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When Faith Meets the Climate Crisis: A 28-Year Global Research Map

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Abstract

Purpose- This research explores the role of religion in climate change in the Anthropocene era through a comprehensive bibliometric approach.

Design/methods/approach- The study used quantitative bibliometric analysis of 751 documents from Scopus covering 1996–2024. Data were analyzed using R/R-Studio, VOSviewer, and Microsoft Excel to evaluate publications, citations, authors, affiliations, international collaboration, and research trends and patterns. **Findings-** Publications on religion and climate change showed significant growth, especially from 2006 onward. The dataset contained 1,445 authors, 382 single-authored documents, 2.09 co-authors per document, and 16.91% international co-authorship. Network analysis identified climate change and religion as central topics, while perception, risk factor, and Anthropocene appeared among more recent research emphases. Density analysis showed “Climate Change, Religion, and Human” as the most frequent and prominent thematic combination. **Research implications/limitations-** The study provides a broad map of the field but is limited by its database coverage; the manuscript recommends expanding future searches to additional databases. **Originality/value-** The study provides a 28-year global research map linking religion, climate change, human and social dimensions, and emerging Anthropocene-related themes, highlighting the interdisciplinary structure and future research directions of this literature.

Keywords: Climate Change; Islam; Anthropocene Era; Bibliometric Analysis; Environmental Policy

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Introduction

Climate change is one of the biggest challenges facing humanity in the 21st century. Its far-reaching and profound impact on environmental, economic, and social life has prompted various disciplines to seek effective mitigation solutions and strategies. The Anthropocene era, which marked the dominance of human activity over the earth's ecosystems, has seen human intervention reach levels that significantly alter the basic functions of nature.

Amidst these challenges, religion is emerging as a social force that has great potential to influence environmental behavior and policy. Religion offers a moral and ethical framework that can inspire collective action to conserve nature. Various religious traditions have rich and profound views on the relationship between humans and nature, which can be a solid basis for a sustainable environmental movement.

McCright, A.M (2023) provides an in-depth overview of how religious beliefs influence perceptions and attention to climate change issues [1]. Religious traditions can be an important resource in addressing the challenges of adaptation to climate change [2]. Climate change is a challenge for spiritual traditions, but with deep religious insight is able to overcome the issue of climate change [3]. Bibliometric analysis is able to examine the role of Islamic environmental ethics in responding to climate change, and provide an overview of research contributions to the understanding of Islamic environmental ethics and the context of climate change [4]. Religious beliefs can shape attitudes and behaviors toward the environment [5].

Research examining the role of religion in the context of climate change is increasingly receiving attention, given the importance of cross-disciplinary understanding to address this complex issue. Bibliometric analysis is an effective method for evaluating research developments and trends in this field [6], [7]. By analyzing existing scientific publications, we can identify patterns, research focuses, and collaborations between scientists that contribute to our understanding of the role of religion in climate change. This study aims to explore the research landscape on climate change.

Methods

This research uses quantitative methods with a comprehensive bibliometric analysis approach, including document and network analysis. The data was collected through a Boolean search on the Scopus database from 1996 to 2024, conducted on May 22, 2024 at 1:40 p.m. For document, citation, and network analysis, R/R-Studio, VOSViewer, and Microsoft Excel software are used.

The stages of research include: researchers conduct a literature review to ensure the relevance of the research and identify gaps in bibliometric topics. The study also helped determine the right keywords for the study's coverage, then, a search using Boolean operators in Scopus (TITLE-ABS-KEY ("religion") AND TITLE-ABS-KEY ("climate change")) yielded 751 documents. Next, filtration uses Boolean operators from Scopus (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SRCTYPE, "j")) resulting in 144 documents. And finally, this research was carried out with bibliometric analysis carried out using Scopus analyzer and R/R-Studio to identify the number of documents per year, documents by journal, author, affiliation, country, and field of study. Network visualization of documents is analyzed using VOSViewer and data processing is done with Microsoft Excel, as shown in Figure 1 Research Flow.

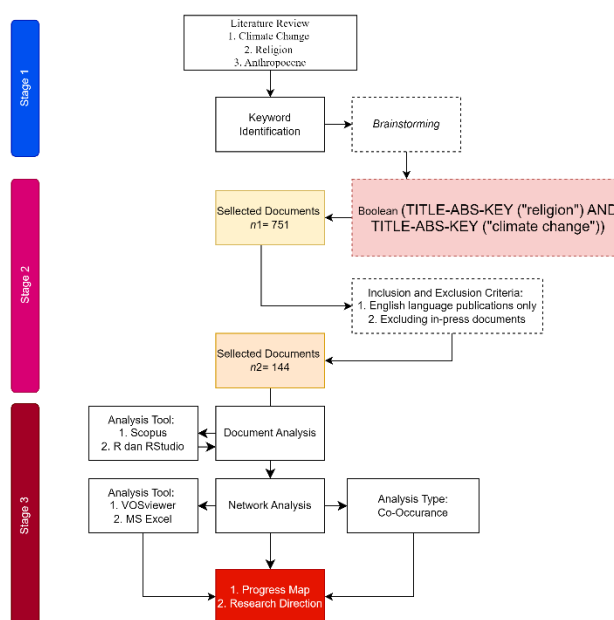


Figure 1 Research Flow

Results and Discussion

a. Document Analysis

Table 2.1. 1 Summary of The Main Information shows a dynamic and well-developed research ecosystem. Significant annual growth, a high number of citations, and a large number of references indicate that this research has a substantial impact in its field. Although there is a lot of research done individually, collaboration, including on international collaborations, is also quite significant. Data obtained for 18 years so that it obtained 1,445 authors with 348 single authors and international collaborations of 16.91%, 2.09 authors per document and 382 single-author documents with a total of 444 articles. This demonstrates a balance between independent and collaborative research within the academic community.

Table 2.1. 1 Summary of The Main Information

MAIN INFORMATION ABOUT DATA	
Timespan	1996:2024
Sources (Journals, Books, etc)	514
Documents	751
Annual Growth Rate %	13.98
Document Average Age	6.31
Average citations per doc	14.76
References	37237
DOCUMENT CONTENTS	
Keywords Plus (ID)	2698
Author's Keywords (DE)	1859
AUTHORS	
Authors	1445
Authors of single-authored docs	348
AUTHORS COLLABORATION	
Single-authored docs	382
Co-Authors per Doc	2.09
International co-authorships %	16.91
DOCUMENT TYPES	
Article	444

Figure 2.1. 1 Year Charts presents a bar graph that explains the number of research results per year from 2006 to 2024. Starting in 2006 there was a very low number of publications per year, ranging from 0 to 3 publications per year, then in 2007-2012 there were no publications recorded, so in 2014 it showed an increase in publications with the number of documents 7. A significant increase

in publications in 2018-2023 began with the number of publications of 13 documents to 16 documents. The year 2024 is not over yet, but this year's publications have a significant increase, even resulting in the number of publications of 13 documents, this indicates a trend that remains high or slightly decreased from its peak in 2022. As the number of publications increases, there is also likely to be an increase in collaboration among researchers and support from research institutions or sponsors.

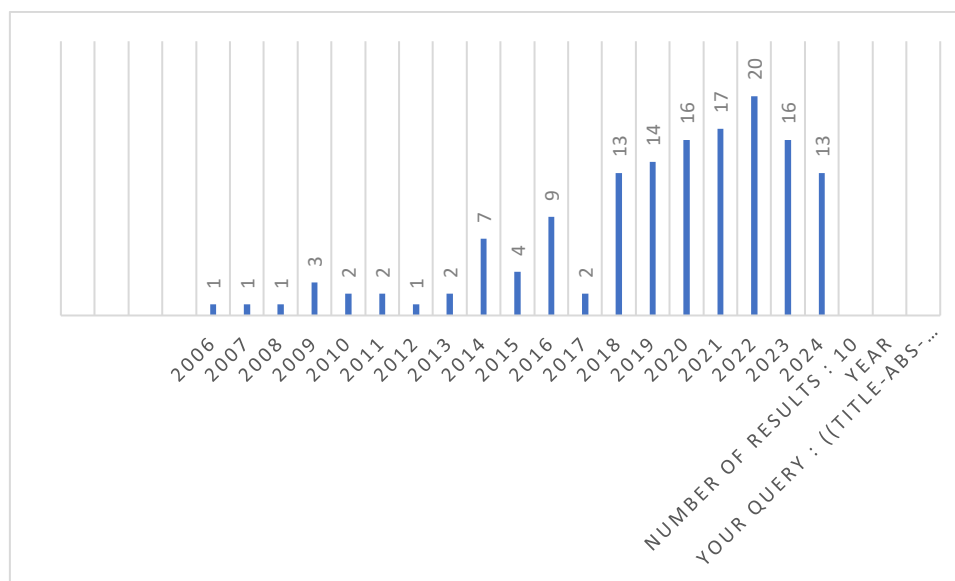


Figure 2.1. 1 Year Charts

The graph in Figure 2.1. 2 Name of Authors Charts shows the Scopus database with the number of publications on each author. The majority of authors in this graph have the same number of publications, with the number of 2 publications. There are only two authors who have the number of publications above the others, namely Rutjens, B.T., as the most prolific author among those listed. Then followed by Van Der Lee, R who took second place from the highest author of the publication. Researchers with fewer publications may have the potential to increase their contributions and collaboration with more prolific authors may be one way to achieve this [8], [9], [10], [11].

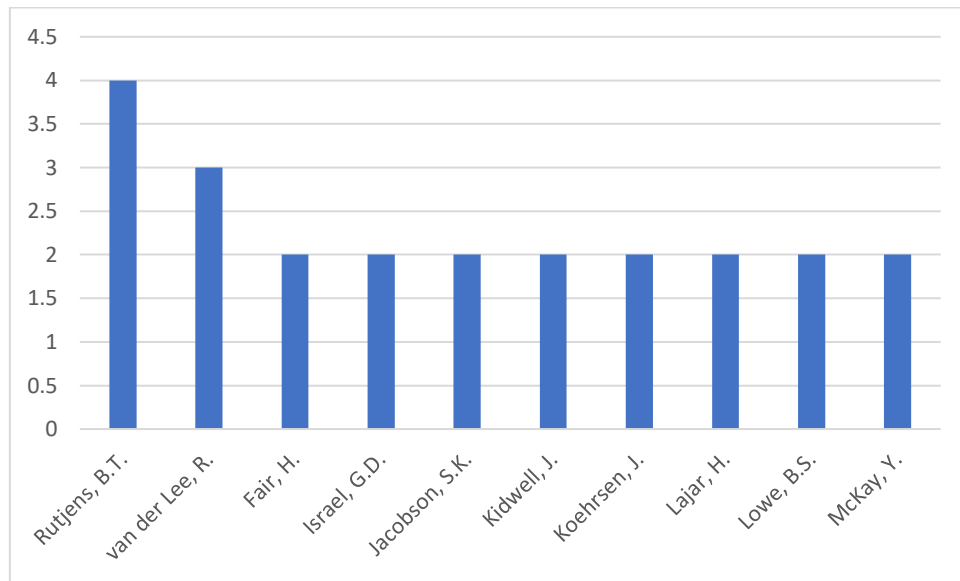


Figure 2.1. 2 Name of Authors Charts

The horizontal bar graph in Figure 2.1. 3 Affiliation Charts shows that the number of publications from various universities. Vrije Universiteit Amsterdam dominates with a significantly higher number of publications than other universities, reaching 6 publications [12]. In addition, Universiteit van Amsterdam also shows a strong contribution, although not as high as Vrije Universiteit Amsterdam, with a total of 4 publications [13]. Many universities have the same number of publications, namely 3 publications, this shows that research contributions are relatively evenly distributed among several well-known universities.

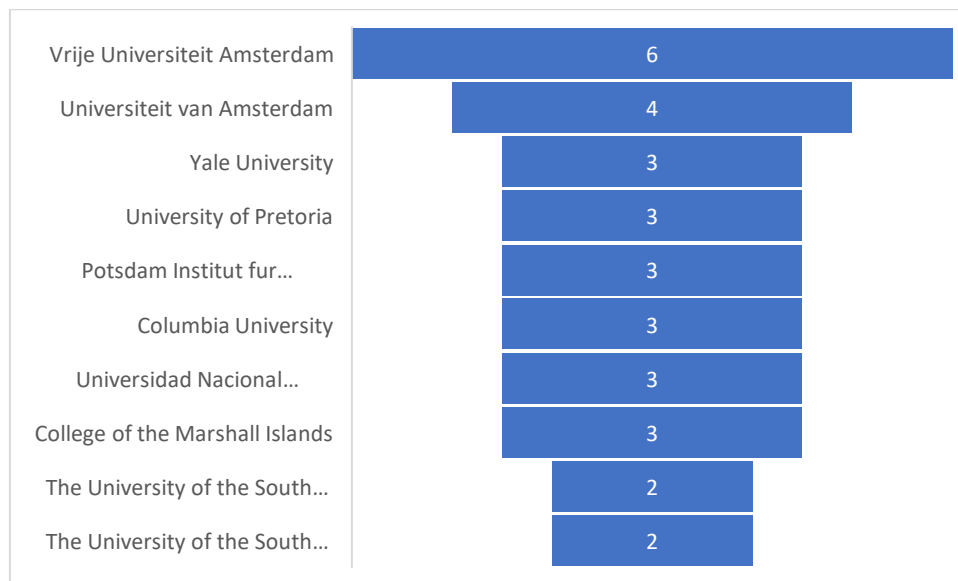


Figure 2.1. 3 Affiliation Charts

Figure 2.1. 4 Country Charts in a pie chart shows the distribution of presentations, entries or contributions from different countries. The United States has the largest share in the pie chart with 36% presenting 49 documents, the United Kingdom is in second place with 20% with 28 documents, and Germany is third with 9% or 12 documents. This pie chart visualizes how contributions or entries are divided between countries, with each section having a different nature to distinguish different countries. The proportions of each section in the diagram give a clear picture of the relative contributions of each country.

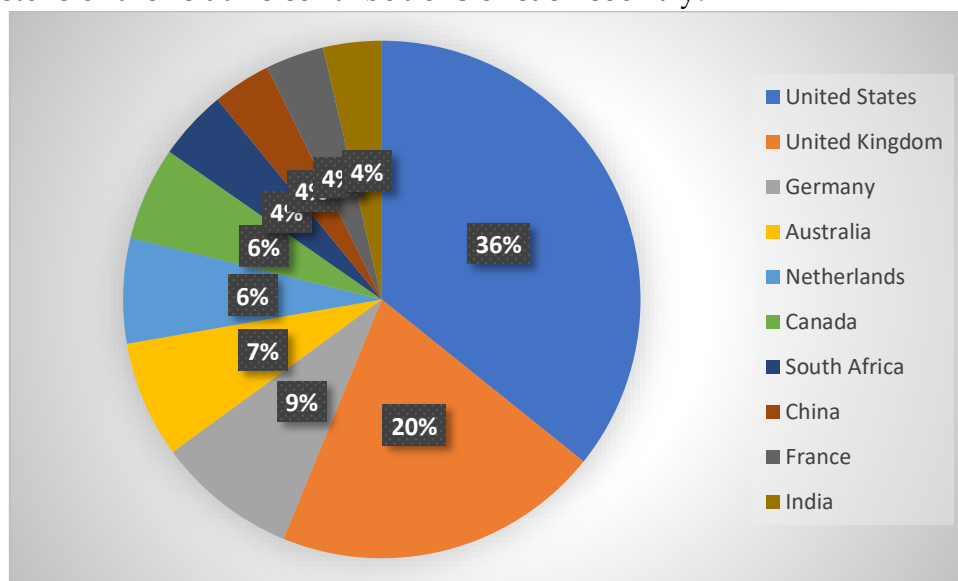


Figure 2.1. 4 Country Charts

The distribution of the number of scientific publications on various topics is shown in Figure 2.1. 5 Source Charts, that Religions, represented in dark blue, has the largest share in this graph, which shows that the publications in this journal are the most compared to other journals by producing 16 documents [14]. Public Understanding of Science is orange, has the second largest share with the number of publications obtained as much as 5, and the journal Plos One in gray has a significantly smaller share than the top two journals with the number of publications owned by 5 documents [15].

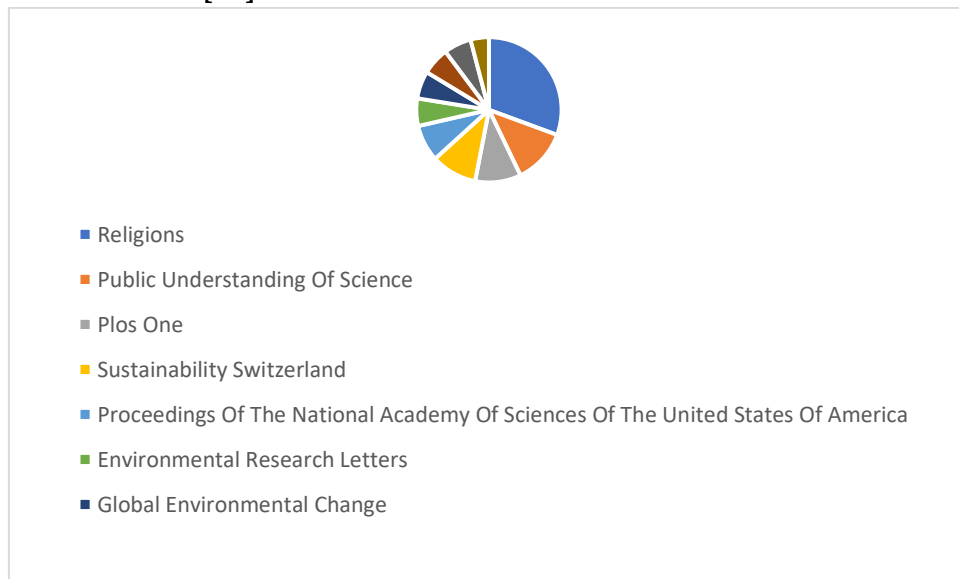


Figure 2.1. 5 Source Charts

The R/R-Studio device produces data obtained from the Three Field Plot which shows that there are 3 elements that can be examined, namely the name of the journal, the list of author names, and the theme or topic used. The three elements are interconnected and related to gray plot lines. The findings showed the number of journals as many as 6, there was one journal that had a connection between journals, authors and themes with outgoing flow results as many as 2 and each author had a total outgoing flow of 4, namely the journal Worldviews: Environment, Culture, Religion. The journal is connected to authors Rutjens BT and Jenkins W who discuss the topics of Religion, Climate Change, Spirituality, Christianity, and Anthropocence [8], [16]. Overall, these diagrams provide a comprehensive overview of the distribution and relationships between sources, authors, and topics within a particular field of research.

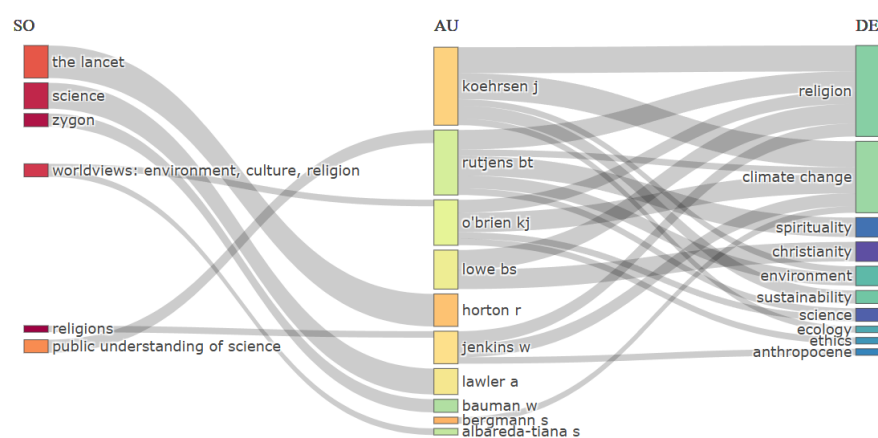


Figure 2.1. 6 Three Field Plot

Corresponding Author's Countries shows the number of documents written by lead authors from different countries. The graph also distinguishes between publications written by authors from one country (SCP: Single Country Publications) and publications involving the collaboration of authors from different countries (MCP: Multiple Country Publications). USA has the highest number of documents by producing SCP with 136 documents and MCP 14 documents, followed by the United Kingdom with 41 SCP and 10 MCP documents, and Australia with 27 SCP documents and MCP 7 documents. The diagram in Figure 2.1. 7 Corresponding Authors Countries illustrates that international research collaborations exist, but domestic research still dominates in some of the countries involved.

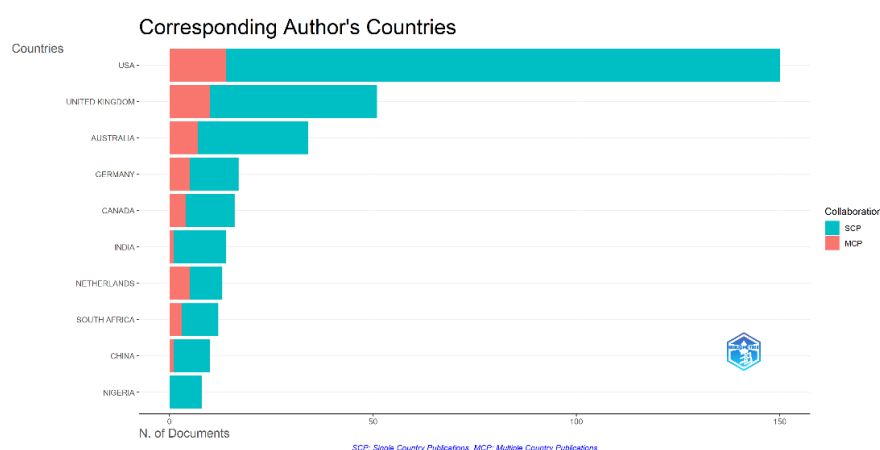


Figure 2.1. 7 Corresponding Authors Countries

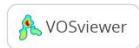
The citations in Table 2.1. 2 Most Global Document Cited display ten documents categorized by total citations and citations per year. Estrada. A (2017), Sci Adv is a document with a total of 860 citations [17], Including the documents that have the highest number on the list, this shows a significant impact in the scientific community. Then Slimak MW (2006), Risk Anal, was published earlier, but had a number of citations of 341, indicating enduring relevance [18]. These reflect that topics that are important and relevant in their respective fields of research make significant contributions to the scientific literature, and the year published does not determine the number of citations.

Table 2.1. 2 Most Global Document Cited

Paper	Total Citations	TC per Year
ESTRADA A, 2017, SCI ADV	860	107.50
SLIMAK MW, 2006, RISK ANAL	341	17.95
DRUMMOND C, 2017, PROC NATL ACAD SCI U S A	310	38.75
NISBET MC, 2007, SCIENCE	305	16.94
BAIN LE, 2013, PAN AFR MED J	287	23.92
DIETHELM P, 2009, EUR J PUBLIC HEALTH	247	15.44
HOFFMAN AJ, 2011, ORGAN ENVIRON	216	15.43
RUTJENS BT, 2018, PERS SOC PSYCHOL BULL	201	28.71
MAKONDO CC, 2018, ENVIRON SCI POLICY	197	28.14
SALLNOW L, 2022, LANCET	193	64.33

b. Network Analytics

Keyword-based network visualization from the scientific literature obtained from VOSViewer in Figure 2.2. 1 Network Visualisation shows the relationship between different topics and keywords that often appear together in research articles. All clusters in this graph add up to 3, data obtained from the VOSViewer device to obtain analysis of co-occurrence with minimum cluster 15 with a total number of items 90. The first cluster in red has 38 items, the second cluster in green has 27 items, and the third cluster in blue with 25 items. This visualization illustrates a



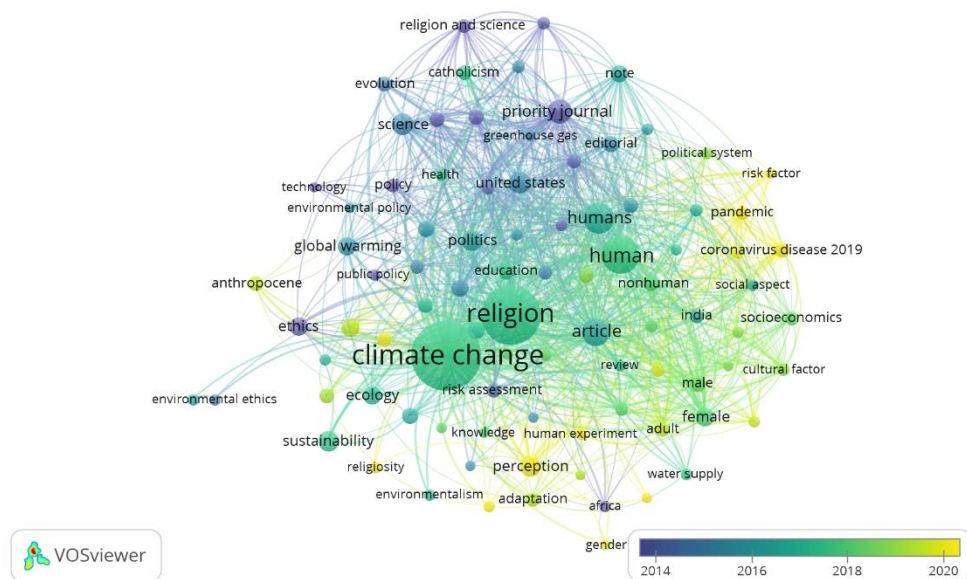


Figure 2.2. 2 Overlay Visualisation

This last type of visualization is a Density Visualization that uses a heat map to show the density of terms. Lighter areas (yellow) indicate higher densities or higher concentrations than the term appears frequently, while darker areas (blue/purple) indicate lower densities. Each node still represents a keyword or term, similar to previous network visualizations. Heat map colors range from blue/purple (lower density) to yellow (higher density). The theme "Climate Change, Religion and Human" is in the brightest yellow area, indicating that these terms are the terms that appear most frequently and take center stage in the dataset. This is as explained in Figure 2.2. 3 Density Visualisation.



Figure 2.2. 3 Density Visualisation

Conclusion

Climate change is a major challenge of the 21st century with far-reaching impacts on the environment, economy, and social life. The anthropocene era showed the predominance of human activities that changed the basic functions of nature. In the face of these challenges, religion has great potential as a social force that can influence environmental behavior and policies.

This study used a quantitative approach and comprehensive bibliometric analysis with R/R-Studio, VOSViewer, and Microsoft Excel software. Data is collected from Scopus and filtered for relevance. Results show a vibrant research ecosystem with significant annual growth, high number of citations, and international collaboration. Publications increased from 2006 to 2024 with the collaboration of researchers and institutional support.

Keyword-based network visualization shows relationships between various topics and keywords that often appear together in research articles. Climate change and religion became central topics with strong links to various other subtopics, demonstrating the importance of understanding perceptions and social impacts of scientific issues. Policy and politics play an important role in linking different areas of research, emphasizing the importance of interdisciplinarity in addressing global issues.

With network map analysis, we can identify key research areas, understand the interaction of these topics, and find potential areas for further research. Network visualization shows recent research that addresses perceptions, risk factors, and the Anthropocene era. Density Visualisation shows the term "Climate Change, Religion, and Human" as the most frequently occurring term, taking centre stage in this study.

This research is limited to articles indexed in Google Scholar and Scopus. Future research should include other databases to track the growth of these subjects. The hope for the author in the future is to study more deeply and thoroughly related to Islamic Spirituality in the Welfare of Cancer Patients with Bibliometric Analysis, making it easier to read and quote other documents from Google Scholar, WoS, Scopus, and others.

Author Contributions

Fauziyah Qurrota A'yun Tamami: Conceptualization, Methodology, Writing – review & editing, Supervision, Project administration. **Sabrina Failasufa Tamam:** Methodology, Writing – review & editing, Investigation.

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Conflict of Interest

The authors declare no conflicts of interest.

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Use of artificial intelligence (AI)

The authors declare that no generative artificial intelligence (AI) tools were used in the preparation, analysis, or writing of this manuscript

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