



Research article

Disentangling rural smartness in European policies: a critical overview of the Smart Village concept

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Abstract: In recent years, several policies have increasingly considered smart technologies as a potential solution to overcome territorial marginality in rural areas, where digitalization and smart innovation could help local communities address challenges such as depopulation and socio-economic deprivation. At the European scale, the Smart Village Action was launched in 2017 to address the so-called “circle of decline”, showing to what extent rural smartness has been recently gaining momentum in transnational cohesion policies. This work aims to critically explore the Smart Village paradigm as a recently-emerged policy framework in rural, cohesion and/or recovery policies, investigating if and how it is variously (re)interpreted in policies and operationally applied in projects. From a methodological point of view, a qualitative policy document analysis (QPDA) and software-based content analysis were carried out on UE official documents, offering new theoretical insights and operational recommendations for understanding the concept of smartness beyond urban-centered perspectives.

Keywords: smart village; policy framework; rural areas; content analysis; European Union

1. Introduction

Over the last few decades, the competitive strategy of the European Union has been based on a vision of smart, sustainable, and inclusive growth. Conceptually connected to the Smart Growth developed in the post-World War II era in the USA to face increasing rates of urban sprawl, a technology-based vision of territorial development has traditionally emphasized urban contexts, regarded as inherently suitable for technological innovation. Over time, the Smart City paradigm has become a buzzword, promoted as a tool for optimizing urban governance, an instrument for spreading new waves of neoliberalism, and a medium for developing branding strategies and disseminating appealing urban images [1]. Thus, most of the scientific literature on smartness has an evident urban-centric bias, focusing on the interactions between users or citizens, urban spaces, and digital information networks taking place in and for cities.

For years, rural territories have been excluded from smart-driven strategies, practices, and narratives, although innovation—including technological—is far from being absent, especially in the field of Smart Agri-food [2]. However, in the last decade, there has been a significant semantic shift in the paradigm of smartness, first at the level of policies and then of narratives, marking the appearance of the term in policy documents, programs, and actions, especially at the European scale, regarding rural areas. Smartness is no longer seen as a tool for digital innovation strategies incorporated into the urban dimension but as a potential strategy for actions aimed at addressing socio-economic and cultural marginalization, challenging geographical limitations tied to (in)accessibility. In fact, a growing emphasis is being placed on the need to promote technological-digital innovation strategies specifically for rural areas, traditionally less affected by technological infrastructure programs and presenting higher potential for benefits, especially in the aftermath of the Covid-19 pandemic and the National Recovery and Resilience Plans (NRRPs) developed and implemented by the different countries in European Union [3]. This is the case of the Smart Village Action (SV), launched in 2017 by the European Parliament to overturn the decline in European rural areas.

However, as Naldi et al. [4] stated, at the European scale, it remains unclear how smart-based strategies can be effectively adapted to diverse non-urban regions since several policies envisioning smart-related concepts (e.g., embeddedness, relatedness, and connectivity) are generally more applicable to areas integrated with urban centers, with larger populations and an industrial base [5].

This explorative work, supported by a theoretical point of view into the geography of smart cities/territories, is based on secondary data to evaluate the conceptual and operational shifts characterizing the Smart Village paradigm's evolution; first, the shift from urban to rural, and then from European-scale policies into national-level practices. This explorative approach [6] represents preliminary research of a relatively new field of scientific exploration. The research is specifically focused on the ways through which the framework has been translated from European and transnational policy levels to national levels and into funded projects during its first round of implementation (2017–2019). The aim is to understand if and how it is (re)interpreted, what governance levels and sectors are involved, and which practices relate to the “smart village” paradigm in the recently approved Common Agriculture Policy (CAP) (2023–2027).

This work employs a qualitative policy document analysis (QPDA) of the Smart Village Action, assessing the main characteristics of SV projects in terms of localization and sectors/fields involved.

Furthermore, the investigation is also based on a software-based content analysis to explore if the dimension of territorial smartness, officially promoted in the UE policies, is operationally territorialized in the SV projects from the initial phase (2017–2019).

In doing so, this research provides novel theoretical insights into the debate on rural smartness by highlighting the operationalization of a transnational policy that diverges from the urban-centric approaches typically adopted in smartness studies. It highlights critical aspects and potential opportunities of a “transmigrating paradigm” and provides a novel understanding of the role of new technologies in rural areas, often considered in the context of firm innovation, alongside useful indications for policy-makers at the transnational and national scales.

The work is organized as follows: after a brief methodological section, the second section provides a state-of-the-art overview of smartness as a migrating paradigm from urban to rural. The third section presents an analytical focus on EU smartness policies in rural areas and a manual policy analysis. In the fourth section, SV projects are examined in-depth using software-based content analysis. The final sections include discussion and conclusions.

2. Objectives, methods, and research workflow

The aim of this work is two-fold. First, we aim to explore to what extent the SV concept mobilizes rural smartness as a driver for the endogenous resources of social innovation in rural areas, going beyond firm-level technological innovation. Second, it examines how this territorial smartness, as outlined in the EU official policy documents, is operationalized in project implementations, to assess if and how the paradigm is conceptually modified in the shifts from transnational policies to implementation. We decided to focus on the initial stage of the SV European policy framework (2017–2019) as it refers to an already-concluded stage of implementation that can be easily evaluated, in comparison with the current application of the SV paradigm in the CAP approved in 2023, which has further emphasized the potential of SV for rural areas.

From the methodological standpoint, a content analysis approach was adopted, as it can be applied to various data sources, including texts, visual content like photos and videos, and audio data. It offers flexibility, being applicable in both empirical and theoretical contexts. Text remains by far the most frequently used data source for content analysis, as underscored by Krippendorff [7]. In contemporary research, written text analysis has emerged as a cornerstone method for gaining insight into various phenomena across disciplines. From examining the nuances of language in literature to exploring social media public discourse, the written text provides a valuable source of information suitable for analysis.

Following Prior [8], we decided to adopt a qualitative policy content analysis approach, which condenses raw data into themes through valid inference and interpretation using inductive reasoning. Specifically, we decided to use a summative approach to content analysis [9], which is based on the counting of words or manifest content, and then we extended the exploration to include latent meanings and themes. Although apparently quantitative in the early stages, this approach allows us to explore the usage of the words in an inductive way. Prior suggested combining techniques of rule-based content analysis with a theoretical frame, enabling the identification of the core features of a policy narrative.

As such, our methodology entailed the following phases:

(1) A manual qualitative policy content analysis (QPCA) [8] on the official sources of the UE SV action (source: see Appendix 1) and their categorization to identify the main narratives emerging from policy documents.

(2) A software-based content analysis on three levels of analysis. First, official documents of the SV policy framework. Second, official documents from SV groups across three main areas of action, analyzed using the open-source tool Voyant (www.voyant-tool.org), where the units of analysis were words detected in terms of frequency and reciprocal networks to infer the main themes. Third, official documents describing the 35 SV projects officially selected as the most representative and, for this reason, included as good practices in the new 2023–2027 CAP.

3. From the city to the village: smartness as a migrating paradigm

Over the last few years, a wide repertoire of labels has been used to highlight the growing role of new technologies in urban governance, which recently flowed into the buzzword “Smart City” (SC). Generally promoted by large corporations and international and national organizations, often in collaboration with research centers and universities, the idea of digital urbanism is incorporated into “normative” visions of the future, in which technology is seen as the primary driver of change. From Barcelona to Chicago, SC programs use technology for management, monitoring, and urban planning tools through interactions with data flows and big data [10–12].

The term SC as a wide range of definitions, ranging from Wired City [13] and Cybercity [14] to Digital City [14,15] and Intelligent City [16]. Vanolo [17] identified two macro-perspectives on SC. The first perspective is conceptually linked to the notion of Smart Growth, a theoretical-operational framework that emerged after the Second World War in the United States. It is mostly regarded as a planning/building policy tool to counteract the unstoppable development of urban sprawl. In the European Union, it has been translated into a wider policy framework aimed at promoting innovation, education, and research in a variety of subfields. Although different in terms of theoretical assumptions and methodological approaches, the definitions under the Smart Growth perspective are equally based on an uncritical celebration of the SC, in which all actors involved—from central governments to citizens—would act as agents of change thanks to the “widespread intelligence” ensured by smartness, opening up new horizons of civic participation [18,19]. The crucial role of users has been further emphasized in recent years due to the spread of mobile devices, which allow everyone to co-create big data through user-generated content.

The second perspective sees smartness as a result of the different waves of urban neo-liberalism, driven by large corporations that foster the so-called “smartmentality” effect [20]. In addition to the corporate logic, this second vision also criticizes the indiscriminate proliferation of big data that changes the territories of everyday life into infoscapes, (un)consciously generated by citizens acting like human sensors that leave digital traces [21,22].

In the EU policy context, the theory of Smart Specialization has been developed by several scholars to guide policy-makers on priority areas for innovation policies. This vision entails the development of place-specific innovation policies aimed at activating the endogenous regional potential, through innovation, knowledge, and technology, as part of the EU smart growth strategy first developed in 2020. According to McCann and Ortega-Argiles [5], smart specialization is linked

to three concepts: embeddedness, relatedness, and connectivity. The first refers to strong regional or local connections to specific industries in terms of input/output linkages and/or labor force; relatedness implies knowledge spillovers, and connectivity stresses the relevance of face-to-face contacts, networks, and mobility of human capital, for which it is crucial to increase and improve both traditional transport and ICT infrastructures.

In the mid-1980s, Howard Newby [23] argued that for the first time since the Industrial Revolution rural areas could participate in a technological breakthrough on equal terms with urban centers. Recently, with the advent of the Technological Revolution, rural areas have overcome their peripheral status and inherent weakness of informational ties through improved technological infrastructures. However, as Visvizi and Lytras [24] stated, while the impact of ICT has long been explored and even problematized in urban contexts, the application, use, and territorial effects of new technologies are traditionally less explored in rural areas, as these are generally affected by low accessibility to resources and markets—and, consequently, spillover advantages—negative migratory balances, and low education rates [4], making it difficult to activate endogenous development [25,26].

In general, the relationship between digital technologies and rural areas is emphasized in the agri-food sector, the so-called Smart Agriculture or Agriculture 4.0. This "umbrella" term encompasses a vast range of technologies based on digitalization and information technology through the integration of physical, technological, and biological systems such as the Internet of Things, robotics, artificial intelligence, 3D printing, and autonomous vehicles [27].

Smart farming is a field in which digitalization can be a driver for innovation and increased profitability of companies. Suppliers of agricultural technologies and large transnational corporations can achieve strategic positions in the broader economic market through digital technologies with high information content, automatic systems, and data collection [28]. However, while smartness in rural areas has been explored regarding technological innovation at the firm level, the paradigm has been less analyzed regarding the territorial dimension.

Interpreting smartness as territorial digitalization implies exploring the ongoing forms of the digital divide that characterize rural areas, where their lower connectivity is regarded as the true "rural penalty" [29]. In addition to technical-infrastructure barriers linked to the morphological dimension, the absence of a homogeneous broadband connection is the result of limited demand in areas generally with aging populations that are more reluctant to adopt new technologies.

While smartness has traditionally been promoted and explored in urban contexts and viewed at the firm level in rural areas, recent policies have introduced terms like Smart Territory or Smart Land [30,31]. This conceptual turn not only marks a spatial shift from urban to territorial scale but also epitomizes the "migration" of the Smart concept and its ubiquitous performative power. Unlike Smart City, Smart Territory indicates a wider strategy of sustainable and efficient use of resources through the integration and interconnection of physical, social, and digital spaces on an urban and/or regional scale. So, its field of application is extended to larger portions of the territory [32].

This vision mirrors the conceptual and operational rethinking of the traditional center-periphery, urban-rural dialectics that have recently become more nuanced. In more recent years, the concept of city-region has incorporated urban–rural interactions, even though the rural level is usually absent as a conceptual and operational dimension in studies and planning practices [33]. The result is to assume that nothing else exists outside of the urban area, which has resulted into the incorporation of the non-

urban, or the “ontological Other” (ib.) leading to “extensive regional urbanization [33]. As a matter of fact, although equally involved in the processes of metropolization, rural areas have less representativeness and a lower capacity to influence decision-making processes. The paradigm of the Smart Territory or Smart Land considers both urban and rural components equally relevant, particularly in the recent European policies aimed at facing crucial issues affecting territorial cohesion.

Over the last few years, several EU policies have been developed to reverse the progressive depopulation and consequent socio-economic marginalization of rural areas which make up 44.6% of the entire European surface and 28% of the population. These areas are affected by a growing peripheralization despite their varied landscape-territorial structures and functional specializations. This “marginality” is mainly triggered by depopulation, which is driven by the absence or insufficiency of infrastructures and basic services, the gradual abandonment of agricultural land for more remunerative occupations, high rates of school dropouts, and deep impoverishment in terms of human capital. This turns into further territorial gaps and, therefore, new socio-economic polarizations on a regional scale [34]. Currently, the progressive trend toward depopulation mainly concerns the rural territories of Eastern Europe, in which the processes of agricultural–industrial restructuring have accelerated urbanization, the Nordic and Baltic countries, whose territories have always been characterized by low population rates, and finally the inner areas of southern Europe, in which these new gaps exacerbate historical territorial polarizations (ib.).

In this scenario, territorial cohesion policies have utilized smartness not only as technological and digital infrastructure but also in its multidimensional form of social innovation. This is the underlying conceptualization of the Smart Village (SV) model. As stated by Hlaváček et al. [35], the SV concept “seeks to use modern technology and digital innovation to achieve sustainable development and improve living conditions for rural residents. These initiatives aim to develop modern rural areas which will streamline infrastructure, enhance digital connectivity, support entrepreneurship and improve the quality of rural life so that they remain attractive to the younger generation and do not fall behind urban regions”. The SV model has been recently mobilized in several transnational and national policies at the European scale to help rural areas face ongoing challenges through innovative changes, regarded as particularly relevant in the post Covid-19 National Recovery and Resilience Plans (NRRPs) where digitalization is one of the main pillars, especially in remote and/or rural areas [36]. Regarded as a novel concept [35], the SV does not fully duplicate the SC approach that is usually associated with technological-driven solutions [37]. On the contrary, the SV model usually combines technological and non-technological solutions [38] to pursue community wellbeing in line with the neo-endogenous approaches to village development [39].

4. Manual qualitative policy content analysis: EU Actions from transnational to national perspectives

The first conceptualization of techno-driven rural development in European policies dates back to the 2016 Cork Declaration 2.0, *A better Life in Rural Areas*, which, following the 1988 Commission communication on *The Future of Rural Society*, promotes alternative approaches to rural development through the involvement of communities. The declaration explicitly refers to the need to bridge the

digital divide and the potential of new technologies in activating supra-local networks, overcoming the barriers of accessibility and physical-geographical marginality.

Although already embedded in official policies, rural digitalization is translated into the smart paradigm in the Smart Village (SV) action, officially launched in 2017 within ENRD—European Network for Rural Development of the General Directorate for Agriculture and Rural Development of the European Commission and continued until 2022, when it was incorporated into the new CAP—Common Agricultural Policy. In addition to various European organizations, agricultural service companies, and experts, the ENRD included the National Rural Networks, the management authorities of the Rural Development Policy and the Local Action Groups (LAGs). These groups identified a series of thematic groups focused on some macro-areas regarded as particularly relevant for the pursuit of the three main objectives, namely competitiveness, environmental protection, and social inclusion, for the 2014-2020 programming,

Within one of the thematic areas identified, the “Smart & Competitive Rural Areas”, the action on Smart Villages (SV) was launched by the European Parliament with the support of various General Directions (AGRI, REGIO, and MOVE) of the European Commission through the creation of a specific thematic working group of the European Network for Rural Development (2017–2020). In the policy documents, Smart Villages were defined as an action to explore

ideas and initiatives around revitalising rural services through digital and social innovation. It looked at how rural services – such as health, social services, education, energy, transport, retail – can be improved and made more sustainable through the deployment of Information and Communication Technology (ICT) tools and through community-led actions and projects¹.

So, in line with this approach, the SV action marked a change in scale and, from a conceptual point of view, the overcoming of a technocratic vision of smartness, explicitly reconnecting to already consolidated approaches and policies of bottom-up participation and development, like the LEADER and Community-Led Local Development (CLLD) approach.

During its three years of activity, the SV thematic group surveyed ideas and initiatives for the revitalization of rural services (health, education, energy, transport, retail) using digital social innovations, supported by participatory tools and community actions centered on ICT. Furthermore, the group tried to orient policies toward the adoption of SV strategies by providing an exchange platform across Europe.

The conceptual assumptions and operational implications of the SV were supported by the 2018 Bled Declaration, which emphasized that “the rural digital economy, if developed in an innovative, integrated and inclusive way, has the potential to improve the quality of life of rural citizens and, therefore, contribute to tackling the current depopulation and migration from rural areas”. The actions envisaged by the Bled Declaration aimed at promoting technological infrastructure through precision agriculture, digital platforms, e-learning, e-health, e-administration, circular economy, rural tourism, and social innovation in general.

The SV action identified a series of digital innovation practices, experiences, and strategies across Europe based on a variety of funds, governance tools, methodologies, and actors. It also included

¹ https://ec.europa.eu/enrd/smart-and-competitive-rural-areas/smart-villages_en.html

national and/or regional strategies of integrated territorial development aimed at overcoming sub-national gaps (the National Strategy for Inner Areas in Italy or the Reciprocity Contracts in France), actions specifically designed for the revitalization of rural areas through new technologies (i.e., “Smart Countryside” program launched in Finland), and practices at the local and hyper-local scale, like eco-villages in Ireland or rural co-working programs in Catalonia.

Within the SV action, the Smart Eco-Social Villages Pilot project was launched in 2018–2019, followed by the 1st and 2nd Preparatory Actions on Smart Rural Areas in the 21st Century (between 2019–2022 and 2020–2023) referred to as “Smart Rural 21” and “Smart Rural 27 projects” respectively. In particular, the Smart Rural 21 project was a 2.5-year project supported by the European Commission aiming to promote the uptake of the SV paradigm across the EU by supporting the SV implementation in 21 villages selected in several European countries, in order to draw future indications for policy intervention.

In outlining the vision of rural smartness, the European Union is explicitly inspired by the concept of “intelligent communities”, which aims to overcome a techno-centric vision and promote a vision of development in which new technologies are not the final objectives but rather tools to activate endogenous processes and resources. This vision of smartness, that combines digitalization with green transition and social innovation, is also emphasized in NRRPs designed and implemented by the Members states within the Next Generation EU plan to recover from the Coronavirus health crisis, where a strong emphasis is devoted to the recovery and competitiveness of remote and/or rural areas.

4.1. An in-depth exploration of the SV action. The first round of conceptualization and implementation (2017–2022)

Going in-depth into the policy documents (see Appendix 1), we organized the several stages of policy design and implementation.

First, the SV thematic group carried out an exploratory scope to identify the initiatives on rural services already developed on a European scale. Findings demonstrated that several Member States were preparing strategies and pilot projects based on the SV vision to face the still-enduring digital divide between urban and rural areas and/or depopulation in certain rural areas. So, the SV thematic group on “revitalizing rural areas” identified two main groups of national policies:

- Broader strategies of rural development combining economic development and job creation by supporting innovations in services, mostly in education, mobility, employment, healthcare, and energy.
- Specific strategies aimed at ICT development and capacity building, focusing particularly on the creation of broadband infrastructures and improving the uptake of digital opportunities through educational courses for both citizens and entrepreneurs. Some of these strategies also support pilot innovations in specific services.

Apart from identifying the funding programs of the SV initiatives (Rural Development Programmes as well as other EU Funds, such as the ERDF, the ESF, and National funds), the SV action also identified the most interesting strategies developed at the national scale aimed at supporting social cohesion and quality of life within broader rural development or specific strategies for digitalization of rural areas. In this list, the Inner Area Strategy in Italy was included as a national-

wide strategy of territorial cohesion aimed at reversing depopulation in several areas with scarce accessibility to services. This strategy was included as several pilot strategies had a strong focus on supporting local service innovation, although the policy scale was not focused on the village but rather an assemblage of different municipalities and communities that work together within a multi-governance multi-actor strategy of territorial cohesion. In the same vein, the list also included French Reciprocity contracts, aimed at improving the sustainability of rural services and economic development; the Spanish Law for Sustainable Rural Development, as an integrated approach to support rural infrastructure, ICT development, and a wide range of rural services; and the Smart Countryside program in Finland, which pursued the digitalization of rural services.

After this initial scoping survey, the SV thematic group explored in-depth a series of good practices to explore the challenges faced in their implementation, the development processes, and the critical points in order to provide policymakers with recommendations and suggestions.

4.2. The SV paradigm into the new Common Agricultural Policy (2023–2027)

The SV action has been recently translated into the SV “concept” within the recently launched EU Common Agricultural Policy (CAP), one of the main pillars of the European Green Deal and its Farm to Fork and Biodiversity strategies, supporting the farming sector by promoting high-quality and sustainable food production with a series of investments in the broader rural economy.

With this wider policy framework, the SV approach was included in LEADER interventions for 2023–2027, together with a series of preparatory actions to support Member States and rural communities in the implementation of the post-2020 CAP and help them in the creation of new smart villages across the European Union. For this reason, in December 2020, the second Preparatory Action on Smart Rural Areas in the 21st Century (shortly called “Smart Rural 27” project) was launched by the European Commission², drawing on the previously launched SV actions (i.e., Smart Eco-social Villages Pilot Project and the Smart Rural 21 project) (Figure 1).

² <https://www.smartrural27.eu>.

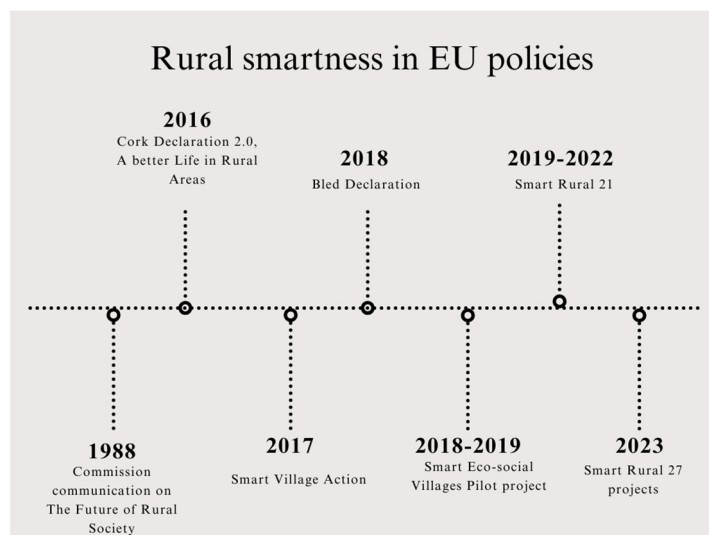


Figure 1. Timeline of rural smartness in EU policies. Source: Authors' processing.

The main issue of the last SV policy round is to translate a “policy concept to reality” by embedding the SV approach in LEADER through CAP Strategic Plans. As officially stated,³

“The term ‘smart village’ is a policy concept developed at the EU level, which now is about to be tested for the first time in the CAP Strategic Plans. Many member states explicitly plan to include smart village initiatives under LEADER intervention [...]. Some CSPs explicitly plan smart villages by recognising the vital role that LEADER Local Action Groups (LAGs) can plan for the emergence of smart villages. In other CSPs there are vague references without an explicit mention, but leave freedom for LAGs to pick it up.”

Official statements recognize that without a legal definition at the EU level, member states can “fill the concept with their own realities”, although some common features can be retrieved from the definition developed by the Pilot Project on Smart Eco-social villages.

As officially declared, SV are:

“Smart Villages are communities in rural areas that develop smart solutions to deal with challenges in their local context. They build on existing local strengths and opportunities to engage in a process of sustainable development of their territories. They rely on a participatory approach to develop and implement their strategies to improve their economic, social and environmental conditions, in particular by promoting innovation and mobilising solutions offered by digital technologies. Smart Villages benefit from cooperation and alliances with other communities and actors in rural and urban areas. The initiation and the implementation of Smart Village strategies may build on existing initiatives and can be funded by a variety of public and private sources”.⁴

³ https://eu-cap-network.ec.europa.eu/news/smart-village-corner_en.

⁴ Source: Pilot Project on Smart Eco-Social Villages.

In this last operationalization of the SV paradigm, two main thematic clusters were identified. The first focused on energy, considered a crucial issue due to current challenges such as climate/energy crisis, rising prices, and households' energy poverty. The ambition of creating decentralized systems of energy supply is seen as a strategy particularly relevant for small villages and rural areas that can assure independence from large corporations and strengthen local value creation. The second cluster is about the digitalization of services to address the challenges usually faced by rural areas, like the aging population, the decrease in quality and number of services of public interest, the difficult access to employment, the lack of efficient transport infrastructures and connections, and educational poverty, among others. The digitalization cluster is inserted in the wider Digital Decade framework and the related policy program adopted by the European Commission in 2020, through which the EU aims to pursue a “human-centric, sustainable vision for digital society to empower citizens and businesses”. With the specific aim of promoting the SV paradigm, a series of SV taskforces have also been created at national scales, made of experts who help communities to improve the interaction among the several funds that can be used for SV projects. In addition to this, the 1st European Smart Villages Pilot Observatory was created to discuss the specific needs of stakeholders and promote the implementation of the SV concept “within and beyond” the CAP.

Overall, the most crucial element emerging from official documents of this last round of SV implementation is the territorialization of the policy framework, at least at the design level, since a strong emphasis is put on the local scale and the endogenous resources to be enhanced. The approach is also defined as “place-based” because it “concerns a delimited local area (typically a village, a small rural town, one or more municipalities)”. Participation should rely on assemblages between different communities, stakeholders, and/or territorial contexts through the use of innovative solutions to face local needs, not necessarily mobilizing digital technologies but only “where appropriate”.

Furthermore, policy documents underline the difference between SV strategies and projects; the first is regarded as the most crucial tool “to be translated into the language of the community”. The policy documents allow single Member States to provide their own definition of SV strategy, ranging from a concept to an initiative that has to include a participatory approach, innovation, and a set of cooperative relations and actions that have to face social, economic, and environmental challenges.

5. The software-based content analysis

In total, 878 experiences were identified in the first round of the SV action in Europe (2017–2022)⁵, with Finland as the country with the highest number of SV projects (65), followed by Spain (50) and Italy (47) (Table 1).

⁵ https://ec.europa.eu/enrd/policy-in-action/projects-practice_en.html

Table 1. SV projects (first round, 2017–2019).

Country	SV projects
Austria	45
Belgium	40
Bulgaria	15
Croatia	11
Cyprus	3
Czech Republic	27
Denmark	18
Estonia	35
Finland	65
France	38
Germany	45
Greece	25
Hungary	38
Ireland	23
Italy	47
Latvia	27
Lithuania	20
Luxembourg	15
Malta	11
Poland	41
Portugal	25
Romania	37
Slovakia	33
Slovenia	46
Spain	50
Sweden	42
Netherland	32
United Kingdom	24

The most recurrent keywords of the projects are #LEADER/CLLD (245 times), followed by #agriculture (237) and #entrepreneurship (174), while the words that appear the most in different combinations of keywords are #rural, as predicted, followed by #services, #management, and #local (Figure 2). Not surprisingly, the frequency of keywords shows the relevance of a sector that is obviously regarded as crucial for rural areas, that probably needs to be reinvented and innovated both in decision-making and strategic planning processes (as #management and #entrepreneurship show), as well as the dimensions widely stressed in the general framework, such as the service provision and the local dimension.

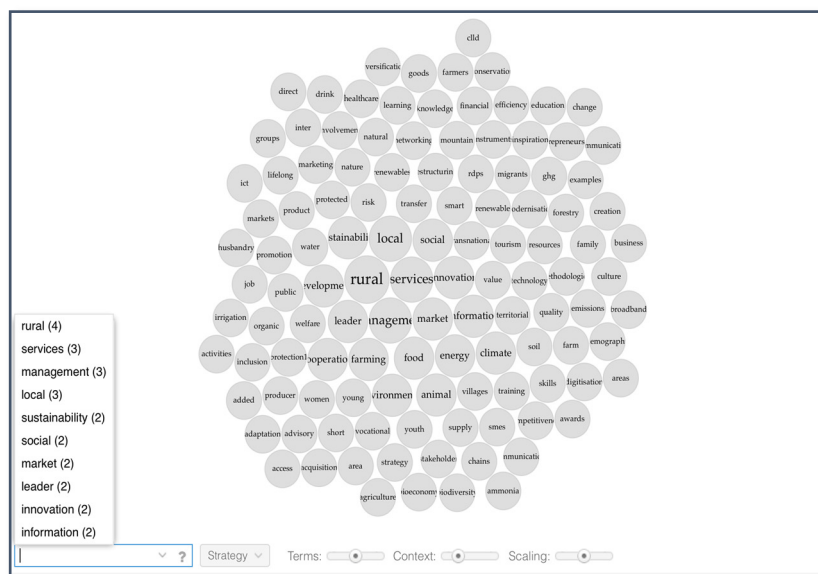


Figure 2. Frequency of keywords and recurring words within keyword combinations.

The software-based content analysis focused on observing the alignment between European policies and projects related to SV to detect the correspondence between the general policy framework and national-scale funded projects with the aim of understanding how the transnational policy is operationally implemented/territorialized in the projects funded. For this reason, the content analysis was conducted at three levels: (1) the level of European policies on smart rural development; (2) the level of national projects officially categorized within the SV action and grouped in three macro-areas; (3) the level of the 35 SV projects officially considered as the most representative of the 2017–2022 SV action and consequently included as good practices in the new CAP⁶. By examining the available online European policy documents and the description of the smart village action⁷, we obtained the following results.

⁶ We used the open source tool Voyant, available at www.voyant-tool.org

⁷Here: <https://digitevent-images.s3.amazonaws.com/5c0e6198801d2065233ff0996-registrationfiletexteditor-1551115459927-smart-villages-briefing-note.pdf> and here: https://ec.europa.eu/enrd/smart-and-competitive-rural-areas/smart-villages/smart-villages-portal/eu-policy-initiatives-strategic-approaches_en.html



Figure 3. Tag cloud EU policy documents on SV.

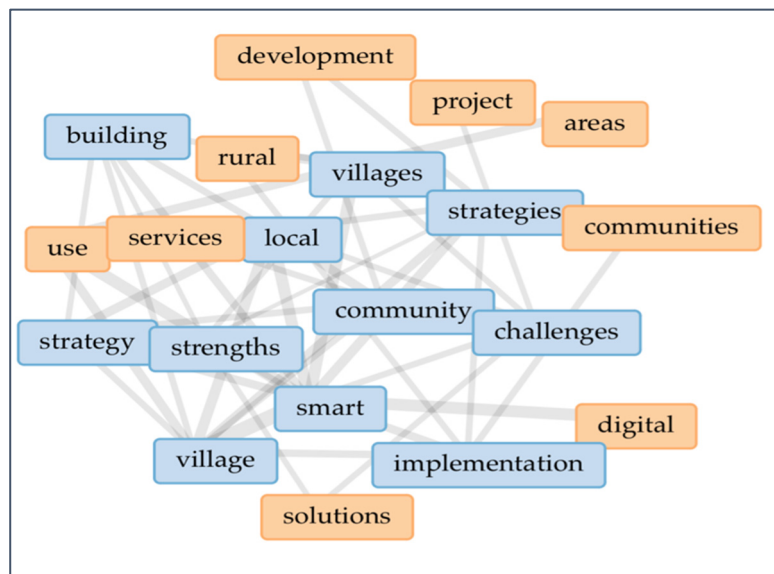


Figure 4. Links between tags in EU policy documents on SV.

As it emerged from the software-based content analysis, the most recurring words after #smart were #local (26), #village (24), and #villages (20) (Figure 3, Table 2). However, although observing the recurring topics offers us an overview of the main topics discussed in the policies, it is very interesting to interpret the graph connecting the topics (Figure 4). The graph shows us how the word “smart” links words such as #village and #community.

In the same cloud of links between words, we observe the link between topics such as #communities, #rural, and #villages, which highlight, as above-mentioned, the less urban-centric orientation of the new smartness policies generation. The rural focus, the orientation toward the community, and smaller contexts appear very explicit in the general document of European policies.

Table 2. Summary table of content analysis on the European policy lines for SV projects.

Most frequent words in the corpus
smart (39); local (26); village (24); villages (20); digital (20); use (19); development (18); rural (17); technologies (16); services (16); strategies (14); opportunities (14); areas (14); solutions (13); project (13); community (12); communities (12); public (11); pilot (11); strategy (10); implementation (10); citizens (9); support (8); innovative (8); funding (8); stakeholders (7); resources (7); improve (7); financing (7); building (7); wide (6); way (6); tools (6); quality (6); projects (6); needs (6); need (6); life (6); definition (6); challenges (6); administrative (6); active (6); scale (5); range (5); private (5); potential (5); make (5); future (5); different (5); capacity (5); approach (5); addition (5); able (5); working (4); variety (4); training (4); strengths (4); strategic (4); states (4)

The main themes emphasized within the SV framework strongly intertwine digitalization with issues concerning the local community. These policies demonstrate a comprehensive approach aimed at supporting project concepts that have the potential to influence both infrastructure development and community empowerment. Moreover, the emphasis on digitalization underscores the importance placed on leveraging technological advancements to enhance various aspects of village life, while simultaneously fostering community engagement and cohesion. This holistic approach not only addresses the technological needs of rural areas but also recognizes the intrinsic value of community involvement in driving sustainable development initiatives.

The analysis was further expanded from the policy level to the project one, by exploring the smart village database list included in the portal until 2022. Each project was included in a macro-domain that corresponds to the three main policy areas identified by the European Network for Rural Development (ENRD), with a summary sheet document subjected to the analysis: (1) Digital and Social Innovation in Rural Services, (2) Smart and Competitive Rural Areas; and (3) Supporting Rural Businesses.

(1) *Digital and Social Innovation in Rural Services.* The Tag Cloud (Figure 5) includes the first 255 words of the documents analyzed for the first group of projects. Based on the content analysis, the corpus focuses extensively on rural development projects, particularly within the realm of digital services and community development. The prominence of terms like #rural and #project underscores the strong emphasis on initiatives in rural areas (Table 3). Additionally, the inclusion of terms such as #digital and #services highlights the significance of technology and service provision in driving rural development forward.

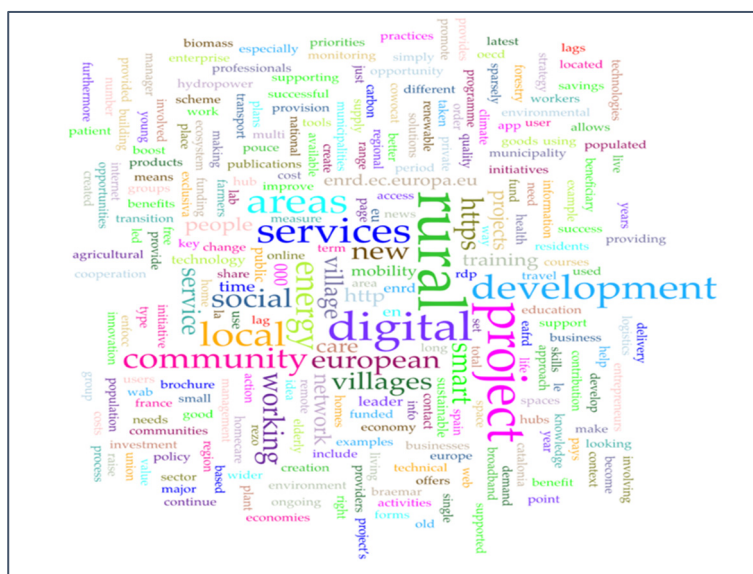


Figure 5. Tag Cloud EAFRD Projects on Digital and Social Innovation in Rural Services.

Noteworthy terms such as #energy, #community, #social, #villages, and #smart indicate a diverse range of topics covered in the corpus, suggesting a multifaceted approach to rural development. Furthermore, terms like #health, #education, and #farmers indicate a holistic approach to rural development, addressing various needs and sectors within rural communities.

Table 3. Summary table of content analysis on the EAFRD Projects on digital and social innovation in rural services.

Most frequent words in the corpus
Rural (177); project (122); digital (105); services (75); areas (75); local (73); development (66); energy (55); community (52); social (50); villages (45); https (44); european (44); working (43); smart (43); village (39); service (39); new (39); http (33); care (33); training (32); network (32); projects (31); people (31); enrd.ec.europa.eu (26); time (25); mobility (25); 000 (24); leader (23); en (23); public (22); enrd (22); technology (21); sustainable (21); initiative (21); eu (21); use (20); contact (20); page (19); online (18); la (18); improve (18); health (18); farmers (18); education (18); remote (17); period (17); long (17); hub (17); home (17); funding (17); cafrd (17); approach (17); action (17); access (17); support (16); residents (16); information (16); funded (16)

(2) Projects on *Smart and Competitive Rural Areas*. For the second group of projects, the content analysis suggests that the competitiveness of rural areas is pursued through smart policies that primarily focus on improving services. In Figure 6, for example, keywords such as #digital, #services, or #broadband are noticeable. These indicate a commitment to enhancing access to services, especially through digital infrastructure and the Internet. This suggests a particular emphasis on strengthening internet connections and online services, which are regarded as crucial for the economic and social development of rural areas. In this vision, smart policies aim to increase the competitiveness of rural communities by providing them with the necessary resources and opportunities to thrive in the digital economy.

The text underscores the continued relevance of human-centered approaches within the realms of rural and digital development, emphasizing the importance of community empowerment, local engagement, and responsive service delivery.

(3) Projects on *Supporting Rural Businesses*. Based on the most frequent words in the third corpus selected for the content analysis, insights show the prominence of words like #rural, #business, #support, and #development (Figure 7). They suggest a strong emphasis on fostering entrepreneurship and economic growth in rural areas. This indicates a focus on initiatives aimed at supporting local businesses, promoting investment, and driving overall development in rural communities.

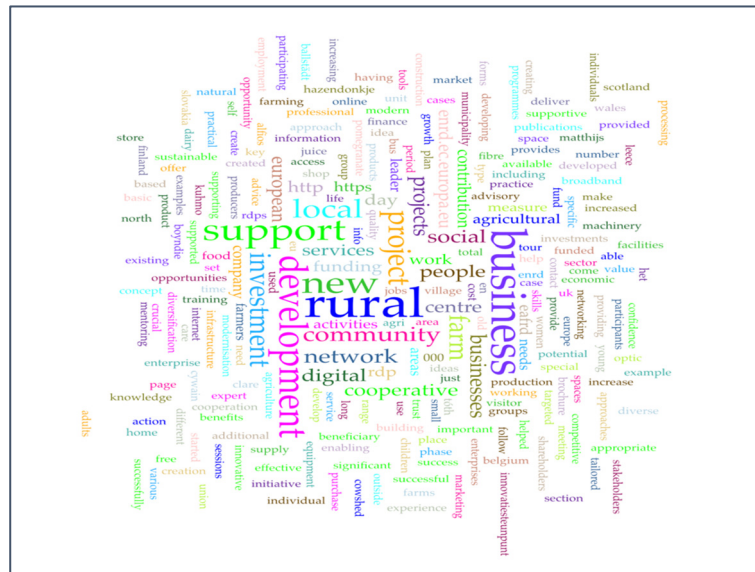


Figure 7. Tag Cloud EAFRD projects on supporting rural businesses.

Table 5. Summary table of content analysis on the EAFRD projects on supporting rural business.

Most frequent words in the corpus
rural (169); business (121); support (90); development (84); new (73); local (71); project (67); investment (56); farm (52); community (45); network (43); digital (43); social (42); projects (41); businesses (39); cooperative (38); people (37); centre (37); services (35); http (35); european (34); funding (33); contribution (33); enrd.ec.europa.eu (32); day (32); rdp (31); eafnd (30); agricultural (30); work (29); https (29); activities (29); leader (27); areas (27); company (26); needs (25); measure (25); food (24); farmers (24); training (23); used (22); cost (22); 000 (22); production (21); en (21); agri (21); village (20); quality (20); products (20); ideas (20); help (20); eu (20); women (19); tour (19); total (19); skills (19); rdps (19); modernisation (19); infrastructure (19); enrd (19)

In particular, terms such as #project, #investment, and #projects indicate a commitment to implementing various initiatives and programs aimed at promoting rural development and economic prosperity. This suggests a strategic approach to allocate resources and investments specifically tailored to address the needs of rural areas. Additionally, words like #digital, #social, and #network suggest the acknowledgment of the importance of digital and social initiatives in rural development, while terms such as #farm, #agricultural, #farmers, and #production suggest a focus on agriculture-

to harness the collective intelligence and resources of local stakeholders to drive sustainable and resilient development at the territorial level. By embracing community-based approaches and prioritizing social inclusion and service provision, smart initiatives are regarded as tools that have the potential to foster more equitable and prosperous societies for all. This comprehensive approach to rural development encompasses economic, social, digital, and agricultural dimensions, with a focus on empowering local businesses, fostering innovation, and enhancing the overall quality of life in rural areas. A strong emphasis is put on implementing projects and attracting investments to stimulate economic growth in rural areas. Additionally, digital and social initiatives are regarded as crucial to enhance connectivity and access to services, apart from specific services for agriculture-related activities, including support for farmers and efforts to promote sustainable farming practices. Lastly, the content analysis highlighted a commitment to skills development and training, indicating a desire to equip individuals with the necessary skills for participation in rural development initiatives.

Overall, the analysis reflects a comprehensive approach to rural development, addressing economic, social, digital, and agricultural aspects to improve the quality of life in rural communities. The comparative content analysis of policies and projects suggests that policy level and project implementation are largely aligned in providing the idea of a smart village as a hub of social innovation and a catalyst for leveraging endogenous resources. However, projects tend to specifically focus on specific sub-sectors and/or dimensions, often fragmented into micro-projects that lack the broader interpretation of smartness strongly recommended by policies.

6. Discussion

As underlined by Naldi et al. (2014) [4], over the last two decades, EU policies have put an increasing emphasis on the need to support growth by encouraging research, innovation, and knowledge transfer. Although traditionally mobilized in urban centers, this growth strategy has also been promoted for rural areas by supporting embeddedness, relatedness, and connectivity as preconditions for pursuing economic development and overcoming regional inequalities (Bilbao-Osorio and Rodríguez-Pose, 2004) [26]. This vision of growth-based development has been recently intertwined with the smartness paradigm, which, in its early conceptualization, had a strong technocratic focus. Despite the several critical interpretations of smartness as a general solution for urban areas, in rural territories the paradigm does not seem to be fully explored.

The SV action marks a change in scale in EU policies regarding smartness; these have traditionally been applied to urban areas or, on the contrary, confined to the micro-scale of firms and consequently regarded as tools for technology-driven products or process innovation.

From a theoretical point of view, the SV action is intended to overcome a technocratic vision of smartness, explicitly reconnecting to already consolidated approaches and policies of bottom-up participation and development, such as the LEADER and Community-Led Local Development (CLLD) approach, in addition to providing a broader idea of innovation, not solely technical and/or digital.

The conceptual shift from urban to rural smartness seems to be aligned with the most recent visions entailing a more human-centered conception of smartness as a broader theoretical and operational framework to enhance endogenous resources, in which digitalization is only a part of a wider strategy. As a ubiquitous concept transmigrating from urban to rural contexts, smartness is

mobilized in policy narratives as a multifaceted notion potentially suitable in every non-urban area, more targeted to pursue social innovation by enhancing local specificness than activating one-size-fits-all technology-driven development.

From our content analysis, an alignment emerged between the policy framework (first level of analysis) and its operationalization in projects, grouped into macro-categories (second level), and the third level, concerning the 35 projects selected as representative of the whole strategy. However, in this last one, more emphasis was put on the community dimension. Going more in-depth, at the single projects level, it emerged that the SV action—or strategy, as it has been recently defined in the new CAP—reveals some inherent contradictions in the operationalization of the policy paradigm into place-based experiences, since it includes extremely varied projects aimed at increasing competitiveness and/or innovation through a complex system of actions, tools, and financing that varies a lot from a country to another.

It is no accident that the SV action does not have a specific funding fund but draws on various existing funds, including the European Agricultural Fund for Rural Development (FAESR), national and/or regional or private funding. Also, there is no commonly used definition, equally shared by the different European countries; each Member State has developed its own concept, resulting in varied SV strategies and funding programs.

As a result, although seen as relevant to address the decline of rural areas, the SV conceptualization seems to be contradictory. First, the “place-sensitiveness” of the approach is intended in terms of territorial size and administrative level (“typically a village, a small rural town, one or more municipalities”), while a truly place-based approach does not refer to a locally delimited administrative level but it rather concerns “policies sensitive to people in places”. As highlighted in the Barca report, “An agenda for a reformed cohesion policy” [40], place-based policies are targeted to tackle the “persistent underutilization of potential and reducing persistent social exclusion” where exogenous policy actions have to trigger endogenous changes at the local scale, with local actors set targets and design projects [41]. On the contrary, although explicitly structured around place-sensitiveness and community participation, the SV policy seems to be conceptually limited if compared to the theoretical conceptualization of Smart Territory and/or Smart Land. It is constrained to administrative/political levels and entails too many different experiences of local innovation in rural areas, leading to a confusing conceptualization of rural smartness.

6.1. Limitations, future research exploration, and policy implications

This work has some limitations, partly connected to the methodology selected and partly to the thematic focus. The content analysis has provided valuable insights into the key themes and priorities, conceptually (in policies) and operationally (in projects) mobilized for rural smartness, that could be further explored and problematized in future research. Despite being widely used in policy analysis, software-based content analysis cannot provide a comprehensive picture of the design and implementation stages; this is the reason why we decided to integrate a software-based approach with a manual QPDA approach, which could be further extended by including other qualitative methods (i.e., interviews with experts, key informants, fieldworks) in future research, crucial to deconstructing narratives behind and inside policies. Furthermore, this work represents the first explorative stage to

problematize how the SV paradigm has been conceptually and operationally mobilized in the first stage of SV EU policies. However, it will be crucial to “follow” how it will be further implemented in the current CAP, where the paradigm has been widely emphasized, and several actions have been promoted to support it, like the SV Observatory, the inventory including the good practices, the national-scale policy analysis. It will be equally relevant to go more in-depth in NRRPs implemented by European countries to face the Coronavirus health crisis to explore from a critical perspective how rural smartness has been mobilized in this ambitious transnational program and how it could conceptually and operationally change in “migrating” from a policy framework to another one.

In spite of these limitations, this explorative work provides a critical analysis of the theoretical-operational dimensions of a policy that could be useful both in terms of novel research insights and practical policymaking. As Bacchi [42] noted, most policies at the different scales “do not officially declare that there is a problem that the policy will address and remedy. Rather this is implicit in the whole notion of policy – by their nature policies make changes, implying that something *needs* to change. Hence there are *implied* ‘problems’”. So, through the content analysis adopted in this work, we explore what Bacchi [42] calls the “what’s the problem represented to be” approach that allows disentangling the theoretical-operational implications of the SV policy framework in the conceptual shift from urban to rural smartness.

7. Conclusion

To conclude, “smart development is not a one-size-fit-all concept and its application in rural contexts needs to be combined with a place-based approach adjusted to fit the specifics of rural contexts and linkages [...] there are still several outstanding issues that need to be analysed to gain a deeper understanding of the expected outcomes, largely related to the obvious spatial implication of strategies that aim to spur knowledge and innovation” [4].

The first controversial issue is defining the territorial context, starting from the concept of “place” in place-specific policies for territorial cohesion, considering that rural areas are not the same but, in reality, largely vary in terms of environmental and socio-economic conditions as well as linkages with urban centers. This adds another nuance to the already-mentioned theoretical debate [33] about the “absence of the rural” as a conceptual and operational dimension in studies and planning practices and/or its simplifying trivialization to a one-size-fits-all value.

Although the SV concept delivers a broader meaning of smartness, going beyond both the technology-driven vision of growth and the micro-scale of firms, a critical issue arises concerning the conceptualization of rural smartness. Apart from sporadic cases, this paradigm has not been the subject of extensive and consolidated studies. Therefore, SV is defined variably across Member States’ national policies and lacks the critical framework that distinguishes the paradigm in the urban context. As Cowie et al. [25] noted, technologies and the notion of smartness are still seen with a strong urban-centered/techno-centered bias. It is therefore necessary to further explore the relationship between rural areas and new technologies, going beyond the urban-rural dialectic and broadband connection/digitalization as the main topics.

Author contributions

Conceptualization: T.G.; Data curation: V.E.A. and T.G.; Investigation: V.E.A. and T.G.; Methodology: V.E.A. and T.G.; Software: V.E.A.; Validation: V.E.A. and T.G.; Visualization: V.E.A. and T.G.; Writing – original draft: V.E.A. and T.G.; Review & editing: T.G.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

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Conflict of interest

The authors declare they have not any conflict of interest.

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