

SYSMA

SYSTEM MAPPING FOR TRANSITIONS

Without a doubt, the crisis caused by the Covid-19 pandemic has been a **global challenge**, possibly the first to be faced since the end of the Cold War. The sanitary field, but also others such as cultural, relational or productive have been affected, questioned and challenged in all states of the Union. It has been especially compromising to face this situation of uncertainty from the point of view of the local economies in territories whose main sources of income were related to activities that have suffered a collapse due to the mobility restrictions derived from the pandemic. Regions dependent on activities such as industrial tourism have experienced an unprecedented economic contraction, raising unemployment rates and increasing uncertainty to levels that are difficult to bear.

In this context, the experiences of systems innovation that were pilot or experimental until now, have found a good opportunity to prove their effectiveness. And, in this sense, the methodology included in the handbook **'Challenge-led system mapping: a knowledge management approach'** (Matti, Martin Corvillo, Vivas Lalinde et al. 2020), originally designed to promote and enhance ecological transitions in territories potentially affected by the consequences of the imminent climate crisis, has been recontextualized to enhance the recovery of these territories affected by the crisis of the Covid-19.

Under a simple premise (having good information allows us to make good decisions), the consortium of 10 partners from 9 European countries listed in the table below and known as **System Mapping for Transitions (SysMa)** has carried out a process of system mapping along with the municipalities mentioned. This system mapping is actually the crystallization of a series of conversations in which the municipality has been the aggregator, but in which the main starring has been the communication between various stakeholders who have managed to co-create, in a collective and contributive way, a valuable achievement in these times of uncertainty: to show and to understand those economic activities showing a high degree of resilience to shocks such as this crisis derived from the pandemic.

Thanks to this **system mapping** that is the result of a collective process of co-creation, the **municipalities, chambers and agencies** that have been involved in this development of knowledge generation and management now have systematized information that will allow them, among other things, to understand how they can efficiently manage the imminent **European recovery funds**. In addition, also as a derivation of this collective process, new networks of local **actors** have emerged and consolidated existing networks. As a final derivation of the implementation of this **system mapping methodology**, new channels of communication have been created between **public institutions** and **actors** of various natures (private enterprise, public-private consortiums, civil society, education and R&D institutions...) enabling the emergence of new productive frameworks in the short and medium term.

CTBG Bulgaria	Municipality of Sofia/Sofia Development Agency
UPV-INGENIO Spain	Municipality of Valencia
AESS Italy	Municipality of Bari
University NOVA Portugal	Municipality of Torres Vedras
CUT Cyprus	Municipality of Limassol & Municipality of Ipsonas
CYI Cyprus (The Cyprus Institute)	Municipality of Strovolos
ATHENA Greece	Municipality of Athens
Energy Agency Croatia	Croatian Ministry of Science and of Education
MCAST Malta	Malta Chamber of Small Medium Enterprises
SEE ICT Serbia	City of Belgrade

Trying to summarize the benefits of the whole process in a single idea: **SysMa** has made possible the opening of a series of processes that, from the generation of collective knowledge, can drastically and positively modify their socio-economic contexts.

In the next pages, you will find the different **system mappings** built up by the partners of the consortium. In them, simple infographics and synthetic texts offer a first understanding of the current situation in each of the municipalities. Sometimes, the portrait offered is wide and diverse in activities. In others, there is an evident bias towards certain types of activities. This difference is logical: different municipalities and regions have different strategies that have been implemented, in some cases, for some years now. In every case, these mainly visual and synthetic reports are the result of a pilot experience carried out during no more than 6 months in a year marked by a worldwide pandemic crisis. And these results will, at best, witness the beginning of new ways of dealing with complexity when it strikes a society.

SYSTEM MAPPING PROCESS

Matti, C., Martin Corvillo, JM, Vivas Lalinde, I., Juan Agulló, B., Stamate, E., Avella, G., and Bauer A. (2020). *Challenge-led system mapping. A knowledge management approach. Transitions Hub series. EIT Climate-KIC, Brussels*
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SY SMA

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The challenges that have emerged as a consequence of the crisis caused by COVID-19 require system innovation rather than unique linear models of product and process innovation. In this context, different regions and cities face the challenge of dealing with the crisis generated by the global pandemic and its effects at all levels, with a particular impact on regions whose economies are based on weak sectors such as tourism or the hospitality.

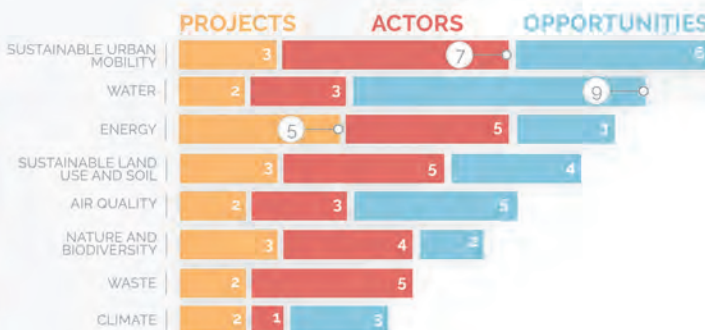
SysMa was created to help boost, through System Mapping methods, the management of aid funds, projects and sustainable processes that lead to a change to build stronger economic models, by combining existing knowledge of projects in operation and the economies of scale that exist within territorial strategies. Therefore, the purpose of this project is to provide the regions involved complex information processed through participatory methods that can help create a new sustainable socio-economic model capable of facing future challenges.

The local delivery partner, Cleantech Bulgaria (that also plays the role of leading partner within the SysMa consortium), contacted with Sofia Municipality through the Sofia Development Agency, which is 100% participated by the city council through the Green Sofia department. After the first conversations that were distillated in three meetings, both Cleantech Bulgaria and Sofia Municipality decided to deliver a system mapping workshop around the Sofia Green Capital topic. The agreement was part of a progressive work developed by both parts since 2015.

SYSTEM MAPPING PROCESS



MAPPED BY CLUSTER



The first look at the distribution of the results of the systemic mapping workshop around Sofia Green Capital yields the following results:

- The ecosystem is concentrated around a majority of **public participation projects**. These projects are characterized by a diverse but uniform thematic distribution, as will be described below.

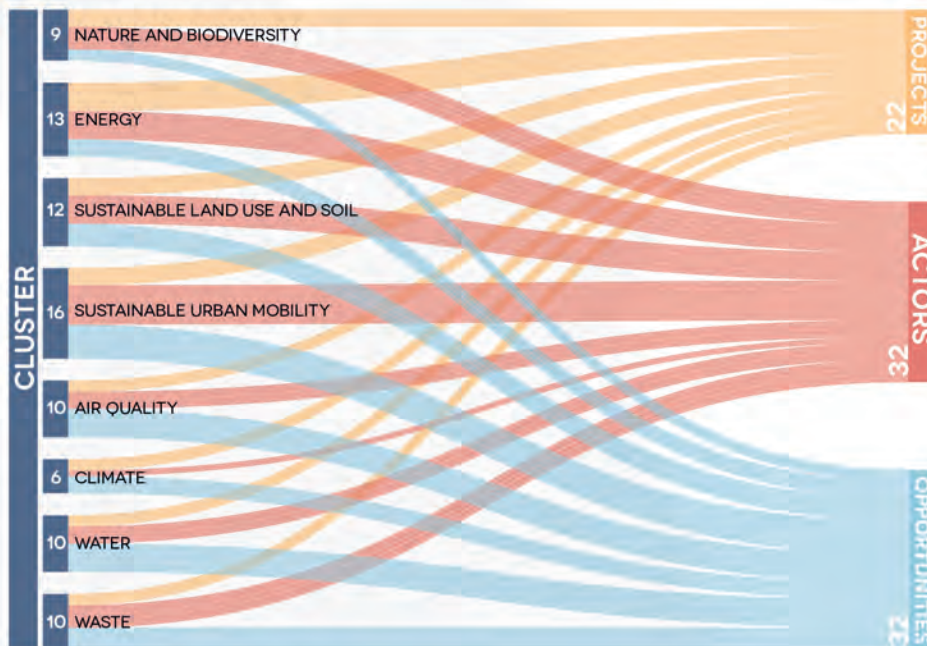
- The variety of **actors** around these projects is distributed in 4 main areas: the most influential, **public administrations** and agencies of such participation; then, **clusters** of experts (universities and consultants), organized **civil society** and **private enterprise**.

- The participants perceive the context as a potential source of **opportunities** derived mainly from new interactions between actors present and a greater profusion in the thematic areas imported by the **mapped projects**. The abundance of **opportunities**, if we review the detailed data, shows the recognized need for implementation of new specific **projects**, but also the investment and scaling of pre-existing **projects** without neglecting the **digitalization** and use of data for process improvement.

CLUSTER RELATION

The system mapping methodology has the ability to give the analysis a descriptive character. It is not only to understand what elements are present in the system, but to understand its thematic character. In this way, governance systems can understand which **areas** are overexploited or underutilized, and where efforts can be focused to generate **opportunities** for transformation of the productive system.

Around this thematic distribution, we can quickly see how the **energy** field is the most exploited at the **project** level today, and therefore perhaps not a perceived priority area for **opportunities**. These potential **opportunities** are most abundant in the areas of **sustainable urban mobility**, **air quality** - no doubt two closely related areas of work - and **water** quality. Analyzing the detailed data, the workshop participants perceived **barriers** in the field of **energy innovation**, especially in relation to **building renovation** and lack of medium-long term strategic planning.



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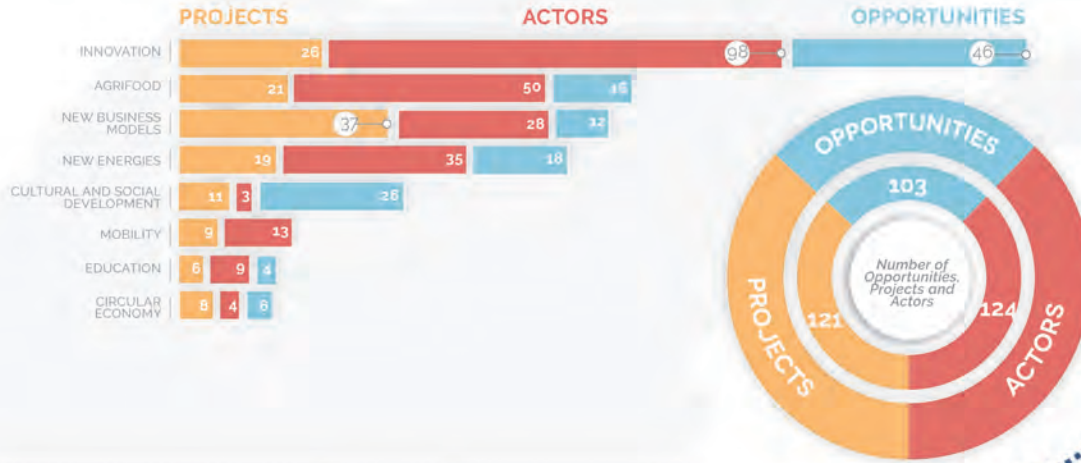
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The local delivery partner, **UPV-Ingenio** contacted with the **Valencia municipality** which was closely involved in the whole process. After the first conversations that were distributed in two different meetings, both **Valencia municipality** and **UPV-Ingenio** decided to deliver a system mapping workshop around the topic "System Innovation Mapping for Regions". The agreement was the beginning of a progressive work that will be developed by both parts in the quest for greater resilience for the city through innovation.

SYSTEM MAPPING PROCESS



MAPPED BY CLUSTER



The ecosystem mapped in the city of **Valencia** offers us a quantitative amplitude in terms of **projects** and **actors**. A balanced amplitude, which also offers us a relative balance in the field of **actors**, where the **public administration**, the world of **associations** and **non-governmental organizations** and finally **the university and R+D+i entities** have been associated for some time to generate **projects** related to **sustainability**.

Within the **organized society**, it is worth mentioning the presence of **consumers**, who have platforms that allow **communication with private corporations**, often related to the **energy and sustainable food field**. In this sense, the various **producers** at different scales play an important role.

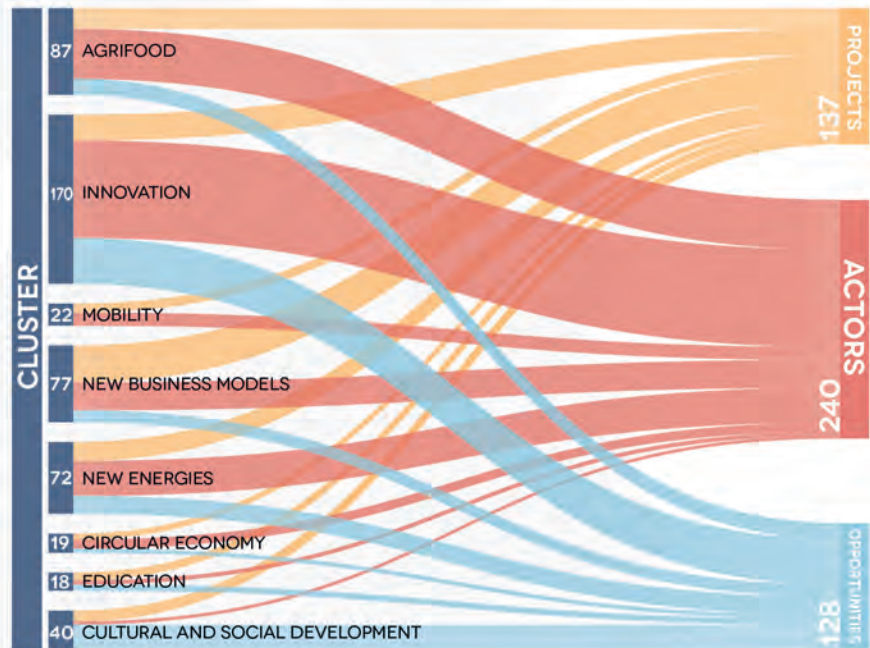
In the field of **opportunities** derived from the **projects** being carried out and the potential interaction of the actors present, the generation of discussion groups and other platforms and initiatives that raise cultural awareness about **local economic sustainability** is also noteworthy. Additionally, we find measures that try to encourage the entrepreneurial spirit. Most of the **opportunities** detected, by the way, are focused on improving existing services and processes, improvements related to the scaling up of pilot projects, but also to action within **schools and universities** and the promotion of synergies or connections between **institutions and local groups**.

CLUSTER RELATION

By carrying out a qualitative review of the systemic mapping carried out by **UPV-Ingenio** together with the **City Council of Valencia**, we can focus on the **seven thematic axes** indicated by the participants. It has special relevance, taking into account the peculiarities of the city, **innovation** especially around **sustainable food, energy efficiency** and **generation of new business models**.

The proliferation of **opportunities** is relevant in the areas mentioned, but also in the field of **citizen engagement and social development**, where it is a matter of encouraging knowledge about the details of the **ecological transition**.

It is equally striking that, being a large city, **no opportunities for innovation** in the field of sustainable mobility are identified. We attribute this circumstance to the importance that the current city council has given to the modification of outdated mobility structures.



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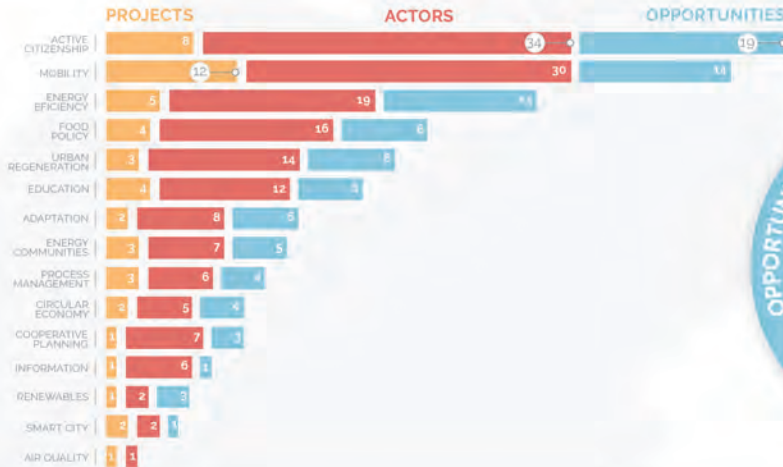
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The local delivery partner **AESS Italy** contacted with the **Bari municipality** which was closely involved in the whole process. After the first conversations that were distributed in 2 meetings, both **Bari municipality** and **AESS Italy** decided to deliver a system mapping workshop around the topic "The exploration of the landscape of the sustainability projects and opportunities, in view of the future SEGAP and of incoming EU funding opportunities". The agreement was the beginning of a progressive work that will be developed by both parts.

SYSTEM MAPPING PROCESS



MAPPED BY CLUSTER



In the ecosystem mapped in the region of **Bari**, we can observe that there are a large number of **actions** generally based on **R&D&I** and the creation of synergies between the **public and private sectors** with the objective of generating strategic plans that help make **Bari** a Smart City through socio-economic development related to **sustainability, digitalization and efficient energy use**.

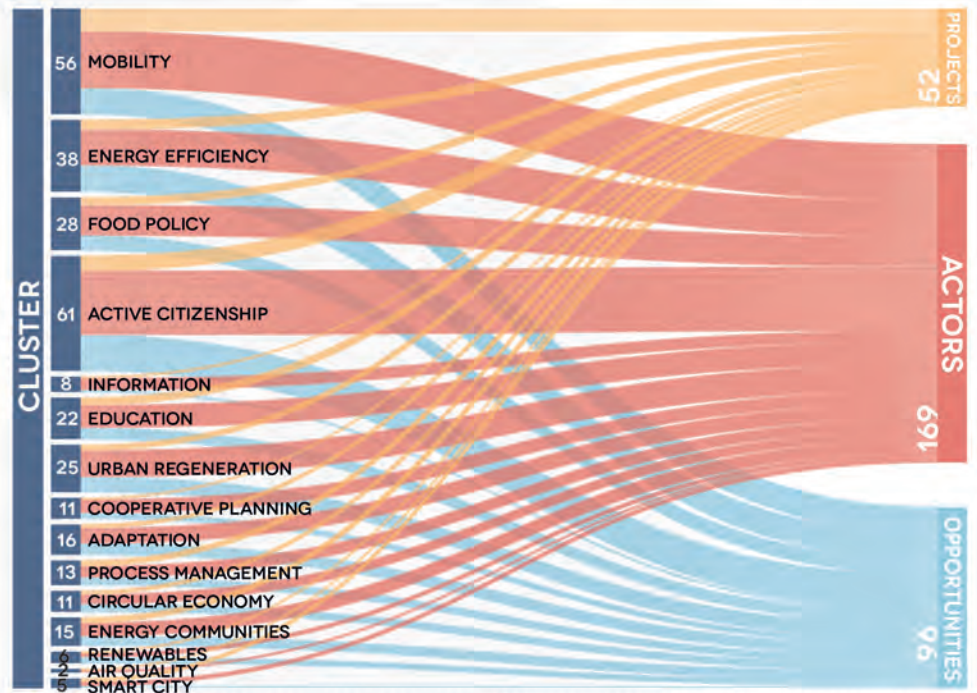
The **stakeholders** involved in the actions mentioned above are generally **public agencies and private companies** related to **energy and innovation**. We can also observe an important influence of **education and civil society** in this transformation of the system as **key actors**.

In the area of **opportunities**, although we have many thematic areas distributed in the different clusters detected, we can observe how **active citizenship, mobility and energy efficiency** have a great importance.

CLUSTER RELATION

By carrying out a qualitative review, we can observe up to **fifteen thematic areas** indicated by the participants, although we also observe an asymmetry that shows us the impact of each one on the mapping. The fact that the thematic area of **active citizenship** has a great weight shows us the importance it has for the change of model, the involvement of **citizens** and the provision of tools to mobilize them towards a change of model and decision making in their daily lives.

As a transforming element to be highlighted due to the systemic factor it involves, we can observe **urban regeneration**, which with the involvement of **public and private agents**, would undoubtedly facilitate the path towards a more intelligent and sustainable city.



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TORRES VEDRAS

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The local delivery partner **NOVA University** contacted with the **Torres Vedras municipality** which was closely involved in the whole process. After the first conversations that were distributed in 2 meetings, both **Torres Vedras municipality** and **NOVA University** decided to deliver a system mapping workshop around the topic "Torres Vedras More Resilient". The agreement was part of a progressive work developed by both parts since 2017.

SYSTEM MAPPING PROCESS



MAPPED BY CLUSTER



The mapped ecosystem of the city of **Torres Vedras** is a fairly intensive mapping, but it is also extensive in number. We could highlight the large number of existing **actors**, with four defined groups such as the **public sector, private initiatives, academia and citizen participation** and a great balance between them.

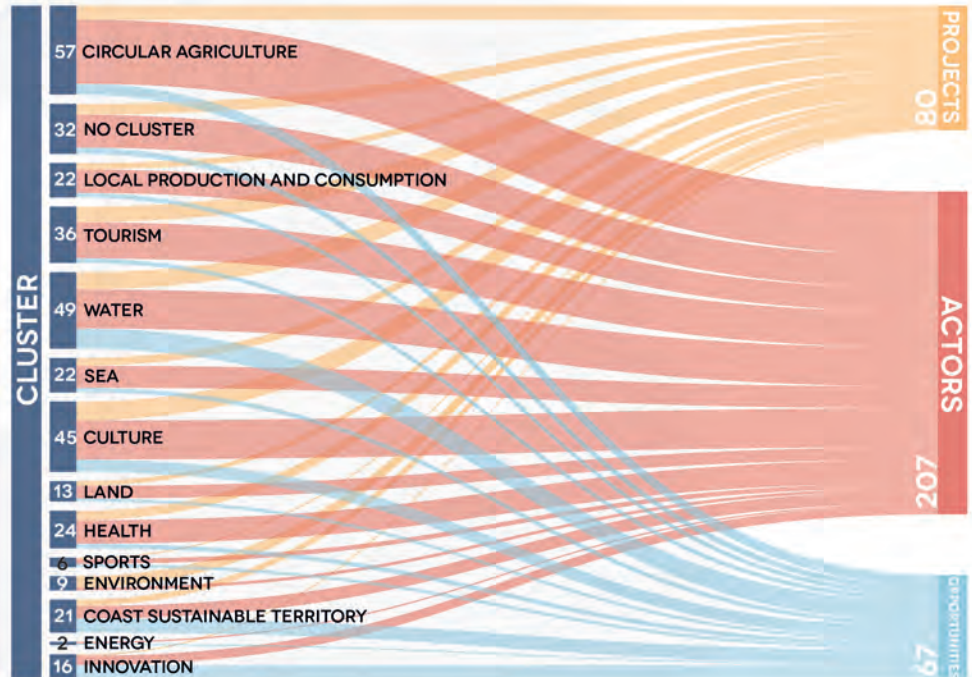
We can see that the **projects** currently being developed are related with topics such as **circular agriculture, tourism and water**, which are the basis of the local economy. It is specially remarkable to see that one of the most influential thematic groups is **culture**.

In the area of **opportunities**, we see that they are very balanced in their distribution around the mapped projects, and that they arise mostly as a consequence of bringing together **public-private actors** and their potential in the area of **sustainability**.

CLUSTER RELATION

Carrying out a qualitative review of the systemic mapping, we can observe up to **fourteen impact areas**. We can remark the sectors with the greatest socio-economic impact in the region, such as **tourism** or **water management**, and it is here that we see a great niche of **opportunities**, together with others such as **culture** to enhance them and achieve a **sustainable and positive impact**.

The important role of **innovation** as a thematic area is also remarkable, since the transversality in this aspect and the important role it plays in obtaining funding for both **public and private initiatives** will be key to positively transforming these sectors that are so important in the economy.



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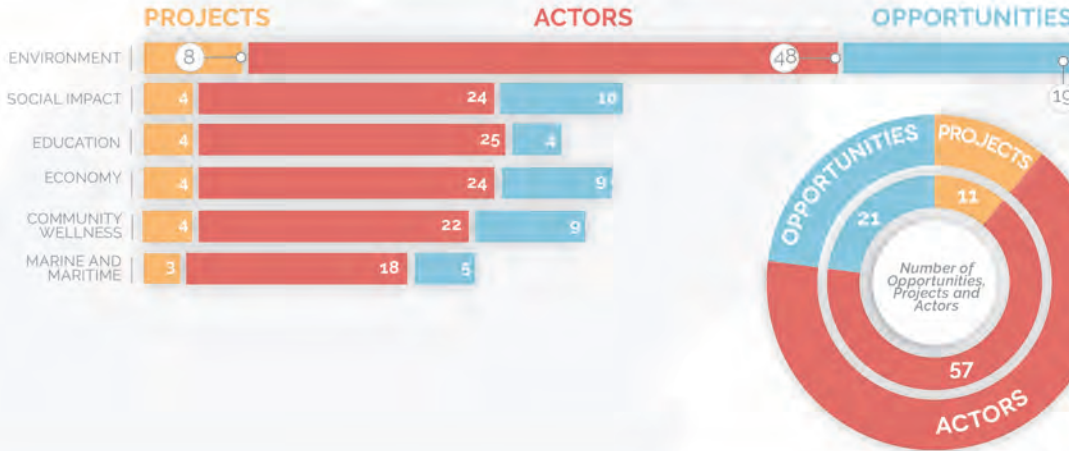
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The local delivery partner **CUT Cyprus** contacted with the **Limassol and Ipsonas municipalities** which were closely involved in the whole process. After the first conversations that were distributed in 2 meetings, both municipalities and **CUT Cyprus** decided to deliver a system mapping workshop around the topic "System mapping as a service for regions". The agreement was part of a progressive work developed by the municipality with the partner.

SYSTEM MAPPING PROCESS



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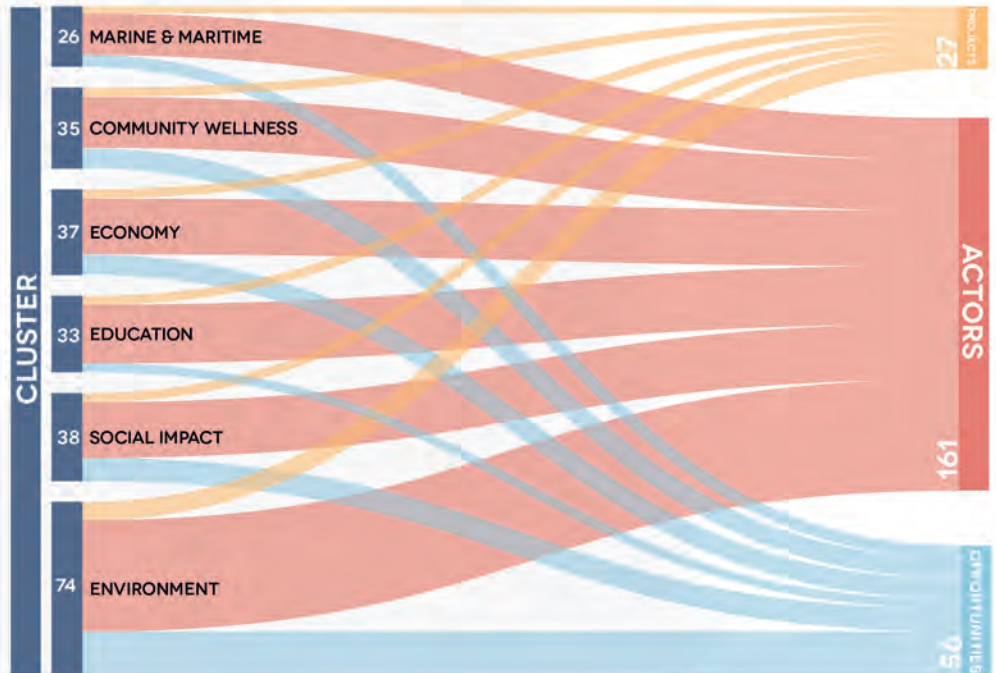


Attending to the systemic mapping of the city of **Ipsonas**, we can notice the presence of a wide variety of **actors** in front of a relative concentration of **projects**. Some **projects or actions** are mainly concentrated around the connection with the environment (maritime, even with the historical center) and systemic innovation, such as the **circular economy** or **digitalization** for the improvement and facilitation of processes.

Also noteworthy is the proliferation of **public entities** that are well connected to **academic bodies** and the **private sector**. The **tourism** sector, which has considerable weight in the local economy, also appears in this mapping of **activities** and **actors** that show potential resilience.

We can also pay attention to the presence of **barriers**, especially perceived in terms of **bureaucratic complexity**, **lack of dissemination of good practices** and **lack of collective culture** that encourages a transformation towards a local ecological transition.

CLUSTER RELATION



One of the elements that characterize the ecosystem of **Ipsonas** is the variety of foci that can have their own network of **actors** to some extent autonomous. In practice, their diverse involvement in different thematic areas is perceived. For example, the involvement in **urban development projects** manages to cover most of the network of **actors**. This field of action is also inspiring when it comes to producing ideas of potential transformative effect, taking into account the variety and amount of **opportunities**.

Maritime security and the implementation of **circular economy mechanisms** also show a greater concentration of **activities, actors and opportunities** than more consolidated **projects** such as those in the **educational field**.

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SYSTEM MAPPING FOR TRANSITIONS

STROVOLOS

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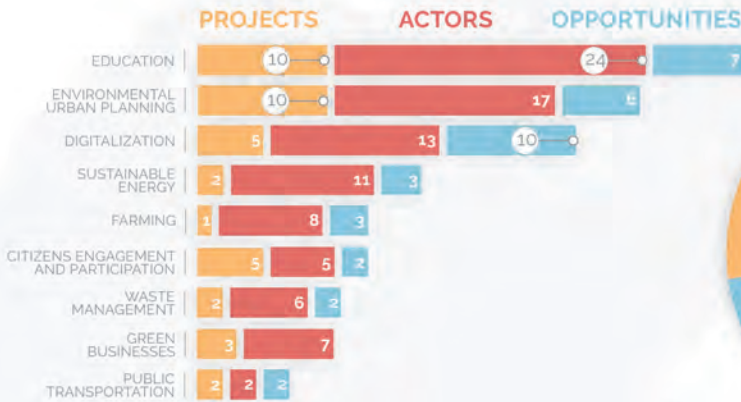
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The local delivery partner, **CYI Cyprus** contacted with the **Strovolos municipality** which was closely involved in the whole process. After the first conversations that were distributed in 2 meetings, both **Strovolos municipality** and **CYI Cyprus** decided to deliver a system mapping workshop around the topic "System mapping as a tool to make a resilient community in Strovolos". The agreement was part of a progressive work developed by both parts.

SYSTEM MAPPING PROCESS



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Based on the results of the systemic mapping, we can affirm that the **Strovolos** ecosystem is characterized by a relative balance between the diversity of **actors** and **projects** that are underway.

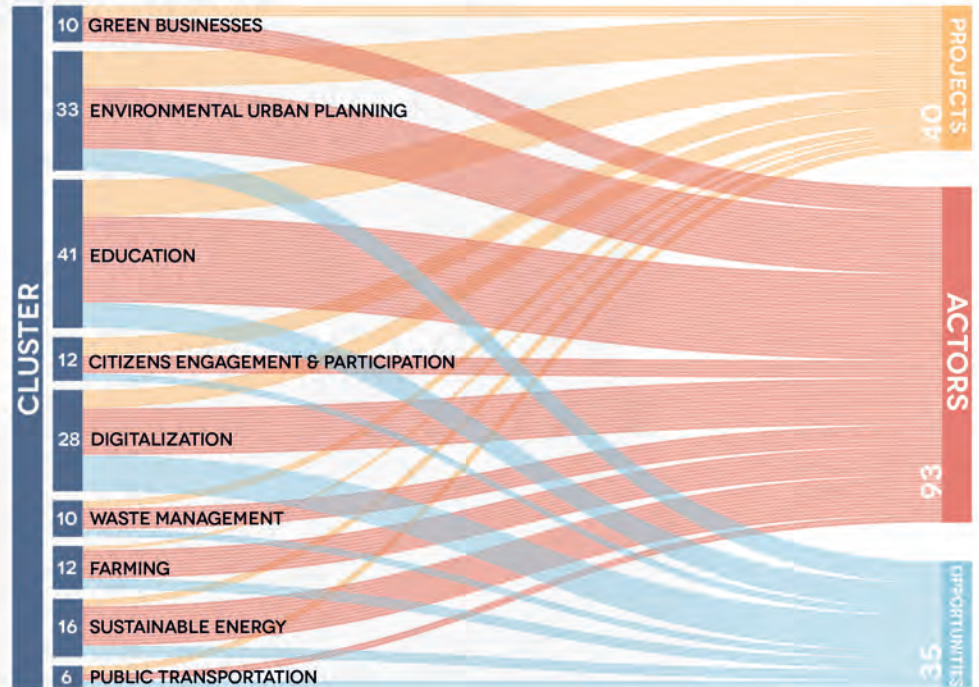
As for the **activities**, it is remarkable the balance between **projects** of different nature if we pay attention to the individual inputs enclosed in this report: **digitalization** projects and **improvement of communication** flows with the citizen/user/company coexist with projects focused on an efficient and sustainable development of the municipality at a more infrastructural level. The pedagogical or formative element also shows its weight in the ecosystem, providing it with a balance at least in terms of the concentration of topics.

The constellation of **actors** present in the system is qualitatively less varied than could be inferred from other similar mappings, concentrating most elements around the **public sphere, the private sphere, and academia**.

CLUSTER RELATION

The observation and analysis of the **Strovolos** ecosystem, according to each cluster or theme of action is conditioned by the network of actors that are part of it and its distribution. This network of **actors** has a wide influence on the multiple elements that are part of the scenario at the active level, generating a kind of 'generative balance' in the areas previously highlighted (**education, urban planning and digitalization**). This fact produces an image of a settled ecosystem in which dialogue is a constant between **clusters** of **actors**.

Possibly due to this circumstance, the profusion of perceived **opportunities** is mostly concentrated in the thematic areas in which the number of projects was already more noticeable per se. The detection of opportunities in the field of **education** is particularly striking, due to the multi-faceted nature of the project. The **change of social culture** is perceived by the participants as an essential issue to work on in the short and medium term. This work would make it possible to deepen **innovation** in other aspects, such as the change of cultural paradigm itself, deep in **citizenship** or in **consumption and urban planning**.



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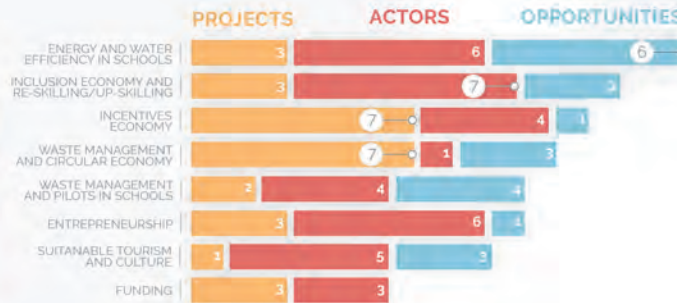
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The local delivery partner, ATHENA Greece contacted with the Athens municipality which was closely involved in the whole process. After the first conversations that were distributed in a series of meetings, both ATHENA Greece and Athens municipality decided to deliver a system mapping workshop around the topic "System mapping as a tool to create resilient regions." The agreement was part of a progressive work developed by both parts.

SYSTEM MAPPING PROCESS



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The ecosystem mapped in Athens offers us a quantitative balance in terms of **projects, actors and opportunities**. The actions are mainly developed by a triple axis formed by **regional entities** with great impact on the municipalities, **private initiatives and organized civil society** in different forms such as foundations, **NGOs** and **actors** around the university, responsible for the development of pilots. These **stakeholders** have a longstanding relationship, working to generate **projects** related to **sustainability**.

As for the initiatives developed, the theme is related to the increase of resources for the development of **projects** that promote **sustainability** and the **fight against climate change**, in addition to **digitalization** and **education** as keys to facilitate a change in the system.

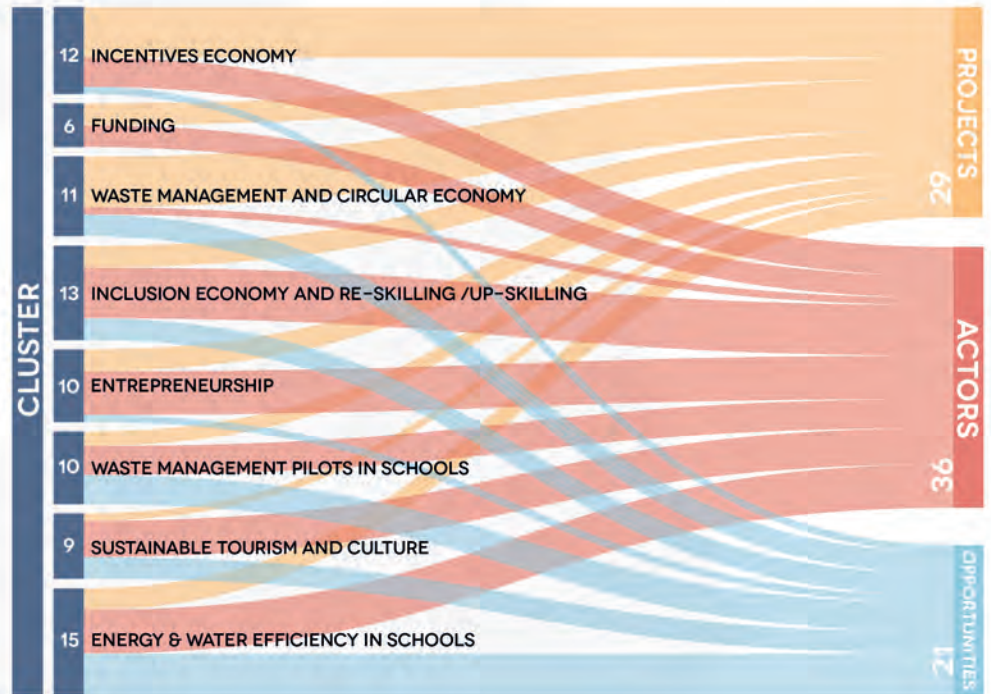
As for the **opportunities**, they are closely linked to the activity of existing **projects** and the synergies that can be created by bringing together different **actors**, seeking to generate a strategic plan for modernization and resilience to climate phenomena, for the development of a more sustainable socio-economic model.

CLUSTER RELATION

Carrying out a qualitative review, we can see that there are **eight thematic areas**, with a fairly equitable distribution of **actors**, highlighting on them, **waste management and the circular economy**, topics that are quite related to systemic innovation and which represent **actors** with great relevance.

The proliferation of **opportunities** is relevant in the areas that have been mentioned, highlighting the **efficiency in schools** and **modernization of the productive system** to make it more sustainable, efficient and inclusive.

It is surprising how **opportunities** in the area of funding, which would undoubtedly be catalysts for an increase in projects and therefore impact, are not perceived.



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The local delivery partner, **Energy Agency Croatia** contacted with the **Ministry of Science and Education** which was closely involved in the whole process. After the first conversations in a single meeting, both **Ministry of Science and Education** and **Energy Agency Croatia** decided to deliver a system mapping workshop around the topic: "Systemic role of the RECs in different processes related to policy making". The agreement was part of a progressive work developed by both parts.

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The ecosystem mapped by the **Energy Agency Croatia** together with the **Croatian Ministry of Science and Education** especially throws up a wide variety of **actors** around a very specific set of **projects**, from which a few but interesting improvements in the form of **opportunities** emerge.

The cloud of **actors** offered by the mapping, by its nature, refers us especially to **public institutions, consortiums and local market and economic entities**. The **private sector** also has a presence, with banks, industry and emerging companies and startups. Finally, organized civil society appears in a lighter form as the third pillar.

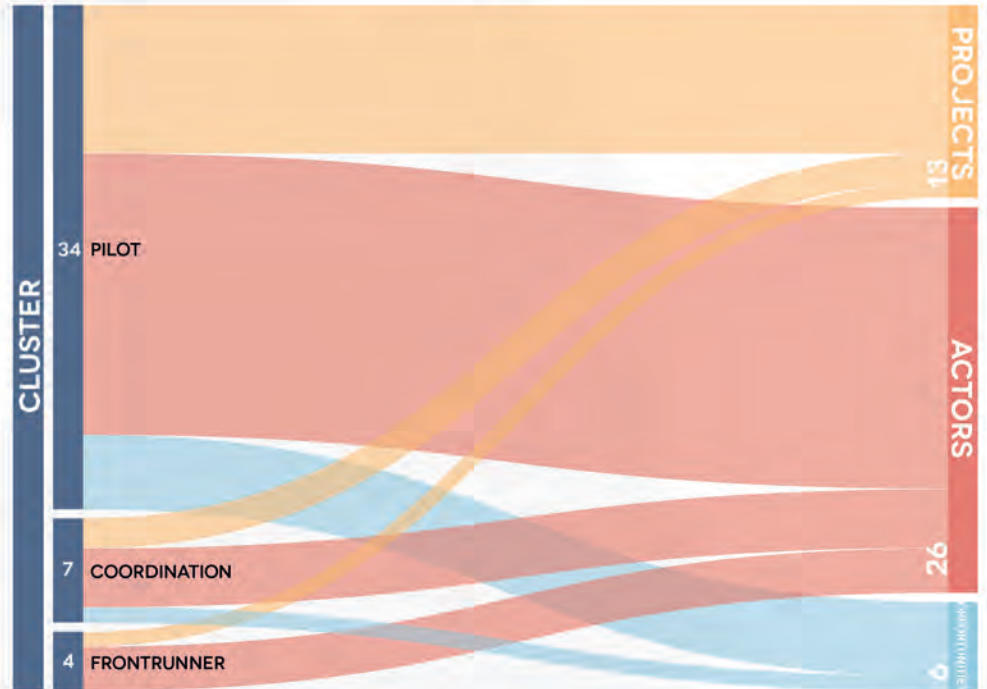
As for the actions mapped, these refer us to **project** implementation processes, search for funding and coordination and development of the institutions participating in these **projects**.

Finally, it should be noted that the **opportunities** mapped focus almost exclusively on improving, financing, and scaling up the **projects** present in the mapping, especially in terms of improving competitiveness and improving intersectoral cooperation.

CLUSTER RELATION

When it comes to the distribution of systematic mapping in areas of interest, we find a preponderance of **projects** and **actors** involved in the pilot category. This is an indicator of the initial or experimental stage of many of the **projects** being carried out in the **Croatian state**. The **Fronrunner** and **Coordination** categories are in the background.

It should be noted, when analyzing this workshop qualitatively, that the scope of this mapping is short and it is a first implementation of the **Challenge-Led System Mapping methodology** in the pandemic context, in the region of **Croatia**.



SY SMA

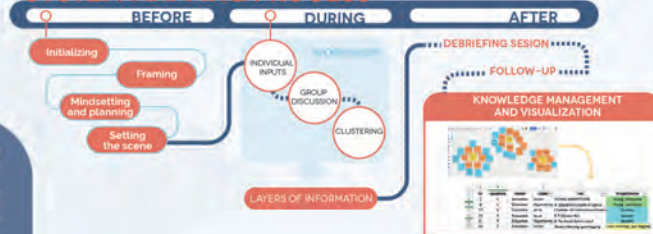
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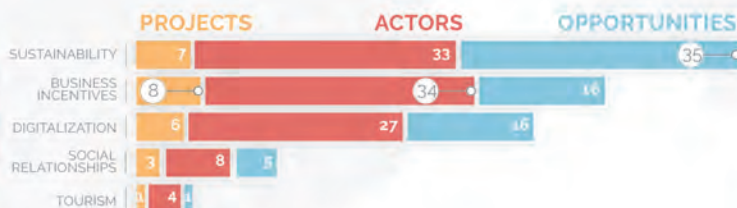
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MCAST Malta as delivery partner of the project, contacted the Malta Chamber of Small Medium Enterprises which was closely involved in the whole process. After the first conversations that were distributed in a series of meetings, the conclusion was to deliver a system mapping workshop around sustainable initiatives in the country. The agreement was the beginning of a progressive work that will be developed by both parts.

SYSTEM MAPPING PROCESS



MAPPED BY CLUSTER



If we attend to the mapped ecosystem of Malta, we can observe a concentrated number of projects and a high number of actors around it. These projects are very much oriented towards the modernisation of processes, processes related with subjects such as the circular economy, industrial symbiosis, logistics management, etc.

In addition, the advanced state of these projects requires digitalisation processes to make them much more efficient.

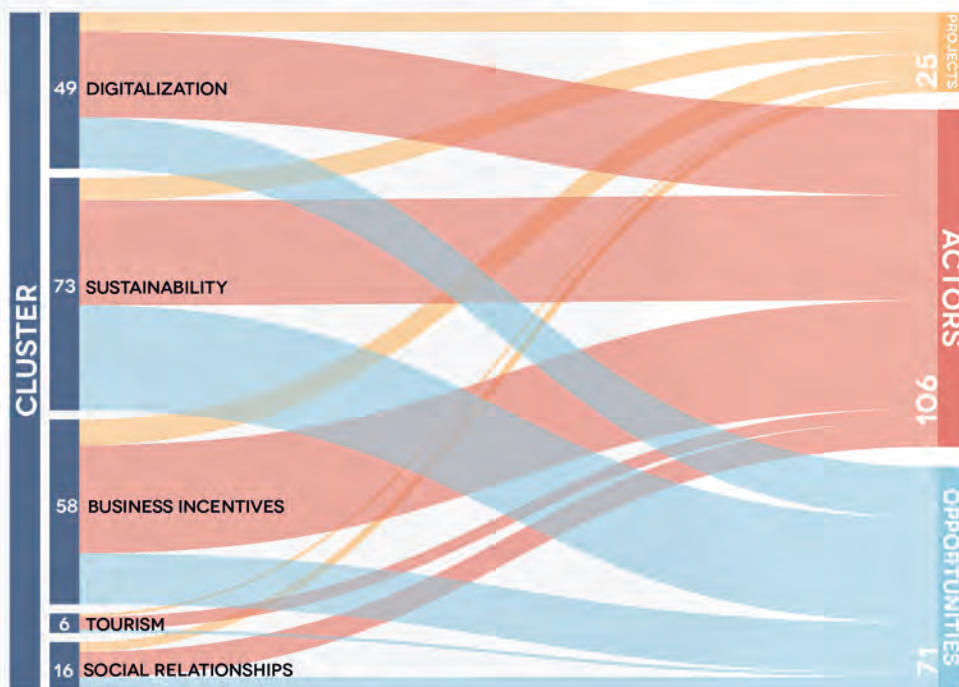
As far as the actors are concerned, it is striking how the most represent the private sector, mainly initiatives which have to do with this modernisation of processes which we have discussed. Also, although to a lesser extent, there is a presence of the public sector, which with its policies and institutional initiatives, aims to promote these initiatives and to have a positive impact on society, generating a more sustainable and fair socio-economic model. Finally, we can see how education and civil society have an important role in this systemic change.

CLUSTER RELATION

Attending the qualitative review of the systemic mapping, we can observe up to five areas of impact. We can see how the incentives to improve competitiveness is the cluster with the largest population of data, both actors and opportunities. This indicates that an increase in innovation is necessary to improve the processes of the private sector in terms of logistics, prices, etc. and thus improve its competitiveness. It is considered that this may have an impact especially on the sectors that have been damaged by the COVID-19 to try to reform them.

The thematic area which stands out most in terms of the number of opportunities is that of sustainability, since high-impact models can be imported transversally into their context and thus generate a new socio-economic model.

Furthermore, it is considered that, through innovation, sustainability and a digitalisation strategy, funding can be obtained to promote the private sector, as well as facilitating the worker's day-to-day work, with measures such as teleworking.



The challenges that have emerged as a consequence of the crisis caused by COVID-19 require system innovation rather than unique linear models of product and process innovation. In this context, different regions and cities face the challenge of dealing with the crisis generated by the global pandemic and its effects at all levels, with a particular impact on regions whose economies are based on weak sectors such as tourism or the hospitality.

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The local delivery partner, SEE ICT Serbia (that is also involved in the SysMa consortium), contacted with Nis and Belgrade local authorities, which were closely involved in the whole process. Having previously worked on other challenges related to system innovation approach methodology with the same challenge owner and having had a first contact to explain the challenge, one meeting was enough to define the subject around "Building sustainable and resilient cities in Serbia". The agreement was part of a progressive work developed by both parts.

SYSTEM MAPPING PROCESS



MAPPED BY CLUSTER



In the mapped ecosystem of the city of Belgrade, we can observe a rather limited number of projects that stand out for their consolidation and a high number of actors around them. The projects are the core of a well-defined strategic line, which is mainly focused on energy efficiency and transformation, as well as the provision of services related to waste management and mobility.

We can observe actors surrounding these projects with a great balance between the public sector and private initiatives.

Part of this existing strategic line is made up by education at all levels and the impact it has in providing capacities and tools to civil society so that they can then make decisions.

CLUSTER RELATION

Looking at the thematic distribution, we can see up to nine different areas of work, with a balanced distribution of key projects, but we see that as a result of the search for funding and strategy, there are many more actors and opportunities in thematic areas such as energy management or the provision of services. We can also observe in these thematic areas a fairly large number of barriers detected to scale up these projects and make the opportunities a reality.

It is remarkable that there is not only a relationship between the public sector and private initiatives, but we can also observe a great weight of private investors and banks in the financing of these projects and around the potential opportunities and monetization of them.

Therefore, we can observe during the mapping, a well-defined strategy on this city where the socioeconomic model is more sustainable and has a greater resilience.

