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LOCATING CRIME IN THE FIELD OF SUSTAINABILITY: A BIBLIOMETRIC MAPPING ON "SUSTAINABILITY AND CRIME" FROM 1995 – 2022

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Abstract. Emerging as a field of study and paradigm shifts parallel to the societal changes are inherited consequences of social sciences. Criminology, as a field of study, originated from sociology and developed as a particular field of study, later initiating sub-disciplines within the subject. Moreover, moving back and forth in the criminological evolution, multidisciplinary research connected the crimes with indirectly related fields and generated more total outputs to emphasize the ultimate goal of criminology, "crime control and prevention". Identifying crimes within the area of sustainability is vary. Discussions of crime prevention as improving quality of life, locating different criminal activities within Sustainable Development Goals (SDG.s), and using SDG.s for crime prevention are among the ample dialogues. This study reviews the literature on sustainability and crime with VOSviewer, a bibliometric visualizing software.

Keywords: bibliometric mapping; crime; Scopus; sustainability; VOSviewer

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Additional disciplines: law; sociology; ecology and environment

1. Introduction

With the delicate balance between constructive ambiguity and blatant disagreement, sustainable growth could not resist the weight of different interpretations. It has been a decade since the term "sustainable development" was first coined. Despite its seeming good fortune for environmentalists, this decision reveals several severe issues. In addition, economists have taken over the sustainable development narrative, and wealthy nations have become less concerned about developing their economies. Many people agree that sustainability is a beneficial move, but there are many different interpretations of what it means to be "sustainable," and these views are becoming increasingly polarized. It is possible to trace these misinterpretations back to the first English usage of the term "sustain." Taking care of one's own needs is an apparent extension of the notion of sufficiency. Keeping what is already in mind naturally leads to a preservation focus in a second family of meanings. First, the focus is on

"meeting the needs of today," whereas, in the second, it's all about looking to the future and planning for the future (Jamieson, 1998).

The Brundtland Report of 1987 established sustainability as a policy term concerned with the conflict between humankind's ambitions for a better existence on the one hand and the restrictions imposed by nature on the other. Over time, the notion has been re-interpreted to include three dimensions: social, economic, and environmental. A change, change in meaning (a) obscures the fundamental contradiction between the goals of welfare for all and environmental conservation; (b) risks diminishing the importance of the environmental dimension; and (c) separates social and economic aspects, which are, in reality, the same. It is advocated instead to revert to the original definition, where sustainability is concerned with the wellbeing of future generations, particularly with irreplaceable natural resources as opposed to the satisfaction of current demands, which we term wellbeing. A balance must be struck between the two, but not by claiming three sides of the same coin. Although depleting natural resources at the cost of future generations, also developing capital (including knowledge) that improves future wellbeing. A crucial issue is how much one compensates for the other (Kuhlman & Farrington, 2010).

Since the 1970s, the concept of sustainability has increasingly been linked to the concept of human sustainability, and as a result, the most often quoted definition of sustainability and sustainable development is "human sustainability on planet earth." Sustainable development, as defined by the United Nations World Commission on Environment and Development, is "development that meets the demands of the present without compromising the ability of future generations to meet their own needs" (United Nations). The word "sustainable development" refers to the simultaneous pursuit of three goals that overlap: environmental, economic, and social, and since 1987, there has been a substantial increase in the number of disciplines in which the idea of sustainable development has been implemented (Goni et al., 2015). This trend is shown by the increase in the number of sustainability publications combined with different fields.

The Sustainable Development Goals (SDGs), often known as the Global Goals, are 17 interconnected goals intended to serve as a "blueprint to build a better and more sustainable future for everyone." The United Nations General Assembly established the SDGs in 2015, intending to complete them by 2030 (United Nations, n.d.). As SDGs addressed a broad spectrum of human life, social issues were also combined with the concept of sustainability sooner. The combination of sustainability and crime addresses the "quality of life" directly and is attached to all SDGs, publications related to the theme of "sustainability and crime" has become more interesting with time.

Literature reveals definitions, themes, and descriptions of sustainability in many complex shapes and sizes, ranging from strategy, framework, phrases, concepts, indexes, indicators, weak, strong, externality, internal, and criterion. As a result, there is a vast diversity of opinions, which leads to confusion regarding the literal implementation of sustainability. It does this by exposing the concept of "sustainable" as a function of transdisciplinary factors, highlighted in four common themes: social, economic, ecological, and technological (Hasna, 2007).

Researchers hypothesize that there is a connection between being a victim of crime and the victim's reported level of life satisfaction and wellbeing, related to the social theme of sustainability. Studies that investigate linked concepts with crime and the quality of life often focus on indicators like fears of crime and worries for personal safety, happiness, and overall levels of satisfaction with the quality of life. It would suggest that having a history of being a victim of crime does not have a significant impact on these factors, on average. Crime-related difficulties have a relatively minor influence on people's happiness levels, life satisfaction, and contentment with their quality of life. The overall relationships were relatively low, leading the authors to conclude that victimization did not significantly impact these factors. Even though victimization was associated with some concerns about neighbourhood crime and problems, a tendency to engage in more defensive behaviours, less

satisfaction with their own and their family's safety in neighbourhoods, and lower levels of satisfaction with the quality of life, the authors concluded that victimization did not have a significant overall impact on these factors (Hanson et al., 2010).

The most prevalent source of information about the crime is police reports. Many crimes go unreported for a variety of reasons. As a result, police reports tend to understate crime and cover various locations and kinds of crime inconsistently. Victimization surveys are a better source of crime statistics since they are less likely to be skewed. Surveys question a representative sample of people if they have been victims of crime, how much they were harmed, and under what conditions. Many of these polls are only accessible in a few countries and typically for a short period. Victimization surveys, on the other hand, aren't flawless. Crime and violence committed by criminals and other fringe groups, such as gangs, are often overlooked by the media. Police reports are the primary data source for international and inter-period comparisons (Bourguignon, 2000). Sustainability reports indicate the absolute crime rates as it reveals the factors affecting the quality of life, measuring the levels of crime fear of individuals and the community.

The study's main objective is to review the existing literature on sustainability and crime with VOSViewer, a bibliometric visualizing software, answering 05 questions: What is the volume and document citation by the time of distribution from 1995 to 2022? Which countries contributed most to the knowledge of sustainability and crime between 1995-2022? What top journals have published the 100 most cited articles on sustainability and crime? What is the intellectual structure of sustainability and crime? What are the key concepts that have been explored in the field of sustainability and crime? and how they are related? What is the nature of collaboration that is evident in the publications on sustainability and crime?

2. Methodology

Although the literature review is based on bibliometric analysis, different methods were used to answer each question (see Table 1).

Table 1. Research questions and used methods

Research Question	Method Used	Used software
What is the volume and document citation by the time of distribution from 1995 to 2022?	Bibliometric Analysis	Microsoft Excel
Which countries contributed most to the knowledge of sustainability and crime between 1995-2022?	Bibliometric Distribution	Microsoft Excel
What top journals have published the 100 most cited articles on sustainability and crime?	Citation counting	Vosviewer and Microsoft Excel
What is the intellectual structure of sustainability and crime?	Citation Network Analysis	Vosviewer
What are the key concepts that have been explored in the field of sustainability and crime? And how they are related?	Keyword co-occurrence Analysis	Vosviewer
What is the nature of collaboration evident in the publications on sustainability and crime?	Co-authorship Network Analysis	Vosviewer

Table 2. Data collection (Data filtering)

Phase 01 - Search Result - 868
• Search “(("Sustainability") AND ("Crim*")) in Scopus database
Phase 02 - Search Result - 572
• Limitation of subject areas: Sociology, Environment, Psychology, Arts and Humanities and Multi-disciplinary
Phase 03 - Search Result - 405
• Fixing article type - Article(Final)
Phase 04 - Search Result - 393
• Limitation of the Language: English Only
Phase 05 - Search Result - 393
• Final Manual screening

The original list derives from the Scopus database (.csv format). The keywords "Crime" and "Sustainability" examined in the linked literature were utilized. In the Scopus database, the following Boolean operation and truncation were used as "(("Sustainability") AND ("Crim*"))". Total publications were 868. As the second limitation, data was limited to 5 subject areas: Sociology, Environment, Psychology, Arts and Humanities, and Multi-disciplinary, the total number of publications was limited to 572. Publication type was selected as "Article" and limited results to 414; Publication Stage was fixed as "Final" and resulted from 405. As the final limitation, the Language was selected as "English," and the total units were finalized as 393 (see Table 2).

The search string was TITLE-ABS-KEY (("Sustainability") AND ("Crim*")) AND (LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "ENVI") OR LIMIT-TO (SUBJAREA , "PSYC") OR LIMIT-TO (SUBJAREA , "ARTS") OR LIMIT-TO (SUBJAREA , "MULT")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (LANGUAGE , "English")) available data was limited to the years from 1995 to 2022.

3. Results and discussion

3.1 Identification of the volume and distribution of the field of sustainability and crime

Tabulation of the bibliometric data extracted from the Scopus database indicates a gradual increment in the field of sustainability and crime. Although the publications in the field are less than ten each year between 1995 – 2010, from 2011, a gradual rise is visible. Except for 2015, from 2013, the number of publications is higher than 20. The era of 2020 to 2021 indicates a higher number of publications, exceeding the number 45 (see Fig. 1).

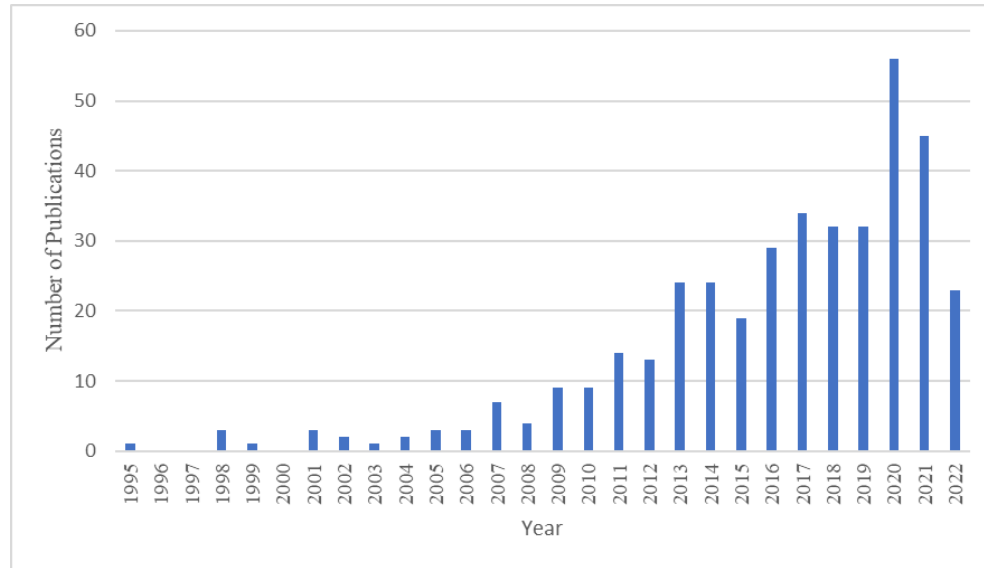


Fig. 1. Number of publications on sustainability and crime

The increment year point, 2015, is the year of the officially formatted year of the Sustainable Development Goals. The 2030 Agenda for Sustainable Development provides a shared road map for achieving global peace and prosperity for people and the planet in the here and now and in the years to come. In the year 2015, every membered state of the United Nations gave their stamp of approval to this agenda. The 17 Sustainable Development Goals (SDGs) are at the centre of this movement. These goals represent an urgent call for action by all developed and developing countries within the framework of a global partnership. They understand that ending poverty and other forms of deprivation must go hand in hand with strategies that improve health and education, reduce inequality, and spur economic growth, all while tackling climate change and working to preserve our oceans and forests. To put it another way, eradicating poverty and several other types of deprivation won't be achievable until these tactics are implemented.

Discussion of SDG and Crime arose with SDG 16. The goal of Sustainable Development Goal 16 is to create societies that are peaceful and inclusive, based on the protection of those who are the most vulnerable, the rule of law, and effective governance at all levels. In addition, it foresees institutions that are open to the public, efficient in their operations, and answerable to those they serve. These institutions would promote non-discriminatory laws and policies, fight organized crime, bribery, and corruption, and prevent acts of violence, terrorism, and criminality. Goal 16 of the Sustainable Development Goals asks for decision-making processes that are responsive, inclusive, participatory, and representational, along with an increased involvement for developing nations in institutions of global governance. But, later, researchers identified the combination of all 17 SDGs and crimes.

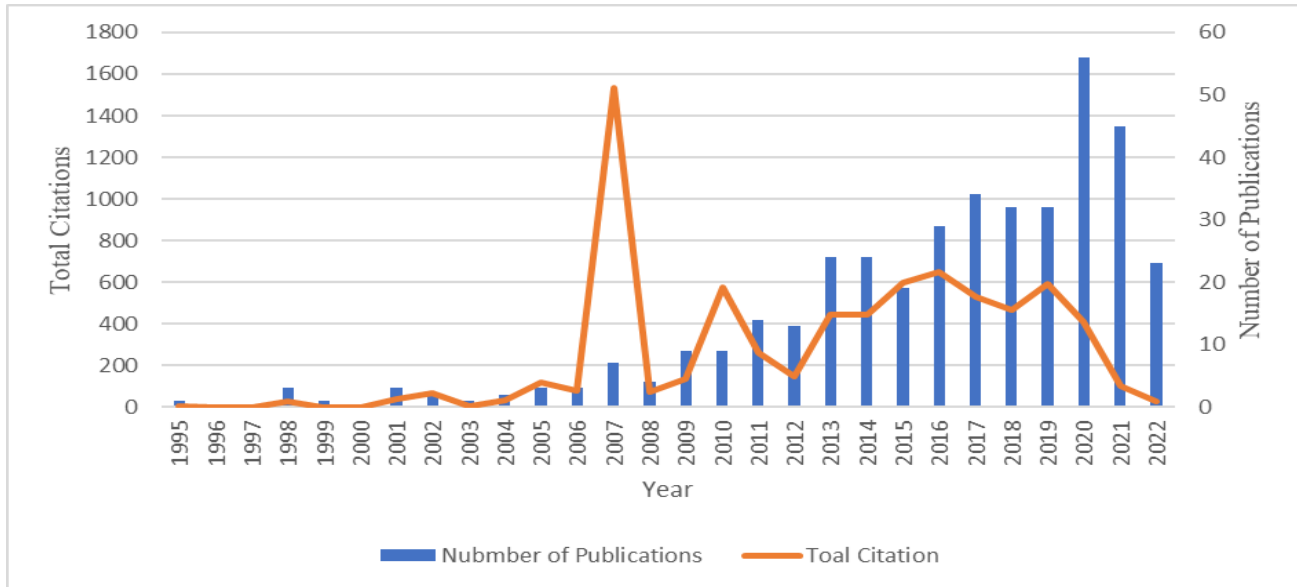
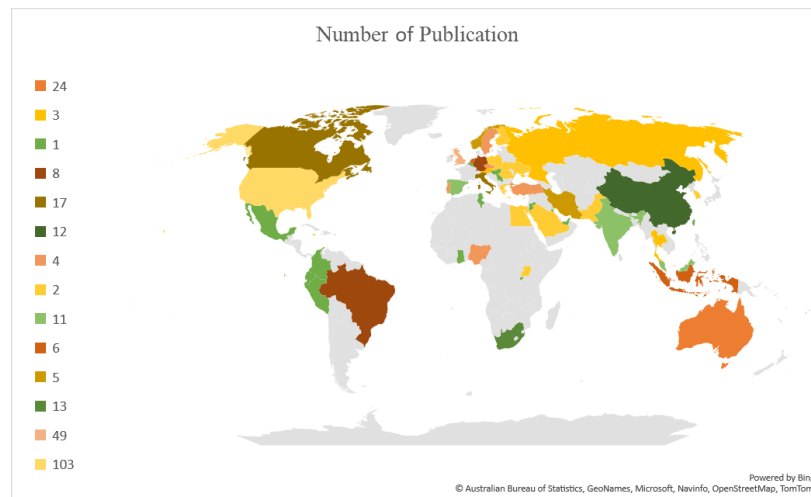


Fig. 2. Number of publications and total citations

Articles published in 2007 were the most cited (see Figure 2). Although a significant drop can be identified in 2008, a gradual increase and stability could be recognized with available data. The minor citation within the period of 2021-2022 due to the period of time, and according to the normalizing data, a significant change cannot be addressed. According to Figure 3, the field of sustainability and crime is an uncommon but slightly popular topic among researchers.

3.2 The most contributed countries to the knowledge of sustainability and crime between 1995-2022

Most of the articles published on sustainability and crime were in the United States and the United Kingdom to measure the distribution of the publications. Australia, Italy, and Canada also bear the higher number (Map 1, Figure 3).



Map 1. Distribution of publications according to the country

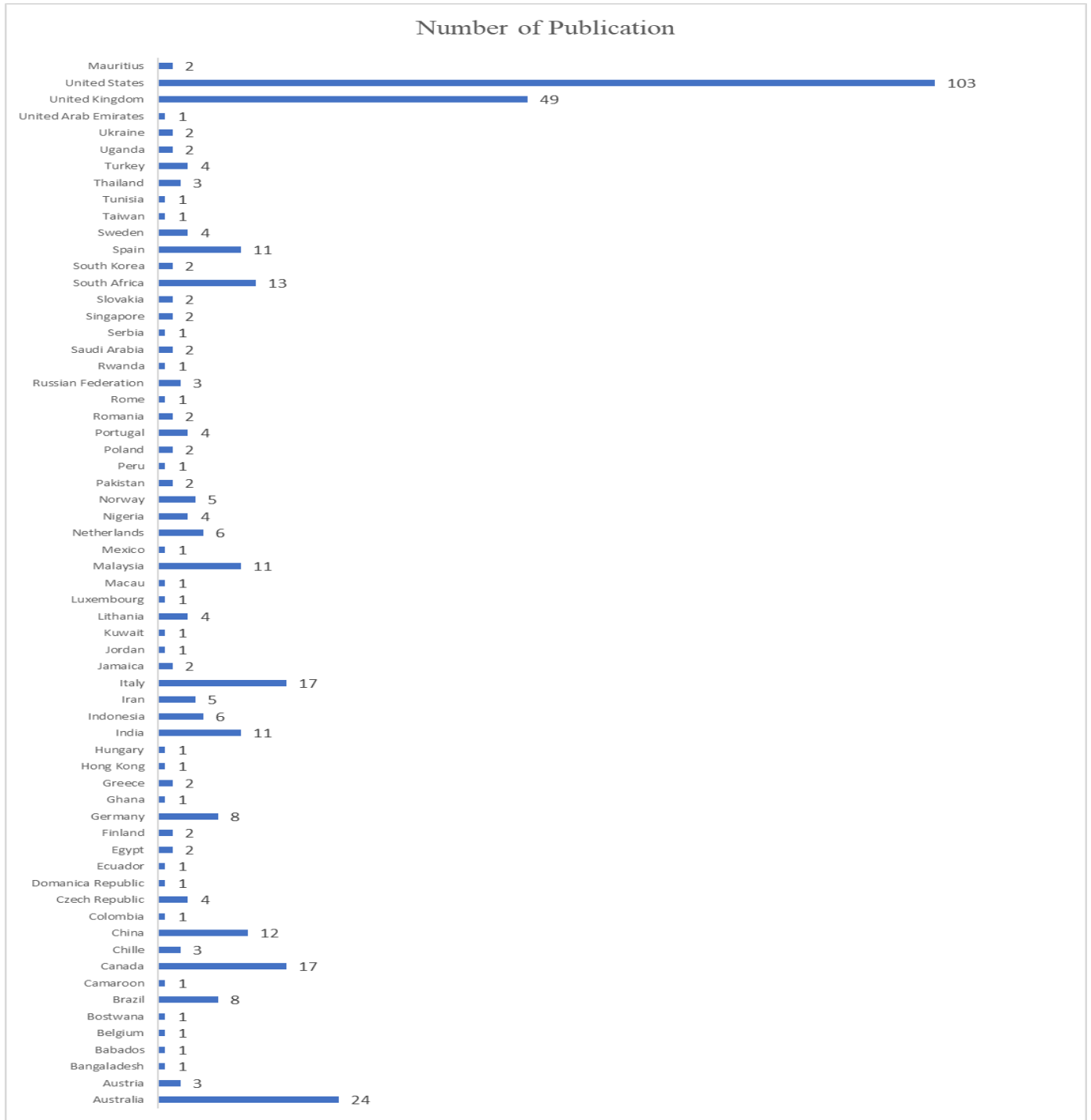


Fig. 3. Distribution of publications

3.3 The top journals that have published the 100 most cited articles on sustainability and crime

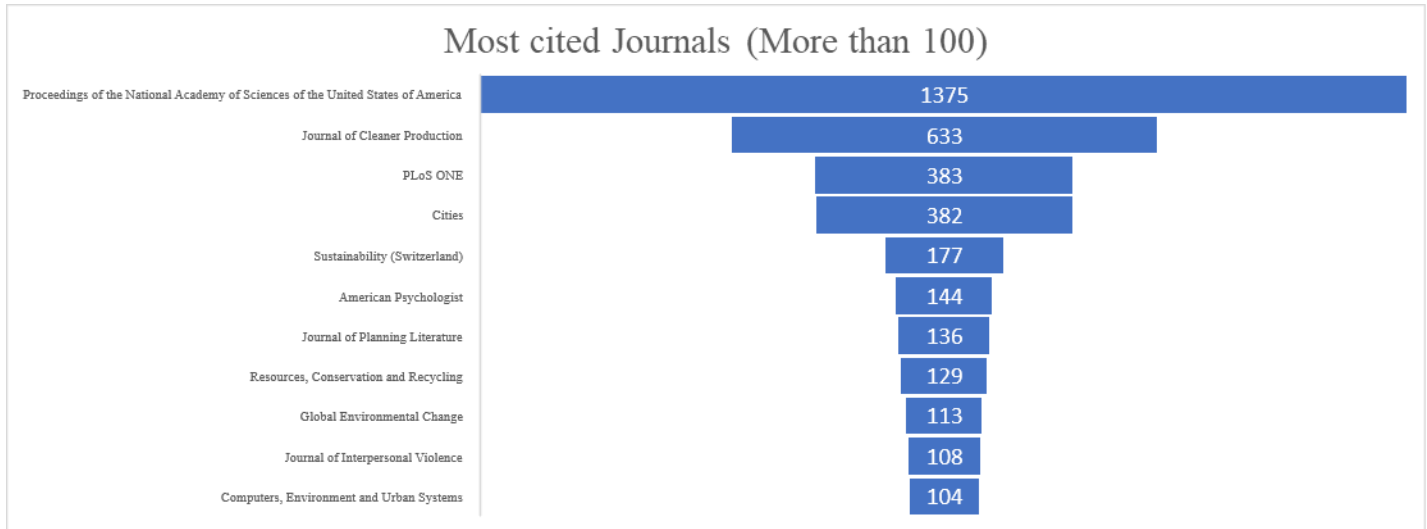


Fig. 4. Most cited journals

With the highest number of publications on sustainability and crime, the Proceedings of the National Academy of Sciences (PNAS) of the United States of America is the most-cited journal. PNAS is a multidisciplinary scientific publication that experts from various fields evaluate. It is often abbreviated as PNAS or PNAS USA. Original research, scientific reviews, comments, and letters are all published in this magazine, which has been in publication since 1915 and serves as the official publication of the National Academy of Sciences. The journal is said to have an impact factor for the year 2020 of 11.205, as reported by Journal Citation Reports. The Proceedings of the National Academy of Sciences (PNAS) is the scientific journal that has received the second-highest number of citations between 2008 and 2018. The Public Library of Art and Science (PNAS) has been characterized in numerous ways by the mainstream media, such as "prestigious," "sedate," "famous," and "high impact" (PNAS, n.d.).

The second most cited Journal, The Journal of Cleaner Production (JCP) is a scholarly publication that is evaluated by experts in the relevant fields and publishes research that crosses disciplinary boundaries. Elsevier is the issuing company, and the Journal of Cleaner Production acts as a platform for sharing information and research ideas, strategies, and technologies that are meant to assist in ensuring progress is made toward making societies and areas more sustainable. This forum is worldwide and cross-disciplinary. Its purpose is to foster inventiveness and creativity, new and better products, and develop unique structures, systems, processes, goods, and environmentally friendlier services. In addition, it is intended to encourage the formulation and execution of preventatively oriented educational programs and policies by government agencies (JCP, n.d.).

Moreover, Plos One, Cities, Sustainability (Switzerland), American psychologists, Journal of Planning Literature, Recourse conservation, and recycling, Global environmental change, journal of interpersonal violence, computers, environment, and urban system are the journals included in more than 100 cited journal category on sustainability and crime. The fact that the crime and related components are directly and indirectly rooted in the sustainability field is evident due to the differently distributed areas of journals, including the journal on interpersonal violence and computers, environment, and urban systems, for instance (see Figure 4).

3.4 The intellectual structure of sustainability and crime

After the completion of a manual reading phase, the intellectual structure of knowledge on sustainability and crime is composed of twelve different schools of thought: Sustainability and environmental justice (Cluster 01 -), Sustainability and psychology of crime (Cluster 02), Sustainability and economy (Cluster 03), Sustainability and built environment (Cluster 04), Sustainability and urban crimes (Cluster 05), Sustainability and evidence-based practice (Cluster 06), Sustainability and regional development (Cluster 07), Sustainability and deviant behaviour (Cluster 08), Sustainability and urban planning (Cluster 09), Sustainability and cultural criminology (Cluster 10), Sustainability, technology and security (Cluster 11), Sustainability and investment (Cluster 12), and Sustainability and exploitation(Cluster 13). Figure 6 indicates 13 clusters in different colours while visualizing the citation network (figure 5).

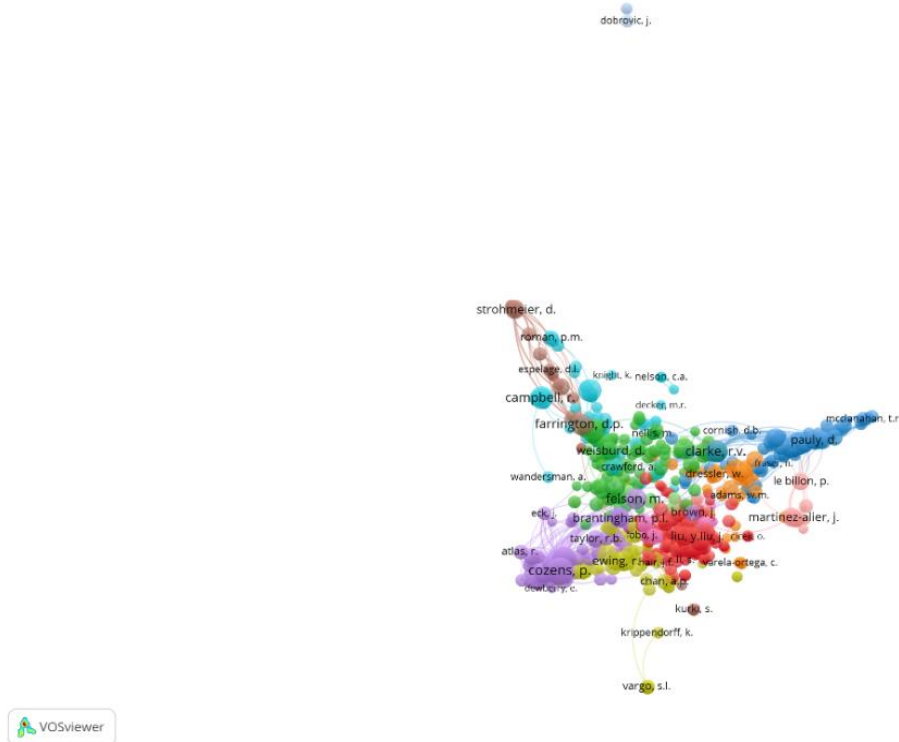


Fig. 5. The citation network

Note: The minimum number of citations of an author is fixed as 05, and of the 29051, only 755 meet the threshold. In the network of 755, only 731 were connected.

3.5 Key concepts that have been explored in the field of sustainability and crime

In order to identify the key concepts explored in the field of sustainability and crime, keyword analysis was done. Vosviewer software was set up as the minimum number of occurrences of a keyword as two(2), 326 keywords were found, and 722 met the threshold. Country names, repeated words, hyphenated words, and singular plural, for instance, were manually removed, and 12 clusters (themes) were identified according to the keyword occurrence. The generated CSV data of keyword occurrence (Vosviewer) were sorted according to the weight of occurrence in each cluster (12 clusters in total) and identified a common theme (Table 3).

Table 3. Clusters, themes and keywords

Cluster	Theme	Keywords
1	Sustainability and Social Strata	male, female, adults, human, economics
2	Sustainability and Governance	sustainability, governance approach, safety, urban development, social sustainability
3	SDG and Environmental Crimes	crime, sustainable development, environment protection, conservation, forestry
4	Sustainability and Urban Planning	urban planning, neighborhood, urbanization, perception, urban designing
5	Regional crime prevention	crime prevention, strategic approach, criminology, developing countries, illegal fishing
6	Sustainability and human behaviour	urban population, public policy, human experiments, quality of life, cities
7	Environmental sustainability	urban area, ecological sustainability, environmental policy, water management, environmental monitoring
8	Statistical explanations of sustainability	economic development, correlation, regression analysis, questionnaire survey, united nations
9	Sustainability and social problems	decision making, poverty, waste management, public health, unemployment
10	Sustainability and quality of life	housing, community, mental health, wellbeing, air quality
11	Sustainability and law	law enforcement, corruption, legislation and jurisprudence, civil society, environmental legislation
12	Sustainability and social impact assessment	land use, fear of crime, social impact, designing out crime

The network visualization of the identified 12 clusters related to each other is as follows (Figure 6, Figure 7).

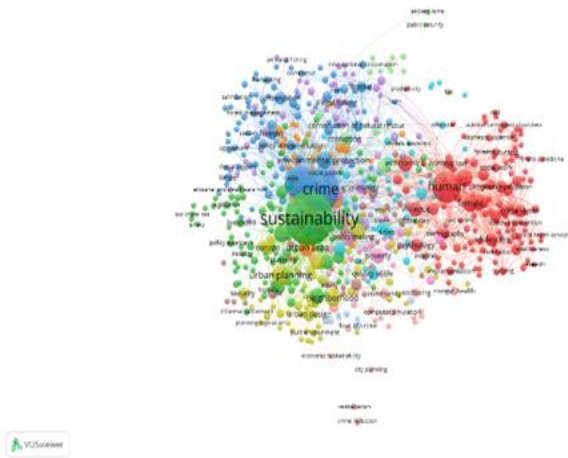


Fig. 6. Keyword co-occurrence analysis

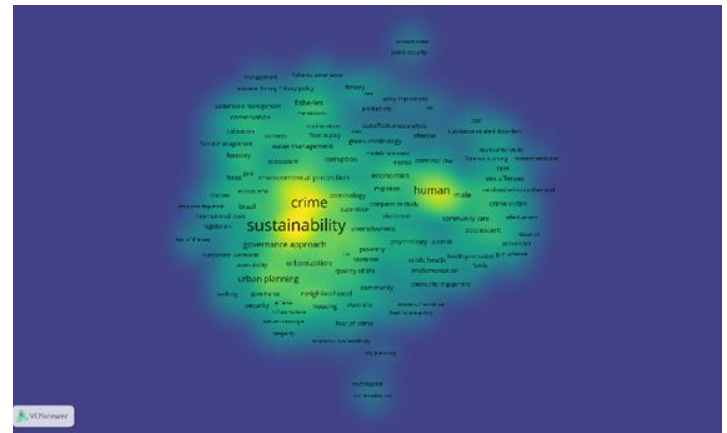


Fig. 7. Density visualization

3.6 The nature of collaboration that is evident in the publications on sustainability and crime

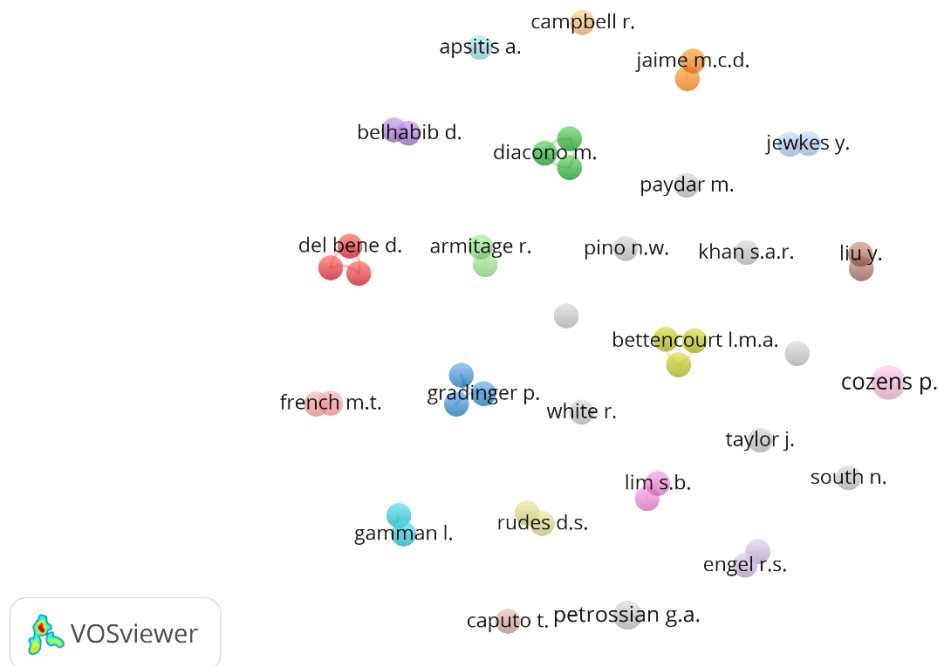


Fig. 8. Co-authorship network

Fixing the minimum number of documents of an author as 02, among 1154 authors, only 46 met the threshold (Figure 8). The authorship analysis shows that a total of 46 authors contributed to the 100 most-cited articles. Among these 46 authors, 11 had linked once, 4 clusters of authors linked with two lines, while the other 14 authors remained alone. Figure 8 represents the co-occurrence network of the collaboration of these distinctive authors. It can be seen that there are 28 distinct clusters, including single-author clusters.

Conclusions

From 1995 to 2022, there has been a steady rise in the number of publications on sustainability and crime, with minor oscillations, notably after 2016. There has been a growing interest in "sustainability and crime" which can be observed by looking at where the research comes from and the location.

A recent bibliometric study on differentiated instruction's impact on crime reports and sustainability yielded some surprising results. The subject is fascinating to many academics in light of the rise in publications and citations. According to the study, the most significant number of publications occurred between 2020 and 2021. The analysis also found that in journal citations, Proceedings of the National Academy of Sciences of the United States of America has garnered the most acclaim.

The USA and The UK authors have contributed the most to the most referenced articles on differentiated teaching. A list of notable authors, keywords, and study locations for future academics interested in the issue of sustainability and crime. These results enrich the foundation of knowledge used to provide differentiated education by providing an overview of the current body of research.

The findings of the bibliometric study, in particular the co-authorship network, point to the following as the primary causes of the uncertainty over the scientific quality of sustainability and crime research: Because there is a dearth of intellectual interaction among individuals who are doing study in the topic of sustainability and crime, writers are more likely to be subjective and pursue their own particular research pathways in isolation from one another.

The scientific community members investigating sustainability and crime need to improve the amount of intellectual communication they have with one another to confront the problem that this scenario provides. The improvement of regional research helps construct a collaborative and interdisciplinary environment, which is required to generate a possible consensus regarding the approach to conceptualizing and enabling sustainability through the reduction of crime and the enhancement of the quality of life.

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