ORCID
NDS: 0000-0002-5525-4126
TDG: 0000-0001-9417-7816
RS: 0000-0002-1112-0919

Review article

Policy mixes in rural areas: a scoping literature review

Naomi di Santo[1],*, Teresa Del Giudice[2], Roberta Sisto[3]

[1] *Department of Soil, Plant and Food Sciences, University of Bari Aldo Moro, Bari, Italy*
[2] *Department of Agriculture, University of Naples Federico II, Naples, Italy*
[3] *Department of Social Sciences, University of Foggia, Foggia, Italy*
*Corresponding author. E-mail: naomi.disanto@uniba.it

Abstract. While public policy guidelines emphasise the need to consider sustainability issues as interconnected, policymakers often focus on specific problem areas. The concept of "policy mix" was introduced to highlight that adopting a single policy instrument is insufficient for effective territorial development and socio-technical transition. Starting with the need to foster a transition to sustainability and considering the synergies of a policy mix and the fundamental role of rural areas, this study aimed to explore the existing literature to determine the main topics on policy mixes in rural areas, the commonly used methodologies, the key features of policy mixes, and the suggested future research directions. This study was conducted using a scoping literature review and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology; it included 78 articles. This review revealed important gaps, such as the lack of ex-post evaluations of policies and assessments of governance impacts on policy mix implementation. This paper contributes to advancing the literature by helping the scientific community and policymakers understand the importance of implementing policy mixes.

Keywords: sustainability transition, policy mix, rural areas, rural ecosystems, scoping review.
JEL codes: O20, R58, P25.

HIGHLIGHTS

– Complex issues need a systemic approach to implement a policy mix of interventions.
– The role of rural areas stresses the need to consider a policy mix in this context.
– The area of interest, policy processes, and evaluation were used to rank policy mixes.
– The results were compared with the 17 SDGs and the goals of the CAP.

1. INTRODUCTION

The United Nations has set forth a comprehensive vision in the 2030 Agenda for Sustainable Development, encompassing a range of interconnected objectives. These Sustainable Development Goals (SDGs) are founded on principles that demand a multifaceted and collaborative transformation to address the complexities of the world's challenges. By combining goals of environmental management, economic prosperity, and social equity, the policy documents aim to achieve these ambitious objectives by fostering a holistic global transformation. Consistently, the European Commission wants to achieve sustainability objectives encompassing the three interconnected dimensions, through various initiatives. One of these is the European Green Deal, which seeks to facilitate a prosperous and inclusive transition within the European Union (EU) by establishing an equitable society, promoting a circular economy, supporting resource-efficient rural and regional development, and incentivising the reduction of carbon dioxide (CO_2) emissions (Filipović *et al.*, 2022).

In Europe, achieving these goals requires implementing a sustainability transition, particularly given the potential impact of rural areas, which are key players in this transition (Bock, 2016). The urgency to implement a transition towards sustainability has driven academic research to analyse this issue. For example, Köhler *et al.* (2019) conducted a literature review on sustainability transitions and found that early publications primarily focused on electricity and transportation. At the same time, the authors of more recent studies (Köhler *et al.*, 2019; Li, 2017; Miller, Belton, 2014) have examined a broader range of societal domains, including food, water, heating, housing, urban development, and waste management. While these aspects are generally studied individually, they are rarely examined together and within the rural context, which remains underexplored in the literature. This aspect is crucial because sustainability issues should not be considered in isolation. Conversely, as suggested by Cozzi *et al.* (2020), it would be more appropriate to integrate these aspects into the broader macro context, using a systematic approach to consider their synergies or potential conflicts.

In 2018, rural territories encompassed over 341 million hectares, which is equivalent to 83% of the total EU territory. Moreover, approximately 30.6% of the EU population resides in rural areas (European Commission, 2023). Scholars such as Zang *et al.* (2023) have highlighted that current global challenges, including managing resources, land, and waste, are accentuated in rural regions, calling for a deeper emphasis on addressing these concerns. In this intricate and multifaceted landscape, Vávra *et al.* (2022) analysed the pivotal role of rural areas in promoting territorial development. This is evident in various European initiatives such as the Long Term Vision for Rural Areas (LTVRA), which has been developed to shape a new vision for rural regions by 2040 and to foster a shared perspective on the evolving role of rural areas (Ahlmeyer, Volgmann, 2023).

To overcome rural issues and to enhance the role of rural areas, it is crucial to address them in an interconnected manner. While policy documents emphasise this need, policies and policymakers often focus on isolated problems. As Niemeyer, Vale (2022) pointed out, inappropriate sectorial policies conducted to the detriment of the environment, such as deforestation, inadequate soil use, and massive exploitation of natural resources, have led to food and water insecurity. These negative results highlight the need to implement comprehensive strategies that address various issues (Wilts, O'Brien, 2019). Such strategies require transformative shifts in technology, policies, and societal dimensions to effectively tackle pressing environmental challenges. This new approach requires the implementation of multi-actor, multidisciplinary, and long-term processes (Geels, 2019), introducing the concept of a "policy mix" within this framework. Specifically, there is increasing awareness that environmental and social issues are correlated and must be addressed together. Moreover, a multidimensional, long-term perspective is essential for managing the complexity of heterogeneous actors and issues. In fact, using specific policy instruments to achieve single solutions is widely considered inadequate for capturing all elements of complex systems (Quitzow, 2015). In this context, a policy mix can provide a transversal approach to explore the potential benefits of interactions between multiple instruments (Trotter, Brophy, 2022). However, it is crucial to consider not only the direct influence of each instrument, but also their synergistic effects (Edmondson *et al.*, 2019; Lindberg *et al.*, 2019; Milhorance *et al.*, 2020).

The impacts of a policy mix have been analysed by various authors in different fields, for example, in biochemistry (Vonhedemann *et al.*, 2020), energy (Zhenghui *et al.*, 2022), innovation studies (Howlett, Rayner, 2007), and decision sciences (Kivimaa, Kern, 2016). On the contrary, this perspective remains relatively unexplored in the context of rural development. Thus, starting from the need to implement a transition to sustainability, also considering the synergy of a policy mix and the fundamental role of rural areas, the present study aimed to review the existing literature and to identify future research areas necessary for a comprehensive understanding of the relationship between policy mix

and rural territories. This study explored the relationship between policy mixes and rural areas, using the seminal work of Rogge, Reichardt (2016) as its theoretical framework. To achieve this, a scoping literature review was performed to investigate the key topics and issues, focusing on three aspects. First, it is important to examine the long-term plans and policy objectives addressed in the literature. Additionally, this study analysed the processes and evaluation methods associated with policy mixes to provide a comprehensive understanding of the concept. Finally, this review identified the most commonly used methodologies and the future research directions for studying policy mixes in rural contexts. This review has provided a detailed framework for understanding the relationship between policy mix and rural areas and has identified research fields requiring further investigation. Finally, the results have been be compared with the 17 SDGs and the objectives of the Common Agricultural Policy (CAP) to assess alignment or to identify gaps between the scientific literature and policy agendas. This paper is structured as follows: Section 2 outlines the theoretical framework of the policy mix, Section 3 details the methodology and data, Section 4 presents the main results and discussion, and Section 5 offers concluding remarks.

2. THEORETICAL FRAMEWORK

In the 1960s, the concept of "policy mix" was introduced in the economic policy literature as a combination of both monetary and fiscal policies. This new vision emphasises the idea that the adoption of a single policy instrument is not sufficient for achieving effective territorial development and socio-technical transition (Quitzow, 2015), as well as the need to explore the potential interactions and advantages of combining different policies (Trotter, Brophy, 2022). However, this approach is rather complex and far from a simple process: a policy mix integrates the strengths of different policies using several policy instruments and balances the weaknesses of each individual instrument, resulting in increasing advantages (Milhorance et al., 2020).

Policy mix is often described as an elusive and fuzzy concept, and an explicit definition has not yet been defined. On the one hand, some authors have described policy mixes as an appropriate combination of policy instruments (e.g., Vlačić et al., 2018). On the other hand, many authors have described policy mixes as a coordination of different plans across different government levels to achieve a common goal (e.g., Tønnesen et al., 2022). This paper has adopted the perspective that policy

mixes should be considered not just as a combination of instruments, but also as implementation of policy strategies, the definition of policy processes, and the combination of various characteristics that build an adequate policy mix for each territory (Rogge, Reichardt, 2016). Specifically, in different territories, such as rural areas, a range of policies are already in place, each addressing specific challenges. However, the concept of policy mix emphasises the importance of an integrated and coordinated approach to policy formulation, which implies establishing a framework where these policies do not operate in isolation, but rather harmonise and intersect synergistically to achieve multidisciplinary goals. Indeed, sometimes there is an overlap of policies that may even conflict, generating confusion rather than optimal outcomes (Scordato et al., 2018). Therefore, the policy mix view promotes a more structured and coordinated approach in which policies are designed and amalgamated into a coherent "mix" that can address rural challenges and efficiently use available resources (Uyarra et al., 2016).

The policy mix approach is not just suggested to manage the complexity of an issue; it is often the most effective strategy to address their multi-dimensionality, particularly when pursuing sustainability goals. For example, Flanagan et al. (2019) reported various scenarios where a policy mix approach could be applied. Specifically, technological change, in its stages of innovation or diffusion, may encounter a range of market, system, and institutional failures, necessitating multi-faceted policy interventions. Moreover, new types of innovation policies emphasise that instruments originally designed to meet different policy objectives can and should be "co-opted" to support innovation policy goals. Furthermore, the adoption of a policy mix reflects a growing recognition that modern states are increasingly characterised by the dispersion of power (Flanagan et al., 2019). This shift is not exclusive to innovation policy; rather, it is part of a broader transition from traditional models of government and public administration to multi-level governance and new public management frameworks. Thus, the policy mix approach is beneficial (i) to address the complexity of issues, (ii) to manage new and more sophisticated policy instruments, (iii) to expand the scope of innovation policy, and (iv) to accommodate increasingly complex governance systems involving a wider array of actors (Borras, 2019; Flanagan et al., 2019). Despite its advantages, the policy mix approach can also have negative impacts. Indeed, when designing policy mixes, there may be a need to harmonise different policies to limit the number of instruments moving towards a simpler policy mix. This approach could lead to compromises

and support token actions, such as (i) discouraging the application of a policy mix, as it may become difficult for policymakers to evaluate, compare, and align policies, and (ii) inaction from policymakers, who may defend their approach even when the overall effectiveness of the policy mix is disappointing (den Bergh *et al.*, 2021).

3. MATERIALS AND METHODS

A scoping literature review was carried out using the major online scientific search engines, namely Web of Science and Scopus. The main keywords – "polic* mix*" OR "polic* portfolio*" OR "polic* package*" – were combined, through the use of Boolean operators, with the following terms related to rural territories: "rural development" OR "territorial development" OR "rural area*" OR "territor* transition*" OR "rural territor*" OR "rural growth" OR "territorial growth" OR "ecosystem*" OR "rural ecosystem*" OR "knowledge* ecosystem*" OR "innovation* ecosystem*". Specifically, keywords were selected for query formulation by distinguishing two main topic areas. The first area concerned the analysis of policy mixes, including most of the synonyms used in the literature to examine this topic. However, the term "instruments mix" was deliberately excluded because it could lead to results far from our goal. In fact, during the article selection phase, it was noted that most articles that used the term "instruments mix" were already included in the search because of the mention of "policy mix" in the abstract, keywords, or title. The second area concentrated on the development of rural and territorial areas. Using keywords such as "rural development", "territorial development", or "rural area*"; important documents dealing with topics such as "rural development tools" were included. In summary, the query included broader keywords to cover all possible facets of the research topics.

The process for selecting articles is summarised in Figure 1, reporting the scheme suggested by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for scoping reviews. This approach contributes to the robustness of the review. The PRISMA flow chart, originally developed as the Quality of Reporting of Meta-analyses (QUOROM) statement, was adapted to its current form for this study (Liberati *et al.*, 2009). This adaptation aims to enhance the objectivity and relevance of the research findings and to ensure accessibility to readers (Page *et al.*, 2021). The reliability of this procedure aligns with the goal of improving the quality of research findings and making them accessible to readers (Page *et al.*, 2021). This tool

Figure 1. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart of the article selection process.
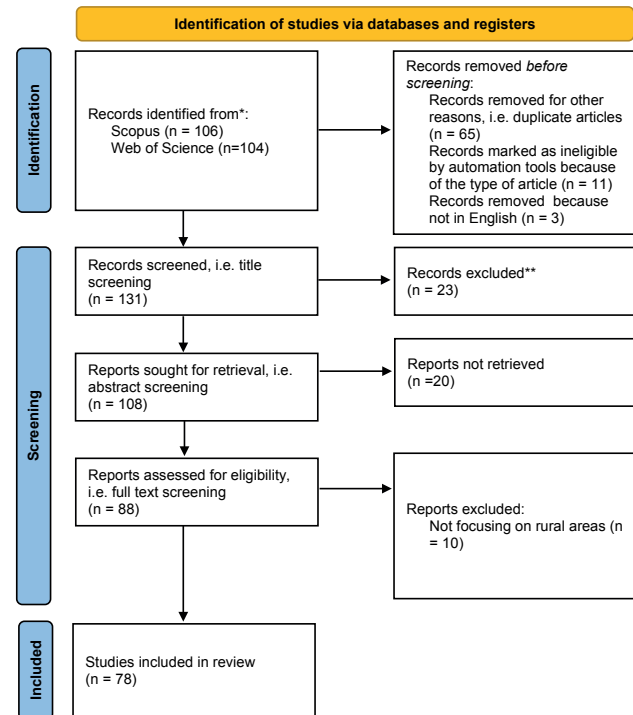
Source: Adapted from Page *et al.* (2021).

was developed by experts, including review authors, methodologists, physicians, medical editors, and consumers (Liberati *et al.*, 2009). It was later extended to the social sciences, demonstrating its utility in studies characterised by broadly framed questions. By utilising this flow chart, it is possible to assess the existing literature and to identify unexplored areas of study, thereby reducing the risk of arbitrary selection or author subjectivity and establishing a robust and scientifically approved methodology (Page *et al.*, 2021).

From the initial database search, 210 articles were identified, of which 65 were removed because they were duplicates (resulting from both Scopus and Web of Science databases). In addition, only articles published in peer-reviewed journals were included; this led to the exclusion of an additional 11 articles. Finally, it was decided to include only articles written in English, so 3 articles were eliminated. Next, the relevance and conformity of articles were assessed through the analysis of titles and abstracts. At this point, 88 articles met the inclusion criteria and were included in the next step, that is, full-text reading. Those articles were read to further evaluate their eligibility. This led to the exclusion of 10 more articles because they did not focus on the analy-

sis of rural areas (but rather mainly on entrepreneurship aspects). The final review included 78 articles (the full list is in the Supplementary Material – Table A).
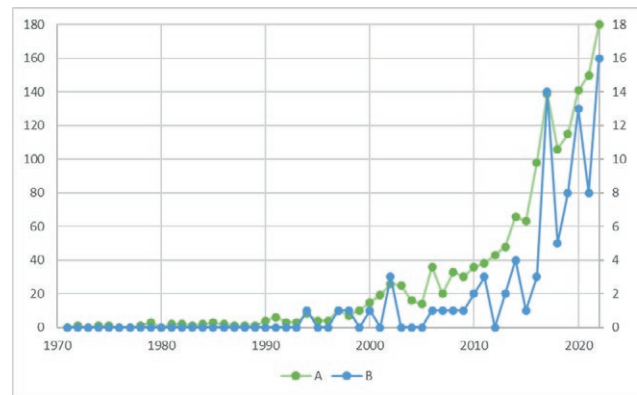
After selecting the articles, a deductive analysis was chosen over an inductive approach. Deductive analysis supports the examination of how documents align with findings from other contexts and is typically based on established theories, conceptual models, and literature reviews. This approach contrasts with inductive analysis, which uses open coding to explore documents, to develop new categories, and to identify macro-codes that were not previously defined (Azungah, 2018). Consequently, based on Rogge, Reichardt (2016), in this paper policy mixes have been categorised according to three key concepts: goals, policy plans, and the evaluation methodology.

Figure 2. The number of published articles on policy mix (green line) and policy mix and rural areas (blue line).

4. RESULTS AND DISCUSSION

4.1. Descriptive overview

Figure 2 shows the publication trends of the articles on the topic of policy mix (green line) and the articles included in this review on policy mix and rural areas (blue line). The included articles (blue line) were published between 1994 and 2022. Both trends have shown a notable increase over time. Indeed, since 2000, there has been an increase in the number of articles that include the term "policy mix" in their titles, abstracts, or keywords. At the same time, the trend related to the included articles (blue line) has also increased: since 2010, the literature on this topic has grown. This may be due to the objectives of various policy documents highlighting the importance of the issue, in particular referring to rural territory analysis and the need to implement policy mix. Alternatively, this increasing trend may reflect the consistently growing volume of publications in Web of Science and Scopus.

Next, the articles' keywords were analysed to obtain a preliminary segmentation of the main strands in the literature. Given the large number of collected keywords, the VOSviewer software was used to split and group the keywords into clusters. Figure 3 displays the six clusters into which the VOSviewer software categorised the keywords based on their frequency. Specifically, the co-occurrence number was set to two, meaning that clusters were formed by grouping keywords that appeared together at least twice. From this segmentation, it can be seen that the keyword "rural areas" does not appear, but there are keywords such as "biodiversity", "multi-level governance", and "water quality". This finding underscores the fragmentation in the literature and a gap in topics concerning rural areas, highlighting the need for additional studies on the issue.

To answer the research questions, Table A (in the Supplementary Material) was created based on the literature analysis. This table reports the goals, research methodology, setting, number of citations, connection to the policy mix concept, and future research strands of each included article.

Figure 3. The keywords of the selected documents, generated by using the VOSviewer software.
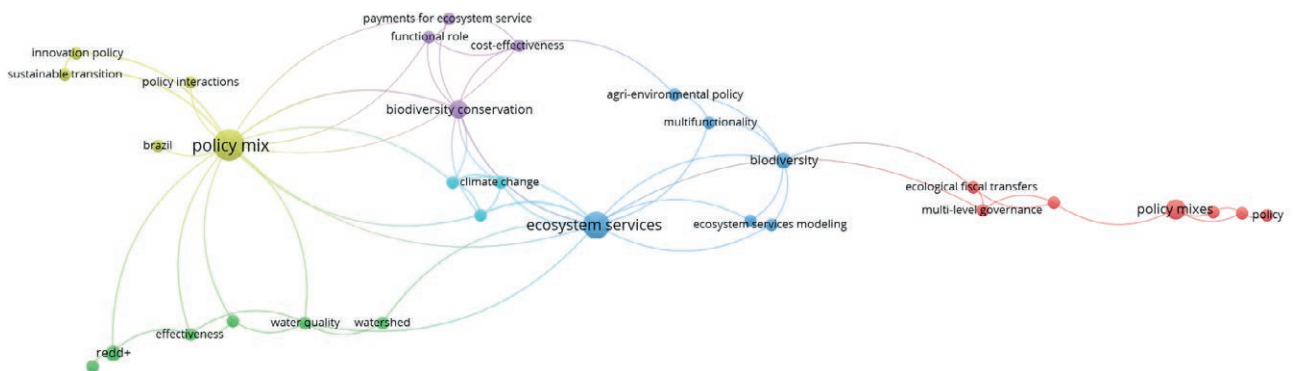
4.2. The goals of policy mixes

Table 1 summarises the main goals investigated in the included articles. Specifically, the objectives are categorised into macro areas, which reflect long-term goals as outlined by Rogge, Reichardt (2016).

The macro areas most commonly addressed in the selected articles are *biodiversity loss* and *persistent environmental degradation*. Specifically, 16 articles analysed and justified the use of a policy mix to manage these multifaceted issues. Some authors, such as Zabala *et al.* (2022), only suggested implementing policy mixes because of the weaknesses of a single policy for the management of complex topics, such as the forest environment. On the other hand, other authors (Droste *et al.*, 2017; Kubo *et al.*, 2019; Ngan, 2022) pointed out that biodiversity conservation requires an appropriate combination of regulatory tools. Still other articles (e.g., Meinard, 2017; Venturini *et al.*, 2019) highlighted different types of tools that can be combined into policy mixes: regulatory tools, such as licenses and standard-setting; economic tools, such as taxes and fees; and information tools.

Regarding *environmental impacts* and the level of *environmental degradation*, many of the included articles focused on the status of forest areas (e.g., Rezende *et al.*, 2018; Scullion *et al.*, 2016; Wong *et al.*, 2017). In this regard, the Reducing Emissions from Deforestation and Degradation (REDD+) projects have been highlighted as an effective policy mix strategy (Albert *et al.*, 2020), which is based on the idea that environmental and social objectives are not distinct goals. Thus, the primary objectives (reduction of deforestation and for-

est management) are connected with objectives such as poverty reduction and economic development of rural areas (Sarker *et al.*, 2022). Among the instruments found in REDD+, some are aimed at defining property rights, introducing incentive-based instruments, and sharing the benefits from the implementation of REDD+ projects. In addition, when considering the influence of other sectoral policies, such as low-emission development strategies, it is important to consider the redundancy of some aspects, which very often results from a lack of consciousness of the related issues (Scullion *et al.*, 2016).

The second macro area that has been investigated frequently in the literature concerns the *provision of ecosystem services*. Indeed, many authors have pointed out that ecosystem-based adaptation (EBA) represents a specific type of policy mix that can drive a sustainability transition. According to Scarano (2017), EBA is a specific policy mix that integrates socio-economic policies with conservation and land use policies. For example, tools for protected area management and biodiversity conservation plans are included in policy mixes related to income generation and infrastructure development. On the other hand, payments for ecosystem services (PES) are part of a more comprehensive policy mix directed towards ecosystem management (Barton *et al.*, 2017; Cook *et al.*, 2017; Montoya-Zumaeta *et al.*, 2019). The link between PES and rural areas emerges from the inclusion of these payments in national rural development strategies. For example, PES can interact with various poverty reduction policies and can coexist with conditional cash transfers (CCTs) in regions where both programmes are implemented (Izquierdo-Tort, 2020).

Another issue analysed in rural area management is *conservation*. Among the articles that have analysed this issue (Lopolito, Sica, 2022; Meinard, 2017; Niemeyer, Vale, 2022; Tønnesen *et al.*, 2022), the results reported by Kubo *et al.* (2019) are very interesting. The authors suggested two important considerations for implementing a policy mix. First, it is essential to summarise all existing policy instruments without forgetting the emerging and potential ones. Sharing feedback with stakeholders is also essential to reduce the negative impacts that can be created when employing policy mix, such as overlap or contrast (Scordato *et al.*, 2018).

As highlighted previously, the concept of policy mix was introduced in the social sciences with the aim of promoting a transition towards sustainability, encompassing the economic, social, and environmental spheres. Consistently, *sustainability* and *the sustainability transition* have been investigated in the literature (Bhandari, Jana, 2010; D'Adamo *et al.*, 2022; Trotter, Brophy, 2022). According to Jeannerat, Crevoisier (2022),

Table 1. The principal goals of policy mixes.

Principal goals	Number of articles
Environmental degradation, environmental impact, and Biodiversity loss	16
Provision of ecosystem services	10
Conservation	10
Sustainability and sustainability transition	8
Competitiveness, innovation, and digitalisation	8
Climate change	7
Agricultural support policies	7
Land use	5
Resource management	4
Drought and water resource management	3
Energy security	3
Multifunctionality	3
Rural area growth and countering depopulation	2

it is important to consider strategies that include social innovation in a policy mix designed to develop rural territories. Specifically, to support the achievement of sustainable goals, a targeted spatial development intervention should consider an inclusive policy mix. Moreover, it is crucial to base policy cohesion strategies on pillars such as co-innovation, common value creation, and collaboration (Braito *et al.*, 2020; Jeannerat, Crevoisier, 2022; Urgenson *et al.*, 2013). Thus, due to the complexity of the challenges in rural areas, it is necessary to create common values that can foster sustainable development. From a territorial perspective, for example, firms should change their vision from short-term economic maximisation to economic and social responsibility based on a long-term vision (Costa, Matias, 2020; Henderson, Roche, 2020; Tønnesen *et al.*, 2022).

From a goal-clustered policy mix perspective, the impacts of climate change are linked to drought. Although *water scarcity* is not the only effect of climate change, it is one of the most impactful for the management of rural areas. Overall, among the selected articles, 10 analysed the effect of policy mixes in managing this issue (*e.g.*, Farjalla *et al.*, 2021; Fedrigo-Fazio *et al.*, 2016; Reside *et al.*, 2017). Some studies have focused on the analysis of drylands; for example, Milhorance *et al.* (2020) analysed the Brazilian context. Their study is very important from a policy planning perspective because it describes three types of policy mix tools: enabling tools (i.e., the formal prerequisites for policy mix implementation, such as certificates, quality control, and registries), adaptation tools (such as technical assistance to farmers or insurance against damages), and complementary tools (such as tools related to generational renewal).

Furthermore, the literature review revealed that several authors (Hailu *et al.*, 2020; Milios, 2018; Venturini *et al.*, 2019) have analysed policy mixes from the perspectives of *land* and *resource management*. For example, Fedrigo-Fazio *et al.* (2016) classified the variables that can be included in the selection of a policy mix as the long-term view or the success level. They used these variables, along with goals, geographic coverage, data availability, and replicability, to select policy mixes. Following this pattern, they reported several case studies, such as a case in Finland concerning forest and land use. In this case, the policy mix included nature conservation laws, national forest management plans, certification and labelling schemes, subsidies and funding to develop innovation.

The other aspects considered in the included articles concern *multidimensionality*, *energy security*, and *territorial growth*. These areas seem unexplored and under-investigated; in fact, only eight of the included articles

considered these three issues (e.g., Barton *et al.*, 2017; Simões *et al.*, 2021; Venturini *et al.*, 2019).

4.3. The policy processes

The first step of this review was to summarise the main policy mix goals analysed by the literature. Then, an analysis of the plans to achieve these goals – in other words, the policy processes regarding the guidelines, roadmaps and programmes for achieving long-term goals – was carried out (Rogge, Reichardt, 2016). Indeed, Rogge, Reichardt (2016) focused on policy processes for developing and supporting policy mixes, dividing these processes into two main categories: policy-making and policy implementation. Policy implementation involves the practical actions required to execute and enforce policies, relying on robust support systems. In contrast, policy-making focuses on shaping interventions based on past experiences and managing conflicts arising from established interests. The includes articles focused on different types of intervention for example, the Global COVID-19 Humanitarian Response Plan (Mugabe *et al.*, 2022), the National Adaptation Plan (Niemeyer, Vale, 2022), PES (Nimubona, Pereau, 2022; Zabala *et al.*, 2022), the Clean Air Action Plan (CAAP), and the National Strategic Plan for Solid Waste Management (Ngan *et al.*, 2022).

Rather than outlining the individual plans or programmes that currently exist in the political landscape, it is important to emphasise other key aspects in the analysis of political processes: the role of governance and participatory approaches in the implementation of a policy mix in rural areas. Starting with the analysis of the governance, as various studies have shown (Davenport *et al.*, 2017; Könnölä *et al.*, 2021; Mann, Plieninger, 2017; Scordato *et al.*, 2018), it is worth considering that policy mix projects move in a vertical context. In fact, considering the multiplicity of different levels of national, regional and local governance must be a key element for policymakers to avoid conflict between the instruments. However, the true impact that governance has on the effectiveness of a policy mix has received relatively little exploration. Moreover, focusing on the participatory approaches, they are not considered in their full and complete execution. According to Uyarra *et al.* (2016), rural areas are characterised by intrinsic elements, issues, and characteristics. Therefore, the development of a policy mix should rigorously analyse and ensure coherence across different levels of governance.

This scoping literature review demonstrated that innovation strategy could be a successful strategy for promoting change in society's vision. For example, new

business models related to innovation can deliver a simple service and other enabling services that support sustainability goals (Trotter, Brophy, 2022). In addition, policy processes are fundamental for establishing strategies and shifting from long-term goals to feasible actions (Rogge, Reichardt, 2016). Thus, an important focus must be on decision-making processes that identify which instruments to include in policy mixes.

Focusing the attention on the theoretical frameworks on effective policymaking, Tinbergen (1956) defined an efficient policy as a set of individual independent instruments each addressing a specific issue. According to this rule, some multitarget instruments (such as PES) should be considered inefficient. Each policy objective is represented through a linear equation, encompassing uncontrollable, inconsequential, and unidentified variables tied to the policy instruments. Hence, rooted in the fundamental traits of linear equation systems, Tinbergen concluded that an equivalent number of independent policy instrument variables and policy objectives leads to a resolvable model. In cases where the number of policy instrument variables surpasses the number of policy objectives (equations), there are infinite solutions. In contrast, when the number of policy instrument variables is lower than the number of policy objectives, solutions manifest only sporadically.

Considering the objectives of this review, the view of Tinbergen is opposed to the idea behind a policy mix. Indeed, in the policy mix concept, interactions among different instruments can be successful in overcoming the criticism of various issues (Milhorance et al., 2020). From this perspective, the study by Schader et al. (2014), which contrasts the Tinbergen rule with the implementation of a policy mix, is important because it highlights how multi-objective instruments, especially those that bring co-benefits, could enhance the effectiveness of a policy mix. Thus, the basic rule is that multi-target instruments can be included in the design of a policy mix if "their average cost-effectiveness over all policy targets is not lower than the average cost-effectiveness of targeted divided by the number of policy targets" (Schader et al., 2014: 189).

4.4. The evaluation of policy mixes

The last characterisation of policy mixes concerns the assessment of their key aspects. The use of a case study is considered an optimal strategy to assess the impacts of policies because the intrinsic characteristics of each area can modify the outcomes and impacts of policies. Moreover, it is crucial to consider the current policies and the different issues faced by rural areas to implement a policy mix effectively. Furthermore, in single policy evaluation, the most commonly used criteria are effectiveness, efficiency, and equity (Barton et al., 2017). However, when considering the interactions between different policies, these criteria should be combined with other indicators, such as consistency, coherence, credibility, stability, and completeness. Consistency concerns the presence of synergies between policies (Kuberska, Mackiewicz, 2022; Trotter, Brophy, 2022). Coherence reflects the "absence of contradictions between instrument mixes and different policies" (Scordato et al., 2018). Credibility concerns the understanding of a policy as a consideration of its feasibility, together with trust between the parties. Stability and completeness do not indicate the rigidity of a policy mix, which can change over time, but rather the concreteness of objectives and completeness at the decision-making level (Rogge, Reichardt, 2016).

Only a few of the included articles focused on evaluation of a policy mix; this represents a literature gap. The first emerging feature is the lack of data or the difficulty of evaluating policies that are distributed differently over time (Mantino, Vanni, 2019). It is also essential to define a systemic strategy for evaluating implemented policy mixes, which does not yet appear in the literature (Fedrigo-Fazio et al., 2016). The diversity of objectives presents another obstacle to measuring the effects of a policy mix. Many of the included articles described policy mixes implemented in specific territories, but they lacked objective results evaluating the entire policy mix. In fact, according to Banerjee et al. (2020), a separate assessment of each component of a policy mix is not sufficient and can result in misleading policy advice.

To address this literature gap, many authors have attempted to use methodologies based on future scenario analysis (Lopolito, Sica, 2022; Venturini et al., 2019; Zhang et al., 2019). However, this approach also highlights the lack of objective and commonly accepted indicators in the literature. Thus, these findings suggest a lack of a universal approach – whether qualitative, quantitative, or mixed methods – that can be applied across different territories to evaluate the efficiency of policy mixes. Therefore, to advance research on extrapolation and external validity, further development in this area is necessary (Cartwright, Hardie, 2012).

4.5. Literature gaps

The literature gaps regarding rural areas were analysed by comparing the objectives in the included articles with the 17 SDGs (Table 2) and the CAP objectives (Table 3). These objectives are central to many global policies and instruments aimed at achieving sustainability.

Four of the SDGS were unexplored in the included articles, specifically, Goal 5 (gender equality), Goal 8 (decent work and economic growth), Goal 14 (life below water), and Goal 16 (peace, justice, and strong institutions; United Nations, 2016). Goal 14 was excluded from the query because of the diversity of aims and knowledge needed to analyse "rural areas" and "life below water". However, it could be necessary to implement studies analysing the other uninvestigated goals. Indeed, it seems difficult to think about the implementation of a policy mix in rural areas without considering, for example, the female workforce (Goal 5). In addition, when considering the characteristics of rural areas and the difficulties related to working conditions, it is important to include plans for compliance with working conditions (Goal 8).

Table 3 shows that among the CAP objectives, three of them have been poorly investigated. There has been a lack of implementation of policy mixes, including

policies related to knowledge and training of territorial stakeholders on the aims of the policies. In addition, the analysis revealed a significant gap in examining the inclusion of risk management and financial policies in rural areas. Risk management and financial policies are now considered crucial for addressing climate impacts, which cannot be managed by economic policies alone; therefore, awareness of the role of financial instruments is essential.

Over the past decades, governments have invested heavily in immaterial capital, including new architectural designs, training of specific human capital, and investment in market research and scientific research and development. However, adequate evaluation methods for these investments are still lacking. In fact, there have been substantial investments in knowledge sharing and innovations, which are transversal aspects that are very difficult to evaluate. For this reason, many of the

Table 2. Topics of policy mixes relative to the Substantiable Development Goals.

Sustainable Development Goal	Topics covered in the included articles	Level of attention in the included articles
1. No poverty	Rural depopulation, subsistence farming issues, rural poverty	+++
2. Zero hunger	The impact of COVID-19 on food security, agricultural support policies, biodiversity conservation in agriculture	+++
3. Good health and well-being	*Xylella* outbreak, agricultural pollution impact, public health concerns related to environmental degradation	+++
4. Quality education	Digital divide, social sustainability, brain drain	+++
5. Gender equality		0
6. Clean water and sanitation	Water resource management, hydrological ecosystem services, diffuse agricultural pollution	+++
7. Affordable and clean energy	Solar photovoltaic systems for rural electrification, green energy promotion, biogas energy goals	+++
8. Decent work and economic growth	Competitiveness in rural areas	+
9. Industry, innovation, and infrastructure	Ecological economic models, innovation and governance, new technologies in digital industries	+++
10. Reduced inequality	Access to broadband in rural areas, environmental compensation measures to support social equity	++
11. Sustainable cities and communities	Territorial planning for climate challenges, land management, tourism attractiveness for sustainable development	+++
12. Responsible consumption and production	Recycling and reuse in circular economy, policies for regeneration and material reuse, green procurement	+++
13. Climate action	Climate change, rural climate adaptation, emissions reduction from deforestation	+++
14. Life below water		0
15. Life on land	Biodiversity conservation in agriculture, forest conservation and reforestation, natural habitat protection	+++
16. Peace, justice, and strong institutions	Biodiversity support in public policies	+
17. Partnerships for the goals	Multi-stakeholder collaboration in rural policies, partnerships for sustainable resource management	++

"0" means that the goal was not addressed in the included articles. The number of plus signs (+) indicates the extent to which the goal was addressed in the included articles.

Table 3. Topics of policy mixes in relationship to the Common Agricultural Policy's goals.

Common Agricultural Policy objective	Topics covered in the included articles	Level of attention in the included articles
1. Fair income	Support for semi-subsistence farms	+
2. Competitiveness	Competitiveness disparities between countries, rural innovation, support for sustainable competitiveness and innovation	+++
3. Food value chain	Sustainable farming practices, market policies for agricultural products, governance for equity in the value chain	+++
4. Climate change	Climate adaptation and water resource management, forest conservation, land use to counter climate change	+++
5. Environmental care	Conservation of protected natural areas, forest resource management, environmental conservation policies	+++
6. Landscapes	Agricultural biodiversity conservation, protection of natural resources, support for diversified ecosystems	+++
7. Generational renewal	Policies to attract youth to farming,	+
8. Rural areas	Coordinated urban–rural development ideology for rural livelihood, local circular economy initiatives, rural tourism development	+++
9. Food and health	Agricultural pollution and water quality, food quality management, water resource protection	+++
10. Knowledge and innovation	Innovation in sustainable transitions	+

The number of plus signs (+) indicates the extent to which the goal was addressed in the included articles.

included articles evaluated just one policy, because this analysis is easier to carry out. On the contrary, there is a need to assess the joint effects of several policies implemented at the same time, considering that a single policy or instrument can have transversal effects and contribute to different goals. Therefore, it is necessary to evaluate the interconnectedness and sometimes overlap between goals. This endeavour requires a systemic evaluation of the instruments used and the objectives achieved.

5. CONCLUDING REMARKS

This review aimed to investigate several key aspects related to policy mixes in rural areas. Specifically, it explored the main topics addressed in the literature, identified future research directions suggested by the included articles, examined the most commonly used methodologies for analysing policy mixes in rural contexts, and outlined the primary characteristics used to define these policy mixes. There is a growing awareness that environmental and social issues cannot be analysed separately. Furthermore, managing the complex interactions among multiple stakeholders and issues requires a multidimensional, long-term perspective. This approach should account for enabling factors, where the institutional context plays a crucial role. This is particularly important in rural areas, where policy mixes play a key

role in mitigating climate change effects and implementing sustainable development strategies. Although the challenge is recognised and acknowledged by various policy documents, the literature on this topic remains limited. From this perspective, a scoping literature review was conducted to explore how to address these research questions effectively.

Several scholars (Borras, 2019; Flanagan *et al.*, 2019) have highlighted that the policy mix approach could be useful for managing complex issues and achieving sustainability goals by using different policy tools. However, it may lead to potential complications in harmonising policies and increase token actions by policymakers, such as resistance to developing efficient strategies, which can reduce its overall effectiveness (den Bergh *et al.*, 2021). Therefore, it is important to explore the policy mix concept to recognise its benefits and to mitigate potential failures.

Based on the work by Rogge, Reichardt (2016), this review categorised policy combinations using three fundamental principles: objectives, policy strategies, and assessment methods. The common objectives identified in the included articles encompass themes such as biodiversity loss, ecosystem services, and climate change. In contrast, the articles addressed topics such as gender equality and the financial considerations associated with climate change insurance less frequently. The overarching takeaway from this analysis is the identification of a significant gap in the existing research: a notable

absence of ex-post policy evaluations and assessments of the influence of governance on implementing policy combinations. Specifically, policy documents are increasingly emphasising the need for a coherent policy mix implementation, while the significance of rural areas is growing in importance for achieving complex objectives such as the sustainability transition. From this perspective, a greater understanding of overall principles that could aid in the drafting of documents and the formulation of policies is required.

This study, envisioned as both a reference and a consultative resource, offers multiple recommendations. First, it offers valuable insights for local businesses and stakeholders in different rural areas. Rural issues and the critical elements required for implementing a policy mix underscores the efficient utilisation of financial and territorial resources. Second, it emphasises the crucial role of diverse stakeholders in developing effective, long-term strategies. Incorporating the findings from this analysis into regional governance could help local actors accelerate and optimise the essential sustainability transition. Third, the results support several suggestions for policymakers. A deep understanding of the essential considerations and potential barriers in adapting policy mixes to contemporary challenges can help mitigate the negative outcomes of conventional policies, such as wasteful spending, inefficient resource allocation, and the failure to achieve long-term goals. From a more practical perspective, there is a critical need to establish good governance that can effectively support the implementation of a policy mix in rural areas. The expected governance should focus on the area's specific characteristics, involve stakeholders, and consider each need to ensure policy consistency and to mitigate the risk of failure. Finally, the policy mix analysis employed in this study can be instrumental in identifying critical factors for policymakers to establish valuable evaluation tools. Furthermore, given the substantial literature gap, there may be a need for a complex approach to evaluate the impact of policy mixes, encompassing both social and economic dimensions.

This study offers an initial perspective on policy mix analysis within rural areas, serving as a foundation for subsequent research to explore various aspects, such as the influence of governance on rural area implementation or the development of measurement indices for diverse policy mixes. It aids the scientific community and policymakers in enhancing and promoting the need for policy mix implementations and reiterates the pivotal role of rural areas. However, this study is not without limitations. It is evident that the results are not applicable because of the lack of a specific case study – the

goal of this study was to analyse the current state of the art to direct future research and to identify literature gaps. Nonetheless, this choice paves the way for potential future research. If, through this literature review, more specific objectives on particular topics emerge, it may be beneficial to consider both the academic and grey literature for more comprehensive and detailed perspectives. In addition, future research should include long-term goals that appear to be little explored in the analysis of policy mixes. There is also a need to address the gap in methodologies for evaluating the impacts of different governance levels on policy mix implementation. Furthermore, while the topic is covered very broadly, each rural area has intrinsic peculiarities related to its territory. Therefore, it would be interesting to consider the diversity among countries, as these differences can impact the effectiveness of a policy mix.

AUTHOR CONTRIBUTIONS

Conceptualisation, N.d.S., R.S. and T.D.G.; Methodology, N.d.S.; Investigation, T.D.G. and N.d.S.; Writing – Original draft, T.D.G. and N.d.S.; Writing – Review & Editing, R.S., N.d.S. and T.D.G.; Funding Acquisition, R.S.

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