The European Commission's
INTELLIGENT CITIES
CHALLENGE

Castelló de la Plana: Intelligent City Transformation Overview

ICC Final Deliverable

European Commission | The Intelligent Cities Challenge is funded by COSME, the EU programme for Competitiveness of Enterprises and SMEs

Executive summary

Castelló City Council is a public body that represents a municipality of almost 200.000 inhabitants. In the last years, the municipality has a commitment with the environment and the transition to a Low Carbon Economy, participating in lots of activities to reduce CO2 emissions. It also aims to be a living lab of new and innovative technologies, while trying to support entrepreneurship in the city through various tools related both to innovation and to the environmental objectives of Castelló.

Directly linked to that, the vision of Castelló was established, as well as the ambitions to overcome to fulfil this objective: *Castelló 2050: A green city for all people to live.*

- *Zero-waste water cycle.*
- *Green city and green industrial areas.*
- *Education and civil engagement & Entrepreneurship in sustainability.*

To achieve this vision, the City Council, together with the City Ecosystem and stakeholders, have considered that certain actions are necessary, taking advantage of the development of the ICC. Thus, the following solutions were proposed:

- *Solution 1. Energy Local Communities*, which would consist in start defining the possible creation of a decentralized, fair and efficient energy system that establishes a new and efficient way of generating, using and managing energy at the local level, through the cooperation and voluntary participation of citizens, local administration and stakeholders.
- *Solution 2. Integral Water Management*, designing a comprehensive water management solution that includes updating and improving existing infrastructures and optimizing the city's water resources, promoting sustainable consumption and reusing.
- *Solution 3. Municipal Energy Efficiency Plan*, with the aim of keep developing the Municipal Energy Efficiency Plan of the City Council by implementing some of the proposed actions, as improving the energy efficiency of a public building that is being rehabilitated and upgrading the efficiency of the urban public lightning.
- *Solution 4. Promoting & Supporting Entrepreneurship,* carrying out actions that involve greater coordination between companies and the City Council to promote entrepreneurship and talent retention in the city.

Currently, and in the years to come, the City Council will be focused on the Castelló 2030 Urban Agenda, the strategic city instrument aimed at achieving the Sustainable Development Goals (SDGs) that is aligned with the strategic framework and methodological tools proposed by the Spanish Urban Agenda.

Mayor Foreword

Belonging to this network of cities strengthens our city's commitment to innovation and its conviction that, doing so together with Europe and the most advanced cities in the world in this field, is the best possible way to achieve our goals.

This has been an exceptional opportunity to work with a community that harnesses advanced technologies to address the problems that cities are suffering, and to rebuild their economies, leading them to smart, green and sustainable growth, improving their quality of life and creating new opportunities for the business ecosystem.

Amparo Marco – Major of Castelló de la Plana

The city of Castelló de la Plana 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

Reported as one section

	1 Preparation & assessment	2 Ambition & roadmap	3 Implementation	4 Review & way forward
	5 months: September 2020 – January 2021	3 months: February 2021 – April 2021	15 months May 2021 – July 2022	2 months August 2022 – September 2022
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

Intelligent Cities Challenge

Section

1

Castelló de la Plana: Preparation and assessment

ICC transformation

September 2020 to January 2021

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Introduction

To understand the decisions made by Castelló de la Plana, it is worth highlighting the several orographic, sociodemographic and climatic features that it has, since these characteristics have defined both the deficiencies of the city and the solutions that have been adopted in order to improve the current situation.

1 - Sociodemographic features

- Size:
  - Population: 171,728 inhabitants.
  - Surface: 107,5 km2
- Economic activity:
  - The city is the industrial and cultural engine of the province.
  - The tile industry is the most important one.
  - There is a lack of technological experts that are required by the city industries.

2 - Orographic features

- Located in flat terrain:
  - On the one side this is a problem (floods), but is also an advantage as it can encourage citizens to use non motorized vehicles.
- Aquifer:
  - Most of the water is obtained from the existing aquifer that is located under the surface.
- "La Marjalería":
  - Wetlands located between the city centre and the beach. Problems of contamination and depuration.

3 - Climatic features

- Storms:
  - Not much precipitation during the year, but strong storm episodes that usually end up causing floods.
- Good weather
  - Sunny days even in winter.

4 - Political actions

- European funds:
  - FEDER
  - Urban Agenda 2030.
- Innovative Public Procurement.
- Smart City Plan.
- Roadmap to 2050:
  - Castelló, a green city for all people to live.
- Transforma Castelló Strategy

5 - Academic & Associative Framework

- Jaume I University:
  - The University promotes innovation and R&D, housing the ESPAITEC Scientific, Technological and Business Park, and the Ceramic Technology Institute (ITC).
- Centre for Energy Efficiency & Innov.
  - Space aimed at offering advice and support to entrepreneurs and companies (CIES).
- Xarxatec
  - Association of Technological Companies of Castelló.

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 Castelló de la Plana today

Castelló City Council is promoting a vision based on innovation, inclusion, technology and sustainability, as engines of economic and human development, highlighting the value of synergies and the capacities that define local social and economic agents.

The Transforma Castelló Strategy is the main roadmap that the city currently has, seeking to implement a model of city shared by the administration, citizens and the agents that make up the local socioeconomic framework. Another strategic plans that the City Council is managing are, among others: the Municipal Energy Efficiency Plan, an Integral Sustainable Urban Mobility Plan, the General Plan of Urban Management or an Accessibility Plan.

One of the actions in which more progress has been made is in improving the energy efficiency of the city, with the City Council having the intention of continuing to advance in this regard.

There is also a strong commitment in promoting the electronic administration and the digitalization of public services, favouring the Open Government and optimizing the management of the municipal services. This action is one of the biggest challenges the city faces right now, since for its achievement the participation and training of both citizens and public workers is necessary.

Key insights from city performance analysis

Higher performance observed

1. Castelló has reduced the consumption of energy by changing the public lightning, introducing the self-consumption in public buildings and acquiring electric vehicles for the municipal fleet.
2. The number of kilometres of cycle lanes, both in the city centre and in the suburbs, is being increased to encourage citizens to use non-motorized transport.
3. Multiple SUDS and NBS are being implemented in the city with the aim of boosting rainwater reuse and preventing flooding.
4. The city is the industrial engine of the province. The ceramics, energy, chemical and plastics sectors stand out.
5. Castelló was the winner of the 2nd prize of the "Most Accessible City in Europe" awards in 2020. Recent performance include the installation of 17 safer and more accessible bus platforms.

Lower performance observed

1. Citizens are not aware of the benefits of energy efficiency. They do not see these initiatives as being in their interest.
2. 57% of the trips made daily in the Castelló metropolitan area are by private vehicle .
3. The wetlands area suffers from flooding and contamination from fertilizers used in neighbouring orchards.
4. There is a lack of citizens with the necessary technological skills to work in this sector.
5. In the outskirts of the city there are still barriers in the environment and built infrastructure that may hinder the free mobility of some people.

City Ecosystem

CASTELLÓ LOCAL ECOSYSTEM

PUBLIC ADMINISTRATION

- *City Council*:

Technicians from the different departments coordinated by the Office of Economic Planification and Projection will participate.

SOCIETY

- *Neighbours & Assoc.:*

Castelló is a city that has already included its citizens in the decision-making process of other projects.

BUSINESS

- *XARXATEC (Association of technological companies of Castelló)*

A non-profit organisation that seeks to develop talent and encourage the expansion of technology companies.

- *Companies:*

Depending on the solutions adopted.

RESEARCH AND EDUCATION

- *Jaume I University (UJI):*

With 11,500 students approx., houses the ESPAITEC Scientific, Technological and Business Park, and the Ceramic Technology Institute (ITC).

- *Centre for Energy Effic. & Innov.*

Space aimed at offering advice and support to entrepreneurs and companies.

City Ecosystem

- INSIGHTS FROM THE 1:1 INTERVIEWS: The interviewees stakeholders answered some questions regarding two specific themes, that we understood were matters of common concern.

1. Green economy and environment: Expand the use of renewable sources and energetic efficiency solutions.

2. eGovernment and digitalize the public services.

  - *Background of the interviewee & expectations:*

    - Profile of the interviewees: technicians related to research, hydrogeology, tourism, technology… (from the local ecosystem).

    - Main strategies proposed: promotion of the circular economy, development of a green economy strategy, environmental tourism initiatives, Integral Water Cycle….

  - *Stakeholder expectations:*

    - Common objective: an innovative and sustainable local ecosystem. Providing human resources, contact networks, experience…

    - What has the city done right? Pedestrianization. Promoting an entrepreneurial environment. There is much to be done yet.

City Ecosystem

- INSIGHTS FROM THE 1:1 INTERVIEWS

  - *Related initiatives to term:*
    - Most of the companies interviewed are involved in collaboration projects and agreements with the City Council or receiving funds for the development of their own activities. Although, they claim to need more funding and institutional support.
    - Unique features of the city related to innovation and improvement: location, predisposition to innovation, size and the effort the City Council has made creating an office that acts as an interlocutor with stakeholders seeking common strategies.
    - How does the city in tracking impacts? Correct tracking, but it could improve in the management of the existing work groups and the tasks that they carry out.

  - *Suggestions on how to move forward to the theme:*
    - Policies/programmes/actions to support green economy, the environment, the eGovernment and digitalization of public services: On the right track, but still in an incipient phase. It is necessary to implement more inclusive measures. Improvements in areas like water resources management, smart city, renewable energies, waste and digitization.
    - Actions to take at the city level in order to engage the ecosystem: to make more dissemination and I+D+i projects, analysis and prediction of atmospheric pollution levels, water levels in aquifers…

City Ecosystem

- INSIGHTS FROM THE LOCAL ENABLERS ANALYSIS

1. *Overall perceptions of the city*:

STRENGHTS

- Sunny weather practically 360 days a year. Ideal size.
- Very good port-city-airport connection.
- High number of cycle lanes.
- 2nd safest city in Spain. One of the cleanest cities in Spain.
- Important business sector. Cluster of ceramic industries.
- Innovative University with a leading international technology park.
- Very involved in Education and with the elderly.
- Child-friendly city (UNESCO).
- 2nd prize accessible European city.
- Leader in management of European funds.
- Cohesive innovation ecosystem.
- Good relationship between economic and social agents.

The biggest WEAKNESS of this city is its proximity to a large city such as Valencia, meaning that many of the opportunities that could be suggested for Castelló finally develop in Valencia. Moreover, there is a monoculture of the tile that does not help much neither.

City Ecosystem

- INSIGHTS FROM THE LOCAL ENABLERS ANALYSIS

2. Digital and green futures:

- Optimization of water resources + Deployment of 5G technology (Smart City) → Sustainable city
- Circular economy → New market niches → New professionals with the necessary knowledge

3. Entrepreneurialism and the private sector:

- Successful sectors in driving new technologies: industry, finances, e-commerce…(public sector is still lagging).
- Barriers: the corporate culture, still focused on resistance to change within organizations that hinder the adoption of new technologies.
- Ways to overcome challenges: efficiency and productivity.

4. Policy and the public sector:

- Good management of European funds, specially in projects related with the reduction of CO2 and accessibility.
- Inclusion of the gender perspective in public tenders and participatory processes,
- Great progress in the area of public procurement of innovation.
- In contrast, the city could improve in the field of Smart cities and in digitalization processes.

City Ecosystem

- INSIGHTS FROM THE LOCAL ENABLERS ANALYSIS

5. Collaboration, Community and Entity:

- Public and private sectors actors have a high level of collaboration and synergies.
- Very good relationship between economic and social actors and the City Council.

6. Capabilities and skill sets in the population:

- Most demanded professional profiles: Technological and technical fields of the ceramic sector. Service sector.
- Data does not show differences between the local and the state level of qualification of citizens.
- Internet use is widespread, but continuous training through public and private centres is little used by the population.

7. Funding and financing:

- Recovery Plan "Next Generation EU", EU structural funds and the Urban Agenda 2030. state and autonomic level funds.

8. Research and innovation assets:

- Jaume I University (UJI): 601-800 best universities in the world in the Times Higher Education World University Rankings 2020.
- The City Council has started developing projects of Innovative Public Procurement.

City Ecosystem

- REFLECTIONS FROM THE STAKEHOLDERS IN THE WORKSHOP

From the discussion established by the stakeholders during the workshop, it has been concluded that the challenges that the city is currently facing in relation to the Green Economy and local Green Deals are:

- *Renewable energy and efficiency solutions.*
- *Challenges of the early demand map.*
- *Self-consumption.*
- *Energetic efficiency in buildings.*
- *Luminaires.*
- *Pedestrianization of streets.*
- *Optimization of water resources.*

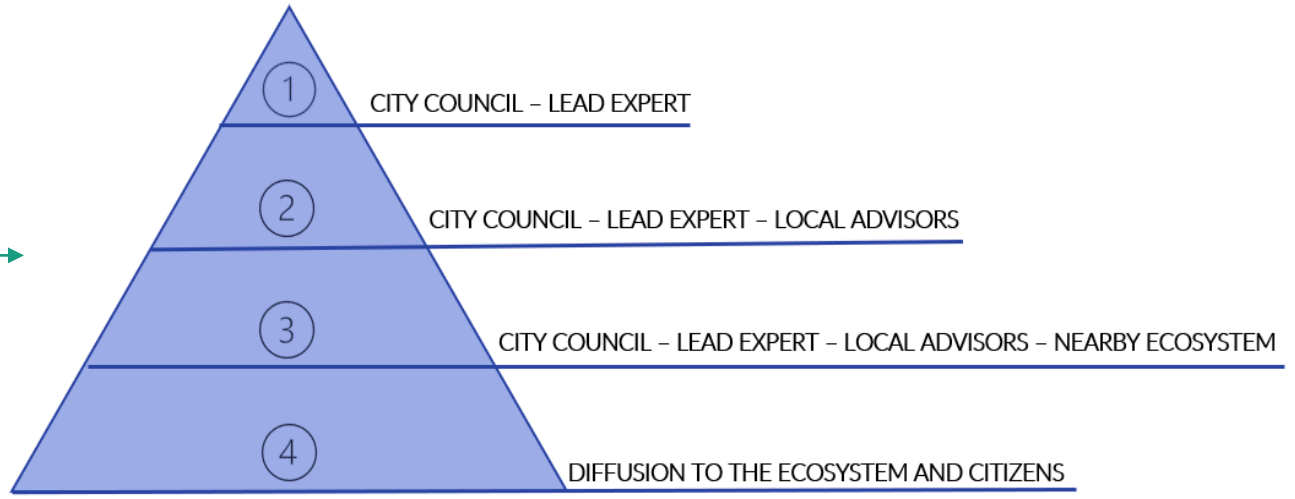
City Ecosystem

- REFLECTIONS ON WORKING NORMS WITH THE ECOSYSTEM

There are certain working norms that must guide the relationships between the different actors of the sustainable, inclusive and innovative ecosystem that it is intended to create. These norms can be summarized as next:

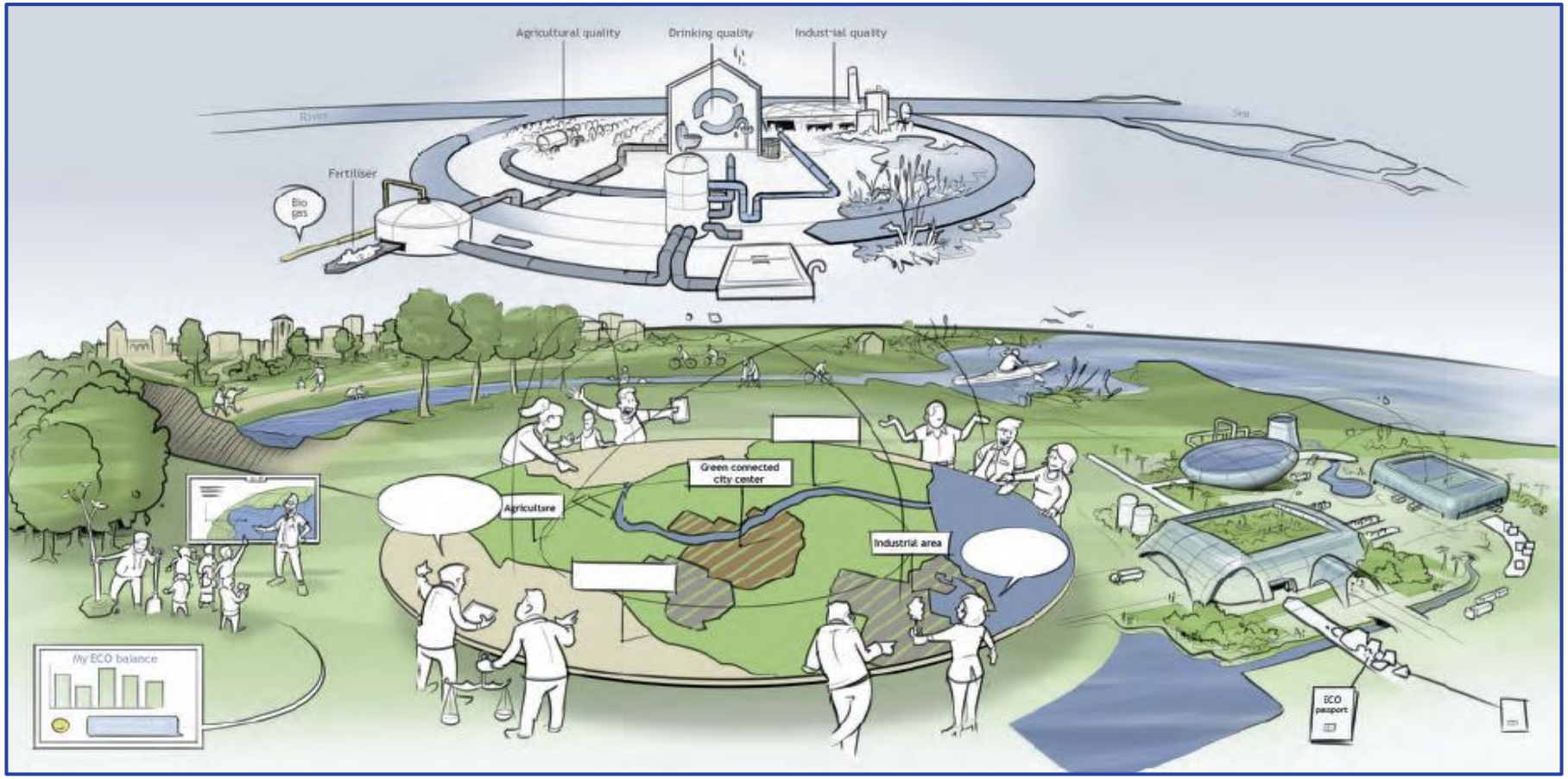
- *Allowing all parties to share information and express their ideas.*
- *Overcoming personal prejudices and be opened to new concepts.*
- *Facilitating specialization to take advantage of the skills of the different members of the ecosystem.*
- *Avoiding individual positions and competition.*
- *Transparency and commitment.*

LEVELS OF COLLABORATION



ICC strategy: Vision and ambition statements

CASTELLÓ 2050: A GREEN CITY FOR ALL PEOPLE TO LIVE



ICC strategy: Vision and ambition statements

CASTELLÓ 2050: A GREEN CITY FOR ALL PEOPLE TO LIVE

1. ZERO-WASTE WATER CYCLE

As a result of the flat terrain on which the city rises, it has become essential to start establishing solutions like Sustainable Urban Drainage Systems (SUDS), that will allow us avoiding floods and, at the same time, giving new uses to rain water.

- Improving the current state of the wetlands and developing innovative solutions on it, to maintain supply needs and restore the aquifer.
- Including NBS (Nature Based Solutions) & SUDS and a rain water harvesting mechanism to be reused for irrigation, in the project for the pedestrian and cycling improvement of the Lidón Avenue:

2. GREEN CITY AND GREEN INDUSTRIAL AREAS

The orography of the terrain, the climate conditions and the size of the city are favourable to use non-motorized vehicles. More km of cycle lanes are being incorporated in the city. On the other hand, there is a will of making the industrial areas greener and transform them into self-sustainable clusters.

- Start defining how can the City Council help to establish an Energy Local Community.
- Improving the current state of the wetlands and developing innovative solutions on it, to maintain supply needs and restore the aquifer.
- Including NBS & SUDS and a rain water harvesting mechanism to be reused for irrigation, in the project for the pedestrian and cycling improvement of the Lidón Avenue:
- Renovate part of the municipal fleet and installation of electric vehicle recharging points.
- Renovate the lighting. Improvement of energy installations in municipal buildings.

3. EDUCATION & CIVIL ENGAGEMENT & ENTREPRENEURSHIP IN SUSTAINABILITY

An important lack of knowledge about sustainability has been detected among citizens, stakeholders and technicians. It is needed educating citizens about the impact our behaviour has in the environment, and the individual actions that each one of us can take.

- Start defining how can the City Council help to establish an Energy Local Community.
- Renovate part of the municipal fleet and installation of electric vehicle recharging points.
- Renovate the lighting. Improvement of energy installations in municipal buildings to refurbish them
- Programme of coordination and technical excellence to achieve an alignment with the economic needs.
- Call for grants to promote the alignment of the university's lines of research with the social and technological challenges of the city.

City strategy: justification

- *How do the solutions interact:*

  The four solutions that have been considered a priority (Energy Local Communities, Integral Water Management, Municipal Energy Efficiency Plan and Promoting & Supporting Entrepreneurship), do interact positively with each other, as they are all directly related to the overarching ICC city vision: "Castelló 2050: A green city for all people to live", in particular, achieving a sustainable and self-sufficient city that takes into account the opinion of citizens and encourages their participation in both decision-making and implementation of the actions (especially in the case of Energy Local Communities).

  With regard to the two solutions related to energy consumption and efficiency, it is important to note that there are no conflicting interactions between them that could affect in their development and implementation, since, in the case of the Municipal Energy Efficiency Plan, the administration is solely responsible for its execution, already having, as mentioned above, the necessary funds for carrying it out; while in order to get the Energy Local Communities initiative underway, many other actors must participate and get involved for it to prosper (private sector, citizens, etc.).

City Strategy: justification

- *Best guided thoughts:*

  - Take into account the results obtained in the preliminary market consultations, and training in the field of Public Procurement of Innovation, as it is a way to develop competitive and innovative solutions, which enable a better provision of services to citizens.

  - The goals to be achieved should be clear and ambitious, but also realistic, with objectives set after a detailed analysis of the city's current or potential situation.

  - Always keep in mind to promote training (both for technicians and citizens), as well as to invest in talent, focusing on new technological areas that will be of vital importance for the execution of future projects.

- *Key factors:*

  - The development of legislation in some of the areas that are of interest to us.

  - Involvement and acceptance of the solutions by the local ecosystem (citizens, private companies, technicians and political forces involved in decision making).

  - Keeping on mind in which projects is necessary obtaining financing for its implementation.

  - The development of integrated management platforms, which simplify procedures and provide a global overview of the progress achieved, increasing the efficiency of the evolution and monitoring.

Intelligent Cities Challenge

Section

2

Castelló City Council: Ambition and roadmap

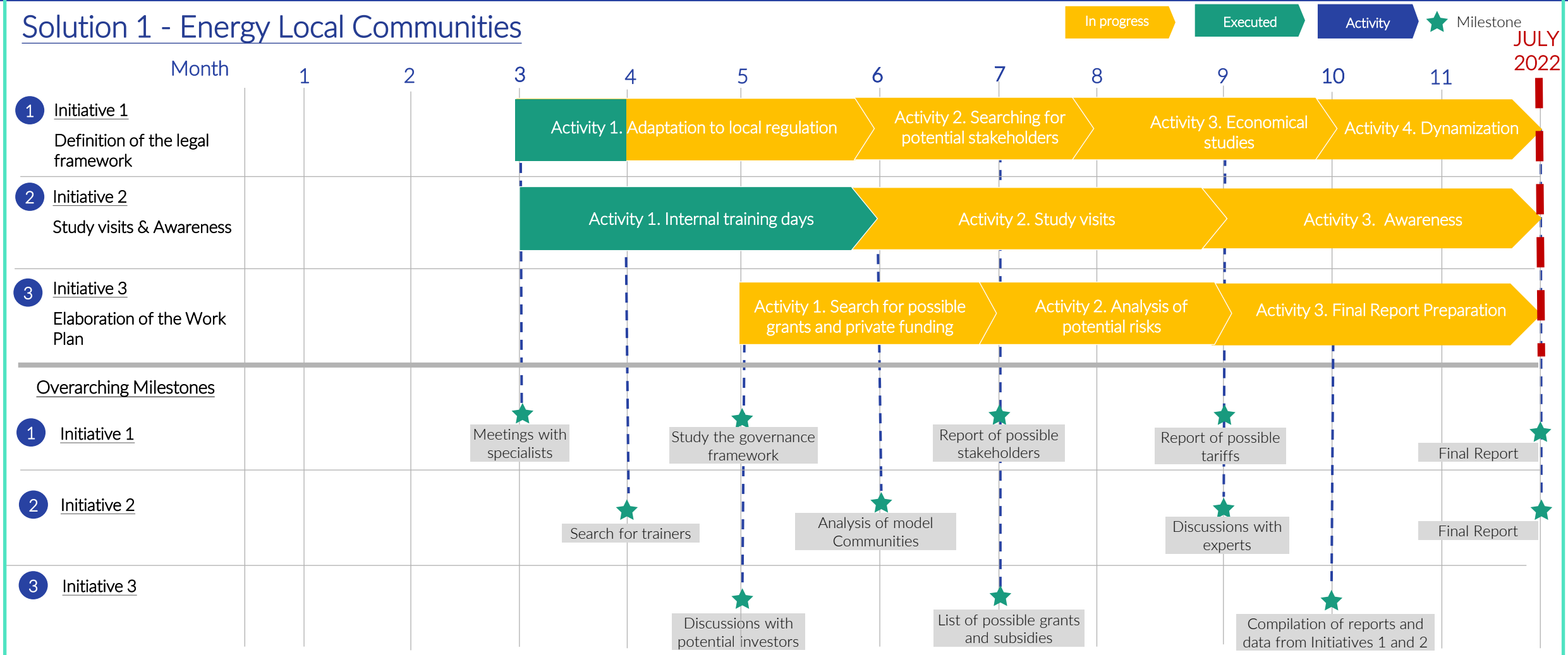
ICC Transformation

February 2021 to May 2021

European Commission | The Intelligent Cities Challenge is funded by COSME, the EU programme for the Competitiveness of Enterprises and SMEs

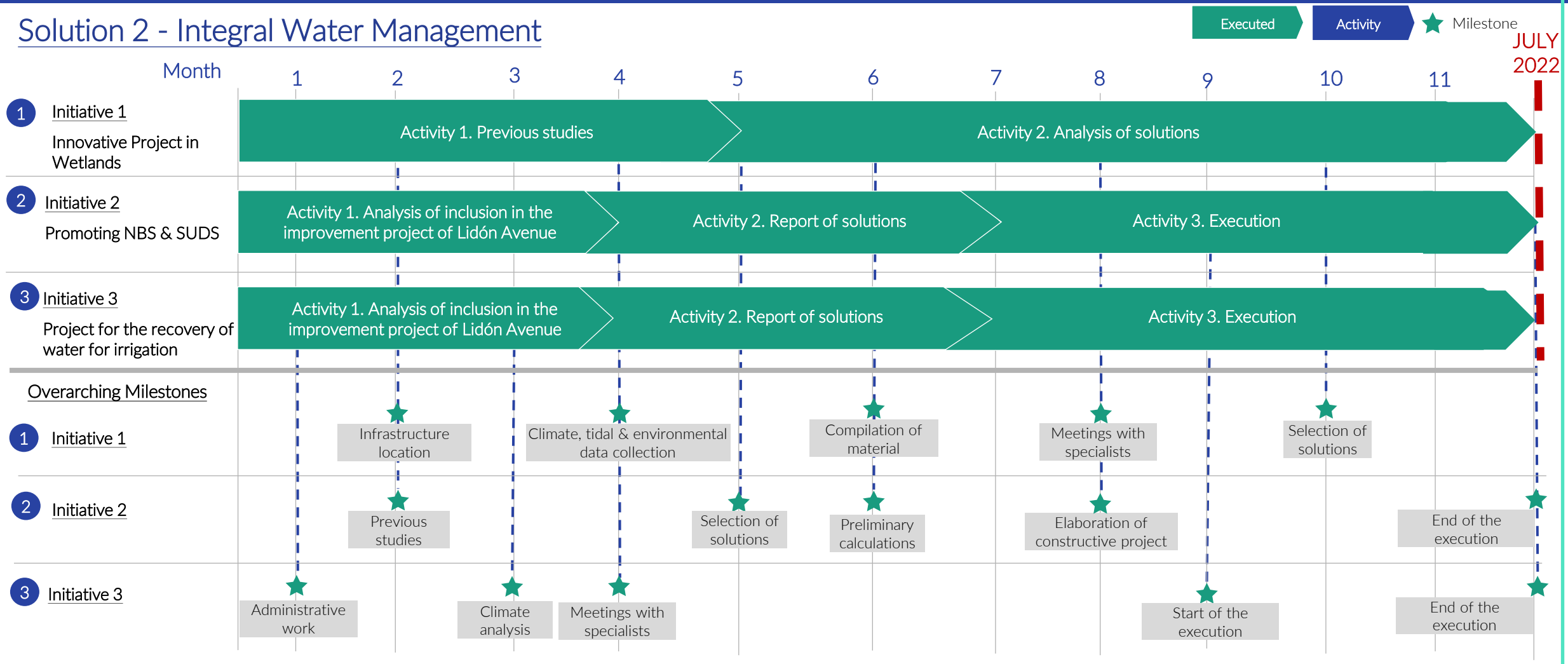
High level implementation roadmap

Solution 1 - Energy Local Communities



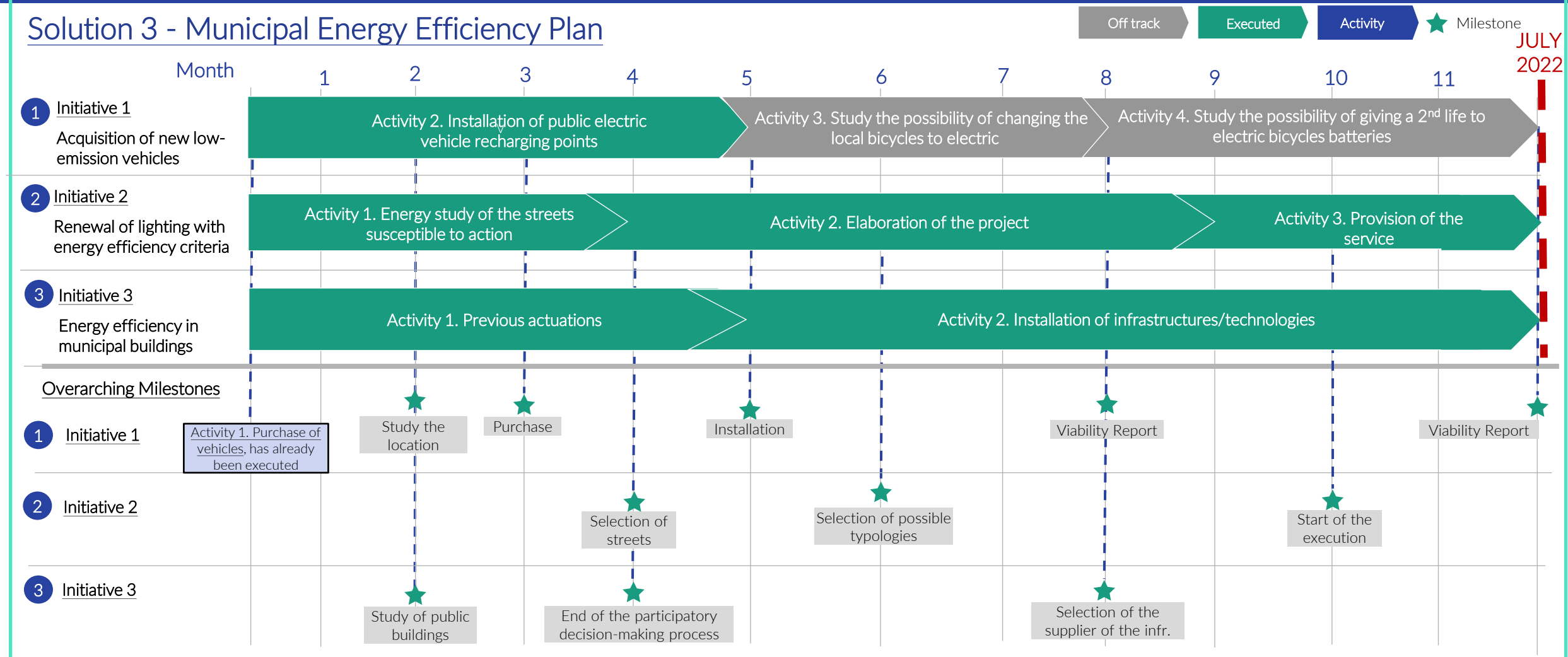
High level implementation roadmap

Solution 2 - Integral Water Management



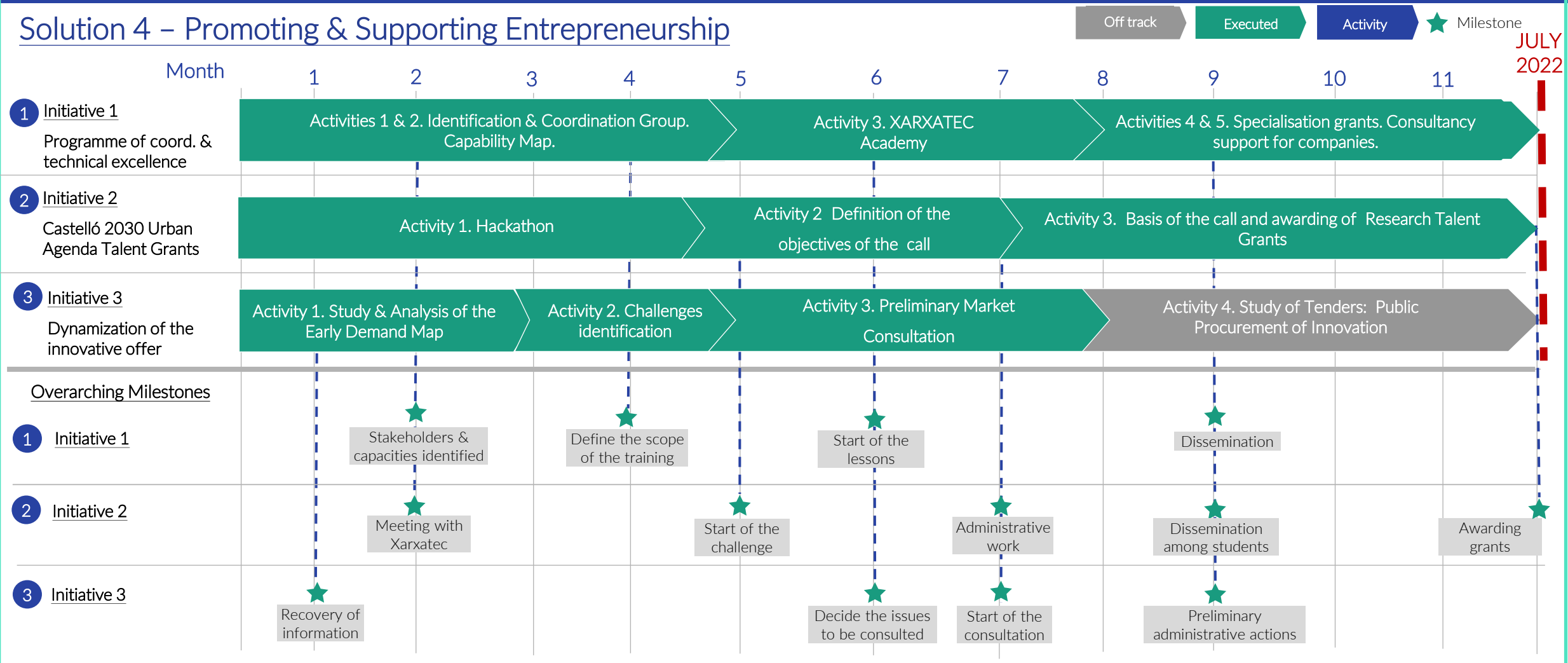
High level implementation roadmap

Solution 3 - Municipal Energy Efficiency Plan



High level implementation roadmap

Solution 4 – Promoting & Supporting Entrepreneurship



Rationale to road map

- Roadmaps were designed together with the city ecosystem and technicians of the City Council, in order to prevent that the followed paths were unrealistic. It was intended that visually, it would be possible to quickly understand where we were in the execution, as well as the activities and milestones to be fulfilled and the delays that could occur.

- The proposed design pretended to enhance the development of each Solution independently of the others, which has been accomplished.

- Except for Solution 1, in which the three proposed initiatives are being developed jointly, and initiatives 2 and 3 of Solution 2, that are part of the same constructive project, the rest of initiatives can be fully developed without interferences of the rest.

- From the start, the City Council was aware of the blockers that could come up with the implementation of Solution 1. Finally, there has been a delay with respect to the original plan. That has been solved by contracting external specialized assistance.

Solution 1. Energy Local Communities (Initiatives 1, 2, 3)

Strategy

Description

Start defining how can the City Council help to establish an Energy Local Community.

- Main activities foreseen:
  - Adaptation to local regulation.
  - Searching for potential stakeholders.
  - Economical studies.
  - Dynamization.

Link to vision

The proposed initiative form the basis for the creation of an Energy Local Community, an objective directly related to the city's vision, by promoting the use of green energy as well as self-consumption.

Link to ambition statement

- A.S.2. Green City & Green Industrial Areas.
- A.S.3. Education And Civil Engagement & Entrepreneurship In Sustainability.

Expected impact and timing

- Expected impact:
  - Getting the city prepared to enable the subsequent creation, when possible, of an Energy Local Community.
- Timing:
  - July 2022, with the end of the proposed activities.

Stakeholders involved

Solution lead:

Solution working team:

Contributors:

- Other municipalities that can share their experiences.
- AVAESEN.

Risks and mitigation

- Key risks:
  - Lack of legislation and experience on the matter.
  - Is required highly specialised knowledge.
- Challenges that are likely to arise:
  - Failure to find solutions that fit our specific situation.
- Mitigating measures:
  - Search for information on similar projects.
  - Support from other councils.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

- Source of funding:
  City Council's own funds. Grants will be needed for its future implementation.
- Estimated cost: 15,000 euros the whole solution (external technical assistance costs for the design of the solution).

Solution maturity outputs

- Number of possible locations studied: 2

City performance outcomes and impacts

As the solution is still in the early stages of development, and given the characteristics of the solution itself, it is not possible to identify yet, through indicators, how well Castelló is performing on outcomes and impacts.

Solution 2. Integral Water Management
Initiative 1. Innovative project in Wetlands

Strategy

Description

Improving the current state of the wetlands and developing innovative solutions on it, to maintain supply needs and restore the aquifer.

- Main activities foreseen:
  - Meetings with specialists.
  - Analysis of solutions.
  - Selection of solutions.

Link to vision

Recovery of the city's natural environment, encouraging its improvement and maintenance.

Link to ambition statement

- A.S.1. Zero-Waste Water Cycle.
- A.S.2. Green City & Green Industrial Areas.

Expected impact and timing

- Expected impact:
  - To make optimal use of the water, addressing the problems of salinization and soil contamination.
- Timing:
  - Pending on getting funds, this initiative will create impact 3 years from its execution.

Stakeholders involved

Solution lead:

Solution working team:

Contributors:

- EPSAR (Public Entity for Wastewater Sanitation).
- FACSA (Company specialised in the integral water cycle).
- Hydrographic Confederation.

Risks and mitigation

- Key risks:
  - Getting funds.
  - Getting farmers & local people to agree to the proposal.
- Challenges that are likely to arise:
  - Technical & environmental problems
- Mitigating measures:
  - Development of relevant studies.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

- Source of funding:
  - Grants are needed to be obtained for its future implementation.
- Estimated cost:
  - Undefined yet.

Solution maturity outputs

As the solution is still in the early stages of development, and given the characteristics of the solution itself, it is not possible to identify yet, through indicators, how well Castelló is performing on outputs

City performance outcomes and impacts

As the solution is still in the early stages of development, and given the characteristics of the solution itself, it is not possible to identify yet, through indicators, how well Castelló is performing on outcomes and impacts.

Solution 2. Integral Water Management

Initiatives 2. Promoting NBS & SUDS and 3. Project for the recovery of water for irrigation

Strategy

Description

Including NBS & SUDS and a rain water harvesting mechanism to be reused for irrigation, in the project for the pedestrian and cycling improvement of the Lidón Avenue:

- Main activities foreseen:
  - Previous studies and administrative work.
  - Report of solutions.
  - Execution.

Link to vision

Including sustainable and green solutions in the newest city projects and taking the first steps towards the goal of becoming a city with a sustainable integrated water cycle.

Link to ambition statement

- A.S.1. Zero-Waste Water Cycle.
- A.S.2. Green City & Green Industrial Areas.

Expected impact and timing

- Expected impact:
  - To boost the use of NBS & SUDS and to move from reusing a 0% of rainwater in that area to accomplish a 100%.
- Timing:
  - It will start to create impact at the end of the execution of the works.

Stakeholders involved

Solution lead:

Solution working team:

Contributors:

- EPSAR (Public Entity for Wastewater Sanitation).
- FACSA (Company specialised in the integral water cycle),

Risks and mitigation

- Key risks:
  - Citizen's acceptance.
- Challenges that are likely to arise:
  - Technical problems.
- Mitigating measures:
  - Expert opinion.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

- Source of funding:
  - 50% financed with subsidies for unique project for local entities, which "favour the transition to allow carbon economy" (ERDF).
- Estimated cost:
  - 300.000 euros.(both)

Solution maturity outputs

The proposed indicators, as set out in the developed drafts , are, for Initiatives 2 and 3, jointly:

- m2 of vegetated area - 9759
- m3 of rainwater managed with SUDS - 587
- m2 of permeable surface - 14025

City performance outcomes and impacts

As the solution is not fully implemented yet, and given the characteristics of the solution itself, it is not possible to identify yet, through indicators, how well Castelló is performing on outcomes and impacts.

Solution 3. Municipal Energy Efficiency Plan
Initiative 1. Acquisition of new low-emission vehicles

Strategy

Description

Renovate part of the municipal fleet and installation of electric vehicle recharging points. Feasibility studies to convert the network to electric and a pilot project to give a 2nd life to batteries.

- Main activities foreseen:
  - Installation of recharging points.
  - Feasibility studies (as can be seen in the Roadmap, postponed currently).

Link to vision

The proposed initiatives promote carbon reduction strategies, especially in urban areas, including the promotion of sustainable multimodal urban mobility and adaptation measures with mitigation effect, leading to a green city by 2050.

Link to ambition statement

- A.S.2. Green City & Green Industrial Areas.
- A.S.3. Education And Civil Engagement & Entrepreneurship In Sustainability.

Expected impact and timing

- Expected impact:
  - Encourage the use of electric vehicles, with the City Council serving as an example.
- Timing:
  - It will generate impact from the beginning, as it is primarily an incentive to citizenship.

Stakeholders involved

Solution lead:

Solution working team:

Contributors:

- Energy Services Company.

Risks and mitigation

- Key risks:
  - Citizen's acceptance.
  - Changes may not influence in their future decisions.
- Challenges that are likely to arise:
  - Failure in the choice of the installation site .
- Mitigating measures:
  - Information campaigns. Diffusion.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

- Source of funding:
  - Own funds and European Regional Development's funds (50 %).
- Estimated cost:
  - 600,000 euros

Solution maturity outputs

- Number of electric vehicles acquired by the City Council :19
- Number of public electric vehicle recharging points installed: 7

City performance outcomes and impacts

For all the initiatives under Solution 3, these indicators are:

- Estimated annual greenhouse gas reduction (tons of CO_2 equivalent/year): 517,11
- Reduction of final energy consumption in public infrastructures or businesses (Ktep/year): 0,1346
- Reduction of annual primary energy consumption in public buildings (kWh/year): 82,88

Solution 3. Municipal Energy Efficiency Plan
Initiatives 2. Renewal of lighting and 3. Energy efficiency in municipal buildings

Strategy

Description

Renovate the lighting to reduce energy bills and emissions, Improvement of energy installations in municipal buildings to refurbish them

- Main activities foreseen:
  - Installation of the new luminaires and provision of the service.
  - Installation of infrastructures and technologies.

Link to vision

The proposed initiatives promote carbon reduction strategies, especially in urban areas, including the promotion of sustainable multimodal urban mobility and adaptation measures with mitigation effect, leading to a green city by 2050.

Link to ambition statement

- A.S.2. Green City & Green Industrial Areas.
- A.S.3. Education And Civil Engagement & Entrepreneurship In Sustainability.

Expected impact and timing

- Expected impact:
  - Promote the reduction of energy consumption and reducing the city's energy bill.
- Timing:
  - It will be palpable when the projects are completed and the new luminaires have been installed.

Stakeholders involved

Solution lead:

Solution working team:

Contributors:

- Energy Services Company.

Risks and mitigation

- Key risks:
  - Citizen's acceptance.
- Challenges that are likely to arise:
  - Failure to properly define the location where actions would be most beneficial.
  - Technical problems.
- Mitigating measures:
  - Information campaigns.
  - Relevant studies.
  - Expert opinion.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

- Source of funding:
  - Own funds and European Regional Development's funds (50%).
- Estimated cost:
  - 700,000 euros (I.2) and 1,296,000 euros (I.3).

Solution maturity outputs

The proposed indicator, as set out in the drafts developed, are, for Initiatives 2 and 3, jointly:

- Number of luminaires replaced: 1350

City performance outcomes and impacts

For all the initiatives under Solution 3, these indicators are:

- Estimated annual greenhouse gas reduction (tons of CO_2 equivalent/year): 517,11
- Reduction of final energy consumption in public infrastructures or businesses (Ktep/year): 0,1346
- Reduction of annual primary energy consumption in public buildings (kWh/year): 82,88

Solution 4. Promoting & Supporting Entrepreneurship
Initiative 1 charter. Programme of Coordination & Technical Excellence

Strategy

Description

To carry out a programme of coordination and technical excellence which will help to achieve an alignment with the economic needs of Castelló.

- Main activities foreseen:
  - Specialisation grants.
  - Consultancy support for companies.
  - Dissemination.

Link to vision

The 3 proposed initiatives encourage entrepreneurship, in particular in the field of innovation and new technologies, while also seeks to retain talent in the city,

Link to ambition statement

- A.S.3. Education And Civil Engagement & Entrepreneurship In Sustainability.

Expected impact and timing

- Expected impact:
  - Facilitate the alignment of the entrepreneurship support instruments and the specialization of the technical staff.
- Timing:
  - The three initiatives will have their first impacts as soon as they start to be implemented.

Stakeholders involved

Solution lead:

Solution working team:

Contributors:

- XARXATEC.

Risks and mitigation

- Key risks:
  - Failure to correctly identify the areas of opportunity.
- Challenges that are likely to arise:
  - Difficulties in forming the coordination group.
- Mitigating measures:
  - Searching for technical advice and support.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

- Source of funding:

  Own funds (except for the Act.3 which funds came from the Provincial Council of Castellón, the Valencian Institute for Business Competitiveness (both public), and XARXATEC (private)
- Estimated cost: 41,762 euros.

Solution maturity outputs

The established output for Initiatives 1 and 2 is:

- Number of participants in initiatives promoted by the City Council: 40

City performance outcomes and impacts

For all Initiatives under Solution 4, the city performance indicator is:

- Number of supported startups:10

Solution 4. Promoting & Supporting Entrepreneurship
Initiative 2 charter. Castelló 2030 Urban Agenda Talent Grants

Strategy

Description

Launch of a call for grants to promote the alignment of the university's lines of research with the social and technological challenges of the city.

- Main activities foreseen:
  - Basis of the call.
  - Dissemination among students.
  - Awards of the Research Talent Grants.

Link to vision

The 3 proposed initiatives encourage entrepreneurship, in particular in the field of innovation and new technologies, while also seeks to retain talent in the city,

Link to ambition statement

- A.S.3. Education And Civil Engagement & Entrepreneurship In Sustainability.

Expected impact and timing

- Expected impact:
  - The promotion of citizen talent & aligning the research to develop solutions aimed at fulfilling the Castelló 2030 Urban Agenda.
- Timing:
  - The Activity 1 Hackaton will take place from the 26th to the 28th of November.

Stakeholders involved

Solution lead:

Solution working team:

Contributors:

- Public Entities: UJI
- Private Entities: XARXATEC

Risks and mitigation

- Key risks:
  - Lack of interest from potential participants.
- Challenges that are likely to arise:
  - Technical problems.
- Mitigating measures:
  - Coordinate with the university to carry out dissemination campaigns among students.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

- Source of funding:
  - City Council and Jaume I University (UJI).
- Estimated cost:
  - Public funds (City Council-UJI): 14.000 euros.
  - Private funds: 21.000 euros

Solution maturity outputs

The established output for Initiatives 1 and 2 is:

- Number of participants in initiatives promoted by the City Council: 40

City performance outcomes and impacts

For all Initiatives under Solution 4, the city performance indicator is:

- Number of supported startups:10

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Solution 4. Promoting & Supporting Entrepreneurship
Initiative 3 charter. Dynamization of the innovative offer

Strategy

Description

To enhance the Municipality's capacity to promote the development of technology, becoming a facilitator of entrepreneurship.

- Main activities foreseen:
  - Study of Tenders.
  - Preliminary administrative actions.

Link to vision

The 3 proposed initiatives encourage entrepreneurship, in particular in the field of innovation and new technologies, while also seeks to retain talent in the city.

Link to ambition statement

- A.S.3. Education And Civil Engagement & Entrepreneurship In Sustainability.

Expected impact and timing

- Expected impact:
  - Encourage the generation of entrepreneurial initiatives aimed at meeting the needs of the city.
- Timing:
  - The three initiatives will have their first impacts as soon as they start to be implemented.

Stakeholders involved

Solution lead:

Solution working team:

Contributors:

- Participants in the consultation process.

Risks and mitigation

- Key risks:
  - Lack of knowledge in the field of innovation and technology.
- Challenges that are likely to arise:
  - Consultation results are not as expected.
- Mitigating measures:
  - Expert opinion.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

- Source of funding:
  - Valencian Agency for Innovation (public).
- Estimated cost:
  - 70,000 euros have been invested by now.

Solution maturity outputs

- Number of city challenges detected in the Early Demand Map: 28
- Number of solutions addressed by the Preliminary Market Consultation: 2

City performance outcomes and impacts

For all Initiatives under Solution 4, the city performance indicator is:

- Number of supported startups:10

Key Performance indicators

SOLUTION	ACTIVITIES – INPUTS AND ACTIONS	SOLUTION MATURITY - OUTPUTS	CITY PERFORMANCE – OUTCOMES AND IMPACTS
1. ENERGY LOCAL COMMUNITIES	- Percentage of executed budget over the planned. - Percentage of executed activities on time. - Number of months behind scheduled.	- Number of possible locations studied.	- Estimated annual greenhouse gas reduction (tons of CO2 equivalent/year). - Reduction of final energy consumption in public infrastructures or businesses (Ktep/year). - Reduction of annual primary energy consumption in public buildings (kWh/year).
2. INTEGRAL WATER MANAGEMENT		- m2 of vegetated area. - m3 of rainwater managed with SUDS. - m2 of permeable surface.	
3. MUNICIPAL ENERGY EFFICIENCY PLAN		- Number of electric vehicles acquired by the City Council. - Number of luminaires replaced. - Number of public electric vehicle recharging points installed.	
4. PROMOTING & SUPPORTING ENTREPRENEURSHIP		- Number of city challenges detected in the Early Demand Map. - Number of solutions addressed by the Preliminary Market Consultation. - Number of participants in initiatives promoted by the City Council.	- Number of supported startups.

Key Performance indicators - Cross cutting indicators

Cross cutting indicators
Number of activities with public participation in decision-making
Number of meetings with experts
Number of activities that involve various Departments of the City Council

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Section

3+4

Castelló City Council: Impact

ICC Transformation

February 2021 to May 2021

European Commission | The Intelligent Cities Challenge is funded by COSME, the EU programme for the Competitiveness of Enterprises and SMEs

Impact executive summary

The aim of the City Council of Castelló in joining ICC was to take advantage of the mechanisms provided by this initiative to find the main problems of the city and seek solutions to them, together with the city ecosystem. Of the solutions that were finally selected, most of the initiatives initially proposed have been successfully carried out, with only a few remaining off track.

The biggest setback has been the beginning of the definition of an Energy Local Community, as it has been said previously, given the lack of legislation on the subject at the moment and the little technical knowledge on the matter among both the population and the municipalities. However, the problem has been addressed quickly, the situation has been brought back on track and progress is now being made.

In relation to the evolution of the proposed KPIs, in line with the above, they have evolved favourably, with the sole exception of the activity KPI related to the delay in the execution of activities with respect to the planned. This KPI has had a worse evolution due to what was commented in the previous paragraph on the Energy Local Community.

Finally, with regard to the next steps that Castelló City Council intends to take in order to achieve the established vision of the city, Castelló 2050: A green city for all people to live in, in our roadmap the next priority objective is to comply with what has been established in the Castelló 2030 Urban Agenda, which is oriented towards the fulfilment of the Sustainable Development Goals and in line with the Spanish Urban Agenda.

Assessment of city performance - progress against KPIs

CITY PERFORMANCE	FINAL RESULTS
1 Estimated annual greenhouse gas reduction (tons of CO2 equivalent/year).	517,11
2 Reduction of final energy consumption in public infrastructures or businesses (Ktep/year).	0,1346
3 Reduction of annual primary energy consumption in public buildings (kWh/year).	82,88
4 Number of supported startups.	10

Assessment of city performance - discussion

- In the case of solution 1, it is difficult to define, at this stage, and given that we are only beginning to see how the Energy Local Community works, its participants and economic model, indicators at city level that are currently measurable. The same happens for the Innovative Project in Wetlands.

- On the other hand, the energy-related indicators have been chosen in line with those currently used by the City Council to justify its actions carried out in the framework of the ERDF, so that the set of initiatives carried out has more coherence.

- Finally, with regard to Solution 4, the chosen indicator makes it easy to consider the real number of startups that have participated in the City Council's initiatives, either through the specialisation grants or by taking part in the Hackaton, in Xarxatec Academy... It should be noted that the implementation of certain activities has not yet been completed, so the provided number could still change.

Assessment of solution maturity - progress against KPIs

	SOLUTION 1	FINAL RESULTS
1	N° possible locations	2

	SOLUTION 2	FINAL RESULTS
1	m2 of vegetated area	9759
2	m3 of rainwater managed with SUDS	587
3	m2 of permeable surface	14025

	SOLUTION 3	FINAL RESULTS
1	N° acquired electric vehicles	19
2	N° public electric recharging points	7
3	N° luminaires replaced	1350

	SOLUTION 4	FINAL RESULTS
1	N° Challenges (Early Demand Map)	28
2	N° Solutions addressed by PMC	2
3	N° participants in initiatives	40

Assessment of solution maturity - discussion

- *Solution 1: Energy Local Community*

  In this case, the indicator was chosen because we were sure to be able to measure it, at least at the end of the ICC. If it had been defined another type of indicator related to energy saved, for example, it would not have been possible to give any number given the early stage of the project.

- *Solution 2: Integral Water Management Plan*

  The values of the corresponding indicators correspond to those calculated in the constructive projects.

  When the execution of the work is finished, which will happen soon, it will be possible to check if it is in line with expectations.

- *Solution 3: Municipal Energy Efficiency Plan*

  For the KPIs 1 and 2 (related to electric vehicles), it can already be said that expectations have been accomplished. In the case of KPI 3, as has been mentioned for Solution 2, the value provided is corresponding to the one calculated for the project, with the execution of the project also nearing completion.

- *Solution 4: Promoting and Supporting Entrepreneurship*

  In the case of this solution, the aim was to take into account, when defining the corresponding indicators, both the progress made in terms of Public Procurement Innovation and citizen participation in the different activities proposed. Regardless of the results obtained, the aim is to continue to make progress in establishing innovative communication processes between the different actors in the municipality.

Assessment of city ecosystem and activities - progress against KPIs

	ECOSYSTEM	FINAL RESULTS
1	Number of activities with public participation	5
2	Number of meetings with experts	10
3	Number of activities involving various Departments	All

	ACTIVITY	FINAL RESULTS
1	% executed budget over the planned	Not yet
2	% of executed activities on time	66,6
3	N° of months behind scheduled.	S1 - 6

Assessment of city ecosystem and activities - discussion

- *ACTIVITY KPIs*

  In the case of the KPIs related to the evolution of activities, these were mainly aimed at measuring the degree of implementation of the proposed solutions.

  As mentioned throughout this deliverable, the delay caused by the start of the definition of the Local Energy Community has meant that activity indicators 2 and 3 (% of executed activities on time and number of months behind schedule, respectively) have not, for the time being, reached the expected.

- *ECOSYSTEM KPIs*

  With regard to those relating to the ecosystem, our objective was to measure the effectiveness of the City Council's communications with citizens and with companies and specialised associations of the city, and even between the different departments of the Castelló City Council itself.

  Based on the results obtained, we can affirm that there is a good level of communication and collaboration with the ecosystem.

  However, the aim is to continue to make progress in this area and to find new, more innovative and efficient ways of communication that will enable us to grasp the problems that may arise in the municipality.

5 key lessons

Lesson	Reflections
1	The importance of achieving a strong public-private partnership.
2	The difficulty of setting up an Energy Local Community, mainly due to the lack of legislation on the subject and the scarcity of real cases implemented and operating that can serve as examples.
3	The amount of water and energy savings that can be accomplished through the application of innovative techniques, as in the case of initiatives 2 and 3 of Solution 2 and Solution 3.
4	Citizens participation in decision-making processes helps City Councils to be able to identify the real problems that the population perceive, and also to implement solutions with high acceptance among them.
5	There are some ambits in which public technicians does not have the required expertise, so it is important to find these areas soon in order to find specialists who have it.

Reflections on city collaborations

Since the beginning of the ICC, the City Council has commented on different occasions that the cities it would have liked to learn from in the following areas are:

- *Wetlands:* Amsterdam
- *Green Infrastructures:* Vienna & Copenhagen
- *Public – Private Collaboration:* Phoenix
- *Entrepreneurship:* Alcobendas
- *Modernization. Citizen Engagement & Communication:* Torrente
- *Digital twins & Digital simulations:* Singapore
- *Sustainable Tourism:* Cartagena
- *Ports:* Rotterdam & Hamburg

Unfortunately, the situation generated by COVID-19 has meant that the expected meetings between the cities have had to take place virtually.

We believe that in our case, this fact has made it very difficult for us to make the most of this experience, and to be able to learn and obtain management examples from experienced cities in the mentioned areas.

Ambitions and Commitments

The city of Castelló de la Plana is currently focused on the Castelló 2030 Urban Agenda, the strategic city instrument aimed at achieving the Sustainable Development Goals (SDGs) that is aligned with the strategic framework and methodological tools proposed by the Spanish Urban Agenda (AUE), which aims to define a model of municipality that integrates the necessary transformations to improve the quality of life of citizens, achieve a more inclusive society and a more sustainable municipality.

It was within this strategy where the relevance of being part of the ICC arose, since, being an initiative focused on innovation and collaboration with citizens and also between cities, it gave us the opportunity to advance in these areas and, therefore, in the Castelló 2030 Urban Agenda.

As a result, in the coming years the City Council is going to focus on continuing to develop, through different strategies, projects and subsidies, the mentioned objectives. Some of the projects included in the Castelló 2030 Urban Agenda are:

- *To carry out the Integral Urban Regeneration Plan.*
- *Develop a Municipal Renaturalisation and Ecological Restoration Strategy.*
- *Promotion of the circular economy.*

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Appendix

Castelló City Council: Additional information

ICC Transformation

February 2021 to May 2021

European Commission | The Intelligent Cities Challenge is funded by COSME, the EU programme for the Competitiveness of Enterprises and SMEs

City Needs: State of the city – detailed analysis

- Higher performance areas

	Key insight	Data points	Interpretation	So what?
1	Castelló has reduced the consumption of energy by changing the public lightning introducing the self-consumption in public buildings and acquiring electric vehicles for the municipal fleet.	The consumption of energy of municipal buildings is 6.279 Mwh per year, and of public lighting 18.398 Mwh per year. The number of electric vehicles acquired is 19 (508,313 €/FEDER).	Energy efficiency is and will be one of the main focuses of action for the City Council, which in the short term intends to carry out two projects to replace points of public lighting, renewing 92% of the city's public lighting.	This insight can be considered as a key area of performance for the ICC strategy to address, as the City Council is already involved and knows perfectly the possible actions to develop in this area.
2	The number of kilometres of cycle lanes, both in the city centre and in the suburbs, is being increased to encourage citizens to use non-motorized transport.	The city has increased 5 km the cycle lanes, having this last summer 96.3 km. It is expected for the short-term expand the existent network with two more stretches (1.000.000/FEDER).	Castelló appeared in the 2019 Bicycle Barometer of the National Institute of Statistics as the 3rd city with the highest proportion of cycle lanes per inhabitant. In fact, the creation of more green corridors is one of the ambitions set by the City Council.	Castello intends to continue facilitating non-motorized mobility for citizens, as was established in its Roadmap to 2050, being this area of special importance because of its connection with other areas such as pollution and quality of life of citizens.
3	Multiple SUDS and NBS are being implemented in the city with the aim of boosting rainwater reuse and preventing flooding.	In the slide number 20 (deliv.1), a table of the accumulated precipitation in the months of December 2020 to February 2021 is given, as an example of the intense episodes of rain that occur in the city.	The interest of the City Council in this area goes back a long time, being reflected in the creation, together with the Polytechnique University of Valencia, of a Basic Guide of SUDS, to help technicians and also citizens to understand these kinds of solutions.	Currently, some urban projects that are being developed incorporates both SUDS and NBS, being this key insight of main importance to achieve a sustainable and circular ecosystem.

City Needs: State of the city – detailed analysis

- Higher performance areas

	Key insight	Data points	Interpretation	So what?
4	The city is the industrial engine of the province. The ceramics, energy, chemical and plastics sectors stand out.	According to the study of the Business Fabric of the Province of Castelló, 85% of the national production and 90% of the exports of tiles and ceramic pavements were located in the province.	It is important for the city to keep investing and promoting these sectors, that have suffered as a result of the economical crisis (2007 – 2013), especially by promoting the training of specialized technicians.	Support for the industry and the creation of new companies is of the utmost importance for the city, being intimately related to the business and scientific innovation that the city seeks so much.
5	Castelló was the winner of the 2nd prize of the "Most Accessible City in Europe" awards in 2020. Recent performances include the installation of 17 safer and more accessible bus platforms.	Other related projects are the creation of main routes adapted to connect public facilities, service centres and residential areas, eliminating barriers. The beaches of Castelló, sports centres and primary schools have also been adapted to the needs of people with reduced mobility, and 100% of the bus fleet has been adapted to make them accessible.	The City Council has as its main tool the Local Accessibility Plan approved unanimously in 2016 and which includes actions in four areas of intervention: urban environment, public facilities and buildings, transport and communication and information. This plan has been developed by other sectoral strategic documents and the accessibility approach has been incorporated into all areas of the City Council.	Despite the fact that in terms of accessibility the city has advanced by leaps and bounds, there are still pending improvement actions. However, it is not one of the priorities to be dealt with in the ICC.

City Needs: State of the city – detailed analysis

- Lower performance areas

	Key insight	Data points	Interpretation	So what?
1	Citizens are not aware of the benefits of energy efficiency. They do not see these initiatives as being in their interest.	We do not have concrete data on the lack of citizen awareness, but in the consultations made with the citizens, this feeling has been confirmed.	In Spanish culture, citizens have not yet taken on board the benefits of investing in energy efficiency. In the specific case of Castelló, for example, they think that the light provided by the new luminaires is not as bright as before.	This insight is of utmost importance for the development of the projects that the City Council wants to implement, not only for those related to energy efficiency, but for all actions. Training and new ways of information should be found.
2	57% of the trips made daily in the Castelló metropolitan area are by private vehicle.	In the slide number 21 (deliv. 1), a table that shows the means of transport used in the metropolitan area of the city.	The reason for this low acceptance of public transport, as revealed by the study of metropolitan mobility, is that there are no services in some municipalities and if there are, the benefits and schedules they offer are "inappropriate" or "uncomfortable" for travellers.	The City Council recognizes that much more collective awareness is needed, since it must not be forgotten that this means of movement helps to mitigate the effects of pollution.
3	The wetlands' area suffers from flooding and contamination from fertilizers used in neighbouring orchards.	The new General Structural Plan contemplates the requalification of a large part of the Marjalería, from Urbanizable to Non-Urbanizable, and as Protected Non-developable Land.	This delicate area is located between the city centre and the maritime district of Castelló, having different land uses (residential, agriculture...). This factor has conditioned the urban evolution and the maritime district has become segregated.	The City Council already tried to execute an action plan in the Marjalería, co-funding it with European funds, which finally could not be carried out. The objective is to obtain financing and execute it in the coming years.

City Needs: State of the city – detailed analysis

- Lower performance areas

	Key insight	Data points	Interpretation	So what?
4	There is a lack of citizens with the necessary technological skills to work in this sector.	In the slides number 22-23 (deliv.1), some graphics FEDEA are provided, showing the distribution of the population of the Valencian Community according to occupation and level of education.	Even though the number of graduates in both science and social university degrees continues increasing, the economic crisis that took place in Spain between the years 2007 and 2013, has led to a decrease in the number of experienced technicians in this field, specially, in construction.	The activities to be implemented and the technological advances are going to generate new jobs that require a good technical qualification, being this area of action therefore very important as it is linked to the rest of the activities and insights.
5	On the outskirts of the city there are still barriers in the environment and built infrastructure that may hinder the free mobility of some people.	Some of the recent performances commented before, as the installation of 17 safer and more accessible bus platforms , were also located in the outskirts of the city.	Less action on accessibility in the outskirts of the city is due to the lower influx of citizens in these areas. There is, however, a will to continue developing actions in this area in order to continue improving the quality of life of the citizens.	As it has been commented, the City of Castelló, in general, has accomplished a high level with regard to accessibility, so this issue is not one of the priorities to be dealt with in the ICC.

City Solutions and Delivery Strategy: Solution Strategy

Solution #1

ENERGY LOCAL COMMUNITIES

BUSINESS CANVAS MODEL

KEY PARTNERS

- Castelló City Council.
- Marketer.
- Administrators.
- Merchants Association.
- Energy Services Company.
- Clusters / Hubs.
- Investors (public or private).
- Asset managers.
- Social facilitator who is in contact with the community.

KEY ACTIVITIES

- Find funds and search spaces.
- Market prelim. consultation.
- Co-creation/training/info-days.
- Recruitment of users.
- Diagnosis of energy situation of the users.
- Simplified procedures and billing, municipal incentives.
- Possibility of starting with SANDBOX (regulate later).

KEY RESOURCES

- Installers and panel and equipment suppliers.
- Engineering and qualified staff.
- Panel locations and information point.
- Cost / benefit analysts.
- Digital management platform.

VALUE PROPOSITIONS

- Improve energy cost.
- Maintain constant rate in solar hours.
- Consumer empowerment.
- Active users.
- Build trust with the end user.
- Feeling of belonging to a group to achieve greater involvement in the initiative.
- Clean energy.
- Emissions reduction.
- Promote local economy by hiring technicians from the area.

C. RELATIONSHIPS

- Close and personal relationship.
- Simplified procedures.

CHANNELS

- Physical information point and through the web.
- Initiative dissemination sessions.
- Social networks (Telegram, Youtube ... ..).

C. SEGMENTS

- Castelló City Council.
- Local Commerce.
- Neighbours.

COST STRUCTURE

- Plant installation, maintenance and replacement cost.
- Salary costs (PM) of project management and indirect costs (office, etc.)
- Cost of the energy management platform.

REVENUE STREAMS

- European and National Funds.
- Investors.
- Sale of generated energy.

City Solutions and Delivery Strategy: Solution Strategy

Solution #2

INTEGRAL WATER MANAGEMENT: Supply, purification, optimization

BUSINESS CANVAS MODEL

KEY PARTNERS

- EPSAR.
- Companies that work within the integral water cycle.
- University Jaume I.
- ITC.
- Community of irrigators.
- Hydrographic Confederation.

KEY ACTIVITIES

- Design a comprehensive solution, analyze and define the city action areas.
- Identify solutions for rainwater collection.
- Update infrastructures and technology of Castelló treatment plant.
- Improve tertiary treatment.
- Identify aquifer zones (water storage).
- Maintenance of supply network and sanitation network.

KEY RESOURCES

- Technology.
- Infrastructures.
- Human Resources.

VALUE PROPOSITIONS

- Water quality (search for alternatives to future supply problems).
- Quality of life (eg against rain).
- Environmental quality (e.g. water reuse).
- Increase the accessibility to water.
- Stop the drainage of rice fields.
- Avoid flooding problems.

C. RELATIONSHIPS

- Managed (administration has direct responsibility), not personalized.
- Education, training and awareness. Transparency.

CHANNELS

- Integral management platform.
- Incidents APP.
- Awareness room.

C. SEGMENTS

- Citizens.
- Industry.
- Irrigators.

COST STRUCTURE

- The update and the installation of infrastructures will make the major cost.
- Salary costs and indirect costs (office, etc)

REVENUE STREAMS

- European and National Funds.

City Solutions and Delivery Strategy: Solution Strategy

Solution #3

MUNICIPAL ENERGY EFFICIENCY PLAN

BUSINESS CANVAS MODEL

KEY PARTNERS

- Castelló City Council.
- Energy Services Company.
- Social facilitator who is in contact with the community.

KEY ACTIVITIES

- Analysis of public luminaires and study the current state of the installations and public buildings.
- Replacement of luminaires with more efficient ones.
- Installation of photovoltaic panels on public buildings.
- Municipal Energy Management Platform.

KEY RESOURCES

- Technology.
- Infrastructures.
- Human Resources (engineers and qualified staff).

VALUE PROPOSITIONS

- Improve energy cost.
- Clean energy.
- Emissions reduction.
- Promote local economy by hiring technicians from the area.
- Reducing the city's energy bill.
- Quality of life.
- Protection of the environment.

C. RELATIONSHIPS

- Managed (administration has direct responsibility), not personalized.
- Education and awareness

CHANNELS

- Social networks (Telegram, Youtube ... ..).
- Dissemination and awareness sessions.
- City Council website.

C. SEGMENTS

- Citizens.
- Industry.
- Castelló City Council.

COST STRUCTURE

- Installation of infrastructures, maintenance and replacements if necessary.
- Costs and indirect costs (office, etc)
- Cost of the energy management platform.

REVENUE STREAMS

- European and National Funds.
- Own funds.

City Solutions and Delivery Strategy: Solution Strategy

Solution #4

PROMOTING AND SUPPORTING ENTREPRENEURSHIP

BUSINESS CANVAS MODEL

KEY PARTNERS

- Castelló City Council.
- Social facilitators which are in contact with the groups concerned.
- University Jaume I.
- XARXATEC.
- CIES.
- Enterprises of Castelló.

KEY ACTIVITIES

- Creation of an Entrepreneurship Commission in the City Council.
- Analysis of the Early Demand Map of the City Council.
- Organisation of an entrepreneurship ecosystem coordinated by the City Council.
- Living Labs & Startups

KEY RESOURCES

- Human Resources.
- Spaces provided by the City Council for the development of activities.

VALUE PROPOSITIONS

- Promotion of the local economy.
- Improvement of the unemployment rate by connecting companies and citizens in the search of employment.
- Bringing back citizens to the city who left due to lack of work.
- Support for innovation and competitiveness.

C. RELATIONSHIPS

- Close and personal relationship.
- Education.
- Training.

CHANNELS

- Social networks (Telegram, Youtube ...).
- Dissemination and awareness sessions.
- City Council website.
- Physical information point (department of Entrepreneurship, Employment and Local Development).

C. SEGMENTS

- Citizens.
- Enterprises of the city of Castelló.
- Castelló City Council.

COST STRUCTURE

- Costs and indirect costs (office, etc).

REVENUE STREAMS

- European and National Funds.
- Own funds,