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Research Application Summary

# Beyond the borders: Conflicts over natural resources in Africa

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## Abstract

Conflicts over finite and shared natural resources continue to dominate headlines around the world. In particular, border regions have challenges in natural resource management. The regions include abundant natural resources, such as forests, energy, air, and rivers, typically associated with distance from the central authority. However, natural resource management becomes sensitive between each side of countries because of power differences or relationships. This study aimed at identifying characteristics of natural resources-based conflict management at the African border areas based on this context. Through a systematic review methodology, natural resource management conflict cases at the border regions were collected from SCOPUS's academic database between 2001 and 2021. The selected cases were analyzed with the categories focusing on various types of natural resources, conflicts, cooperation, and geographical area. The research results indicate various natural resources conflicts and cooperation occurring in African border regions. This research contributes to a better understanding of natural resources-based conflicts and suggests recommendations for designing natural resource management strategies or models at border areas.

Keywords: Africa, conflict management, international partnerships, natural resources, transboundary conservation

## Résumé

Les conflits liés aux ressources naturelles limitées et partagées continuent de faire la une des journaux dans le monde entier. En particulier, les régions frontalières ont des défis en matière de gestion des ressources naturelles. Les régions comprennent des ressources naturelles abondantes, telles que les forêts, l'énergie, l'air et les rivières, généralement associées à l'éloignement de l'autorité centrale. Cependant, la gestion des ressources naturelles devient sensible entre chaque côté des pays en raison des différences ou des relations de pouvoir. Cette étude visait à identifier les caractéristiques de la gestion des conflits basée sur les ressources naturelles dans les zones frontalières africaines en fonction de ce contexte. Grâce à une méthodologie d'examen systématique, les cas de conflits de gestion des ressources naturelles dans les régions frontalières ont été collectés à partir de la base de données académique de SCOPUS entre 2001 et 2021. Les cas sélectionnés ont été analysés avec les catégories axées sur divers types de ressources naturelles,

les conflits, la coopération et la zone géographique. Les résultats de la recherche indiquent divers conflits et coopérations liés aux ressources naturelles dans les régions frontalières africaines. Cette recherche contribue à une meilleure compréhension des conflits liés aux ressources naturelles et propose des recommandations pour la conception de stratégies ou de modèles de gestion des ressources naturelles dans les zones frontalières.

Mots clés : Afrique, gestion des conflits, partenariats internationaux, ressources naturelles, conservation transfrontalière

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## Introduction

Numerous analysts have predicted increasing disputes over natural resources such as air, fuel, water, and forest in the current global setting of expanding consumption, growing populations, and dwindling availability of natural resources (Green, 2005). Conflicts over natural resources, could arise from the trans-boundary contamination and deterioration of generally owned resources as well as inequitable resource distribution (Schnaiberg, 1994). Natural resource conflicts can take different forms based on the intensity, duration, and scope of disputes. Even though violent conflicts kill a large number of people and destroy ecosystems, there has been a dramatic increase in the number of wars and disputes in the Global South, many of them triggered, continued, or intensified from the abundance or scarcity of natural resources.

With such natural resource issues, the border regions of countries can act as a double-edged sword. Turner (1920) and Lattimore (1962) state that frontier areas attract founders to exploit the abundance of natural resources. Natural resource exploitation has undoubtedly been a significant contributor to border dynamics, in many cases causing great changes in both the frontier and core polity (Parker, 2002). Areas remote from the central region are often rich in natural resources such as woods in forests, fishes in seas, and oil in lands. Plants and animals do not recognize national boundaries, just like many of the forces that threaten them (Erg *et al.,* 2015). As the natural resources of border regions become hard to distribute, regardless of accessibility, the regimes on both sides of border become sensitive to degree of power or relations. Natural resource management is now commonly accepted as requiring action on a higher scale at the regional, national, and global levels.

The convoluted history of borderlands and center-periphery relations has affected the natural resource management of many countries. For example, the border regions between China, Thailand, and Burma have conflicts with regard to timber trade and agricultural land (Sturgeon, 2004). Such conflicts are diverse and occur worldwide, covering tropical forests bordering Malaysia and Indonesia as well as Peru and Ecuador; river systems shared between Northern European countries, Spain, Portugal, and mainland Southeast Asian countries; and economic interests in fish stock and sea turtles shared between Indonesia and Philippines.

While borderland studies dealing with natural resources are limited mainly to case studies, which focus on specific border regions or natural resources, this study aims to analyze the overall view of research on various natural resources conflicts and cooperation occurring in border regions around the world. Furthermore, this study tries to categorize not only natural resources but also conflicts caused by human-activity called ‘Anthroposphere’ emphasizing a broad understanding of the

conflicts surrounding the Earth's natural resources. This can be achieved by trying to answer the question: what are the overarching characteristics of transborder relations regarding the natural resources in African border region?

## Theoretical Background

**Global transboundary cooperation for nature conservation**. In 1924, Poland and Czechoslovakia signed the Krakow Protocol, which "pioneered the concept of international cooperation in establishing border parks." These parks in those days had no specific goal other than preservation of natural landscapes that spread across international borders (Trends, 2015). In 1932, the Waterton-Glacier International Peace Park was dedicated to commemorating the long history of peace and friendship between Canada and the United States, emphasizing the natural and cultural links between the countries (Sandwith *et al.,* 2001). In 1933, transboundary conservation received a further boost when the European countries signed the London Convention Relative to the Preservation of Fauna and Flora in their Natural State. The convention, which took effect in 1936, explicitly called for cross-border consultation and cooperation between national States when establishing protected areas contiguous and adjacent to each other's borders (Trends, 2015). In 1997, the International Union for Conservation of Nature (IUCN) promoted the Parks for Peace initiative as a tool to enhance regional cooperation for biodiversity conservation, conflict prevention, resolution and reconciliation, and sustainable regional development (Sandwith *et al.,* 2001). In 2001, the IUCN proposed standardized terminology for transboundary conservation guidelines, with definitions and explanation for terms related to Transboundary Protected Areas and Parks for Peace. They have been negotiated and agreed upon at several events convened by the IUCN World Commission on Protected Areas (WCPA), such as the International Conference on Transboundary Protected Areas as a Vehicle for International Cooperation (Cape Town, South Africa, 1997), the International Symposium on Parks for Peace (Bormio, Italy, 1998), and a Global Partnership meeting (Gland, Switzerland, 2000). Guidelines were developed through workshops in 2013 and 2014 and negotiations on broader natural resource management issues across borderlands, including the concepts of "Transboundary Conservation and Development Areas" and "Transboundary Migratory Corridors (Erg *et al.,* 2015). These guidelines provided for systematic consultation, information sharing, coordinated action, and the management of issues between the stakeholders. Through active discussions, the Seventh Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity (UNCBD COP7 Decisions) held in 2004 also deliberated on 'establishing and managing the ecosystem beyond boundaries and the various global organizations' efforts to promote transboundary cooperation for the protection of natural resources.

## Literature review

Conflicts rooted in natural resources in the transboundary region have been the subject of systematic review and meta-analysis in several studies. Some studies are focused on one specific natural resource. For example, Schillinger *et al.* (2020) reviewed the scientific literature to identify the impact of armed conflicts on water resources through the systematic review. The result shows the vulnerability of water resources towards conflict impacts (Schillinger *et al.,* 2020). Llamosas and Sovacool (2021) conducted a systematic review on dams in a transboundary region to better understand the specific characteristics of transboundary hydropower.

Some studies focused on more specific issues or/and regions. Vesco *et al.* (2020) investigated the linkage between conflict and natural resources through meta-analysis. The result demonstrated a higher possibility of conflict in case of resource scarcity and abundance. Muboko (2017) assessed the contribution of the trans frontier conservation areas (TFCAs) and their institutional framework for cooperation and peace in the Southern African Development Community (SADC). The result found the relevance between institutional frameworks of TFCAs and SADC's efforts for peace and cooperation (Muboko, 2017). Cuvelier *et al.* (2014) conducted a study on the effects of natural resource governance on populations in fragile and conflict areas in Central Africa and the Sahel region. Rutte (2011) identified potential conflicts for maintaining sacred natural sites and institutional arrangements to solve the conflict using meta-analysis. The research highlighted the importance of strategies strengthening the local community rights to manage sacred natural sites (Rutte, 2011). Andrade and Rhodes (2012) identified the key factors that can lead to better compliance with conservation policies on protected areas through meta-analysis. The result demonstrates a positive correlation between community participation in the decision-making process and the level of compliance with protected area policies (Andrade and Rhodes, 2012).

Although several valuable systematic reviews and meta-analysis research are conducted on natural resources in the transboundary region and their management, comprehensive research has yet to be presented. Thus, this study aims to analyze the overall trends of research on various natural resources conflicts and management occurring in border regions around the world. With the world data, this study examines the literature reviews on the subject in African region.

## Materials and Methods

**Systematic literature review**. With transboundary natural resources are defined and conceptualized, this section of the paper describes the research methodology, which is a systematic literature review to organize a thorough and unbiased outlook of the scientific literature on natural resources and their conflict or management in trans-border areas. It shows namely how a representative sample of studied natural resources-based management in the transboundary region were selected and analyzed. This study follows the flow diagram of the preferred reporting items for systematic reviews and meta-analyses (PRISMA) (Moher *et al.,* 2010), which has four phases: identification, screening, eligibility, and inclusion. Figure 1 provides an overview of the search and screening steps to make a data set of publications to be included in the final review.

**Data collection (Identification).** The article selection was conducted by inputting the keywords related to natural resource conflict or management in border areas into the internationally specialized academic database, SCOPUS. The search period was from 2001 up to recently 31 May 2021, considering that transboundary conservation issues began to get attention in international society, and the International Union for Conservation of Nature (IUCN) first offered standardized terminology through the Guidelines in 2001. Search fields included article title, abstract, and keywords. The search strings were a combination of three major topics: border, natural resources, and conflict or management(cooperation). Each search keyword consisted of synonyms, relevant abbreviations, and cited by other previous literature. Specifically, in the case of border search keywords, this study included the terminologies about transboundary conservation such as 'TBPA', 'Peace Park', 'TBMCA', 'TBCL', and 'TBCS' used by IUCN since 2001. The exact search strings we used are found in Table 1. Some articles may have been missed despite our best attempts to include a wide range of keywords reflecting natural resource management in the border regions.

As a result, 12,610 publications were collected at the first stage. After limiting to social science and English literature only, a total of 2,134 articles were selected at the identification stage.

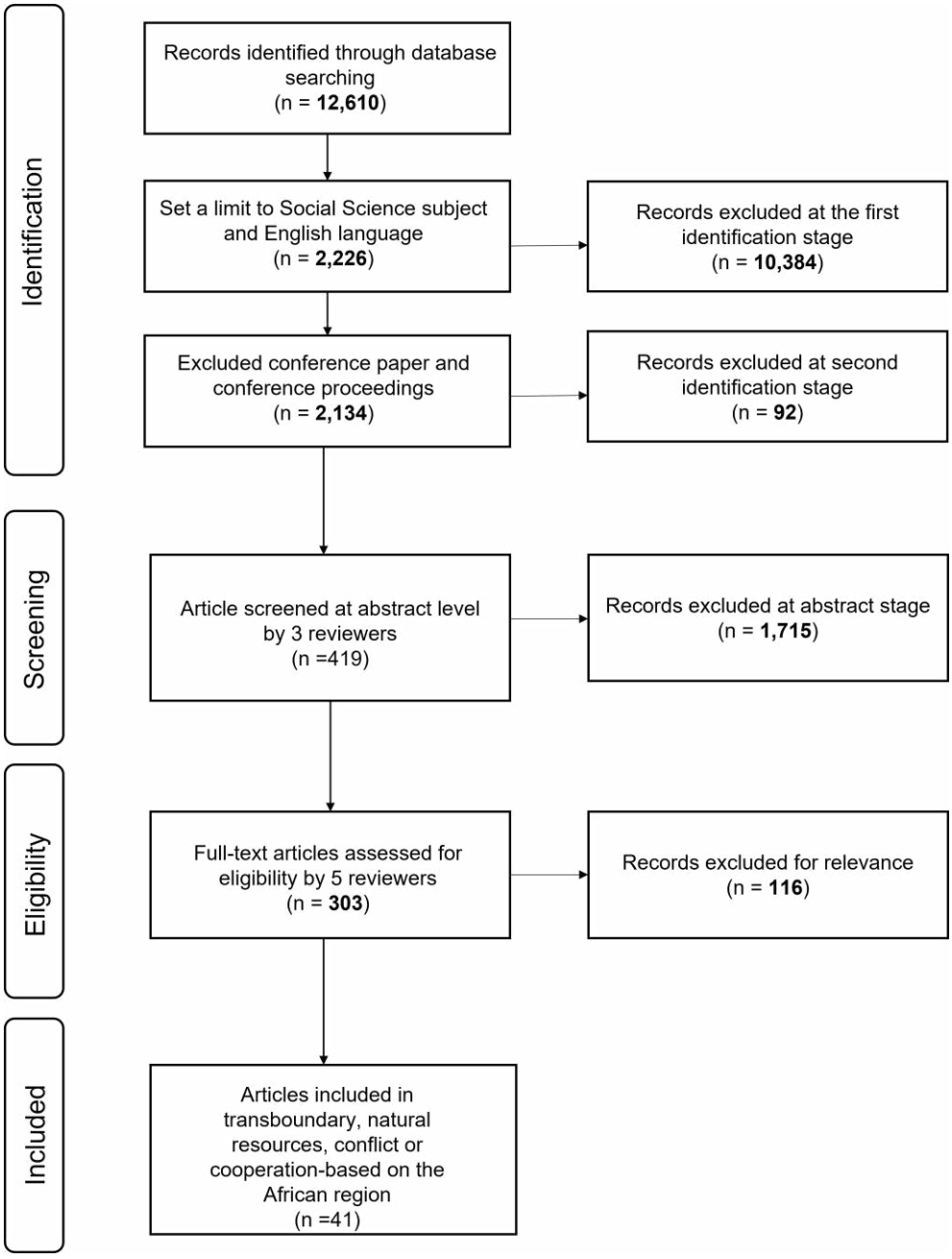


**Figure 1. Process overview for the systematic review**

**Table 1. Search Strings used to retrieve articles from database**

| Search Strings input in SCOPUS |
|---|
| ( TITLE-ABS-KEY ( "border*" OR "frontier" OR "transbo*" OR "crossbo*" OR "transfrontier" OR "Protected Area*" OR "TBPA" OR "Transboundary Conservation" OR "Park* for Peace" OR "Peace Park" OR "Migration Corridors" OR "TBMCA" OR "TBCL" OR "TBCS" OR "Transboundary conservation landscape*" ) AND TITLE-ABS-KEY ( "natural resource*" OR "air" OR "water" OR "river" OR "basin" OR "sea" OR "fish" OR "ecosystem*" OR "bird*" OR "land" OR "forest*" OR "habitat" OR "timber" OR "non-timber" OR "NTFP*" OR "soil" OR "agricultur*" OR "wildlife" OR "species" OR "oil" OR "coal" OR "gas" OR "metals" OR "stone" OR "petrol" OR "mines" OR "Uranium" OR "copper" OR "iron" OR "gold" OR "silver" OR "diamond" ) AND TITLE-ABS-KEY ( "conflict" OR "dispute" OR "war" OR "terror*" OR "coordination" OR "collaboration" OR "cooperation" OR "management" OR "violen*" OR "risk" OR "disasters" OR "issue*" OR "armed" OR "acute" OR "Protracted" OR "crisis" ) ) |

**Article screening, study eligibility criteria, and inclusion**. As a first screening step, three coders who were tested and passed through inter-coder reliability using Fleiss' Kappa statistical measure checked the titles, keywords, and abstracts of the literature to see if they corresponded to the predetermined criteria; The inclusion articles are
1) Contents related to other countries (a clear indication of border areas),
2) Those dealt with at the international level (exclusion of only one country's issues, for instance, conflicts with indigenous people in a nation),
3) The main topic is natural resource conflict in case that management or cooperation among countries.

**There were 419 items left at this point.** For the next stage of full-text review, the textual information from the selected articles was then coded by sub-categories according to the definition (Table 2), and non-eligible articles were excluded in the process. Each sub-category was clearly defined referring to the relevant articles and publications for inter-coder reliability and the five coders reviewed the full text of the selected articles. The percentage agreement approach was used to assess intercoder agreements, which were found to be above 90% in about 10% of the contained articles. To continue in a comparable and systematic manner, we discussed and revised our coding categories for addition and removal. We re-discussed and modified the coding system halfway through the full-text analysis, as well as at the end. If there was any uncertainty or disagreement, independent experts were consulted.

The resulting dataset of publications included in the review comprised 303 articles for further analysis. Among the 303 articles, specially African publications were selected resulting in 41 studies with this process.

**Data coding strategy.** Each case in the studies was classified using the following criteria to categorize the context of the border and natural resource in the selected publications (Table 2). The categorize the geographical indication, this study classified the location of the case in the article as global, regional, and national. In the global level, the article dealt with the natural resource conflict or management in the worldwide issues. When specific group affiliations of countries are referenced in the articles, such as the European Union (EU), Association of Southeast Asian Nations (ASEAN), and the Mekong Basin, the reviews are also classified as 'regional'. The majority of these regional studies involved more than three nations and included the continental dimensions.

Moreover, national level studies were selected when the location of the studies are conducted with bilateral relations.

To categorize the natural resources, a coding category system was developed by using Earth's four spheres which are atmosphere, lithosphere, hydrosphere, and biosphere. These four spheres interact with one another in many ways (Huddart and Stott, 2020). Moreover, the concept 'Anthroposphere' was added in this study to describe how natural resources from man-made affect the conflicts or management in the border region. The Anthroposphere has evolved into a vital component of the Earth's ecosystem, heavily influenced by and, in turn, influenced by the other four Earth systems. (Manahan, 2006). If the article covered more than one natural resource, then multiple choices from one article were considered due to the interdependent characteristics of all systems.

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**Table 2. Coding category system**

| Category | Sub-Category | | Definition |
|---|---|---|---|
| Published Year | Year | | Year of publication of the article |
| Location of the study | Global | | Global is selected when the entire planet is referred to as being involved in the issue. |
| | Regional | | Regional is selected when specific group association of countries are mentioned. |
| | National | | National is selected when specific countries are mentioned. |
| | Not recognizable | | Neither the country nor the continent is recognized in the article. |
| Type of Natural Resources | Atmosphere | Air<br>Rainfall<br>Others | An atmosphere is a layer of gas or layers of gases that envelope a planet and is held in place by the gravity of the planetary body (Pielke, 2021). |

## Results

**Number of articles by year**. Before 2003, few natural resource-based conflict or management studies were published, but the number of publications has been steadily increasing since 2016. (Figure 2). The articles about the hydrosphere, such as rivers, oceans, and lakes, were the most prevalent among the articles chosen. In addition, the biosphere and the "others," which include ecosystems and biodiversity, increased at the same time.

The path of Anthroposphere research is depicted in Figure 3. Each of the Anthrospheres are linked one on one with other spheres during the category coding procedure in a systematic literature review. As a result of the changes in the hydrosphere and biosphere, natural resources that have a strong interaction with human activity have proliferated.

**Distribution of studies according to the natural resources.** Each natural resource is classified as an Earth's five spheres in this study. Figure 5 displays what kinds of resources were studied and how frequently. Among the four spheres, the hydrosphere marked 63.1 percent, and the biospheres showed 22.9 percent. Specifically, River studies (n=148) were the dominant issues around the border regions. Conflicts or managements surrounded the ocean (n=46), forest (n=36), and animals (n=32) were studied in order.

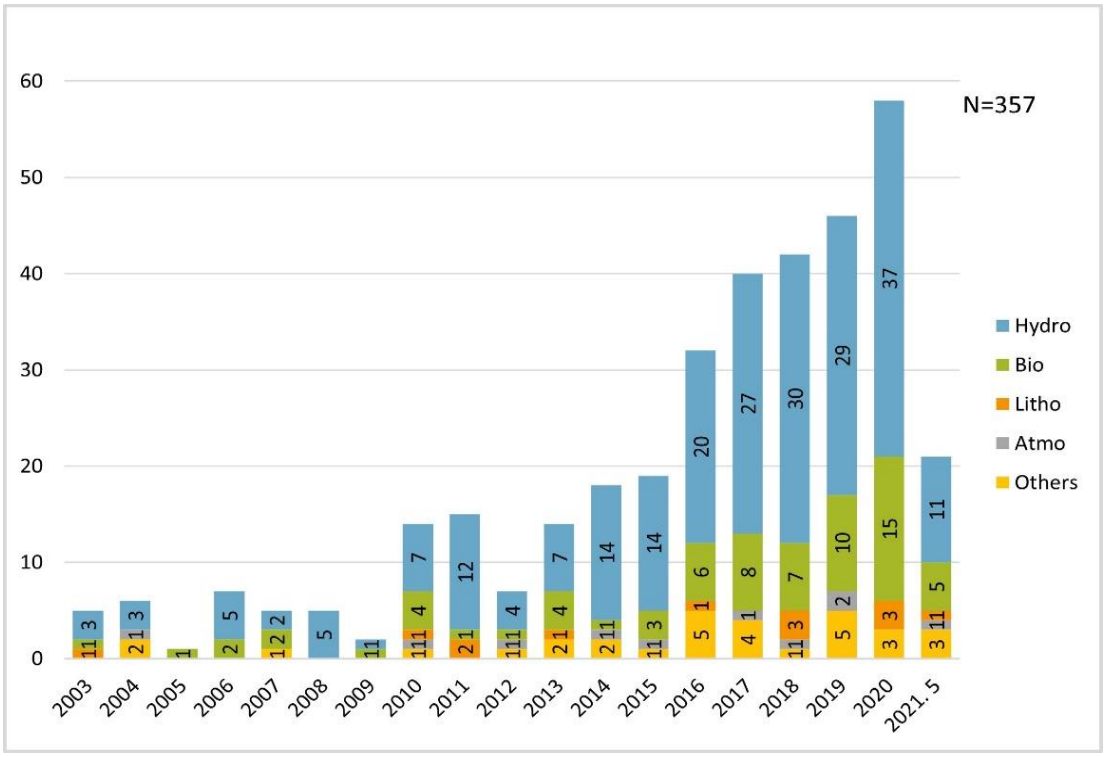


**Figure 2. Number of articles on Earth's four spheres by published year**

| | | |
|---|---|---|
| Lithosphere | Soil<br>Oil<br>Coal<br>Rocks<br>Others | Lithosphere is defined as the rock and crust surface that covers the Earth (Britannica, 2020). |
| Hydrosphere | Ocean (Marine)<br>Ice caps and glaciers<br>Groundwater<br>Lake<br>River<br>Others (all water) | A hydrosphere is the total amount of water on a planet. The hydrosphere includes water that is on the surface of the planet, underground, and in the air. A planet's hydrosphere can be liquid, vapor, or ice. On Earth, liquid water exists on the surface in the form of oceans, lakes, and rivers (Britannica, 2021). |
| Biosphere | Animal<br>Vegetation<br>Forest<br>Others | The biosphere is a global ecosystem composed of living organisms (biota) and the abiotic (nonliving) factors from which they derive energy and nutrients (Gates *et al.,* 2020). |
| Anthroposphere | | Anthroposphere was defined as that part of the environment made or modified by humans and used for their activities. The Anthroposphere has become an integral part of Earth's environment strongly influenced by and, in turn, strongly influencing the other four environmental spheres (Manahan, 2006). |
| Others | | All other natural resources that do not fall under the previous categories (e.g., Ecosystem, Biodiversity) |
| Not recognizable | | Cannot be defined or recognized |

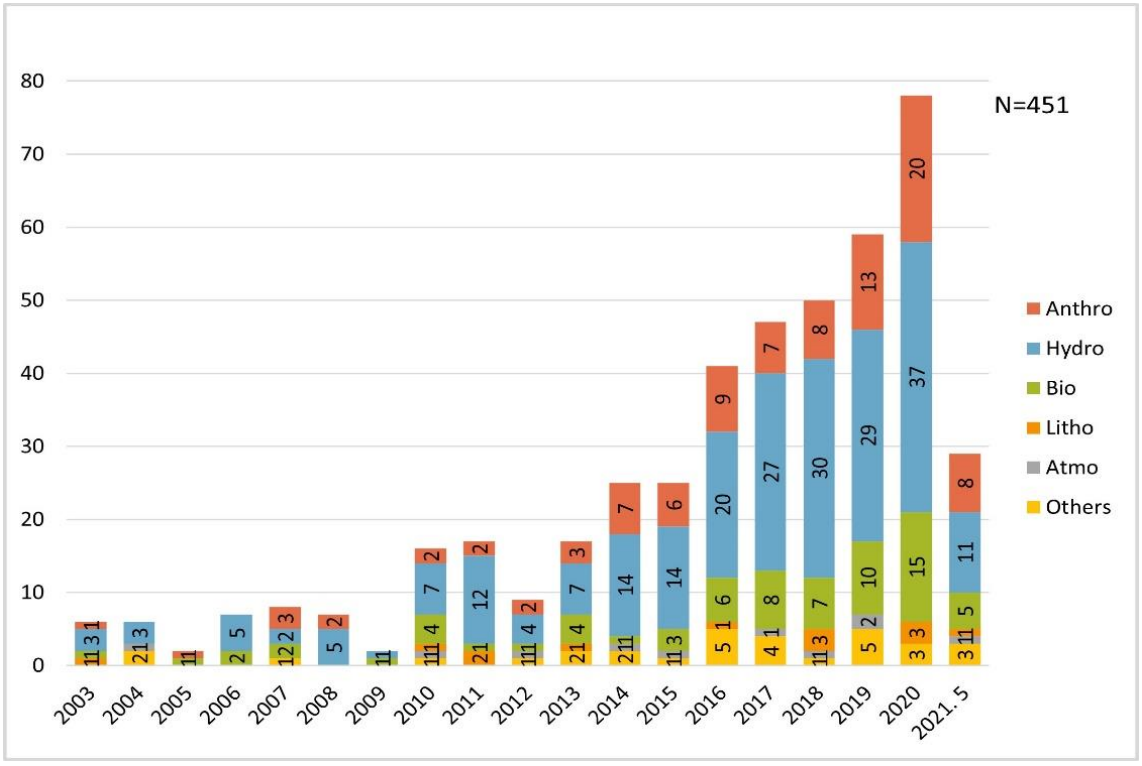


**Figure 3. Number of articles on Earth's five spheres by published year**

The total of Anthropophere studies were 94 publications which also connected with the hydrospheres (64%), biosphere (35%), and lithosphere (1%). In this study, the research team figured out the specific types of Anthropophere in the border region. Mostly, dams, hydropower infrastructure, and fishery activities induced disputes and managed border areas in the hydropower section. Moreover, lands for agricultural uses, irrigation systems, and Diamond smugglings caused the conflicts, whereas studies dealt with designating the protected areas and national parks as management methods in the biosphere section.

**Geographical distribution of natural resources conflicts and management.** Figure 4 shows the locations of the cases in the studies at the global, regional, and national levels. Since this study identified the border issues, there were binational studies searched dominantly. The extensive national-level studies were founded on 143 cases, which accounted for more than half of these studies. According to the Figure 5, China has the dominant (n=33) cases, and India (n=27), Mexico (n=21) has followed. At the regional level, the chosen literatures are 36 percentages of this study (108 publications). Regional studies were strongly related to cooperation between neighboring countries through the formation of associations and organizations such as European Union (EU), Mekong Institute, Alpine Space Program cooperation area (ASPCA) and so on. Because the surrounding nations share common natural resources for a long period, they attempted to manage the conflicts together on a regional scale. In this dimension, specific continents and Ocean boundaries are also included (Table 3). At the global level, it included the studies which were discussed about more than two regional scale areas as well as no special statement about the study areas but global initiatives or international laws (Total 52 studies).

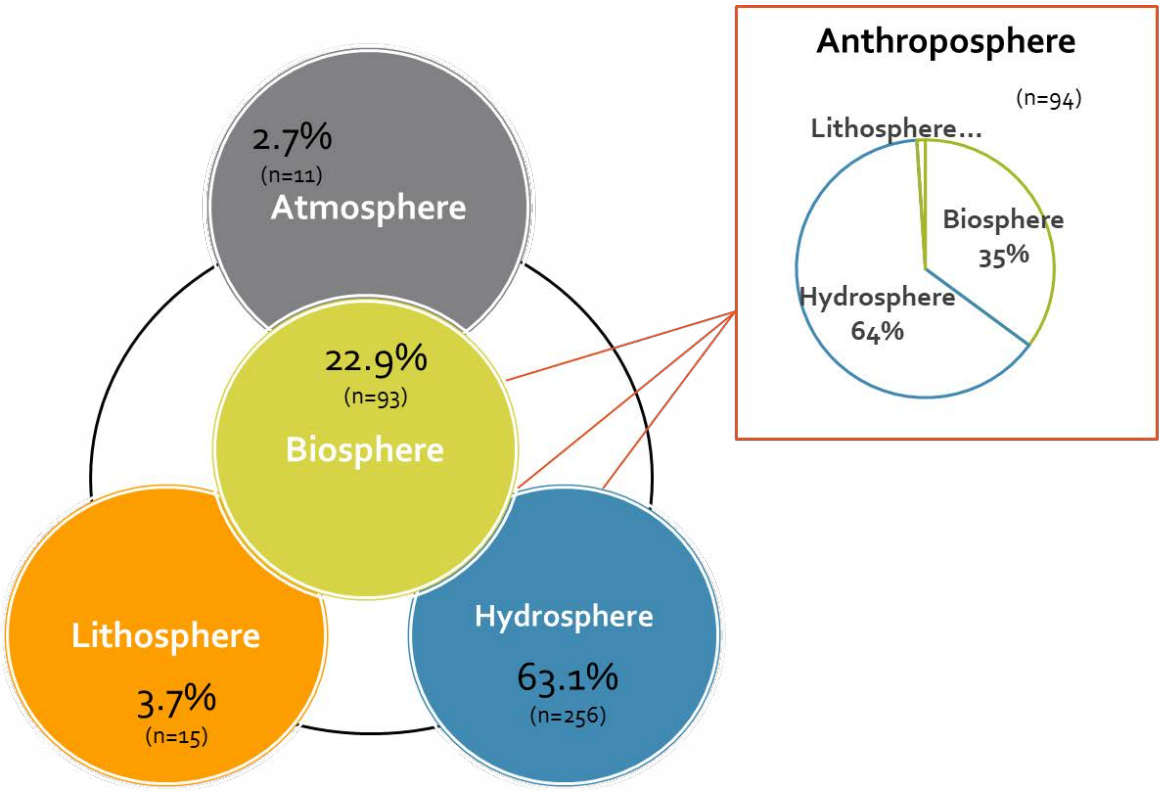


**Figure 4. Distribution of Earth's five spheres**

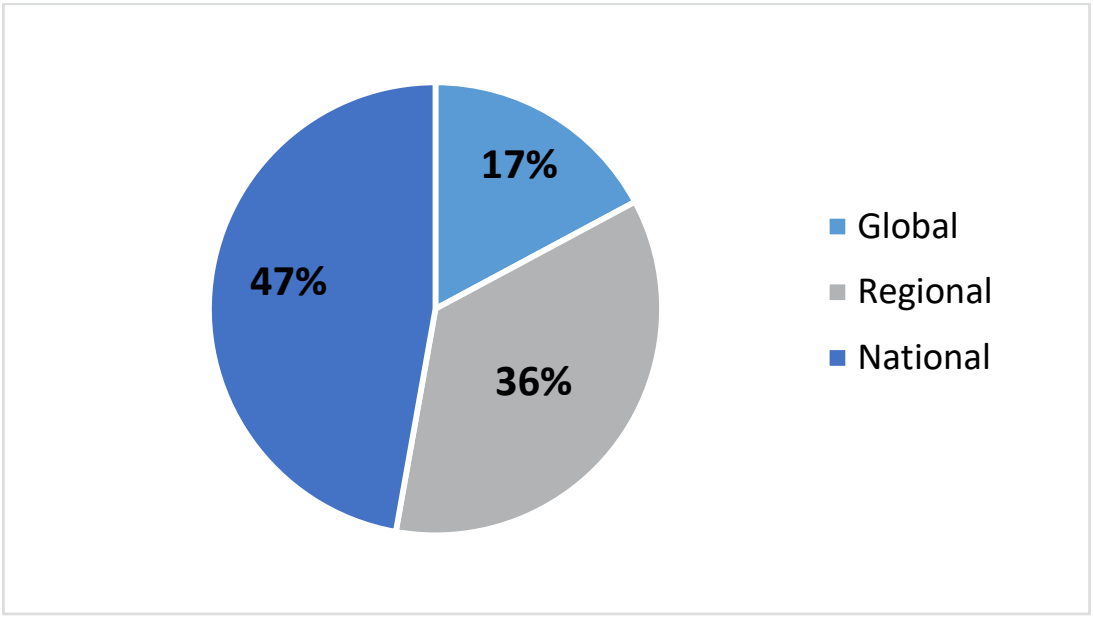


**Figure 5. Geographic distribution of the selected articles**

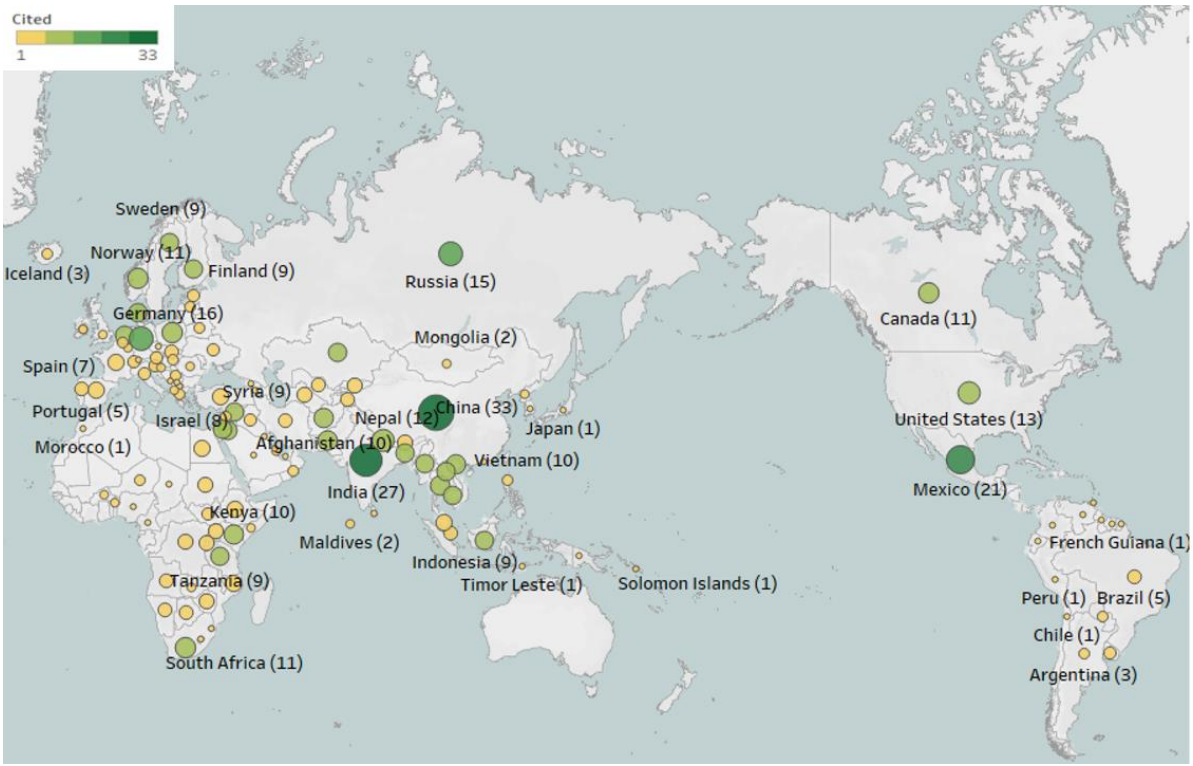


**Figure 6. Distribution of selected countries and articles**

**Table 3. Continent and Ocean-level studies (Regional Scale)**

| Region | Natural Resources | Article |
|---|---|---|
| Oceania | Hydrosphere (Ocean)<br>Anthroposphere (Fisheries) | (Campbell and Hanich, 2015) |
| Antarctic | Hydrosphere (Ocean)<br>Anthroposphere (Protected area) | (Gardiner, 2020) |
| Arctic | Hydrosphere (Ocean)<br>Lithosphere (Ironstone, Cobalt, Diamond) | (Edwards and Evans, 2017; Gorkina, 2013; Stephenson, 2018) |
| Baltic Sea | Hydrosphere (Ocean)<br>Others (Biodiversity) | (Gänzle et al., 2019; Jetoo, 2018, 2017; Koivurova and Rosas, 2018; Strandmark et al., 2015) |
| South China Sea | Hydrosphere (Ocean)<br>Anthroposphere (Hydropower) | (Bateman, 2017; Hoi and Dang, 2015; Zhao, 2008) |

| | | |
|---|---|---|
| North Atlantic | Biosphere (Fish)<br>Anthroposphere (Fisheries) | (Østhagen et al., 2020) |
| South Atlantic | Hydrosphere (Ocean)<br>Others (Ecosystem) | (Marques et al., 2004) |
| Western Indian Ocean | Hydrosphere (Ocean)<br>Biosphere (Fish)<br>Anthroposphere (Fisheries) | (Levin et al., 2018) |
| Northern Sea | Hydrosphere (Ocean)<br>Anthroposphere (Offshore wind energy, Fisheries)<br>Others (Ecosystem) | (Jentoft and Knol, 2014; Platjouw, 2018; Roeben, 2013) |
| Western and Central Pacific | Hydrosphere (Ocean)<br>Biosphere (Fish) | (Seto et al., 2020) |

**Number of articles based on the Africa region.** According to the Figure 7, literatures which dealt with the African border region as case studies steadily increased.

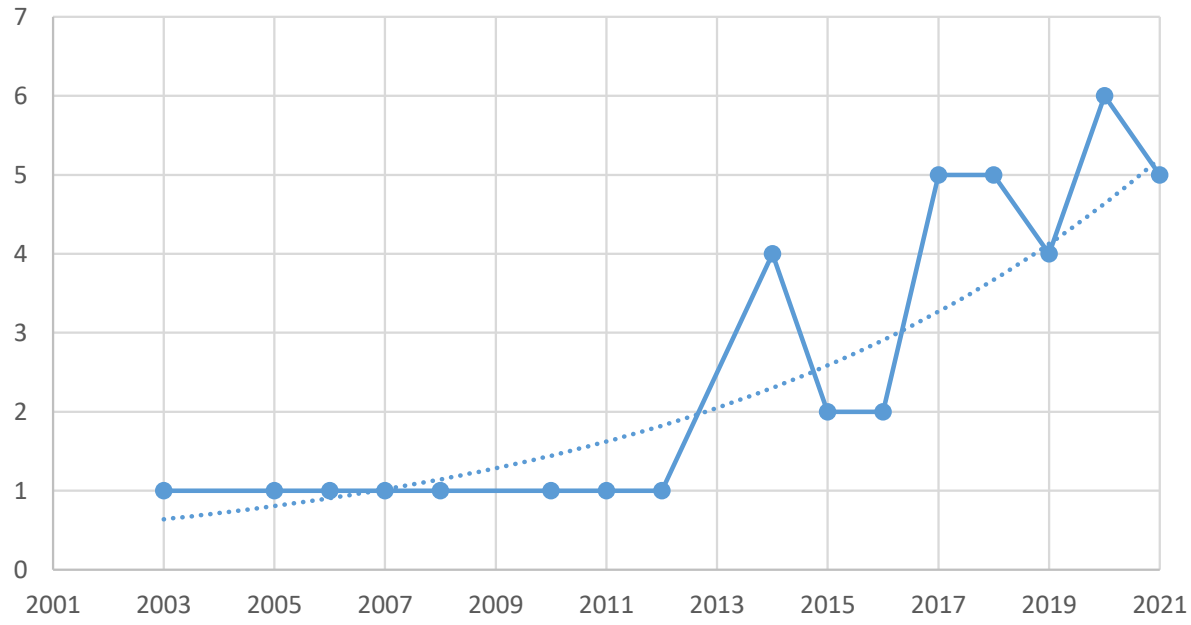


**Figure 7. Changes of selected articles regarding the African region**

## Discussion

The results highlight the overall information of the worldwide literature review, concentrating on research transition, types of natural resources, and geographical areas. In particular, there are several characteristics regarding the natural resources and border regions. In this section, this study examined the details along with the case studies that were reviewed in the previous systematic stages.

Figure 8 displays the overall information about the distribution of natural resources in the African borderland. There are 41 publications. Overall selected articles distributed all around the African continents except for the north western countries. It does not mean that there are no conflicts or cooperation and management about natural resources among the border regions, it is more likely that there are few articles or research regarding these issue. Hydrosphere was found to be the most activate issues in the African regional studies. There are 63 transboundary river basins in Africa, covering 64 per cent of the continent's land area (UNEP, 2010). Among these river basins, the major river bains included the Lake Chad basin, the Congo basin, the Niger basin, the Nile basin, the Orange baisn, and the Zambezi basin examined in this study.

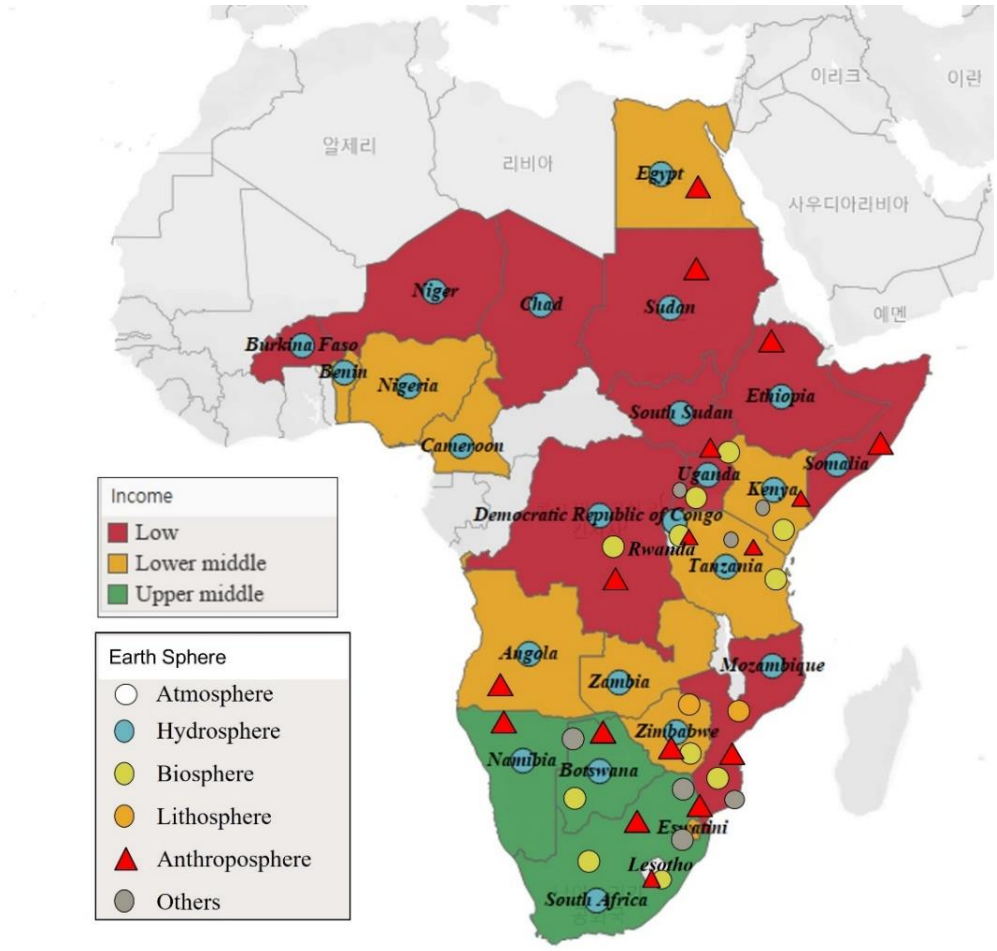


**Figure 8. African borderland and natural resources**

## Conclusion

The number of transboundary natural resource-related articles in the world is rapidly increasing, but there is still a lack of global perspective. Previous studies examined specific border disputes involving specific natural resources. These articles could deeply examine the conflict situations, historical backgrounds, various stakeholders, and national policies or plans. However, the approach has limitations in the global academic context. Consequently, more comprehensive research is required to resolve the conflicts surrounding the use of natural resources near border areas.

By providing systematic evidence and frameworks, this study contributes to the development of strategies, scientific studies, and effective implementation, as well as save time for decision making. The systematic map, in particular, provides insight into which border region studies were developed and what natural resources caused conflicts and were managed from various perspectives. Based on this study, innovative interdisciplinary research should be conducted to identify global literature trends concerning the issues. In this study, we used a unique approach to categorize natural resources as the Earth's five spheres: atmosphere, lithosphere, hydrosphere, biosphere, and Anthroposphere. Rather than dividing natural resources into separate objects, this research attempted to comprehend how all environmental issues have interacted as an element of Earth. Significantly, Anthroposphere-created features such as dams, agricultural lands, national parks, and diamond smuggling have influenced the conflicts between countries' borderlands.

In conclusion, the systematic map identifies and describes the natural resources, conflicts or cooperation, and border regions in the academic research. This research will help to better understand the links between conflicts and natural resources in border regions. Furthermore, this study identifies gaps where additional research and investment should be guided.

## Acknowledgement

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## References

Alvarez, R.R. 1999. Toward an anthropology of borderlands: the Mexican-US border and the crossing of the 21st century. *Frontiers and Borderlands: Anthropological Perspectives* pp. 225–238.

Andrade, G.S.M. and Rhodes, J.R. 2012. Protected areas and local communities: An inevitable partnership toward successful conservation strategies? *?. Ecology and society* 17 (4): 1-17. https://doi.org/10.5751/ES-05216-170414

Bateman, S. 2017. Building cooperation for managing the South China sea without strategic trust. *Asia and the Pacific Policy Studies* 4 (2): 251-259. https://doi.org/10.1002/app5.178

Campbell, B. and Hanich, Q. 2015. Principles and practice for the equitable governance of transboundary natural resources: cross-cutting lessons for marine fisheries management. *Maritime Studies* 14 (1): 1-20. https://doi.org/10.1186/s40152-015-0028-7

Cuvelier, J., Vlassenroot, K. and Olin, N. 2014. Resources, conflict and governance: A critical review. *The Extractive Industries and Society* 1 (2): 340-350.

Edwards, R. and Evans, A. 2017. The challenges of marine spatial planning in the Arctic: Results from the ACCESS programme. *Ambio* 46 (3): 486-496. https://doi.org/10.1007/s13280-017-0959-x

Erg, B., Groves, C., McKinney, M., Michel, T.R., Phillips, A., Schoon, M.L., Vasilijevic, M. and Zunckel, K. 2015. Transboundary conservation: a systematic and integrated approach. Best Pract. Prot. Area Guidel. Ser.

Gänzle, S., Stead, D., Sielker, F. and Chilla, T. 2019. Macro-regional strategies, cohesion policy and regional cooperation in the European Union: Towards a Research Agenda. *Polit. Stud. Rev.* 17: 161–174. https://doi.org/10.1177/1478929918781982

Gardiner, N.B. 2020. Marine protected areas in the Southern Ocean: Is the Antarctic Treaty System ready to co-exist with a new United Nations instrument for areas beyond national jurisdiction? Mar. *Marine Policy* 122: 104212.

Gorkina, T.I. 2013. Geopolitical problems of the arctic. *Reg. Res. Russ.* 3: 447–457. https://doi.org/10.1134/S2079970514010067

Green, B.E. 2005. A general model of natural resource conflicts: The case of international freshwater disputes. *Sociologia* 37: 227–248.

Hoi, N.C. and Dang, V.H. 2015. Building a regional network and management regime of marine protected areas in the South China Sea for sustainable development. *J. Int. Wildl. Law Policy* 18, 128–138. https://doi.org/10.1080/13880292.2015.1044797

Huddart, D. and Stott, T.A. 2020. Earth environments. John Wiley & Sons.

Jentoft, S. and Knol, M. 2014. Marine spatial planning: Risk or opportunity for fisheries in the north sea? *Marit. Stud.* 12: 1–16. https://doi.org/10.1186/2212-9790-12-13

Jetoo, S. 2017. The role of transnational municipal networks in transboundary water governance. Water (Switzerland) 9. https://doi.org/10.3390/w9010040

Jetoo, S. 2018. Barriers to effective eutrophication governance: A comparison of the Baltic Sea and North American Great Lakes. Water 10 (4): 400.https://doi.org/10.3390/w10040400

Koivurova, T. and Rosas, A. 2018. The CBSS as a vehicle for institutionalised governance in the Baltic Sea Area, in comparison with its two sister organisations in the north. *Mar. Policy* 98: 211–219. https://doi.org/10.1016/j.marpol.2018.09.010

Levin, N., Beger, M., Maina, J., McClanahan, T. and Kark, S. 2018. Evaluating the potential for transboundary management of marine biodiversity in the Western Indian Ocean. *Australas. J. Environ. Manag.* 25: 62–85. https://doi.org/10.1080/14486563.2017.1417167

Llamosas, C. and Sovacool, B.K. 2021. The future of hydropower? A systematic review of the drivers, benefits and governance dynamics of transboundary dams. *Renewable and Sustainable Energy Reviews* 137: 110495. https://doi.org/10.1016/j.rser.2020.110495

Manahan, S.E. 2006. Environmental science and technology: a sustainable approach to green science and technology. CRC Press.

Marques, M., Da Costa, M.F., Mayorga, M.I.D.O. and Pinheiro, P.R.C. 2004. Water environments: Anthropogenic pressures and ecosystem changes in the Atlantic drainage basins of Brazil. *Ambio* 33: 68–77. https://doi.org/10.1579/0044-7447-33.1.68

Moher, D., Liberati, A., Tetzlaff, J. and Altman, D.G. 2010. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Int J Surg* 8: 336–341.

Muboko, N. 2017. The role of transfrontier conservation areas and their institutional framework in natural resource-based conflict management: A review. *J. Sustain. For.* 36 :583–603. https://doi.org/10.1080/10549811.2017.1320224

Østhagen, A., Spijkers, J. and Totland, O.A. 2020. Collapse of cooperation? The North-Atlantic

mackerel dispute and lessons for international cooperation on transboundary fish stocks. *Maritime Studies* 19 (2):155-165.https://doi.org/10.1007/s40152-020-00172-4

Platjouw, F.M., 2018. Marine spatial planning in the North Sea-are national policies and legal structures compatible enough? the case of Norway and the Netherlands.*The International Journal of Marine and Coastal Law* 33 (1): 34-78. https://doi.org/10.1163/15718085-12320075

Prescott, J.R.V. 2014. Political frontiers and boundaries. Routledge. 332pp.

Roeben, V. 2013. Governing shared offshore electricity infrastructure in the Northern Seas. *International and Comparative Law Quarterly* 62 (4):839-864.

Rutte, C. 2011. The sacred commons: Conflicts and solutions of resource management in sacred natural sites. *Biological Conservation* 144 (10): 2387-2394.

Sandwith, T., Shine, C., Hamilton, L. and Sheppard, D., 2001. Protected areas for peace and co-operation. Best Practice Protected Area Guidelines SeriesBest Practice Protected Area Guidelines Series No. 7, 117pp.

Schillinger, J., Özerol, G., Güven-Griemert, Ş. and Heldeweg, M. 2020. Water in war: Understanding the impacts of armed conflict on water resources and their management. *Wiley Interdisciplinary Reviews: Water* 7 (6): p.e1480. https://doi.org/10.1002/wat2.1480

Schnaiberg, A. 1994. The political economy of environmental problems and policies: Consciousness, conflict, and control capacity. *Advances in Human Ecology* 3: 23-64.

Seto, K., Miller, N., Young, M. and Hanich, Q. 2020. Toward transparent governance of transboundary fisheries: The case of Pacific tuna transshipment. *Marine Policy* 104200. https://doi.org/10.1016/j.marpol.2020.104200

Stephenson, S.R. 2018. Confronting Borders in the Arctic. *J. Borderl. Stud*. 33: 183–190. https://doi.org/10.1080/08865655.2017.1302812

Strandmark, A., Bring, A., Cousins, S.A.O., Destouni, G., Kautsky, H., Kolb, G., de la Torre-Castro, M. and Hambäck, P.A. 2015. Climate change effects on the Baltic Sea borderland between land and sea. *Ambio* 44: 28–38. https://doi.org/10.1007/s13280-014-0586-8

Sturgeon, J.C. 2004. Border practices, boundaries, and the control of resource access: A case from China, Thailand and Burma. *Development and Change* 35 (3): 463-484.

Trends, W. 2015. Transboundary Cooperation for Nature Conservation. World Trends and Ways Forward in Northeast Asia, NEASPEC Working paper, 55pp.

Vesco, P., Dasgupta, S., De Cian, E. and Carraro, C. 2020. Natural resources and conflict: A meta-analysis of the empirical literature. *Ecological Economics* 172: 106633 https://doi.org/10.1016/j.ecolecon.2020.106633