

## RURAL DEVELOPMENT ANALYZED FROM A BIBLIOMETRIC PERSPECTIVE

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### Abstract

*This paper aimed to analyze rural development in terms of publications in scientific journals and magazines indexed in international citation databases. The methodology consisted in choosing WoS database as information source, establishing "Rural development" as the key term, searching the bibliometric references in the period 1990-2022, and identifying 2,091 publications, collecting, processing and analyzing the data using VOS Viewer and Microsoft Excel, illustrating the results and making the corresponding comments. The results outline the evolution of the concept of rural development over time, with a focus on the transition from a traditional modernisation-based approach to a more local and quality- and sustainability-oriented perspective. The local perspective has been implemented at EU level through the creation of LEADER where the approach is bottom-up to identify the real problems facing the community.*

**Key words:** rural development, LEADER, multidisciplinary, rural areas, bibliometric analysis

### INTRODUCTION

The concept of rural development has undergone significant changes from the mid-1960s to the present day, departing from its traditional roots rooted in the notion of modernization.

This traditional perspective held that all societies followed a linear path from a non-rational and technologically limited state to a rational and technologically advanced one. This shift marked a transition from traditional to modern society [14].

Around 1965, some rural areas in France initially linked development with centralized and modernizing policy-making, emphasizing planning [11].

However, during the 1970s and 1980s, the concept of rural development gradually transformed into a more localized, people-centric outlook. Consequently, what was once associated primarily with economic growth and modernization began to embrace a qualitative dimension, placing value on the quality and sustainability of growth [4].

This transformation was accompanied by a shift in regional planning in Europe, moving

away from the traditional top-down approach to a predominantly bottom-up approach [6]. The 1990s marked a significant leap forward with the introduction of the LEADER Community Initiative in Europe. This marked the emergence of an endogenous planning approach, characterized by a fresh way of thinking that emerged as modern planning declined and post-modernity took hold [2, 3]. This approach replaced sectoral strategies with territorial rural development, emphasizing environmental considerations and the pursuit of sustainability.

The planning methods implemented in Europe from the 1990s onward, driven by the LEADER approach, are unique and lack a comparable methodology in other parts of the world. It was only in the second decade of the 21st century that new methodological approaches emerged, featuring more contemporary methods than those developed within the European Union countries. These approaches place the individual at the core of sustainable development [13].

In this context, the purpose of this research is to analyze rural development in terms of publications in scientific journals indexed in

international citation databases in order to create an image on the concept of rural development over time and to identify how the traditional modernisation-based approach passed to a new perspective focused especially on a higher quality and sustainability.

## MATERIALS AND METHODS

To trace the evolution of the Rural Development concept and predict its future

trajectory, an examination of the field's progression has been undertaken. One of the most reliable metrics for gauging a field's advancement is through scholarly research. Bibliometric analysis of rural development entails evaluating and quantifying the influence and significance of scientific research within this domain. This analytical approach involves gathering bibliographic data from academic and research outlets to identify prevailing trends, patterns, and research directions in the field.

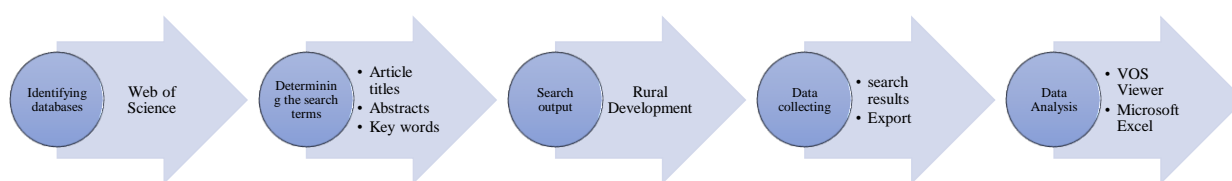


Fig. 1. Stages of bibliometric analysis  
Source: Own construction.

To conduct a thorough bibliometric analysis of rural development, the subsequent steps can be employed, as it shown in Figure 1.

### a. Identify the database

The most common scientific databases at present are Web of Science, Scopus and Google Scholar, which contain relevant research publications in any field. Web of Science database was used in this analysis because it contains the most numerous and relevant publications. In order to determine the importance and size of the field of rural development, Web of Science database was chosen as source of information. WoS is an online bibliographic database developed and managed by Clarivate Analytics. It is one of the most prestigious and widely used academic databases covering a wide range of scientific and academic disciplines. WoS provides access to information about scholarly articles published in high-quality journals, conferences, books and other sources.

### b. Definition of search terms

Key terms relevant to the domain under analysis, "Rural development", were established.

### c. Conducting the search

Once the search terms and the bibliometric reference database were established, the searches were carried out. In the first phase, a simple search of the terms in all fields identified 207,382 publications, which shows that there is significant interest in rural development research and publication. This demonstrates that there is a strong knowledge base and community of researchers active in this field. In order to reduce the number of publications, the same terms were searched for in the titles of the articles, keywords and abstracts, resulting in 2,091 publications.

### d. Data collection

The data resulting from the searches were exported as bibliographic information about the articles found, such as title, authors, year of publication, journal or conference in which they were published and number of citations, defining aspects that can determine the quality of the research conducted. For further analysis of the collected data, data were exported in Excel format for quantitative data analysis and in text format for analysis using the WOS Viewer software.

### e. Data analysis

Bibliometric analysis tools, such as VOSviewer and Microsoft Excel, are used to

analyze the collected data. This allows to assess the number of publications per year, geographical distribution of authors, most cited journals, collaborations between authors and institutions, frequency of citations and impact of articles, keywords frequently related to the field, etc.

Interpretation of results: The results obtained should be analysed in the context of rural development. It is important to note that bibliometric analysis should not be the only method to assess rural development, but should be used in combination with other approaches such as field studies, interviews or qualitative analysis to gain a more comprehensive understanding of the subject.

## RESULTS AND DISCUSSIONS

In order to better understand the results, this paper was structured in 3 main section. First section analyses the number of articles and journals which resulted in the search, the second one analyses the articles by period of time and the last one analyses results from a bibliometric approach.

### First section - General indicators on the evolution of publications

The search identified 2,091 articles published in 1,101 journals between 1990 and 2022, including the terms "rural development" in the title of article or abstract, it was excluded from the title of journal.

Figure 2 shows a continuous increase in the number of articles over the period 1990-2022. Specifically, between 2010-2022, the number of articles has shown a major increase, which indicates the focus of scientific research on rural development subject.

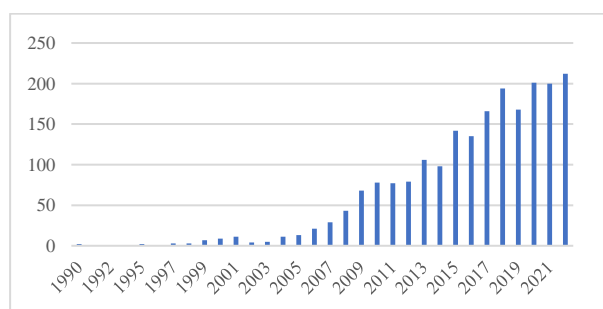


Fig. 2. Number of WoS publications by year  
 Source: Own construction based on Web of Science data.

The analysis also shows the diversity of journals showing the interdisciplinary approach on subject.

Table 1 shows that the first 25 journals contain 25.25% of the total amount of publications with an average number of articles/journals of 21.12, while the remaining publications - 1,076 total 74.75% with an average number of 1.45 articles/journal.

Table 1. Top 25 journals by number of publications

No.	Journal title	Articles	%	% cumulated
1	Sustainability	119	5.69	5.69
2	Journal of Rural Studies	52	2.49	8.18
3	Scientific Papers-Series Management Economic Engineering In Agriculture And Rural Development	50	2.39	10.57
4	Land Use Policy	49	2.34	12.91
5	Land	25	1.20	14.11
6	Cuadernos De Desarrollo Rural	19	0.91	15.02
7	European Countryside	19	0.91	15.93
8	International Journal of Environmental Research And Public Health	17	0.81	16.74
9	Regional Studies	14	0.67	17.41
10	Ekonomika Poljoprivreda-Economics Of Agriculture	14	0.67	18.08
11	World Development	13	0.62	18.70
12	Fresenius Environmental Bulletin	12	0.57	19.27
13	Journal Of Rural And Community Development	11	0.53	19.80
14	Boletin De La Asociacion De Geografos Espanoles	11	0.53	20.33
15	Conference Rural Development 2017: Bioeconomy Challenges	11	0.53	20.85
16	Journal Of Environmental Protection And Ecology	10	0.48	21.33
17	Eastern European Countryside	10	0.48	21.81
18	Habitat International	10	0.48	22.29
19	Rural Development 2013: Proceedings, Vol6, Book 1	9	0.43	22.72
20	Renewable & Sustainable Energy Reviews	9	0.43	23.15
21	Energy For Sustainable Development	9	0.43	23.58
22	Energies	9	0.43	24.01
23	Agriculture-Basel	9	0.43	24.44
24	Agricultural Economics-Zemedelska Ekonomika	9	0.43	24.87
25	Management Theory And Studies For Rural Business And Infrastructure Development	8	0.38	25.25
26	Other 1076 Journals	1563	74.75	74.75
<b>Total</b>		<b>2091</b>	<b>100</b>	<b>100</b>

Source: Own calculation based on Web of Science data.

The most articles published on the chosen topic were found in the journal *Sustainability*, followed by *Journal of Rural Studies* and Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development.

Table 1 shows that the Journal of the Faculty of Management and Rural Development of the University of Agronomic Sciences and Veterinary Medicine of Bucharest brings a significant contribution in terms of scientific research in the field of rural development with a share of 2.39% of total publications, thus managing to occupy third place in the ranking.

Table 2 shows that in terms of the total number of citations of articles in the field of rural development, the *Journal of Rural Studies* ranks first with 12.22% of the total citations of the 2091 articles (22,935 citations). *Land Use Policy* ranks second with 9.78%, followed by *Sustainability* with 5.81%. For an overview of the quality of scientific articles, the average number of citations per article has been calculated in Table 2. As a result, the *Journal of Peasant Studies* has the highest average number of citations per article, managing to total 1,179 citations with its 4 articles.

Table 2. Top 25 journals by number of citations

Crt. No.	Journal name	No. of citations	% of total citations	No. of articles	Average citations/article
1	JOURNAL OF RURAL STUDIES	2,802	12.22	52	53.88
2	LAND USE POLICY	2,243	9.78	49	45.78
3	SUSTAINABILITY	1,332	5.81	119	11.19
4	JOURNAL OF PEASANT STUDIES	1,179	5.14	4	294.75
5	WORLD DEVELOPMENT	1,035	4.51	13	79.62
6	HABITAT INTERNATIONAL	558	2.43	10	55.80
7	RENEWABLE & SUSTAINABLE ENERGY REVIEWS	480	2.09	9	53.33
8	APPLIED GEOGRAPHY	387	1.69	3	129.00
9	TOURISM MANAGEMENT	380	1.66	6	63.33
10	REGIONAL STUDIES	361	1.57	14	25.79
11	ECOLOGICAL ECONOMICS	348	1.52	6	58.00
12	JOURNAL OF GEOGRAPHICAL SCIENCES	326	1.42	7	46.57
13	JOURNAL OF CLEANER PRODUCTION	317	1.38	6	52.83
14	LANDSCAPE AND URBAN PLANNING	311	1.36	4	77.75
15	FOREST POLICY AND ECONOMICS	292	1.27	8	36.50
16	ENERGY FOR SUSTAINABLE DEVELOPMENT	244	1.06	9	27.11
17	ENERGY POLICY	216	0.94	5	43.20
18	LAND	190	0.83	25	7.60
19	GEOGRAPHICAL JOURNAL	177	0.77	3	59.00
20	MIS QUARTERLY	167	0.73	1	167.00
21	CUADERNOS DE DESARROLLO RURAL	159	0.69	19	8.37
22	INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH	157	0.68	17	9.24
23	SCIENTIFIC PAPERS-SERIES MANAGEMENT ECONOMIC ENGINEERING IN AGRICULTURE AND RURAL DEVELOPMENT	144	0.63	50	2.88
24	JOURNAL OF TRAVEL RESEARCH	141	0.61	3	47.00
25	SOCIAL INDICATORS RESEARCH	140	0.61	4	35.00

Source: Own calculation based on Web of Science data

Table 3 provides information on the main research directions and the number of publications associated with each direction. The details presented in the table are analysed below.

The table gives an overview of the number of publications in the different research areas mentioned. However, it does not provide

detailed information on the content or quality of these publications.

However, based on the articles related to these areas, we can observe and establish the link between each research area and Rural Development.

Table 3. Main research directions identified

Main fields correlated with rural development	Articles
Environment and Ecology	519
Business & Economics	388
Agriculture	312
Territorial planning	187
Public administration	168
Social sciences	165
IT	103
Sustainable development	96
Education and research	85
Medical sciences and health	68
Total	2,091

Source: Own calculation based on Web of Science data.

These correlations will be analysed below:

**-Linking Environment and Ecology to Rural Development**

Sustainable rural development promotes environmentally friendly and sustainable agricultural practices. It involves the adoption of innovative farming techniques such as organic farming, permaculture and agroecology. Sustainable agriculture aims to protect the soil, reduce the use of chemicals and promote biodiversity, which contributes to food security and environmental protection in rural areas.

**-Linking Business & Economy and Rural Development**

The link between business & economy and rural development is important and can contribute to the economic growth and sustainable development of rural communities. Here are just a few major issues: diversification of the rural economy, job creation and income growth, access to services and infrastructure, knowledge transfer and innovation, and harnessing local resources.

**-Linking Agriculture and Rural Development**

The link between agriculture and rural development is close and mutual. Agriculture is one of the main pillars of rural development, having a significant impact on the economy and communities in rural areas. Agriculture is often the main source of income for people living in rural areas.

Farmers and agricultural workers contribute to the economic development of rural communities through the production and marketing of agricultural products. Thus, agriculture provides employment opportunities and economic stability in rural areas. Agriculture plays a crucial role in providing food for the population. Local agricultural production in rural areas contributes to the food security of communities and reduces dependence on imports. Sustainable and diversified agriculture in rural areas can ensure long-term food security and reduce vulnerability to fluctuations in international markets.

**-Linking Sustainable Development and Rural Development**

Sustainable development is about promoting balanced, socially and environmentally sound economic growth in the long term, while rural development focuses on improving living conditions and economic development in rural areas. Protection of natural resources: Sustainable development and rural development focus on the protection and sustainable use of natural resources in rural areas. This includes sustainable agricultural practices, appropriate water management, biodiversity conservation and efficient energy use. Sustainable rural development aims to ensure a balance between the use of resources and their conservation for future generations.

**-Linking IT and Rural Development**

IT can support rural development by improving access to information, education, business, health services and e-government, as well as by providing an adequate digital infrastructure. The use of information technology contributes to creating opportunities and improving the quality of life in rural communities, thus promoting sustainable and balanced rural development.

**-Linking Education and Rural Development**

Education has a significant impact on rural development by creating opportunities for learning and personal development, increasing employability, developing community and local resources, stimulating innovation and knowledge transfer, and promoting civic

participation and involvement. By investing in education and developing an accessible and quality education system, a significant contribution can be made to sustainable rural development and to improving the quality of life in rural communities.

### Second Section - Analysing the context of rural development by period

This section presents an analysis based on historical periods. The most cited articles are analysed for each of them.

Figure 3 shows that in the period 1990-2000 only 30 papers were published on rural development subject, while in the period 2001-2011 12 times more articles were published (360 publications) and in the period 2012-2022 57 times more (1,701 publications).

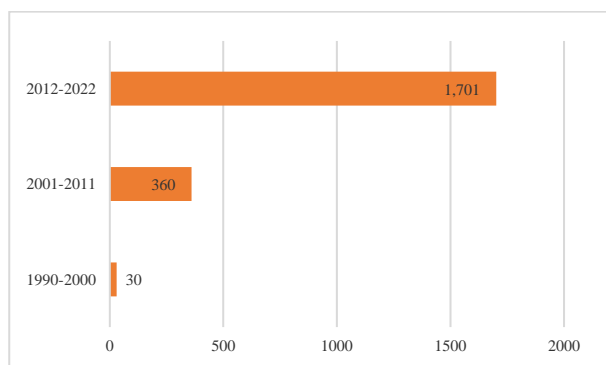


Fig. 3. Number of articles published in the three periods

Source: own processing.

### First period 1990-2000

The article with the most citations during this period was written by authors Byrne, J., Shen, B., & Wallace, W. [2] in which they explore the various renewable energy sources used in rural China, such as solar, wind and biogas, and analyse their implications in terms of affordability, cost, environmental impact and socio-economic benefits. The study also examines relevant government policies and programmes in the field of renewable energy and how they influence rural development.

The rural development perspective has been addressed by the author Gegeo, D. W., thus managing to obtain a significant number of citations on this topic. He addresses the perspectives and experiences of indigenous communities in terms of sustainable

development, self-reliance and improving the quality of life in rural areas [5].

[5, 8] explored the role and contribution of knowledge in rural development processes, highlighting the importance of recognising and valuing this knowledge in efforts to promote sustainability and social inclusion in rural communities.

### Second period 2001-2011

As [1] finds in his paper, during the 1990s, rural development projects were initially seen as leading efforts to enhance rural livelihoods. Nevertheless, subsequent assessments and research have cast a negative shadow on the effectiveness of these projects [7]. In light of these disappointing outcomes, this subsequent era triggered a wide-ranging discourse on how to enhance rural development by introducing fresh approaches and methodologies focused on community involvement and fostering ownership.

With this in mind, the most cited publication from this period looks at the different dimensions of livelihoods, including economic, social and environmental aspects, and explores how these can be integrated into rural development policies and practices. It also examines the complex interactions between economic, social and ecological factors within rural communities and how these interactions can influence development processes [9][10].

Further evidence that rural development became more prevalent in public opinion at the time is the fact that researchers are examining how the state limits or neglects this concept and the implications for rural development and local communities. Thus, [8] explores the relationship between rural development and the role of the UK state, with a focus on the denial of multifunctional agriculture. It examines agricultural policy and rural development in the specific context of the UK and investigates how the state influences and regulates agricultural practices and development in rural areas. The authors examine how the state limits or neglects this concept and the possible negative implications it may have for rural development and local communities.

### Third period 2011-2022

In this third phase (2012-2022), there has been a substantial upswing in the publication of articles on this subject, indicating a burgeoning interest and the expansion of an intense international scientific discourse that had its roots in the preceding era.

This period has witnessed the emergence of novel methodological approaches characterized by more advanced techniques, centering on individuals as the focal point of sustainable development, and tailored to this new orientation.

During this timeframe, the concept of integrated rural development has undergone rejuvenation, emphasizing fresh governance models intertwined with spatial planning and skill development. It underscores the significance of bridging the public and private sectors while mobilizing local stakeholders to promote sustainability.

The principles originally established in the EU's LEADER program are being adapted to different contexts, leading to transnational rural development experiments that address novel governance paradigms [3]. New concepts like resilience have surfaced in the context of urban-rural development dynamics, aimed at fostering sustainable rural communities capable of withstanding external pressures. Crucial themes related to economics, local entrepreneurship, social capital, innovation driven by social learning, participatory planning, social structures, and collaborative partnerships for coordinating rural development initiatives and policies are actively debated. Other researchers concentrate on scrutinizing and comprehending rural transformation within the context of emerging economies. Another direction of rural development research is the use of digital technologies as a lever for improving the quality of life in rural areas. As presented above, IT can be a viable solution for sustainable rural development. IT (Information Technology) and rural development are two interlinked areas that can bring significant benefits to rural communities. Integrating IT into rural development can improve access to

information, services and economic opportunities, thus contributing to bridging the digital divide and increasing the quality of life in rural areas. Considering the above, the highest number of citations was recorded by an article combining digital technologies and rural development. Thus, [12] examines previous research on the availability of ICT infrastructure, the level of ICT adoption and use in rural communities, and the factors that influence these issues. It examines existing inequalities in internet access, connectivity, infrastructure and digital skills in rural areas. It also explores the implications of ICT inequalities for rural development, including the impact on the local economy, education, health and local governance. The study also discusses possible solutions and interventions that can be implemented to bridge the digital divide and promote sustainable rural development in the digital age.

### Part Three - Co-occurrence Analysis of Keywords and Clusters

In this section, we conducted a keyword co-occurrence analysis to identify themes and trends.

We can see in Figure 3 that 4 distinct groupings have been created, which are individually analysed below. At the centre of the network diagram are the terms that are the subject of this research, followed by the term sustainable development.

The red cluster (Figure 4) is a cluster that refers to community-based rural development, from which we can see that the LEADER approach appears distinct from the other policies that are in the blue cluster.

The green cluster (Figure 5) refers to sustainable development and urbanization of rural areas in China. This cluster highlights the connections and relationships between these concepts in the keyword co-occurrence analysis.

The articles in the dataset used for the analysis address topics such as sustainable development in the Chinese context, the impact of urbanisation on regional development and growth issues in specific geographical areas in China.





technologies in the context of rural development. These include topics such as the impact of agricultural policy on sustainable rural development, the adoption and implementation of renewable technologies in agriculture, and measures and strategies to promote sustainable agricultural development.

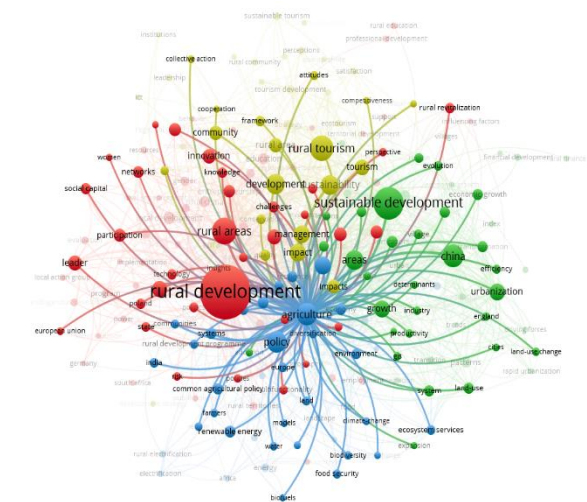


Fig. 6. Network diagram of co-occurrence in the blue cluster  
 Source: Own processing using VoSviewer of information extracted from WoS.

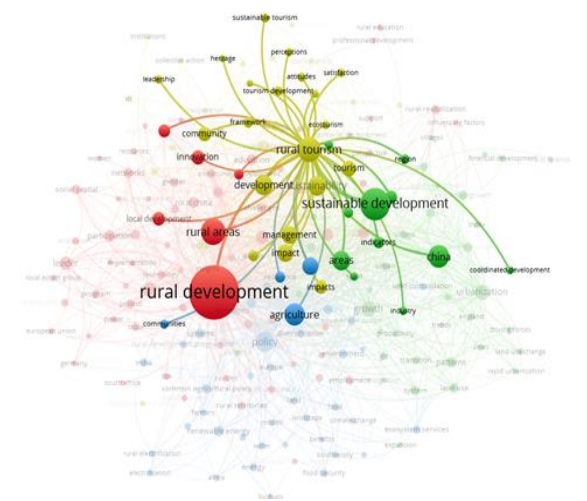


Fig. 7. Network diagram of co-occurrence in the yellow cluster  
 Source: Own processing using VoSviewer of information extracted from WoS.

The yellow cluster (Figure 7) refers to themes related to rural tourism, development, sustainability, management and impact. This cluster suggests that the articles in the dataset

analysed discuss issues related to rural tourism development, sustainability, management of rural activities and the impact that tourism has on rural communities. These may include topics such as planning and implementing rural tourism development strategies, managing the impact on the environment and local communities, and promoting a sustainable approach to rural tourism.

Figure 8 illustrates bibliographic coupling, with countries as the unit of analysis. We generated a network map of co-relationships among countries using VOSviewer software. Each node represents a country, where node size signifies the level of a country's activity, and lines connect two countries with collaborative ties. The thickness of these connecting lines corresponds to the strength of cooperation between the countries.

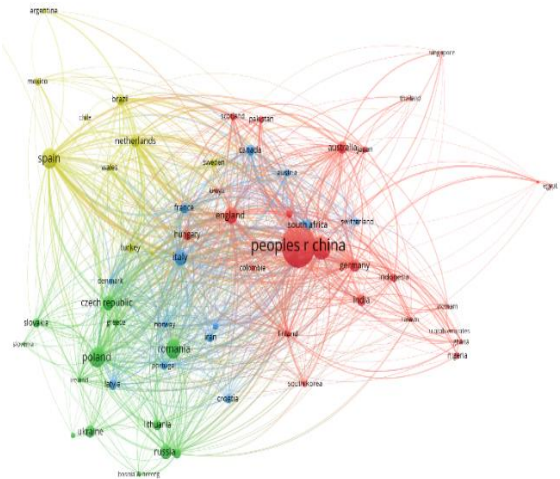


Fig. 8. Network diagram of co-networks by country  
 Source: Own processing using VoSviewer of information extracted from WoS

Applying a threshold of at least 10 occurrences for each country, it resulted that only 62 countries meet this criterion. VOSviewer categorizes these 62 nodes into four distinct clusters, with each cluster represented by a distinct colour.

Figure 9 presents a visualization depicting the concurrent temporal trends related to the term "rural development."

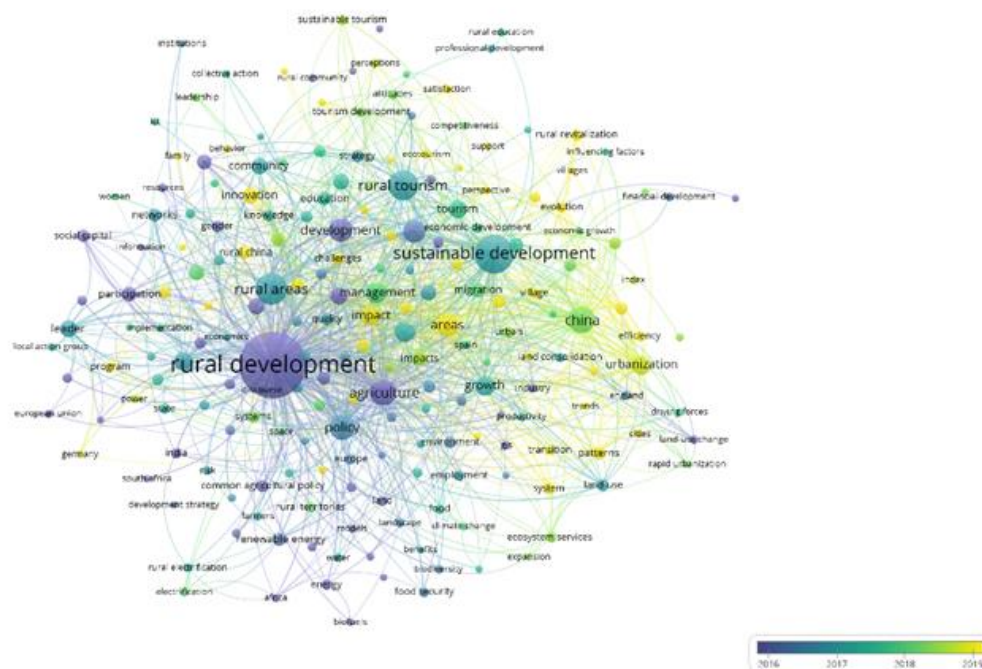


Fig. 9. Overlay view of the temporal trend of the VOSviewer term map in rural development  
 Source: Own processing with VoSviewer of information extracted from WoS.

The colour of a term indicates the average year of appearance of the publications in which that term appears. The closer the colour of a term is to purple, the older the publications in which that term appears, and the closer the colour of a term is to yellow, the more recent they are. This shows that the terms on the right-hand side (transformation, impact, innovation, urban revitalization, efficiency) of the figure are used more in recent publications. An interesting point in this figure is that agriculture is moving away from rural development, even though it is the main activity with growth potential in rural areas.

## CONCLUSIONS

The analysis shows that rural development is a growing field in the academic and research community. Between the 1990s and 2000s, researchers' concerns focused on the search for renewable energy sources for sustainable development and socio-economic impact on local communities. Also, during this period, there was a growing concern about improving the quality of life and policies governing rural development in less developed countries.

Publications in the second period analyse the different dimensions of livelihoods, including economic, social and environmental aspects, and explore how these can be integrated into rural development policies and practices. It also examines the complex interactions between economic, social and ecological factors within rural communities and how these interactions can influence development processes.

The latest period is one in which new methodological approaches have emerged, reflected in more advanced methods and which consider people as the focal point of sustainable development, with planning appropriate to this new direction.

During this period, the concept of integrated rural development has been renewed, based on new governance linked to spatial planning and skills development, reinforcing the importance of integrating the public and private sectors and mobilising local actors when it comes to sustainability.

The principles of the EU's LEADER programme are being applied in other contexts, as transnational rural development experiments that address new types of governance. New concepts such as resilience

are emerging in urban-rural development relationships to achieve sustainable rural communities able to survive in the face of external factors. Major themes related to economics, local entrepreneurship, social capital, innovation based on social learning, participatory planning, social structures and partnerships for coordinating rural development projects and policies are debated. Other researchers focused on analysing and understanding rural change in the context of new economies.

The analysis shows the many areas that are interlinked with rural development. Addressing this complex and interlinked issue needs to be done from multiple perspectives and different disciplines in a holistic and effective manner.

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