# The European Commission's INTELLIGENT CITIES CHALLENGE

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# CITY OF VARI – VOULA – VOULIAGMENI Intelligent City Transformation Overview

#### ICC Final Deliverable



#### **Executive summary**

The overarching cities' vision is to create a smart, green and more resilient and sustainable future for their citizens by embracing cutting edge technologies in the areas of citizen participation and government services and green and digital transition.

All citizens have free access to public documents and services, and embrace the digital transition.

What we are trying to do is to improve citizens' daily life; give citizens the chance to be heard and take action; support the green and digital transition.

"e-Government and digitizing public services"

- "Waste management and circular economy"
- "Smart and green mobility / transport"
- "Scaling up renewable energy solutions and energy-efficiency"

The CoVVV will continue its efforts to reduce the total carbon footprint of the municipality and more specific establish effective strategies for the circular economy, renewable energy solutions, and green mobility, while simultaneously aspiring to simplify citizens' lives through e-Government and by digitizing public services.





## **Mayor Foreword**

As the Mayor of the City of Vari Voula Vouliagmeni, from the very first day, I strongly believed that ICC is a long journey of learning, exchanging, growing, and investing in the future.

ICC contributed to the extroversion of the city by introducing us to a European and International audience and by helping us build relations and coalitions that benefit the city in the short and long run.

The dispersal of information between cities enables us to learn from the steps that other cities have taken and adapt them to our own city and our own ecosystem.

CoVVV is a place that embraces tomorrow with open arms, and sees each new challenge as a chance to secure a brighter future for our children, next generation citizens.

To achieve this we apply the following steps:

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- We recognize the environment as our most important asset, so we engage the community and we try to create an army of local experts.
- We are trying to apply agile and innovative solutions and to educate green principles and develop skills.
- We are trying to transform urban spaces and service systems to make them more attractive places for people to enjoy and to adapt to the changes caused by accelerated digitalization.
- We are implementing & offering value added digital services to citizens and businesses 100% of citizens' and business' transactions with CoVVV to be digital / paperless.
- We are promoting energy efficiency and optimal waste management systems and our target is to reduce households' CO2 emissions by 50% and businesses' CO2 emissions by 50%
- We are creating a business-friendly environment to achieve sustainable economic growth.
- We believe that the coexistence and the balance of sustainability's 3 factors, Human Beings, Environment, and Economy is the golden ratio for our future



The European Commission's INTELLIGENT CITIES CHALLENGE

Section

September 2020 to January 2021



# CITY OF VARI – VOULA – VOULIAGMENI : Preparation and assessment

ICC transformation



### Introduction

CoVVV is a mid-size municipality and outer suburb of Athens, the capital of Greece, located approx. 30 km from its centre

It extends to 33.94 km2 and its population is 50.721 inhabitants (26/05/2020 Registry Office)

It spans over 27 km of coastal front from Voula to Varkiza, with dozens of beaches ("the Athenian Riviera").

There is an increasing number of enterprises operating in the tertiary sector, combined with huge investments in the tourism entrepreneurship.

CoVVV's vision is to be the first smart, green and sustainable city in Greece within the next 4 years by implementing citizencentric solutions that embrace common logic, experience and knowledge, based on international standards.

The key motivation and goal of the Municipality is to establish a smart and sustainable society.

Key aspects that define a smart city, such as smartization of governance, energy, construction, mobility, economy, environment, infrastructure, technology, healthcare and living, education and citizens, are CoVVV's main priorities for the city's transformation.



## City needs: State of the city overview

#### The state of CoVVV today

The Municipality in the midst of the economic difficulties arising from the Covid-19 period and the economic results of the war in Ukraine is taking significant steps, not only to maintain and develop all the processes and operations related to Local Green Development and digital governance (new city app, installation of a Lora WAN) but also to constantly take new innovative actions.

For example, the use of drones to control the greenery of the Municipality and the creation of a City Crisis Control Room for issues such as fire, flooding, etc.

#### Key insights from city performance analysis

Higher performance observed			Lower performance observed				
1	Municipal e-services and Citizen participation.	1	Employees training & digital literacy.				
2	Solution-oriented smart technology and applications.	2	Lack of digital skills in the non-digital sector.				
3	The Municipality has a strong commitment in supporting digital transformation		Need for more actions in the green and circular economy.				
4	High standards of living including housing, infrastructure, and services to support family, health, safety,, open spaces for activities.	4	Touristic initiatives & projects.				
5	High degree of utilization of CoVVV's digital services by the citizens. <b>205.000 unique visitors in city's portal</b>		Lack of policies / incentives for households and businesses to reduce energy consumption and CO2 emissions				



### **City Ecosystem**

The ecosystem includes the Municipality departments and directorates with solid leadership, Local Business Community, Citizen organisations, and the local community.

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 4th industrial revolution and after COVID-19 period.

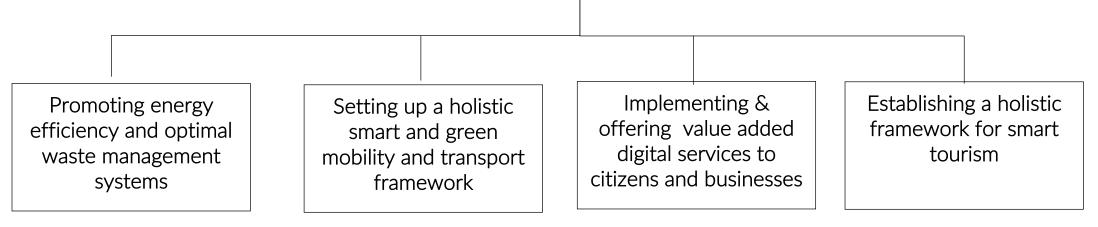
- **Governmental / Public Authorities** responsible for national & local policies in critical areas, such as energy efficiency, recycling, waste management etc (legislation / regulation in these areas, and also provide funding for implementing relevant initiatives), e.g. Ministry of Development & Investments, Ministry of Environment, Attica Prefecture.
- **Local Business Community** users of MoVVV services, valuable partners in identifying city needs in terms of entrepreneurship; The lack of a local trade / commerce / business association is an obstacle in establishing a productive and efficient dialogue with the business community thus there is a need for individual conversations with local entrepreneurs.
- Academia / Research Institutes provide expertise and know how on key aspects of the "smart" city concept, bring experience in the technical interventions contributing and supporting MoVVV to its technical projects and activities in the region, namely: the department of Mechanical Engineering of the National Technical University of Athens (NTUA), Harokopio University, Environmental Center for Development Education and Networking.
  - **Technology / Network Providers** provide "smart" solutions to face the city needs in various areas, e.g. the Public Electricity Company (DEI), private vendors.





### **ICC strategy: Vision and ambition statements**

To become the first truly smart, green and sustainable city in Greece within the next 4 years, through the implementation of applications that will support citizen-centric services, based on international standards, primarily in the fields of energy efficiency, optimal waste management, smart and green mobility, digital services & smart tourism







## **City strategy: justification**

The strategic target of the Municipality is to become the first truly smart, green and sustainable city in Greece within the next 4 years, through the implementation of applications that will support citizen-centric services, based on international standards, primarily in the fields of energy efficiency, optimal waste management, smart and green mobility, digital services & smart tourism.

The main axis of our activities is the coexistence, and the balance of sustainability's 3 factors, Human Beings, Environment, and Economy is the golden ratio for our future.

We are working to

1. Create 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. Create 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.

4. 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.

5. 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. **CHALLENGE** 



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Section

2

February 2021 to May 2021



# CITY OF VARI – VOULA – VOULIAGMENI : Ambition and roadmap

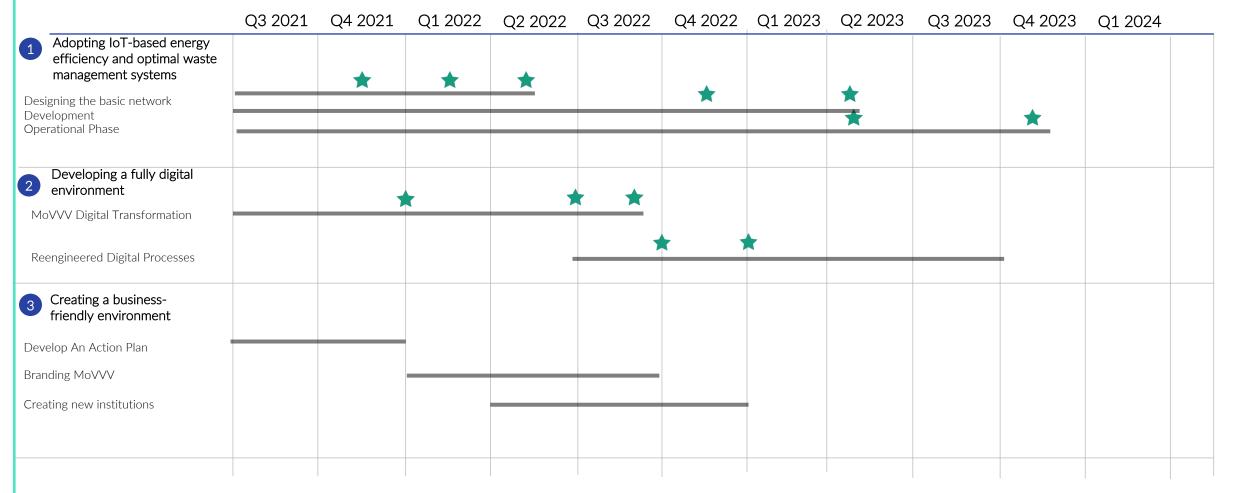
ICC Transformation



# High level implementation roadmap ("10000m plan") 1/2

Activity Milestone

11





## High level implementation roadmap ("10000m plan") 2/2

Activity Milestone

	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024
6 streams source selection     process											
Expansion of the existing "BAYS" and "PAYT Measures to increase the usage of the	-					-					
BAYS & PAYT											
Producing standard soil conditioner											
Expansion of the existing production scheme & entering new markets											
Branding & Marketing of the product				-							

## Rationale to road map

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.

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)



# **Initiative charter** Adopting IoT-based energy efficiency and optimal waste management systems

Strategy		Stakeholders in	nvolved	Inputs, outpu	its, outcomes and impacts	
Description	CoVVV will install in all its vehicles, buildings, schools, parks, garbage bins, and all public spaces sensors that will collect information on various areas of operation, exploiting the Lo.Ra. Protocol. These IoT devices will measure conditions on site and send these measurements to CoVVV servers. The devices will perform actions, based on predefined by CoVVV rules or from instructions received remotely from CoVVV systems'	Solution lead:	Ministry of Environment, Ministry of Development & Investments (provision of funding), Academia / Research Institutes: Technical Consultants in designing and executing the project, Technology Vendors: technical solution provision, installation, implementation and pilot operation, Internal Users?	Source of funding and estimated cost	The MoVVV will be the owner of the system. Funding will be secured through NSRF 2021-2027. Long-term viability of the project is secured through the cost reductions achieved through the improvements in energy and waste management The solution is completed by 60%	
	administrators			maturity outputs		
Link to vision	1. Promoting energy efficiency and optimal waste management systems	Contributors:	Which other entities (at organisation level) might contribute?	0 □ + △		
Ċ	<ol><li>Setting up a holistic smart and green mobility and transport framework</li></ol>		Distance of the block of the bl	No blockers and risk in implementing		
Link to ambition statement	Reduce energy consumption cost Reduce CO <sub>2</sub> emissions Better services to citizens Well-functioning	Risks and mitigation				
Expected impact and timing	All the activities & actions will take place and conclude in the interval 01.2023 – 12.2023					
R						
The European Commission's INTELLIGENT CITIES CHALLENGE					14	

# **Initiative charter** Developing a fully digital environment to provide administrative services to citizens and local businesses

Strategy		Stakeholders involved		Inputs, outpu	uts, outcomes and impacts
Description	tion All transactions and communications of MoVVV with citizens and local businesses will be carried out digitally, all documents submitted by citizens and businesses or produced by MoVVV Services will be kept / stored only in digital form, any document requested by citizens / businesses will be issued and sent only in digital form, all documents already issued by MoVVV		Ministry of Development & Investments (provision of funding), Academia / Research Institutes: Technical Consultants in designing and executing the project, Technology Vendors: technical solution provision, installation, implementation and pilot operation, Internal Users:	Source of funding and estimated cost	MoVVV will be the owner of the system. Funding will be secured through NSRF 2021-2027. Long- term viability of the project is secured through the reductions of costs associated with printing, such as paper, equipment, toner, ink etc The solution is completed by 90%
	services will be digitized and stored in MoVVV's Document Repository, thus allowing easy & rapid access and retrieval to MoVVV employees, citizens and businesses.	Solution working team:	MoVVV will be the owner of the system. Funding will be secured through NSRF 2021-2027. Long- term viability of the project is	maturity outputs	
Link to vision	Eliminating paper from all MoVVV operations will have obvious benefits to the environment, will allow MoVVV officials to perform tasks quicker, smarter and more		secured through the reductions of costs associated with printing, such as paper, equipment, toner, ink etc		
	efficiently, will increase citizens' satisfaction from MoVVV's services and - will reduce significantly the costs associated with printing, such as costs for paper, equipment, toner, ink etc	Contributors:	Ministry of Development & Investments		
Expected impact and timing	All the activities & actions will take place and conclude in the interval 01.2023 – 12.2023	Risks and mitigation	Resistance to Change by some MoVVV employees with limited ICT skills and more bureaucratic attitudes towards the role of the public administration		
The European Commission's INTELLIGENT CITIES CHALLENGE					15

#### Initiative charter Creating a business-friendly environment to achieve sustainable economic growth

Strategy		Stakeholders	involved	Inputs, outputs, outcomes and impacts			
	The proposed solution is based on three main axes: Creating institutions that upgrade and promote the local market, following the internationally successful example of Business Improvement Districts (BIC) Creating an innovation district	600 technolo Local Bu	Academia / Research Institutes & gy vendors (design & implementation) sinesses (operation) Funding authorities of Development & Investments	Source of funding and estimated cost	CoVVV will be the owner of the system. Funding will be secured through NSRF 2021-2027. Long-term viability of the project is secured through the reductions of costs associated with printing, such as paper, equipment, toner, ink etc		
	within the city limits, according to the successful cases of many cities at a global level Supporting the social and solidarity economy, by developing a Municipality Social Media, that will assist and promote businesses operating in these sectors	Risks and mitigation	No blockers and risk in implementing the project have been identified so far	Solution maturity outputs	The solution is completed by 80%		
Link to vision	Implementing & offering value added digital services to citizens and businesses			0 🗆 + Δ			
Ċ	Establishing a holistic framework for smart tourism						
Link to ambition statement	Acquisition of brand and extroversion of the local business community Development of advanced, innovative technological solutions from collaborations of institutions within the limits of the municipality and their pioneering use in the city Reducing social inequalities within the city's limits						
The European Commission's INTELLIGENT CITIES CHALLENGE					16		

#### Initiative charter Benefit As you Save (BAS) & Pay as you throw (PAYT).

Strategy		Stakeholders i	involved	Inputs, outpu	ts, outcomes and impacts
	Based on the implementation of The Benefit As you Save – BAS program belongs to the financial project Interreg where our Municipality is Lead	Solution lead:	Citizens & Local Business MoVVV services Academia R&D Institutes	Source of funding and estimated	The Benefit As you Save – BAS program belongs to the financial project Interreg where our Municipality is Lead Partner. The budget of the program is 912.594 euros.
	Partner and Pay as you throw is a reward model for the disposal of municipal solid waste. The aim is to instantly incentivize citizens according to their contribution to the separate	Risks and mitigation			The aim is to instantly incentivize citizens according to their contribution to the separate selection of waste at source.
	selection of waste at source. And reward the participants by loyalty points, municipal fees reduction, etc.			Solution maturity outputs	The solution is completed by 80%
Link to vision	Implementing & offering value added to green waste Establishing a holistic framework waste management				
Link to ambition statement	Catch and also surpass national targets for 2035 which are 65% source selection and 10% landfill				
	Reduce the overall cost of cleanliness while achieving a large diversion rate,				
	Extend the pilot program throughout the municipality through the European Life Program				
The European Commission's INTELLIGENT CITIES CHALLENGE					17

#### **Initiative charter** Vita Green standard soil conditioner

Strategy		Stakeholders ir	volved	Inputs, outpu	its, outcomes and impacts	
Description	Our municipality is also a pioneer in the production of standard soil conditioner, which is produced from green and organic waste and has A+ quality. Following the successful completion of the pilot project in 2017 with the production of 50,000 liters of 'Vita Green' from the utilization of 2000 tons of green waste, the Municipality signed a three-year contract	Solution lead:		Source of funding and estimated	The municipality distribute to the citizens bags with barcodes. Citizens will fill the bags with recyclable materials which will be collected by a door-to-door procedure. The person who owns the bag with	
		Solution working team: Citizens & Local Business MoVVV services	MoVVV services		recyclable and organic waste will be identified and will be awarded by loyalty points, municipal fees reduction, etc.	
	with the University of Athens and WATT to process up to 10,000 tons of green and of organic waste per year, which is translated into production of 20,000 bags of 50 liters of high quality soil conditioner «Vita Green Plus».		Academia R&D Institutes	Solution maturity outputs	The solution is completed by 100%	
Link to vision	Implementing & offering value added to green waste Establishing a holistic framework waste management	Risks and mitigation	No blockers and risk in implementing the project have been identified so far			
Link to ambition statement	Reduction of environmental footprint Economic benefits The Implementation of this program, without calculating the groundbreaking source screening program applied and will divert approximately 35% of household waste from landfill far beyond the national average which is below 10%.					
The European Commission INTELLIGENT CITIE CHALLENG	5					

## **Key Performance indicators - overview**

Solution	Activities – Inputs and actions	Solution Maturity - outputs	City performance – outcomes and impacts
Adopting IoT-based energy efficiency and optimal waste management systems	not in full implementation		
Developing a fully digital environment to provide administrative services to citizens and local businesses	f digital applications in our city's portal ( <u>vvv.gov.gr)</u>	<ul> <li>of exchanged electronic documents.</li> <li>of municipal employees with digital signature.</li> <li>of municipal public services available online.</li> <li>of citizens' and businesses' procedures completed online.</li> </ul>	<ul> <li>availability of the online systems.</li> <li>in citizens' and businesses' trust in the Municipality. (205.000 unique visitors to vvv.gov.gr)</li> <li>of Municipality's performance</li> </ul>
Creating a business-friendly environment to achieve sustainable economic growth	<ul> <li>City information in our city's tourist portal <u>visitvarivoulavouliagmeni.gr</u></li> <li>digital applications in our city's portal (<u>vvv.gov.gr</u>)</li> </ul>	<ul> <li>of municipal public services available online.</li> <li>of citizens' and businesses' procedures completed online.</li> </ul>	<ul> <li>Business Satisfaction from Municipality Services.</li> <li>GHG emissions reduction due to online service delivery for citizens and businesses.</li> <li>Economic benefit for businesses by saving time in issuing permits and transactions with the Municipality.</li> </ul>



## **Key Performance indicators - overview**

Solution	Activities – Inputs and actions	Solution Maturity - outputs	City performance – outcomes and impacts
Benefit As you Save (BAS) & Pay as you throw (PAYT)	<ul> <li>in the amount of the mixed waste stream.</li> <li>recycling rate</li> <li>the clean spaces</li> <li>consciousness of citizenship</li> </ul>	<ul> <li>Local community involvement</li> <li>Technical know-how of the staff</li> <li>of bins for separate waste collection</li> <li>of raising awareness activities</li> </ul>	Citizens' satisfaction levels <b>(</b> ) city's solid waste that is recycled <b>(</b> )
Vita Green standard soil conditioner	<ul> <li>consciousness of citizenship</li> <li>recycling rate</li> <li>Target group reached</li> </ul>	<ul><li>Local community involvement</li><li>of raising awareness activities</li></ul>	<ul> <li>Citizens' satisfaction levels</li> <li>The amount of municipal solid waste generated per capita annually</li> <li>Percentage of city's solid waste that is recycled</li> </ul>



### Key Performance indicators - Cross cutting indicators

#### Cross cutting indicators

Increase in citizens' and businesses' trust in the Municipality.

Increase of Municipality's performance.

Citizens Satisfaction from Municipality's Services.

Business Satisfaction from Municipality Services.





## **Rationale to KPI approach**

Every project and action be selected and evaluated in terms of their impact on the coexistence and the balance of sustainability's 3 factors, Human Beings, Environment, and Economy is the golden ratio for our future

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

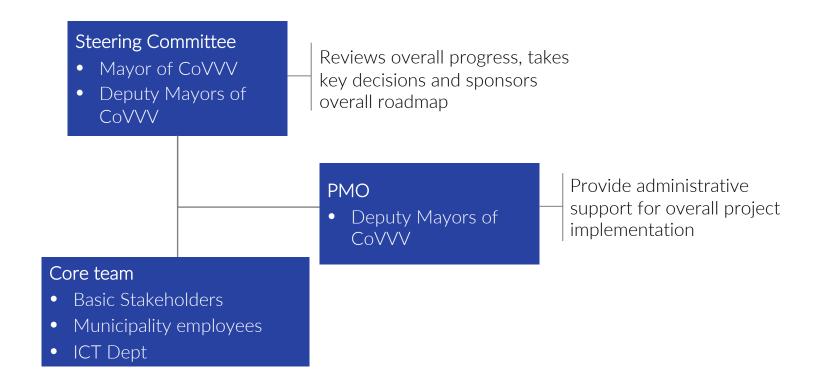
- 1. Actions for utilization of infrastructures that already operate.
- 2. Digital applications and tools, IoT platforms, and portals, as part of a unified and interoperable IT system

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**







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Section

3 + 4

May 2021 to November 2022



# CITY OF VARI – VOULA – VOULIAGMENI : Impact

ICC Transformation



#### Impact executive summary

The Municipality managed to secure funding for the implementation of the initiatives. The following initiatives will be finished during the duration of the ICC project:

- Developing a fully digital environment to provide administrative services to citizens and local businesses
- Adopting IoT-based energy efficiency and optimal waste management systems
- Creating a business-friendly environment to achieve sustainable economic growth
- Benefit As you Save (BAS) & Pay as you throw (PAYT)
- Vita Green standard soil conditioner
- New city portal
- New city tourist portal
- New city app (end of September)

For the next 3 years, the CoVVV will establish more responsible ways of facilitating, managing and monitoring the city services through data-driven management.

Finally, the CoVVV will continue its efforts to become a truly climate-neutral city by 2030



#### Assessment of city performance - discussion

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.

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, the Municipality has prepared the basis of KPIs for each solution and stage, as has already been presented.

At the moment it is important to initially create the appropriate new infrastructures and the new separate collection networks for new waste streams so that the information and awareness programs that will follow can have an appropriate positive impact on the citizens.



#### Assessment of solution maturity - discussion

The following initiative will be finished during the duration of the ICC project:

- New city app (end of September) This initiative will start delivering impact a few months later.
- Developing a fully digital environment to provide administrative services to citizens and local businesses
- Adopting IoT-based energy efficiency and optimal waste management systems Creating a business-friendly environment to achieve sustainable economic growth Benefit As you Save (BAS) & Pay as you throw (PAYT)

Our Municipality, with the addition of each new separate collection network for a new waste stream, managed to install a complete network of bins to geographically cover the needs of the entire Municipality.



# 5 key lessons

Lesson	Reflections
1	The municipal elected authorities' political commitment is essential for the digital transformation, as cultural, organizational and operational change is required apart from the development of technical solutions.
2	Active participation of the stakeholders is essential to planning and implementing city-wide solutions. Collaboration between Greek cities could add value, since they have access to same sources of funding and face same problems and obstacles
3	The assessment of the contribution of the solutions to the city's performance is tough to do, as there is a lack of baseline data. Moreover, only large - scale implementations can create measurable results at the city level.
4	Participation in ICC exposes the City Team to many best practices worldwide. Collaboration with non-Greek cities could add value and help with proposed solutions that have been already been successfully applied
5	Although participation in the ICC did not provide financial support, it was advantageous when the city applied for financial aid in EU calls.
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#### **Reflections on city collaborations**

CoVVV collaborated with the other Greek cities in exchanging experiences towards the implementation of the ICC solutions. The Greek cities faced the same problems from the national administration's bureaucratic and complicated processes.

We hope that in the following period, after the further development of our own solutions, we will be able to make more substantial collaborations with them.





# Commitments

Commitments to on-going resources	Commitments to on-going collaboration	Commitments to on-going KPIs
The city will implement the projects already in the pipeline. It will also intensify its efforts to provide innovative education and training for upskilling and reskilling in collaboration with the local ecosystem. We will pursue new partnerships with the local ecosystem.	The city will continue the collaboration with the other Greek ICC cities As mentioned before, we will seek and create new and more substantial collaborations with other ICC cities that share the same goals and challenges as us.	The city hasn't yet created a city-wide assessment and evaluation framework. Efforts will be made to establish the KPIs framework in the coming period.