

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

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May 2022

# Municipality of Chalkida Intelligent City Transformation Overview

ICC Final Deliverable



# Executive summary

The **strategic target** of the Municipality is growth by supporting entrepreneurship, employment, and everyday living to achieve sustainable development and attract new residents. The plan and city vision's main direction is a recovery with an outward-looking and feasible local economy. Therefore, City's policy is focused on:

1. Creating an attractive environment for the settlement of young people who will choose the city for permanent residence, offering quality everyday life, either work in the region of the city or region Attica,
2. Creation of an outward-looking production and economy business ecosystem, with international connections, employment opportunities, friendly and supportive environment for innovative companies, start-ups, and new ideas.
3. Enhance an innovative and sustainable tourism model of twelve (12) months, which will complement the business support and the attractiveness of the city,
4. Transfer of know-how and creating conditions for developing the social economy and entrepreneurship, forming social (and economic) cohesion.

Thus, the City roadmap aims to:

1. The maximum integration of intelligent city systems (a) in the operation of the city and the communication with the Citizens, and (b) in the operation of the Municipality and the integration of e-governance,
2. The immediate use of applications and systems by citizens, executives, and elected officials, and their integration into their daily lives to meet the needs, transparency, participation, evaluation, and continuous upgrading,
3. The orientation of each existing and new funding to the strategic goals, to create economies of scale, with the primary motto "do more with less,"
4. The creation of high-performance teams in the Municipality to ensure (a) the continuity of actions and the diffusion of know-how in the Municipality, (b) the guidance and participation of the local productive ecosystem (c) the coordination of actions of continuous digital training.

# Executive summary

The plan proposes seven (7) solutions/actions to support the objectives comprehensively.

Every project and action be selected and evaluated in terms of their impact on

- (a) Social sustainability (people),
- (b) quality of life based on a sustainable local agreement (green deal), and
- (c) the prospects for attractive growth (prosperity)

The result concerning the financing is that the available and secured funding exceeds 30.000.000€ for the period up to 2025, with almost 6.000.000€ for the new technology “smart” transformation. The city now implements projects and submits proposals for further funding. In the meantime, the city starts to schedule the training and reskilling actions trying for the broadest participation.

# Mayor Foreword

The Municipality starts from a relatively low level of digital and technological transformation but has invested and has essential basic infrastructure. Therefore, regarding the transition to the new technological and after-COVID era, emphasis was placed on the additional utilization of all available funding to choose feasible solutions that can cover the entire city and its needs.

The ICC's journey gave great help in this because

- (a) it enabled communication and information within the city and the stakeholders, and the transfer of internationally experience and
- (b) highlighted the essential dimension that cities become smart when they direct technology (and funding for it) to holistic solutions friendly to the citizen's everyday life.
- (c) support focusing on realistic targets and combining funding resources and practices "to do more with less."
- (d) showed the significance of the creation of a high-performing team in the municipality

On this basis, the city prepared two road maps, a general map of transformation and a map of transition to the "smart" cities, the second part of the first.

All Access to Finance (A2F) actions were matched to these maps. Each existing or secured funding was evaluated according to the contribution to roadmap actions and assessed based on priorities and complementarity. Thus, it secured significant funding that allows the start of project implementation, securing funding to continue the project implementation, and submitting projects for new financing. The result is that the available funding exceeds 30.000.000€ up to 2025.

At the same time, three main infrastructure projects are under construction, which affect the transformation and the support of a green deal of the city (a) installation of the fiber-optic network, as well as the expansion of WiFi infrastructures and 5G mobile networks (c) construction of gas network throughout the city (b) major road bypass to the North and South of Evia.

Section

# 1

## Municipality of Chalkida : Preparation and assessment

ICC transformation

September 2020 to January  
2021

# 1 Introduction

Chalcis (Chalkida, Halkida) is the capital city on the island of Euboea (Evia), which belongs to the region of Central Greece (Modern Greek: Stereá Elláda). It lies at the Euripus channel's narrowest point. Euboea is the 6th largest island in the Mediterranean Sea (2<sup>nd</sup> in Greece). Chalkida has an essential place in world history, with monuments and sites, at a depth of 5,000 years. Major highlights are the dark ages of 1100-700 BC, colonization in Ischia in Naples, Reggio di Calabria, Naxos in Sicily (8<sup>th</sup> Century BC) and the Chalcidice Peninsula, the Venetians era (c. 1209–1470 AC), and the capital of the kingdom of Negropont (Euboea) and the ottomans occupation till 1830, the early industrial period (1900AC).

Athens city center is 70 km from Chalkis while a large industry concentrates on the broader area. The city is connected by train with the national railway and motorway network. Athens airport is 60km from Chalkida. The municipality area is 412,38km<sup>2</sup>, with 108,313 people (census 2021).

The municipality of Chalkida has a long industrial and business tradition. Given its location near metropolitan Athens, the city can grow by attracting startups, SMEs, and youth entrepreneurship related to industry and technology.

The municipality has an extensive coastline suitable for swimming, gastronomy, local products, and significant infrastructures for athletic and sports events, water sports, sailing, and diving.

The city is an excellent place to live with a high level of safety, utility services, open space for activities, infrastructures to support family life, entertainment, housing conditions better than the mean EU level, and better prices concerning mean EU family income, extended areas of pedestrian zones and promenades, and high level of intercity transport infrastructures.

The local branch of Athens Kapodestrian University includes five related departments with courses in Aerospace Science, Digital Technologies, Agricultural, Ports Management, and Digital Arts- Cinema.

# 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 Municipality of Chalkida today

The municipality of Chalkida is an attractive place to live for families and young people. High level in safety, health, education, utilities infrastructures, environment, infrastructures, and services for young families, a fair housing level, gastronomy, and entertainment.

Deindustrialization and the 10 years crisis of the Greek economy affected the municipality's economy, also affecting the demographic of the city.

However, the municipality could achieve fast recovery, based on the above right level of infrastructures and services, the geographic site, the short distance from Athens, where lives the 40% of the population of Greece, the long industrial tradition but also the good performance in agriculture and services sector, the available funding for productive activities up to 2030.

The feasibility and outward-looking recovery must be based on actions in the direction of the 4th industrial revolution and the new environment in the world economy after COVID-19.

## Key insights from city performance analysis

### Higher performance observed

- 1 Environment and City Location close to the area in which lives 40% of the Greek population, including intercity connections by motorway, train, ports, aviation (airport of Athens).
- 2 High standards of living including housing, infrastructure, and services to support family, health, safety- security, open spaces for activities on a 12month basis, utility infrastructures, entertainment
- 3 Industrial and productive tradition, well-educated people, a good level of agriculture, winery, gastronomy, and services and tourism activities
- 4 Available infrastructures to support the implementation of the proposed actions in the strategic plan
- 5 Available initial funding to support the launching of the proposed strategic plan for an ICC transformation

### Lower performance observed

- 1 The tendency for migration of skilled young people, for employment reasons
- 2 Low level of digital transformation in Municipality operations
- 3 City public transport system is unaffordable, especially in suburban regions, hitting labor mobility and driving up private transport
- 4 Moderate level of implementation of the legislated urban plan
- 5 Need for more actions in the green and circular economy

# City ecosystem

The ecosystem includes the Municipality authorities with solid leadership, the Technical Chamber of Greece, a local division with more than 1.000 university-level engineers, and the Evia Chamber for Commerce and Industry, which represents more than 8.000 local enterprises and industries (14.000 for the whole Evia), the port authorities and the University departments.

All stakeholders support the shared vision for a sustainable, intelligent city. The ecosystem members work together to build an efficient team, plan a robust strategic plan, and implement catalytic actions to pursue the recovery of the local economy in the new era of the 4<sup>th</sup> industrial revolution and after COVID-19 period.

Regional authorities, the wider public, and private sectors favor implementing the proposed strategy for the municipality's ICC transformation. Also, the city has started to create an ecosystem of local start-up companies and new enterprises.

# ICC strategy: Vision and ambition statements - thematic tracks chosen by the city. Response to needs (lower performance insights).

## Overarching ICC city vision

To create the conditions for attracting innovative companies and start-ups, support the implementation of new business ideas, form a smart and sustainable 12-month tourism model, and create an outward-looking business ecosystem and employment opportunities that will attract the settlement of young people, offering a quality life.

### Ambition statement – thematic track 1

Growing startups, SMEs, and social economy, which seeks to regain the city's leading role in technology and industry. Emphasis is given on creating an attractive environment for the establishment of technology companies and startups, but also organized development of social enterprises

### Ambition statement- thematic track 2

Smart and sustainable tourism seeks to implement a comprehensive plan of sustainable tourism development for 12 months, which is based on the city's resources and interests and the city's attractiveness for permanent residence

### Ambition statement- thematic track 3

Scaling up renewable energy solutions and energy-efficiency, aiming at the continuous integration of technological solutions for energy efficiency and improving the city's environmental footprint.

### Ambition statement –thematic track 4

e-Government and digitizing public services, which is a constant priority of the Municipality and needs to gain steps as its contribution is critical for the city's overall digital transformation of functions and activities.

# City strategy: justification

The **strategic target** of the Municipality is growth by supporting entrepreneurship, employment, and everyday living. It is the way to achieve sustainable development and attract new residents. The Strategic target consists of **four axes** with which each planned project/action is related and utilizes every available financial source. The four axes are:

1. Creating an attractive environment for the settlement of young people who will choose the city for permanent residence, offering quality everyday life, either work in the area or in Attica,
2. Creation of an outwork-looking production and economy business ecosystem, with international connections, employment opportunities, friendly and supportive environment for innovative companies, start-ups, and new ideas.
3. Enhance an innovative and sustainable tourism model of twelve (12) months, which will complement the business support and the attractiveness of the city,
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Thus, the City plan aims to:

1. The maximum integration of intelligent city systems (a) in the operation of the city and the communication with the Citizens, and (b) in the operation of the Municipality and the integration of e-governance,
2. The immediate use of applications and systems by citizens, executives, and elected officials, and their integration into their daily lives to meet the needs, transparency, participation, evaluation, and continuous upgrading,
3. The orientation of each existing and new funding to the strategic goals, to create economies of scale, with the primary motto "do more with less,"
4. The creation of high-performance teams in the Municipality to ensure (a) the continuity of actions and the diffusion of know-how in the Municipality, (b) the guidance and participation of the local productive ecosystem (c) the coordination of actions of continuous digital training.

# City strategy: justification

Hence every project proposal and action be selected and evaluated in terms of their impact on:

- a. Social sustainability (people),
- b. Quality of life, based on a sustainable local practical agreement (green deal), and
- c. The prospects for attractive growth (prosperity),

while must be characterized by interventions in:

- a. Governance level, of organization and citizen participation, in responding to the new challenges, and
- b. To spread, in the sense of diffusing, the value of applications into more areas of the entire city life.

Through the ICC's opportunity, the Municipality of Chalkida forms a coherent and well-understood plan to support an influential city's transformation. Chalkida, strategy is deployed in two directions:

1. Actions for utilization of infrastructures that already operate. Creation of complementary ones followed by a series of projects in the city to create an attractive environment for the city's branding as the right place for work, business, accommodation, holiday, and leisure.
2. Digital applications and tools, IoT platforms, and portals, as part of a unified and interoperable IT system for the digital transformation economy of scale (in terms of services to citizens and the local economy).

The plan's primary perception is to design and implement projects, doing more with less so that the funding results in practical solutions for the citizens and the city and complements the city's fast recovery from the recession.

The plan and city vision's main direction is a recovery with an outward-looking and feasible local economy. Furthermore, the recovery must be based on actions that meet the work and living. requirements for a successful transition to the 4th industrial revolution era and the aftrefCOVID-19 changes in conditions for work

Section

2

Municipality of Chalkida :  
**Ambition and roadmap**

ICC Transformation

February 2021 to May 2021

# City solutions, response to needs (lower performance insights) and linked with the Ambitions

-  1. Innovation Centers- Hubs. Municipality property buildings and use as Hubs non-operating industrial buildings and plants. Response to need 1. Linked to ambitions/ thematic tracks mainly 1 and 2 with influences in 3 and 4
-  2. Municipal Public Market and Open Malls. Response to need 1, 4. Response to ambitions/ thematic tracks mainly 1 and 2 with influences in 3 and 4
3. Democritus Entrepreneurship Center. Response to need 1. Response to ambitions/ thematic tracks mainly 1 and 2 with influences in 3 and 4.
4. Actions and Center for the enhancement of Social Economy and Social Entrepreneurship. Response to need 1. Response to ambitions/ thematic tracks mainly 1 and 2 with influences in 3 and 4
5. Smart and sustainable tourism development highlighting the attractiveness of the city in two directions (a) hosting and organizing events in science, technology, culture, sports, holidays and leisure, on a 12-month basis (b) permanent residency. Response to need 1, 3, 4. Response to ambitions/ thematic tracks mainly 2 and 1.
6. e-Government, digitizing public services, citizen participation, tools, and applications towards an intelligent city. Response to need 2, 3, 4. Response to ambitions/ thematic tracks mainly 4 with influences in 1 and 2
7. Environmental footprint and energy-efficiency, Response to need 5, 4, 3. Response to ambitions/ thematic tracks mainly 3 with influences in 1 and 2

# City strategy: solutions interaction

The plan proposes seven (7) solutions/actions (see next page) to support the objectives comprehensively.

Actions (1) and (3) have practically the same object and complement each other. The Municipality implements action (1) and action (3) by the Commercial Chamber.

Action (2) spatially urban development areas of local business activity with the integration of modern technologies, shaping business, professional and social interaction areas. With a modern look, it practically revives the city centers' function as a network.

Action (4) utilizes the existing network of social infrastructure with the aim of both offering support for social benefits and supporting social entrepreneurship and volunteerism. Hence the social dimension of actions is offered, which serves the attractiveness of a friendly city.

Action (5) covers the target to support a 12-month tourism model, leveraging local development. It utilizes and modernizes existing infrastructure to host events to cover a wide range of business and social outreach activities.

Action (6) refers to the digital transformation of the Municipality itself as an organization, aiming to serve the citizen and gradually integrate advanced technologies into its daily organization and operation.

Action (7) aims at direct environmental interventions in the logic of local green deals. Waste management and energy-saving actions are included.

# Solution 1 and 3.

## “Innovation and Entrepreneurship Hub” Charter

<p><b>Solution :</b></p>  <p><b>Innovation and Entrepreneurship Hub</b></p>	<p><b>Ultimate goal and scope of this initiative</b></p>  <p>The purpose of this initiative is to support start-ups, incubate innovative ideas, enhance business cooperation, attract entrepreneurs and investors, provide digital nomads' workplace to be the gate for connection with international networks.</p>	<p><b>Impact and timing</b></p>  <p>The development of the Innovation Hub is expected to operate as a facilitating factor for the local economy</p>
<p><b>Initiative lead:</b></p>  <p>Municipality of Chalkida</p>	<p><b>Major milestones</b></p>  <p>InnoHub's Masterplan, Implementation Roadmap, stakeholders Management Plan (10/2021), postpone to 06/2022</p> <p><b>Project Contracting 12/2022</b></p> <p>Beginning of Operation (09/2022) postpone to 01/2024</p>	<p><b>Risks</b></p>  <p>The key risk is delays in securing the projects' financing, that will affect the time plan of the implementation of the solution and/or during the contracting phase, due to bureaucracy</p>
<p><b>Contributors:</b></p>  <p>Academia &amp; Research Institutes Technology Partners Technology consultants</p>	<p><b>Key stakeholders</b></p>  <p>Governmental / Public authorities (for financing the project)</p> <p>Academia &amp; Research Institutes (know-how &amp; expertise)</p> <p>Construction companies (construction services)</p> <p>Technology / Network Providers (<b>know-how &amp; expertise</b>)</p> <p>Technology Consultants (<b>know-how &amp; expertise</b>)</p>	<p><b>Support needed</b></p>  <p>Support is needed from academia, research and industry partners, technology vendors and consultants in transferring know how on the area, based mostly on best practices from abroad</p> <p>Furthermore, support is needed by:</p> <ol style="list-style-type: none"> <li>1. Governmental and public authorities in providing the necessary funds to implement the whole solution</li> <li>2. Strong commitment at the level of Municipality in developing a high-performing team</li> </ol>

# Solution 1. Innovation and Entrepreneurship Hub: High-level implementation roadmap (action 3 may be started from the end of 2023)



# Solution 2

## “Municipal Public Market and Open Malls” Charter

Solution :



**Municipal Public Market and Open Malls**

Initiative lead:



Municipality of Chalkida

Contributors:



Academia & Research Institutes  
Technology Partners  
Technology consultants

Ultimate goal and scope of this initiative



The purpose of this initiative is to create an innovative environment for sustainable entrepreneurship, employment, opportunities to the youth, the promotion of local products, and the municipality's outward-looking economy

Major milestones



Public Market:

Master Plan and Operation Model (01/2022)  
Marketing Plan, Roadmaps (01/2022)

Implementation Roadmap and Stakeholders Management Plan (02/2022)

Open Malls:

Central Mall, Masterplan, Roadmaps (01//2022)

Regional Malls, Masterplan, Roadmaps (01/2022)

Beginning of operation of the central Open Mall (03/2022)

Beginning of Operation of regional “Open Malls (09/2022)

Key stakeholders



Municipality entities  
Technical Chamber of Evia  
Evia Chamber  
University departments  
Economic Chamber  
Other entities and NGOs

Impact and timing



Hub for local products, shopping and commerce, a public market, marketplace, and open malls are supporting the local economy and city life.

Risks



The most significant risks come from the lack of experience in designing projects of this kind. That is why cooperation with mentor cities such as Espoo and Tampere is sought, which are already successful in these areas and ICC Networking opportunity

Support needed

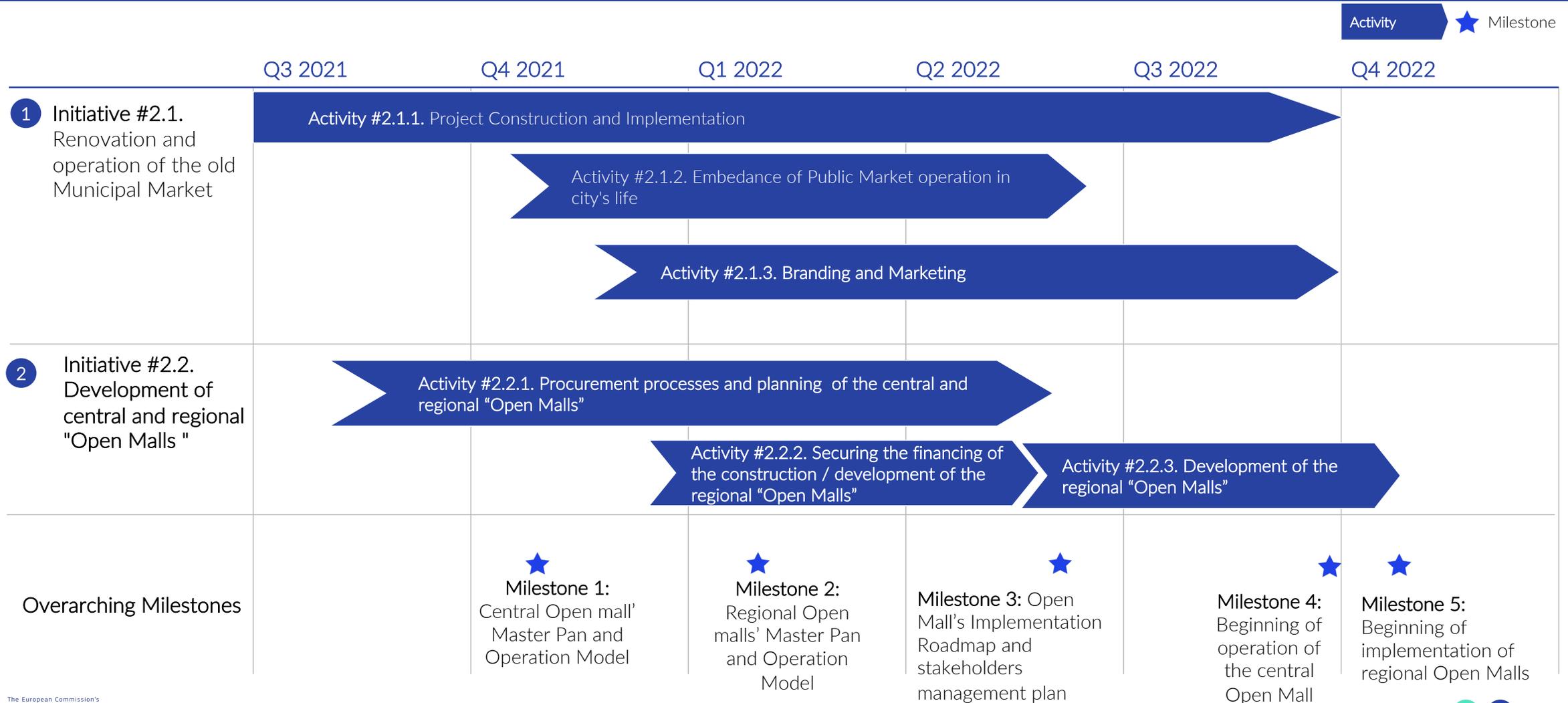


Support is needed from academia, research and industry partners, technology vendors and consultants in transferring know how on the area, based mostly on best practices from abroad

Furthermore, support is needed by:

1. Governmental and public authorities in providing the necessary funds to implement the whole solution
2. Strong commitment at the level of Municipality in developing a high-performing team

# Solution 2. Municipal Public Market and Open Malls: High level implementation roadmap

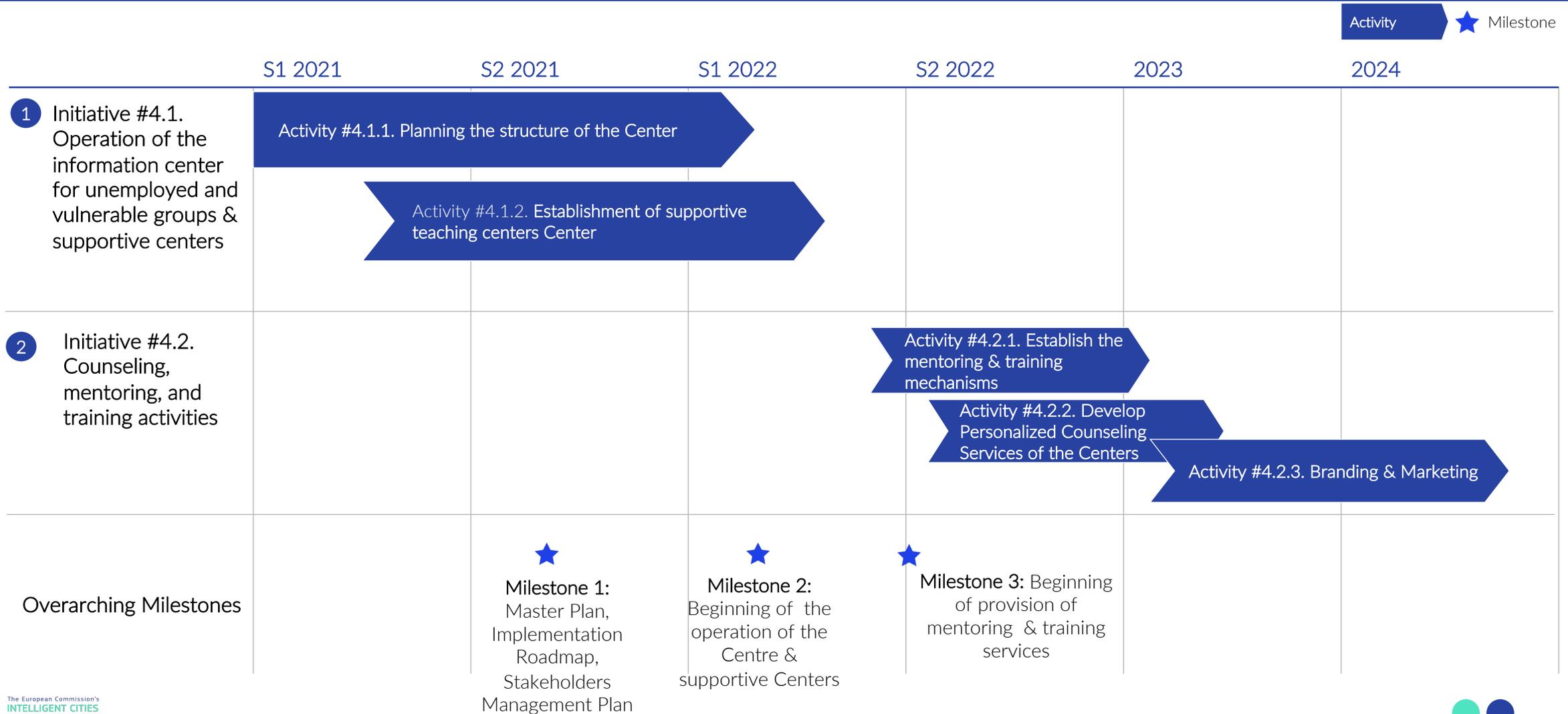


# Solution 4.

## “Actions and Center for the enhancement of Social Economy and Social Entrepreneurship ” Charter

<p><b>Solution :</b></p>  <p>Actions and Center for the enhancement of Social Economy and Social Entrepreneurship</p>	<p><b>Ultimate goal and scope of this initiative</b></p>  <p>The purpose of this initiative is to focus on the development of social entrepreneurship, which is moving at low levels. To this end, actions are foreseen to create entrepreneurship and working opportunities for vulnerable groups and unskilled work (blue-collars).</p>	<p><b>Impact and timing</b></p>  <p>Through this initiative, an innovative environment for sustainable social economy entrepreneurship, employment, opportunities for youth and vulnerable groups will be created.</p>
<p><b>Initiative lead:</b></p>  <p>Municipality of Chalkida</p>	<p><b>Major milestones</b></p>  <p>Masterplan, Roadmap, stakeholder Plan (01/2022) Beginning of center operation (06/2023) Beginning of teaching-training centers (01/2023) Beginning specific activities (01/2023) Launching mentoring services (03/2023)</p>	<p><b>Risks</b></p>  <p>Risks come from the lack of experience in designing projects of this kind.</p>
<p><b>Contributors:</b></p>  <p>Municipality entities, social economy entities, Evia Chamber, University departments other interested parties as NGOs. Also, regional authorities</p>	<p><b>Key stakeholders</b></p>  <p>Social economy entities, Technical and Evia Chamber, University departments other interested parties as NGOs. Regional authorities</p>	<p><b>Support needed</b></p>  <p>Support is needed from academia, research and industry partners, technology vendors and consultants in transferring know how on the area, based mostly on best practices from abroad</p> <p>Furthermore, support is needed by:</p> <ol style="list-style-type: none"><li>1. Governmental and public authorities in providing the necessary funds to implement the whole solution</li><li>2. Strong commitment at the level of Municipality in developing a high-performing team</li></ol>

# Solution 4. Actions and Center for the enhancement of Social Economy and Social Entrepreneurship: High level implementation roadmap



# Solution 5

## “Smart and Sustainable Tourism” Charter

Solution :



**Smart and Sustainable Tourism**

Initiative lead:



Municipality of Chalkida

Contributors:



Municipality entities, Technical Chamber of Evia, Evia Chamber, Tourism and services professional associations, University departments other interested parties as Economic Chamber, investors, private sector and other entities

Ultimate goal and scope of this initiative



The purpose of this initiative is to facilitate a smart and sustainable tourism model, highlighting the attractiveness of the city in two directions :

1. hosting and organizing events in science, technology, culture, sports, holidays and leisure, on a 12-month basis ;
2. permanent residency.

Major milestones



Tourism destination actions masterplan (12/2021)  
 Launch of activities (03/2022)  
 Masterplan preferable residence area (06/2023)  
 Launching of activities (06/2022)  
 Launch of operating periods and completion of projects (04/2022- 12/2024)

Key stakeholders



Municipality entities  
 Technical Chamber of Evia  
 Evia Chamber  
 Tourism and services professional associations  
 University departments  
 Other interested parties as Economic Chamber, investors, private sector and other entities

Impact and timing



Through this initiative, a smart and sustainable tourism model, highlighting the attractiveness of the city will be established.. The municipality properties will act as a backbone infrastructure for private and independent activities and business development, offering support through platforms and interoperable IT systems

Risks



The tourism model based on sea and sun and the following behaviors need to change into a more holistic model based on collaborative activities, hospitality, and friendship with an outward-looking view. The risk due to changes is present as the action suggests changes in models, policies, and behaviors.

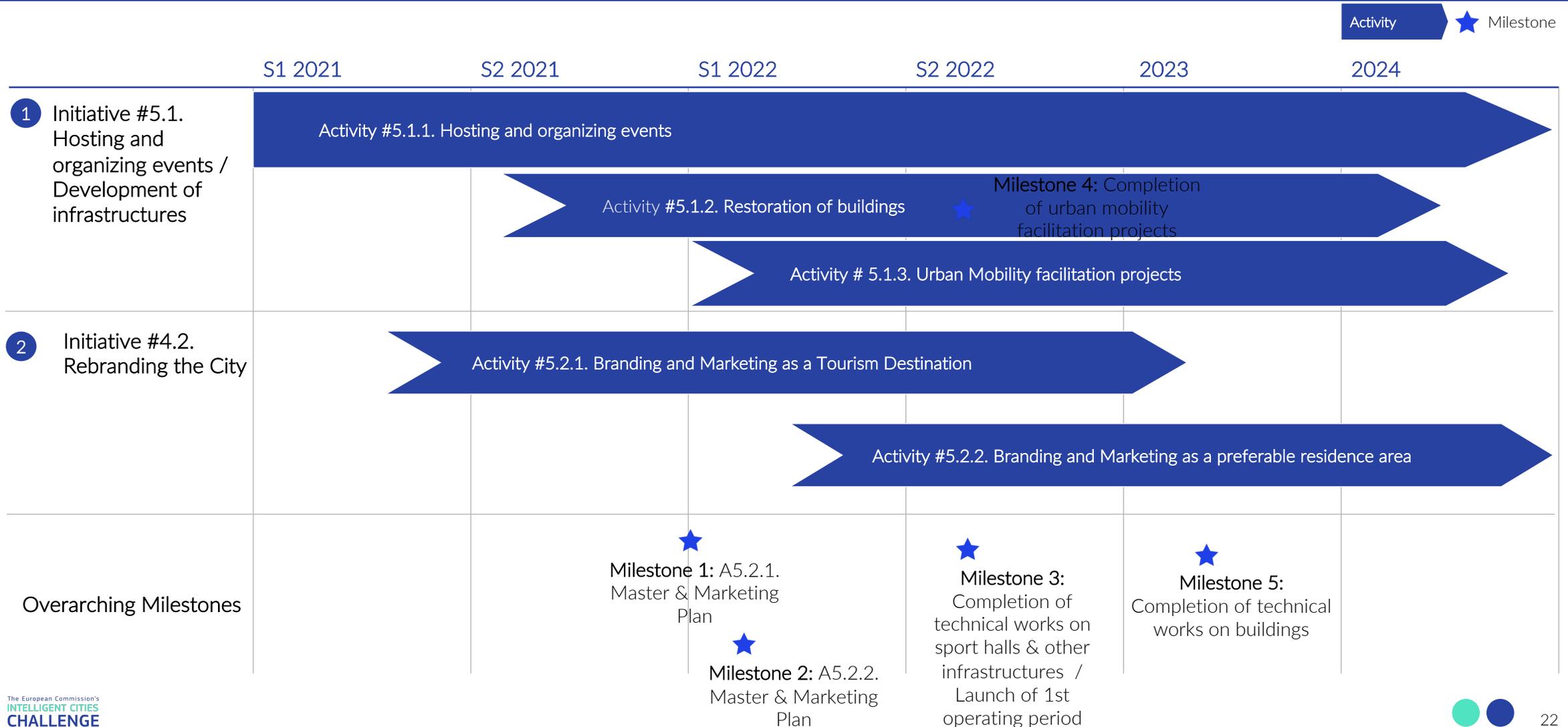
Support needed



Support is needed from academia, research and industry partners, technology vendors and consultants in transferring know how on the area, based mostly on best practices from abroad. Furthermore, support is needed by:

1. Governmental and public authorities in providing the necessary funds to implement the whole solution
2. Strong commitment at the level of Municipality in developing a high-performing team

# Solution 5. Smart and Sustainable Tourism: High level implementation roadmap

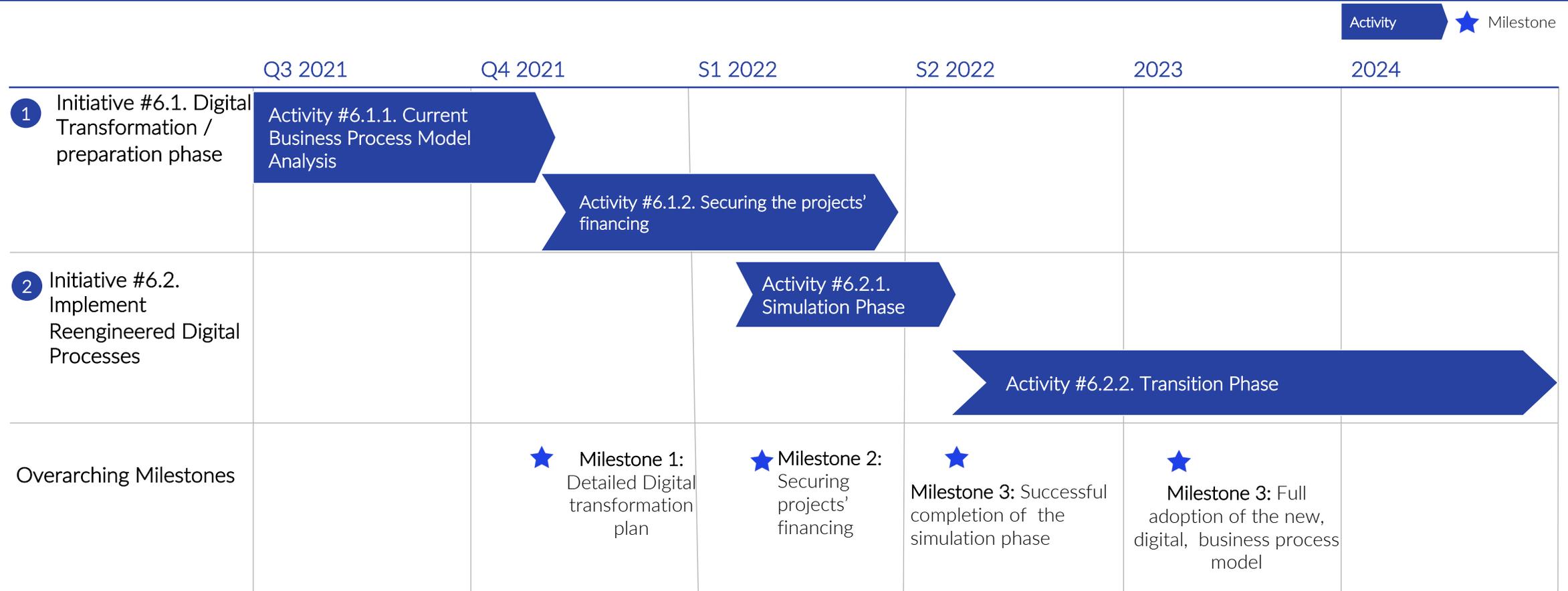


# Solution 6

## “e- Government and digital transformation ” Charter

<b>Solution:</b> 	<b>e- Government and digital transformation</b>	<b>Ultimate goal and scope of this initiative</b> 	The purpose of this initiative is to enable the Municipality of Chalkida to adopt digital technologies and processes in providing services to residents and local businesses	<b>Impact and timing</b> 	The main benefit is the achievement of digital transformation and municipality e-governance (well accepted by the citizens) for an efficient municipality administration and enhancing the local economy.
<b>Initiative lead:</b> 	Municipality of Chalkida	<b>Major milestones</b> 	Detailed Digital transformation plan (01/2022) Securing project financing (06/2022) Successful completion of simulation phase (04/2023) Full adoption of new, digital, business process model (12/2024)	<b>Risks</b> 	Potential risks for the implementation include public procurement processes, low level of digital abilities, and digital divide that hurdles the acceptance and implementation. Lack of capable team to support the implementation of digital transformation
<b>Contributors:</b> 	Academia & Research Institutes Technology consultants Technology vendors	<b>Key stakeholders</b> 	Municipality entities Regional authorities Evia Chamber Technical Chamber Other professional associations Private sector enterprises Citizens	<b>Support needed</b> 	Support is needed from academia & research partners of the Municipality, technology vendors and consultants to ensure the detailed design of the Municipality's "to be" business processes Furthermore, support is needed by: <ol style="list-style-type: none"><li>1. Governmental and public authorities in providing the necessary funds to implement the whole solution</li><li>2. Strong commitment at the level of Municipality in developing a high-performing team</li></ol>

# Solution 6: e- Government and digital transformation: High level implementation roadmap



# Solution 7

## “Environmental footprint and energy-efficiency” Charter

<b>Solution :</b> 	<b>Environmental footprint and energy-efficiency</b>	<b>Ultimate goal and scope of this initiative</b> 	The purpose of this initiative is to maximize the energy efficiency of the city and reduce its environmental footprint	<b>Impact and timing</b> 	The main benefit is the understanding and enhancing the significance of energy efficiency and circular environmental economy to the Municipality and the island
<b>Initiative lead:</b> 	Municipality of Chalkida				
<b>Contributors:</b> 	Municipality entities, Technical Chamber of Evia, Evia Chamber, University departments, private sector, traffic police and citizens.	<b>Major milestones</b> 	Completion of local Green Deal Master Plan & Implementation Plan (2023) Completion of traffic facilitation projects (12/2023) Completion of local Green Deal Stakeholders Plan (12/2022) Energy efficiency & waste management Systems' installation & operation (2023)	<b>Risks</b> 	Understanding the importance of organizations and citizens' day-to-day operations and the need for behavioral changes pose the most significant risk to the effectiveness and extension of relevant actions.
		<b>Key stakeholders</b> 	Municipality entities, Technical Chamber of Evia Evia Chamber University departments Private sector and other entities Traffic police Citizens	<b>Support needed</b> 	Support is needed from academia & research partners, technology vendors and consultants in transferring know how on the area, based on best practices from abroad Furthermore, support is needed by: <ol style="list-style-type: none"><li>1. Governmental and public authorities in providing the necessary funds to implement the whole solution</li><li>2. Strong commitment at the level of Municipality in developing a high-performing team</li></ol>

# Solution 7: Environmental footprint and energy-efficiency: High level implementation roadmap



# Solutions 1 and 3, KPIs–Indicators

Indicator Title	Indicator Unit	Definition
<b>Activity.</b> Digital Nomads Support (two indicators)	1. Number 2. Growth rate per year	1. The number of digital nomads- users of Hubs' facilities. 2. The growth rate of digital nomads- users of Hubs' facilities
<b>Activity.</b> Stimulating a supportive entrepreneurship environment	# of SMEs established and supported per year	Number of new SMEs or SMEs in preliminary stage established and supported (business guidance / mentoring, training, networking etc)
<b>Activity.</b> Local job creation	# of jobs	Number of jobs created due to the Innovation Hub's operation
<b>Activity.</b> A2F	Amount	The number and budget of investments successfully triggered (through venture capital schemes, EU Financing, bank loans, etc.)
<b>Maturity.</b> Funding, Know-How and Expertise	Likert scale	The extent to which there is available funding for the action and the Municipality's core team already has the know-how and expertise to support the project.
<b>Impact.</b> Wider local Impact/Acceptance from the productive sectors/ stakeholders	Number	The number of collaborations with the wider environment of industries and organizations, as well as peer to peer cooperations (start-ups, nomads with the industry, organizations), due to the Hubs' collaboration framework
<b>Impact.</b> Impact. Extroverted business activity of local SMEs	Number	Budget and /or contracts of international activities carried out by the SMEs- Start-Ups, due to the networking environment supported by the Hubs
<b>Impact.</b> Upskilling and Reskilling environment (two indicators)	1. Number 2. Number	1. Successfully organized training and mentoring courses in digital and entrepreneurship issues 2. Number of attendees per training course or mentoring session.

## Solution 2, KPIs – Indicators

Indicator Title	Indicator Unit	Definition
<b>Activity.</b> Attractive environment for new companies' establishment	# of SMEs established per year	Number of new SMEs established for the first three years (per year) in the Public Market and the Open Malls' areas
<b>Activity.</b> Increased regional competitiveness	Likert scale	The extent to which the project supports the competitiveness of the local business community
<b>Activity.</b> Local job creation	# of jobs	Number of jobs created due to the operation of the Public Market and the Open Malls
<b>Maturity.</b> Wider local impact/Acceptance from the productive sectors/ stakeholders	Number	The number of collaborations with the wider environment of local producers, existing shops and markets, local companies
<b>Maturity.</b> Participation in/ to a broader ecosystem	Likert scale	To extent to which the project has created added value to other sectors (e.g., agriculture, tourism, etc)
<b>Impact.</b> Extroverted operations	Number per category	The number/amount of extroverted activities carried out by the SMEs participating in the Public Market and the Open Malls, due to the networking environment supported by tools such as common logistics, city logistics, platforms, and digital application.
<b>Impact.</b> New Jobs creation	Number of jobs	Number of Jobs created by the operation of the Public Market and the Open Malls per year.
<b>Impact.</b> Upskilling and Reskilling environment (two indicators)	1. Number 2. Number	1. Successfully organized training and mentoring courses in digital and entrepreneurship issues 2. Number of attendees per training course or mentoring session.

# Solution 4, KPIs – Indicators

Indicator Title	Indicator Unit	Definition
<b>Activity.</b> Support to members of vulnerable social groups (two indicators)	1. Number 2. Growth rate per year	1. The number of residents- users of social economy support services and facilities. 2. The growth rate of residents - users of social economy support services and facilities
<b>Activity.</b> Blue collars and vulnerable people reached	% of people	Percentage of people in the target groups that have been reached, informed and/or activated by the solution.
<b>Activity.</b> Professionals' participation (related to social economy and entrepreneurship)	Number	Number of professional (e.g. psychology, sociology, education specialists etc.) participating to the center's operations
<b>Activity.</b> Projects' effect on the local market (two indicators)	Number	Number of employees participating to the project Number of clients seeking and finding efficient services through the center
<b>Activity.</b> Upskilling and Reskilling environment (two indicators)	1. Number 2. Number	1. Successfully organized training and mentoring courses in social economy and social entrepreneurship issues 2. Number of attendees per training course or mentoring session.
<b>Maturity.</b> Certification processes	Likert Scale	The extent to which the solution was planned to certify the level and the evaluation of the offered services (by the social enterprises and their employees)
<b>Impact.</b> Building a socially-driven economy productive environment.	Likert scale	The extent to which the municipality's new policy, i.e. to find solutions and organize a steady framework for the successful integration of vulnerable groups and employment, offering services to the day-to-day city life, is effective
<b>Impact.</b> Establishment of a local Social Economy Market	Likert Scale	The extent to which the municipality's policies to support services in critical sectors of the social economy, e.g., assistance to disabled and older people, dedicated nursing, cleaning, delivery and courier, low-level qualifications labor staff, is effective

# Solution 5, KPIs – Indicators

Indicator Title	Indicator Unit	Definition
<b>Activity.</b> Events Held (separate indicators for (a) science and technology events (b) culture, classical and social science (c) sports for youth ). Specific indicator for international events	Number	Number per event category / International events per category.
<b>Activity.</b> Participation Intensity related to events	Number	Number of visitors and participators to the events
<b>Maturity.</b> Stimulating an attractive and innovative environment	Likert scale	The extent to which the camps, related infrastructure of the city and sports halls operation stimulate an attractive and innovative environment for seasonal events
<b>Maturity.</b> Availability of pedestrian, green and blue spaces	M2/capita	Pedestrian, Green and Blue areas within the municipality, beaches with blue flags, areas for sea activities as canoe-kayak, sailing, surfing, kite-surf
<b>Maturity.</b> Quality and Access to public transport and vehicle access solutions	Likert scale	The perception of users on the quality and accessibility of the public transport service and access to vehicle sharing
<b>Impact.</b> Wider local Impact/Acceptance from the productive sectors/ stakeholders	Number	The number of collaborations with the wider local environment tourism service providers, existed shops and markets, local companies
<b>Impact.</b> Participation in/ to a wider ecosystem	Likert scale	To extent to which the project created added values for other sectors (e.g., agriculture, commercial, local industry etc)
<b>Impact.</b> Market orientation/ branding/ acceptance	Likert scale	The extent the impact on the local, national and international environment

# Solution 6, KPIs – Indicators

Indicator Title	Indicator Unit	Definition
<b>Activity.</b> Increase in online government services	Likert scale	The extent to which access to online services provided by the city was improved by e.x. the project types of services, frequency of use, unique users, system failures, etc
<b>Activity.</b> Quality of open data	Likert scale	The extent to which the quality of the open data produced by the project was increased
<b>Activity.</b> Improved interoperability	Likert scale	The extent to which the project has increased interoperability between systems of the Municipality
<b>Mature.</b> Know-How and Expertise	Likert scale	The extent to which the Municipality's core team already has know how and expertise similar to the proposed solution
<b>Mature.</b> Municipality's staff digital skills	Likert scale	The extent to which municipality personnel already has technical know how and expertise similar to the proposed e-governance applications
<b>Mature.</b> Access to Finance	% of budget coverage	Percentage of budget coverage from already available EU, National, and other sources.
<b>Impact.</b> Ease of use for end users & stakeholders of the solution	Likert scale	The extent to which the solution is perceived as difficult to understand and use for potential end-users & stakeholders
<b>Impact.</b> Advantages for end users	Likert scale	The extent to which the project offers clear advantages for end users

## Solution 7, KPIs – Indicators

Indicator Title	Indicator Unit	Definition
<b>Activity.</b> Municipal solid waste	t/cap/yr	The amount of municipal solid waste generated per capita annually
<b>Activity.</b> Recycling rate	% of tonnes	Percentage of city's solid waste that is recycled
<b>Activity.</b> Fleet Management rates and warehouse management rates concerning waste management.	numbers	Numbers (e.x. km/car) concerning the fleet and warehouse management related to waste management system,
<b>Maturity.</b> Reduction in the amount of solid waste collected	% in tonnes	Percentage reduction in the amount of waste collected due to the solution
<b>Maturity.</b> Increase recycling rate	%	Increase in the percentage of the city's solid waste that is recycled due to the solution
<b>Impact.</b> Increase in local renewable energy production	% in tonnes	Percentage increase in the share of local renewable energy due to the solution
<b>Impact.</b> Local Green Deals maturity and acceptance level	Likert scale	The extent to which the municipality and city stakeholders accept, participate, discuss, accept and implement local policy landscape toward a local green deal.

# Key Performance indicators– Cross- Cutting Indicators

Indicator Title	Indicator Unit	Definition
City attractiveness, taking into account: <ol style="list-style-type: none"> <li>1. Open space for day to day living and activities</li> <li>2. Social Infrastructures to support young family life</li> <li>3. Housing availability and cost</li> <li>4. Utilities level</li> </ol>	Likert Scale	The extent to which the city is attractive as a place to have a high quality of life, and work in an extrovert environment with sufficient facilities.
Access to urban planning (3 indicators) Pedestrian Zones and Accessibility Commercial areas' facilities (parking spaces, childcare spaces, etc.). Recreation of green and blue spaces and significant buildings	<ol style="list-style-type: none"> <li>1. m2</li> <li>2. Number of spaces</li> <li>3. m2</li> </ol>	<ol style="list-style-type: none"> <li>1. Pedestrian Zones around the Public Market and the Open Malls</li> <li>2. Parking Spaces, Parking Cost, childcare facilities and playrooms etc.</li> <li>3. Recreation of green and blue spaces and significant buildings</li> </ol>
Involvement of the city administration	Likert scale	The extent to which the municipality and other local authorities are involved in the development and the support of the solutions/ centers (e.g. financial & organizational contribution, encouragement of volunteer work)
Housing availability and cost (two indicators)	Likert scale, Rental rate / m2, sales rate / m2	Housing availability and housing stock, Building's quality Prices to buy or rent an apartment or house for long and short time period
Access to high-speed internet (two indicators)	<ol style="list-style-type: none"> <li>1. #/100 inhabitants,</li> <li>2. % of municipality area</li> </ol>	Fixed (wired)-broadband subscriptions per 100 inhabitants. Percentage of municipality area covered by high-speed fixed internet (FTTB, FTTP) Percentage of the municipality's area covered with 4G or 5G

# Rationale to KPI approach

The ICC local team and the municipality choose the rationale for the KPI approach and decision-making process for which KPIs are covered in each of the three KPI types, capturing discussions the city has had on availability, actionability, validity, complementarity, and implementation conditions.

Every project and action be selected and evaluated in terms of their impact on:

(a) Social sustainability (people), (b) quality of life based on a sustainable local agreement (green deal), and (c) the prospects for attractive growth (prosperity)

As also to form a coherent and well-understood plan to support an influential city's transformation and participation deployed in two directions:

1. Actions for utilization of infrastructures that already operate.
2. Digital applications and tools, IoT platforms, and portals, as part of a unified and interoperable IT system

The ICC team chose and suggested the selected KPIs, which the stakeholders accepted. The KPIs were planned to be well received and understood by the stakeholders, to be easy to use, to identify points that need improvements and additional actions, and to help in broader participation in implementing the proposed actions.

# Governance structure for roadmap implementation (comments)

The Municipality's participation in the ICC program is implemented at a time when the Municipality has submitted several proposals to different financial sources related or complementary to the digital transformation and the technologically advanced (intelligent) city.

Each funding source has different requirements and administrative bureaucracy regarding procedures to be followed.

Therefore, given the level of the Municipality and the available experienced staff (regarding the transition to a technologically advanced city), the project was chosen to be implemented by the Municipality's conventional structures. Hence:

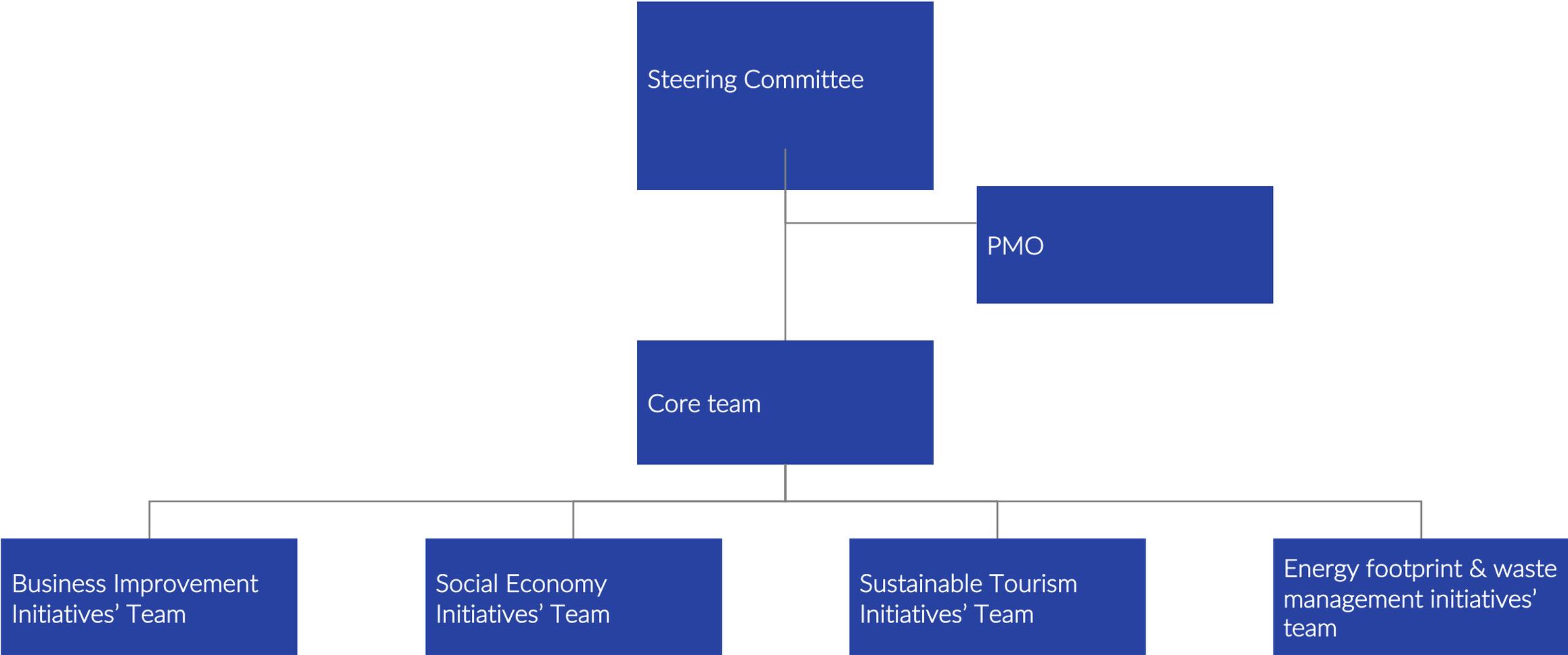
1. The Department of Business Planning, New and Information Technologies of the Municipality is responsible for implementing these projects.
2. A team of experts supports the Department (in which joined the ICC Lead and Thematic Expert as well as the representatives of the ecosystem). The role of this group is to share the available information, evaluate financing tools, evaluate and recommend proposals, and support and evaluate strategic planning.
3. This team is supported by technical advisors as provided for in approved programs from other but relative funding resources.
4. The Mayor's office participates and cooperates with the above.

At the political level, a responsible Deputy Mayor has been appointed.

For each initiative (just like the ICC), a project manager and the project support team (with department responsibilities for each project) are defined.

With the evolution of financing and the procurement and implementation procedures of each project, the gradual configuration of a permanent department with the object of technological transition and local green deals is planned.

# Governance structure for roadmap implementation



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

Section

3+4

# Municipality of Chalkida: Impact

ICC Transformation

February 2021 to May 2021

# Planning, A2F and Impact of the ICC Journey

The Municipality starts from a relatively low level of digital and technological transformation but has invested and has essential basic infrastructure. Therefore, regarding the transition to the new technological and after-COVID era, emphasis was placed on the additional utilization of all available funding to choose feasible solutions that can cover the entire city and its needs. The **ICC's journey** gave great help in this because

- (a) it enabled communication and information within the city and the stakeholders, and the transfer of internationally experience and
- (b) highlighted the essential dimension that cities become smart when they direct technology (and funding for it) to holistic solutions friendly to the citizen's everyday life.
- (c) support to show the path to focus on realistic targets, combine funding resources and practices "to do more with less."
- (d) show the significance of the creation of a high-performing team

On this basis, the city prepared two road maps, a general map of transformation and a map of transition to the "smart" cities, the second part of the first.

All A2F actions were matching to these maps. Each existing or secured funding was evaluated according to the contribution to roadmap actions and assessed based on priorities and complementarity. Thus, secured significant funding that allows the start of project implementation, securing funding to continue the implementation of the project, and submitting projects for new financing. The result is that the available and secured funding exceeds 30.000.000€, with almost the 6.000.000€ for the digital transformation.

At the same time, three main infrastructure projects are under construction, which affect the transformation and the support of a green deal of the city (a) installation of the fiber-optic network, as well as the expansion of WiFi infrastructures and 5G mobile networks (c) construction of gas network throughout the city (b) major road bypass to the North and South of Evia road networks.

# Initial A2F per solution

**Impact to all the solutions:** The Municipality of Chalkida has ensured funding up to 3.000.000€, through RRF of Greece, following the related procedures which include a intelligent city transformation plan and estimate launch of the procurement processes at 04/2022. The specific funding affects to all solutions

## **Solution 1 and 3**

To support these actions, the Municipality (for the immediate start of the implementation) has already secured, through NSRF 2014-2020, funding of two actions, 150,000€ each, (a) for the planning of branding to support innovation and entrepreneurship and (b) the operation of a business competitiveness support center.

An additional part of 1,000,000 € could be allocated for training in leading sectors of the local economy which relates to the matching supply and demand of work specifically for engineers and experienced technical (including IT) staff in the secondary sector (industry and construction).

## **Solution 2**

The project concerns restoration, development, and operation of the Municipal Market of Chalkida (established firstly in 1885) and the square's regeneration in front of it. The project will be funding from the Region of Central Greece and the Municipality in a budget of 15,000,000€ with possible completion by the end of 2024.

The Open Mall in the broader area of the Agora includes pedestrian projects and improvement of the wider area's overall image. It has a budget of 1,500,000€ and has submitted a coherent plan for funding.

The third (3) action combines pedestrian zones and the promotion of shopping centers in the regional areas to support the creation of regional city centers for shopping and services. Initial resources of 1,000,000€ have already been committed for accessibility upgrades in the street and pedestrian network within the municipality and funding for the advancement of the urban mobility plan.

# Initial A2F per solution

## Solution 4

The Municipality for the immediate start of the project has planned actions. It has already secured funding (a) for the development of social entrepreneurship and social economy (400,000 €), (b) the creation of an information center for unemployed and vulnerable groups (200,000 €) (c) counseling, mentoring, and training activities for the promotion of employment and entrepreneurship (1,000,000€), (d) establishment of supportive teaching centers (€ 200,000), (e) operation and counseling center for women and minorities victims of violence (500,000€).

## Solution 5

The available initial funding includes projects (through NSRF 2014-2020, funding from Green Fund, and the Fund for Municipalities Antonis Tritsis) as:

The restoration and utilization of the old warehouse of the city train station (budget 2.100.000€)

The expansion of the Municipality's pedestrian network (secured initial funding of 5,000,000€),

The restoration of historical monuments and buildings such as the Ottoman residence on Paidon Street (budget of 1.000.000€). The house is in the former medieval and ottoman castle area, in a triangle of monuments of monotheistic religions such as the Orthodox church of Agia Paraskevi, the Ottoman mosque, and the Jewish Synagogue.

Expansion of sustainable urban mobility actions with walking and cycling routes that cover the entire coastal front of the Municipality and favor the use of bicycles with initial funding of 500.000€

Disability persons' accessibility equipment of the beaches of the Municipality, 240.000€

Actions (in collaboration with OLNE) for maintenance and expansion of small fish ports and marinas within the Municipality.

# Initial A2F per solution

## Solution 6

The available initial funding includes projects (through NSRF 2014-2020, funding from Green Fund, and the Fund for Municipalities Antonis Tritsis) as:

Digitization, electronic archiving, and database records of build and construction department, buildings permits, and Municipality's real estate properties (600.000€ NSRF 2014-2021).

Intelligent applications, systems, and platforms for safety, health - welfare, e-government, education - culture - tourism, and environment (Antonis Tritsis, under submission).

## Solution 7

The available initial funding includes projects as:

The energy efficiency of Municipality's property buildings € 1,500,000

Energy upgrade of sports facilities, € 2,500,000

Energy-saving systems in municipal lighting, € 200,000

Charging stations for electric vehicles, € 200,000

Underground waste bins, € 200,000

Traffic improvement programs, € 200,000

Upgrade of the fleet of waste collection vehicles, € 1,000,000

Operation of recycling corners, € 900,000

# A2F Chalkida Project RRF Funding (solutions 1, 4, 5, 6, 7)

Funding of 2.970.000€ for the intelligent city transformation accepted through RRF Greece Fund from 2022 to 2026 according to the below plan (six- 6- actions). This funding completes Chalkida's strategic plan for the city's transformation into a preferable city to live in.

## 1. Traffic Optimization

- Integrated Controlled Parking and Mobility Information Management Information System
- Pedestrian Crossing Systems

## 2. Environmental Resources Management

- Waste collection applications and systems
- Applications and Support Systems for Energy Saving

## 3. Social Care and Health

- Provision of telemedicine and telecare services
- Application - Social Services and Welfare Support Information System

# A2F Chalkida Project RRF Funding (solutions 1, 4, 5, 6, 7)

## 4. Citizenship, Living, Employment, Entrepreneurship

- Organization and Operation of Co-Working Spaces
- Application of support for new entrepreneurship, business interconnection, management of collaborative workplaces, and interconnection of members, specialists, mentors, and investment funds
- Implementation of interactive consultations and collective decision-making, volunteer management, crowdsourcing, and crowdfunding

## 5. Metropolitan Wireless Networks

- Metropolitan Networks, LoraWan Network Infrastructure.
- WiFi Networks (under implementation through other funding)

## 6. Central Platform Information and Supervision Systems

- Central unified platform for management and data collection of the intelligent transformation actions of the Municipality
- Development of Building Information Modeling (BIM) and digital twin (city twin) (pilot phase)
- Electronic Digital Transformation Services of the Municipality for the intelligent city and citizen service

# Assessment of city performance - discussion

As already mentioned, the city plan's main point is that it is in the process of public procurement for a significant part of it and submission of proposals for further funding. The duration of completion of already approved projects is up to 2025. Funding is secure through ESPA 2014-2020, RRF, and National- Municipality resources,

Projects under submission are related to RRF, ESPA 2021-2027, and other financing resources.

## **Solution maturity assessment**

At this stage, it concerns the financing and is considered satisfactory. The planning is also considered adequate since the actions are planned to cover the whole city as much as possible.

## **Evaluation of the ecosystem and the activities of the city.**

The ICC helped launch efforts to participate in the city's ecosystem. However, the other stakeholders of the city are at the same (early) level of readiness. The implementation of solutions creates better conditions for mobilization and participation.

## **Assessment of city ecosystem and activities - progress against KPIs**

In terms of activity indicators, these will also emerge from the start of implementation. But the Municipality has prepared the basis of KPIs for each solution and stage, as has already been presented.

## 5 key lessons

1. The **first key lesson** is that creating a high-performance team that will design and support the implementation of the transformation plan is the most critical decision,
2. The **second lesson** (and transfer of experience) is that it requires constant and systematic cooperation with the stakeholders to overcome reactions and perceptions and gradually form a dynamic ecosystem in the city.
3. The **third lesson** is that the best plan will fail if it does not focus on its diffusion in society, skilling and reskilling, and simple and continuous courses on understanding the use of devices and technology.
4. The **fourth lesson** is that when there is access to international experience, then with proper planning, they can become more with less and, above all, be accepted by society.
5. The **fifth (and not less critical) lesson** is that the European Union is the new commonplace of communication and cooperation (of every small or large homeplace, region, or nation), with many experiences, excellent opportunities for networking and transfer of experiences, shared aims and guidance and available funding for the transition to the new technological age as in the after-COVID era.

# Reflections on city collaborations

Due to the COVID conditions, the communication was limited, but using the ICC platform and applications helped overcome obstacles and support discussions.

In the previous section, we have referred to the critical lessons that the Municipality received through the ICC.

For Chalkida, discussions between cities and mainly between Lead and Thematic Experts of different cities and local authorities (indicatively Espoo-Tampere) helped formulate solutions or avoid difficulties in suggested solutions.

Indicatively, the design of Co-Working and Makers spaces and related Camps, the choice of solution for traffic and parking with the least possible sensors, solutions for the waste management as also fleet management, the integration in the design of the city of first works in the BIM / Digital logics Twins