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The Comparison of Circular Economy Analysis in Developed and Developing Countries

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ABSTRACT

This study seeks to present a better understanding of knowledge about the circular economy by referring to literature studies in developed and developing countries during the observation period from 2006 to 2022. This study provides an overview of the bibliometric approach: time analysis, journal analysis, co-authorship analysis, keyword analysis, citation analysis, country analysis, and agency analysis. The level of research contribution in developed and developing countries tended to be low until 2016, increasing significantly in recent years. Keyword analysis reveals that Circular Economy has the highest contribution in 2019 for developed countries and in 2020 for developing countries. Then, the citation analysis shows that "Towards a National Circular Economy Indicator System in China: An Evaluation and Critical Analysis" has the highest citation. And China became the number one country for its contribution to circular economy publications globally. This study suggests that developed and developing countries collectively have a deeper understanding of the circular economy concept for sustainable green economic growth globally.

1. Introduction

At the beginning of the 21st century, the global community finally realized the importance of the problem of climate change. The impact is so great that it is socio-economic, encouraging policymakers to highlight several solutions that are the best problem solvers. Driven by the increasing complexity of economic activities, economic development must experience development and change (Wibowo & Indrayanti, 2020). Thus, circular economic development is highlighted as a need for completion in sustainable business issues in Economics, Education, and Social Networks within the tourism sector (Gravitiani et al., 2022; Purnomo et al., 2023). The circular economy has also emerged as a major key in corporate efforts to achieve better environmental sustainability (Theeraworawit et al., 2022). In the socio-economic context related to business development, the circular economy is considered an important approach to achieving sustainable economic and environmental development (Ruiz-Real et al., 2018). The circular economy was first introduced by Pearce and Turner as a synonym for reuse, reduce and recycle activities. Previous researchers further expanded the concept to include all activities that contribute to a sustainable business and environment (Alnajem et al., 2021).

In practice, a circular economy requires resources and capabilities to develop new recycling and waste management procedures and the application of environmentally friendly innovations, including re-planning energy and water use. Ultimately (García-Quevedo et al., 2020), companies may eventually redesign their product or service to be more proactive in circular economy implementation. This can create jobs, reduce waste from various sectors, and encourage economic growth. Running a circular economy requires good planning, a clear road map, capacity and network, implementation and replication, policy and strategy, technology and innovation, finance, and investment.

The attention of researchers and academics to the circular economy has led to a significant increase in research in recent years (Ruiz-Real et al., 2018), so it is very important to know the evolution of related publications. The findings from this study are helpful for both environmental and economic analyses, particularly considering the global outlook on these study lines. This article identifies the main trends in circular economy research in developed and developing countries and proposes future research initiatives.

This study establishes a bibliometric approach to present a better literature mapping related to the circular economy in developed and developing countries. Related research has been further explored in developed countries, while in developing countries, the circular economy is actively explored (Tsuchimoto & Kajikawa, 2022). The challenges of implementing a circular economy in developing countries are more significant (Theeraworawit et al., 2022). In detail, the focus is more on circular economy barriers in developing countries (Ezeudu & Ezeudu, 2019), namely poor funding, inadequate training, ineffective legislature, and lack of data. The literature's findings motivate this study to better map circular economy empirical studies in developed and developing countries from 2000 – 2022.

Several stages of the analysis can be described as follows: (a) time analysis reveals that the number of empirical papers is annually in developed and developing countries, (b) journal analysis describes that 133 journals discuss the circular economy with a sample of developed countries while those in developing countries are 129 journals, (c) keyword analysis showed that there were ten keywords in the developed country sample and ten keywords in the developing country sample, (d) co-authorship analysis revealed that there were ten authors who contributed significantly to the developed country sample and ten authors from the developing country sample. Developing countries, (e) citation analysis explains that there are ten empirical papers with significant citations with samples of developed countries and ten empirical papers with samples of developing countries, (f) country analysis expresses that there

are ten countries that contribute significantly to samples of developed countries and ten countries with a sample of developing countries, and (g) institution analysis reflects that there are ten institutions (universities) that contribute significantly to the sample of developed countries and ten universities to the sample of developing countries.

This study is written in several sections. The first section introduces the research issue, aims, and contribution. The second section is related to the literature on the circular economy. The third section is a description of the methodology. The fourth section is the findings from the bibliometric analysis (empirical results). The fifth section is a discussion and the last section is a conclusion.

2. Literature Review

The circular economy is a mode of economic development whose goal is to protect the environment and prevent pollution, thus facilitating sustainable economic growth (Ruiz-Real et al., 2018). Singh and Ordonez explain the circular economy as a financial strategy to promote innovative ways to transform the current linear consumption system into a circle through saving materials (Singh & Ordoñez, 2016). Geissdoerfer et al., (2017) define a circular economy as a regenerative system in which resource inputs and waste, emissions, and energy leakage are minimized by deceleration, closure, and constriction of materials and energy. The concept is processed through maintenance, repair, reuse, reproduction, and recycling (Theeraworawit et al., 2022).

The circular economy have been pursued actively in Australia and other developed countries by reviewing existing and relevant published studies on circular economy in these countries (Halog & Anieke, 2021). Furthermore, this transformative notion can be adopted in developing countries with the participation of key stakeholders to solve waste mismanagement problems. The problem of economic development in developing countries that often occurs in this era is an economic performance (Wibowo & Indrayanti, 2020). Improvement in economic performance and public acceptance are the key triggers to encourage stakeholders for sustainable development. But in fact, the diffusion of this concept in the industrial arena is still relatively slow, particularly in the developing country, which collectively exerts high potential to be the world's largest economies and workforce (Ngan et al., 2019).

The circular economy concept tends to vary, adopted in different academic settings depending on the researcher's perspective. Homrich et al., (2018) highlight the most relevant research streams that refer to the basis of circular economy: laws of ecology, permaculture, industrial metabolism, industrial symbiosis, eco-parks, regenerative design, industrial ecology, natural ecology capitalism, cradle-to-cradle, and performance economy (Alnajem et al., 2021). A circular economy focusing on the waste hierarchy from waste prevention at the top to disposal at the bottom intends to cover the supply chain as much as possible to create a sustainable and zero-waste environment (Ranjbari et al., 2021). As pioneers of environmental and economic analysis, Pearce and Turner argue that in the circular economy concept, the interrelationships of four basic welfare financial functions of the environment are discussed: (1) the value of convenience; (2) the resource base for the economy; (3) waste stream basin; and (4) life support systems (Ruiz-Real et al., 2018).

3. Research Method

Data

This study maps the literature on circular economy in developed and developing countries. All documents published in various journals are sourced from Scopus. Before bibliometric analysis, we adopted PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) to select documents eligible for the study. Then the database was analyzed following the stages of the bibliometric approach using Vosviewer version 1.6.17. Data in bibliometric analysis tends to be massive, hundreds or even thousand (Donthu et al., 2021). So in this study, the observation period taken was from 2006 to 2022, due to the availability of data.

Figure 1 describes the sampling procedure for several research documents on the circular economy in developed countries. Sample documents were taken from the core Scopus database with keywords: "circular and economy" and "developed and countries." A literature search with these keywords found 497 research documents. This number was then sorted into documents eligible for review using a bibliometric approach, namely 485 research documents. The documents are Articles, Conference Papers, Reviews, Book Chapters, Notes, Books, Editorials, and Short Surveys. The sources are Journals, Conference Proceedings, Book Series, and Books. Document samples are in various languages, namely English, Chinese, French, Russian, Spanish, Croatian, German, Korean, and Polish. Samples were taken on January 30, 2023.

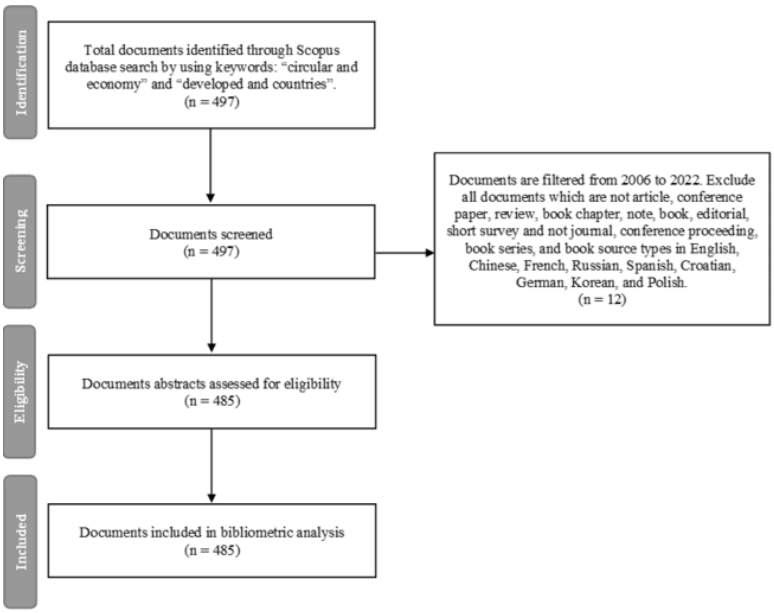

Figure 1. PRISMA Flow Chart Sample of Developed Countries
Source : Scopus Database

Figure 2 describes the sampling procedure for several research documents on the circular economy in developing countries. Sample documents were taken from the core Scopus database with the keywords: "circular and economy" and "developing countries." A literature search with these keywords found 621 research documents. This number was then sorted into documents eligible for review using a bibliometric approach, namely a total of 587 research documents. The papers are Articles, Reviews, Book Chapters, Conference Papers, Books, Conference Reviews, Short Surveys, Editorials, Notes, Data Papers, and Retracted. The sources are Journals, Conference Proceedings, Books, and Book Series. Document samples are in various languages, namely English, Chinese, Spanish, French, and German. Samples were taken on February 4, 2023.

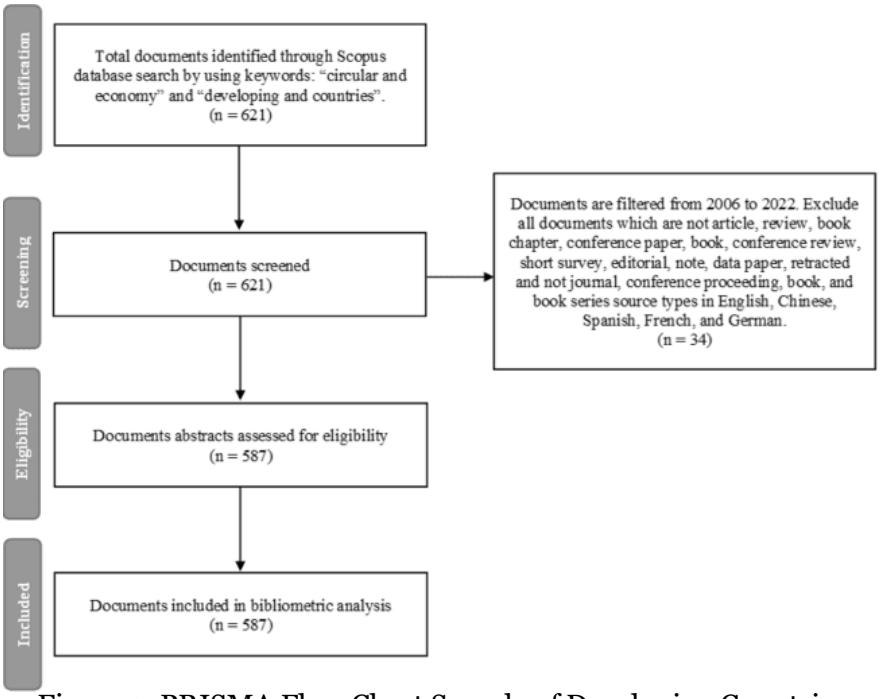

Figure 2. PRISMA Flow Chart Sample of Developing Countries
Source : Scopus Database

Figure 3 describes the sampling procedure for several research documents on the circular economy in developed and developing countries. Document samples were taken from the core Scopus database with keywords: "circular and economy" and "developed and developing and countries." A literature search with these keywords found 196 research documents. This number was then sorted into documents eligible for review using a bibliometric approach, namely 186 research documents. The papers are Articles, Reviews, Book Chapters, Conference Papers, Books, Editorials, Notes, and Short Surveys. The sources are Journals, Books, Book Series, and Conference Proceedings. Document samples are in various languages, namely English, Chinese, and Spanish. Samples were taken on February 4, 2023.

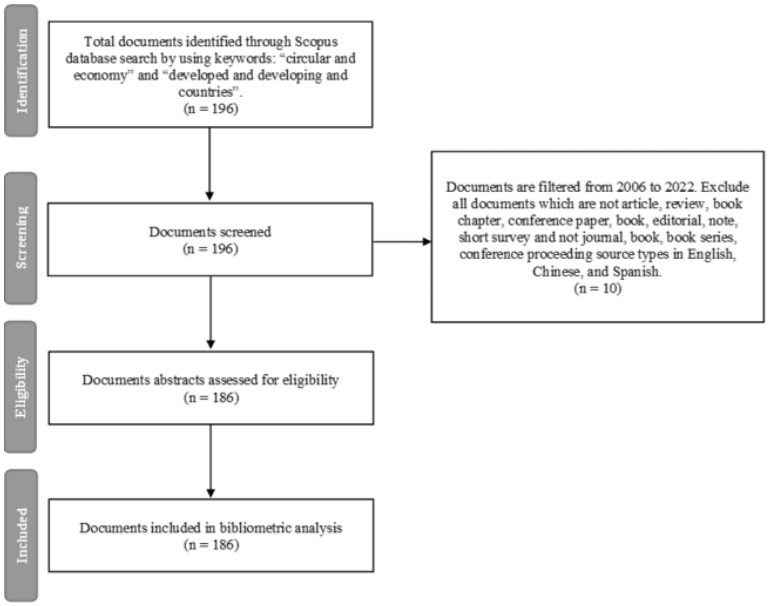

Figure 3. PRISMA Flow Chart Sample of Developed and Developing Countries
Source : Scopus Database

Literature data analyzed using a bibliometric approach can be classified into several types of analysis. First, time analysis describes the number of circular economy research documents in developed and developing countries in each observation period. Second, journal analysis shows the total number of journals relevant to the study objectives. Third, the co-authorship analysis explains the number of authors who have contributed significantly to uncovering the circular economy in developed and developing countries. Fourth, keyword analysis describes the number of keywords that are most used. Fifth, the citation analysis expresses the highest number of citations to papers that discuss the circular economy in developed and developing countries. The sixth, country analysis, describes countries contributing to circular economy research in developed and developing countries. Finally, the institutional analysis is the number of universities or research institutes contributing significantly to circular economy research in developed and developing countries.

Bibliometric Approach

The bibliometric analysis makes it possible to evaluate knowledge development about a particular subject and assess the scientific influence of research and sources (Ruiz-Real et al., 2018). Bibliometric analysis reveals subject area as well as publication and citation trends. In the literature (Huang et al., 2019), knowledge mapping is typically used to uncover and visualize groups of similar ideas or unusual features and trends by showing how knowledge in the field has developed comprehensively and transparently. The authorship analysis is based on three categories: countries, organizations, and individuals. Keyword analysis was carried out to map research groups and their intellectual structure in existing publications (Wimbadi & Djalante, 2020).

Citation analysis has long been a well-known technique for exploring intellectual structures or defining significant lines of research in a discipline. Citations are used as a measure of influence. If an article is widely cited, it is considered necessary (Zupic & Čater, 2015). In addition to citation analysis, to examine the conceptual structure of the literature, concurrent keyword analysis (keywords that appear in the same document) can be used (Nguyen et al., 2022).

Different bibliometric indicators can also characterize scientific outcomes, such as the impact of papers indicated by the number of references from other publications (Ruiz-Real et al., 2018). Different bibliometric parameters can be statistically presented and mapped, including publication evolution, citation analysis for core publications and authors, collaboration analysis for countries and institutions, and co-word analysis (Ranjbari et al., 2021).

4. Results and Discussion

Circular Economy in Developed Countries

Time Analysis

The findings of this study convey the contribution of circular economy research in developed countries in several ways. First, time analysis describes the availability of literature on circular economy in developed countries every year. Second, time analysis presents a distribution pattern of the amount of literature that tends to fluctuate during the observation period. Third, this analysis shows the highest and lowest levels of literature availability in specific year periods.

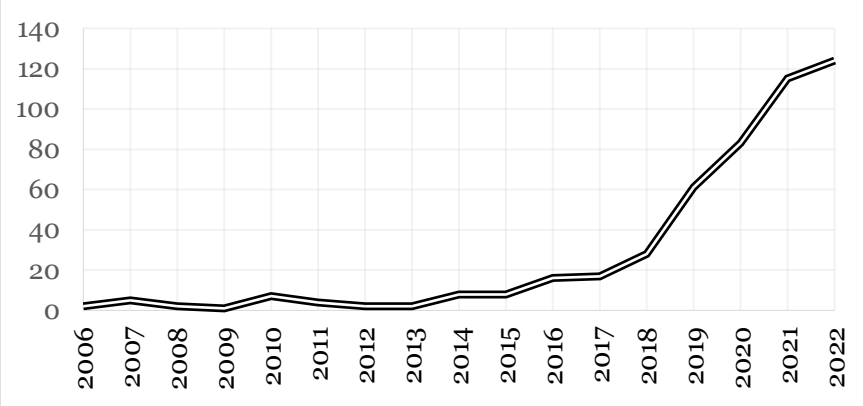

Figure 4. Number of Selected Research Documents
in Developed Countries during 2006 –2022
Source : Scopus Database

Time analysis reveals the movement in the number of published research documents each year during the observation period. Graphic one illustrates that in 2006 the number of research articles was two documents. The number of research articles continues to increase until 2022; the number has increased 62 times to 124 papers. It is only mention more than 10 papers and the highest occurred in 2022, with 124 papers.

Journal Analysis

Table 1. Number of Selected Journals in Developed Countries

Journal	Number of Selected Papers in each Journal
Sustainability Switzerland	45
Journal of Cleaner Production	41
Resources Conservation and Recycling	14
Waste Management and Research	12
Energies	11
Sustainable Production and Consumption	10

Source : Scopus Database

The analysis conducted on various journals reveals the extent of their contribution to research publications during the observation period. Table 1 presents a comprehensive list of 133 journals that are dedicated to circular economy research in developed countries. It is worth noting that multiple journals have published numerous research documents on this subject. Among these journals, the top 12 in terms of the highest number of publications are as follows: (a) Sustainability Switzerland with 45 documents, (b) Journal of Cleaner Production with 41 documents, (c) Resources Conservation and Recycling with 14 documents, (d) Waste Management and Research with 12 documents, (e) Energies with 11 documents, (f) Sustainable Production and Consumption with 10 documents, (g) Science of The Total Environment with 9 documents, (h) Environmental Science and Pollution Research with 7 documents, (i) IOP Conference Series Earth and Environmental Science with 6 documents, (j) Recycling with 5 documents, (k) Waste Management with 5 documents, and (l) Journal of Environmental Management with 5 documents.

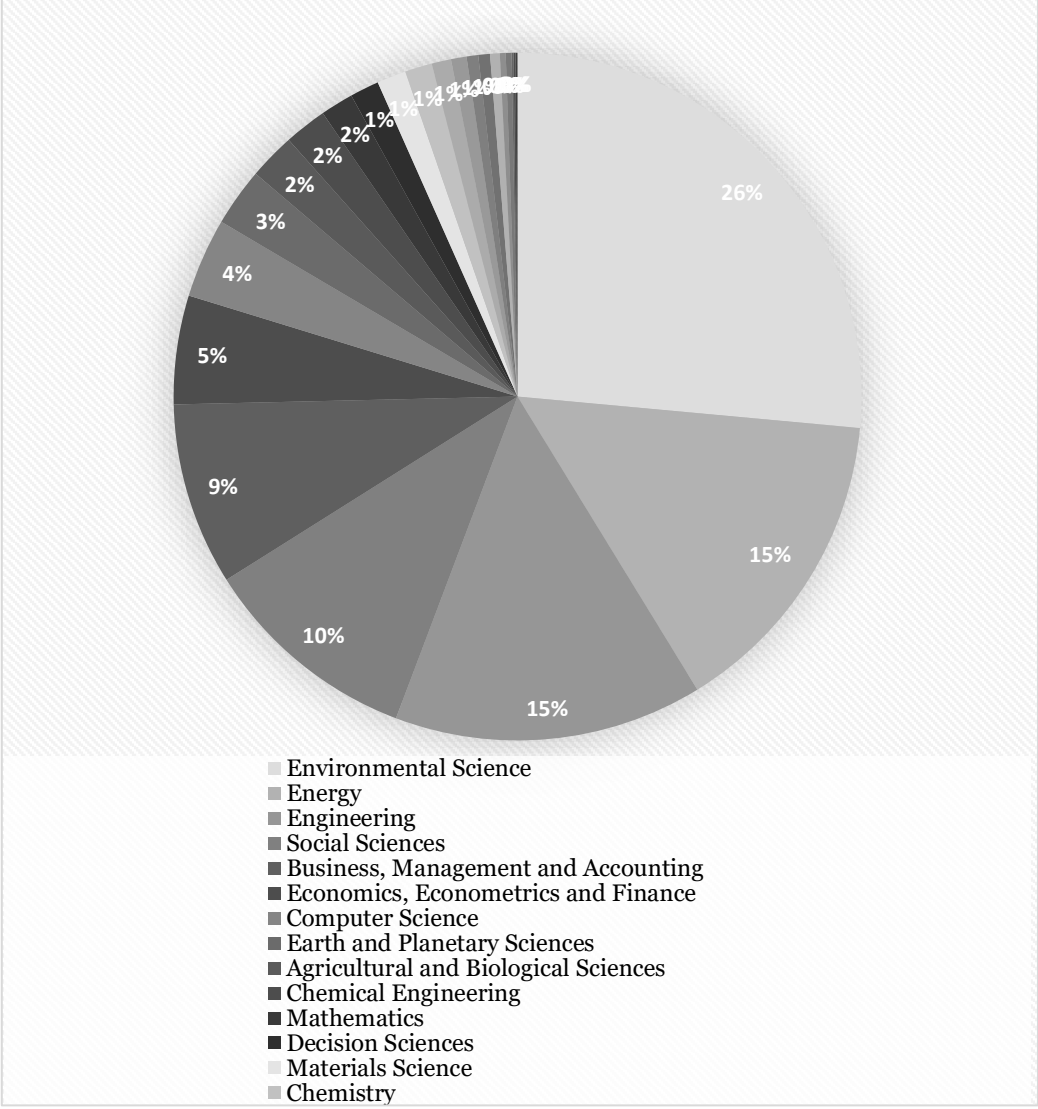

Figure 5. Number of Journal by Subject Area in Developed Countries
Source : Scopus Database

The subject area is one way to classify journal literature. The findings of the study indicate that research journals in developed countries that have published articles on the circular economy can be categorized into various subject areas. These subject areas are as follows: Environmental Science, Energy, Engineering, Social Sciences, Business, Management and Accounting, Economics, Econometrics and Finance, Computer Science, Earth and Planetary Sciences, Agricultural and Biological Sciences, Chemical Engineering, Mathematics, Decision Sciences, Materials Science, Chemistry, Medicine, Physics and Astronomy, Biochemistry, Genetics and Molecular Biology, Arts and Humanities, and others. The percentage of documents published in each subject area is provided in Figure 4. For example, Environmental Science accounts for 26% (or 290 documents) of the published research journals, while Arts and Humanities represent only 1% (or 6 documents) of the total.

Co-authorship Analysis

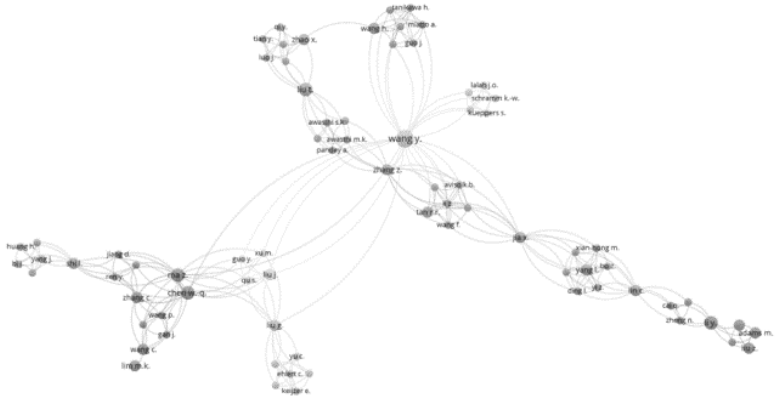

Figure 6. Co-authorship Network Visualization in Developed Countries
Source : Scopus Database

Co-authorship analysis is a research approach that aims to identify and map the authors who have made significant contributions to the field of circular economy research in developed countries. In this study, a total of 77 authors have been identified and categorized into 10 distinct clusters. The circular nodes depicted in Figure 5, each represented by a different color, symbolize these clusters. Among the 77 authors, five individuals have emerged as key contributors. Notably, Wang, Y. has made the highest contribution, having authored a total of 5 documents that were published with a relatively higher frequency in 2018. Wang, Y. has collaborated with authors from 8 different clusters, indicating a wide range of research interests. Other notable authors include (a) Li, Y., who has contributed 3 documents, (b) Liu, T., who has also contributed 3 documents, (c) Ma, Z., who has contributed 3 documents, and (d) Chen, W.-Q., who has also contributed 3 documents. The clusters with nodes of the same color suggest that certain authors have engaged in more extensive and close collaborations on specific research topics.

Keyword Analysis

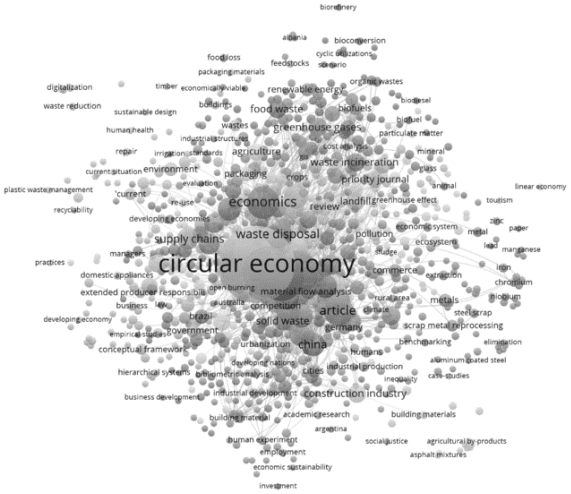

Figure 7. Keyword Network Visualization in Developed Countries
Source : Scopus Database

We have conducted an analysis of keyword co-occurrence using a selection of 485 documents. This analysis aimed to identify keywords associated with the concept of the circular economy in developed countries between the years 2006 and 2022. The results of the

study revealed a total of 920 keywords, which were further categorized into 15 clusters. Each cluster was represented by a distinct color, as depicted in Figure 6.

Among the analyzed keywords, we found ten that exhibited the highest frequency. These keywords include Circular Economy (284 occurrences), Sustainable Development (123 occurrences), Waste Management (100 occurrences), Recycling (94 occurrences), Sustainability (78 occurrences), Developing Countries (71 occurrences), Economics (51 occurrences), Article (44 occurrences), Developed Countries (41 occurrences), and Waste Disposal (33 occurrences).

Interestingly, these ten keywords played a significant role in specific years. In 2018, the keywords Economics and Developed Countries made notable contributions. In 2019, the keywords Circular Economy, Sustainable Development, Recycling, and Articles were particularly influential. Lastly, in 2020, the keywords Waste Management, Sustainability, Developing Countries, and Waste Disposal had a substantial impact.

Overall, this co-occurrence analysis sheds light on the keywords associated with the circular economy in developed countries over the specified period, highlighting the importance of certain keywords in different years.

Circular Economy in Developing Countries

Time Analysis

The findings of this study convey the contribution of circular economy research in developing countries in several ways. First, the time analysis describes the availability of literature on the circular economy in developing countries every year. Second, time analysis presents a distribution pattern of the amount of literature that tends to fluctuate during the observation period. Third, this analysis shows the highest and lowest levels of literature availability in specific year periods.

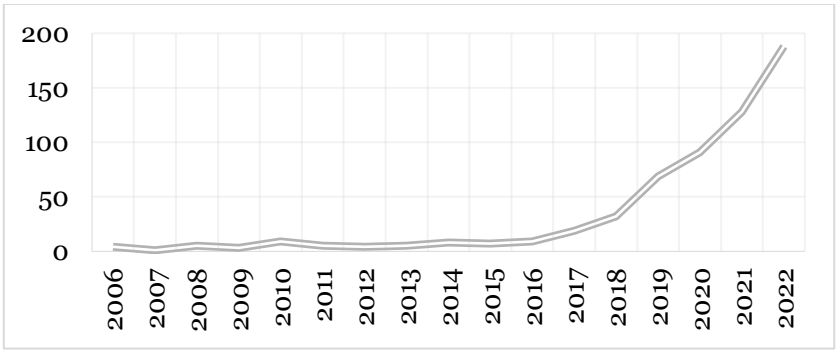

Figure 8. Number of Selected Research Documents in Developing Countries during 2006 – 2022

Source : Scopus Database

Time analysis reveals the movement in the number of published research articles each year during the observation period. Graphic 2 illustrates that in 2006 the number of research articles was four documents. The number of research articles continues to increase until 2022; the number has increased 47 times to 188 papers. We mention only more than 10 papers 2007 and the highest occurred in 2022, with 188 papers.

Journal Analysis

Table 2. Number of Selected Journals in Developing Countries

Journal	Number of Selected Papers in each Journal
Journal of Cleaner Production	50
Sustainability Switzerland	45
Resources Conservation and Recycling	21
Waste Management and Research	19
Environmental Science and Pollution Research	11
Journal of Environmental Management; and Sustainable Production and Consumption	10

Source : Scopus Database

Journal analysis describes the number of journals contributing to research publications during observation. There are 129 journals related to circular economy research in developing countries listed in Table 2. In detail, several journals publish more research articles. Sorted by nine journals with the most research articles, namely: (a) Journal of Cleaner Production (50 documents), (b) Sustainability Switzerland (45 documents), (c) Resources Conservation and Recycling (21 documents), (d) Waste Management and Research (19 documents), (e) Environmental Science and Pollution Research (11 documents), (f) Journal of Environmental Management (10 documents), (g) Sustainable Production and Consumption (10 documents), (h) Science of The Total Environment (9 documents), and (i) Waste Management (7 documents).

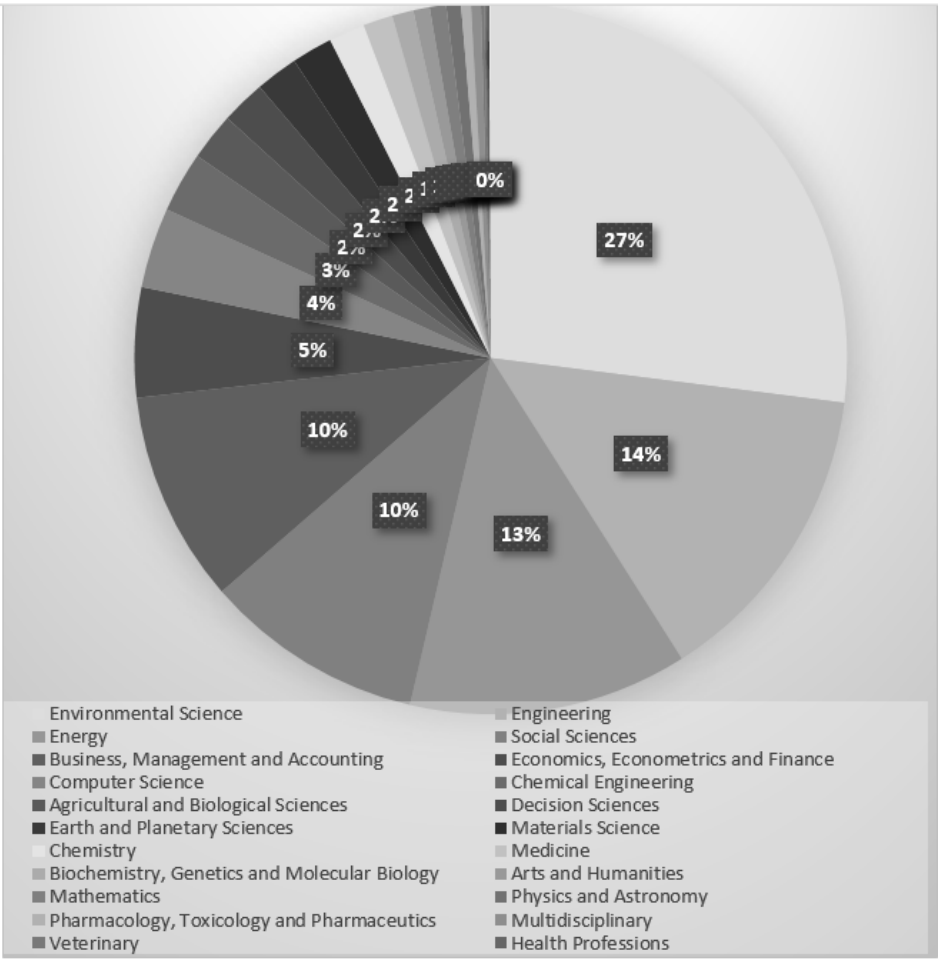

Figure 9. Number of Journal by Subject Area in Developing Countries

The subject area is a significant factor in classifying journal literature. The research findings indicate that research journals focusing on the circular economy in developing countries are categorized into various subject areas, as depicted in Figure 7. These subject areas include Environmental Science, Engineering, Energy, Social Sciences, Business, Management and Accounting, Economics, Econometrics and Finance, Computer Science, Chemical Engineering, Agricultural and Biological Sciences, Decision Sciences, Earth and Planetary Sciences, Materials Science, Chemistry, Medicine, Biochemistry, Genetics and Molecular Biology, Arts and Humanities, Mathematics, Physics and Astronomy, and others. Each subject area represents a certain percentage of the published documents, ranging from 27% in Environmental Science to 1% in Physics and Astronomy and others.

Co-authorship Analysis

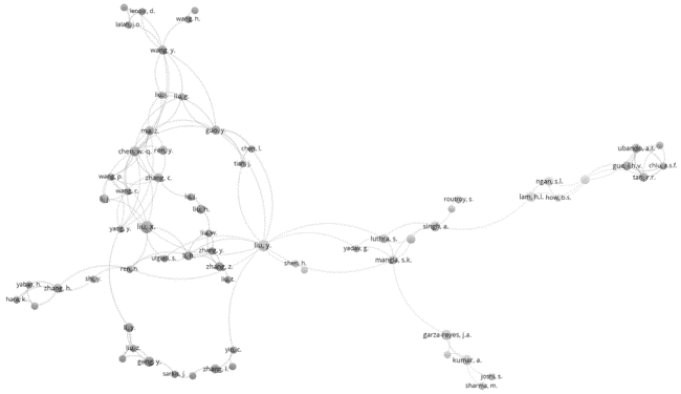

Figure 10. Co-authorship Network Visualization in Developing Countries
Source : Scopus Database

Co-authorship analysis focuses on mapping authors who have contributed significantly to circular economy research documents in developing countries. A total of 67 authors have been identified and divided into 11 clusters. The circular nodes of different colors in Figure 8 represent other clusters. Judging from the mapping, the contribution of research documents by the 67 authors is evenly distributed. There are two authors with more significant contributions. The highest contribution was by Liu, X. with a total of 6 documents with a higher frequency of publication in 2019. The contribution of the author Liu, Y. is also significant, with a capacity of 5 papers with a higher frequency of publication in 2021. Collaboration between Liu, Y . and other authors spread across 7 clusters, indicating that Liu, Y.'s research interests are extensive. Clusters of the same color nodes suggest that some authors have collaborated more profoundly and closely on a particular topic.

Keyword Analysis

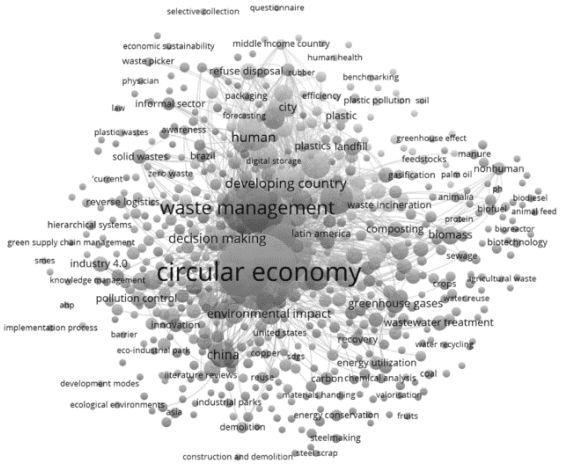

Figure 11. Keyword Network Visualization in Developing Countries
Source : Scopus Database

We conducted a co-occurrence analysis of keywords with 587 selected documents. This keyword analysis identified all keywords related to the circular economy in developing countries from 2006 – 2022. The study found 621 keywords divided into 9 clusters, each color representing its respective cluster (Figure 9). There were ten keywords with the highest frequency of the analyzed keywords, namely Circular Economy (353 occurrences), Developing Countries (220 occurrences), Sustainable Development (180 occurrences), Waste Management (153 occurrences), Recycling (124 occurrences), Sustainability (93 occurrences), Developing World (86 occurrences), Economics (72 occurrences), Article (66 occurrences), and Developing Country (55 occurrences).

These ten keywords contributed more in 2019 (Sustainable Development, Recycling, Developing World, Economics, and Article) and 2020 (Circular Economy, Developing Countries, Waste Management, Sustainability, and Developing Country).

Circular Economy in Developed and Developing Countries Citation Analysis

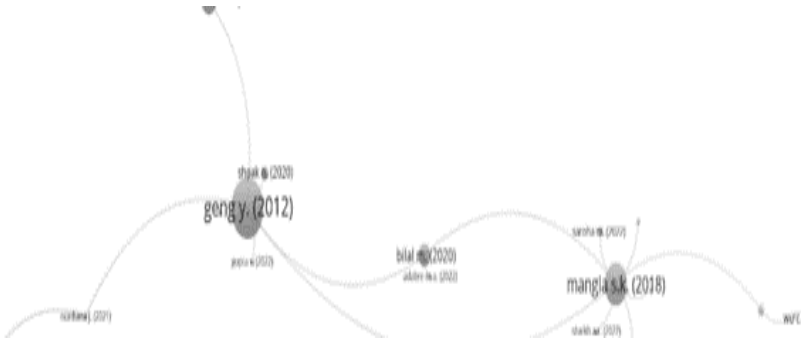

Figure 12. Citation Network Visualization in Developed and Developing Countries
Source : Scopus Database

Citation analysis reveals several important cited literature documents related to the circular economy in developed and developing countries. From the 2006 – 2022 sample, 7 clusters were formed with 24 citation documents. The study findings are presented in Figure 10. There are three literature documents with the highest citations of the samples analyzed. The documents of the article are (a) Towards a National Circular Economy Indicator System in China: An Evaluation and Critical Analysis (Geng, Y., 2012/ 503 citations); (b) Waste

Biorefineries: Enabling Circular Economies in Developing Countries (Nizami A.S., 2017/ 292 citations); and (c) Barriers to Effective Circular Supply Chain Management in a Developing Country Context (Mangla S.K., 2018/ 242 citations).

Countries Analysis

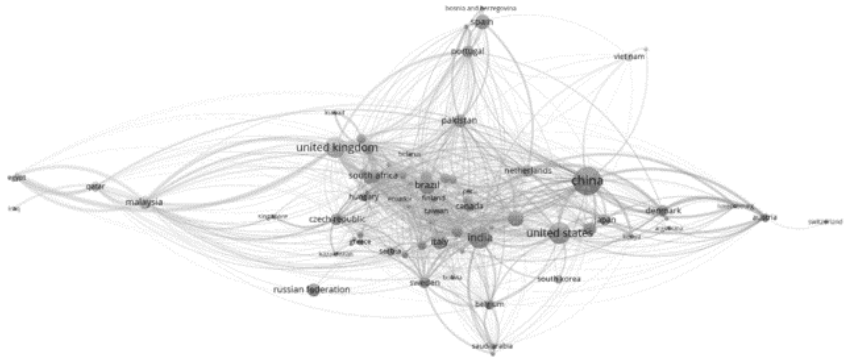

Figure 13. Countries Network Visualization in Developed and Developing Countries
Source : Scopus Database

The countries analysis describes several countries that have researched and contributed to literature documents related to the circular economy in developed and developing countries. Of the 72 countries that appeared, 9 clusters were formed, with each color representing its cluster (Figure 11). This study explains that there are five countries with the highest contribution to related research, namely China (34 documents), India (20 papers), the United States (20 documents), the United Kingdom (19 papers), and Brazil (12 documents).

Institution Analysis

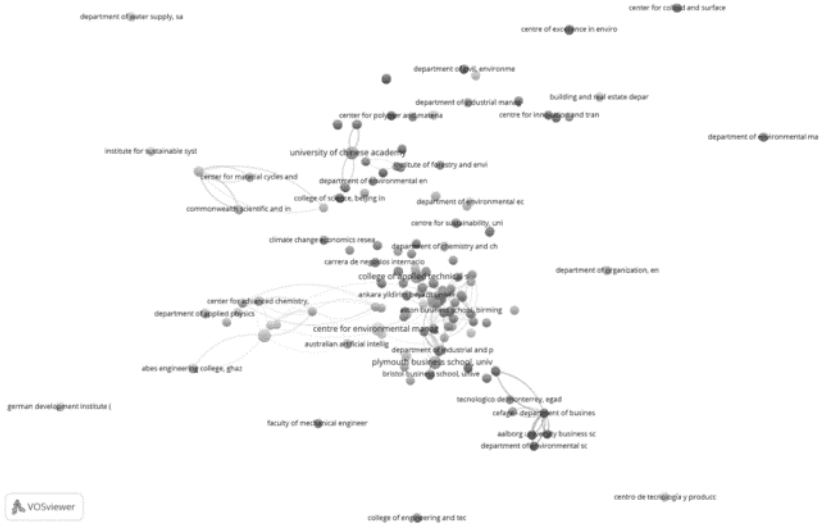

Figure 14. Institution Network Visualization in Developed and Developing Countries
Source : Scopus Database

The institutional analysis maps several institutions contributing significantly to literature documents on circular economy in developed and developing countries. Of the 412 institutions, 26 clusters were formed, with each color representing its respective cluster (Figure 12). The analysis results explained that almost all institutions contributed only 1 document. Only seven institutions produced two research documents, namely Plymouth Business School (University of Plymouth), University of Chinese Academy of Sciences (China), Jaipuria Institute of Management (India), Center for Environmental Management and

Control (University of Nigeria), Institute for Development Studies (University of Nigeria), Moscow State Institute of International Relations (Russian Federation), and College of Applied Technical Sciences (Serbia).

5. Conclusion

The time analysis results of circular economy literature in developed and developing countries explain the same thing, where the number of publications needs to be improved. From 2016 until now, the number of literary publications has increased significantly. Sustainability Switzerland is the journal with the most significant contribution to the analysis of developed countries, and the Journal of Cleaner Production to the study of developing countries. Most of the literature documents are included in the field of Environmental Science. Wang, Y. became the author with the most significant contribution to the analysis of developed countries, and Liu, X. to the study of developing countries.

In keyword analysis, Circular Economy is the keyword with the most significant frequency of occurrence in circular economy literature documents in both developed and developing countries, with the highest contribution year in 2019 in developed countries and 2020 in developing countries. The concept of circular economy was noticed one year earlier by developed countries than developing countries. The journal with the highest citations, namely Towards a National Circular Economy Indicator System in China: An Evaluation and Critical Analysis (Geng et al., 2012), with 503 citations, reflects how much influence the journal article has on circular economy research in developed and developing countries. China is the number one country contributing to circular economy research publications in developed and developing countries. As well as being a rising topic in the western economy, the circular economy is experiencing rapid growth in China, the first country in the world to develop laws (2008) that facilitate circular economy implementation (Ruiz-Real et al., 2018). And fierce competition occurs in every institution worldwide competing to publish research related to the circular economy in developed and developing countries, so no institution with a dominant contribution to related research exists.

This study can reveal literature on circular economy in developed and developing countries. These findings can guide researchers in developing and deepening related studies in implementing a country and across countries. Policymakers can benefit from the results of this study for the implementation of a circular economy in the long term.

The concept of a circular economy is starting to develop along with increasing global public awareness of the problem of climate change. The impact is felt to be very disturbing, including on the socio-economic aspect. Researchers highlight circular economy development as a relevant solution. This study conducts a bibliometric analysis to analyze published literature from 2000 – 2022. What is being carried out to map the development and progress of circular economy research in developed and developing countries? This study not only discusses time analysis, journal analysis, keyword analysis, and co-authorship analysis like previous research studies but also highlights citation analysis, country analysis, and institution analysis. This study also discusses the views on the circular economy concept in developed and developing countries. The results of this study can be helpful for researchers and policymakers who wish to highlight in more detail how the circular economy concept has been over the past 22 years. And can understand diverse views in both developed and developing countries.

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