

THE ROLE OF EU FUNDS ON BOOSTING LOCAL ECONOMIES IN SMALL TOWNS OF ROMANIA. ANALYSIS OF SMART CITY PROJECTS IMPLEMENTED IN SIRET TOWN, ROMANIA

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Abstract:

In this study, we explore how EU funding can be a real injector in the local budget of small and medium-sized towns of Romania. Due to various obstacles encountered by local public administration entities in Romania when executing innovative projects with own budgets, EU funding seems to be the adequate response to the need of smart city solutions development. The primary aim of this research is to demonstrate that the town of Siret, among other local public administrations in Romania, exhibit a remarkable ambition to implement innovative investment projects based on a willingness to embrace smart and sustainable local development, strategic foresight, transparency, adaptability, and the ability to engage and integrate the needs of the entire community. Through an examination of various programming documents made available by the local public authority in Siret, we extract some key financial indicators that EU funding is essential in fostering innovation and the development of smart city initiatives.

Key words: smart city, strategy, public sector, sustainable development, EU funding.

JEL classification: H83, O18.

1. INTRODUCTION

Romania's entry into the European Union has opened doors for swift advancement. Nevertheless, along with joining EU norms, great investments across various economic sectors were necessary. Investment projects in fields like infrastructure, extension of common utilities, buildings modernization, enhancing tourism, and environment protection were among best targeted investments with EU money. Local and county governments, companies, and diverse organizations are eligible to seek financial support for their project plans. The reliance on EU funding is significant since local funds are often inadequate. The financial resources allocated to Romania present an excellent prospect for fostering a robust, well-developed milieu. Thus, acquiring EU funds is a vital step for local bodies to expedite intelligent growth and bridge the developmental disparities among cities, towns, counties, or regions.

In the current research paper we analyze the specific case of a Romanian municipality, namely the town of Siret, Suceava county, located in the North-East region of Romania. The aim of the research is to make an analysis of the role of the local public authority in attracting EU funds and thus contributing to regional development through the implementation of smart city projects.

Conducted by the need to speed up the sustainable development of Siret, the Siret Town Administration together with the Siret Town Council have established the necessary framework for encouraging the local development of smart city initiatives, taking into account the regional and county development context and with focus on some specific development needs mostly scarce in resources and with direct link to population benefits. In executing its initiatives, the local public administration consistently aims to use a sustainable and adequately balanced strategy that includes substantial investments in public infrastructure, fostering a robust business climate, targeting at the same time investments in educational, social and cultural sectors. Environmental projects and participation in generating employment opportunities are as important as other domains, especially in the context of unpredictable evolution of the past decades.

The effort to stimulate development in specific smart city areas has constituted a real and perpetual objective of Siret Town Administration lately and public authorities have sought to revive economic and social activity of both Siret center and surrounding areas since the town is a central pole of development for a wide area of approximately 45 km radius with a strong rural component. By distributing investments in a large variety of fields like transport, education, health, Siret town administration ensured that the necessary resources are allocated as distributed as possibly for a wider mass of beneficiaries.

We have witnessed the fact that the role of EU funds in small and medium-sized towns is multifaceted, addressing a range of critical areas from infrastructure development to technological innovation. By aligning with EU objectives such as environmental sustainability, digital transformation, and social inclusion, small towns have been able to access funding that catalyzes comprehensive urban development. This strategic approach not only addresses immediate needs but also lays the groundwork for long-term prosperity and resilience.

Strategic planning is crucial in this context. Small towns, including Siret, Romania, is faced with the process of carefully assessing their needs, potential, and challenges to effectively tap into EU funding. This involves a thorough understanding of both the local context and the broader objectives of the EU. Crafting proposals that align local development goals with EU priorities increases the likelihood of securing funding. Such planning often requires a collaborative approach, involving local government, businesses, community groups, and other stakeholders, ensuring that projects are well-rounded and community-focused.

Investment in smart city projects is a prime example of how EU funds are reshaping small towns. These projects encompass a wide array of initiatives, from improving digital connectivity and implementing smart energy solutions to enhancing public transportation systems and developing intelligent urban planning tools. By integrating advanced technologies and data-driven approaches, these projects aim to make towns more efficient, sustainable, and livable. The infusion of EU funds into such initiatives is not just about technological advancement but also about creating an inclusive environment where all residents can benefit from improved services and a higher quality of life.

Moreover, the role of EU funds extends beyond mere financial assistance; it also brings about a transfer of knowledge and best practices. Small towns, through their engagement in EU-funded projects, become part of a larger network of cities and regions, sharing experiences, challenges, and solutions. This collaborative environment fosters innovation and learning, enabling small towns to leapfrog developmental stages and implement solutions that have been tried and tested elsewhere.

In its forecasts, Siret Town Administration assessed that by 2024-2025, the town would have a sustainable local economical environment, with primary focus on innovation, but with special regard for preserving tradition and capitalization of local resources, attractive to a wide area of potential investors, based on a state-of-the-art infrastructure and a sustainable partnership with strategic actors of the local community and members of the entrepreneurial sector in the area.

Accessing European funds and thus supplementing the local budget, the Town Hall of Siret has identified those objectives that address an integrated and comprehensive approach to the needs of sustainable smart development, so that concrete actions lead to the achievement of the objectives proposed in the Development Strategy of the locality.

2. LITERATURE REVIEW

Research on smart city projects implemented by local authorities highlights the importance of governance models (AlAwadhi, 2016), digital transformation (Pupek, 2019), data-driven applications (Kaluarachchi, 2022), and the creation of public value (Fontana, 2014). These studies emphasize the need for effective governance structures, stakeholder involvement, and conflict resolution mechanisms. They also underscore the role of digital technologies in improving urban services and citizen engagement. Furthermore, they stress the potential of data-driven applications in enhancing city systems and the importance of creating public value through smart city initiatives.

The impact of European Union (EU) funds on local budgets, particularly in the context of smart city projects, has been a subject of extensive academic and policy discourse. The allocation of EU funds, notably through frameworks like the European Regional Development Fund (ERDF) and Cohesion Fund, has significantly influenced the trajectory of urban development across Europe, especially in fostering smart city initiatives.

A key theme in the literature is the role of EU funds in augmenting local budgets. Studies have shown that EU funding, particularly in less economically developed regions, provides a crucial lifeline for local governments. Matteis (2021) highlights the positive impact of local governments in managing these funds for entrepreneurial development, while Halásková (2016) underscores the importance of local financing for the development of public services. This financial support enables the implementation of technologically advanced projects that would otherwise be beyond the fiscal capacity of local budgets. In the context of smart cities, this often translates into developments in sectors such as sustainable transport, energy efficiency, and digital infrastructure. The EU's emphasis on smart growth under the Europe 2020 strategy, as outlined in policy documents and scholarly articles, aligns with the objectives of many smart city projects, thereby catalyzing local development initiatives.

Several case studies in the literature explore how cities have leveraged EU funds to develop smart infrastructure. Correia (2022) provides a comprehensive overview of smart city initiatives in the EU, highlighting the role of EU structural funds in their development. Medda (2015, 2019) further explores the use of European financial instruments, such as the Urban Development Fund, in promoting smart sustainable urban development, particularly in the energy sector. These studies collectively underscore the significant impact of EU funds in driving the development of smart infrastructure in European cities. These studies often highlight the transformational impact of such funding on urban landscapes. For instance, the deployment of smart grid technologies and IoT-enabled public services in cities like Barcelona and Amsterdam has been partially attributed to the strategic use of EU funds. This aligns with the European Commission's broader strategy to promote the digitalization of European cities, as reflected in policy papers and funding guidelines.

Despite the benefits, the literature also identifies challenges in utilizing EU funds for local smart city projects. Municipal decision makers perceive non-technical issues such as collaboration, economics, governance, and technology awareness as key challenges (Pierce, 2017). The need for resources and the allocation of these resources through project competition are highlighted as crucial in the transition towards sustainable energy systems (Meeus, 2010). Barriers to the implementation of smart energy city projects include political support, cooperation among partners, financial support, skilled personnel, and ownership (Mosannenzadeh, 2017). The main obstacles to smart city project implementation are external factors such as subsidies, communication, and expertise, while public participation, stakeholder cooperation, and long-term political commitment are key drivers (Pezzutto, 2016). One recurring issue is the complexity and bureaucratic nature of the funding application and management process, which can be particularly daunting for smaller municipalities. Studies have highlighted that this complexity often necessitates specialized administrative expertise, which some local governments may lack. Furthermore, academic discussions around the Multiannual Financial Framework suggest that the cyclical nature of EU funding can lead to inconsistencies in project planning and implementation.

A significant portion of the literature focuses on the socioeconomic impact of EU-funded smart city projects. Many scholars argue that these projects, while initially costly, can lead to long-term economic benefits for local communities, such as job creation, enhanced service delivery, and improved quality of life. There is also a growing discourse on the sustainability aspect, where EU funds are seen as instrumental in promoting green and sustainable urban development. Projects that focus on energy-efficient buildings, reduced greenhouse gas emissions, and sustainable urban mobility are often cited as examples where EU funds have made a tangible difference. Caragliu (2019) found that these smart city projects can lead to increased urban innovation, particularly in the form of patent applications. Wirsbinna (2021) further emphasized the economic benefits of these projects, highlighting their role in value generation and sustainability. Correia (2022) provided a

comprehensive overview of the state of smart city initiatives in the EU, noting their varying levels of development and their relationship with socio-economic factors such as public budget balance, GDP, and EU structural funds. However, Pezzutto (2015) raised concerns about the low level of EU research and development funding for smart cities, suggesting that a restructuring of funding distribution could better capitalize on the potential energy savings and contribute to the EU's climate and energy goals.

Looking forward, the literature suggests an evolving role for EU funds in shaping the smart cities of the future. The increasing focus on climate change and digital transition in EU policymaking is likely to influence the nature of funding and projects prioritized. Scholars advocate for more streamlined funding processes and greater flexibility to accommodate the diverse needs of local governments (Marzinotto, 2012; Buti, 2008). This includes the creation of a European Growth Fund to anticipate pre-allocated EU expenditure (Marzinotto, 2012), and the introduction of "constrained flexibility" to ensure consistency with EU objectives (Buti, 2008). Zerbinati (2012) and Zerbinati (2004) further explore the role of local governments in the EU funding process, with the former suggesting that local governments can benefit from participating in multi-level governance networks, and the latter highlighting the impact of EU funding on Europeanization and local government changes. There's also a call for enhanced collaboration between EU bodies and local governments to ensure that funds are effectively utilized and aligned with the long-term strategic goals of both the EU and the local entities.

In conclusion, EU funds have undeniably played a pivotal role in shaping the development of smart cities across Europe. While the benefits are significant, it is crucial to address the challenges in fund management and align projects with broader socioeconomic and environmental goals. The continuous evolution of EU policies and funding mechanisms is likely to further influence the impact of these funds on local budgets and urban development.

3. METHODOLOGY

The assessment of the impact and role of European Union (EU) funds in developing smart city projects involves a comprehensive and multi-faceted methodology that includes theoretical methods, as well as practical ones. This process typically starts with the collection of data, which is a critical first step in understanding the extent and nature of EU fund utilization. Data collection encompasses a range of information, including financial figures, project outcomes, demographic statistics, and other relevant metrics. This data is sourced from various entities, such as local authority, project managers, EU databases, and monitoring reports. The objective is to gather a holistic and detailed set of data that reflects both the quantitative and qualitative aspects of funded projects. In order to demonstrate the proposed objectives for this study, the data collection activity was carried out at the premises of Siret Town Hall, a public authority of local interest, which carries out activities in the field of local public administration and is particularly concerned with improving the living conditions of the inhabitants of Siret.

Following data collection, the methodology includes an in-depth study of specific projects and relevant programming documents. In the data collection process, we focused on the programming documents related to the 2014-2020 period, but also on subsequent programmes and, implicitly, on those priorities and measures dedicated to the implementation of the project ideas of Siret Municipality. This step involved analyzing individual smart city initiatives funded by the EU to understand their scope, objectives, and outcomes. Reviewing programming documents, such as policy frameworks and strategic plans, provided insight into the intended goals and priorities set by the EU and local authorities. This analysis helped us in identifying the alignment (or lack thereof) between project execution and the broader strategic objectives. Additionally, a literature review is conducted to contextualize findings within the existing body of research, offering a comparative perspective and identifying established patterns and trends in smart city development funded by EU initiatives.

Another critical component of the methodology is the analysis of the infusion of EU funds into the local budget and its subsequent impact. This involves assessing how EU funds have been integrated into local financial structures and the extent to which they have supplemented or replaced local spending. The aim is to understand the financial leverage effect of EU funds and their role in catalyzing additional investment in smart city projects.

4. RESULTS OF RESEARCH

In the Integrated Strategy for Sustainable Urban Development, developed for the 2014-2020 programming period, the priorities and areas of intervention have been identified at local level in Siret in a strong correlation with the strategic objectives and development priorities set at European level in the Europe 2020 Strategy.

Based on the information presented in Figure 1, we could observe that a particular focus was placed on funds accessed under the Regional Operational Programme 2014-2020 (60% of the projects executed), that is investments concerning physical infrastructure such as roads, health and social infrastructure are addressed. In addition, the institution applied for other necessary funding at national level (with programmes such as PNDL, ANL, Anghel Saligny, with 18% of the value of the projects implemented).

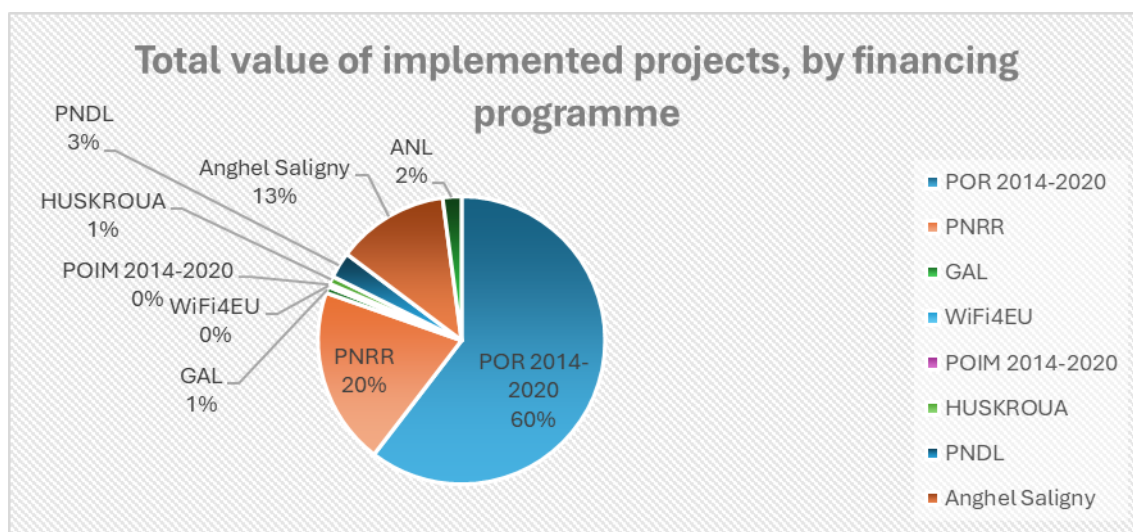


Figure 1. Total value of implemented projects in Siret town, by financing programme

Source: Own elaboration

It is also noted that Siret Town Administration also focused on enhancing the institution's ability to offer transparent services. This was achieved by conducting an institutional analysis to identify and address vulnerabilities, alongside improving the training of employees and local elected officials/authorities in this domain. We believe that a total amount of more than 220 million Romanian lei accessed in a 7-year period implies, without any doubt, an increased administrative capacity, and an absorption capacity above the average for the country.

The Regional Operational Programme (ROP) 2014-2020 has played a key role in funding smart city projects in Romania, providing a vital source of funding for the modernization of urban infrastructure. This programme, co-funded by the European Union through the European Regional Development Fund, had the main objective of reducing economic and social disparities in the country's regions. Within the ROP, a significant segment of funding has been allocated to the development of innovative technological solutions and the implementation of the smart city concept. This included projects to improve urban mobility, make energy resource management more efficient, digitize public services and increase the quality of life in cities or towns. Through this programme, many Romanian cities have had the opportunity to invest in advanced technologies

such as smart street lighting systems, efficient public transport networks and smart and sustainable city solutions, thus contributing to a more sustainable and connected future. Funding from the 2014-2020 ROP has therefore been an important catalyst for urban and technological transformation in Romania.

As shown in the analyzed documentation, no less than 9 projects have been implemented in the Town of Siret with funding from the 2014-2020 ROP. This programme has mainly funded investment objectives in urban localities (municipalities, cities) and focused in the previous programming period on specific urban areas, namely educational, health, transport infrastructure, but also other public services aimed at improving the quality of life: recreational infrastructure, sports, museums, recreational centers, educational centers, etc. In Siret, the projects summed up to more than 138 million lei invested in the areas listed above, but also in a specific structure dedicated to research and innovation (a science and technology park).

Romania's National Recovery and Resilience Plan (NRRP), a crucial post-pandemic initiative funded by the European Union, includes significant financial allocations to support smart city projects, with a particular focus on increasing energy efficiency, digitization, waste management and the development of near-zero energy buildings (NZEB).

This programme represents a unique opportunity for Romanian cities, including the Town of Siret, to accelerate digital transformation and adopt sustainable solutions. The funding specifically targets the modernization of urban energy infrastructure to reduce energy consumption and carbon emissions, while promoting Nzeb buildings which are essential for a sustainable energy future. It also puts a strong emphasis on the digitization of master urban plans and sustainable urban mobility plans, key elements in smart city planning. In addition, efficient waste management is another priority area, supporting the implementation of innovative recycling and circular economy solutions. Through the NRRP, Romania has thus had the chance to significantly improve the sustainability and efficiency of its cities and towns, taking an important step towards long-term environmental and digital goals. The total value of the projects funded from the NRRP in Siret is over 45 million lei.

Local Action Groups (LAGs), under the LEADER approach of the European Union's Common Agricultural Policy, have provided an alternative and complementary funding pathway for smart city solutions, with a particular focus on rural areas and small urban communities. These funds, aimed at local development and supporting community initiatives, have been accessed to implement innovative projects and smart city technologies in these areas, with a particular focus on improving quality of life and promoting sustainability. Projects funded by LAGs have included the implementation of smart solutions for resource management, such as efficient street lighting systems, energy monitoring and control technologies, the development of digital communication infrastructures and the promotion of sustainable urban mobility. Through this approach, LAGs have played an important role in extending the smart city concept beyond large urban centers, bringing innovation and advanced technology to less developed communities, thus helping to bridge the technological and economic gap between rural and urban areas. The only project carried out by the Town of Siret through Codrii Herței LAG concerned the construction of a multifunctional social center and had a total value of approx. 1.6 million lei.

The city of Siret has implemented a project under the WiFi4EU programme based on a €15,000 voucher. The WiFi4EU programme, the European Union's initiative to promote free Wi-Fi internet access in public spaces, has played a significant role in the evolution of cities and communities towards the smart city concept. By offering vouchers for the installation of Wi-Fi access points in places such as parks, squares, libraries, and other public spaces, WiFi4EU has contributed not only to digital connectivity, but also to the digitization of public services and the improvement of citizens' experience. This internet access has facilitated the collection and analysis of real-time urban data, essential for smart management of city resources, from traffic to energy consumption. It has also enabled local authorities to offer innovative digital applications and services such as city guidance systems, interactive tourist information and citizen communication platforms. In essence, WiFi4EU was an important step in democratizing access to technology,

providing a solid basis for the further development of smart city infrastructures and services, and underlined the European Union's commitment to supporting the digital transition across Europe.

Regarding the local hospital, the Siret Town Administration has accessed funds worth over 700,000 lei from POIM 2014-2020. The project aims at smart solutions by implementing a complex system of detection, signaling and alarm for fires and monitoring of oxygen levels which is an essential component of the smart safety infrastructure. Such a system includes highly sensitive smoke and heat detectors strategically distributed throughout the hospital, including on-call rooms, doctors' offices, patient rooms and other critical areas. These detectors are connected to a central alarm system that continuously monitors the signals and triggers the necessary alarms when it detects abnormalities. In addition to fire detection, the system includes oxygen sensors to monitor levels of this vital gas, essential in areas where medical oxygen is used and where leaks can pose a major risk. These sensors would alert hospital staff when oxygen concentrations exceed safe limits, allowing rapid intervention to avoid any risk of asphyxiation or fire. The system can then be integrated with building automation solutions to control ventilation and other safety systems. In addition, connectivity to the hospital's internet network allows remote monitoring and instant alerting of emergency teams, optimizing response time and efficiency of incident response.

Tourism is a special field developed unevenly in Romania. The Town Administration of Siret has implemented smart city solutions in the field of tourism, including the creation of a network of tourist information centers along an integrated tourist route of UNESCO monuments and Natura 2000 protected areas. With the help of funding of around 2 million lei, the local public administration and several other relevant international partners have created a niche tourist route, attractive to tourists from all over the world. The promotion of the route was carried out with the help of virtual reality videos that recreated the destination sites, inviting tourists and all those interested to visit the monuments and locations targeted by the project across four countries: Romania, Ukraine, Hungary, and Slovakia.

Romania's national funding programmes are primarily focused on addressing deep-rooted problems in localities in terms of basic infrastructure. For example, the town of Siret has accessed funds through the PNDL programme to extend the sewerage network in the town, as well as a school in the area. Although the projects do not involve smart city solutions, the investments can later be integrated with specific smart solutions to monitor consumption in order to make public utility resources more efficient.

The rehabilitation and upgrading of local roads is a semi-permanent objective in many Romanian municipalities, and this type of investment does not automatically have a smart component. However, as with other type of public infrastructure investments, the project can be integrated with smart solutions at a later stage. In this case, the Siret Town Administration is willing to upgrade the investment of more than 28 million lei with some traffic management solutions (such as smart traffic lights, traffic monitoring, etc.).

With regard to new construction, current funding focuses on innovative technical solutions that lead to minimal resource consumption. The National Housing Agency usually uses block-type projects, so the investment is not aimed at implementing smart solutions. Further integration of such solutions is also possible, with the aim of increasing the quality of public services offered (utilities, neighborhood safety, video surveillance of the condominium, resource management, etc.).

The analysis of the revenue budget of the Town of Siret for the period 2015-2022 shows a particular dynamic for the amounts received from the European Union. As can be seen, in the first years of the period analyzed, the amounts are in the hundreds of thousands of Romanian lei. The year 2015 reflects amounts from the previous programming period, i.e. 2007-2013. The years 2016-2018 reflect modest amounts received from the EU which only show the beginning of investment projects that materialize from 2019 onwards, with more than 4 million lei received from the EU. The year 2020 represents a strong peak of the period, which is attenuated in the following year, probably due to the slowdown of projects due to the COVID-19 pandemic. A strong rebound in 2022 with over 34 million lei received from the EU in the form of pre-financing, reimbursements and payments for ongoing grant funded projects.

We can observe in Figure 2 that grant funding has played a crucial role in the economic development of Siret, which has implemented smart city projects, turning them into models of innovation and efficiency. By accessing these funds, the town of Siret, like most small and medium-sized cities in Romania, had the opportunity to invest in advanced technologies without jeopardizing its limited budgets. The implementation of smart solutions, such as intelligent traffic management systems, energy-efficient public lighting, digitization of public services and electric mobility infrastructure, has not only improved the quality of life of its inhabitants, but also stimulated economic activity. Local businesses, for example, have benefited from improved urban mobility and increased visibility through digital networks. In addition, through these projects, the town of Siret has started to become more attractive to investors and tourists, generating new business opportunities and increased local income.

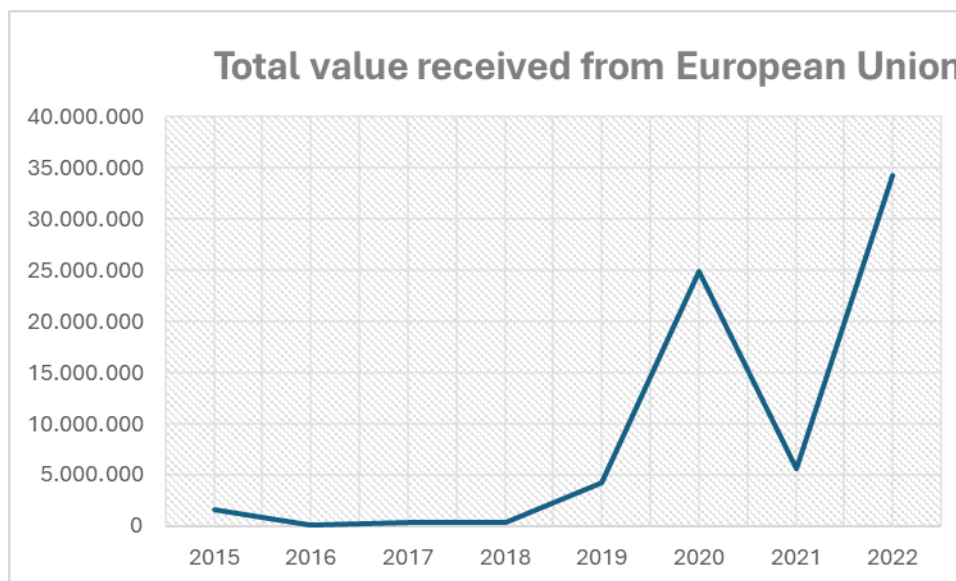


Figure 2. Total value of sums received from European Union, by year

Source: Own elaboration

In addition to the direct economic impact, the grants have also facilitated the social and cultural development of the town. Smart city projects have encouraged civic participation, with digital platforms facilitating interaction between citizens and local government and giving residents a stronger sense of belonging and involvement in the community. Education and training have also been improved, through access to technology and training programmes in new fields, preparing the local workforce for the digital economy. In addition, these initiatives have contributed to improving the sustainability profile of the locality through projects focusing on energy efficiency and carbon reduction, which has attracted the attention and interest of segments of the population and investors interested in green practices and innovation. Thus, grant funding has the potential to become not only an engine for economic growth, but also a catalyst for social change and long-term sustainability.

In conclusion, non-reimbursable funding has provided small towns like Siret with a platform for profound transformation. Through the smart city projects funded, this community has become more efficient, more sustainable and more prepared for future challenges. This has not only boosted economic potential but has also created a replicable model for other similar localities, demonstrating how technology and innovation can be successfully applied in any environment, regardless of the size or resources of the city.

5. CONCLUSIONS

After documenting the case study of Siret Town, we formulate some conclusions on the budgetary impact of accessing non-reimbursable funds for smart city projects.

The impact of European non-reimbursable funds on the budget of the Town of Siret has been transformative, especially in the context that the revenue budget has tripled in recent years. This substantial increase in revenue, largely attributable to access to European funds, has enabled the city to initiate and support ambitious smart city modernization projects. Such projects include, for example, the digitization of public services, the modernization of transport infrastructure and the implementation of technological solutions for the efficient management of urban resources. These initiatives have not only improved the quality of life of residents but have also generated significant long-term savings by optimizing the town's operational expenditure. Moreover, the implementation of smart infrastructure and innovative services has attracted new investment and stimulated local economic growth, contributing to a virtuous circle of development and prosperity.

In addition to the direct economic benefits, the European non-reimbursable funds have also had a significant social and community impact. The EU funded smart projects have improved access to education and health, developed safer and more attractive public spaces, and promoted social inclusion. For example, the creation of smart green areas and smart technology equipped recreational spaces has provided residents with new opportunities for leisure and social interaction. Modernization projects have also included vocational and educational training for young residents, ensuring that the local community is ready to adapt and take advantage of the new opportunities created by the digital economy. In this way, European grant funding has not only contributed to the economic growth of the town but has also increased social cohesion and greatly improved the overall quality of life in the community.

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