Hungarian Association of Agricultural Informatics
European Federation for Information Technology in Agriculture, Food and the Environment

Journal of Agricultural Informatics. Vol. 16, No. 2
journal.magisz.org

Bibliometric Analysis of Sustainable Development Goals in Agricultural Development: Trends, Challenges, and Future Directions

Asep Yusup Mamun[1], Várallyai László[2]

I N F O
Received: 13/04/2025
Accepted: 23/07/20255
Available on-line: 29/09/2025
Responsible Editor: Péter Lengyel

Keywords:
Bibliometric analysis, Sustainable Development Goals (SDGs), Sustainability, Agricultural Development, Food Security, Innovation, Climate Change, Policy.

JEL Classification Codes:
Q01, Q16, Q18, O13, O44, R58.

A B S T R A C T
This study employs bibliometric analysis to explore research trends, challenges, and innovations in aligning agricultural development with the Sustainable Development Goals (SDGs). Based on Scopus-indexed literature from 2016 to 2024, Citation Network Analysis (CNA) and Co-Occurrence Network Analysis reveal key thematic areas including SDG integration, sustainability trade-offs, food security, the water-energy-food nexus, and climate adaptation. The findings highlight critical regional disparities, governance gaps, and economic constraints that hinder effective implementation of sustainable agricultural strategies, particularly in developing regions such as Africa, India, and Bangladesh. Although technologies like precision agriculture, remote sensing, and smart irrigation offer promising solutions, their uptake remains limited due to infrastructural and financial barriers. The study underscores the need for inclusive policy frameworks, multi-stakeholder collaboration, and targeted investment in sustainable technologies. A noted limitation is the exclusive use of the Scopus database, which may overlook relevant research indexed elsewhere. These insights aim to inform policymakers, researchers, and practitioners in advancing SDG-aligned agricultural transformation through evidence-based strategies and global cooperation.

1. Introduction

Sustainable development has become a global priority, particularly following the adoption of the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), which came into effect in January 2016. These goals offer a unified framework to promote social well-being, economic growth, and environmental sustainability (Serafini et al., 2022). Agriculture plays a pivotal role in achieving several of these goals, especially SDG 2 (Zero Hunger), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 15 (Life on Land). Sustainable agricultural practices contribute to food security, climate resilience, and biodiversity conservation, while also supporting smallholder farmers and promoting responsible resource use (Philip & Suresh, 2024; Peña-Cortes, 2023; Requelme et al., 2019).

Despite this potential, challenges such as the dominance of agribusiness in policy-making, limited adoption of smart farming technologies, and economic and infrastructural constraints hinder progress, particularly in developing countries. Nations like China and India demonstrate both advancements and ongoing difficulties in integrating sustainability into agricultural policies (Shen et al., 2020; Rai & Lakshmypriya, 2023). Innovations such as climate-smart agriculture, crop diversification, and organic farming are essential for overcoming these barriers (Banerjee et al., 2021).

This systematic literature review explores four main research questions: how agricultural development strategies align with SDG objectives (RQ1); the challenges of integrating sustainability into agricultural practices (RQ2); regional differences in implementing SDG-related strategies and lessons learned (RQ3); and the innovations and technologies that support SDG targets in agriculture

[1] Asep Yusup Mamun
University of Debrecen, Doctoral School of Management and Business, Faculty of Economics and Business, Institute of Methodology and Business Digitalization, Debrecen, Hungary
e-mail: *asep.mamun@econ.unideb.hu*
[2] Várallyai László
University of Debrecen, Faculty of Economics and Business, Institute of Methodology and Business Digitalization, Debrecen, Hungary
e-mail: *varallyai.laszlo@econ.unideb.hu*

(RQ4). By synthesizing current research, this study offers insights into ongoing progress, challenges, and future directions in sustainable agriculture, aiming to guide policymakers, researchers, and practitioners in aligning agricultural development with the SDGs through policy innovation, technological advancement, and global collaboration (Sarker et al., 2023).

2. Methodology

This study used a Scopus-indexed dataset of publications from 2016 to 2024, selected for Scopus's comprehensive coverage, accurate indexing, and robust citation metrics, which make it ideal for bibliometric analysis (Powell & Peterson, 2017; Pranckutė, 2021; Falagas et al., 2008). Its structured author and source profiles further enhance the reliability of citation tracking. A Systematic Literature Network Analysis (SLNA) was employed to investigate literature on SDGs in agricultural development, incorporating both bibliometric review and network visualization techniques (Máté et al., 2024). This method supports transparency and analytical rigor, setting it apart from traditional literature reviews (Tranfield et al., 2003).

The analysis applied Bibliographic Network Analysis and Visualization (BNAV), using Citation Network Analysis (CNA), Global Citation Score (GCS), and Co-occurrence Networks of Keywords (CONK) to identify key research themes, influential studies, and structural relationships. Following established approaches (Hummon & Dereian, 1989; Fahimnia et al., 2015), the methodology mapped the intellectual landscape and evolving focus areas in SDG-related agricultural research. The use of content analysis minimized bias while improving the validity and replicability of predefined research constructs. The software VOSviewer (v1.6.20) was used to generate bibliometric maps from Scopus data, providing a detailed visual representation of research patterns.

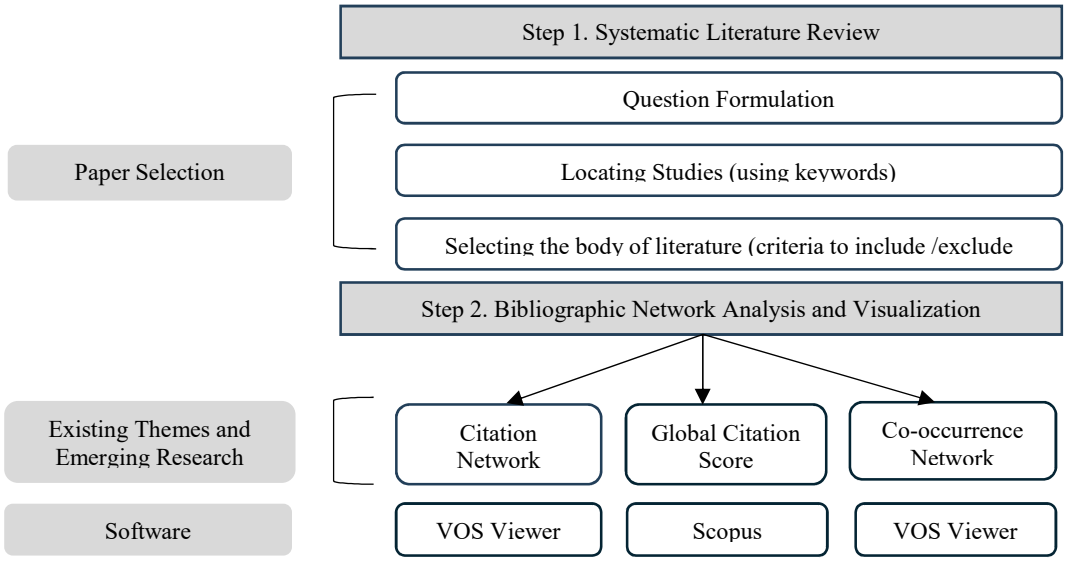


Figure 1. SLNA for Research Methodology of the Review (Máté et al., 2024).

3. Results

3.1. Systematic Literature Review

We conducted an interdisciplinary systematic literature review on SDGs in Agricultural Development to identify relevant research using specific keywords. Our approach focused on compiling a comprehensive search list by selecting publications relevant to an initial bibliographic exploration. The final search query was structured as follows (Equation 1):

("Sustainable Development Goals" AND "Agricultur")* (1)

On 21 February 2025, a search was performed in Scopus using the title, abstract, and keyword fields. As shown in Figure 2 and outlined by Máté et al. (2024), a systematic filtering process was applied to refine the dataset. The search was limited to publications from 2016 to 2024 and focused on subject

areas relevant to SDG-related agricultural development, including agricultural sciences, environmental science, social sciences, engineering, economics, and related fields.

Non-English publications were excluded, reducing the dataset from 4854 to 4096 documents. Further filtering by document type—such as articles, reviews, and conference papers—reduced the total to 4256. Finally, limiting the dataset to open-access publications resulted in 2164 documents for analysis.

This rigorous selection process ensured that the literature analyzed was highly relevant, up to date, and methodologically sound, providing a robust foundation for bibliometric analysis in the context of sustainable agricultural development and the SDGs.

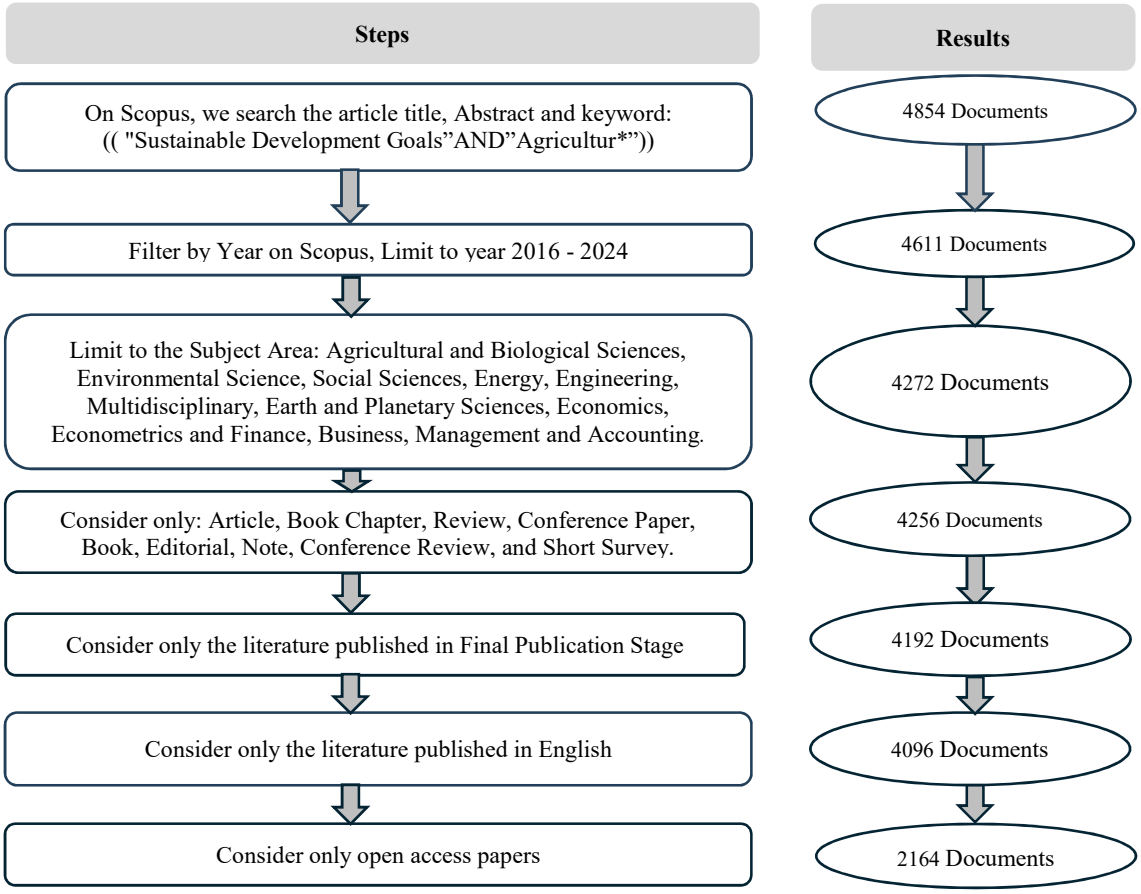


Figure 2. Paper Selection Procedure and Results

3.2. Bibliographic Network Analysis and Visualization

3.2.1. *Citation Network Analysis*

Citation Network Analysis (CNA) is a method where research papers are represented as nodes and citations function as connections between them. This approach enables the tracking of citation flows, offering insights into how earlier studies have influenced subsequent research and helping to identify knowledge dissemination patterns. CNA isolates smaller clusters of interconnected papers, ensuring each document within a cluster has at least ten citations linked to others. It also highlights the most highly cited papers within an author network by assigning citation weights (Hummon & Dereian, 1989).

Figure 3 presents a Citation Network Map (CNM) in overlay view, illustrating citation relationships between documents. CNA defines the scope of topic clusters, forming a network of 15 nodes and four linkages. It is especially effective in larger clusters, where the volume of data allows for more comprehensive results (Ejsmont et al., 2020). Based on this principle, VOSviewer generated six clusters, summarised in Table 1. These clusters represent significant themes in sustainable development, resource management, and environmental policy, highlighting the interconnection of various Sustainable Development Goals (SDGs).

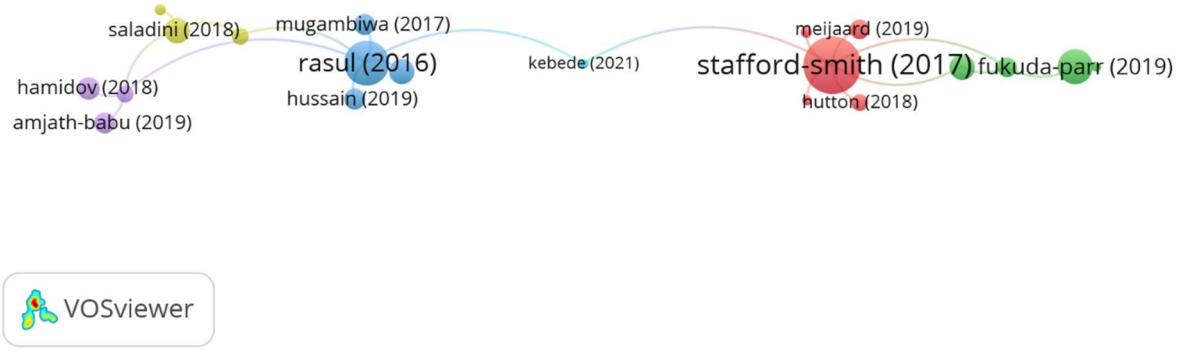


Figure 3. Citation Network Map

Cluster 1 focuses on SDG implementation strategies, ethical considerations in oil palm production, and trade-offs in sustainability policies, with influential contributions from Stafford-Smith et al. (2017), Meijaard et al. (2019), and Hutton et al. (2018). Cluster 2 examines food waste, SDG challenges in mining, and small-scale sustainable mining, drawing insights from Manzoor et al. (2024), Hirons et al. (2020), and Hilson et al. (2020). Cluster 3 addresses hydropower policy, the water-energy-food nexus, and climate change impacts on food security, as explored by Hussain et al. (2019), Mpandeli et al. (2018), and Mugambiwa et al. (2017).

Table 1. Research topics on the most significant clusters in the CNA

Cluster	Nodes	Links	Topics	Top 3 Cited Papers*	Period	Size** (%)
1. SDG Governance and Ethical Agricultural Trade-offs	5	11	SDG Integration, Ethical Oil Palm, SDG Trade-offs	Stafford-smith et al. (2017) Meijaard et al (2019) Hutton et al (2018)	2017-2021	25
2. Resource Efficiency and Sustainable Mining Practices	4	8	Food waste reduction, SDG Challenge Mining, Sustainable Small-scale mining	Manzoor et al (2024) Hirons et al (2020) Hilson et al (2020)	2019-2024	20
3. Hydropower Policy and Climate-Food Nexus	4	9	Hydropower development policies, water-energy-food nexus, climate change & food security	Hussain et al (2019) Mpandeli et al (2018) Mugambiwa et al (2017)	2016-2019	20
4. Integrated Environmental Sustainability Frameworks	3	6	Water-Forest-Energy-Food nexus, SDG Assessment framework of Water-Energy-Food-Ecosystems nexus, Water-Energy-Food nexus sustainability.	Okumu et al (2021) Malagó et al (2021) Saladini et al (2018)	2018-2021	15
5. Agricultural Resilience and Climate Adaptation	3	6	Water-energy-food nexus agriculture, Hydropower impacts nexus, Climate change adaptation	Hamidov et al. (2020) Amjath-Babu et al (2019) Hamidov et al (2018)	2018-2020	15
6. Land-Use Planning and Sustainability Trade-offs	1	2	Food-water-land nexus	Kebede et al (2021)	2021	5

*Source: Authors (*Minimum Citation: 20, **Nodes=20 (100%))*

Cluster 4 underscores the importance of integrated approaches to managing water, energy, food, and ecosystems, with assessment frameworks provided by Okumu et al. (2021), Malagó et al. (2021), and Saladini et al. (2018). Cluster 5 focuses on sustainable agricultural practices, hydropower's role in the nexus, and climate adaptation, supported by studies from Hamidov et al. (2020), Amjath-Babu et al. (2019), and Hamidov et al. (2018). Cluster 6 examines interlinkages between food production, water management, and land use, with key insights from Kebede et al. (2021). Collectively, these clusters reveal the complexity of sustainable development and the need for interdisciplinary approaches in addressing climate change, resource management, and socio-economic resilience.

3.2.2. *Global Citation Score and Normalized Citation Score Analysis*

The Global Citation Score (GCS) is a valuable metric for identifying influential publications, measuring the total number of citations a paper has received across the database, regardless of citation network connections (Knoke & Yang, 2019). The normalized GCS highlights the top ten most impactful papers, offering a fair comparison across disciplines and publication years. It also helps identify emerging studies gaining attention since publication (Strozzi et al., 2017).

Table 2 presents the top 10 most cited articles based on their Normalized Citation Score, as calculated by VOSviewer. These articles span diverse topics related to sustainability and development. Stafford-Smith et al. (2017) ranks first in Sustainability Science with a score of 8.1513 and 637 citations, making it foundational in SDG integration and CNA. Manzoor et al. (2024) ranks second in Future Foods (score 7.142, 21 citations), emphasizing food waste reduction. Fukuda-Parr et al. (2019) ranks third in Global Policy (score 4.6943, 223 citations), contributing to SDG policy despite not being part of the CNA.

Table 2. Top 10 most cited articles ranked by Normalised Citations Score

Rank	Authors	Publication Year	Journal	Appearance In CNA	Citation Score	Normalised Citation Score
1	Stafford-Smith et al.	2017	Sustainability Science	Yes	637	8.1513
2	Manzoor et al.	2024	Future Foods	Yes	21	7.142
3	Fukuda-parr et al.	2019	Global Policy	No	223	4.6943
4	Hilson et al.	2020	Geoforum	Yes	115	3.2261
5	Rasul et al.	2016	Environmental Development	No	376	2.7948
6	Malagó et al.	2021	Resources, Conservation and Recycling	Yes	55	2.1942
7	Hirons et al.	2020	Environmental Science & Policy	Yes	69	1.9356
8	Hussain et al.	2019	Renewable and Sustainable Energy Reviews	Yes	87	1.8314
9	Amjath-babu et al.	2019	Applied Energy	Yes	83	1.7472
10	Mpandeli et al.	2018	International Journal of Environmental Research and Public Health	Yes	126	1.7176

Source: Authors

Hilson et al. (2020) in Geoforum is fourth (score 3.2261, 115 citations), discussing small-scale mining and sustainability trade-offs. Rasul et al. (2016) in Environmental Development (score 2.7948, 376 citations) addresses the food-water-energy nexus in South Asia. Malagó et al. (2021) in Resources, Conservation and Recycling (score 2.1942, 55 citations) focuses on sustainability assessment frameworks. Hirons et al. (2020) in Environmental Science and Policy (score 1.9356, 69 citations) explores SDG risks in mining. Hussain et al. (2019) in Renewable and Sustainable Energy Reviews (score 1.8314, 87 citations) addresses hydropower and climate adaptation. Amjath-Babu et al. (2019) in Applied Energy ranks ninth (score 1.7472, 83 citations), studying the water-energy-food nexus in Himalayan basins. Finally, Mpandeli et al. (2018) in International Journal of Environmental Research and Public Health (score 1.7176, 126 citations) focuses on climate adaptation through the nexus approach in Southern Africa. These top-cited works reflect critical themes including SDG implementation, food security, environmental sustainability, and resource governance.

3.2.3. Co-occurrence Analysis

A co-occurrence network analysis was used to examine the relationships among frequently occurring keywords in the selected literature. In this network, nodes represent author-defined keywords, and links indicate how often terms appear together across publications (Callon et al., 1991). Frequent co-appearance of terms signals their significance and helps identify thematic trends (Ding et al., 2001).

Using VOSviewer, the network was visualized through three mapping techniques. After filtering the Scopus abstracts, a final sample of 2164 documents was analyzed. Keywords were extracted from titles, abstracts, and author-assigned terms. Before constructing the network, data were standardized by merging synonyms and abbreviations. Keywords had to appear in at least five documents to be included in the network (Khitous et al., 2020). More frequently used and interconnected keywords were given greater visual prominence in the output map (Ejsmont et al., 2020).

Figure 4 illustrates the Co-occurrence of Keywords Network Map, displaying thematic linkages in SDG-related agricultural research. This visualization reveals the interdisciplinary and interconnected nature of sustainability research. It identifies prominent research themes, knowledge gaps, and areas for future investigation, emphasizing the importance of integrated policy and collaborative approaches.

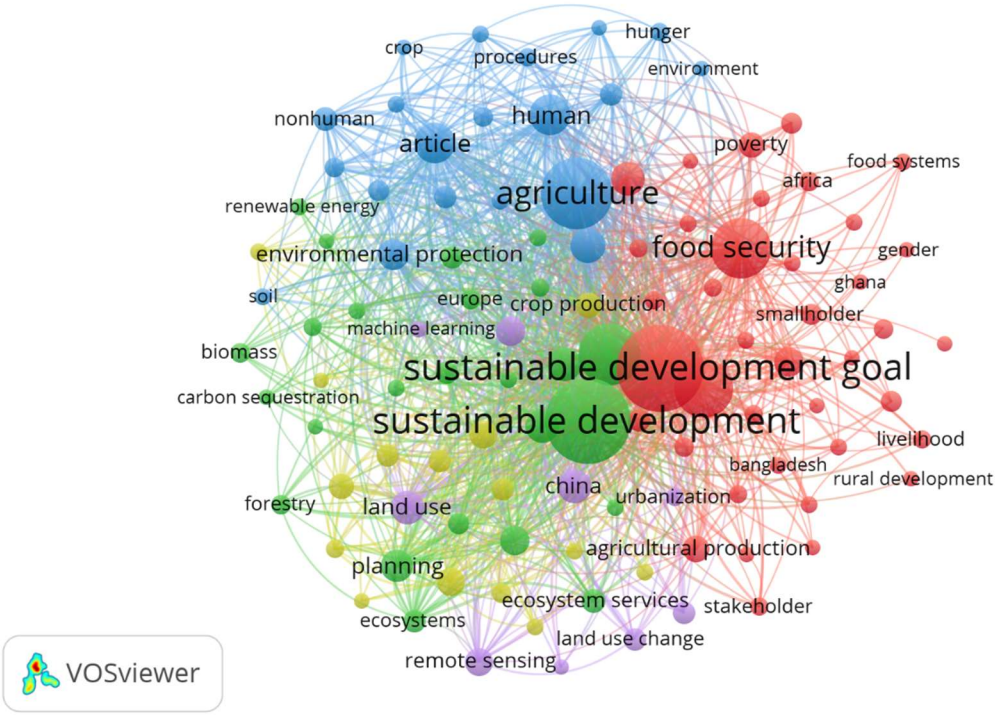


Figure 4. Co-occurrence of Keywords Network Map

Table 3 presents the five major research clusters derived from the Co-occurrence Network, each representing a distinct focus area in sustainable agriculture, environmental policy, and resource management. These clusters highlight critical themes such as climate resilience, food security, and sustainable land and water use. The findings underscore the need for coordinated policy, innovation, and multi-sectoral engagement to address complex global challenges through sustainable development.

Table 3. Main research topics based on CONK

Cluster	Keywords	Total Link Strength	Occurrences*	Main Research Topics
1	Sustainable Development Goal	3369	630	Sustainable agricultural development, food security, and economic growth in developing countries, particularly in Africa, India, and Bangladesh, emphasising smallholder farming, resilience, governance, and policy trade-offs in rural and urban food systems amidst challenges like poverty, climate change, and COVID-19.
	Food Security	1470	326	
	Sustainability	1477	309	
	Sustainable Agriculture	539	115	
	Alternative Agriculture	559	97	
	Agricultural Production	468	77	
	Poverty	398	74	
	India	395	60	
	Nutrition	267	53	
	Agricultural Development	244	51	
	Smallholder	278	50	
	Africa	246	46	
	Developing Countries	321	46	
	Innovation	163	45	
	Economic Development	329	43	
	Food Production	257	42	
	Trade-Off	334	42	
	Stakeholder	258	41	
	Developing World	279	40	
	Livelihood	216	39	
	Productivity	314	39	
	Food Systems	141	38	
	Literature Review	206	38	
	Sub-Saharan Africa	192	38	
	Adaptive Management	276	37	
	Bangladesh	140	37	
	Rural Area	282	35	
	Policy	193	34	
	Covid-19	146	33	
	Farming System	209	33	
	Economic Growth	200	32	
	Governance Approach	244	32	
	Ghana	112	31	
	Resilience	164	31	
	Agroecology	86	30	
	Gender	103	30	
	Public Health	203	30	
	Rural Development	114	30	
	Urban Agriculture	131	30	
2	Sustainable Development	3471	605	The intersection of sustainable development, climate change mitigation, and environmental policy, emphasising biodiversity conservation, renewable energy, carbon sequestration, and the economic and social effects of ecosystem services, forestry, and agricultural innovations in the United States, Europe, and globally.
	Climate Change	2075	341	
	Biodiversity	805	119	
	United Nations	789	114	
	Planning	804	110	
	Agricultural Robots	601	92	
	Ecosystem Services	360	64	
	Ecosystems	558	61	
	Economics	504	60	
	Greenhouse Gas	404	57	
	Economic And Social Effects	465	50	
	Biomass	306	48	
	Europe	367	48	
	Forestry	347	47	
	Environmental Policy	356	43	
	Carbon	386	41	
	Environmental Economics	319	38	
	Mitigation	261	36	
	United States	240	35	
	Energy	235	34	
	Renewable Energy	216	34	
	European Union	209	33	
	Carbon Dioxide	184	31	
	Carbon Sequestration	268	30	

Cluster	Keywords	Total Link Strength	Occurrences*	Main Research Topics
	Waste Management	166	30	
3	Agriculture	2546	441	The environmental sustainability of agriculture, food supply, and natural resource conservation, examining the impact of farming practices, agricultural workers, and the food industry on Hunger, environmental protection, and soil management.
	Article	1506	164	
	Human	1450	160	
	Food Supply	1015	131	
	Environmental Protection	909	99	
	Nonhuman	580	62	
	Agricultural Worker	500	58	
	Environmental Impact	444	57	
	Environmental Sustainability	471	53	
	Controlled Study	498	49	
	Review	454	47	
	Hunger	278	41	
	Procedures	377	39	
	Soil	309	36	
	Conservation Of Natural Resources	422	35	
	Farms	261	34	
	Food Industry	347	33	
	Catering Service	344	32	
	Environment	230	32	
	Crop	239	31	
4	Decision Making	603	83	Decision-making in water management for sustainable crop production, emphasising irrigation efficiency, water conservation, groundwater use, and risk assessment to optimise water supply, quality, and crop yield.
	Water Management	607	83	
	Crop Production	485	71	
	Water Quality	465	68	
	Water Supply	533	58	
	Crops	384	57	
	Cultivation	410	57	
	Irrigation	289	49	
	Water Conservation	392	42	
	Water	346	38	
	Crop Yield	183	37	
	Groundwater	247	37	
	Water Resource	288	36	
	Efficiency	205	31	
	Risk Assessment	216	30	
5	China	763	121	Spatiotemporal analysis of land use change and agricultural land degradation in China, utilising remote sensing and machine learning to assess the impacts of urbanisation on land sustainability.
	Land Use	930	118	
	Agricultural Land	728	91	
	Remote Sensing	443	83	
	Spatiotemporal Analysis	319	60	
	Land Use Change	357	59	
	Urbanisation	285	43	
	Machine Learning	186	36	
	Land Degradation	199	31	

*Source: Authors (*Ranking Order, Min Number of Occurrences of a Keyword: 30*)

4. Discussion and Implications

This study offers a comprehensive analysis of how agricultural development aligns with the Sustainable Development Goals (SDGs), particularly in the areas of food security (SDG 2), sustainable agriculture (SDG 12), climate action (SDG 13), and poverty alleviation (SDG 1). The Co-Occurrence Network Analysis identified key thematic areas such as agriculture, food supply, environmental protection, and water management. High-frequency keywords like “agriculture,” “climate change,” and “sustainability” appeared across hundreds of documents and reflect the interdisciplinary nature of current research. For example, “agriculture” was cited in 441 documents with a normalized citation score of 1.22, showing its central position in SDG-related research.

These findings are supported by Citation Network Analysis, which identified six major clusters. Cluster 1 includes foundational studies such as Stafford-Smith et al. (2017), which had the highest normalized citation score (8.15) and contributed significantly to debates on SDG integration and governance trade-offs. Other influential works in this cluster include Meijaard et al. (2019) and Hutton

et al. (2018), both of which explored ethical and environmental concerns in oil palm production. Cluster 2 and Cluster 3 feature research such as Manzoor et al. (2024), which focuses on food waste reduction, and Mpandeli et al. (2018), which examines climate adaptation and water-energy-food linkages. These works reinforce the urgent need for integrated governance approaches to manage trade-offs between economic growth and sustainability.

The findings are consistent with earlier studies such as Rasul et al. (2016), which highlighted the complexities of the food-water-energy nexus in South Asia. Similarly, Hilson et al. (2020) discussed the social and environmental trade-offs in small-scale mining, an issue also explored in Cluster 2. These comparisons underline the recurring challenge of reconciling environmental goals with development imperatives, especially in low- and middle-income countries. The Co-Occurrence Network further reveals increasing attention to technologies such as precision agriculture, remote sensing, and machine learning. While these innovations offer potential solutions, their implementation is still constrained by limited infrastructure, financial barriers, and knowledge gaps.

Regional disparities in SDG implementation also emerged as a significant theme. Research from China, India, and sub-Saharan Africa suggests that institutional capacity and governance structures significantly influence the effectiveness of sustainability strategies. Studies such as Malagó et al. (2021) and Amjath-Babu et al. (2019) show that regions with more integrated policy frameworks tend to implement adaptive and inclusive approaches. In contrast, limited coordination and weak enforcement mechanisms often hinder SDG progress in less developed areas.

Although this study provides valuable insights, one limitation lies in its exclusive reliance on Scopus as the data source. While Scopus offers extensive coverage and reliable metrics, it may omit relevant regional publications and non-English studies indexed in other databases. As a result, future research should consider integrating data from complementary sources such as Web of Science or Google Scholar to broaden the scope and reduce potential publication bias.

Overall, the analysis underscores that achieving SDG-aligned agricultural development requires more than technological innovation. It demands collaborative governance, inclusive policies, targeted financial support, and capacity building. Aligning agricultural strategies with sustainability goals will require continued research, cross-regional learning, and international cooperation to address the interconnected challenges of food security, climate resilience, and equitable development.

Conclusions

This study presents a comprehensive bibliometric analysis of how agricultural development aligns with the Sustainable Development Goals (SDGs), identifying key research themes, persistent challenges, and emerging innovations. The analysis of Scopus-indexed literature reveals strong connections between agricultural strategies and SDG targets, particularly in areas such as sustainability, climate change, food security, and biodiversity conservation. The Citation Network Analysis (CNA) identified six major research clusters, encompassing topics such as SDG integration, ethical agricultural practices, resource management, and climate adaptation. Similarly, the Co-Occurrence Network of Keywords (CONK) highlights the importance of agricultural productivity and governance, especially in regions like Africa, India, and Bangladesh.

However, significant barriers remain. These include policy trade-offs, weak governance frameworks, economic disparities, and limited access to sustainable technologies. Although tools like precision agriculture, remote sensing, and smart irrigation offer promising solutions, their adoption is constrained in low-income regions due to affordability and infrastructural challenges. Addressing these issues will require collaborative governance, targeted investments, and inclusive policy approaches.

A key limitation of this study is its exclusive reliance on the Scopus database, which, while widely used and highly regarded for its coverage and indexing quality, may exclude relevant publications from other academic databases such as Web of Science or Google Scholar. This may limit the scope of findings and introduce potential bias by omitting region-specific or non-English studies not indexed in Scopus.

In conclusion, while notable progress has been made, achieving SDG-aligned agricultural development demands continued research, policy innovation, and global collaboration. Future studies should consider broader data sources, conduct longitudinal impact assessments, compare regional policy outcomes, and explore scalable technologies to build sustainable and resilient agricultural systems worldwide.

References

Amjath-Babu, T. S., Sharma, B., Brouwer, R., Rasul, G., Wahid, S. M., Neupane, N., ... & Sieber, S. (2019). Integrated modelling of the impacts of hydropower projects on the water-food-energy nexus in a transboundary Himalayan river basin. Applied Energy, 239, 494-503. DOI: 10.1016/j.apenergy.2019.01.147

Banerjee, A., Paul, K., Varshney, A., Nandru, R., Badhwar, R., Sapre, A., & Dasgupta, S. (2022). Soilless indoor smart agriculture as an emerging enabler technology for food and nutrition security amidst climate change. In Plant nutrition and food security in the era of climate change (pp. 179-225). Academic Press. DOI: 10.1016/B978-0-12-822916-3.00004-4

Ejsmont, K., Gladysz, B., & Kluczek, A. (2020). Impact of Industry 4.0 on Sustainability—Bibliometric Literature Review. Sustainability, 12(14). DOI:10.3390/su12145650

Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. International Journal of Production Economics, 162, 101. DOI:10.1016/j.ijpe.2015.01.003

Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2008). Comparison of PubMed, Scopus, web of Science, and Google Scholar: strengths and weaknesses. The FASEB Journal, 22(2), 338–342. DOI:10.1096/fj.07-9492LSF

Fukuda-Parr, S., & McNeill, D. (2019). Knowledge and politics in setting and measuring the SDG S: Introduction to special issue. Global Policy, 10, 5-15. DOI:10.1111/1758-5899.12604

Hamidov, A., Helming, K., Bellocchi, G., Bojar, W., Dalgaard, T., Ghaley, B. B., ... & Schönhart, M. (2018). Impacts of climate change adaptation options on soil functions: A review of European case-studies. Land degradation & development, 29(8), 2378-2389. DOI:10.1002/ldr.3006

Hamidov, A., & Helming, K. (2020). Sustainability considerations in water–energy–food nexus research in irrigated agriculture. Sustainability, 12(15), 6274. DOI:10.3390/su12156274

Hilson, G., & Maconachie, R. (2020). Artisanal and small-scale mining and the Sustainable Development Goals: Opportunities and new directions for sub-Saharan Africa. Geoforum, 111, 125-141. DOI:10.1016/j.geoforum.2019.09.006

Hirons, M. (2020). How the Sustainable Development Goals risk undermining efforts to address environmental and social issues in the small-scale mining sector. Environmental Science & Policy, 114, 321-328. DOI:10.1016/j.envsci.2020.08.022

Hummon, N. P., & Doreian, P. Connectivity In A Citation Network: The Development Of DNA Theory *. DOI:10.1016/0378-8733(89)90017-8

Hussain, A., Sarangi, G. K., Pandit, A., Ishaq, S., Mamnun, N., Ahmad, B., & Jamil, M. K. (2019). Hydropower development in the Hindu Kush Himalayan region: Issues, policies and opportunities. Renewable and Sustainable Energy Reviews, 107, 446-461. DOI:10.1016/j.rser.2019.03.010

Hutton, C. W., Nicholls, R. J., Lázár, A. N., Chapman, A., Schaafsma, M., & Salehin, M. (2018). Potential trade-offs between the sustainable development goals in coastal Bangladesh. Sustainability, 10(4), 1108. DOI:10.3390/su10041108

Kebede, A. S., Nicholls, R. J., Clarke, D., Savin, C., & Harrison, P. A. (2021). Integrated assessment of the food-water-land-ecosystems nexus in Europe: Implications for sustainability. Science of the Total Environment, 768, 144461. DOI:10.1016/j.scitotenv.2020.144461

Malagó, A., Comero, S., Bouraoui, F., Kazezyılmaz-Alhan, C. M., Gawlik, B. M., Easton, P., & Laspidou, C. (2021). An analytical framework to assess SDG targets within the context of WEFE nexus in the Mediterranean region. Resources, Conservation and Recycling, 164, 105205. DOI:10.1016/j.resconrec.2020.105205

Manzoor, S., Fayaz, U., Dar, A. H., Dash, K. K., Shams, R., Bashir, I., ... & Abdi, G. (2024). Sustainable development goals through reducing food loss and food waste: A comprehensive review. Future Foods, 100362. DOI: 10.1016/j.fufo.2024.100362

Máté, D., Estiyanti, N. M., & Novotny, A. (2024). How to support innovative small firms? Bibliometric analysis and visualisation of start-up incubation. Journal of Innovation and Entrepreneurship, 13(1)10.1186/s13731-024-00361-z. DOI:10.1186/s13731-024-00361-z

Meijaard, E., & Sheil, D. (2019). The Moral Minefield of Ethical Oil Palm and Sustainable Development. Frontiers in Forests and Global Change, 2, 22. DOI:10.3389/ffgc.2019.00022

Mugambiwa, S. S., & Tirivangasi, H. M. (2017). Climate change: A threat towards achieving 'Sustainable Development Goal number two'(end hunger, achieve food security and improved nutrition and promote sustainable agriculture) in South Africa. Jàmbá: Journal of Disaster Risk Studies, 9(1), 1-6. https://hdl.handle.net/10520/EJC-5d267303f

Mpandeli, S., Naidoo, D., Mabhaudhi, T., Nhemachena, C., Nhamo, L., Liphadzi, S., ... & Modi, A. T. (2018). Climate change adaptation through the water-energy-food nexus in southern Africa. International journal of environmental research and public health, 15(10), 2306. DOI:10.3390/ijerph15102306

Okumu, B., Kehbila, A. G., & Osano, P. (2021). A review of water-forest-energy-food security nexus data and assessment of studies in East Africa. Current Research in Environmental Sustainability, 3, 100045. DOI:10.1016/j.crsust.2021.100045

Peña-Cortes, L. (2023). Search for Haloenzymes. In: Aguilar, C.N., Abdulhameed, S., Rodriguez-Herrera, R., Sugathan, S. (eds) Microbial Biodiversity, Biotechnology and Ecosystem Sustainability. Springer, Singapore. DOI:10.1007/978-981-19-4336-2_20

Philip, B. , Suresh, G (2024). India's Agriculture Sector's Journey towards Sustainable Development Goals: Assessing Governmental Interventions and Sectoral Outcomes. Universal Journal of Agricultural Research, 12(2), 332 - 341. DOI: 10.13189/ujar.2024.120212.

Powell, K. R., & Peterson, S. R. (2017). Coverage and quality: A comparison of Web of Science and Scopus databases for reporting faculty nursing publication metrics. Nursing Outlook, 65(5), 572. DOI:10.1016/j.outlook.2017.03.004

Pranckutė, R. (2021). Web of Science (WoS) and Scopus: The titans of bibliographic information in today's academic world. Publications, 9(1), 12. DOI:10.3390/publications9010012

Rai, R., Lakshmypriya, K. (2023). Unraveling the Interplay Between Indian Agricultural Sector, Food Security, and Farms Bill: Key to Sustainable Development Goals. In: Alam, A., Rukhsana (eds) Climate Change, Agriculture and Society. Springer, Cham. DOI:10.1007/978-3-031-28251-5_11

Rasul, G. (2016). Managing the food, water, and energy nexus for achieving the Sustainable Development Goals in South Asia. Environmental development, 18, 14-25. DOI:10.1016/j.envdev.2015.12.001

Requelme, N., Cachipuendo Ulcuango, C. J., & Ortiz Tirado, P. X. (2019). La sostenibilidad en la construcción de políticas públicas, planes, programas y proyectos de desarrollo rural en Ecuador. http://dspace.aeipro.com/xmlui/handle/123456789/2341

Saladini, F., Betti, G., Ferragina, E., Bouraoui, F., Cupertino, S., Canitano, G., ... & Bastianoni, S. (2018). Linking the water-energy-food nexus and sustainable development indicators for the Mediterranean region. Ecological Indicators, 91, 689-697. DOI:10.1016/j.ecolind.2018.04.035

Sarker, P. K., Paul, A. S., & Karmoker, D. (2023). Mitigating climate change and pandemic impacts on global food security: dual sustainable agriculture approach (2S approach). Planta, 258(6), 104. DOI:10.1007/s00425-023-04257-2

Serafini, P. G., de Moura, J. M., de Almeida, M. R., & de Rezende, J. F. D. (2022). Sustainable development goals in higher education institutions: a systematic literature review. Journal of Cleaner Production, 370, 133473. DOI:10.1016/j.jclepro.2022.133473

Shen, J., Zhu, Q., Jiao, X., Ying, H., Wang, H., Wen, X., Xu, W., Li, T., Cong, W., Liu, X., Hou, Y., Cui, Z., Oenema, O., Davies, W. J., & Zhang, F. (2020). Agriculture Green Development: a model for China and the world. Frontiers of Agricultural Science and Engineering, 7(1). DOI:10.15302/j-fase-2019300

Stafford-Smith, M., Griggs, D., Gaffney, O., Ullah, F., Reyers, B., Kanie, N., ... & O'Connell, D. (2017). Integration: the key to implementing the Sustainable Development Goals. Sustainability science, 12, 911-919. DOI:10.1007/s11625-016-0383-3

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. British journal of management, 14(3), 207-222. DOI:10.1111/1467-8551.00375