:** according to CLARITY project goals, increasing the urban planning resilience is directly related to secure the correct functioning of urban services. Delivering urban services determine a positive social impact, as it allows the citizens to be involved in the policy decision making process to foster positive impacts that may occur from a climate change event.
- **MINIMIZE NEGATIVE SOCIAL IMPACTS OF CLIMATE CHANGE:** climate change adds pressures to the already vulnerable inhabitant groups in cities, by increasing the exposure to climate characteristics and increasing their particular weakness. So, it is important to provide solutions tailored for those vulnerable social groups, in order to mitigate negative effects on health, welfare and economic strength and prosperity.
- **CAPACITY BUILDING OF CITIZENS:** citizens play a fundamental role in climate change adaptation and risk reduction. Thus, raising awareness supporting capacity building is crucial.
- **CITIZENS COMMITMENT:** in addition to capacity building of citizens, also the citizens commitment is highly relevant to react in an adequate manner on extreme climate events.

The above CLARITY Social-Innovation Impacts have been evaluated in each CLARITY Work Packages 1 to 6. WP7 is not applicable to Social-Innovation Impacts being devoted to project management only. Overlapping the evaluation of each WP, it is possible to obtain the impact of the entire CLARITY project, as reported in the section 4.

A table has been prepared for the evaluation of each WP Social-Innovation Impacts including the following contents:

- **Scope:** brief description of the WP scope,
- **Output:** what is produced by the WP,
- **Social-Innovation Impacts graph:** graphic presentation of the Social-Innovation Impacts addressed by the WP and related degree of achievement,
- **Social-Innovation Impacts Evaluation:** detailed description of the evaluation of the different Social-Innovation Impacts achieved by the WP.

The value attributed to each of the Social-Innovation Impact categories has been expressed in 0 to 10 value scale, as reported in Table 4:

Table 4: Semantic scale for the evaluation of the Social-Innovation Impacts

Degree of Achievement	Evaluation of the Social-Innovation Impacts
0	Absent or Not Applicable Impact
1	Very poor Impact
2	Poor Impact
3	Very Weak Impact
4	Weak Impact
5	Medium Impact
6	High impact
7	Very High Impact
8	Strong Impact
9	Very Strong Impact
10	Huge Impact

3 Impact per Work Package

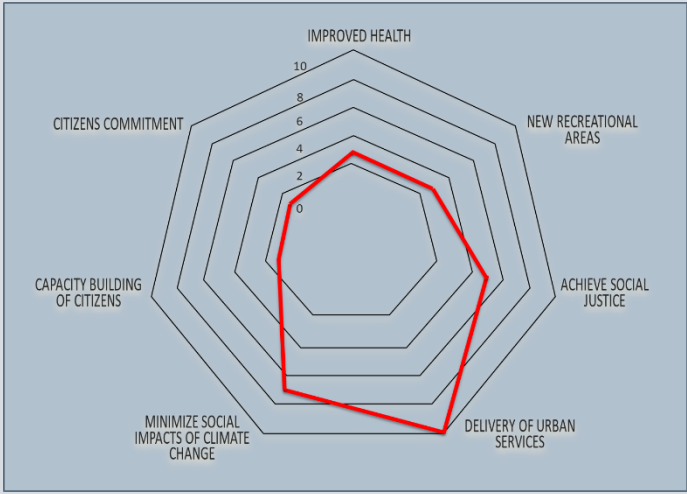
The degree of achievement of each Social-Innovation Impact allows to highlight the contribution provided by the specific tasks and its deliverables carried out within each WP.

The value of each “degree of achievement” has been assigned, for each WP, by the editors of this document according to the correlation between the specific tasks (including its deliverables) and the categories of the Social-Innovation Impacts. The categories not impacted by the WP were eliminated; for other categories of Social-Innovation Impact, the drivers of the impact have been described justifying the choice.

An overview of the impact of the entire CLARITY project is provided in the section 4.

3.1 WP1 Social-Innovation Impacts

Table 5: WP1 Social-Innovation Impacts

Scope	Social-Innovation Impacts graph
<p><i>CO-Creation</i> The objective of WP1 is “to involve practitioners, suppliers, purveyors and technology providers, scientists and potential end users (customers) in the climate service co-creation and deliver the CLARITY CSIS software and workflows in support of the climate-resilience planning.”. On top of this, WP1 also facilitates the technical management of the whole project (T1.1), provides the necessary repositories for hosting of the CLARITY software code, data and services as well as a set of tools to support the development of industrial-quality code (T1.4).</p>	
Output	Social-Innovation Impacts Evaluation
<p>D1.1 Initial workshops and the CLARITY development environment</p> <p>D1.2 Database of initial CLARITY CSIS user stories and test cases</p> <p>D1.3 CLARITY CSIS v1</p> <p>D1.4 CLARITY CSIS v2</p> <p>D1.5 Final industrialization and support report</p>	<p>In this WP, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following:</p> <p><i>Delivery of Urban Services (10)</i> This WP mainly specifies and releases the CSIS tool which hugely helps in the Delivery of Urban Services.</p> <p><i>Minimize social impacts of climate change (7)</i> This WP provides the CSIS tool to the cities and their citizens to increase their resilience to climate change and therefore it contributes to Minimize social impacts of climate change.</p> <p><i>Achieve social justice (5)</i> The usage of the CSIS Tools increases the social justice because the models typically indicate that main investments should be directed to densely built downtown urban areas, where poorer people live. Moreover, many of the</p>

	<p>recommended adaptation options aim at greening the common spaces, which mainly improves the quality of life for the poorer people.</p> <p><i>Improved health (3)</i> This Social-Innovation Impact increases in case the adaptation measures, identified by means of the CSIS tool, have been implemented.</p> <p><i>New recreational areas (3)</i> This Social-Innovation Impact increases in case the adaptation measures, identified by means of the CSIS tool, such as nature-based solutions, have been implemented.</p> <p><i>Capacity building of citizens (1)</i> <i>Citizens commitment (1)</i> This WP doesn't directly affect the citizens. They are indirectly interested by the usage of the CSIS tool only in case it increases the awareness on climate change issues, often not properly understood by the public. CLARITY Project as a whole does not primarily target the citizens, even though some of the information published by the project may be of interest to them and citizens associations use CSIS tool supported by expert practitioners.</p>
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3.2 WP2 Social-Innovation Impacts

Table 6: WP2 Social-Innovation Impacts

Scope	Social-Innovation Impacts graph
<p><i>Demonstration & Validation</i> WP2 is aimed at ensuring the quality of data collection process and the compliance with the CLARITY modelling methodology (WP3), at monitoring and supporting the demo cases implementation, at proving the operational level CLARITY CSIS and showcasing its functionalities (demo driven).</p>	
Output	Social-Innovation Impacts Evaluation
<p>D2.1 Demonstration and validation methodology</p>	<p>In this WP, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following:</p>

D2.2 Catalogue of local data sources and sample datasets

D2.3 CLARITY Demonstrators Implementation and Validation Report v1

D2.4 CLARITY Demonstrators Implementation and Validation Report v2

Delivery of Urban Services (10)

The projects results related to the Demonstration Cases described in this WP, offer very valuable information, that has been practically used for the Delivery of Urban Services reaching the target of the CLARITY project.

Minimize social impacts of climate change (8)

Depending on the results provided by each of the Demonstration Cases as proved with the usage of CSIS tool, the adopted solutions have a strong impact in Minimizing the social impacts of climate change.

Achieve social justice (5)

The specific solutions adopted in the Demonstration Cases increase the social justice because contribute to reduce the impacts of the climate change for the poorer people.

Improved health (3)

This Social-Innovation Impact increases in case the adaptation measures, identified by means of the CSIS tool, have been implemented. Demonstration Cases reduce, for citizens, the impacts from flooding, heat waves, etc.

New recreational areas (3)

This Social-Innovation Impact increases in case the adaptation measures, identified by means of the CSIS tool, such as nature-based solutions, have been implemented.

Capacity building of citizens (2)

Citizens commitment (2)

As reported in the evaluation of the WP1, this WP doesn't directly affect the citizens. However, the results of the Demonstration Cases do increase the awareness on climate change issues, which are often not properly understood by the public.

3.3 WP3 Social-Innovation Impacts

Table 7: WP3 Social-Innovation Impacts

Scope	Social-Innovation Impacts graph																
<p><i>Science Support</i></p> <p>The main objective of the WP3 is to provide the scientific background, models and algorithms to support the implementation of the CLARITY DCs and development of the CLARITY CSIS based on EU-GL methodological concept and end-user driven requirements. The WP3 activities include stepwise application of the methodological approach ranging from generation and analysis of climate and environmental data, employment of high-resolution climate models to analyse climate change on local scale, hazard characterisation, risk assessment and impact analysis, identification and appraisal of adaptation measures and final decision support and analysis of socio-economic impact. The WP3 activities are closely related to CLARITY CSIS requirements and the co-creation process in WP1 and the definition of data requirements and the data collection process for future implementation of demo cases in WP2.</p>	<table border="1"> <caption>Data from Social-Innovation Impacts graph</caption> <thead> <tr> <th>Impact Area</th> <th>Current Achievement (0-10)</th> </tr> </thead> <tbody> <tr> <td>Improved Health</td> <td>3</td> </tr> <tr> <td>New Recreational Areas</td> <td>3</td> </tr> <tr> <td>Achieve Social Justice</td> <td>5</td> </tr> <tr> <td>Delivery of Urban Services</td> <td>5</td> </tr> <tr> <td>Minimize Social Impacts of Climate Change</td> <td>5</td> </tr> <tr> <td>Capacity Building of Citizens</td> <td>2</td> </tr> <tr> <td>Citizens Commitment</td> <td>2</td> </tr> </tbody> </table>	Impact Area	Current Achievement (0-10)	Improved Health	3	New Recreational Areas	3	Achieve Social Justice	5	Delivery of Urban Services	5	Minimize Social Impacts of Climate Change	5	Capacity Building of Citizens	2	Citizens Commitment	2
Impact Area	Current Achievement (0-10)																
Improved Health	3																
New Recreational Areas	3																
Achieve Social Justice	5																
Delivery of Urban Services	5																
Minimize Social Impacts of Climate Change	5																
Capacity Building of Citizens	2																
Citizens Commitment	2																
Output	Social-Innovation Impacts Evaluation																
<p>D3.1 Science support plan and concept</p> <p>D3.2 Science support report v1</p> <p>D3.3 Science support report v2</p>	<p>In this WP, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following:</p> <p>Delivery of Urban Services (5) This WP provides scientific methods to the Delivery of Urban Services.</p> <p>Minimize social impacts of climate change (5) Scientific methods for the impact quantification and assessment allow to identify the vulnerabilities of elements at risk. By combining the impacts assessment with climate change scenarios, future impacts can be better addressed and thus, their impacts can be reduced. The understanding of how adaptation strategies can reduce impacts, helps to minimize the social impacts of climate change.</p> <p>Improved health (3) The identified adaptation measures, indirectly, improves health.</p> <p>New recreational areas (3) The identified adaptation measures, such as nature-based solutions, indirectly, increases the recreational area extend.</p>																

3.4 WP4 Social-Innovation Impacts

Table 8: WP4 Social-Innovation Impacts

Scope	Social-Innovation Impacts graph
<p><i>Technology Support</i></p> <p>The overall objective of WP4 can be summarised as to provide the technological backbone of the CLARITY Climate Service Information System (CSIS) in terms of software and services and the technical infrastructure that is required to co-develop CLARITY Climate Services together with CLARITY end users in WP1. Thereby, technologies contributed by partners and developed and used in former European (research) projects have to be adapted to CLARITY needs in order to maximise reuse of existing background, to minimize development effort and thus to encourage innovation over implementation.</p>	
Output	Social-Innovation Impacts Evaluation
<p>D4.1 Technology support plan</p> <p>D4.2 CLARITY CSIS Architecture</p> <p>D4.3 Technology support report v1</p> <p>D4.4 Technology support report v2</p>	<p>In this WP, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following:</p> <p><i>Delivery of Urban Services (5)</i></p> <p>This WP substantially provides technical solutions to implement the CSIS tool used to the Delivery of Urban Services and awareness raising of the public.</p>

3.5 WP5 Social-Innovation Impacts

Table 9: WP5 Social-Innovation Impacts

Scope	Social-Innovation Impacts graph
<p><i>Exploitation and Business</i></p> <p>The Exploitation and Business work package focuses on the effective dissemination and exploitation of the project results. The work of this WP comprises four tasks: T5.1 Exploitation Requirements, T5.2 Exploitation Strategy and Business Plan, T5.3 Social Innovation Assessment and T5.4 Climate Service Market Place. Following the finalisation of Task 5.1 in M14 with D5.2, which helped to influence the CSIS architecture, the work shifted towards the business approach with T5.2 and development of marketplace with T5.4.</p>	
Output	Social-Innovation Impacts Evaluation
<p>D5.1 Exploitation Requirements and Innovation Design v1</p> <p>D5.2 Exploitation Requirements and Innovation Design v2</p> <p>D5.3 Exploitation and business plan v1</p> <p>D5.4 Exploitation and business plan v2</p> <p>D5.5 Exploitation and business plan v3</p> <p>D5.6 Social Innovation assessment</p> <p>D5.7 MyClimateService.eu Marketplace</p>	<p>In this WP, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following:</p> <p><i>Delivery of Urban Services (7)</i></p> <p>This WP is mainly devoted to the exploitation of the projects results and so to direct promotion of the CSIS tools and expert services used for the Delivery of Urban Services.</p>

3.6 WP6 Social-Innovation Impacts

Table 10: WP6 Social-Innovation Impacts

Scope	Social-Innovation Impacts graph
<p><i>Dissemination and Community Building</i> In WP6 two types of activities are carried out continuously focussing on:</p> <ul style="list-style-type: none"> • project branding and wide, interdisciplinary communication- and awareness measures and interconnection with other projects and initiatives; and • sharing insights with expert audiences and the preparation of events and dedicated workshops to ignite additional implementation projects for third parties that are similar to CLARITY demonstrators. 	
Output	Social-Innovation Impacts Evaluation
<p>D6.1 Communication and dissemination plan and report v1 D6.2 Communication and dissemination plan and report v2 D6.3 Communication and dissemination plan and report v3 D6.4 Communication and dissemination plan and report v4 D6.5 CLARITY website D6.6 CLARITY Guideline v1 D6.7 CLARITY Guideline v2</p>	<p>In this WP, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following:</p> <p><i>Delivery of Urban Services (8)</i> The dissemination activities mainly promote the utilization of the CSIS tool used to the Delivery of Urban Services</p> <p><i>Minimize social impacts of climate change (8)</i> The dissemination activities are also based on the results provided by each of the Demonstration Cases. This makes awareness on how the adopted solutions can have a strong impact in Minimizing the social impacts of climate change.</p> <p><i>Capacity building of citizens (4)</i> <i>Citizens commitment (4)</i> The dissemination activities could reach the citizens increasing the Citizens commitment and Capacity building of citizens. In particular, CLARITY has produced a large number of webinars, shorter video features and “news” items that are publicly available at YouTube, at CLARITY GoToStage channel and at the marketplace web site².</p>

² <https://www.gotostage.com/channel/climate-adaptation>, <https://myclimateservice.eu/>

4 Overall CLARITY Social-Innovation Impacts

In Table 11, the specific values given to each of the Social-Innovation Impacts for each WP can be seen.

The values represent to which degree each WP contributes to achieve a given impact, and this is precisely the information that has been used to draw all the graphs presented in the previous tables.

Table 11: Summary of CLARITY Social-Innovation Impacts per WP

Social-Innovation Impacts	WP1	WP2	WP3	WP4	WP5	WP6	MAX
Improved health	3	3	3	0	0	0	3
Achieve social justice	5	5	0	0	0	0	5
New recreational areas	3	3	3	0	0	0	3
Delivery of Urban Services	10	10	5	5	7	8	10
Minimize social impacts of climate change	7	8	5	0	0	8	8
Capacity building of citizens	1	2	0	0	0	4	4
Citizens commitment	1	2	0	0	0	4	4

Overall CLARITY Impact can be estimated by using the maximum value (MAX column in Table 11) of each Social-Innovation Impact, an obtained as reported in Figure 2. The red line represents the overall social impacts graph for the whole project.

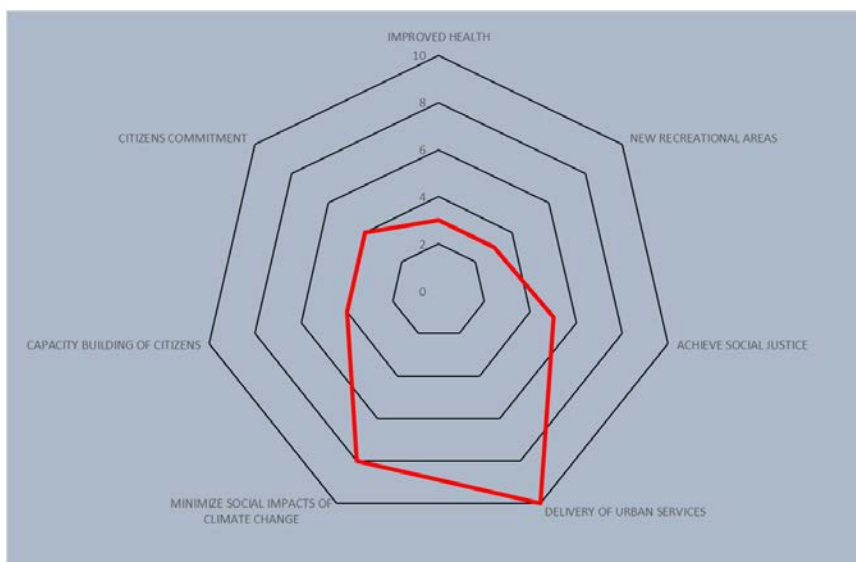


Figure 2: Graph of the overall CLARITY Social-Innovation Impacts

CLARITY helps to improve the Delivery of Urban Services, minimize the impacts of climate change and achieve social justice. Additionally, since CLARITY project has a clear commitment with climate change adaptation, the proposal of adaptation strategies and measures for cities has an impact on citizen’s health and well-being.

High impact on achieving the social justice is remarkable, considering the technology centric approach that focuses more on urban services and their interdependencies rather than on climate justice. However, the CLARITY models clearly indicate that the climate adaption efforts should concentrate to densely populated areas where most societally disadvantaged people live. Moreover, the adaptation activities suggested by the project will improve the quality of the common spaces, by introducing additional green, water and recreational areas. This again disproportionately benefits the societally disadvantaged groups that do not own property outside of the city and therefore use the common spaces more intensively. The actions to reach a social justice should be analysed in detail through local instruments, such as the Climate Plan developed in Barcelona [6] where social justice is clearly addressed.

On the other hand, the dissemination of the acquired knowledge (e.g. climate projections, impact assessment, etc.) and the developed tools (i.e. CSIS), methodologies and dissemination guidelines could contribute to increase the capacity building and commitment of citizens. This is especially true for the video materials produced by the project (webinars, features) that are easy to understand and available on dedicated GotoStage channel³, on You tube⁴ as well as on the marketplace site.

As a conclusion, although CLARITY was not mainly focusing on citizens, the degree of accomplishment of social benefits related to them such as citizens’ commitment, improved health or social justice (partially), is remarkable.

4.1 Impacts on Demonstration Cases

DC Napoli

The results obtained from the CLARITY project research have had a significant impact on a local scale. The climate change profile for Napoli area is at the base of all planning documents and it is based on the regional downscaling with a focus on extreme heat and precipitation events in the period 2020-2100 in terms of frequency according to the different RCPs.

Benefits of integrating adaptation strategies into urban plans and redevelopment / modernization projects in the Metropolitan City of Naples, with a specific focus on the Municipality of Naples, were assessed by the Naples “Multi-scale Climate-Resilient Urban Planning”.

The municipality of Naples indeed has decided to integrate the studies of the CLARITY project within its territorial planning tools and guidelines: 1. Strategic level – Napoli Sustainable Energy and Climate Action Plan (SECAP); 2. City planning – Update of Napoli City Plan (PUC); 3. District planning – Ponticelli Urban Regeneration Plan (PRU).

The Naples case also demonstrated that specific requests can be successfully into the models. Following specific requests from the Municipality of Naples to provide support to the implementation of the Ponticelli Urban Regeneration plan, further expert analyses have been produced in this area of the city. These have assessed the effect of different configurations of building and open spaces, as well as of different surface covers, starting from the baseline projects developed by the Social Housing Department, in charge of implementing the plan.

In policy terms, on a broader urban governance level, the main objective of Naples Demonstration Case is to support public administration at Metropolitan and Municipal level in developing the local adaptation plan based on EU Directives and the National Strategy for Climate Change Adaptation. The implementation of the Adaptation Plan is based on the information acquired through the climate services provided by CLARITY that has allowed end-users to acquire a set of design guidelines which, according to future plans beyond CLARITY, can be further integrated to tackle the multi-risk conditions (climate, seismic, hydrogeological, volcanic) of the Metropolitan area, so to promote an integrated approach to Climate Change Adaptation and Disaster Risk Reduction within public policies and private investments.

In addition, the CLARITY marketplace allows various local data, models and service providers to have new job opportunities by offering themselves on the CLARITY website to support expert studies on demand.

The following table resumes the Social-Innovation Impacts achieved in this DC.

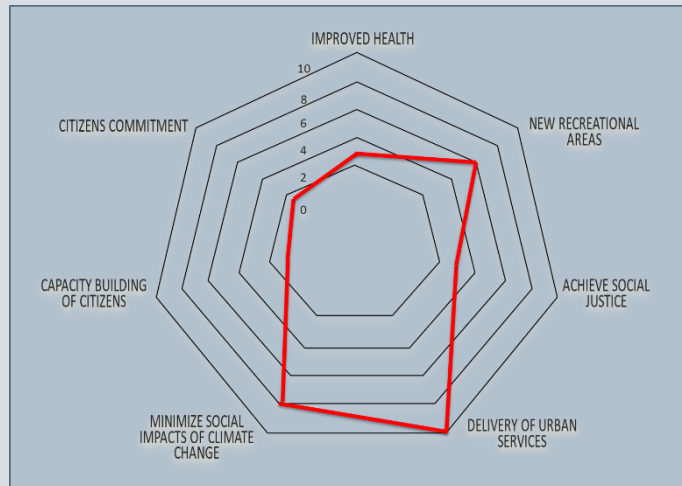
Table 12: DC Napoli Social-Innovation Impacts

Scope	Social-Innovation Impacts graph
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³ <https://www.gotostage.com/channel/climate-adaptation>

⁴ <https://www.youtube.com/channel/UCTS7pNWYKt0SzmBuiqcmW6A/videos>

DC Napoli
See the above description of the demonstration case.



Output	Social-Innovation Impacts Evaluation
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D2.3 CLARITY Demonstrators Implementation and Validation Report v1
D2.4 CLARITY Demonstrators Implementation and Validation Report v2

In this DC, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following:

Delivery of Urban Services (10)
The projects results, related to this DC, offer very valuable information that has been practically used for the Delivery of Urban Services reaching the target of the CLARITY project.

Minimize social impacts of climate change (8)
This DC uses of CSIS tool and the adopted solutions (Green roofs, Air-conditioned public transport, increased green areas, increased number of trees) have a strong impact in Minimizing the social impacts of climate change.

Achieve social justice (3)
The specific solutions adopted in the DC contributes to increase the social justice because contribute to reduce the impacts of the climate change for the poorer people.

Improved health (3)
This DC reduces, for citizens, the impacts from Heat Waves, Pluvial Flooding and Landslides.

New recreational areas (6)
This DC promotes the usage of adaptation measures such as nature-based solutions (increased green areas, increased number of trees).

Capacity building of citizens (0)
Citizens commitment (1)
This DC doesn't involve directly the citizens but only municipality's representatives.

DC Stockholm

There are plans for collaboration and joint exploitation of the project results between SMHI, WSP, Stockholm City and CABJON. The starting point of the plans in Sweden is the opportunity to replicate the studies

developed in Stockholm in other regions of the country. Collaborators include the University of Sweden where we primarily collaborate with health experts to further explore and predict the health effects of heat waves, and Swedish Environment Institute, an expert in collaboration with end users and methods for including perspectives of end users in development; moreover, like other stakeholders, we find the presence of Swedish government, Swedish authorities and other service providers interested on heat waves.

The results from the Demonstration Case will be **incorporated into the City of Stockholm’s ongoing work with an Action plan for handling cloudburst in the city**. A draft will be presented in autumn 2020 for further development, and decision on investments by the City Council. The Swedish Contingency Agency (MSB) has ongoing funding for continued work in the project Hazard Support (2015-2020, total budget 1,6 million SEK for the heat wave part). FORMAS, a Swedish research council for sustainable development currently funds this works in two projects. Greenwave (2019-2022, total funding 2.1 million SEK) focusing on continuing this work and EDUCAS (2020-2023, total funding of 2.9 million SEK) were heat wave is one of the extremes investigated. To further extend the capacity in this area we have two applications for funding of continued research to FORMAS for this work (total amount over 7 million SEK for the two projects). Decisions will be taken in November. In addition to this SMHI is currently discussing with the Swedish government possible funding for establishing a web platform on heat waves that will provide guidelines to Swedish municipalities, authorities and consultants on how to adapt to future heat waves.

Ongoing work for further developing the methods and involve stakeholders according to project plans in ongoing projects. Additional work is dependent on decisions on funding.

The results from the Demo case will be incorporated into the City of Stockholm’s ongoing work with an action plan for handling cloudburst in the city. A draft will be presented in autumn 2020 for further development, and decision on investments by the City Council.

The following table resumes the Social-Innovation Impacts achieved in this DC.

Table 13: DC Stockholm Social-Innovation Impacts

Scope	Social-Innovation Impacts graph
<p><i>DC Stockholm</i> See the above description of the demonstration case.</p>	
Output	Social-Innovation Impacts Evaluation
<p>D2.3 CLARITY Demonstrators Implementation and Validation Report v1 D2.4 CLARITY Demonstrators Implementation and Validation Report v2</p>	<p>In this DC, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following: <i>Delivery of Urban Services (10)</i></p>

	<p>The projects results related to this DC, offer very valuable information, that has been practically used for the Delivery of Urban Services reaching the target of the CLARITY project. CLARITY’s work has been to build this national resource that will increase the possibility for hazard characterisation in Sweden.</p> <p><i>Minimize social impacts of climate change (7)</i> The specific solutions adopted in the DC (Investigate role of vegetation, increased vegetation to control flow rates, infiltration) have a very high impact in Minimizing the social impacts of climate change.</p> <p><i>Achieve social justice (5)</i> The specific solutions adopted in the DC contributes to increase the social justice because contribute to reduce the impacts of the climate change for the poorer people.</p> <p><i>Improved health (3)</i> This DC reduces, for citizens, the impacts from Heat waves, Pluvial Flooding and Air quality / Pollution.</p> <p><i>New recreational areas (3)</i> This DC promotes the usage of adaptation measures such as nature-based solutions, using the GAF (Green Area Factor) which is an urban site sustainability metric and a tool to enhance green infrastructure in the city.</p> <p><i>Capacity building of citizens (0)</i> <i>Citizens commitment (1)</i> This DC doesn’t involve directly the citizens but only municipality’s representatives.</p>
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DC Linz

Based on CLARITY recommendations, the City of Linz has introduced a multi-million “climate fond” and already started financing climate adaptation projects. Moreover, they have declared climate adaptation as strategic urbanistic development goal⁵.

Press-conferences on CLARITY and its outcomes for Linz have been held in the summers 2019 and 2020 by Linz policy makers and AIT scientists. CLARITY team members from AIT and ZAMG have been interviewed and various media have published newspaper articles as well as TV- and Radio features which contribute to awareness raising within the urban society.

Currently, the city of Linz, AIT, SCC and ZAMG are preparing an exploitation project that will transform the CLARITY advanced urban screening service prototype into an operative tool supporting this strategy. The ultimate goal is to make the assessment of climate risks mandatory in the planning of infrastructure projects in the future – even for the small projects where climate studies would not be economically viable. From the LINZ perspective, it’s important not only to select and evaluate specific areas, but to consider infrastructure measures across the whole city.

The following stakeholders, who are involved in planning activities for the City of LINZ shall be included in the project: experts in urban planning for the City of LINZ: external civil engineers, planners, consultants working on urban planning projects, investors, decision-makers (incl. politicians) and opinion leaders.

During summer 2020 an urban climate strategy to become “European Climate Capital” has been elaborated and approved by the local council (Gemeinderat) of Linz as the political body of the city, further a “climate

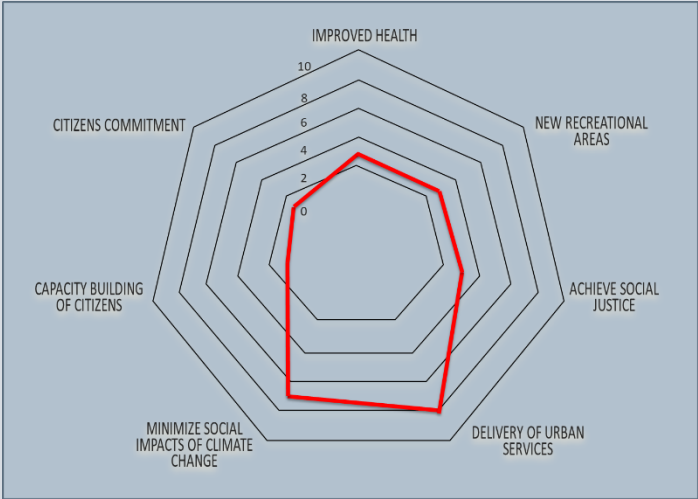
⁵ https://www.linz.at/medienservice/2019/201911_103976.php

fund has been approved to finance investments and projects which are expected to improve climate resilience and in between elected adaptation measures have been implemented benefitting the population and visitors of Linz.

A new project CLARITY4LINZ is proposed by AIT and further Austrian Partners to be funded within the framework of the current call for the LIFE-EU programme (sub-programme "Climate Action"). LIFE-projects are explicitly recommended following a H2020 project to implement research results and bring them into the market.

The following table resumes the Social-Innovation Impacts achieved in this DC.

Table 14: DC Linz Social-Innovation Impacts

Scope	Social-Innovation Impacts graph
<p><i>DC Linz</i> See the above description of the demonstration case.</p>	
Output	Social-Innovation Impacts Evaluation
<p>D2.3 CLARITY Demonstrators Implementation and Validation Report v1 D2.4 CLARITY Demonstrators Implementation and Validation Report v2</p>	<p>In this DC, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following:</p> <p><i>Delivery of Urban Services (8)</i> The projects results related to this DC (Green roofs, increased vegetation, albedo changes, reduction in soil-sealing), offer a meaningful information, that has been practically used to address heat hazards at the urban scale reaching anyway the target of the CLARITY project.</p> <p><i>Minimize social impacts of climate change (7)</i> This DC uses of CSIS tool and the adopted solutions have a very high impact in Minimizing the social impacts of climate change.</p> <p><i>Achieve social justice (3)</i> The specific solutions adopted in the DC increase the social justice because contribute to reduce the impacts of the climate change for the poorer people.</p> <p><i>Improved health (3)</i> This DC reduces, for citizens, the impacts from Heat Waves.</p> <p><i>New recreational areas (3)</i></p>

	<p>This DC includes the possibility to use adaptation measures such as nature-based solutions (increased vegetation).</p> <p><i>Capacity building of citizens (0)</i> <i>Citizens commitment (1)</i> This DC doesn't involve directly the citizens but only municipality's representatives.</p>
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DC Spain

CEDEX plans to host their own CSIS transport application and offer basic services for free to the community around the Spanish Ministry of Transport. The potential users of the application would be technicians (consulting companies and planners), technicians from public administrations (project and conservation departments) and university professors, students or researchers on issues related to vulnerability and adaptation to climate change. This application would be accessed through the domain cedex.es.

Moreover, ACCIONA intends to commercialize the transport application and is preparing an innovation project with several CLARITY partners in this direction.

The following table resumes the Social-Innovation Impacts achieved in this DC.

Table 15: DC Spain Social-Innovation Impacts

Scope	Social-Innovation Impacts graph
<p><i>DC Spain</i> See the above description of the demonstration case.</p>	
Output	Social-Innovation Impacts Evaluation
<p>D2.3 CLARITY Demonstrators Implementation and Validation Report v1 D2.4 CLARITY Demonstrators Implementation and Validation Report v2</p>	<p>In this DC, the grade of achievement of the Social-Innovation Impacts, reported in brackets, is the following:</p> <p><i>Delivery of Urban Services (7)</i> The projects results related to this DC, offer a meaningful information, that has been practically used for the Delivery of Urban Services although adjusted to the specific assessment needs of road infrastructure, reaching anyway the target of the CLARITY project.</p> <p><i>Minimize social impacts of climate change (6)</i></p>

	<p>The adopted solutions (Changes in road orientation / shadowing, changes in routes to lower elevations, increases in drainage sizes / channels) have a high impact in Minimizing the social impacts of climate change.</p> <p><i>Achieve social justice (2)</i> The specific solutions adopted in the DC increase the social justice because contribute to reduce the impacts of the climate change for the poorer people.</p> <p><i>Improved health (2)</i> This DC reduces, for citizens, the impacts from Heat Waves, Cold Waves and Floods.</p> <p><i>New recreational areas (0)</i> This DC doesn't use adaptation measures such as nature-based solutions.</p> <p><i>Capacity building of citizens (0)</i> <i>Citizens commitment (1)</i> This DC doesn't involve directly the citizens but only municipality's representatives.</p>
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4.2 Impacts on practitioners planning capabilities

In order to implement climate adaptation strategies in different cities of the world, practitioners must be aware and must know about climate change impacts. The same concept is valid for the different stakeholders who are responsible for taking actions towards adapting to climate change.

In today's world, a large amount of climate data and information is available; however, most of this data is not efficiently used. CLARITY CSIS (CLARITY Climate Services Information System) translates the existing climate data and information into user-friendly and knowledge customized services end can be used by the end-users to climate change adaptation. With the help of these services, the cities can become more climate-proof. To boost the implementation of adaptation towards existing or future climate change risks, the practitioners can use CLARITY Methodology and CSIS to provide support to the decision-makers since they provide information on climate change impacts or effects as well as the potential solutions or strategies which can be presented in terms of projections, trends, advice, development, and evaluation of solutions.

Overall, CLARITY strongly increases the planning capabilities of the practitioners, helping them in disclosing information, facilitating shared understanding, and supporting the decision-making process among the stakeholders. In fact, an effective urban planning service should always consider the climate change adaptation and should be able to communicate different types of information to and between several stakeholders, including private and public actors. When informed discourse/decisions are to be carried out as well as reduce the amount of risk due to climate change, then the practitioners need to understand the complex impacts of the several (interdependent) adaptation measures, as CSIS allows.

Moreover, CSIS allows the sharing of the potential future impacts of climate change and the impact evaluation of the possible adaptation measures. Practically, it reduces the lack of awareness and understanding of the urban planners about the risks of climate change implementing adaptation measures.

Furthermore, CSIS is especially advantageous for providing visualization of integrated information, including feedback on the impacts of measures because it adds new insights to the communication and use of climate information data by the stakeholders.

Usually, different communication formats can play a role in communicating with different stakeholders, which is essential for the decision-making process for adaptation. In the literature, there is a significant gap

between the qualitative process-based methods that are being used in participatory planning and the detailed models and decision support tools that are still mostly used by experts. In practice, this gap acts as a barrier to the success of carrying out participatory planning in a way that supports decision making and thus, causes a usability gap between the practitioner/urban planners and the climate adaptation services. Therefore, the choice of the format in which the climate information data is presented, understood, perceived, and used by the several stakeholders, is crucial.

CSIS bridges the usability gap by providing outputs with scientific content that support participatory processes for decision making because allows a better understanding of the climate adaptation.

Finally, most climate services/tools are used in the planning phase rather than the managing or action phase of the decision-making process. CSIS provides visualization and photos which influence the usability among the stakeholders in terms of understanding the information and acting upon it, initiating participatory planning and collaborative/interaction modelling to support the decision-making process. Despite the fact that there are countless decision support tools available to help local and regional authorities in managing and reducing risks in the face of uncertainty associated with climate change, CSIS reduce the gap between the scientific knowledge produced on climate risks and its usefulness for local and regional decision makers.

5 Report Summary

Seven categories of Social-Innovation Impacts have been identified in order to assess the main social-innovation aspects addressed by CLARITY's results. For the CLARITY project as a whole, the main impacts addressed by the project are:

- *the Delivery of Urban Services: main objective of the project*
- *the Minimization of social impacts of climate change: direct consequence from the increase of city's resilience*
- *the Achieve social justice: indirect consequence from the increase of city's resilience even if the social justice is a transversal question that should be locally assessed also with other instruments (considering the social, economic, gender, territorial and cultural diversity of citizens) and so, transversally addressed by specific policies and measures.*

Other remarkable Social-Innovation Impacts achieved are:

- *the Improved health: potential consequence of some adaptation measures implemented*
- *the New recreational areas: potential consequence of some adaptation measures implemented*

A minor degree of Social-Innovation Impact achieved is:

- *the Citizens commitment and the Capacity building of citizens, which could be indirect consequence of the exploitation and dissemination of project results.*

Moreover, the project has resulted in major impact in the four demonstration regions, where the results were already incorporated in the regional urban and traffic planning.

6 References

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