

Environmental Impact and Indigenous Peoples: A Bibliometric Study of the Scientific Literature in Scopus

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Abstract

This study analyzed scientific output indexed in Scopus regarding environmental impact and indigenous peoples through a bibliometric review of 1,633 documents published between 2003 and 2023. The search was conducted across titles, abstracts, and keywords using a specific search equation. At the same time, the analysis examined the temporal evolution of publications, institutional affiliations, countries of origin, document types, fields of knowledge, publication sources, and keyword co-occurrence. The findings revealed sustained growth in the literature, with a higher concentration in recent years, as well as a predominance of scientific articles and a strong presence within the environmental and social sciences. Production was concentrated primarily in institutions and countries within the Anglophone sphere, while the thematic network was structured around climate change, biodiversity, public health, extractivism, land management, and environmental justice. Collectively, this study enabled the identification of the bibliometric landscape of this field, its primary channels of dissemination, and the lines of research that have guided its development within the recent international scientific literature.

Keywords: *Bibliometrics, Environmental Impact, Indigenous Peoples, Scopus, Scientific Literature.*

Introduction

The relationship between the environment and indigenous peoples occupies an increasingly visible place in scientific literature today, not only due to the magnitude of contemporary ecological transformations, but also because of the way these alterations impact historically situated territories, ways of life, knowledge systems, and subsistence practices (Boiral et al., 2020; Fernández-Llamazares et al., 2020; Higuera Carrillo, 2022; Mohd Salim et al., 2023; Romero Torres & Gamero De La Espriella, 2023). In numerous contexts, processes such as deforestation (Bose, 2023; González & Kröger, 2023); pollution (Flores-Ramírez et al., 2021; Liboiron & Cotter, 2023); extractive expansion (Jacka, 2018; Scheidel et al., 2023); climate change (Mohamed Shaffril et al., 2020; Sanabria Martínez, 2022; Schlingmann et al., 2021); biodiversity loss (Estrada et al., 2022; Parks & Tsioumani, 2023); and pressure on natural resources do not manifest in isolation, but rather as part of complex territorial dynamics that affect indigenous communities in differentiated ways. This situation has led various disciplines to pay increasing attention to the linkages between environmental degradation, social vulnerability, health, collective rights, governance, and territorial justice.

The problem, however, cannot be understood solely in biophysical terms. In the case of indigenous peoples, the environment does not constitute an external backdrop or a mere reservoir of resources, but rather a relational space where memory, identity, social organization, spirituality, mobility, and cultural production and reproduction converge. Consequently, environmental impacts acquire a particular density when they alter territories that sustain distinct ways of inhabiting and understanding the world (Boyd & Furgal, 2019; González Vallejo, 2023; Ninomiya et al., 2023; Ribeiro & Morato, 2020). This specificity has spurred approaches that move beyond sectoral analyses, seeking to interpret ecological damage alongside its political, health-related, economic, and cultural implications.

Within this framework, scientific output on the subject has expanded in diverse directions. Some studies focus on the effects of climate change on indigenous populations, with particular attention to food security (Davies et al., 2023; Shafiee et al., 2022; Richmond et al., 2021); mobility (Whyte et al., 2019; Yumagulova

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et al., 2023); exposure to extreme weather events (Ebi et al., 2021; Lansbury Hall & Crosby, 2022; Nagy et al., 2018); and adaptive capacities (Chepkoech et al., 2020; Ford et al., 2020; Vogel & Bullock, 2021). Other works examine conflicts linked to mining (Arbeláez-Ruiz, 2022; Burtseva et al., 2020; Horowitz et al., 2018); hydrocarbons (Anthias, 2018; Jonasson et al., 2019; Westman & Joly, 2019); dams (Baird et al., 2021; Schapper & Urban, 2021); agribusiness (Ioris, 2022; Melo Zamudio et al., 2022; Sullivan, 2021); land use (De Jong et al., 2021; Ioris, 2022; Vázquez Vidal & Martínez Prats, 2023); and territorial dispossession (Araque Geney, 2023; Farrell et al., 2021). Added to this is research concerning pollution, environmental health, biodiversity, resource governance, indigenous ecological knowledge, and disputes over recognition and participation. Although this diversity has enriched the field, it has also resulted in a literature that is dispersed across various fields of knowledge, geographic regions, analytical agendas, and publication formats.

This dispersion renders a bibliometric approach particularly pertinent. When a field grows in a sustained manner and branches out into multiple thematic lines, it becomes necessary to identify its development patterns, its centers of production, its primary channels of circulation, and the conceptual connections that structure the available research. Bibliometrics offers suitable tools for this purpose, as it enables the examination of the literature's structure based on bibliographic metadata (Amjad et al., 2022; Buber & Koseoglu, 2022; Ledesma & Malave González, 2022). Rather than replacing the substantive reading of individual studies, this approach provides a comprehensive overview of how a domain of knowledge is configured and identifies its most prominent core elements (Gómez Cano & Sánchez Castillo, 2022; Malapane et al., 2022; Mishra et al., 2021).

In the specific case of the literature concerning environmental impact and indigenous peoples, the need for a bibliometric review is further justified by a conceptual imperative. This is a field characterized by intersecting epistemological and political tensions, wherein frameworks drawn from environmental sciences, social sciences, public health, geography, political ecology, development studies, and indigenous studies coexist. While this convergence enhances the field's interpretive capacity, it also makes it difficult to clearly discern its dominant axes, which geographical regions attract the most attention, from which institutional contexts knowledge is produced, and which agendas have gained the greatest prominence within international scientific discourse. Without a systematic examination of the indexed literature, these questions are often answered in a fragmentary manner.

Despite the growing academic interest in this subject, a need persists to bring order to the field and to offer a structured interpretation of its recent development. It is not enough merely to acknowledge the existence of a growing body of literature; it is equally important to understand how it is distributed, which areas underpin it, which journals disseminate it, which countries and institutions concentrate its visibility, and which lines of research articulate its principal debates. From this perspective, the present study aimed to conduct a bibliometric analysis of the scientific literature indexed in Scopus regarding environmental impact and indigenous peoples. Its purpose was to characterize the structure of this body of work, identify its publication patterns, and explore the thematic clusters that have organized the field during the period under analysis.

Methodology

Study Design

The study was conducted using a quantitative approach with a descriptive and retrospective scope, based on a bibliometric review of scientific literature indexed in Scopus. This type of design allowed for a systematic examination of publication, circulation, and knowledge structuring patterns regarding the environmental impact on indigenous peoples, drawing upon bibliographic metadata retrieved from a single documentary source. The choice of a bibliometric approach was driven by the need to identify regularities in scientific output without intervening in the empirical content of individual studies or performing a narrative or meta-analytic synthesis of their findings.

The review was framed from the perspective of scientific performance and the relational structure of the field. Consequently, the analysis was not limited to a mere count of publications but incorporated procedures for metadata cleaning, normalization, and organization to examine attributes related to production, collaboration, and thematic co-occurrence. The study was conceived as documentary research, given that it worked exclusively with secondary records exported from Scopus.

Information Source and Search Strategy

The selected information source was the Scopus database, chosen for its multidisciplinary coverage, its widespread use in bibliometric studies, and the capability to export standardized metadata for analytical processing. The search was executed directly within this database using the following query:

(TITLE-ABS-KEY (environmental AND impact) AND TITLE-ABS-KEY (indigenous AND people)) AND PUBYEAR > 2002 AND PUBYEAR < 2024

The query was formulated across the title, abstract, and keyword fields with the aim of retrieving documents in which the relationship between environmental impact and indigenous peoples was explicitly embedded within the core elements of indexing and thematic description. The temporal scope encompassed publications issued between 2003 and 2023, inclusive. The search yielded 1,633 documents, which constituted the initial documentary universe for the study.

To ensure the traceability of the process, the results were exported in CSV format, including all bibliographic fields available in Scopus for this type of download, specifically: authorship, title, year, source, affiliations, abstract, author keywords, indexed keywords, cited references, document type, DOI, and citation count. The exported file served as the sole basis for subsequent processing and analysis.

Inclusion Criteria and Analytical Delimitation

All documents retrieved by the search strategy that were contained within the file exported from Scopus, and that retained sufficient bibliographic information for identification and analytical processing, were included in the study. The unit of analysis consisted of each individual bibliographic record. No additional filters regarding subject area, language, country, access type, or document typology were applied during the retrieval stage, as the objective was to capture the broad configuration of the field within the boundaries defined by the search query and the established time period.

The analytical delimitation was grounded in the logic of thematic relevance already embedded within the search query. Nevertheless, during the data preparation phase, the consistency of the records was reviewed to detect duplicates, export errors, empty fields, and spelling variations that could affect the quality of the bibliometric analysis. The purpose of this procedure was not to redefine the corpus based on subjective criteria, but rather to ensure the technical stability of the database prior to its analysis.

Data Extraction, Organization, And Cleaning

File processing was carried out based on the metadata contained in the Scopus export. In the initial phase, the integrity of the file was verified, along with the correspondence between the exported fields and the requirements of the analysis. Subsequently, a data cleaning process was undertaken to correct formal inconsistencies commonly found in bibliographic databases, such as duplicate records, spelling variations in author or institutional names, variations in keywords, and the partial absence of persistent identifiers.

The cleaning process involved reviewing fields such as authors, affiliations, source titles, author keywords, indexed keywords, references, and DOIs. In instances where the same author or institution appeared with minor spelling variations, a standardization criterion was applied to unify equivalent forms and prevent the artificial fragmentation of nodes within the relational analyses. A similar procedure was followed for keywords, particularly where differences existed regarding singular versus plural forms, hyphenation, abbreviations, or semantically similar terms referring to the same analytical concept.

Bibliometric Analysis Procedure

The analysis was structured across two complementary levels. The first level focused on bibliometric performance indicators. Within this dimension, variables associated with the dynamics of scientific production were considered, such as the temporal evolution of publications, distribution across journals or sources, institutional affiliations, countries of origin, and document types. These indicators enabled a description of the literature's visibility and distribution without making causal inferences regarding the behavior of the field. In turn, keyword co-occurrence enabled the exploration of the thematic organization of the indexed output and the identification of the main conceptual clusters present in the retrieved literature.

Processing and Visualization Tools

Data preparation relied on spreadsheet software and bibliometric processing environments suitable for handling files exported from Scopus (Excel and VOSviewer). Specialized tools for bibliometric analysis were employed to construct networks and visualization maps, specifically, those capable of processing CSV files or compatible formats derived from Scopus. These applications facilitated the creation of maps depicting country co-authorship, co-occurrence, as well as the identification of thematic and relational clusters using association and proximity algorithms.

Visualization was not treated merely as an illustrative resource; rather, it was utilized as an integral part of the analytical procedure, insofar as the maps enabled the identification of patterns regarding proximity, density, and clustering among bibliographic nodes. Nevertheless, the interpretation of these representations was consistently grounded in the underlying data structure rather than in exclusively graphic criteria.

Procedural Validity and Bias Control

To bolster the internal consistency of the study, the methodology incorporated three distinct control mechanisms. The first involved explicitly stating the search equation and the specific time frame, thereby enhancing the reproducibility of the process. The second consisted of the preliminary cleaning and normalization of metadata, a necessary step to mitigate distortions stemming from formal errors within the records. The third entailed the integration of performance indicators with relational analyses, which allowed for an examination of the field from complementary perspectives rather than through a single type of metric.

Notwithstanding these precautions, it was acknowledged that any bibliometric study is inherently conditioned by the indexing decisions of the consulted database, the manner in which authors describe their own work, and the very structure of the search strategy employed. In this regard, the methodology did not purport to encompass the entirety of existing literature on indigenous peoples and environmental impact; rather, its objective was to systematically analyze the segment of that literature that is both visible and retrievable within Scopus based on the selected search terms.

Ethical Considerations

The research did not involve any interaction with individuals, communities, or sensitive personal data. The corpus consisted exclusively of institutionally accessible bibliographic records retrieved from an academic database. For this reason, the study did not require informed consent or review by research ethics committees involving human subjects. Nevertheless, a commitment was maintained to transparently report every stage of the procedure, respect the integrity of the original metadata, and avoid interpretations extending beyond the documentary scope of the analysis.

Methodological Scope

This methodology was designed to characterize the scientific literature indexed in Scopus regarding environmental impact and indigenous peoples from a bibliometric perspective. Consequently, its objective

was neither to evaluate the substantive quality of individual documents nor to synthesize the empirical content of the included studies. The emphasis was placed on the publication, citation, collaboration, and thematic organizational structures of the field, based on a corpus delimited by an explicit and verifiable search strategy.

Results

Temporal Evolution of Publications

The scientific output retrieved from Scopus exhibited an upward trajectory between 2003 and 2023, although its growth was not linear (figure 1). During the early years, the volume of publications was modest, fluctuating between 9 and 35 documents annually. This pattern was observed between 2003 and 2009—a period in which 162 works were concentrated, equivalent to 9.9% of the total analyzed. Within this initial phase, 2004 recorded the lowest figure of the entire series, with 9 documents, while 2008 marked a rebound, reaching 35. Nevertheless, production had not yet stabilized, as it declined once again in 2009 to 23 publications.

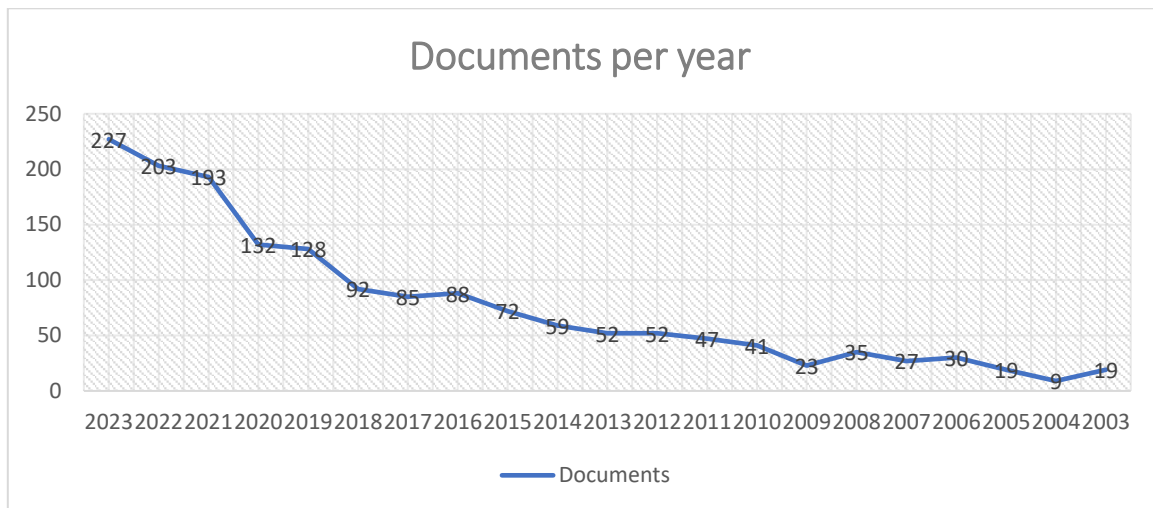


Figure (1) Publication Trends

Beginning in 2010, the literature entered a phase of more sustained expansion. Between 2010 and 2015, 323 documents were published, representing 19.8% of the corpus. During those years, the series grew from 41 publications in 2010 to 72 in 2015. Although there were moments of stability, such as the period between 2012 and 2013, the general trend remained upward. This shift suggests that the topic began to consolidate more visibly within the indexed academic agenda, exhibiting an increasingly less sporadic presence.

This growth became more pronounced between 2016 and 2020. During this period, 525 documents were collected, equivalent to 32.1% of the total. The series fluctuated between 85 and 132 annual publications, experiencing a slight contraction in 2017 relative to 2016, followed by a subsequent recovery. The most notable increase within this block occurred between 2018 and 2019, when output rose from 92 to 128 documents. This shift indicated that interest in the relationship between environmental impact and indigenous peoples had ceased to occupy a marginal position and was beginning to demonstrate greater density within the scientific literature.

The phase of highest volume corresponded to the most recent years. Between 2021 and 2023, 623 documents were concentrated, representing 38.2% of the total retrieved. In 2021 alone, 193 publications were recorded, a figure that far exceeded the values observed prior to 2020. This trend continued in 2022 with 203 documents and reached its peak in 2023 with 227. Broadening the scope to the last five-year period, 883 works were accumulated between 2019 and 2023, representing 54.1% of all identified output.

In bibliometric terms, this temporal concentration revealed that the field gained greater visibility in the recent period, exhibiting an acceleration not observed during the initial years of the series.

The temporal evolution revealed a process of cumulative growth, characterized by occasional fluctuations but maintaining a general upward trajectory. The annual sequence did not reflect a homogeneous development from the outset, but rather a progressive maturation of the subject within Scopus. From this perspective, the literature evolved from a limited presence in the early years to a more pronounced expansion over the last decade, particularly from 2019 onward.

Institutional Affiliations and Countries of Origin

The distribution of institutional affiliations revealed a visible concentration in universities located, for the most part, in Anglophone countries with an established track record in research concerning the environment, territory, and indigenous peoples. The institution with the highest number of documents was the University of British Columbia, with 50 publications. Trailing somewhat behind were McGill University with 29 and the University of Queensland with 28. Next in the rankings were The Australian National University with 26, and the University of Victoria and Charles Darwin University with 25 each. The group was rounded out by the University of Waterloo, the University of Saskatchewan, the University of Toronto, and the University of Melbourne, all with 23 documents (figure 2).

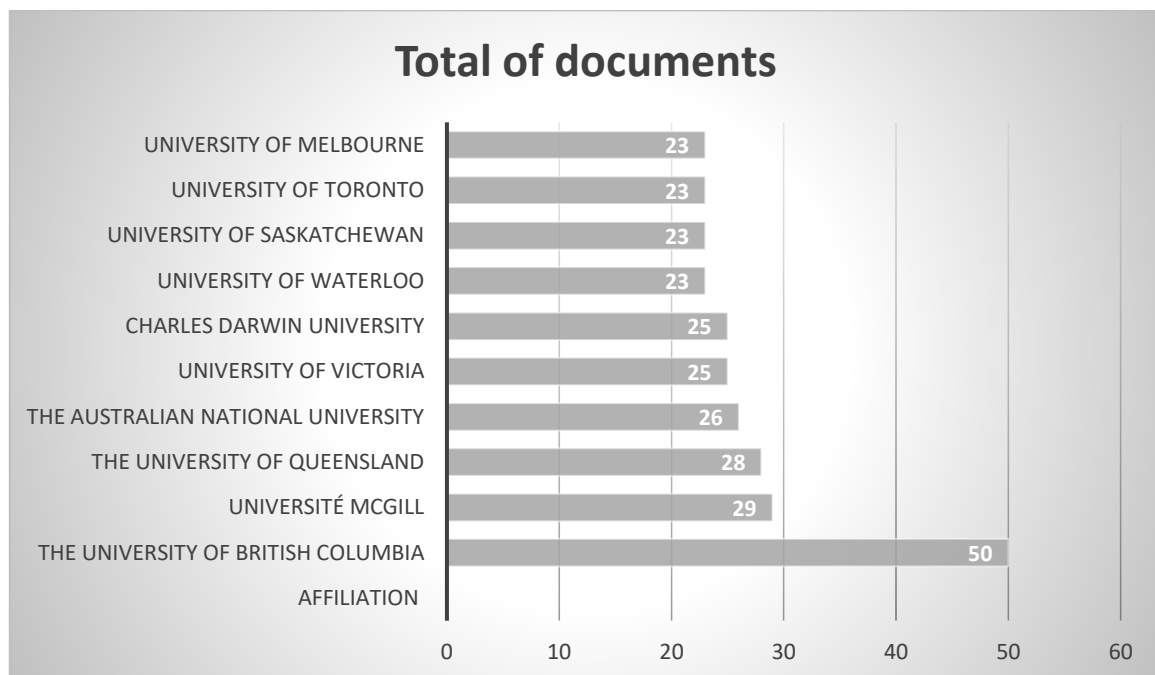


Figure (2) Leading Institutions

This pattern first revealed the prominent weight of Canadian and Australian universities within the corpus. Of the ten institutions with the highest output, five were Canadian, and four were Australian. At the same time, one belonged to the broader Anglophone academic sphere, specifically the United Kingdom, if one considers the international integration of these networks, even though no British university appeared among the top ten in the specific ranking. The recurring presence of universities from Canada and Australia did not appear to be coincidental. Rather, it may be linked to the centrality that debates concerning extractivism, environmental governance, territorial rights, and the relationships between the State, science, and Indigenous peoples have acquired in those contexts.

The predominance of these affiliations also suggests that scientific output regarding environmental impact and Indigenous peoples was not distributed homogeneously across institutions; instead, it tended to

coalesce within academic hubs possessing prior expertise in environmental studies, anthropology, geography, public health, development, and recognition politics. In this sense, this institutional concentration could indicate the existence of established research groups capable of sustaining continuous research agendas, international collaborative networks, and a more stable output over time.

When the analysis shifted to countries of origin, the concentration became even more evident. The United States led the field with 392 documents, followed by Canada with 340 and Australia with 227. A second tier emerged, comprising the United Kingdom with 170 documents and Brazil with 106. Next in the rankings were New Zealand with 70, India with 66, the Russian Federation with 62, Sweden with 52, and Indonesia with 51. The leadership demonstrated by these countries indicated that the literature indexed in Scopus on this subject relies, above all, on scientific systems possessing a high capacity for international publication and strong integration into global publishing circuits.

The position occupied by the United States, Canada, and Australia is particularly significant. Collectively, these three countries accounted for 959 documents, a figure representing a substantial share of the cumulative output within the leading group. Added to this was the case of the United Kingdom, which reinforced the presence of the Anglophone axis in shaping the field. This geographical concentration suggests that scientific discourse regarding environmental impact and indigenous peoples has been driven most intensely by academic contexts that, in addition to possessing robust research infrastructure, maintain direct historical and political ties to indigenous populations and to conflicts surrounding land use, natural resources, and environmental regulation.

Brazil occupied a distinct position within this group, emerging as the Latin American country with the highest number of publications. Its presence may be attributed to the significance of the Amazon region in international discourse, the high density of socio-environmental conflicts within indigenous territories, and the growth of academic communities focused on political ecology, conservation, public health, and territorial rights. Unlike the Anglophone bloc, Brazil introduced a significant point of reference from Latin America, although its volume of output remained lower than that recorded by the top four countries.

The inclusion of New Zealand, India, the Russian Federation, Sweden, and Indonesia broadened the map of scholarly production, demonstrating that the subject resonates across diverse settings. Nevertheless, their figures fell far short of those posted by the countries leading the series. This finding may suggest that, although the field enjoys an international profile, the visibility of its literature remains heavily dependent on specific national and institutional hubs that possess greater capacity for indexing, funding, and circulation within databases such as Scopus.

Taken together, both affiliations and countries of origin revealed a geography of production characterized by inequality. The field was not distributed in a balanced manner across regions, but rather articulated around universities and scientific systems with a strong presence in the international publishing circuit (figure 3).

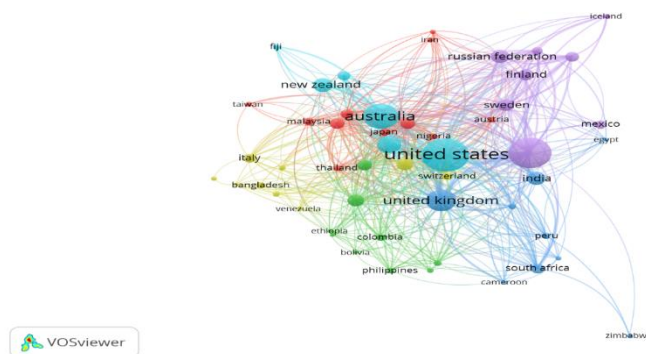


Figure (3) Countries Collaboration Network

This configuration could point to two simultaneous processes: on the one hand, the consolidation of academic centers that have consistently sustained the subject; on the other, a possible asymmetry between the territories where environmental impacts affect indigenous peoples and the institutional spaces from which that reality is researched and published. This tension is relevant to an interpretation of the field, as it speaks not only to who produces knowledge but also to the vantage point from which its scientific visibility is defined.

Document Types

The distribution by document type revealed a clear predominance of the scientific article as the primary means of communication in this field (figure 4). Of the 1,633 records retrieved, 1,059 corresponded to articles, representing 64.8% of the total. Trailing at a considerable distance were book chapters, with 206 documents (12.6%); reviews, with 149 (9.1%); and conference papers, with 100 (6.1%). At a lower level appeared books, with 66 records (4.0%), while other document types had a limited presence: notes (26), letters (10), editorials (9), conference reviews (3), errata (2), short surveys (2), and retracted papers (1).

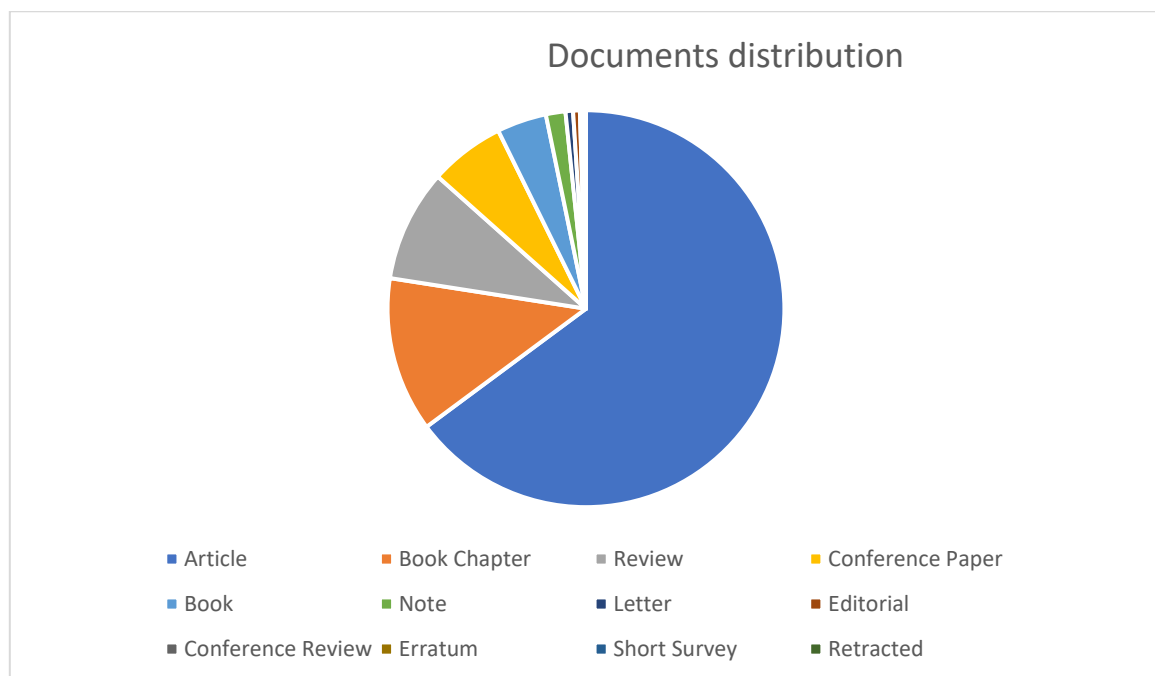


Figure (4) Document Type

This pattern of behavior allowed for the identification of a publication structure dominated by formats generally subject to formal editorial circuits and more standardized academic evaluation processes. The centrality of the journal article suggests that discourse regarding environmental impact and indigenous peoples circulated primarily within scientific journals; this facilitated its inclusion in international databases and consolidated its visibility within the indexing system. Consequently, this was not a field sustained chiefly by occasional literature or publications of limited circulation, but rather by documents that typically constitute the most widely recognized foundation of contemporary scientific exchange.

The presence of book chapters and review articles also proved significant. The chapters indicated that a portion of the knowledge was articulated within collective works, possibly linked to broader interdisciplinary debates concerning territory, the environment, rights, health, extractivism, or governance. Meanwhile, the volume of review articles demonstrated that the field not only produced primary research but also began to generate exercises in synthesis and conceptual organization. This result could be interpreted as a sign of a certain thematic maturation, insofar as review articles typically emerge once a field

has attained sufficient bibliographic density to warrant comprehensive overviews, state-of-the-art assessments, or comparative analyses.

Conference proceedings occupied a minor, though not irrelevant, position. Their relative proportion indicated that a segment of the discourse circulated within spaces dedicated to preliminary academic exchange, yet without displacing the weight of journal-based publication. A similar pattern was observed with books, the volume of which remained moderate. Taken together, this configuration suggests that the field combined formats for rapid dissemination, spaces for more extensive reflection, and products aimed at consolidating ongoing debates, albeit with the scientific article maintaining clear hegemony.

Residual document types, such as editorials, letters, notes, and corrections, played only a marginal role. Their low volume was to be expected within a corpus dominated by research and synthesis documents. Nevertheless, their very existence demonstrated that the subject matter also maintained a presence within complementary editorial registers, a fact that may reflect specific moments of debate, adjustment, or brief intervention regarding particular issues within the field.

Areas of knowledge

Classification by thematic area highlighted the markedly interdisciplinary nature of the corpus, albeit with a stronger concentration in certain fields. *Environmental Science* topped the list with 811 documents, followed closely by *Social Sciences* with 767. In proportional terms, these two areas accounted for 49.7% and 47.0% of the total, respectively. Although Scopus allows for the multiple assignment of a single document to more than one area, the close proximity between these two figures demonstrated that the literature concerning environmental impact and indigenous peoples occupies an intersectional zone, bridging the ecological analysis of these issues with their social, political, and territorial understanding.

This thematic duality proved consistent with the nature of the subject under study. The environmental impact on indigenous peoples cannot be reduced to a single disciplinary framework. On the one hand, it involves processes linked to ecosystem degradation, land use, biodiversity, water, climate, or pollution. On the other hand, it points to dimensions associated with collective rights, territoriality, conflict, health, culture, displacement, governance, and inequality. The quantitative proximity between environmental sciences and social sciences suggests that this field has been constructed, to a significant extent, upon this very dialogue, though not always under symmetrical conditions (figure 5).

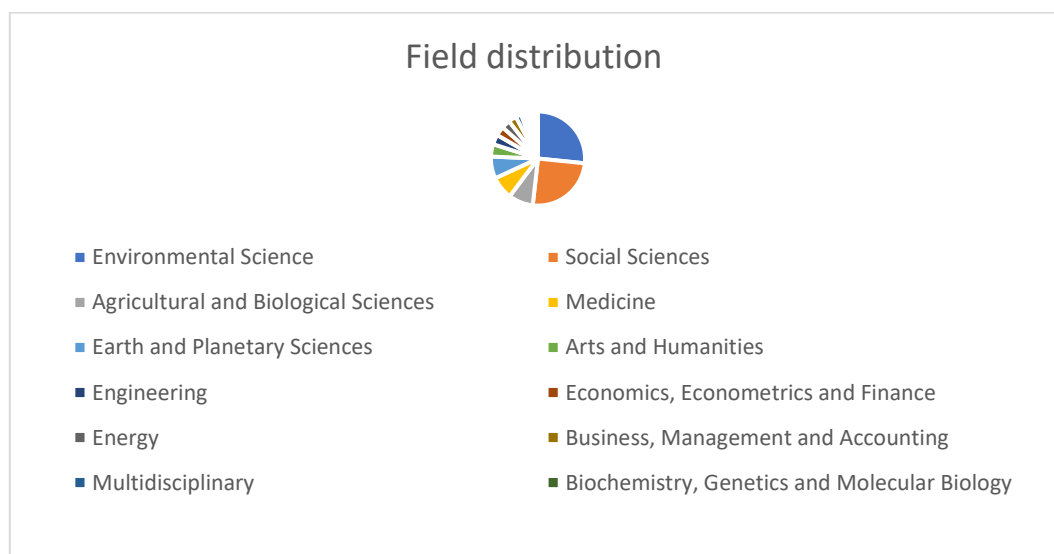


Figure (5) Subject Area

Following these two main areas, *Agricultural and Biological Sciences* appeared with 258 documents, *Medicine* with 240, and *Earth and Planetary Sciences* with 230. This second cluster indicated that the subject matter was also addressed from perspectives related to production systems, applied ecology, human health, and the biophysical basis of the territories. The presence of *Medicine* is particularly noteworthy, as it suggests a link between environmental impact and its effects on the well-being, health status, risk exposure, and living conditions of indigenous communities. In turn, *Earth and Planetary Sciences* offered a perspective focused more on geographical, climatic, or geological transformations that affect the territories inhabited by these populations.

At a subsequent level were *Arts and Humanities* with 130 documents, *Engineering* with 103, *Economics, Econometrics and Finance* with 97, *Energy* with 91, and *Business, Management and Accounting* with 84. This group broadened the analytical scope of the field. The participation of *Arts and Humanities* demonstrated that scholarly output was not limited to technical-environmental approaches but also incorporated historical, cultural, ethical, and discursive interpretations. In parallel, the presence of engineering, energy, and economics may indicate that a portion of the literature was linked to infrastructure, extractive industries, energy transition, economic resource valuation, or conflicts arising from development projects.

The areas with lower frequency also provided relevant insights. *Multidisciplinary* gathered 58 documents, while *Biochemistry, Genetics and Molecular Biology* reached 43 and *Computer Science* 35. Appearing in lower figures were immunology, nursing, psychology, pharmacology, decision sciences, chemical engineering, physics, health professions, neuroscience, chemistry, materials science, veterinary medicine, mathematics, and dentistry. Although their quantitative weight was modest, their presence demonstrated that the subject was not confined to a narrow disciplinary core. On the contrary, it extended into fields that, in principle, might appear peripheral to the central object of study, yet served to broaden how the subject was conceptualized and problematized.

The thematic distribution confirmed that this constitutes a cross-cutting field. The relative hegemony of *Environmental Science and Social Sciences* did not preclude the participation of other fields; rather, it organized a space of convergence where ecological, social, biomedical, territorial, cultural, and technical-productive approaches coexisted. This configuration suggests that the literature on environmental impact and indigenous peoples has developed within a broad disciplinary frontier, where distinct analytical frameworks overlap and engage in dialogue, although not necessarily with equal weight within the indexing system.

Key Journals and Publication Sources

The general overview of publication sources revealed a wide dispersion of scientific output. The 1,633 documents were distributed across 958 distinct sources, indicating that the literature concerning environmental impact and indigenous peoples was not concentrated within a small editorial core, but rather circulated through a diverse network of journals, series, and publication venues. This breadth suggests that the subject successfully established itself within multiple academic communities, rather than being confined to a single specialized circuit. At the same time, it reveals a field characterized by porous thematic boundaries, one capable of engaging in dialogue with journals focused on the environment, public policy, health, impact assessment, sustainability, and territorial studies.

Despite this dispersion, a relative concentration was also observed within a limited set of sources possessing a higher capacity for accepting submissions. The top ten leading sources collectively published 197 documents, accounting for 12.1% of the total corpus. While this proportion was not dominant in absolute terms, it was sufficient to demonstrate that certain editorial venues functioned as recurring hubs for publication. Within this context, the field exhibited a combination of two noteworthy characteristics: on one hand, a broad circulation across numerous journals; on the other, a consistent inclination toward sources that offer compatible frameworks for discussing socio-environmental issues, territorial management, environmental public health, and impact assessment.

In terms of editorial profile, the sources with the strongest presence fell primarily into three categories. The first consisted of journals focused on environmental sciences and environmental health. The second

comprised publications oriented toward sustainability, environmental policy, and impact assessment. The third incorporated venues of a more cross-cutting or interdisciplinary nature, including some associated with conference proceedings series. This composition highlighted the fact that the subject matter did not evolve exclusively within journals dedicated to indigenous studies, but rather within publications where the issue is addressed through the lens of its environmental, territorial, health-related, or public policy dimensions.

Also noteworthy was the simultaneous presence of large-scale commercial publishers alongside academic platforms or scientific associations with more specialized profiles. Elsevier, MDPI, Springer, the Public Library of Science, Institute of Physics Publishing, and the Resilience Alliance were among the imprints associated with the sources yielding the highest number of documents. This combination suggests that the topic circulated both within major international publishing infrastructures and within spaces more specifically defined by particular scientific communities. In bibliometric terms, this could indicate a field that, while maintaining an interdisciplinary foundation, has established relatively stable channels for its dissemination.

When examining the leading sources individually, the *International Journal of Environmental Research and Public Health* took the lead with 42 documents. It was followed by *IOP Conference Series: Earth and Environmental Science* with 25, *Sustainability (Switzerland)* with 23, and *PLoS ONE* with 22. Next appeared *Environmental Management* with 17 and *Science of the Total Environment* with 16. The remainder of the group consisted of *Environmental Science and Policy* and *Extractive Industries and Society*, both with 14 documents, followed by *Environmental Impact Assessment Review* with 13 and *Ecology and Society* with 11.

This collection revealed a clear inclination toward journals and series in which the conflicts between the environment, governance, health, development, and territory occupy a central position. The presence of *Environmental Science and Policy*, *Environmental Impact Assessment Review*, and *Extractive Industries and Society* reinforced this interpretation, as these are sources where debates concerning regulation, extractive projects, environmental management, and the social impacts of development are regularly hosted. For their part, *Ecology and Society* and *Environmental Management* introduced a dimension more closely linked to socio-ecological relationships, conservation, and governance. In the case of *PLoS ONE* and the *International Journal of Environmental Research and Public Health*, the broad thematic scope of these journals facilitated the acceptance of studies situated at the intersection of the environment, health, and indigenous populations.

From a broader perspective, the distribution across sources suggested that the literature did not coalesce around a single hegemonic publishing entity (table 1). Rather, it drew upon a constellation of journals capable of capturing various facets of the issue at hand. This configuration is consistent with a subject of study that demands cross-pollination among environmental sciences, social sciences, health, political economy, development studies, and territorial analysis. Consequently, the diversity of sources should not be interpreted as disorderly dispersion, but rather as an expression of the transversal nature of the field.

Table (1) Leading Sources by Number of Publications

Source	Publisher	Documents
International Journal of Environmental Research and Public Health	MDPI	42
IOP Conference Series: Earth and Environmental Science	Institute of Physics Publishing	25
Sustainability (Switzerland)	MDPI	23
PLoS ONE	Public Library of Science	22
Environmental Management	Springer	17
Science of the Total Environment	Elsevier B.V.	16
Environmental Science and Policy	Elsevier Ltd	14

Source	Publisher	Documents
Extractive Industries and Society	Elsevier Ltd	14
Environmental Impact Assessment Review	Elsevier Inc.	13
Ecology and Society	Resilience Alliance	11

Source: Compiled by the author based on data from Scopus.

Keyword co-occurrence

The co-occurrence analysis revealed a broad thematic network, featuring several high-density nodes and connections that were not limited to a single disciplinary axis. Prominent among the most frequent keywords were climate change (284 occurrences; total link strength: 3,566), biodiversity (113; 1,559), Australia (96; 1,476), Arctic (77; 959), public health (73; 1,539), mining (69; 868), ecosystem (68; 1,369), environment (60; 868), risk assessment (48; 749), adaptation (44; 566), land use (42; 695), child (41; 933), agriculture (39; 585), risk factor (39; 832), adaptive management (37; 495), resource management (37; 533), knowledge (37; 540), Amazonia (34; 444), climate effect (32; 434), social impact (29; 261), and social impact assessment (15; 129). Collectively, this distribution demonstrated that the field is structured around a strong socio-environmental core, to which themes of health, territory, risk, governance, and justice are articulated (figure 6).

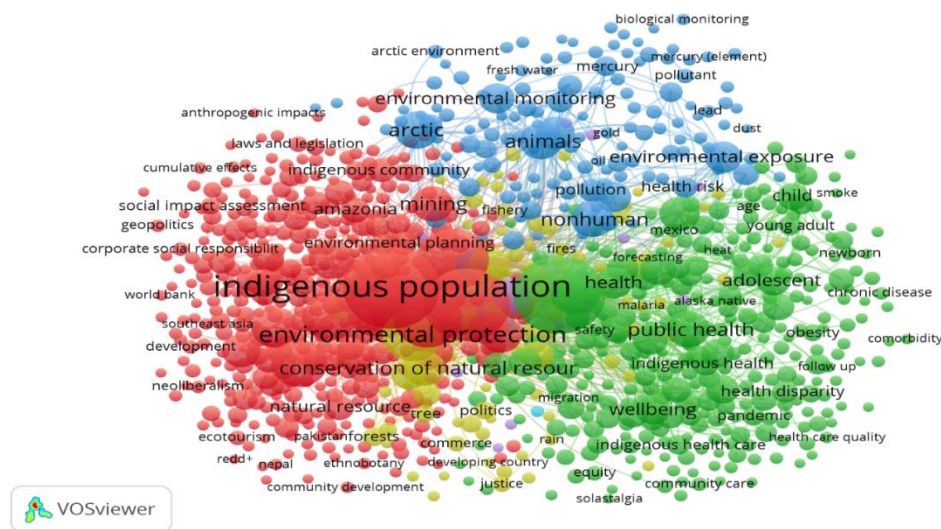


Figure (6) Network of All Keywords Co-Occurrence

The network and density visualizations confirmed that co-occurrence was not organized as a dispersed collection of terms, but rather as an intricate web featuring clearly recognizable focal points (figures 6 and 7). On the map, climate change occupied a highly central position due to its frequency, its linkage strength, and its proximity to terms such as adaptation, climate effect, climate change adaptation, land use, mining, biodiversity, and social impact. In turn, biodiversity, ecosystem, land use, resource management, adaptive management, and knowledge were situated within a dense zone of interrelationships, suggesting that the literature did not treat the environmental impact on indigenous peoples as an isolated phenomenon, but rather as an issue intertwined with ecological transformations, resource use, and forms of territorial management.

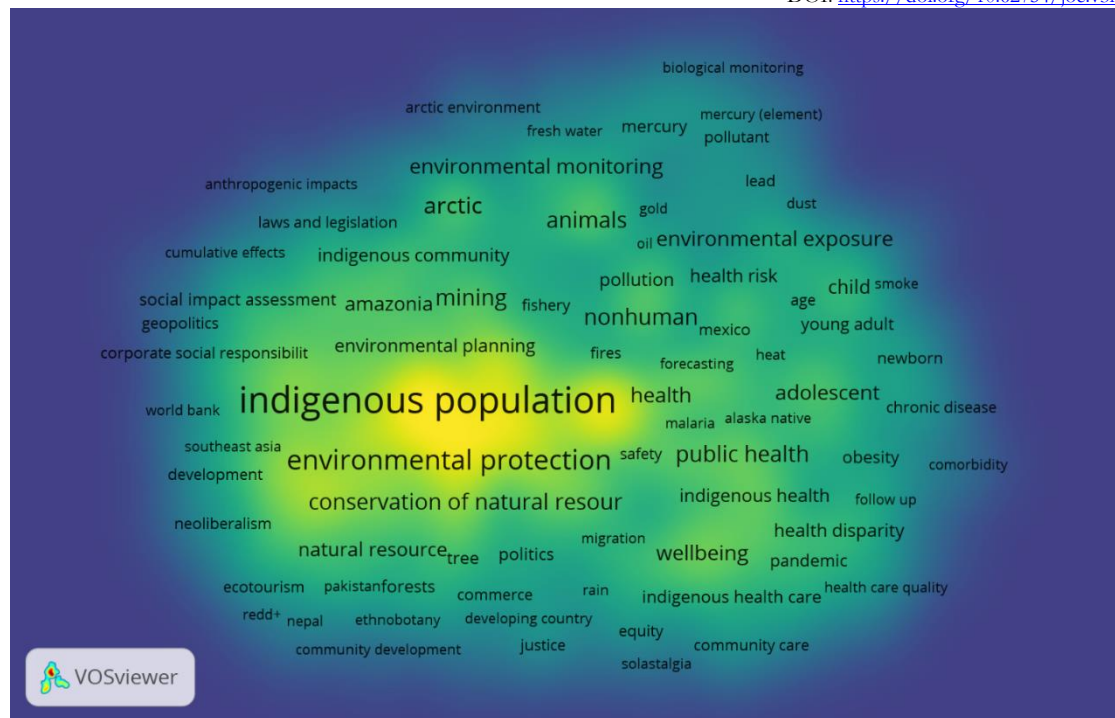


Figure (7) Network of All Keywords Density

Another significant feature was the coexistence of geographical and population-related terms possessing a high capacity for articulation. "Australia" recorded 96 occurrences and a link strength of 1,476, while "Arctic" reached 77 occurrences and a link strength of 959. Terms such as "Amazonia," "Alaska," "American Indian," "British Columbia," "New Zealand," "Ecuador," and "Colombia", along with specific references like "Māori," "Inuit," and "Native American", also appeared with high visibility. This territorial presence indicated that the literature drew upon well-defined regional settings, rather than constructing an abstract and decontextualized discourse. In other words, the problem was investigated within concrete contexts where environmental pressures, indigenous peoples, and territorial disputes converge.

The overlay visualization added a relevant temporal nuance. Certain terms with a more recent average publication date were associated with agendas that have gained prominence in recent years, such as "social determinants of health" (averaging 2021.8077), "natural disaster" (2022.3333), "Native Hawaiian or Other Pacific Islander" (2022.4286), "climate adaptation" (2021.6667), "mine closure" (2021.8333), and "behavior change" (2021.1429). In contrast, terms such as "Australia" averaged 2016.0417, "biodiversity" 2016.9204, "environment" 2016.2333, and "social impact" 2014.4483, suggesting a thematic foundation more firmly established within the field's trajectory. This temporal distinction demonstrated that the network combined consolidated core themes with issues of more recent emergence, particularly those linked to health, adaptation, and risk management (figure 8).

interest has not been limited to the exploitation phase, but has begun to more clearly incorporate discussions regarding closure, remediation, and post-project management.

The fourth line was organized around public health, environmental exposure, and socio-health inequalities. The network highlighted the importance of terms such as "public health," "child," "child health," "mortality," "morbidity," "risk factor," "social determinants of health," "rural health," "quality of life," "drinking water," "air pollution," "arsenic," "bioaccumulation," and "biomonitoring." This thematic constellation revealed that environmental impact has also been studied in terms of disease, toxic exposure, health vulnerability, and living conditions. The recent emergence of "social determinants of health" reinforces the idea that the literature has begun to shift some of its emphasis away from isolated environmental exposure toward frameworks that integrate inequality, access, structural conditions, and collective health.

The fifth line of inquiry was linked to environmental justice, colonialism, and territorial rights. Terms such as climate justice, justice, social justice, colonialism, settler colonialism, racism, recognition, power relations, collective action, and land rights demonstrated that a segment of the field interprets environmental impact not merely as a biophysical or technical problem, but as an expression of historical relations of inequality. This line proved particularly relevant because it connected environmental issues with disputes regarding recognition, self-determination, and the unequal distribution of risks and benefits.

The sixth line focused on Indigenous knowledge, governance, and participation in environmental management. Within this axis, terms such as knowledge, scientific knowledge, public participation, public policy, agency, capacity building, negotiation process, regulatory framework, and resource management gained prominence. Although this line was not the most dominant in terms of absolute frequency, its position within the network suggested a persistent link between the discussion on impacts and the fundamental question of who defines the criteria for management, assessment, and response. Consequently, the literature not only describes environmental damage but also details processes of institutional mediation, public participation, and the situated production of knowledge.

Conclusions

The literature indexed in Scopus regarding environmental impact and indigenous peoples reveals a field that has recently expanded and now exhibits greater publication stability than in its initial stages. More than half of the corpus was concentrated between 2019 and 2023, indicating that the subject gained academic density in recent years and ceased to occupy a sporadic position within the analyzed database. This pattern supports the argument that this is not a marginal line of inquiry, but rather a research domain that has achieved continuity within international scientific production.

The field presents a markedly interdisciplinary configuration, albeit one organized around a well-defined core. The quantitative proximity between Environmental Science (811 documents) and Social Sciences (767) demonstrates that the issue has been studied at the intersection of ecological processes and social, political, and territorial relations. Added to this is the significant weight of areas such as Agricultural and Biological Sciences, Medicine, and Earth and Planetary Sciences, suggesting that an understanding of the environmental impact on indigenous peoples is constructed from multiple frameworks rather than from a single disciplinary tradition.

The geographic and thematic structure of this scholarly output reveals a clear concentration within institutions and countries of the Anglophone sphere, while the keyword network situates the debate around climate change, biodiversity, public health, extractivism, and territorial management. These characteristics indicate that the field has consolidated recognizable agendas and stable channels of dissemination; however, they also highlight an asymmetry between the territories where many of these socio-environmental conflicts occur and the academic systems that command the greatest international visibility for this research.

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