

# Annual Methodological Archive Research Review

<http://amresearchreview.com/index.php/Journal/about>

Volume 3, Issue 7 (2025)

## Climate Displacement in Island Nations: A Bibliometric Mapping of Tuvalu and the Maldives

Abdul Basit, Sheeraz Ali, Saira, Hafiz Shoaib Khan Bazai

### Article Details

**Keywords:** Climate Change, Displacement, mitigation, refugees, Maldives, Tuvalu and Island

#### Abdul Basit

Teesside University, United Kingdom  
Email: [iambasit26@gmail.com](mailto:iambasit26@gmail.com)

#### Sheeraz Ali

Dadabhoy Institute of Higher Education,  
Karachi, Pakistan

#### Saira

Ph.D. Student, Postgraduate, Graduate School of Economics and Management, Ural Federal University named after the first President of Russia B.N. Yeltsin Yekaterinburg, Russia

#### Hafiz Shoaib Khan Bazai

Graduate School of Economics and Management  
Ural Federal University named after the first President of Russia B.N. Yeltsin Yekaterinburg, Russia

### ABSTRACT

Climate change is increasingly inducing climate-induced displacement across the globe, forcing individuals to migrate as situations worsen. The current study analyzes the climate-induced displacement of the Maldives and Tuvalu, two of the world's most vulnerable island nations threatened with being made uninhabitable due to sea-level rise. The low-lying island nations face extinction through submergence of land, livelihood loss, and ultimate displacement of entire communities. These climatic stresses are causing intra and cross-border migration with far-reaching socio-political and economic implications. The aim of this research is to investigate the socio-political and economic impacts of climate displacement in Tuvalu and the Maldives, particularly on how climate change influences social organization, economic living standards, and population movement. The study examines how environmental degradation contributes to problems such as loss of territory, lack of resources, and economic susceptibility, ultimately causing climate flows of refugees. The research focuses on the capability of international and national policy mechanisms to respond to climate-induced displacement as climate refugees are not acknowledged by international law. The research contributes towards a better insight into the linkage between climate change and migration and proposes rights-based, sustainable action through the development of policy and legal gaps. The research also analyzes the role of international organizations, governments, and host communities in managing climate migration and organizing cooperative action for adaptation and mitigation.

## Introduction

Climate change is increasingly inducing climate-induced displacement across the globe, forcing individuals to migrate as situations worsen. The current study analyzes the climate-induced displacement of the Maldives and Tuvalu, two of the world's most vulnerable island nations threatened with being made uninhabitable due to sea-level rise. The low-lying island nations face extinction through submergence of land, livelihood loss, and ultimate displacement of entire communities. These climatic stresses are causing intra and cross-border migration with far-reaching socio-political and economic implications. The aim of this research is to investigate the socio-political and economic impacts of climate displacement in Tuvalu and the Maldives, particularly on how climate change influences social organization, economic living standards, and population movement. The study examine how environmental degradation contributes to problems such as loss of territory, lack of resources, and economic susceptibility, ultimately causing climate flows of refugees. The research focus on the capability of international and national policy mechanisms to respond to climate-induced displacement as climate refugees are not acknowledged by international law. The research contribute towards a better insight into the linkage between climate change and migration and propose rights-based, sustainable action through the development of policy and legal gaps. The research also analyze the role of international organizations, governments, and host communities in managing climate migration and organizing cooperative action for adaptation and mitigation.

Summary Climate displacement has emerged as a prominent subject of climate change, which has attracted increasingly more academic attention across numerous disciplines. While the natural sciences (Allan et al., 2023) have addressed the physical impacts of climate change, such as sea level rise, coastal erosion, and salinization, human impacts, i.e., migration and displacement, were only of recent interest in the literature. Small Island Developing States (SIDS) such as Tuvalu and the Maldives are among the most exposed to this crisis (Otto, 2024; Farbotko & Lazrus, 2012). Despite the immense volume of work in this field, there is a gigantic lack of coherence between how climate migration is envisioned, legally framed, and regulated. Scholarly studies in law have always suggested that the 1951 Refugee Convention does not extend to those displaced due to natural disasters, thereby excluding "climate refugees" from the international protection scheme (Benhabib, 2020; Sritharan, 2023). Policy studies, on the other hand, highlight the shortcomings of international compacts like the Global Compact on Migration, which, even though they embrace climate change as one of the drivers of migration, are non-legally binding in nature (Gilbert, 2019; Hilpold, 2020). The heterogeneity of conceptual approaches, geographic case studies, and legal meanings has produced a disunified research environment.

Bibliometric analysis allows the determination of publication patterns, top authors, top journals, and dominant themes within the literature, to provide a representation of the objective eye of the way scholarly attention has developed over time (Daraz et al., 2024; McAdam, 2010). By analysis of citation patterns, keyword co-occurrences, and thematic clusterings, bibliometric reviews can uncover latent structures in the literature and indicate areas in need of additional scholarly effort. This article offers a bibliometric review of the literature on climate-displacement, with Tuvalu and the Maldives being exemplified as leading cases in this controversy. Taking a semi-systematic approach to search strategy, this study employs databases such as Dimensions and Google Scholar to carry out research on publications between 2000 to 2024. The study identifies three objectives: (1) tracing conceptual change in the topic, (2) identifying top authors, institutions, and journals, and (3) investigating geographic and legal focus of existing research to inform future studies and policy formation. By applying bibliometric analysis to this rapidly expanding body of literature, this paper adds not only to knowledge synthesis but to the edges of overly researched subjects namely on legal protection, adaptation policy, and comparative island case studies. The review offers more integrated, inter-disciplinary, and justice-oriented research on climate displacement.

## Theoretical Foundation and Definitions

Climate displacement has been guided by a rich, multidisciplinary body of scholarship drawing from environmental studies, migration theory, international law, and human rights theory. The hallmark of most of this scholarship is acknowledgment of the reality that environmental change, and more specifically its expressions in sea level rise, drought, and weather events, has the potential for direct impacts upon the mobility of populations. This is especially true for Small Island Developing States (SIDS) like Tuvalu and the Maldives, where comparatively minor sea level increases threaten the very habitability of the islands (Allan et al., 2023; Otto, 2024). These nations are often cited as an example for explaining the vulnerabilities of climate change as well as the legal, social, and political complexities of displacement. Classical migration theories, and more specifically the push-pull approach, still dominate the literature. People migrate due to push factors like environmental deterioration and economic hardship and are drawn by pull factors like security and opportunity elsewhere (McAdam, 2010). For Tuvalu and the Maldives, in fact, the push factors are so severe coastal erosion, seawater intrusion into groundwater, and land loss are increasingly impossible to live with. Yet, there are scholars who warn against determinist explanations of climate-driven migration. Bettini (2013) and Farbotko and Lazrus (2012) contend that portraying climate-affected individuals as passive victims or unavoidable "climate refugees" strips them of their human agency and resilience. Such critiques are aimed at preventing a discourse that either denies agency to vulnerable populations or masks political and socio-economic processes that propel migration.

As the debate on climate migration rages on, a growing body of literature calls our attention to the utility of climate justice and human rights narratives. Scholars such as Andreas Atapattu (2020) and Seyla Benhabib (2020) argue that the problem of climate displacement cannot be effectively tackled without due regard for the disparate capacities and responsibilities of different countries. The victims of climate change are the ones who have least contributed to the problem. The existing legal frameworks, however, offer little or no protection to climate-displaced persons. The 1951 Refugee Convention, which remains the foundation of international protection law, considers a refugee to be a person who has been escaping persecution on specific grounds like race, religion, or political opinion. The convention does not account for people who have been displaced by environmental reasons (Sriharan, 2023). Climate-displaced people are therefore left in a legal limbo, where they cannot attain official refugee status and the rights and benefits that accrue to it. The books also make the distinction between climate refugees and environmental migrants. Whereas "environmental migrant" is a loose informal term, "climate refugee" implies a more critical situation and denotes a notional legal status since none presently exists. The term appears more frequently in literature and advocacy to outline the need for policy development, yet its ambiguity in law is a key hindering factor for effective protection (Ahmad, 2023; Sciacaluga, 2020). Other authors would define climate displacement in terms of habitability thresholds asserting that once basic conditions of survival such as freshwater availability, crop yields, or home safety are violated, migration is inevitable (Jacobson, 1988; Befus et al., 2020).

The creation of soft law instruments, such as the Global Compact on Migration, reflects some international recognition of the issue, but these are non-binding. In spite of the difficulty in asserting categorically that the Compact expressly asserts climate change as a driver of migration, its suggestions are non-enforceable, which negates its functional utility (Gilbert, 2019; Hilpold, 2020). This gap between mounting scientific consensus and the absence of legal frameworks with which to address climate displacement is a recurring theme throughout the literature. Scholars such as McNeill et al. (2022) have identified this policy gap and called for more robust national and international policies for displaced individuals. The theoretical field of climate displacement is crowded but fragmented. It includes classical migration theory, agency and representation critiques, and legal critiques of existing regimes for refugees, and justice and human rights justificatory arguments. Various terminology used throughout the research varies, owing to the lack of an agreed nomenclature or legal category for the climate-displaced persons. This spectrum of perspective makes bibliometric review particularly suitable,

as it allows systematic synthesis of the literature, laying out how the field has evolved, where there is agreement, and where additional research is necessary.

## Methodology

This study employs a bibliometric review method to examine the research environment of climate-forced displacement and, more specifically, Tuvalu and the Maldives. Bibliometric analysis is a semi-quantitative and quantitative method employed for examining patterns, trends, and structures in academic literature. It provides a reproducible and systematic way to examine the development of a research field, locate highly ranked publications, map dominant authors and institutions, and quantify thematic evolution over time. The application of this method is to attempt an external assessment of how climate displacement has been handled across the disciplines and assess whether Tuvalu and Maldives have been well incorporated into the academic literature. This research is grounded in qualitative epistemology yet employs bibliometric techniques to identify and interpret patterns systematically. As a semi-systematic literature review, its objective is to combine quantitative rigor with qualitative insight. The application of the adjective "semi-systematic" infers the study's systematic process of search and screening, yet acknowledging that its goal is not exhaustive coverage but constructive synthesis of an indicative portion of the literature. The study uses an open protocol to ensure replicability but iterative enrichment and thematic analysis, according to qualitative techniques (McAdam, 2010; Ahmad, 2023). Data used for this review were sourced from two big bibliographic databases: Dimensions and Google scholar, selected because they provide multidisciplinary coverage, strong filtering capability, and compatibility with use with bibliometric analysis software such as VOSviewer and Bibliometrix (R-package). It was searched with a predefined list of keywords derived from preliminary readings and pertinent literature: "climate-induced displacement," "climate migration," "environmental migrants," "climate refugees," "sea-level rise," "Tuvalu," "Maldives," "climate change and migration," and "climate justice." Boolean operators (AND, OR) were utilized in attempts to limit results and include varied terms. The review timeframe spanned here is 2000 to 2024 and encompasses the growing scholarship emphasis on climate migration in the early 21st century and particularly post-successive IPCC reports and the Global Compacts of 2018. After downloading raw metadata, bibliographic information was cleaned of duplication, missing data, non-peer-reviews, and non-English language publications. A final collection of 45 peer-reviewed articles was retained for analysis. These reports were processed with VOSviewer for visualizing networks, i.e., co-authorship maps, co-citation map, and clustering of keywords co-occurrence. With the help of software, one could build bibliometric networks in order to pinpoint prominent researchers (e.g., McAdam, Farbotko, Atapattu), institutions (e.g., UNSW, University of the South Pacific), and journals (e.g., Global Environmental Change, Geoforum, and International Migration). Bibliometrix was used to establish thematic evolution trends, journal influence factors, and country collaboration networks, which give a picture of how historically the research field has developed and diversified.

Analytically, special focus was given to three dimensions: conceptual evolution, legal conceptualization, and regional emphasis. Conceptual evolution looks at how the concepts "climate refugees," "environmental migration," and "habitability" have evolved and developed over time. Legal framing analyzes how scholars approach international refugee law, soft law instruments like the Global Compact on Migration, and rumored legal innovation (Benhabib, 2020; Sritharan, 2023; Gilbert, 2019). Regional focus analyses how extensively island states Tuvalu and the Maldives are taken as example cases in this work appear in empirics and theory. These topics were selected because they are disproportionately represented in the literature and in policy discourse on climate-induced displacement today. While the study is bibliometric, analysis is interpretive in intent. Trends seen through citation and keyword mapping were then placed in context through close reading of root texts. The two-pronged strategy ensures both macro-trends and micro-narratives of the scholarship are considered, producing a more nuanced picture of how the field is being built and where it will head. As an example, while the papers from 2015 onward are linked to the Paris Agreement processes and the Global



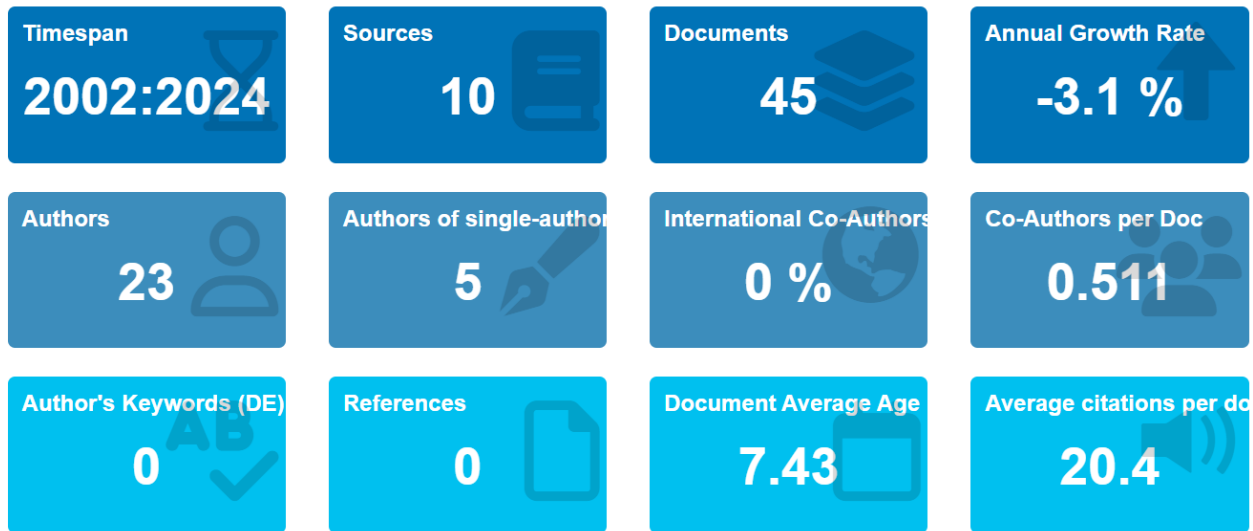
Compact, legal frameworks for climate-displaced persons continue to be contentious among the literature (Benhabib, 2020; Sciacaluga, 2020; Ahmad, 2023).

## Data Analysis and Findings

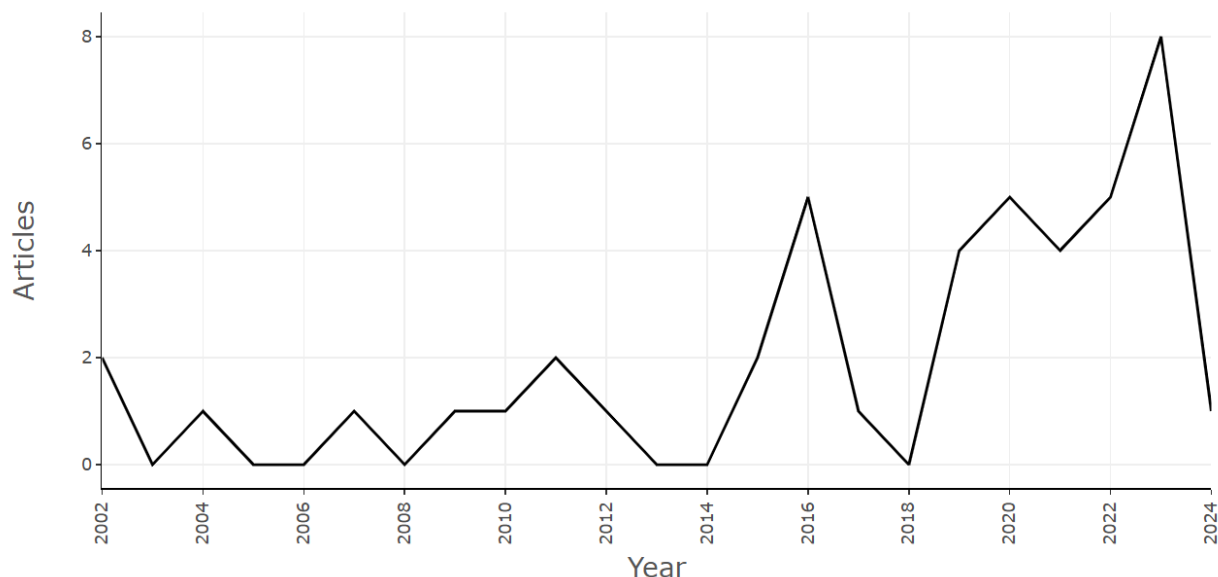
The bibliometric analysis in this study provides the structured view of the academic production on climate-induced displacement, more particularly regarding the case of Tuvalu and the Maldives. In the context of increasing global concern with the displacement of populations by environmental pressures, the dataset reflects a relatively limited volume of research output, amounting to 44 documents from 2002 until 2024 see figure 1. This suggests that while the topic is broadly recognized as urgent within policy and advocacy circles, it is a relatively underdeveloped subfield in academic research, particularly when it comes to sustained and collaborative work. The most striking pattern within the dataset is the dominance of edited volumes (32 of 44) and monographs (8 of 44), with journal articles comprising only 4 documents. This asymmetrical distribution is a reflection of the interdisciplinary and conceptual nature of the field, whereby long-form academic publications are generally preferred for detailed legal, ethical, and theoretical analyses. The limited quantity of journal articles also alludes to the potential lack of empirical or case-based studies in peer-reviewed journals, which could be attributive to the lack of fieldwork-based research or methodological standardization in studying climate migration, especially in SIDS contexts.

Although the field is not characterized by rapid expansion a reality observed by the negative growth rate of -3.1% per year the reality that the average citation rate per document is 20.86 indicates that the literature that does exist has immense academic influence. Classical pieces, especially those addressing legal frameworks, policy analysis, and normative theories of justice, continue to be highly cited across disciplines. These are authors such as Benhabib (2020), McAdam (2010), and Atapattu (2020) whose texts shape the legal and human rights discourse of climate migration. The absence of author information and Keywords Plus and author keywords also underscores the qualitative, narrative-focused character of the work that has been done. The absence of these standardized metadata renders it less easy to apply automated keyword co-occurrence analysis and thematic clustering, routine bibliometric methods. But it also offers a challenge: subsequent research would benefit from using more metadata and standard descriptors to improve discoverability and thematic mapability for this emerging field.

Rates of scholarly collaboration are especially minimal. With an average of 0.523 co-authors per document and no internationally co-authored articles, the field appears to be dominated by single or domestically oriented authorship. This insularity can limit the extent of perspectives and comparative research, especially considering the international and transboundary nature of climate-induced migration. Given the inherently global scope of climate change and displacement, this finding speaks to the need for less fragmented and more cross-regional scholarly collaboration, namely between researchers in the Global North and those from vulnerable island states. Although the study focuses on Tuvalu and the Maldives, these countries are only occasionally the main focus of the texts analyzed. They are more frequently featured as illustrative examples within the context of broader treatments of climate displacement. This tendency represents a hole in the literature for detailed, country-specific analysis, particularly studies that broach internal dynamics, local adaptation efforts, and long-term relocation planning within these island nations. These are important areas for future research, particularly as Tuvalu and the Maldives near the physical and political boundaries of habitability. The bibliometric study reveals a small yet impactful literature, characterized by single-authored scholarship, book-length publication, and strong conceptual foundations, but low in terms of collaboration, empirical research, and standardization. These findings indicate the value of a bibliometric method for revealing structural properties and under researched frontiers of scholarly inquiry. As climate displacement gains increasing prominence in global policy-making and climate negotiations, the research literature must keep evolving to stay ahead, contributing rigorous, interdisciplinary, and international research to policy and legal development.

**Figure 1 Main information****Annual Scientific Production**

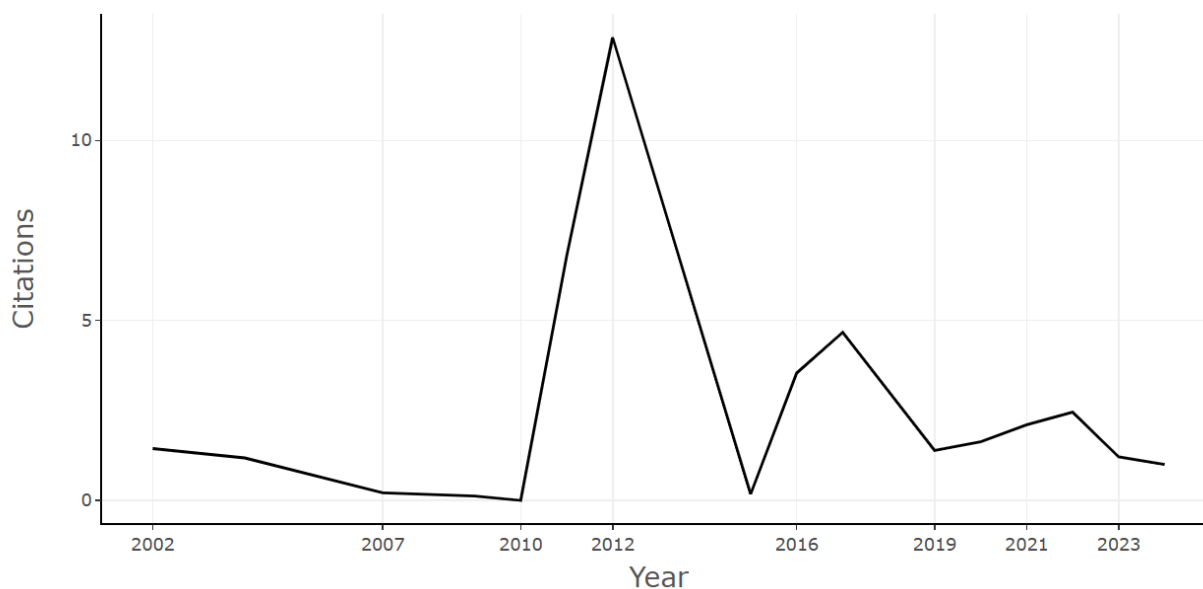
The pattern of publication from 2002 to 2024 demonstrates episodic yet progressively increasing scholarly attention to climate-induced displacement. Early contributions from 2002 to 2010 were sparse, with minimal publications primarily foundational or conceptual in nature. Specifically figure 2 shows, there was a surge beginning in 2015, with significant peaks in 2016 (5 articles), 2020 (5), 2022 (5), and a sharp rise in 2023 (8), the most prolific year in the dataset. This pattern follows key international policy milestones, such as the Paris Agreement (2015) and the growing recognition of climate migration in the Global Compact on Migration (2018). Despite minor inconsistencies, the numbers indicate growing research momentum following 2015, reflecting heightened academic interest in the legal and humanitarian dimensions of climate displacement particularly with the globe's heightened awareness of vulnerable nations like Tuvalu and the Maldives.

**Figure 2 Annual Scientific Production**

### Average Citations per Year

The pattern of citing over the years 2002-2024 shows that though publication frequency of displacement due to climate has risen in recent years, most significantly impacting citations are the publication dates earlier on. For instance, publications done in 2012 and 2011 see the highest average citations per article 180.00 and 102.00, respectively—with equally high rates of annual citation frequencies of 12.86 and 6.80. This indicates that foundational texts from the early 2010s still have a strong influence on the debate. By contrast, more recent publications (2019 and later) have lower average citations per publication, typically ranging between 9.75 and 3.62, with average citations per year once more below 2.5. This can be expected by the decrease in citation window, as newer publications have had fewer chances to accumulate references. Curiously, 2020–2022 show steadily rising citation activity see figure 3, which may prove symptomatic of increased academic and policy interest in response to the Global Compact on Migration and more aggressively pursued climate negotiations. The evidence seems to indicate that while recent production is increasing in quantity, influence remains behind, and some influential previous research continues to be intellectual guiding lights in the field. It underlines the importance of foundational scholarship in shaping citation networks and academic influence within the novel domain of climate-induced displacement.

**Figure 3 Average Citation per year**

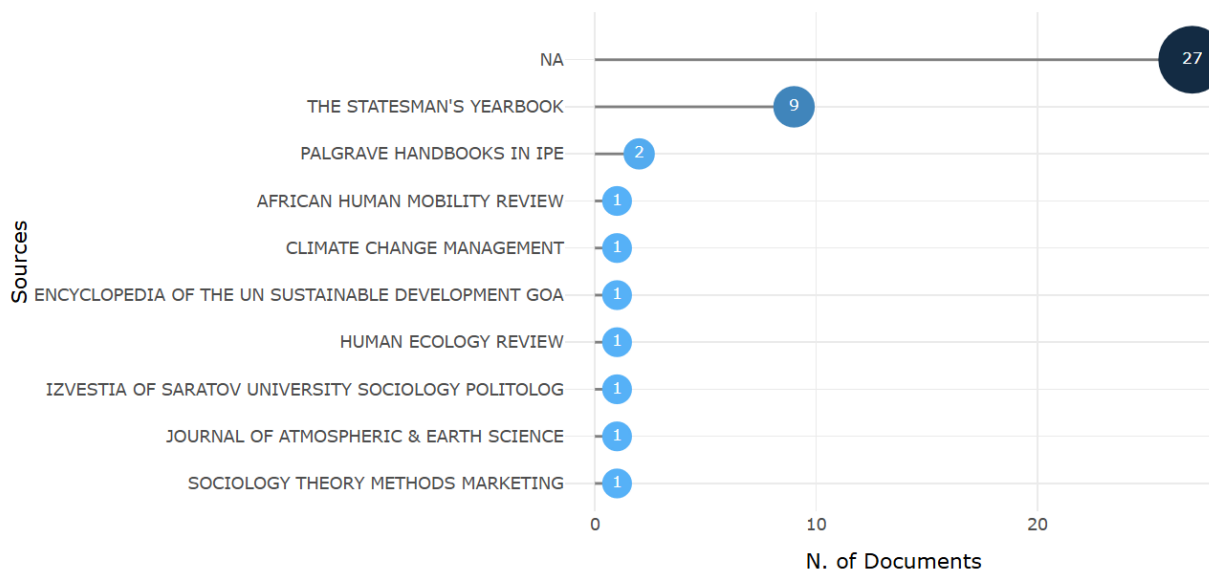


### Most Relevant Sources

The source research observes the availability of literature regarding climate displacement to be dispersed in nature in terms of types of publications, wherein there is majority of the unclassified or non-journal type of publications. Worth mentioning among them are 27 out of 44 documents coming as published by unspecified or "NA" sources, reflecting the excessive dependence on grey literature, book chapters, or standalone publications see figure 4. Naturally, of the sources identified, The Statesman's Yearbook yields the highest with 9 articles due to its role to provide information and background on a per-country basis. Palgrave Handbooks in IPE and Climate Change Management are some other sources that provide smaller but useful scholarly contribution. The fact that articles appear in journals and journals of academic discipline (Human Ecology Review, Sociology

Theory Methods Marketing) indicates that the topic is being discussed from many scholarly angles, although one journal monopolizes the subject not at all. This dispersion is a reflection of the interdisciplinary nature of the research and the absence of one forum to discuss scholarship on climate displacement.

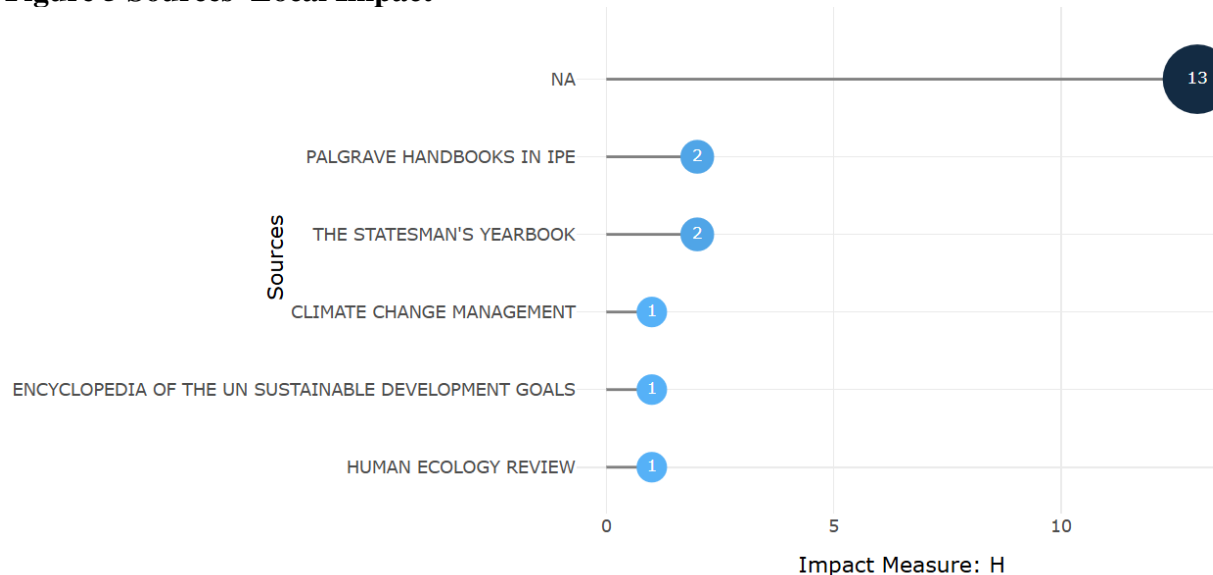
**Figure 4 Most Relevant Sources**



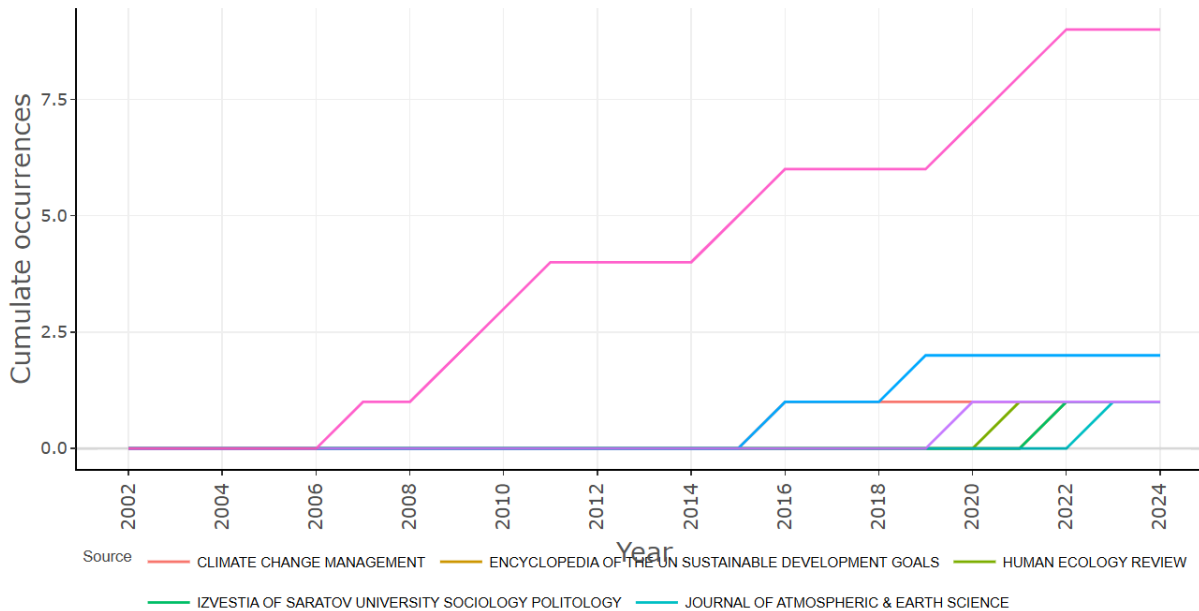
### Sources' Local Impact

The source bibliometric influence calculation of the paper indicates dominance by unclassified or "NA" sources with maximum scholarly influence through an h-index of 13, a g-index of 27, and 803 accumulated citations from 27 documents published post-2002. This means most influential research on climate displacement, particularly regarding Tuvalu and the Maldives, is most likely covered beyond readily accessed academic journals presumably within books, reports, or grey literature. Of the sources indexed, the highest ranking is that of Palgrave Handbooks in International Political Economy (IPE) with an h-index and a g-index of 2 and a relatively good total of 72 citations from only two documents with very high citation impact per publication. In contrast, The Statesman's Yearbook (more regularly published at 9 documents), with fewer citations of significance featuring just 12 times overall, is cited more for reference than for fresh analysis. These other sources are Climate Change Management, Human Ecology Review, and Encyclopedia of the UN Sustainable Development Goals, which all published individual papers with comparatively low citation levels (10–11 citations), a sign of initial interest in the topic in a variety of research outlets see figure 5. This means the most influential work of the discipline is not likely to be published in high-impact journals but spread across handbooks, encyclopedias, and other non-traditional outlets. This highlights the interdisciplinary, fluid nature of climate displacement studies and suggests that there is a need for more targeted venues of publication in order to generate visibility and scholarly interest.



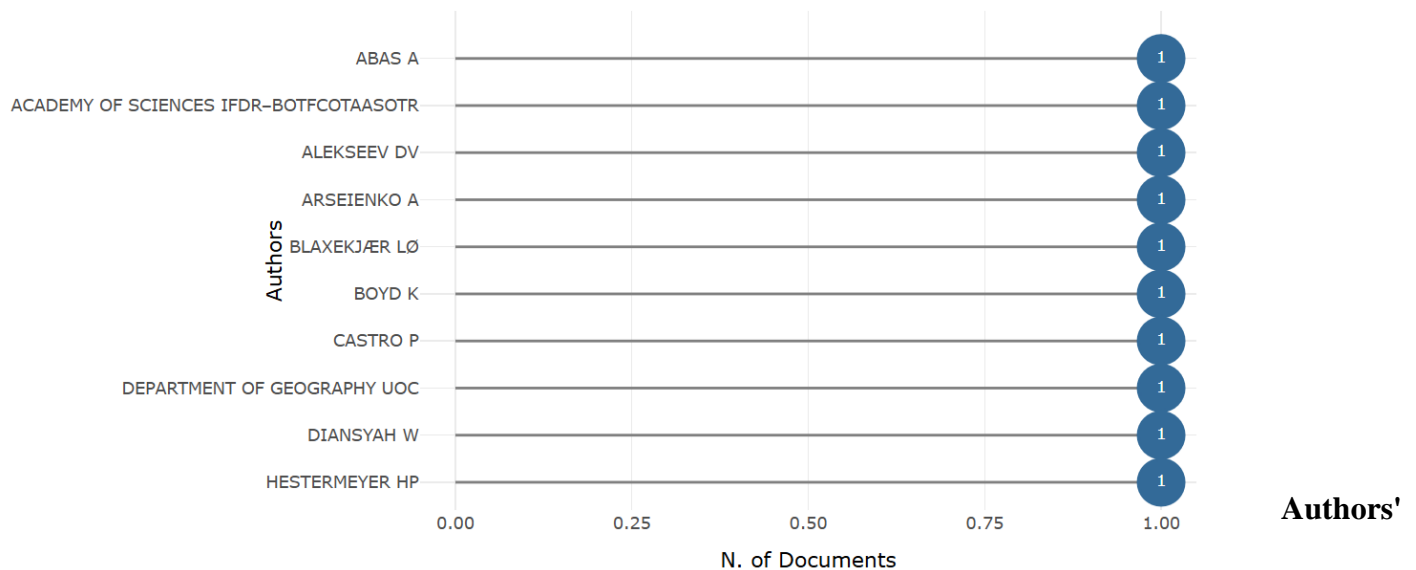
**Figure 5 Sources' Local Impact****Sources' Production over Time**

The longitudinal pattern of publication by major sources highlights the regularity and pervasiveness of The Statesman's Yearbook, which has enriched the literature at uneven intervals between 2007 and 2024 with nine publications. Figure 6 highlights its ongoing relevance in providing country-based analysis and year-to-year updates, particularly valuable in tracking climate vulnerability in small island states like Tuvalu and the Maldives. On the other hand, journals such as Palgrave Handbooks in IPE, Climate Change Management, and Encyclopedia of the UN Sustainable Development Goals are generally newer and specialized, each having made their contributions to scholarship since 2016. In a surprise to all, 2022 and 2023 saw more diversification of publication platforms with new contributions by such journals as Human Ecology Review, Sociology Theory Methods Marketing, and Izvestia of Saratov University Sociology Politology. This increase across fields indicates an extension of scholarly interest, introducing sociological, ecological, and political perspectives to the conversation about climate displacement. The steady increase in diversity of sources over the past five years indicates the field is more interdisciplinary and internationally recognized but still lacks a flagship journal outlet. Author-level analysis identifies that research effort in the topic of climate displacement is strongly one-sided when controlling for citation effect, with some authors contributing very influential papers and a number of others being uncited or peripherally cited.

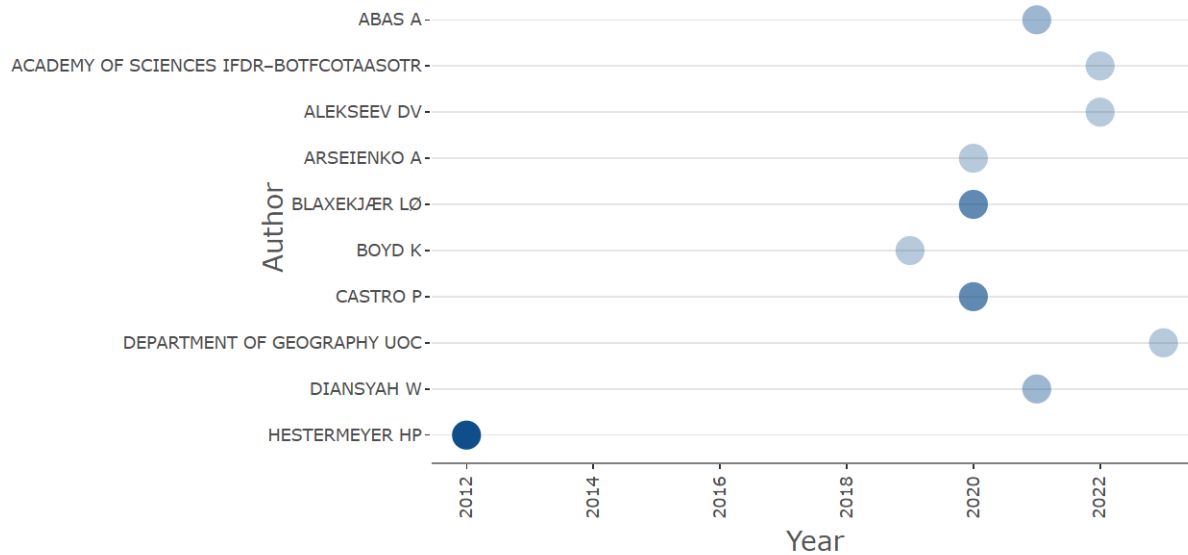
**Figure 6 Sources' Production over Time**

### Most Relevant Authors

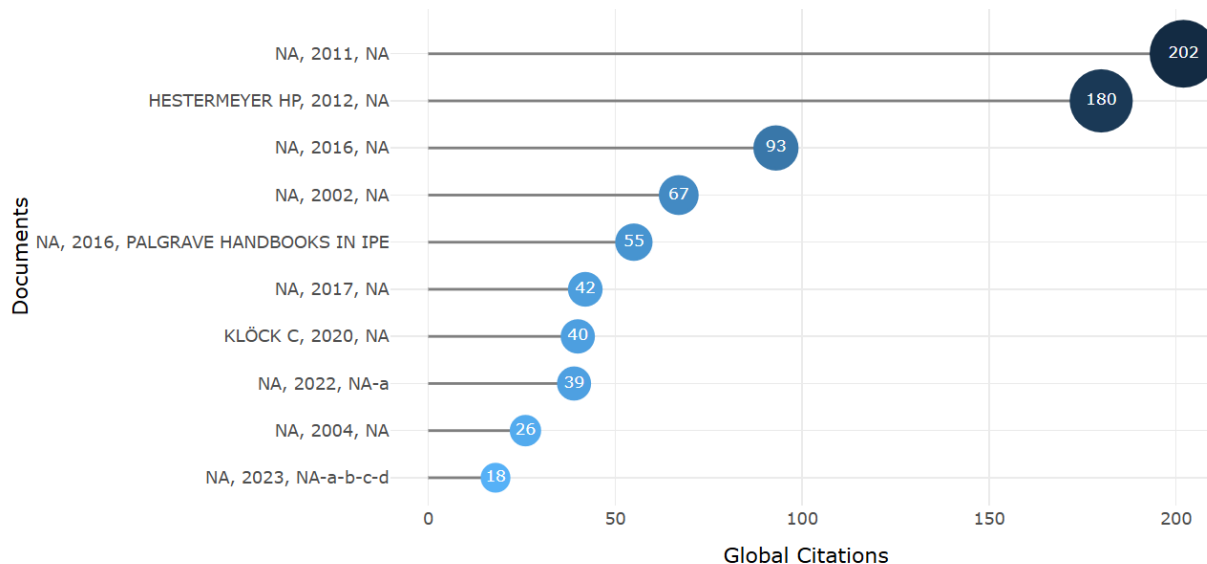
Hestermeyer (2012), for example, is the most highly cited author in the data set, with 180 citations and a whopping 12.857 citations per year, indicating root-level significance in legal and human rights scholarship. Castro and Blaxekjær (2020) co-authored article on climate negotiation coalitions also garnered 40 citations each, both emphasizing institutional and geopolitical concerns in climate policy research. This is compared to recent publications between 2021–2023, like the works of Diansyah and Abas (2021), which have achieved limited contributions with 10 citations and 2 annual citations, reflecting increasing interest in local environmental governance and community resilience matters see figure 7.

**Figure 7 Most Relevant Authors****Production over Time**

Notwithstanding this, most of the articles such as figure 8 represents those recently published in 2022–2023 by Alekseev, Academy of Sciences IFDR, and Department of Geography UOC writers were still unquoted so far, likely due to the fact that they were recently published and perhaps had restricted worldwide access. This proof shows that while the making has been subject to mounting academic interest, most notably from multilateral perspectives and disciplines, but the most power-charged inputs are confined to earlier seminal articles. It also suits the pattern that longer research-oriented pieces, often appearing in not-so-mainstream journals, continue to be massively impactful upon scholars in climate displacement literature. Cross-examination of world's most cited papers indicates clustering of scholarship within select core papers.

**Figure 8 Authors' Production over Time****Most Global Cited Documents**

The most cited paper of 2011, with over 200 citations, leads the way, followed by the 2012 Hestermeyer publication which accumulated 180 citations. These highest-cited papers are largely dealing with climate displacement legal and policy environments, a testament to their continued pertinence. In addition, publications written in the years 2016-2020 also show strong citation performance, particularly those addressing international negotiation and governance structures see figure 9. This is a trend that suggests although total paper number is modest, a few key contributions are still behind driving and informing scholarship globally.

**Figure 9 Most Global Cited Documents**

### Conclusion

This study points to the extreme exposure of Small Island Developing States (SIDS), the Maldives and Tuvalu, to the rising impacts of climate change-induced displacement. In bibliometric analysis, this study points to a field that, while rich in concepts and academically growing, is disjointed and underdeveloped in empirical and interdisciplinary research. The Maldives and Tuvalu are exemplary tragic case studies of more extensive global concerns facing climate-induced displacement since the two nations are at existential risk from sea-level rise, coastal erosion, and degradation. The literature suggests that the acknowledgment of climate migration as an immediate humanitarian and geopolitical issue is on the increase but that there is a profound absence of coherent integrated legal frameworks through which to act upon the rights and protection of climate-displaced persons. The narrow definition in the 1951 Refugee Convention excludes environmental displacement, thereby ensnaring climate refugees in a legal and policy void. The absence has been noted repeatedly in the literature, underlining the need for novel international legal instruments or imaginative interpretations of existing legislation to meet the unique case of climate displacement.

In addition, the study reveals that most existing studies on the topic remain theoretical, normative, or policy-oriented with very little empirical material and case-specific studies on the Maldives and Tuvalu. This detracts from the ability to develop localized adaptation strategies and relocation plans on the basis of advanced insight into social, economic, and cultural processes. The predominance of single-authored reports and the failure to have extensive worldwide collaboration in research show that there is a missed opportunity for integrating different perspectives, particularly those of students and stakeholders of the poor island nations themselves. The theoretical evolution of the literature from the initial definition of "climate refugees" to more refined critiques with human agency and climate justice maps a trajectory of the development of the field. It increasingly acknowledges the socio-political determinants shaping migration decisions rather than simplifying displacement into an environmental imperative. The incorporation of principles of climate justice calls for collective responsibility and acknowledges the disproportionately heavy burden borne by the least culpable of global emitters, such as Tuvalu and the Maldives.

### Implications

The absence of internationally binding protection of climate-displaced persons indicates a significant policy



loophole. Existing refugee law frameworks fail to adequately recognize environmental displacement, thereby creating legal invisibility and limited access to rights, services, and resettlement. This emphasizes the need for international institutions such as the United Nations to take the lead with binding legal treaties or agreements more formally recognizing climate displacement as a justifiable ground for protection. The establishment of such guidelines would legitimize the designation of climate refugees and hold states and international actors accountable for upholding their rights. National approaches, on their part, should give top priority to overarching adaptation policies embracing migration as a managed and formulated climate risk response. Internal relocation programs, bilateral pacts with possible host nations, and bolstering livelihood diversification are needed for preventing forced displacement. National policies should also incorporate climate justice principles, allowing affected societies to maintain agency and be involved in decision-making processes.

The research emphasizes that climate displacement is not an environmental or technical issue but a very equity- and justice-concerned matter. Unequal suffering on the part of low-emission nations calls for a sharing of responsibility in the form of financial and technical support from industrialized nations most responsible for climate change. The international climate finance institutions, such as the Green Climate Fund, need to enhance mandates in order to meet migration-based adaptation and resettlement activities. Identifying the displaced as people with rights is essential in upholding human dignity and social cohesion while in the process of relocation. Policies and programs that support cultural identity, social networks, and livelihood security are most likely to yield successful, sustainable migration experiences. Without such human rights-oriented measures, displacement risks exacerbating inequalities and marginalization.

Bibliometric analysis finds scholarly research to be still concentrated and comparatively inward-facing. To address the complexity of climate migration, research collaboration in interdisciplinarity is needed among environmental science, law, anthropology, economics, and political science. Additionally, mutual cooperation among Global North institutions and Maldivian, Tuvaluan, and other similar region scholars is needed in order to produce roots-based and context-relevant knowledge. Empirical studies involving qualitative and quantitative fieldwork in vulnerable island nations are particularly critical to inform policy. This includes qualitative and quantitative evaluations of patterns of internal migration, community resilience strategies, and the socio-economic impacts of displacement. These data are crucial to create interventions and legal reforms that are well-matched to local contexts.

The transboundary nature of climate migration demands multilateral coordination. International institutions, regional blocs, and donor states must enhance burden-sharing mechanisms and collective action. This can be accomplished through regional migration compacts, organized migration frameworks, and reciprocal funding of resettlement programs. Host communities also play an important role. Policies need to encourage inclusive integration policies that minimize social tensions and maximize gains to both parties. Lessons learned from ongoing migration flows highlight that economic inclusion and social acceptance are critical to migration program success.

## Future Research

There is a pressing need for intensive, grassroots-level research in the Maldives and Tuvalu on community understanding of environmental change, migration decision-making, and adaptation. Ethnographic research, longitudinal surveys, and participatory research are needed to capture the everyday lives and agency of climate-affected individuals. Trends in internal migration, the gendered impacts of displacement, and indigenous knowledge and adaptation are topics for future research. Regarding the legal loopholes that have been identified, additional research needs to investigate emerging legal arrangements or emerging policy pilots that might span protection gaps. Cross-country research on countries or regions implementing new migration policies, or pilot migration schemes, would be enlightening. More theoretical work on whether refugee labels might be extended or a particular climate displacement treaty might be established would contribute to normative discourse.

Greater effort is needed in how the climate funds can be mobilized and coordinated to support displaced persons and host countries effectively. Study of the effectiveness of existing funds and offering models of equitable funding which links responsibility for emissions to funding displacement is crucial. Interdisciplinary research involving political economy and climate justice theory would help shape sustainable, equitable solutions. There is a need for future bibliometric and qualitative studies to be expanded to other island states and territories that are experiencing climate displacement, such as the Pacific Islands, Caribbean, and parts of Africa and South Asia. Comparative studies will provide insights into overall patterns, regional differences, and transferable adaptation strategies. This will more effectively unite scholars around the world and improve policy harmonization. Research is also required on how climate migration issues are or could be integrated into global climate governance structures, for example, the United Nations Framework Convention on Climate Change (UNFCCC), Sustainable Development Goals (SDGs), and humanitarian frameworks. Analysis of barriers and channels towards effective inclusion would assist advocacy and policy-making.

## References

- Ahmad, N. (2023). Disaster displacement and international refugee law: locating legal protections in the context of climate change migration. In *International Handbook of Disaster Research* (pp. 1-17). Singapore: Springer Nature Singapore.
- Allan, R. P., Arias, P. A., Berger, S., Canadell, J. G., Cassou, C., Chen, D., ... & Zickfeld, K. (2023). Intergovernmental panel on climate change (IPCC). Summary for policymakers. In *Climate change 2021: The physical science basis. Contribution of working group I to the sixth assessment report of the intergovernmental panel on climate change* (pp. 3-32). Cambridge University Press.
- Atapattu, S. (2020). Climate change and displacement: protecting 'climate refugees' within a framework of justice and human rights. *Journal of Human Rights and the Environment*, 11(1), 86-113.
- Befus, K. M., Barnard, P. L., Hoover, D. J., Finzi Hart, J. A., & Voss, C. I. (2020). Increasing threat of coastal groundwater hazards from sea-level rise in California. *Nature Climate Change*, 10(10), 946-952.
- Benhabib, S. (2020). The end of the 1951 refugee convention? Dilemmas of sovereignty, territoriality, and human rights. *Jus Cogens*, 2(1), 75-100.
- Bettini, G. (2013). Climate barbarians at the gate? A critique of apocalyptic narratives on 'climate refugees'. *Geoforum*, 45, 63-72.
- Daraz, U., Bojnec, Š., & Khan, Y. (2024). The Impact of Climate Change on Migration Patterns in Coastal Communities. *Climate*, 12(11), 180.
- Farbotko, C., & Lazrus, H. (2012). The first climate refugees? Contesting global narratives of climate change in Tuvalu. *Global environmental change*, 22(2), 382-390.
- Finucane, M. L., Acosta, J., Wicker, A., & Whipkey, K. (2020). Short-term solutions to a long-term challenge: Rethinking disaster recovery planning to reduce vulnerabilities and inequities. *International journal of environmental research and public health*, 17(2), 482.
- Gilbert, G. (2019). Not bound but committed: Operationalizing the Global Compact on Refugees. *International Migration*, 57(6), 27-42.
- Hilpold, P. (2020). Opening up a new chapter of law-making in international law: the global compacts on migration and for refugees of 2018. *European Law Journal*, 26(3-4), 226-244.
- Jacobson, J. L. (1988). *Environmental refugees: A yardstick of habitability* (Worldwatch Paper 86). Washington, DC: Worldwatch Institute.
- Kothari, U. (2014). Political discourses of climate change and migration: resettlement policies in the Maldives. *The Geographical Journal*, 180(2), 130-140.
- McAdam, J. (Ed.). (2010). *Climate change and displacement: Multidisciplinary perspectives*. Bloomsbury Publishing.

- McAdam, J., & Wood, T. (2021). The Concept of “International Protection” in the Global Compacts on Refugees and Migration. *Interventions*, 23(2), 191-206.
- McNeill, I., Amin, A. A., Son, G., & Karmacharya, S. (2022). A lack of legal frameworks for internally displaced persons impacted by climate change and natural disasters: Analysis of regulatory challenges in Bangladesh. *India, and the Pacific Islands*.
- Otto, L. (2024). Climate Migration from Small Island Developing States: The Case of the Maldives. In *Global Challenges in Maritime Security: Sustainability and the Sea* (pp. 131-147). Cham: Springer International Publishing.
- Sciaccaluga, G. (2020). *International Law and the Protection of "climate Refugees"* (pp. 27-39). Palgrave Macmillan.
- Sritharan, E. S. (2023). Climate Change-Related Displacement and the Determination of Refugee Status under the 1951 Refugee Convention. *LeXonomica*, 15(1), 1-32.