

The European Commission's
**INTELLIGENT CITIES
CHALLENGE**

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June 2022

Catanzaro: Intelligent City Transformation Overview

ICC Final Deliverable



Mayor Foreword

The city of Catanzaro has enthusiastically participated in the network of the European Smart Cities (ICC), as the city's presence in the experiment has been an important way of confrontation about its sustainable urban development strategy model with the best practices in Europe.

Catanzaro, the capital of the Calabria Region, thus intends to integrate its own strategic vision of development and innovation, centered on the "Urban Agenda" Program, with the urban planning guidelines of the most innovative cities in Europe, acquiring important indications and suggestions from the comparison in order to better define local development contexts, and promoting partnership experiences with urban realities similar to those of our city.

Catanzaro will emerge from this experimentation with an improved capacity to define models of sustainable urban development in line with the objectives of Agenda 2030 and the European 'green deal', becoming more and more a European city.

Executive summary

In the past few years, the Municipality of Catanzaro has launched a set of strategic planning tools for city development of a particular complexity and originality, so much that it has been referred to as one of the best practices of urban planning. at regional, national and European level.

IDEA OF URBAN DEVELOPMENT

- The City of Health;
- The Green and Sustainable City;
- The City of Culture and Creativity;
- The City of Youth Hospitality and Tourism;
- The City of "health administration";
- The City that invests in the historic center and the regeneration of degraded suburbs.

The Capital City of the Region of Calabria exercises its directional role as a service to the regional territory and valorises its central position between the Tyrrhenian and Ionian seas as the hinge of a metropolitan system that goes from Lamezia to Soverato.

3 objectives of the 2021/2017 EU programming

- A) Smart City (innovative, intelligent based on the "smart cities" approach);
- B) Sustainable city (environmental promotion, energy sustainability, air pollution control and health promotion);
- C) Inclusive city, capable of providing elements of social inclusion to all its social components.

The city of Catanzaro pursued an EU-supported transformation over four main stages, and this document details that journey by these sections

Overview to the city's journey and structure of this document



1 Preparation & assessment

5 months:
September 2020 – January 2021



2 Ambition & roadmap

3 months:
February 2021 – April 2021



3 Implementation

15 months
May 2021 – July 2022



4 Review & way forward

2 months
August 2022 – September 2022

Reported as one section

Summary

Find out **where a city is, where it should go** and who in the ecosystem is going to **mobilise make things happen**

Develop a **concrete plan** to achieve **measured improvements**, collaborating with the community; push action with immediate benefits

Get “big moves” **done** and **see results**; take **action in partnership** with others

Measure success, and commit to **keep connections and improvements going**

Section

1

September 2020 to January
2021

Catanzaro: Preparation and assessment

ICC transformation





Introduction


- The Municipality of Catanzaro already defined an Urban Development Strategy in 2018 ("Urban Agenda"), inspired by the "Smart city" approach. The Urban Agenda of Catanzaro focused on intelligent and digital development, sustainability and social inclusion.
- The city set up an "Urban Authority" Unit to coordinate urban development projects under the direct responsibility of the Mayor.
- In the medium-long term, Catanzaro aims to become an increasingly modern, intelligent and livable city, which can be considered by all Calabrian citizens as a model, able to provide innovative and quality services.
- ICC allows Catanzaro to become part of a network of cities interested in developing the potential of emerging technologies, in order to improve its urban development policies.

City needs: State of the city overview

Significance of insight to what we want to do on the ICC

 Of critical importance to ICC journey and we should be working to change

 Of importance to ICC journey, and we should act to change this along the journey as opportunity presents





 Contextually relevant, but not major point of attention in ICC and unlikely to be impacted on the journey

The state of Catanzaro today

Catanzaro is the capital city of Calabria region, and it is an important executive and administrative center, concentrating the functions of the regional administration. In the last decade, Catanzaro has suffered from the 2008 financial crisis, which caused a progressive depopulation of the city (from around 100,000 to 89,065 inhabitants in 2019) and a general worsening of all economic indicators.

The city was in the process of recovering but was hit hard by the crisis generated by COVID-19, which caused the suspension of more than 60% of production activities.

The city choose to focus on the following priorities for ICC :

1. Citizen participation and government (E-government and digitalisation of public services); 
2. Green economy and local green (+ Supply chains and logistics) (Smart and sustainable mobility and transport); 
3. Green economy and local green (Management of water and water systems); 
4. Security and safety. 

Key insights from city performance analysis (“Radar”)

Higher performance observed Lower performance observed

1	Natural resources & air quality		1	Water supply	
2	Food systems		2	Citizen participation and local industry	
3	Sustainable energy		3	Greening construction and housing	
4	Digital connectivity		4	Water sanitation	
5	Freight transport		5	Safety and security	

City ecosystem (1/2)

- **Shared aspirations and vision** –All the stakeholders participating in the ICC initiative have a similar vision for the city: they all agree on the need to repopulate the center and in general to develop smart and sustainable actions that can help rebuild the demographic and entrepreneurial fabric of the city, severely tested by the two major crises of the 2000s (2008 financial crisis and COVID 19 crisis - still ongoing-). However, a different approach than the one proposed was indicated by ARCI and the Third Sector Forum on the topic of security: instead of surveillance through the use of technologies, according to them it would be more useful to promote interventions in support of integration to combat educational poverty and prevent the problem.

City ecosystem (2/2)

- **What we bring and how we work together** - The stakeholders participating in the initiative have a heterogeneous and complementary set of skills and competences which makes the "team" absolutely complete. In fact, it is composed by the University, with its wealth of knowledge, AMC, the municipal company essential for the mobility of Catanzaro, the professional associations (e.g. architects), the associations of operators, trade, industry, workers and the third sector, which can provide a key point of view to analyze and understand the social and economic dynamics developing within the city.
- **Urban resources for transformation** - The city has a great unexpressed potential, which could be activated thanks to the contribution of the ICC initiative. In terms of financial resources, the city benefits from the contribution of the structural funds (Calabria ROP 2014-2020) and from further national and european financing; moreover, additional resources could come from the Recovery Plan being prepared. In terms of skills and critical thinking, the city ecosystem has shown, also through stakeholder meetings, that it has very clear ideas about the vision of the city, but it needs support for the implementation of projects that can have a real impact in solving the problems of the city.

City Ecosystem – The main local partners in Catanzaro

- University of Catanzaro (member of the ICC team)
- Order of Architects of Catanzaro (member of the ICC team)
- Catanzaro Servizi SpA (manages the water system and the urban security system)
- AMC SpA (manages urban transports and mobility, for instance busses, funicular, parking, etc.)
- Chamber of Commerce, industry and craft
- ConfCommercio (Represents commerce)
- Confesercenti (Represents commerce)
- Confindustria (Represents industries)
- Confartigianato (Represents crafts)
- LegaCoop (Represents cooperatives)
- Collegio dei Geometri (Committee of surveyors)
- CGIL, CISL, UIL and UGL (Trade unions)
- Third sector Forum
- ARCI (Third sector)

ICC strategy: Vision and ambition statements

Vision and ambition statements of Catanzaro

Overarching ICC city vision

Defining a smarter city model, placing the issue of environmental sustainability at the center of local policies, in the awareness that digitization, transport, local mobility and urban resilience are key to achieve this goal.

E-government and digitalisation of public services

Improving local e-government processes, also through comparison with models of other cities belonging to the ICC network

Green economy, local green - Smart and sustainable mobility and transport

Improving eco-sustainable urban mobility to revitalize the city center and develop long-distance mobility, completing the implementation of the various plans and investments already in place.

Green economy, local green - Efficient management of water

Promote actions in the direction of self-sufficiency of water resources to obtain significant energy savings and a positive environmental impact, also through the use of technologies, on which to compare with the experiences of the other cities of the ICC network

Supporting security

Achieve a significant reduction of the city's crime rate for the main crimes by identifying innovative actions on the subject of urban security, in addition to the actions already being implemented on the subject

City solutions and delivery strategy

Solutions already programmed or launched by the City

- The city has many projects in the programming and implementation phase, but most of these are infrastructural, thus the city needs ICC to improve the technological, smart and sustainable component.
- Most of the projects concern sustainable mobility: therefore the city needs to further develop effective interventions regarding e-government, water and security sectors.
- The stakeholders gave their contributions, suggesting further solutions on the topics covered by the initiative; all these ideas will be therefore integrated in the overall analysis and they could contribute to updating the city's strategy.

“Quick wins” projects

THEMATIC AREA N.1: E-GOVERNMENT AND DIGITALISATION OF PUBLIC SERVICES

PROJECT	CONTENT	FINANCED	THEMATIC COHERENCE
Broadband development of 5G experimental applications	5G applications, fruition of cultural heritage in green areas of the city	YES MiSE NOP 5G Trial	HIGH
Citizen's Digital Home	Online virtual environment development citizen participation and partnership for urban procedures digitalisation	NO Candidate on. "Living Lab" Program, Calabria Region	HIGH

THEMATIC AREA N.2: SUSTAINABLE MOBILITY

PROJECT	CONTENT	FINANCED	THEMATIC COHERENCE
City Logistics. Sustainable freight logistics	Development of a digitalised freight logistics governance system in the city and increase in electric freight mobility	YES Calabria Region Transport Plan	HIGH
Smart and digital parking	Development of an online and digital planning and management system for urban car parks (integrated with thematic area 1)	NO Candidate on. "Living Lab" Program, Calabria Region	HIGH

Section

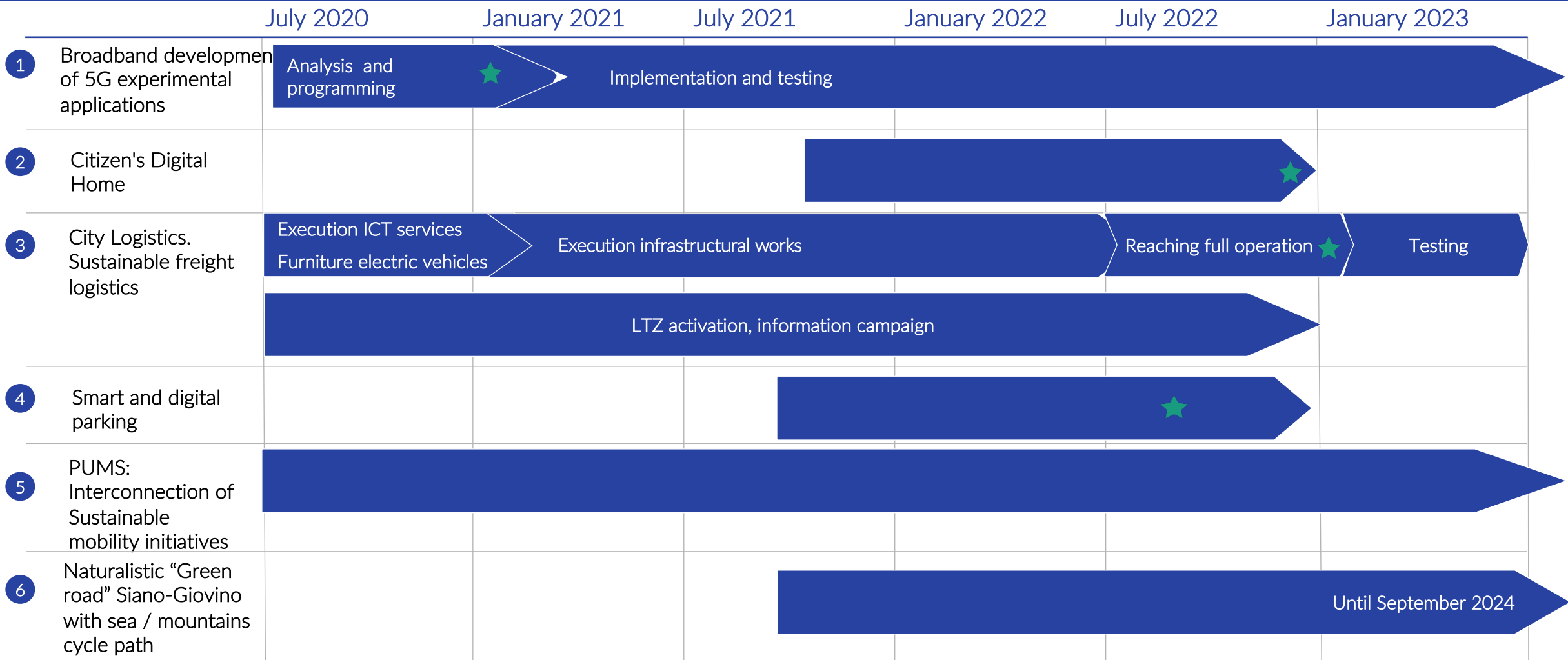
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Catanzaro: Ambition and roadmap

ICC Transformation

February 2021 to May 2021

High level implementation roadmap



Roadmap summary (1/2)

APPROACH

The approach to sustainable urban development by City of Catanzaro focuses on: revitalisation of the historical center and urban regeneration of the peripheries; improving services for citizens; linking the various areas of the city and its surroundings through an integrated sustainable mobility system; addressing current issues of water shortage; and promoting security.

Roadmap summary (2/2)

ROADMAP

- **current initiatives** will mostly start in autumn 2021 and they will last between 24 and 36 months.
 - With regard to sustainable mobility, the “PUMS” already provides for an integrated framework to guarantee interconnection of initiatives and synergies. With regard to other initiatives, Catanzaro already adopted a Sustainable urban development Agenda, but it needs to be updated.
- During the **second half of 2021**, it will be necessary:
 - to detail ideas proposed by the local ecosystem to become concrete initiatives and projects
 - to integrate insights and ideas from exchange of best practices within the ICC project to strengthen innovation
 - to coordinate all initiatives (not only sustainable mobility ones, as it is now thanks to the “PUMS”) within the previewed update of the Sustainable urban development Agenda of Catanzaro
 - to define capacity building initiatives, to strengthen governance and coordination of the Sustainable urban development Agenda and of its multiple projects (through the 2021-2027 Cohesion policy)

1


E-GOVERNMENT AND DIGITALISATION OF PUBLIC SERVICES: Broadband development of 5G experimental applications

Strategy

Description  The project involves 5G applications for fruition of cultural heritage in the green areas of the city. It allows end users to enjoy a new vision of the real world with new information thanks to the use of augmented reality apps and devices; 3Ds reconstructions, including historical ones, of environmental contexts, property and buildings of the city, details of flora and fauna; 4K audiovisual insights, etc.


Link to vision  The project is linked to the vision of the city because it supports achieving the creation of a smarter, more supportive and inclusive city model as developing a modern broadband is fundamental to the digital transition of the city and for citizens' participation


Link to ambition statement  The project contributes to the ambition statement of the city on Digitalisation because it improves digitalisation processes through the adoption of a new broadband technology that would enhance services to the citizens.


Expected impact and timing  5G applications availability and accessibility to the cultural, environmental and service resources of the city and hinterland of Catanzaro
Timing: end 2022



Stakeholders involved

Solution lead:  Municipality of Catanzaro

Solution working team:  Municipality of Catanzaro, University of Catanzaro, private TelCo provider


Contributors:  SMEs and Province of Catanzaro


Risks and mitigation  The main risk is related to the complexity of the implementation phase of the project.

A mitigation measure could be involving the stakeholders in all the process of developing and maintenance, to support the Municipality and citizens in this digital transition.

Inputs, outputs, outcomes and impacts












Source of funding and estimated cost  € 797.923,04 in total. € 624.338,43 from Development and cohesion fund, € 173.584,61 from other sources of funding

Solution maturity outputs  N. of antennas installed
N. of network points activated
Km. of Broadband increase

City performance outcomes and impacts  % of the city population reached by 5G services
% of the municipal area covered by 5G network broadband












2

E-GOVERNMENT AND DIGITALISATION OF PUBLIC SERVICES: Citizen's Digital Home

Strategy	Stakeholders involved	Inputs, outputs, outcomes and impacts
<p>Description</p>  <p>The scope of the project is to create a house of digital innovation of the city in a prestigious building in the historic center to be made available for city initiatives in the ICT sector,</p>	<p>Solution lead: Municipality of Catanzaro</p>  <hr/> <p>Solution working team: Municipality of Catanzaro University of Calabria</p>	<p>Source of funding and estimated cost</p> <p>€ 500.000 (2014-2020 Cohesion Policy)</p> 
<p>Link to vision</p>  <p>The project is linked to the vision of the city because the creation of a house of digital innovation fosters and inclusive city model and to supports the digitization process.</p>	<p>Contributors: National Research Center</p>  	<p>Solution maturity outputs</p> <p>N. of digital applications developed N. of digital administrative procedures activated</p> 
<p>Link to ambition statement</p>  <p>The project contributes to the ambition statement of the city on Digitalisation because the solution has the purpose to create a space where start-ups and little companies can work and share ideas to improve digital competitiveness services for citizens and businesses</p>	<p>Risks and mitigation</p>  <p>The main risk is related to the need of funding for the start-ups and their projects.</p> <p>A mitigation measure could be finding a company sponsor that could finance the projects and/or use the EU 2021-2027 Cohesion policy</p>	<p>City performance outcomes and impacts</p> <p>% of citizens that use digital procedures</p> 
<p>Expected impact and timing</p>  <p>To ensure a space for local business to work and develop ideas and new digital approaches</p> <p>Timing: March 2023</p>		












3 SUSTAINABLE MOBILITY

City Logistics. Sustainable freight logistics

Strategy	Stakeholders involved	Inputs, outputs, outcomes and impacts	
<p>Description</p>  <p>The project aims to to redesign freight traffic within and outside the city center and in the Lido district (The historical center of Catanzaro is on a hill, while the Lido is at the seaside)</p>	<p>Solution lead: Municipality of Catanzaro</p> 	<p>Source of funding and estimated cost</p> 	<p>Total cost: € 1.413.898,24 (Calabria Region Transport plan)</p>
<p>Link to vision</p>  <p>The project is linked to the vision of the city because it contributes to develop a smarter city model, placing the issue of environmental sustainability at the center of local policies, through digitization of, local mobility.</p>	<p>Solution working team: Municipality of Catanzaro</p> 	<p>Solution maturity outputs</p> 	<p>N. of parking areas created N. of digital applications activated N. of electric vehicles purchased</p>
<p>Link to ambition statement</p>  <p>The project contributes to the ambition statement of the city on Mobility because its scope is to improve eco-sustainable urban mobility, in particular to revitalise the city center using a smart organisation of freight logistics and to promote the switch to electric mobility</p>	<p>Contributors: Local commerce companies, goods vehicles operators</p> 	<p>City performance outcomes and impacts</p> 	<p>N. of couriers and commercial users interested % of decrease in atmospheric pollution</p>
<p>Expected impact and timing</p>  <p>A digitalised freight logistics governance system in the city and increase in electric freight mobility.</p> <p>Timing: October 2023</p>	<p>Risks and mitigation</p>  <p>The main risk is related to the necessary collaboration needed by local commerce companies</p> <p>A mitigation measure could be involving these companies along the whole process to co-design implementation modalities</p>		

4

SUSTAINABLE MOBILITY Smart and digital parking












Strategy	Stakeholders involved	Inputs, outputs, outcomes and impacts
<p>Description  The project focuses on a MRS (Mobile Revolution System) to digitalise the management of the car parks of the city</p>	<p>Solution lead: Municipality of Catanzaro </p>	<p>Source of funding and estimated cost  € 500.000 (2014-2020 Cohesion Policy)</p>
<p>Link to vision  The project is linked to the vision of the city because it contributes to environmental sustainability, digitalisation and local mobility.</p>	<p>Solution working team: Municipality of Catanzaro In house public society managing parking and mobility in the city (AMC SpA, (implementing the project) </p>	<p>Solution maturity outputs  N. of digital parking spaces activated N. of digital applications activated</p>
<p>Link to ambition statement  The project contributes to the ambition statement of the city on Mobility because it is aimed to develop an on line planning and management system for urban car parks to reduce traffic congestions and to improve eco-sustainable urban mobility.</p>	<p>Contributors: Universities of the Calabria Region </p>	<p>City performance outcomes and impacts  N. of cars using the app % of increase of electric vehicles in the urban area</p>
<p>Expected impact and timing  To reduce the traffic congestion in the city and to provide a governance system of the situation of car parks in the city by applying new technologies Timing: December 2022</p>	<p>Risks and mitigation  The main risk is related to the difficulties that citizen could have to familiarise with the new system. A mitigation measure could be knowledge sharing and information for citizens</p>	

5

SUSTAINABLE MOBILITY

PUMS: Interconnection of Sustainable mobility initiatives

Strategy Stakeholders involved Inputs, outputs, outcomes and impacts


Strategy	Stakeholders involved	Inputs, outputs, outcomes and impacts
<p>Description</p>  <p>The project promotes a model of urban development centered on sustainable and integrated mobility. This project links all together multiple single actions, to provide a single framework for mobility in the city</p>	<p>Solution lead: Municipality of Catanzaro</p> 	<p>Source of funding and estimated cost</p> <p>The estimated cost is 3.000.000 €</p> 
<p>Link to vision</p>  <p>The project is linked to the vision of the city because it promotes interconnection between different mobility initiatives and sustainable local mobility</p>	<p>Solution working team: Municipality of Catanzaro, In house public society managing parking and mobility in the city (AMC SpA, (implementing the project)</p> 	<p>Solution maturity outputs</p>  <p>Sustainable reconnection of the different suburbs</p> <p>Promotion of electric mobility and bike plan</p> <p>Realisation of an integrated parking / facilities, hectometry / subway / public transport system</p>
<p>Link to ambition statement</p>  <p>The solution contributes to the ambition statement of the city because it aims at strengthening sustainable mobility in the city and with its surroundings.</p>	<p>Contributors: AMC SpA</p> 	<p>City performance outcomes and impacts</p>  <p>Reduction of harmful gas emissions</p> <p>Progressive reduction of road transport and of the use of private cars, eliminating traffic congestion in the city center and in the Lido district</p>
<p>Expected impact and timing</p>  <p>The solution can counteract: the tendency of depopulation and urban decay of the historical center of the city that is perched on a hill and has lost its urban centrality due to the shift of urban functions to the suburbs. This gave rise to private traffic, as the city has an extensive surface and a length of 33 km, from the mountains to the sea, which this project aims to reduce</p>	<p>Risks and mitigation</p>  <p>The main risk is related to the complexity of integrating multiple initiatives and of various existing planning documents</p> <p>A mitigation measure could be creating a task force for the overall governance of the project.</p>	


6


SUSTAINABLE MOBILITY


Naturalistic “Green road” Siano-Giovino with sea / mountains cycle path

Strategy

Description  Construction of a bicycle and pedestrian pathway that links the seaside of Catanzaro with the mountains surrounding the city center

Link to vision  The project is linked to the vision of the city because it places the issue of environmental sustainability at the center of local policies and it promotes sustainable local mobility

Link to ambition statement  The project contributes to the ambition statement of the city on Mobility because it aims at strengthening sustainable mobility in the city and with its surroundings. Furthermore, the “Green Road” can be implemented with multimedia paths and the use of apps for informing citizens on natural and cultural heritage along the Green road and on local culture, this was improving digitalisation as well.

Expected impact and timing  A bicycle and pedestrian path able to connect two important areas of the city of Catanzaro: the area of Li Comuni with that of Giovino along the river Allì and discouraging the use of motor vehicles

Timing: 36 months

Stakeholders involved

Solution lead: Municipality of Catanzaro




Solution working team: Municipality of Catanzaro
In house public society managing parking and mobility in the city (AMC SpA, (implementing the project)




Contributors: Local environment associations




Risks and mitigation  The main risk is related to the cost of the maintenance after the setting-up phase.
A mitigation measure could be involving the Region in funding the prosecution of the project after the first phase.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost  The estimated cost is 4.000.000 €

Solution maturity outputs  Multimedia paths and apps to inform citizens on natural and cultural heritage along the Green road

City performance outcomes and impacts  Creation of the new cycle path
Citizens using the Green road cycle path



Key Performance indicators

Solution	Activities – Inputs and actions	Solution Maturity - outputs	City performance – outcomes and impacts
E-government and digitalization of public services	Broadband development of 5G experimental applications	N. antennas installed N. network points activated Km. Broadband increase	% city population reached by 5G services % municipal area covered by 5G network broadband
E-government and digitalization of public services	Citizen's Digital Home	N. digital applications developed N. digital administrative procedures activated	% citizens that use digital procedures
Sustainable mobility	City Logistics. Sustainable freight logistics	N. parking areas created N. digital applications activated N. electric vehicles purchased	N. couriers and commercial users interested % decrease in atmospheric pollution
Sustainable mobility	Smart and digital parking	N. digital parking spaces activated N. digital applications activated	N. cars interested by the app usage % increase in electric vehicles in urban areas
Sustainable mobility	PUMS: Interconnection of Sustainable mobility initiatives	Sustainable reconnection of the different suburbs Promotion of electric mobility and bike plan Realisation of an integrated parking / facilities, hectometry / subway / public transport system	Reduction of harmful gas emissions Progressive reduction of road transport and of the use of private cars, eliminating traffic congestion in the city center and in the Lido district
Sustainable mobility	Naturalistic “Green road” Siano-Giovino with sea / mountains cycle path	Multimedia paths and apps to inform citizens on natural and cultural heritage along the Green road	Creation of the new cycle path Citizens using the Green road cycle path

Key Performance indicators - Cross cutting indicators

Cross cutting indicators

Efficiency of the Management unit (the Urban development unit) of the Municipality in ensuring coordination and governance of the planning and implementation processes

Level of participation of the local ecosystem and stakeholders in coordination and governance of the Sustainable urban development Agenda of Catanzaro

Level of implementation of a digital and sustainable approach to administrative procedures and public services

Level of automation and digitalisation of municipal services

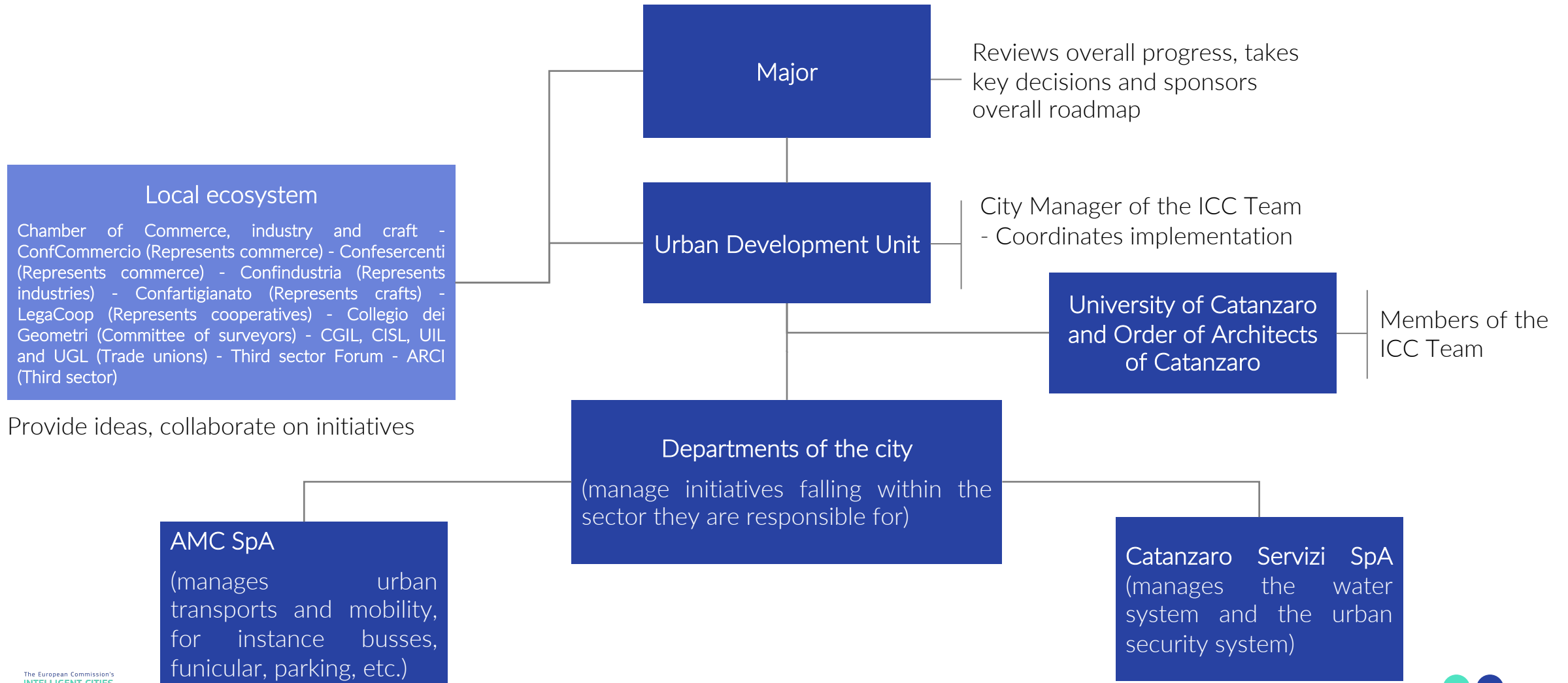
Rationale to KPI approach

The choice of KPIs for the above-mentioned solutions was based on criteria aimed at maximising the expected results in achieving the objectives.

The KPIs considered were a good compromise between challenging yet achievable objectives within the set timeframe.

Each parameter indicated was chosen through a careful analysis of the initiatives and with the collaboration of the stakeholders involved in the realisation of the project. It is very effective in quantifying the progress of individual solutions.

Governance structure for roadmap implementation



The European Commission's
**INTELLIGENT CITIES
CHALLENGE**

Section

3+4

Catanzaro: Impact

ICC Transformation

February 2021 to May 2021

Impact executive summary

The path undertaken during this Intelligent Cities Challenge experience for the city of Catanzaro was very challenging and allowed us to achieve excellent results in both planning and implementation phases.

Obstacle

The biggest obstacle we encountered was undoubtedly the Covid19 pandemic, which slowed down all activities in all areas of interest, despite which the City of Catanzaro reacted well to these bumps in the road.

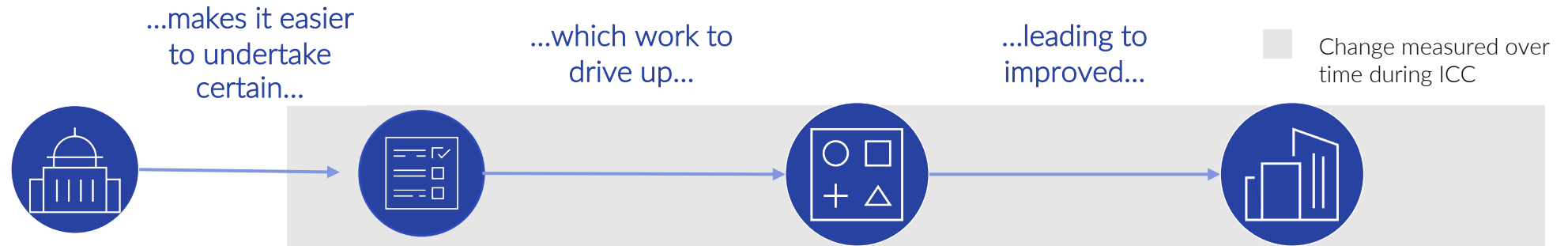
Current State

The current state of the reported Projects implementation makes possible to confirm that the planned KPIs have contributed to achieve, albeit partially, the objectives assumed in the planning stage, which have allowed the City of Catanzaro to create innovative digital infrastructures and sustainable mobility services, that decisively affect the quality of life and the urban context, thus confirming that the originally assumed objectives would have had a positive impact on urban development processes from a European perspective.

Next Three Years

Over the next three years, the city commits to conclude all projects still in progress and to continue to implement them. Increasingly focusing on e-government and sustainable mobility to ensure a healthier and simpler life for its citizens. And the City intends to develop these programmatic lines through the wise and integrated use of the 2021/27 Community resources and of the Recovery Fund, together with the urban investments of the Italian Government and of the Region of Calabria. The City of Catanzaro will increasingly focus on sustainability and digitalization, always striving to set challenging but not impossible goals in order to be able to guarantee excellent results on time.

There are four types of measurable concepts that come together to drive success in the ICC



Idea	Local enablers – city characteristics	Activities – actions and inputs	Technology maturity – outputs	City performance – outcomes and impacts
Description	Each city has unique strengths and weaknesses that help action happen . These can be stakeholder networks, local capabilities, cultural factors or many more that drive success in ICC projects.	A cities main intervention on the ICC is to take actions . These can be direct (e.g., procuring technology), or indirect , (e.g., forming a working group on a topic). The right actions can lead to the right inputs going in to the ICC (e.g., funding, time)	Cities can drive technological solutions to try and improve city performance. How well these solutions are currently used can be described as their 'maturity' , - considering whether they are available for stakeholder use, what stakeholders think of them, and so on	Success of an intelligent city is ultimately measured by its ability to address city needs . These can be considered an improved quality of citizen life and a better environment for stakeholders
Example	A history of strong collaboration between city and a local university...	...allows the creation of a new e-health pilot project using social housing in the city...	...leads to the launch a new tele-health solution utilising 4G data connections...	...resulting in pre-emptive diagnosis and lower wait times at medical facilities

Assessment of city performance - progress against KPIs

City performance	Where we started	Midway through the challenge	Final results
1 Connectivity	+ 10%	+ 20%	+ 30%
2 Parking	N° 30	N° 38	N° 50
3 KM bike-path	18 km	25 km	40 km
4 Digitalisation of service	25%	48%	60%
5 Reduction Pollution	8%	12%	20%

Assessment of city performance - discussion

Projects Planned

The projects planned by the City of Catanzaro moved from the perspective of sustainable urban development with particular attention to the issues of digital transition and sustainable mobility, which constitute the backbone on which urban planning, based on the "smart cities" approach, was developed. The current state of the reported Projects implementation makes possible to confirm that the planned KPIs have contributed to achieve, albeit partially, the objectives assumed in the planning stage, which have allowed the City of Catanzaro to create innovative digital infrastructures and sustainable mobility services, that decisively affect the quality of life and the urban context, thus confirming that the originally assumed objectives would have had a positive impact on urban development processes from a European perspective.

Problems Encountered

Certainly the City of Catanzaro KPIs were strongly influenced by the unexpected Covid19 pandemic and by the economic crisis that was induced by it, causing delays in implementation and unexpected increases in investment costs, but the local ecosystem contribution to the urban strategy was decisive in a positive sense in terms of involvement of the institutional, social and economic partnership of the territory.

Assessment of solution maturity - progress against KPIs

	Where we started	Midway through the challenge	Final results
Broadband development of 5G experimental applications			
1 N. of antennas installed	0	15	40
2 N. of network points activated	0	4	10
3 Km. of Broadband increase	N/A	N/A	N/A
4 % city population reached by 5G services	0	10%	25%
5 % municipal area covered by 5G network broadband	0	5%	20%
Citizen's Digital Home			
1 N. of digital applications developed	10	20	50
2 N. of digital administrative procedures activated	10	20	50
3 % of citizens that use digital procedures	10%	20%	40%

Assessment of solution maturity - progress against KPIs

	Where we started	Midway through the challenge	Final results
City Logistics. Sustainable freight logistics			
1 N. of parking areas created	2	12	32
2 N. of digital applications activated	0	2	10
3 N. of electric vehicles purchased	N/A	N/A	N/A
4 N. of couriers and commercial users interested	15	20	30
5 % of decrease in atmospheric pollution	8%	12%	20%
Smart and digital parking			
1 N. of digital parking spaces activated	2	12	32
2 N. of digital applications activated	0	2	10
3 N. of cars using the app	15	80	300
4 % of increase of electric vehicles in the urban area	+8%	+15%	+25%

Assessment of solution maturity - progress against KPIs

	Where we started	Midway through the challenge	Final results	
PUMS: Interconnection of Sustainable mobility initiatives				
1	Sustainable reconnection of the different suburbs	2	5	10
2	Promotion of electric mobility and bike plan	+8%	+15%	+25%
3	Realisation of an integrated public transport system	1	3	10
4	Reduction of harmful gas emissions	8%	12%	20%
5	Reduction of car traffic	10%	15%	25%
Naturalistic "Green road" Siano-Giovino with sea / mountains cycle path				
1	N. Creation of the new cycle path	18km (n°3)	25km (n°5)	40km (n°8)
2	Citizens using the Green road cycle path	100	200	500

Assessment of solution maturity - discussion

Assesment

The assessment of the implementation of the Projects and the related KPIs, in light of the reported criticalities of the Covid19 pandemic and the induced economic crisis, made possible to effectively reprogram the technological solutions and the creation of digital infrastructures and sustainable mobility services, also through the full sharing of these solutions with the local ecosystem (partnership) involved in the planning of interventions.

Solution Maturity

Confirmation of the effectiveness of the objectives and KPIs originally assumed, albeit with the necessary remodeling of the output and result indicators, measured constantly during the work, therefore allowed to confirm the objectives even if partially resized in the implementation aspect.

Assessment of city ecosystem and activities - progress against KPIs

	Where we started	Midway through the challenge	Final results
Ecosystem			
1 Number of partner	25	25	40
2 % Participation	80%	90%	100%
3 Public Partner	4	4	8
4 Economics Partner	15	15	20
5 Social Partner	6	6	12
Activity			
1 N° events	2	4	6
2 Participation	80%	90%	100%
3 N° of documents	5	15	30
4 N° of media communications	5	10	20

Assessment of city ecosystem and activities - discussion

Ecosystem activity

Overall, considering the critical issues deriving from the Covid19 pandemic already described above, the objectives and KPIs originally planned were respected in the actual implementation, even if reduced in the output and result indicators.

Local ecosystem

The local ecosystem (territorial partnership) has strongly contributed to the implementation of the projects planning and monitoring, ensuring the finalization of the interventions and the actual social demand emerging from the territory.

5 key lessons

Lesson	Reflections
1	A strong partnership is a good basis for the realization of city projects that aim to satisfy citizens as much as possible.
2	Taking advantage of lessons from Cities who have already had experience with a particular project is crucial to minimize errors.
3	The Covid19 pandemic taught us that in every situation is necessary to have always a fallback solutions and always foresee possible drawbacks when planning a project.
4	Continuous and fruitful cooperation with other cities certainly leads to benefits and stronger projects, and can reduce the time needed for completion.
5	For the realization of a successful project there is a need for great knowledge of the funds available so as not to risk having great ideas but being unable to realize them.

Reflections on city collaborations

Collaboration

The city of Catanzaro has learnt that fruitful cooperation with other cities can lead to several positive factors. First of all, there is the possibility of a fruitful exchange of ideas that can lead to the realization of better services.

The exchange of ideas with cities that are planning to implement projects similar to those undertaken by the Municipality of Catanzaro has enabled fruitful discussions and improvements in the strategies of all the cities involved.

Twinning Project

Catanzaro also signed a twinning agreement with the Greek city of Tripolis. The two cities got to know each other during the Intelligence Cities Challenges events and, being linked by a very similar topography, have decided to get to know each other better and start a collaborative relationship that will culminate in an event organized for the end of November where a workshop and dinners will be organized to meet and exchange ideas.

Commitments

Commitments to on-going resources

The city places great emphasis on seizing all possible opportunities that will be created by the National and Regional Plans, especially using the resources made available in the NRRP. The aim is to have the necessary financial basis for the implementation and maintenance of existing and future projects.

Commitments to on-going collaboration

Throughout the course of this Project, the city has initiated ongoing collaborations with the designated Partners. The aim is to always have a partnership that is involved and feels a part of the Project and therefore cares about its timely realization.

Commitments to on-going KPIs

The Municipality of Catanzaro is moving ahead with all the set targets and is meeting all the KPIs it set out to achieve. The aim will be to continue to improve results by also going beyond, where and if possible, the set minimum targets.

3 Year plan - ambitions

Building on the ICC, what would will the city aim to achieve in 3 years time?

Over the next three years, the city commits to conclude all the on going projects and to continue to implement them. Increasingly focusing on e-government and sustainable mobility to ensure a healthier and simpler life for its citizens.

What steps will you take over the next 3 years to achieve these goals?

The aim will be to reduce city traffic through increased mobility sharing and implementation of public services. The process of digitization of public administration will be implemented to make services more user-friendly for citizens and to speed up application procedures. Special attention will be given to new initiatives and calls for tenders related to the PNRR in order to find synergies with existing projects.

3 Year plan - targets

KPI	Category	What commitments will the city make to this end?
1	City Performance	Increasing the city's performance in Green Deal issues by improving the quality of life of citizens
2	Solution maturity	The objective is to complete all the solutions proposed in the CCI in the shortest possible time and to continue to update and develop them according to the new technologies in place.
3	Sustainable mobility	Reducing the use of personal vehicles within the city circle by providing more and more alternative mobility services.
4	ecosystem	Increasing involvement of the partnership by also increasing participation and the number of members
5	Digitalisation	Increasingly improving the digitalization of the city, through more and more high-performance connectivity services in line with the temple.

Appendix

Catanzaro: Additional information

ICC Transformation

February 2021 to May 2021

City Needs: State of the city – detailed analysis – Priority 1 – E-government and citizens participation

Lower performance areas / higher performance areas

Key insight

- The city needs to improve local e-government processes (e.g. e-democracy, digital competitiveness services for businesses and e-procurement)
- This consideration is confirmed by the opinions of stakeholders, who spoke about the need to develop digital skills and infrastructures for the benefit of citizens and businesses.

Data points

- According to the municipality, 60% of services to citizens and businesses are provided digitally and through dedicated sites or platforms
- On the other hand, according to the stakeholders only a small minority of shops within the city of Catanzaro use portals or digital tools to sell their products online.

Interpretation

- Catanzaro has already started its digital transformation process, through organic actions for the digitalisation of procedures and administrative activities
- The improvement of digitalisation in general has a strategic importance for the city as it can also have a positive impact on other sectors (e.g. sustainable mobility, revitalisation of the business fabric and natural and cultural heritage).

So what?

- **Actionability** – The city has all the credentials to make progress on this issue, but it needs support to implement innovative ideas.
- **Significance** - For stakeholders, the theme is absolutely central, as reiterated during the 1:1 interviews and in the meeting of the extended partnership
- **Prioritisation** - The city considers the issue of e-government and citizens participation and digitalisation in general a priority issue due to its transversal nature and the positive effects that the improvement of the same can also have on other sectors (see “interpretation” box on the left)

City Needs – Insights from the needs assessment workshop – Bottom-up perspective

Stakeholder interviews have highlighted their role within the city, their skills, the added value they can bring to the initiative and the projects they are developing within their respective areas of expertise: the University, which carries out important functions mainly related to teaching and research and is also developing initiatives on issues related to the sectors chosen by the Municipality for ICC (e.g. on transport law, in the health and sociological fields); AMC, a company owned by the Municipality of Catanzaro, which represents the main actor for the development of mobility in the city; Confindustria and Confcommercio, which provided the point of view of the manufacturing, commercial, tourist and service companies of the city. According to the stakeholders' point of view, which also emerged during the meeting of the extended partnership, the main strengths of the city are linked to its role as capital and therefore as the main institutional seat of the Region, to the university district located in the area of Germaneto and, more generally, to the heritage of natural, historical and cultural resources of the city. These strengths are also fundamental for understanding the needs of the city, which in fact has a great potential to develop, making the most of its resources in order to reactivate the entrepreneurial and demographic fabric of the city. In the opinion of the stakeholders, this result can be achieved through the development of digital infrastructures and skills, of operators and more generally of the population, the development of initiatives aimed at relaunching entrepreneurship and micro-entrepreneurship in the city and the enhancement of the naturalistic and cultural heritage of the city, especially in the historic center, through the use of new technologies.

City Needs: State of the city – detailed analysis – Priority 2 – Smart and sustainable mobility

Lower performance areas / higher performance areas

Key insight

- The city needs to improve eco-sustainable urban mobility particularly to revitalize the city center as well as to develop long-distance mobility
- This consideration is confirmed by the opinions of stakeholders, who spoke about the need to complete the integration of the vehicle fleet and to aim in the direction of sustainable mobility, completing the actions already in place by the city (e.g. bike and car sharing)

Data points

- According to Legambiente, Catanzaro has a high motorization rate (68 cars and 11 motorcycles per 100 inhabitants), although it ranks first in Calabria for use of public transport

Interpretation

- According to the stakeholders, the two aspects that prevent the development of sustainable mobility are the limited financial resources and the lack of an adequate vision by the institutions. For example, Calabria Region is substantially supporting "ordinary" mobility, but a further and innovative effort is needed to obtain a significant improvement in the quality of life of citizens.

So what?

- **'Actionability'** - The city has the potential to be able to achieve significant improvements in this sector, but an innovative boost is needed which can be provided by initiatives such as ICC
- **Significance** - For the city, the theme is fundamental to revitalize the historic center and significantly improve connections with the outskirts of the city in a way that is as sustainable as possible
- **Prioritisation** - The level of priority for this sector is high (Catanzaro has placed it in second place among the learning sectors for ICC immediately after e-government)

City Ecosystem – The main local partners in Catanzaro

- University of Catanzaro (member of the ICC team)
- Order of Architects of Catanzaro (member of the ICC team)
- Catanzaro Servizi SpA (manages the water system and the urban security system)
- AMC SpA (manages urban transports and mobility, for instance busses, funicular, parking, etc.)
- Chamber of Commerce, industry and craft
- ConfCommercio (Represents commerce)
- Confesercenti (Represents commerce)
- Confindustria (Represents industries)
- Confartigianato (Represents crafts)
- LegaCoop (Represents cooperatives)
- Collegio dei Geometri (Committee of surveyors)
- CGIL, CISL, UIL and UGL (Trade unions)
- Third sector Forum
- ARCI (Third sector)

City Ecosystem – The stakeholder workshop - 1

The city ecosystem involved in the ICC initiative is composed by institutions (University, public utilities); economic and social partners (trade unions and associations representing industry, commerce and professionals); third sector.

Following the 1:1 interviews and the stakeholder workshop, it emerged that the urban ecosystem is very interested in ICC and it generally shares the idea and the desire of the municipality to relaunch the development of the city, in particular in the 4 sectors affected by the initiative (e-government and digitalisation of public services, smart and sustainable mobility and transport, management of water and water systems, security). Specifically, all the actors involved agree on the need to repopulate the historic center - subject to progressive depopulation over the years - through initiatives to support the productive and commercial fabric, exploiting the potential offered by new technologies.

At the same time, the issue of digitalisation is considered fundamental to increase the involvement of citizens and their use of public services; to improve sustainable mobility through actions to complete existing projects (e.g. cycle paths, car and bike sharing), but also in the water and safety sectors. The ideas proposed by the partnership include: projects to promote entrepreneurship and urban micro-entrepreneurship (e.g. incubators for start-up); development of digitalisation to promote cultural and religious tourism, especially in the historic center, full of churches; development of digital fairs.

