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CHALLENGE

Iași: 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

Iași, A City You Will Never Forget

- Iași is one of the oldest cities in Romania and has a strong cultural identity.
- It is the centre of a metropolitan area that occupies 787.87 km² and is home to 507,100 inhabitants (the second city in Romania).
- It is also one of the largest cities at the eastern border of the European Union. Iași is the second largest academic centre in Romania with eight universities and about 60,000 students.
- The city seeks to become a place for recreation and relaxation for all citizens in the region.
- It also aims to offer business opportunities as a regional hub for knowledge.

Key attributes

- Sustainability and quality of life now prevail over other indicators, and this means that Iași City simply needs to start thinking and planning how to become a GREEN and CITIZEN-FRIENDLY CITY, and how to RATIONALLY USE THE RESOURCES
- Keeping Iași city clean, green and sustainable

All the projects started within the ICC program were included on the investment list of the Iași Municipality. For some of them, European funding has been secured. In conclusion, they will have to be completed within the stated term, or with well-justified delays.

Mayor Foreword

The Digital Cities Challenge (DCC) program, together with the experts of the European Commission, helped us to carry out the Digital Transformation Strategy of the Iași Municipality, coordinated by the Digital Council for Digital Transformation, consisting of representatives of businesses, academia, civil society and public authorities.

The Intelligent Cities Challenge (ICC) was a natural continuation of DCC, overlapping with our city's goals of becoming a green, clean and healthy city. We have set strategic goals and initiated the necessary measures to achieve them in all areas: air quality and environmental protection, public transport, waste management, green spaces, energy efficiency, health and education.

The steps taken in three of these areas were continued in the ICC: green mobility, green areas and waste management. The pandemic, the semiconductor crisis, the war in Ukraine, the provision of certain conditions for Ukrainian refugees have sometimes changed our priorities and delayed our plans. But we will not give up on them and we will finish them all!

The actions of the European Commission, to bring European cities to the same table, so that they can learn from the experiences of others, to identify solutions and obtain information about their weaknesses and strengths, are welcome, and the City of Iași will always adhere to them.

We will transform Iași into a sustainable, digital city, with a modern infrastructure, a city of the people and for the people!

Mihai CHIRICA

The Mayor of Iași City

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

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

1 Preparation & assessment

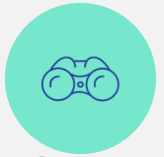
5 months:
September 2020 – January 2021

2 Ambition & roadmap

3 months:
February 2021 – April 2021

3 Implementation

15 months
May 2021 – July 2022



4 Review & way forward

2 months
August 2022 – September 2022

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

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Section

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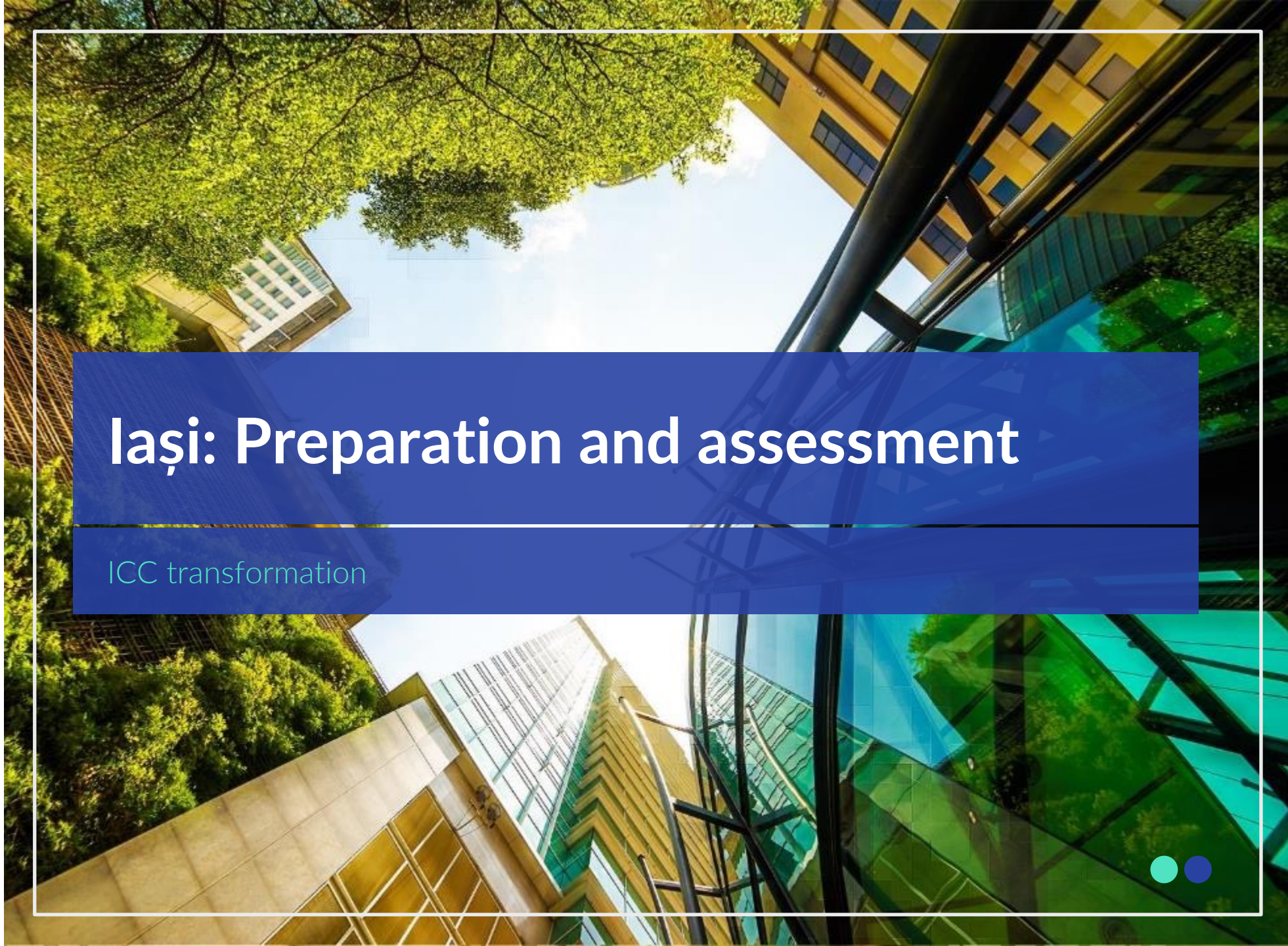

Iași: Preparation and assessment

ICC transformation

September 2020 to January 2021

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Introduction

The council and the community have achieved great things together in the effort to build the city's future.

The following achievements are just some of the most important moments, which the stakeholders want to continue

- **Accessible and connected city** - Our integrated transport system has to provide efficient and safe movement of people and goods into and throughout our city, with residents and visitors adopting sustainable travel choices including walking, cycling and public transport.

- **Active and healthy city** - has active and healthy communities and offers diverse and accessible recreational opportunities for all ages, abilities and backgrounds.

- **Clean and green city** - open spaces and natural areas provide breathing spaces for the city.

- **Friendly and safe city** - is a city of strong and diverse communities.

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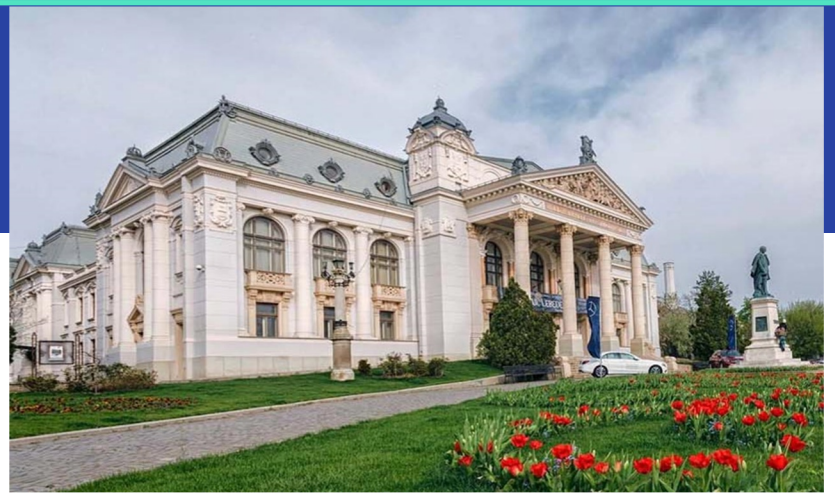
Introduction

Our values:

- Respect for people
- Working together
- Strong academic environment
- Young, innovative resource, with experience in large international projects
- A certain level of maturity and retention of human resources
- The presence of many famous IT & Outsourcing companies
- Renowned university covering the entire spectrum of specialisations (technical, social, medical, veterinary, arts)
- Cultural centre



Keeping Iași city clean, green and sustainable

Aspirations:

- High quality living environments
- Renovation of public buildings
- Support and development of green construction and green procurement
- Setting standards and providing incentives
- Circular economy and waste management systems
- Green transportation

Key attributes:

- **Sustainability** and **quality of life** now prevail over other indicators, and this means that Iași City simply needs to start thinking and planning how to become a **GREEN and CITIZEN-FRIENDLY CITY,** and how to RATIONALLY USE THE RESOURCES

- Smart governance (digitalisation of public services)
- Stimulating entrepreneurship, attracting investment and stimulating the development of companies' own products
- Creating green spaces for the development of innovative hubs, coworking spaces, etc.
- Stimulating entrepreneurship and increasing the number of start-ups

Introduction

Following the Digital Cities Challenge program, the Municipality of Iași became the beneficiary of a Digital Transformation Strategy. It was developed in accordance with the Integrated Urban Development Strategy of Iași Municipality, the Sustainable Urban Mobility Plan of Iași Municipality, the Economic-Social Development Strategy of Iași County and the Tourism Strategy of Iași Municipality and Iași Metropolitan Area. (Integrated Urban Development Strategy Iași; Sustainable Urban Mobility Plan for Growth Pole Iaşi; Sustainable Energy Action Plan; Air Quality Plan in Iași Municipality, for PM10, period 2018 - 2023; Energy Efficiency Improvement Program of Iași Municipality; Legislation in Romania on air quality, carbon dioxide emissions reduction and energy efficiency).

Climate change is affecting us all. From the debates with the stakeholders, it resulted that we must focus our efforts on promoting a more sustainable way of life, offering citizens the opportunity to make more sustainable lifestyle choices.

Our vision is to transform the Municipality of Iași into a clean, smart and sustainable city. For this purpose, we have chosen three directions of action: green transport, waste management and the extension of green spaces.

A key requirement is for people to reduce car use and choose low-emission transportation methods. Among the solutions we identified: the acquisition of modern means of transport, with "0" carbon emissions, the promotion of walking, cycling, use of electric scooters and public transport, the implementation of new mobility services.

Through waste management, we aimed first of all to educate the citizens for the selective collection of waste, to provide collection spaces as close as possible to their homes and to modernize equipment and platforms for smallest possible carbon footprints. The expansion of green spaces will be done simultaneously with the development of pedestrian areas to provide citizens with places to relax, walk, play in a clean emissions-free environment.

City needs: State of the city overview

Significant 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 changed 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 Iași today

The city of Iași is a city full of potential and opportunities.

The municipality is oriented towards greener solutions, reducing pollution, and increasing the quality of life: the development of innovative investments in green, sustainable and circular economy, green infrastructure buildings, alternative transport.

Universities procure skilled workforce, reassuring potential investors; social activities are catered for thanks to the multitude of entertainment places, cultural institutions and existing parks.

A challenge for potential investors is to identify solutions to streamline traffic, which would reduce pollution in a city of about 500,000 inhabitants.

Investments in public transportation are planned.

The municipality makes efforts to access new EU funding opportunities (resilience and structural funds)

It is not for nothing that it has been declared a magnet city by the World Bank.

Key insights from city performance analysis

Higher performance observed

1 **Productivity**
The first Digital Innovation Hub in the North East Region was established

2 **IT specialists**
The Digital Council for Digital Transformation was created
The IoT area in the field of telemedicine is emerging

3 **European funds**

4 **Digitalisation of public transport**
Iași.digital platform – citizens have access to data on public transport, traffic, air quality, clean and disinfected streets are published

5 **Health infrastructure**

Lower performance observed

1 **Air Pollution**
Inefficient Monitoring air quality sensors. Mobility remodelling policies

2 **Decarbonising transport**
Poor electric transport, poor biking and walking infrastructure
A unique ticketing system for buses and trams was introduced

3 **Waste management**
The garbage collected is non-compliant; raise public awareness for separate waste collection

4 **Active lifestyle**
Lack of good quality mobility

5 **Infrastructure green buildings**
Rehabilitation / Modernisation / Extension / Efficiency of public lighting network in Iași

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City Ecosystem

1. The "Civil society" ecosystem - Civil society, citizens of the municipality, foundations, trade unions, associations, citizen interest groups, non-governmental institutions that show interests and contribute to innovative solutions
2. The "Academic" ecosystem - Universities, preschool, primary, secondary, technical or vocational education, County School Inspectorate, research and development institutions, vocational training organisations
3. The "Business Environment" ecosystem - The main companies in Iași, start-ups, spin-offs
4. The "Business support infrastructure" ecosystem - Science parks, technology parks, "Fab-Lab" type structures, business incubators, business accelerators, technology transfer centres, hubs (coworking space), clusters, European innovation and business networks, etc.
5. The "Health" ecosystem
5. The Utility ecosystem - Providers of electricity, water, gas, utilities, waste management, public transport, postal services, telephone services, Internet
6. The "Banking Service Providers" ecosystem
7. The "Culture and Media" ecosystem
8. The "Public Authorities" ecosystem - Public administrations, authorities and public institutions

City Ecosystem

- Insights from the 1:1 interviews
  - 7 bilateral meetings hold with different stakeholders („Alexandru Ioan Cuza" University of Iași – Computer Science Faculty, the Fab Lab Association, Compania de Transport Public SA Iași, Salubris SA Iași, Iconic Cluster Iași, Parcul Științific și Tehnologic TEHNOPOLIS Iași)
  - they want to be part of the projects proposed by the municipality within the ICC in which we can bring existing competencies and develop new ones.
  - high interest from stakeholders in the subject and high interest in cooperation:
  - problems mentioned concerned public transport, waste collection, involvement in development projects of the municipality, development of separate waste collection infrastructure and their recovery, reducing pollution through the development of projects and solutions
  - based on their input, a presentation was created and presented at the Stakeholders workshop (available in Romanian)

- Reflections from the stakeholders in the workshop
  - A total of 12 participants attended the workshop, most of them also being present at the bilateral meetings
  - The summary of the bilateral discussions and of the enablers' survey were presented during the workshop
  - The vision of the project developed in the needs assessment seminar was further refined

City Ecosystem

What stakeholders bring and how they work together – what capabilities different parties are bringing to the table

- Coming together to realise potential
- Joint responses to common challenges
- Based on a bottom-up approach, the strategies go back to the initiative of stakeholders from different ecosystems seeking to join forces in the most efficient way in order to address common problems.
- Shared overarching objective of embedding the existing resources, structures and legislation in a framework maximising their benefits for strengthening purposes
- Iași Municipality acts as a facilitator, aiming to support collaboration between actors at all levels and adding resources and political momentum in the process.

City Ecosystem

- Proposals from the stakeholders in the workshop:

-Continuous collaboration is necessary

-A circular economy model is to be adopted

-Development of alternative transport

-The green initiatives platform for each domain / ecosystem in the strategy

-Open Day to see how garbage is collected and processed. The cars are marked with the name of the collected fraction

-Introduction of traffic simulators

-Education/population awareness. Involving schools, school inspectorate, introducing special classes in the education platform

-Construction of platforms: the population raises the problem, the citizens seek the solution, the administration pays and implements

-Public-private partnerships

-Creating as many working tools as possible (platforms, applications, etc.)

-Scheduling a hackathon for "digital supports green ideas"

-More meetings and debates with citizens on specific issues

-Create a real time coloured map based on the answer to a weekly / monthly question (Example: What do you think about the cleanliness of the city?)

ICC strategy: Vision and ambition statements

Vision

Towards an innovative city with a green sustainable economy

Ambition statement 1

Transforming Iași Built Environment: Towards Carbon Neutral and Blue-Green City

Ambition statement 2

Developing local deals focused on investment and access to the sustainable natural systems, infrastructure, knowledge and education needed for all people to create and enjoy prosperity.

Ambition statement 3

Promotion of electric cars and related infrastructure.

Development of mobility hubs, bike & car sharing

Ambition statement 4

Channeling the passion, spirit and ingenuity that exists in Iași to develop innovation, identify technological solutions and form the necessary partnerships to deal with immediate and future challenges.

Solution 1

Decarbonisation of transport / Green mobility

Solution 2

Development of green spaces in Iași

Solution 3

Waste management, optimised and smart biowaste collection system in Iași.

City strategy: justification

Considering:

- Integrated Urban Development Strategy Iași;
- Sustainable Urban Mobility Plan for Growth Pole in Iaşi;
- Sustainable Energy Action Plan;
- Air Quality Plan in Iași Municipality, for PM10, period 2018 – 2023;
- Energy Efficiency Improvement Program of Iași Municipality;
- Legislation in Romania on air quality, carbon dioxide emissions reduction and energy efficiency

The city of Iași has established as its mission the transformation into a green city, to improve the quality of life of citizens, urban efficiency, while ensuring the sustainability aspects of Iași city at the economic, social, and environmental levels. This is the reason to prioritize the three solutions proposed to be implemented through ICC project:

1) Decarbonisation of transport / Green mobility;
2) Development of green spaces in Iași;
3) Waste management- Optimised and smart biowaste collection system in Iași.

These solutions complement each other and combine educating citizens with the technology and local infrastructure to transform the city of Iași into an efficient, resilient and sustainable city. The biggest challenge is that of expansion (the city of Iași being the second city in terms of population in Romania and declared by the EBRD as a magnet city), which entails a higher energy consumption and the production of more waste.

City strategy: justification

The proposed solutions aim to reduce greenhouse gas emissions while increasing the area of green spaces. We proposed that the reduction of greenhouse gas emissions be achieved by decarbonising public transport (increasing the fleet of zero-emission vehicles - electric buses and trams, developing alternative transport - introducing scooters and electric bicycles, developing specific applications) and proper waste management, at the same time as educating citizens for selective collection.

The solutions adopted by the CCI will transform urban transport into a sustainable one, supporting pedestrian, bicycle and other alternative forms of transport to the detriment of own car travel. The expansion of green spaces will help us cope more easily with urban climate change.

Last but not least, the intelligent solutions developed will make life easier for the citizens of Iași, allowing them to plan their travels, activities and communicate with the city.

It was intended that each solution involved be scalable and open, allowing its extension and interconnection with other solutions as they were, are or will be developed.

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Iași : Ambition and roadmap

ICC Transformation

February 2021 to May 2021

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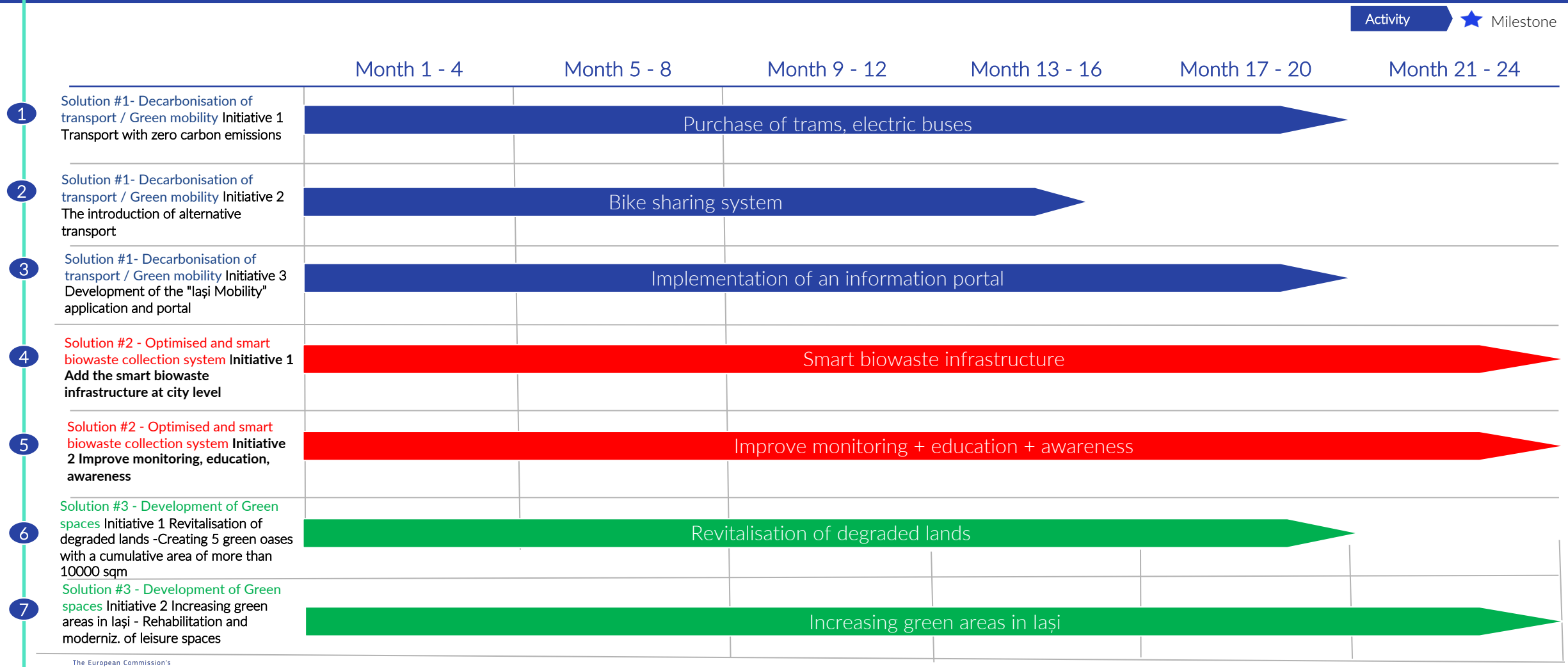
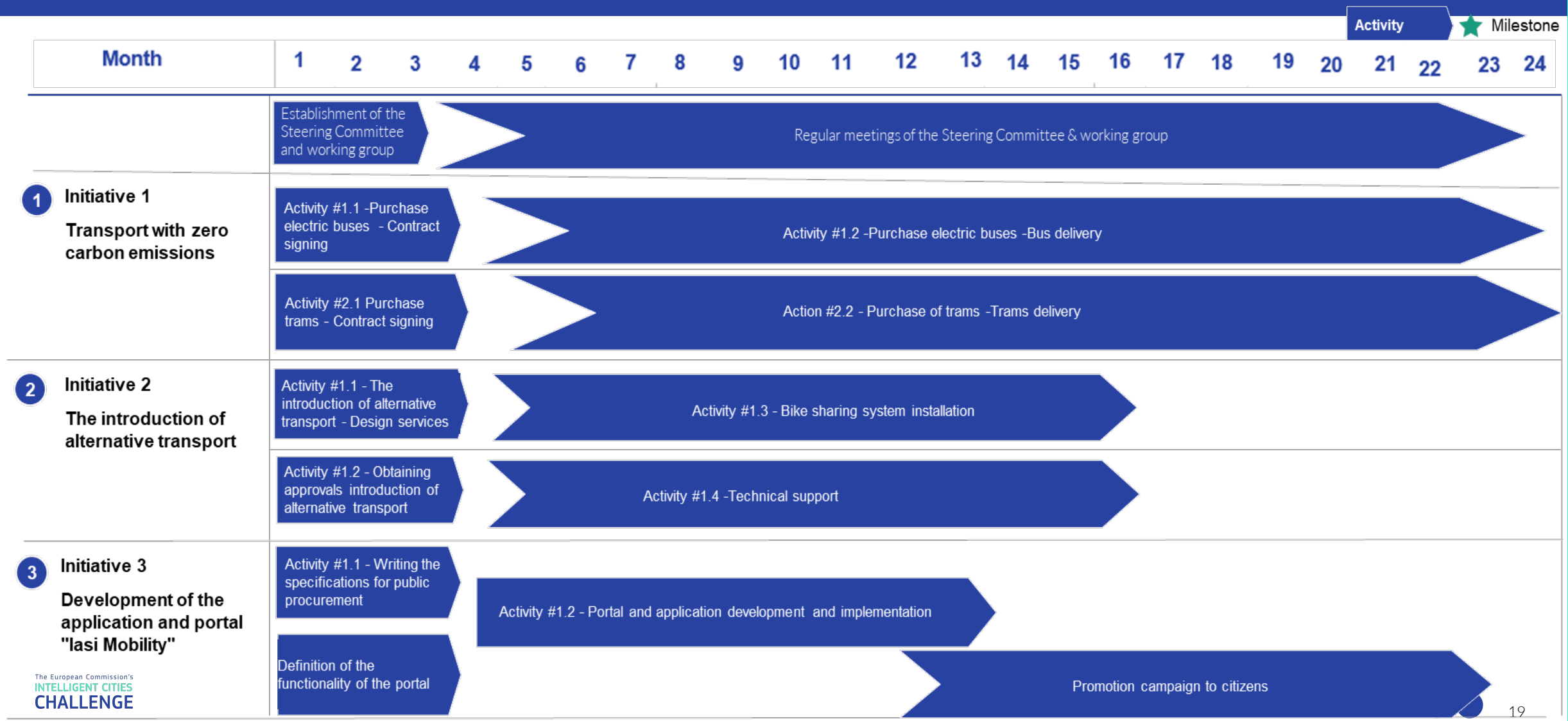
High level implementation roadmap (“10000m plan”)

Each initiative is linked to a corresponding goal. The focus is placed more on the individual initiatives.
Even though there were resource limitations, certain tasks were not prioritised over others because they were from different budget lines, distinct projects.



High level implementation roadmap for Solution #1- Decarbonisation of transport / Green mobility ("10000m plan")



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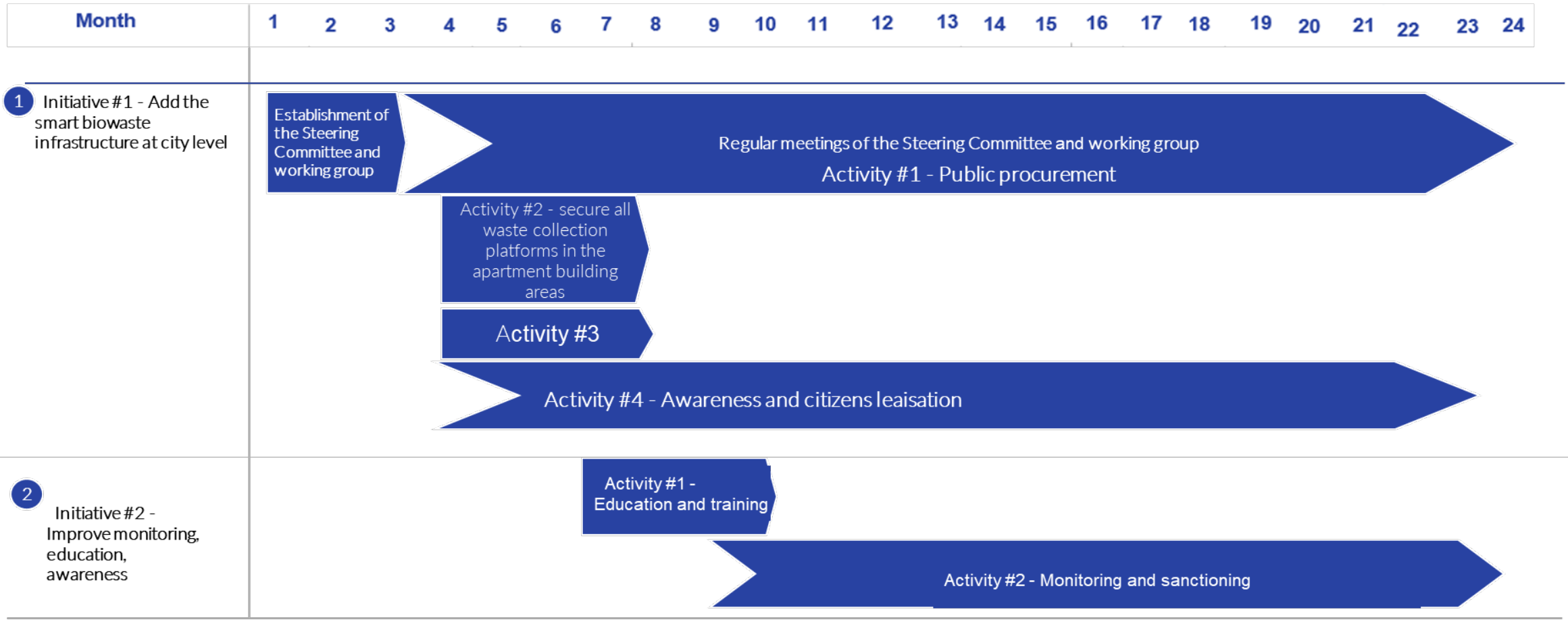
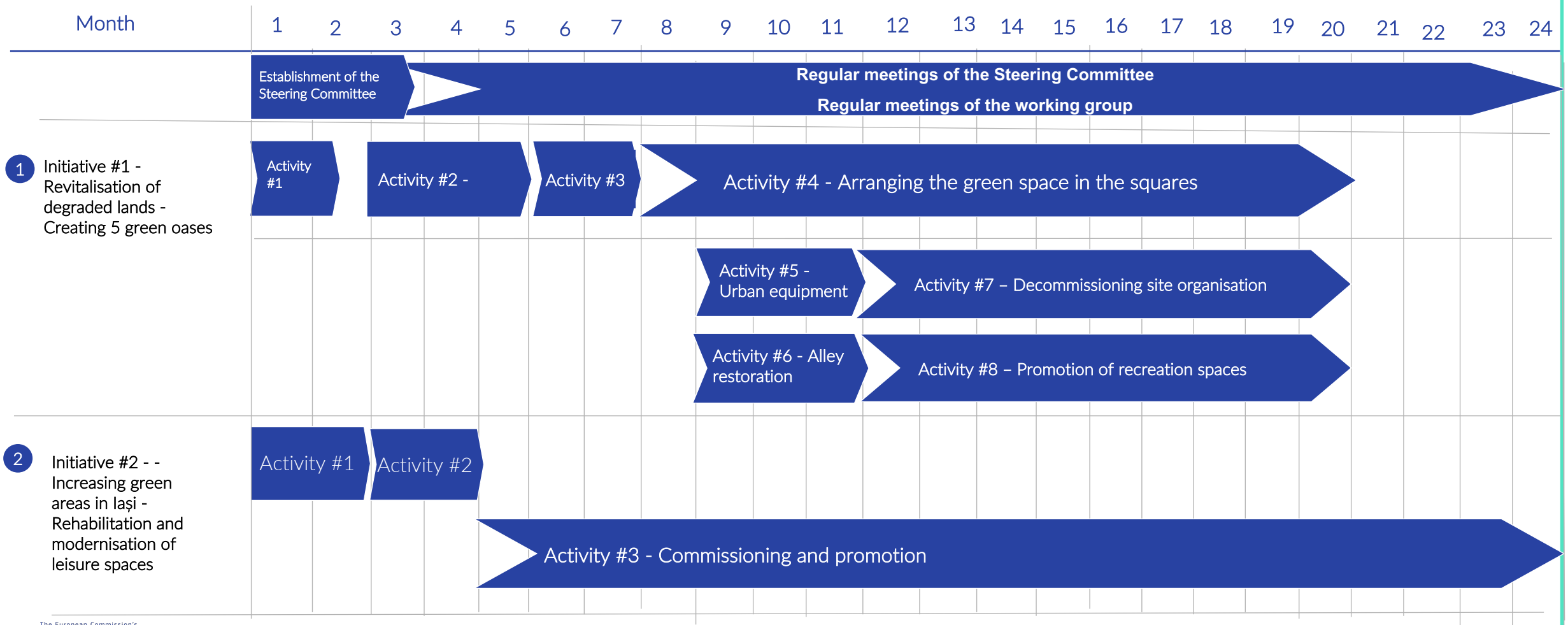
High level implementation roadmap for Solution #2 - Optimized and smart biowaste collection system ("10000m plan")



High level implementation roadmap for Solution #3 - Development of Green spaces in Iași ("10000m plan")



Initiative charter - Solution #1 - Decarbonisation of transport / Green mobility

Strategy

Description

-i. #1 - Public transport with zero carbon emissions: Purchase of 20 -12 m electric buses, 24 - 10 m electric buses, 44 slow charging stations and 13 fast charging stations, 16 trams with lengths of 30 m.

–i. #2 - The introduction of alternative transport: Procurement and delivery of machinery, equipment and endowments for the implementation of an alternative urban mobility system using automatic bicycle rental stations

-i. #3 - Implementation of an information portal: creation of a portal with updated information about public and alternative transport in Iași, with open data and useful applications for citizens

Link to vision

Towards an innovative city with a green sustainable economy

Link to ambition statement

The ambition statement the solution links to

Ambition statement 3 & 2

Expected impact and timing

-i#1: GHG emissions will decrease, for each year by 746 tons of CO2 equivalent per year; timing 20 months

-i#2: 800 bicycles / scooters in sharing mode (of which 3% electric); timing 15 months

-i#3: 1.000 users, minimum 5 articles / information / month taken from the media; timing 20 months

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Stakeholders involved

Solution lead:

Iași Municipality

Solution working team:

Public Transport Company

&

Iași Municipality

Contributors:

- i. #1: Public Transport Company
- i.#2: Public Transport Company and Tehnopolis
- i.#3: Public Transport Company and Al. I. Cuza University

Risks and mitigation

-i.#1: lack of offers for public procurement, non-delivery of buses or trams on time

-i.#2: lack of offers for public procurement, delay in obtaining building permits; delay in commissioning the system

-i.#3: uneven and delayed updating of information; low promotion of the platform

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

-i. #1: 72.000.000 euro European funds, the state budget and the local budget

-i. #2: 3.600.000 euro European funds, the state budget and the local budget

-i. #3: 500.000 euro European funds, the state budget and the local budget

Solution maturity outputs

- for initiative #1: number of electric bus charging stations (25)
- for initiative #2: on-demand bikes per 1,000 people / month
- for initiative #3: Functional portal and application - Availability of public transport passenger information systems

City performance outcomes and impacts

- for initiative #1: electric buses and trams in total means of public transport
- for initiative #2: tons of CO2 emissions from diesel vehicles (public transport); tons of CO2 emissions from gasoline vehicles (public transport); number of bicycles / scooters in sharing mode.
- for initiative #3: the project used opportunities to raise environmental awareness and to educate on sustainability and the environment

Initiative charter - Solution #2 - Optimised and smart bio-waste collection system

Strategy

Description

-i. #1 - Add the smart biowaste infrastructure at city level:
~Purchase of smart biowaste infrastructure -100 000 RFID food waste kits consisting in 25 l + 10l aerated bins and 15 mil food-waste paper bags
~Securing the collection platforms: 800 video cameras, 1500 access cards, 25 PAYT units for the garbage trucks, 1 software
-i. #2 - Improve monitoring, education, awareness:
(305 000 informed citizens)
~A dedicated page/forum/app for people to ask questions, share ideas, identify nonconformities
~Training for the SALUBRIS garbage truck drivers and collectors
~Set up 4 monitoring teams: ENVI Guard and Local Police

Link to vision

Towards an innovative city with a green sustainable economy

Link to ambition statement

The ambition statement the solution links to

Ambition statement 1 & 2

Expected impact and timing

15 months

Stakeholders involved

Solution lead:

Iași Municipality

Solution working team:

Iași Municipality
SALUBRIS

Contributors:

SALUBRIS

Risks and mitigation

-i. #1: insufficient and/or inadequately trained waste workers, low implication of the citizens

-i. #2: insufficient monitoring/sanctioning reps, low implication of the citizens

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

-i. #1: 2,000,000 EUR, National Recovery and Resilience Plan (PNRR), European funds, the state budget and the local budget

-i. #2: 300,000 EUR, PNRR, European funds, the state budget and the local budget

Solution maturity outputs

~ increased by minimum 80% the number of bins for waste sorting, number of awareness- raising activities and number of participating employees
~increased the biowaste bins for door-to-door collection infrastructure (by minimum 100 000 units)

-i. #2: min 80% of the activities completed on time (face-to-face meetings, online meetings, webinars, magnetic guides)

City performance outcomes and impacts

-i. #1:
~min. 100 000 people who sort biowaste
~ min. 50% of city's solid waste that is recycled

-i. #2:
~secure 100% of the existing collection platforms

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Initiative charter - Solution #3 - Development of Green spaces in Iași

Strategy

Description

-i.#1: Revitalisation of degraded lands: creating 5 green oases with a cumulative area of more than 10,000 sqm

-i. #2: Increasing green areas in Iași: creating a park, with distinct functions, for any age category.

Link to vision

Towards an innovative city with a green sustainable economy

Link to ambition statement

The ambition statement the solution links to

Ambition statement 1 & 2

Expected impact and timing

-i. #1: revitalisation of 5 degraded lands with a total area of more than 10,000 sqm, with recreational facilities; timing 20 months

-i. #2: a park of at least 17,500 sqm with at least 30 different areas for leisure; timing 24 months

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Stakeholders involved

Solution lead:

Iași Municipality

Solution working team:

Iași Municipality

Contributors:

-i. #1: Fab Lab
-i. #2: Iconic Cluster

Risks and mitigation

lack of offers for public procurement, delay in project implementation

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

-i. #1: 1.800.000 euro from European funds, the state budget and the local budget

-i. #2: 3,000.000 euro European funds, the state budget and the local budget

Solution maturity outputs

-i. #1: 700 citizens in the spaces / day (average calculated in a month)

-i. #2: revitalisation of degraded lands with a total area of more than 10,000 sqm

City performance outcomes and impacts

-i. #1: increase the surface of green spaces by minimum 25,000 sqm

-i. #2: rehabilitated urban streets with direct access to degraded lands, transformed into green spaces

Key Performance indicators - overview

Solution	Activities – Inputs and actions	Solution Maturity - outputs	City performance – outcomes and impacts
Solution #1 - Decarbonisation of transport / Green mobility – Init #1	Funding committed by city authority Public procurement	~number of electric bus charging stations (25)	50 % of electric buses and trams in total means of public transport
Solution #1 - Decarbonisation of transport / Green mobility – Init #2	Funding committed by other city ecosystem players	~37 of on-demand bikes per 1,000 people / month	tons of CO2 emissions
Solution #1 - Decarbonisation of transport / Green mobility – Init #3	Funding committed on initiative in partnership with other ICC city Experimentation and testing with stakeholders	~functional portal and application - Availability of public transport passenger information systems	90 % of activities completed on time
Solution #2 – Waste management Optimised and smart biowaste collection system in Iași – Init #1	Funding committed by city authority Public procurement Experimentation and testing with stakeholders Increase recycling rate	~1 biowaste collection / family 100 000 RFID food waste kits consisting in 25 l + 10l aerated bins and 15 mil food waste paper bags. # of raising awareness activities	90 % of activities completed on time
Solution #2 – Waste management Optimised and smart biowaste collection system in Iași – Init #2	Funding committed by other city ecosystem players Experimentation and testing with stakeholders	~ 305 000 informed citizens. ~ a dedicated page/forum/app for people to ask questions, share ideas, identify nonconformities. ~ training for the SALUBRIS garbage truck drivers and collectors ~ set up 4 monitoring teams: ENVI Guard and Local Police.	80% of the population equipped with biowaste infrastructure Securing of collection platforms: 800 video cameras, 1500 access cards, 25 PAYT units for the garbage trucks, 1 software, 90% of the population informed/educated 90% of the collection platforms secured
Solution #3 - Development of Green spaces in Iași – Init #1	Funding committed by city authority	700 citizens in the spaces / day (average calculated in a month)	increase the surface of green spaces by minimum 25,000 sqm
Solution #3 - Development of Green spaces in Iași – Init #2	Funding committed by other city ecosystem players	revitalisation of degraded lands with a total area of more than 10,000 sqm	rehabilitated urban streets with direct access to degraded lands, transformed into green spaces

Governance structure for roadmap implementation

Steering Committee

solution #1: Iași Municipality
solution #2: Public Services Iași
solution #3: Iași Municipality

PMO

solution #1: Iași Municipality, Public Transport Company
solution #2: SALUBRIS, Public Services Iași
solution #3: Iași Municipality

Core team

solution #1: Public Transport Company, Iași Municipality
solution #2: Iași Municipality
solution #3: FabLab, Iconic Cluster, Iași Municipality

Solution 1
Public Transport Company
&
Iași Municipality

Solution 2
Salubris
&
Iași Municipality

Solution 3
Iași Municipality

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Section

3+4

Iași : Impact

ICC Transformation

February 2021 to May 2021

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Impact executive summary

By the help of ICC, we were able to collaborate with the stakeholders involved in the three projects we developed. They understood the importance of implementing these projects for the city, this being one of the factors that led to the development of projects in more directions than originally considered.

For example, Salubris has managed to become the most digitised sanitation service in Romania: it has garbage collection applications from companies, the "Clean my street" application, garbage cans equipped with a chip that measures the amount of garbage collected and invoices it automatically, the possibility of monitoring the fleet of sanitation machines, garbage cans that detect when they are full, garbage bins, wi-fi compactors, secured garbage collection platforms, etc.

Importantly, working with stakeholders in the ICC program has led to the development of collaborative relationships and generated new project ideas for the future. We were in a way favoured over other ICC cities, because we are a DCC city and we had formed a Digital Council for Digital Transformation that gave us full and best support through our ICC.

The establishment of the KPI was perhaps not the most inspired, because at least the performance indicators of the city are difficult to monitor, but we strive to complete the implementation of projects in the near future and achieve the proposed objectives.

Assessment of city performance - progress against KPIs

City performance	Where we started (2020)	Midway through the challenge (2021 / 2022)	Final results (2022 / 2023)
1 KPI 1 Air pollution	The city of Iași was the most polluted city in the country, after Bucharest.	Streets and degraded urban spaces were rehabilitated, the area of green spaces increased considerably.	In the last 8 months, the PM2 and air pollution indicators are within normal limits.
2 KPI 2 Alternative transport	Apart from the electric trams, the entire public transport fleet was aging, mainly operating on diesel.	New trams and buses were purchased and 2 electric scooter rental companies entered the city.	25 electric bus charging stations; The purchase of 20 electric buses and 32 new trams.
3 KPI 3 Waste disposal	Big deficiencies in the selective collection of waste and citizens' lack of trust in the sanitation company.	The sanitation company organised activities to raise citizens' awareness of the need for selective collection and an Open Day event.	Approx. 300,000 informed citizens

Assessment of solution maturity - progress against KPIs

		Where we started (2020)	Midway through the challenge (2021 / 2022)	Final results (2022 / 2023)
	Solution 1 - Solution #1- Decarbonisation of transport / Green mobility			
1	electric bus charging stations	outdated public transport fleet, mostly diesel	Funding committed by city authority	50 % of electric buses and trams in total means of public transport and of 25 electric bus charging stations
2	on-demand bikes			37 of on-demand bikes per 1,000 people / month
3	functional portal and application			Availability of public transport passenger information systems 100%
4	passenger information systems			50% electric buses and trams in total means of public transport
	Solution 2 - Optimised and smart biowaste collection system			
1	increased recycling rate		Funding committed by city authority	1 biowaste collection per family 100 000 RFID food waste kits consisting in 25 l + 10l aerated bins and 15 mil food waste paper bags.
2	population equipped with biowaste infrastructure			80% of the population equipped with biowaste infrastructure
3	securing of collection platforms			90% of the population informed/educated 90% of the collection platforms secured 800 video cameras, 1500 access cards, 25 PAYT units for the garbage trucks, 1 software
1	**Solution 3 - - Development of Green spaces**			
	increased the surface of green spaces by minimum 25,000 sqm		Funding committed by city authority	65 % of the desired increase of the surface of green spaces by minimum 25,000 sqm has been achieved
2	rehabilitated urban streets with direct access to degraded lands			55% of the desired rehabilitation of urban streets and lands

5 key lessons

Lesson	Reflections
1 Don't count your chickens before they hatch!	Although the ambitions were high and most works were negotiated with subcontractors, approaching contracting stage, the pandemic situation and later the Russian-Ukrainian war affected badly the suppliers and material prices. These factors led to the impossibility of performing contracts on time.
2 Setting ambitious objectives is not the best strategy for public management	For example, with respect to the green spaces solution, the bar was set too high, minimising the specific characteristics of public tendering which would directly affect the implementation time.
3 Don't approach large public projects without having the funding secured	The occurrence of unforeseen expenses would increase the percentage of non-eligible expenses and bring a negative leverage on the city budget.
4 Integrated projects require a different project management approach	The green mobility solution should, for instance, have had a top own approach instead of bottom up. The later influenced negatively the implementation, because the puzzle image was not clear from the very beginning and when the pieces were put together without taking into account the critical path, the whole project was delayed (for example setting up online applications for e-bike rental and before finishing construction for bike lanes in the city).
5 Collaboration with other European cities	Public project management represents a major challenge and many mistakes can be avoided by learning from other cities experiences. The problem is that open interaction with other cities is difficult due to lack of payed time and low interest in sharing inside information.

Reflections on city collaborations

We were not able to initiate collaborations with other cities because we noticed a low interest in sharing insider information and some of our mailings haven't received any feedback.
However during the city labs we could exchange some valuable information and share negative experiences to learn from.

Commitments

Commitments to on-going resources	Commitments to on-going collaboration	Commitments to on-going KPIs
Some of the projects started on the ICC will be necessarily completed because there are contracts signed both with private companies supplying products or providing services, as well as with the Municipality of Iași and with the European Commission to obtain non-reimbursable funds.	Collaboration with the cities of the European Union is inevitable, it has become a way of working for us as a local public institution. Currently, we implement several projects with multi-national collaboration, among them Digibuild, with cities from 10 European countries and we are in the process of applying for another interesting project on the Horizon, AntifragiCity, where there are partners from 15 countries. These are just a few examples of collaborations with other cities, specialised structures of the Municipality of Iași working on twinning with other localities similar to us.	The municipality of Iași has the financial resources to complete the projects provided in the budget, the human resources allocated through project teams and we will continue with the transformation of the city into a green, clean and sustainable city, thus respecting all the assumed indicators.

3 Year plan - ambitions

Building on the ICC, what would will the city aim to achieve in 3 years time?	(1) The city should have an infrastructure suitable for green transport (electric, electric bicycles, car-sharing, trams, electric buses), being practically a mobility hub, the bicycle rental stations should be in the same place as the passenger stations of the means of transport transport so that mobility to any area of the city is covered (2) The creation of structures for the development of local businesses based on innovation, artificial intelligence, latest generation technologies. We have already completed the pre-feasibility studies for the regional Artificial Intelligence Center and the Brain Institute, we are in the process of implementing a Iași Smart City District area, a neighborhood dedicated to health: the Regional Emergency Hospital, spaces for resident doctors, the Brain Institute, the Heart Institute, laboratories, libraries, study spaces, kindergartens and digital/smart schools, entertainment and shopping places, etc. The spaces will be predominantly pedestrian, forbidden to vehicles with thermal engines, except utility vehicles.
What steps will you take over the next 3 years to achieve these goals?	Pre-feasibility studies have been obtained for most of the previously exposed objectives, followed by feasibility studies and technical projects. The Iași Smart City district was designed with Jaspers, obtaining funds from the EBRD, for the other major objectives we are looking for government or European funding. All objectives are contained in our investment plan approved by the City Council. It follows that as we identify the funds, we will make the purchases and implement them.

3 Year plan - targets

KPI	Category	What commitments will the city make to this end?
1	City Maturity	Air efficiency, energy efficiency and urban mobility strategies implemented or updated. Including, carrying out a traffic study.
2	City Performance	Implementation in the first year of 20% of the strategy projects, in the second year of 30%, in the third year of 50%.
3	City Maturity	Reduction by 10% in the first year, by 15% in the second year, by 25% in the third year of school dropout and functional illiteracy.
4	City Performance	First year implementation of the virtual library. Realisation in the first two years of a pilot project - the digital class - for a digital school. In the third year, all classes, from all schools in the Municipality will have the electronic mark records and online teaching systems.
5	City Performance	In 3 years, the completion of feasibility studies, technical projects, obtaining approvals, authorisations and starting public procurement for the implementation of the Regional Research Center for Artificial Intelligence and the Brain Institute projects.

The European Commission's
INTELLIGENT CITIES
CHALLENGE

Appendix

Iași : Additional information

ICC Transformation

February 2021 to May 2021

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

City Needs: State of the city – detailed analysis

Lower performance areas - **Liveability**

Key insight

Waste management

The separate collection system is inefficient due to the lack of source collection, proper infrastructure especially in the case of apartment buildings, sanctions, education and awareness.

The recycling rate is slightly lower than the national average of 11%, and way below the European average of 47%.

Data points

Waste management

The total municipal waste generated in the first nine months of 2020 is 84,816 t, from which 13,308 t were sorted.

The sorting rate is 15.69% out of which only 10.68% is recycled, meaning that the quality of sorted waste is average and that people's involvement is low.

Interpretation

Waste management

Lack of motivational instruments such as a mandatory "Pay-as-you-throw" system implemented at the city level, an efficient source sorting of waste that includes the sorting of 5 types of waste (paper/cardboard, plastic/metal, glass, biowaste, residual) that are further sorted by the waste operator, secured waste collection points in the case of apartment buildings. Users must be identified (e.g. homeowners associations) in order for sanctions to be properly applied.

Any knock-on consequences on other city performance areas – is it a contained issue or does it have far reaching consequences? The inefficient waste collection had a direct impact on the quality of life of the citizens, it affects the air quality especially in the case of illegal waste burning or littering. Considering there are high quantities of waste that are landfilled, there is a risk of water and soil contamination due to the leaks of toxic levigate.

So what?

Waste management

The city public authorities are aware of the issues and are willing to improve considering that the city can influence the waste collection performed by the operator - public company and also can influence the citizens behaviour by adopting motivational instruments and enforce local and national legislation.

The issue has a high significance because it affects the air, soil, water quality. Waste sorting should be improved in order to reduce pollution, conserve valuable resources and produce clean energy by implementing Anaerobic Digestion technologies.

In light of everything observed above, the city considers the improvement of waste sorting capacity to be a key area of performance for the ICC strategy.

City Needs: State of the city – detailed analysis

Lower performance areas - **Mobility**

Key insight

Alternative transport

There is no alternative transport in Iași.

There is no network of alternative transport belonging to the municipality, complementary to the existing public transport.

Data points

Alternative transport

- 42 kilometres of bike lanes located exclusively on sidewalks,
- 56% of citizens walk
- 55% of citizens choose public transport
- 40% use their personal car regularly or very frequently
- 11% use the bicycle
- 72% said they would prefer to use public transport if there was an efficient infrastructure and if the problems with frequent congestion (especially during peak hours), insufficient public transport vehicles and long arrival times would be solved
- 26.2% would use the bicycle if there was an easy rental system and a good network of bike lanes.

Interpretation

Alternative transport

Currently, the Municipality of Iași does not have an integrated bicycle rental system as an alternative to own car transportation, that can easily connect with public transport.

In order to align to the European trend regarding the development of urban mobility, the Municipality of Iași should implement an intelligent bicycle transport system as part of the Smart City / Smart Mobility concept and that can facilitate the sustainable development of the community.

An alternative public transport system would decongest traffic and reduce pollution in central areas, increasing the quality of life.

So what?

Alternative transport

A “Bike sharing” solution could be adopted by the inhabitants because it is faster than walking, cheaper than a taxi, easier to access than buses and trams, much cheaper than a car, but it can also be combined with all the transport means.

The Community would gain the following benefits:

- an alternative system of individual transport, oriented on travellers and their need for mobility, which thus contributes to the efficiency of travel in congested areas and to the reduction of polluting emissions
- the development of transport connexions by locating bicycle stations in the vicinity of public transport stations, in park & ride car parks and intermodal transport terminals, and the integration of the ticketing system with public transport.

City Needs: State of the city – detailed analysis

Low performance areas - Built environment

Key insight

Built environment

- The sustainability and energy efficiency of the built environment is low especially in the case of public buildings and the existing old communist residential building stock.

- The main inefficient and outdated elements are the building shell, district heating system and the public lighting.

- The local industry is a combination of textile manufacturing and e-services such as call centres and IT.

- The pressure on the existing building stock and new one is related to the growing migration of people that learn, live and work in Iași. The World Bank considered Iași the third migration regional centre and one of the four main regional poles with a magnetic index of 10.51, placing the city on the sixth place at national level.

Data points

Built environment

The majority of the built environment was delivered during the communist period according to outdated building norms. The building energy rehabilitation implemented for the past years covers less than 20% of the total area.

The public building stock consists of 254 buildings, the majority needing refurbishment works. As of 2018, 28,,514 users, of which 27,966 apartments and 548 companies and public institutions were connected to the centralised district heating. In addition, over 150,000 sqm are or/and will be connected to district heating until 2025.

Also, the public lighting system is 95% inefficient and outdated with over 18,000 light bulbs that consumed 10,358 MWh in 2012.

Interpretation

Built environment

- The current state is mainly the result of the communist heritage and poor maintenance during the past 30 years.
- It affects the standard of living, the local public budget and the magnetism of the city.

So what?

Built environment

- The city can influence all of the solutions focused on the public buildings and infrastructure.
- Improvements proposed below will have a positive impact on the sustainability of the built environment.

The following should be prioritised:

- energy audits for all public buildings. including education institutions
- the rehabilitation and modernisation of the district heating system
- modernisation of the public lighting system - LED technology.
- LED systems in all the public buildings.
- Building Management Systems in all public buildings.
- Anaerobic Digester to produce renewable fuel – min. 30% renewable energy sources requested by the NZEB legislation.

City Needs: State of the city – detailed analysis

High performance areas - **Liveability**

Key insight

Health infrastructure

Mens Sana in Corpore Sano

Smart Healthcare is a must for any community!

Data points

Health infrastructure

In 2019, in Iași, there were:

- 5534 beds in public hospitals
- 707 beds in private hospitals
- 126 beds in private specialised medical centres
- 44 beds in private dialysis centres

Medical units:

- 21 hospitals
- 391 dental clinics
- 251 pharmacies
- 216 specialised medical units
- 209 medical laboratories
- 194 family medical offices
- 166 specialised civil medical societies
- 149 civil medical dental societies
- 88 school medical units
- 87 dental laboratories
- 66 civil medical societies

Interpretation

Health infrastructure

The health and education needs of a community will always be a priority, both for immediate well-being and as a sustainable and responsible "investment" in the medium- and long-term future of the community; in this context, the E-Health chapter is being developed around the world every day to improve medical and social services; by involving information and communication technologies (ICT) it is desired to increase the quality without bringing additional unaffordable costs.

The field of E-health can be useful both in coordinating applications that directly target the medical act and optimising the concept of "patient centred care", and in improving the training methods for all categories of medical staff; IT platforms for disseminating medical information from centres of excellence to all professionals interested in benefiting from this expertise, starting from the updating of educational curricula, to the study of procedures through video demonstrations.

So what?

Health infrastructure

Realisation:

- Regional Emergency Hospital
- Iași Smart District, a medical campus
- Smart Medical City virtual
  - development of applications for varieties of pathologies or multidisciplinary approach and interconnection between investigation and therapeutic plans that involve the participation of several medical specialties in the management of rare pathologies,
  - creation of cloud-type databases with up-to-date medical information,
  - quick access to the latest literature,
  - alerts via smart applications,
  - applications that make medical information accessible to patients,
  - interactive applications can facilitate medical education programs for citizens,
  - telemedicine.

City Needs: State of the city – detailed analysis

High performance areas - **Mobility**

Key insight

Digitalisation of public transport

Digitised public transport = efficient and fluid traffic.

Public transport needs new public policies issued by local authorities, linked to the needs and habits of travellers, to be more efficient and to ease traffic, which should capitalize on the benefits of digital technologies.

Data points

Digitalisation of public transport

- number of passengers 2020: 59,227,422
- number of passengers connected to the internet in 2020: 15,762 registered, 275,251 logs / uses
- number of electric vehicles: 124
- number of Euro 6 vehicles: 100
- number of me Euro 2÷5 vehicles : 46
- number of tram routes: 8
- number of bus routes: 24
- total number of stations: 399
- number of stations equipped with information panels: 26
- number of transport vehicles equipped with on-board computer, surveillance cameras, information panels, audio systems: 100
- Open data
- Mobile applications: 2

Interpretation

Digitalisation of public transport

Public transport planning strategies must answer the question: how can we persuade people to behave in a correct way, from an economic and social point of view?

Urban transport policies must be viewed in relation to the national transport policy, in order to ensure a coordinated planning and implementation of digital solutions:

- E-ticketing
- Integrated applications for public and alternative transport
- Connectivity: free wi-fi
- Predictability: information panels
- Accessibility: IoT for people with hearing and vision deficiencies

So what?

Digitalisation of public transport

According to a study by EY Romania, the "traveller of the future" is interconnected, expects a perfect integration of transportation options, has a flexible work schedule and a "peak hour", considers cycling and walking straight viable options and has a personal vision of mobility.

This means more than just studying the number of people using a specific public transportation. While the number of passengers for a specific way of transport reflects individuals' behaviours and mobility options, it does not adequately represent the new "personal mobility".

City Needs: State of the city – detailed analysis

High performance areas - **Economy**

Key insight

Productivity

By changing the economic standards, Iași has the unexpected chance to accelerate its development and to significantly grow economically, through technology and digitalisation.

Data points

Productivity

- **Iași Gross** Domestic Product (Estimates of the National Commission for Strategy and Forecast in local profile - December 2019, based on data from 2018) - 6.89 billion Euro
- 3.14% of national GDP
- 30.54% of regional GDP
- 7th place nationally
- 1st place at regional level

Gross Domestic Product per capita (estimates of the National Commission for Strategy and Forecast in territorial profile - December 2019, based on data from 2018)

- 8,691 euros
- 76.69% compared to the national average
- 122.74% compared to the regional average
- 19th place nationally
- 1st place at regional level

Interpretation

Productivity

Iași has the chance to increase its economic competitiveness in a relatively short time, if it will focus on accelerating digitalisation and convergence towards a technology-based economy.

The digital economy could represent, in 2030, at least 20% of the Gross Domestic Product.

Significant economic development over the last 20 years, based on exports, foreign investment, relatively cheap workforce and especially consumption, risks turning into a disadvantage in the coming years, in the context of significant changes in the world economy.

The COVID-19 pandemic has charged the way economic activities are perceived. In the context of the economic shutdown and social distancing measures, the economic environment has been practically forced to take the step towards digitising activity.

So what?

Productivity

Workforce is no longer cheap.

The main specialisation in Iași is IT.

The need is to focus on real development of digital skills, automation and digitalisation of processes.

The focus on digitalisation and automation of production could lead to GDP growth and creation of new jobs.

Most jobs would be created in activities that involve data processing and use, support and programming activities. Digitalisation will also bring a significant increase in the skills of employees in the economy, who will be forced to use online applications or other technological tools in their daily work.

The highest digitalisation potential is the start-up ecosystems, currently undersized.

City Needs: bottom-up perspectives

Stakeholder views

Strong points:

- Tax reduction on buildings for A class buildings which have an official "green" building certification (Decision of the Local Council regarding the approval of a state aid scheme for the taxpayers of Iași Municipality for the 2019 – 2021 fiscal years)
- Iași has a strong academic environment
- Iași has sensors and applications that can measure air quality
- PhD students develop applications to improve the quality of the environment by traffic improvements
- The IoT area in the field of telemedicine is emerging
- The city of Iași has reached a certain level of maturity and retains human resources
- Salubris developed waste collection infrastructure

Weaknesses:

- Low waste sorting and recycling rate
- Raise public awareness for waste sorting
- Few green spaces
- Bureaucracy barrier
- Lack of a unitary database at the level of institutions
- Inefficient district heating system
- Chaotic constructions without parking lots. The destination of buildings changes, from stores to restaurants (for example), and the parking lots do not exist or are inadequate
- Total indiscipline in traffic, lack of good education
- Inefficient public transport could not persuade the population to give up individual transport
- There is no strategy to increase the synergy of all existing elements in the city

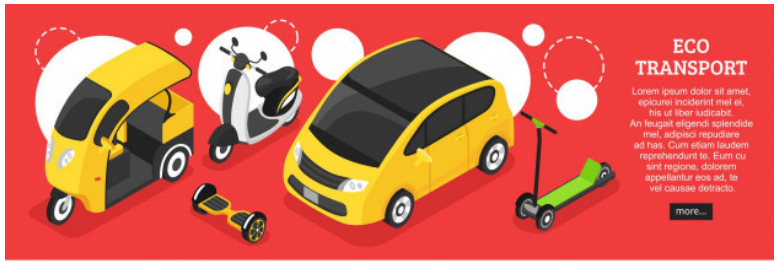
Recap on previous guidance given for solution strategy
Solution #1: Decarbonisation of transport / Green mobility

Focus on the following directions:

1. Purchase of transportation vehicles with "0" carbon emissions
2. Promotion of eco driving to minimize fuel consumption - Introduction of alternative transportation (bicycles, scooters, etc.)
3. Increase of pedestrian areas
4. Introduction of e-ticketing and integrated transportation

Advantages of Green mobility

- is better for health
- is affordable and efficient
- assures a better quality of life
- makes the city attractive – for everyone



Concept

- Reducing dependency on cars
- Improving sustainable alternative modes
- Using available space in more efficient ways
- The need to eliminate or improve transport system malfunctions,
- Modernising and increasing the accessibility and attractiveness of public transport
- Reducing greenhouse gas emissions
- Increasing the quality of life of citizens through an active life
- Development of an alternative individual transport system, oriented to the passenger and his need for mobility, which thus contributes to the efficiency of travel in congested areas and the reduction of pollutant emissions
- Development of intermodality by locating bicycle / scooter stations in the vicinity of public transport stations, in park & ride car parks and intermodal transport terminals, in order to respond to the population demand for mobility services
- Implementation of an information portal and to the bicycle / scooter rental system
- Integration of the ticketing system with that of public transport

Concept

Purchase of transportation vehicles with "0" carbon emissions

A. Acquisition of 16 unidirectional trams with a length of approx. 30 m, with a total capacity of at least 220 seats, of which at least 55 on fixed, non-folding seats, of which min. 6 low floor accessible, plus the tram driver, respectively 6 people/m^2 (calculated at 0.167 m^2/standing passenger).

- After the implementation of the project, GHG emissions will decrease, for each year, by 133 tons of CO_2 equivalent per year at the level of the 5 routes :
  - route 1: -26 tons of CO_2 equivalent per year;
  - route 3: -31 tons of CO_2 equivalent per year;
  - route 7: -20 tons of CO_2 equivalent per year;
  - route 8: -21 tons of CO_2 equivalent per year;
  - route 13: -35 tons of CO_2 equivalent per year.
- The increase in the number of passengers, for all routes, will be approx. 1,200,621 passengers/year, respectively, of 334 passengers/peak hour at the level of the 5 routes:
  - route 1: 64 passengers / peak hour;
  - route 3: 78 passengers / peak hour;
  - route 7: 50 passengers / peak hour;
  - route 8: 53 people / peak hour;
  - route 13: 88 people / peak hour.

Concept

Purchase of transportation vehicles with "0" carbon emissions

B. Acquisition of 20 electric buses with a length of approx. 12 m with a capacity of at least 70 passengers, accompanied by an equal number of slow charging stations (one station for each electric bus), which will be installed at the garages/depots where the new electric buses will be parked and 6 fast charging stations.

- after project implementation
  - ➢ the estimated reduction in emissions (in CO_2 equivalent) will be 997 t CO_2/year,
  - ➢ the estimated increase in the number of passengers will be of 345,487 passengers/year.

Concept

Purchase of transportation vehicles with "0" carbon emissions

C. Acquisition of 24 electric buses with a length of approx. 10 m with a capacity of at least 70 passengers, accompanied by an equal number of slow charging stations (one station for each electric bus), which will be installed in the garages where the new electric buses will be parked and 7 fast charging stations

- After the implementation of the project:

➢ GHG emissions will decrease, for each year by 746 tons of CO_2 equivalent per year, as follows:
  ➢ on route 42 with 442 tons of CO_2 equivalent per year
  ➢ on route 52 with 304 tons of CO_2 equivalent per year.

➢ The increase in the number of passengers was calculated to be approx. 643,228 passenger /peak hour
  ➢ route 42: 365,336 passengers/peak hour,
  ➢ route 52: 277,892 passengers/peak hour.

Concept

- The estimated result is increasing by 3.8% the percentage of bicycle and pedestrian use in 2023, compared to the current situation
- Reducing greenhouse gas emissions by 1.4% in 2023 compared to the current situation
- After the implementation of the project consisting in the purchase of 16 trams,

GHG emissions will decrease, for each year, by 133 tons of CO2 equivalent per year and the number of passengers, for all routes, will be approx. 1,200,621 passengers / year, will increase respectively, of 334 passengers / peak hour at the level of the 5 routes

- The purchase of 20 electric buses will lead to an estimated reduction in emissions (in CO2 equivalent) will be 997 t CO2 / year, the estimated increase in the number of passengers carried will be 345,487 passengers / year.

Concept sprint – what does the solution implementation look like?

1 Prompt: The key features

Green mobility

Short term

Design (Functions and technology options)

- documentation to purchase "0" carbon emissions transportation vehicles
- energy source, charging/ refuelling strategy and interface, on-board storage, drive motor and topology, bus type as well as cooling and heating
- market surveys
- operational assumptions

New Shared Mobility

- eCar sharing, Bike sharing
- community ride sharing

City Navigation

- public transport stations & real-time status
- traffic information &real-time
- air quality information

Long term

Digital mobility platform

- Pay-for-trip
- Optimised routes
- Comprehensive automobile parking management;
- City/region managed
- Integrate regional mobility: Train stations, Park&ride, Airport

Public transport fleet digitalisation

- Fleet CO2 Reduction & Compensation
- Driver profiling / Smart & efficient fleet management
- Monetisation of fleet / mobility data

2 Visualisation that helps other groups understand the concept

Function	Options					
energy source	grid				local storage	
	low voltage	medium voltage	high voltage	rail	stationary battery	H_2 tank
charging/ refueling strategy	opportunity	in motion	depot			
charging/ refueling interface	manual (plug, pump nozzle)	pantograph	induction	trolleybus current collector	battery swapping	
on-board energy source	battery: NMC	battery: LFP	battery: LTO	capacitor	H_2 tank (+ fuel cell)	none
drive motor	permanent magnet synchronous	electrically excited synchronous	asynchronous	switched reluctance		
drive topology	central motor	wheel hub motor				
body type	12 m single-deck	18 m articulated	24 m bi-articulated	double-deck		
cooling	electric air-conditioning	none				
heating	electric resistance heating	electric heat pump	fuel heating			

Morphological matrix of available technology options in electric bus systems.

Recap on previous guidance given for solution strategy
Solution #1: Decarbonisation of transport / Green mobility

Business model

Key partners

Who are our key partners?

Which key resources are we acquiring from partners?

Which key activities do partners perform?

- **City Hall,**
- **Alexandru Ioan Cuza University in Iași,**
- **Iași Public Transport Company,**
- **Fablab,**
- **Iconic Cluster,**
- **Tehnopolis,**
- **private companies**

Key activities

What key activities does our solution require to have impact?

How does the solution keep running behind the scenes?

- Purchase of transportation vehicles with "0" carbon emissions
- Construction of smart, modern bus stations
- Introduction of alternative transportation (bicycles, scooters, etc.)
- Increase of pedestrian areas
- Introduction of integrated e-ticketing
- Introduction of special lanes for public transport

Value propositions

What value do we deliver to users?

What value proposition to we deliver to partners?

How does the wider city benefit?

- **Improve mobility**
- **Pollution reduction**
- **Increasing the number of passengers travelling by public transport**
- **Reducing the number of people using individual transport**
- **Increasing the health of the population**
- **Increasing the citizen's degree of satisfaction**

Customer relationships

What type of relationship does each of our users expect us to establish and maintain with them?

Mobility resource provider and optimizer
Mutual respect relationship.

We offer relaxation and security, while citizens are careful and do not damage.

Channels

How do we reach different users involved in the solution?

Direct communication, e-mail, promotion (mass-media), press releases, social networks, City Hall website.

User segments

Who are the different groups who could benefit from the solution?

What differentiates them?

Do they all get the same benefit? Do they all cost the same to serve?

- **Citizens who use public transport**
- **The rest of the citizens from Iași**
- **Tourists**
- **Public transport company**

Cost structure

What are the most important costs?

Which key activities are most expensive?

Estimate: 125 Mil EUR - 130 Mil EUR
The most important costs:

- **purchase of electric transportation vehicles**
- **construction of bus stations**

Revenue streams

Who is willing to pay for this benefit?

Who should pay?

Who can pay?

All the cost City Hall

The European Commission's INTELLIGENT CITIES CHALLENGE

Concept sprint – visualize key actors

1 Prompt: What are the main stages of scale up of your solution? How would you describe its lifecycle? What defines the steps that move between each?

Phase 1 – Preparation and analysis phase
Step 1. Establishment of the project team and stakeholders involved: academia, consultants, transport operators, City Hall (political and technical level). At this stage, decision-makers need to ensure that the key institutions and policymakers support the project's development and contribute to setting up
Step 2. Data Collection and Analysis of the current mobility situation and scenario development of possible future mobility situations. The responsible departments and organisations should plan the technical details. Goal settings
Step 3. Mapping the existing formal and informal transport options. Develop a common vision of mobility.
Step 4. Identify and select measures, which can meet defined objectives and targets. Planning measures
Step 5. Determine clear responsibilities; elaborate the implementation and budget plan.
Phase 2 – Implementation and monitoring
Step 6. Procurement documentation and tender development
Step 7. New Shared Mobility
Step 8. Legal framework: City hall (legal department) / Legal consultancy
Step 9. Development of intermodality by locating bicycle / scooter stations in the vicinity of public transport stations, in park & ride car parks and intermodal transport terminals, in order to respond to the population demand for mobility services
Step 10. Implementation of an information portal and to the bicycle / scooter rental system
Step 11. Walking and cycling-friendly building regulations (minimum requirements for pedestrian access and parking facilities for cyclists, etc.)
Step 11. Communication campaign (press conference, advertising in bus stops / buses, newsletters) : City Hall, press
Step12. Check progress and feed results back in the process.
Phase 4 – maintenance and development
Step 8. Permanent app maintenance: City Hall,
Step 10. Keep track of the benchmarks and promote them to a wider audience: City Hall

Concept

Stakeholders involved

1. Alexandru Ioan Cuza University
2. Iași Public Transport Company
3. Fablab
4. Iconic Cluster
5. Tehnopolis

Concept

Why is *this* the right solution for the city? How does it link to the results of the maturity assessment? How does it fit to the local enablers? What can we say on stakeholder enthusiasm or fit

S0 – The current scenario, doing nothing

S1 - Scenario 1 leads to a motivation to use the bicycle, as an alternative means of travel, due to the extension of the network of bicycle trails and the introduction of rental stations. However, the influence on other means of transport and, implicitly, on greenhouse gases, is minimal.

S2 - Scenario 2 offers a much better outlook. Due to the introduction of intelligent components of the bike-sharing system, both on bicycles and in stations, related to a more variety of bicycle types and, especially, with the implementation of the integrated ticketing system, the scenario leads not only to increase the number of cycling, but also to the increase of intermodality, with effects on the number of users and travel by public transport. The cumulative effect of switching to these two modes of transport leads to a decrease in the number of journeys by personal vehicle, with an impact on increasing the quality of the environment and reducing greenhouse gases.

1 Prompt: What problem is your solution solving for? (think back to the vision)

- lowers the pollution levels of the city with positive effect on the air quality especially due to mitigation of illegal waste burning or littering.
- improves the quality of life, comfort and health of the citizens.
- reduces the risk of water and soil contamination due to the leaks of toxic leachate, considering there are high quantities of waste that are landfilled.
- reduces the negative financial impact on the cleaning services of the city and on the local budget due to the high penalties the city is obliged to pay annually to the Environmental Fund for the lack of performance of the system and for the quantity of waste landfilled.
- contributes to a cleaner and less polluted city.

Concept

- Optimising the solid waste management is an urgent issue with impact on the pollution levels, local budget, citizen's health and the overall esthetics of the city.
- All local enables are impacted at some level by the waste management system, from avoiding the penalties to health benefits.
- All are desiring a cleaner and greener city and are willing to make the effort to contribute. The stakeholder's enthusiasm to contribute is medium to high.

Concept: Optimised and smart biowaste collection system

Solution: Optimise the waste collection system

Short term (12 months)

- implement the biowaste collection infrastructure at source: 2 bins (10 l aerated bin and a 25 l airtight RFID container).
- secure all waste collection platforms in the apartment building areas.
- zone up the city and set up a local inspection team: environment guard inspectors and local police (minimum 4 people per zone) to sanction noncompliance.
- set up a PAYT system: people who sort their waste pay less than the ones who do not or pay per the residual weight generated.
- establish a dedicated page/forum/app for people to ask questions, share ideas, identify nonconformities.
- trainings/education module in cooperation with local/national NGOs and SALUBRIS.
- train the SALUBRIS drivers and pick up reps.

Long term

- Extend the treatment capacity of the existing compost station and/or install an Anaerobic Digestion.
- Improve the MBT and transform into an Material Recovery Biological Treatment station
- set up a PAYT system: people who sort their waste pay less than the ones who do not

Ongoing:

- establish a dedicated page/forum/app for people to ask questions, share ideas, identify nonconformities
- trainings/education module in cooperation with local/national NGOs and SALUBRIS.
- train the SALUBRIS drivers and pick up reps.

Mapping stakeholder commitments and needs can spotlight win-win opportunities

Solution #2
Optimise waste sorting

Description

Implement a smart biowaste collection at city level. Dedicated RFID containers will be offered to citizens along with educational instructions. This will be dubbed by PAYT and sanctions.

Relevant to which city opportunity

...

Benefit to city

Reduces pollution related to GHG emitted by the landfill and reduces the penalties applied by the Environmental Fund and paid by public money.

Stakeholder	Benefit to stakeholder	Contributions to solution	Resources needed from city/other stakeholders
Stakeholder #1 SALUBRIS	Financial benefit from the selling the recyclable goods (PET, metal). Improved reputation performance via innovative principles and holistic approach.	Acquisition and distribution of the collection infrastructure. Education, training.	Legislation improvements
Stakeholder #2 MUNICIPALITY	Avoidance or significant reduction in the annual sanction payable to the Environmental Fund	Legislation improvements, guidance to SALUBRIS Monitorisation, sanctioning, communication, connect with citizens.	Environmental Fund or MFE - funding.
Stakeholder #3 CITIZENS	Better quality of life, cleaner city, healthier grounds	form a critical mass of volunteers	Communication personal and institutional models

Mapping stakeholder commitments and needs can spotlight win-win opportunities

Solution #2
Optimize waste sorting

Description

...

Relevant to which city opportunity

...

Benefit to city

...

Stakeholder	Benefit to stakeholder	Contributions to solution	Resources needed from city/other stakeholders
Stakeholder #4 ENVIRONMENTAL GUARD	Creates the premises for the smart development of the city	Field audit and sanctioning. Identification of obstacles and best practice and report for policy improvement.	Supplementing the number of employees/capacity building.
Stakeholder #5 LOCAL POLICE	Contribution to the strategic development of the city and pollution reduction via fines.	Field audit and sanctioning.	
Stakeholder # 6 UNIVERSITIES	Widening and strengthening the research pool on the circular economy domain.	Collaboration in founding of a Research Center for Circular Economy with focus on the product and system ecodesign.	
Stakeholder # 7 ADIS IAȘI	Potential funding opportunities.		

Recap on previous guidance given for solution strategy
Solution #2 - Optimised and smart biowaste collection system

Waste management - business model

Key partners

Who are our key partners?
SALUBRIS
ADIS IS

Which key resources are we acquiring from partners?
Infrastructure

Which key activities do partners perform?
Acquisition of infrastructure
Education
Treatment

Key activities

What key activities does our solution require to have impact?
- full audit of the waste system
- proper infrastructure acquisition and distribution.
- securing existing waste collection platforms - apartment areas.
- education for citizens
- training for SALUBRIS collectors
- implement PAYT: transition from tax per person to pay per quantity of residual waste generated.
- develop an efficient monitorisation and sanctioning system.

How does the solution keep running behind the scenes?

-

Value propositions

What value do we deliver to users?
- better organised swm system and improved public money usage.

What value proposition do we deliver to partners?
- improved reputation, more cost efficient on medium to long term.

How does the wider city benefit?
- cleaner, healthier, greener city, improved reputation at national and international level.

Customer relationships

What type of relationship does each of our users expect us to establish and maintain with them?
Promotion the success at international level.

Channels

How do we reach different users involved in the solution?
Municipality website
Dedicated platform
Local NGOs such as CIVICA
Local media
City billboards
Public busses

User segments

Who are the different groups who could benefit from the solution?
- citizens
- companies

What differentiates them?
- type and quantity of waste generated. For example, the HORECA will generate more biowaste than households or other companies

Do they all get the same benefit?
Small variations. TBD

Do they all cost the same to serve?
Small variations. TBD

Cost structure

What are the most important costs?
-smart biowaste infrastructure estimated cost:
Food waste: 25 l (3 EUR) + 10l aerated 1.5 EUR) + food waste bags 150 bags/year x paper bags (0.035 EUR) (5.25 EUR) + RFID: **(0.20 EUR)**
TOTAL: 13.7 EUR/household

pr of the collection platforms: 5 EUR/platform
PAYT units: 45000 EUR (TBD)

Which key activities are most expensive?
- smart biowaste infrastructure

Revenue streams

Who is willing to pay for this benefit? **TBD**

Who should pay? **SALUBRIS and the MUNICIPALITY, ADIS Iași - treatment**

Who can pay? **SALUBRIS, TBD**

The European Commission's INTELLIGENT CITIES CHALLENGE

Concept

What are the main blockers and risk and how will it be overcome?

- **RISK 1: low implication of the citizens**
- **SOLUTION 1: communication, education, monitorisation, proper incentives, sanctions.**

Why hasn't this solution happened already?

- **lack of know how and lack of coordination between stakeholders.**
- **SALUBRIS made efforts for the past years, however citizens' involvement is low even on the two fraction sorting.**

What big assumptions does the solution rest on?

- **the premium initial investment in the infrastructure can be amortised from avoiding the penalties to the Environmental Fund.**
- **the city will achieve higher recycling rates.**
- **the city will become cleaner, greener and healthier to live in.**

The European Commission's
INTELLIGENT CITIES
CHALLENGE

Concept

What, at the highest level, are the main stages from today to getting this solution at full impact? What are the 3-5 life stages of this solution?

Phase 1 – preparatory phase

Step 1. Audit of the current situation: infrastructure, number of houses and apartments
Step 2. Planning, tendering and acquisition of infrastructure
Step 2.1 secure and update all waste collection platforms in the apartment building areas
Step 3. Education prior to distribution (1-2 months before)
Step 4. Distribution of infrastructure

Phase 2 – creation of platform - start of the separate collection of biowaste

Step 4. Training for the SALUBRIS collectors
Step 5. Set up monitoring teams: ENVI Guard and Local Police
Step 6. Launch a dedicated online forum and/or an mobile app for people to stay connected.

Phase 3 – launch of the platform - food waste prevention measures

Step 7. Food bank
Step 8. Food waste prevention ongoing education
Step 9. Promote best practice such as local zero waste restaurants, shops etc.

Phase 4 – maintenance and development - extend the capacity for the treatment of biowaste

Step 10. Supplement the existing biowaste treatment capacity: Anaerobic Digestion or increase the capacity for the existing composting plant.
Step 11. Ongoing education, monitorisation and sanctioning.

Recap on previous guidance given for solution strategy

Solution #3 - Development of Green spaces

Concept

What does the solution set out to solve? What is its problem statement? How is this linked to the vision, and any specific data points from the Needs Workshop?

1. **The need to reach the threshold of 26 sq m of green space / per capita** imposed by Emergency Ordinance 114/2007
2. **The need to offer access to all Iași residents to green spaces** such as squares, gardens or parks at a distance of a maximum of 10 minutes walk from the residence
3. **The need to include (public) green spaces in new developments** resulting from the process of converting former industrial platforms into commercial activities, offices, services or green production
4. **The need to reduce natural risk factors** (landslides and floods) and reduce air pollution
5. **The need to highlight the natural resources** of Iași Municipality

Concept

What are the main features of the solution? What should happen? Where? Why? Can we visualize what it might look or feel like?

- Demolition of buildings in an advanced state of degradation located on the grounds subject to interventions, which do not belong to the national cultural heritage
- Construction of pedestrian alleys
- Landscaping (deforestation, gardening, perennial planting / surface lawning, including planting trees and shrubs)
- Creating recreational facilities on parklands (e.g.: special areas for sports, children's playgrounds, etc.)
- Purchase and installation of construction elements such as alleys, gazebos, pergolas, grilles, toilets, maintenance spaces / locker rooms, stages
- Wi-fi connection in public spaces
- Installation of video surveillance systems for the parklands from the project
- Urban furniture (benches, trash bins, ecological toilets, bicycle parking support, fencing, etc.)
- Modernisation of streets that lead directly to the land subject to intervention
- Replacement and / or connection to public utilities of the land subject to investment
- Designing of irrigation system / lighting system for the parklands
- Approvals, agreements, authorisations, studies necessary for the proposed activities will be obtained
- Potential increasing the green area via the green roof solutions where technically possible

Concept

Why is *this* the right solution for the city? How does it link to the results of the maturity assessment? How does it fit to the local enablers? What can we say on stakeholder enthusiasm or fit?

The current situation is characterised by a need to expand the green areas of the city for environment and social benefits. Pollution in Iași requires various solutions in order to improve environmental factors. Additionally, in the public territory of the municipality there are numerous abandoned lands, in a state of degradation, which affect both functionally and aesthetically the related urban landscape. Proper landscaping of abandoned lands would support "green" measures, ensure land's ecological value and good urbanisation. In many Iași zones there is a significant lack of recreation places and playgrounds for children, which causes overcrowding of the main squares (especially in the Copou area) and of the related road surfaces (in this case Carol I Blvd. and secondary streets in the area of squares). Not having a healthy alternative in the vicinity of the home, due to time constraints and transportation possibilities, countless times, the population (both adults, but especially children) spend their free time in front of the TV / computer / phone, to the detriment of healthy physical and mental recreational activities.

Stakeholders

- Salubris
- FabLab
- Iconic Cluster
- Tehnopolis

Recap on previous guidance given for solution strategy
Solution #3 - Development of Green spaces
Business model

Key partners

Who are our key partners?

Which key resources are we acquiring from partners?

Which key activities do partners perform?

- City Hall,
- Salubris,
- FabLab,
- Iconic Cluster,
- Tehnopolis,
- private companies,
- citizens,
- NGO's,
- mass-media

Key activities

What key activities does our solution require to have impact?

How does the solution keep running behind the scenes?

- Demolition of obsolete buildings that do not belong to the national cultural heritage
- Construction of pedestrian alleys
- Landscaping
- Creating recreation facilities
- Installation of gazebos, pergolas, bathrooms, scenes, etc.
- Wi-fi connection in public spaces
- Installation of video surveillance systems
- Urban furniture (benches, trash cans, etc.)
- Connection to public utilities
- Designing of irrigation system
- Designing lighting system for the parklands

Value propositions

What value do we deliver to users?

What value proposition to we deliver to partners?

How does the wider city benefit?

- Increasing the areas of green spaces
- having new places to spend free time
- increasing areas with low pollution
- increase of air quality
- air filtration

Customer relationships

What type of relationship does each of our users expect us to establish and maintain with them?

Mutual respect. We offer relaxation and security, while citizens are careful and do not cause damages.

Channels

How do we reach different users involved in the solution?

Direct communication, e-mail, promotion (mass-media), press releases, social networks, City Hall website.

User segments

Who are the different groups who could benefit from the solution?

What differentiates them?

Do they all get the same benefit? Do they all cost the same to serve?

- the citizens around the green spaces
- the rest of the citizens from Iași Municipality
- small entrepreneurs who can sell various snacks, fast food products or who offer entertainment services (rent bicycles, cars, photos, etc.) or small traders (balloons, toys, etc.)

Cost structure

What are the most important costs?

Which key activities are most expensive?

Estimated: 4,700,000 - 5,000,000 EUR

The most important costs:

- land clearing
- landscaping

Revenue streams

Who is willing to pay for this benefit?

Who should pay?

Who can pay?

All the cost City Hall

The European Commission's INTELLIGENT CITIES CHALLENGE

Concept

Phase 1 – preparatory phase

Step 1. Demolition of buildings in an advanced state of degradation located on the grounds subject to interventions, which do not belong to the national cultural heritage

Phase 2 – creation of platform

Step 2. Construction of pedestrian alleys
Step 3. Landscaping (deforestation, gardening, perennial planting / surface lawning, including planting trees and shrubs)
Step 4. Creating recreational facilities on parklands (e.g.: special sports areas, children's playgrounds, etc.)
Step 5. Purchase and installation of construction elements such as alleys, gazebos, pergolas, grilles, toilets, maintenance spaces / locker rooms, stages
Step 6. Wi-fi connection in public spaces
Step 7. Installation of video surveillance systems for the parklands from the project

Phase 3 – launch of the platform

Step 8. Promotion, press conference
Step 9. Openness to public use

Phase 4 – maintenance and development

Step 10. Contract with specialised companies
Step 11. Permanent monitoring