

## Chapter 31

# In pursuit of a taxonomical definition of disaster diplomacy—An empirical scientometric analysis

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### 1 Introduction

After the great Indian Ocean tsunami, interesting points can be observed in South and Southeast Asia. Indonesia signed a peace agreement with the Free Aceh Movement which seemed to solve an intrastate tension going back to 1976. On the other hand, Sri Lanka headed to a civil war with the Liberation Tigers of Tamil Eelam which destroyed the temporary peace between the opposing parties (Enia, 2008). In conclusion, one single but huge disaster event became a catalyst for political issues: this phenomenon is called *disaster diplomacy*—a recently discovered but significant research area. The present article is about the scientometric analysis of this discipline. The focus of research is the publications of the aforementioned academic field and their scientometric embeddedness. To understand this, it is necessary to determine the terms of *disaster diplomacy* and *scientometrics*.

*Disaster diplomacy* examines security arising from the management of transboundary environmental emergencies. Simply put, it studies the

phenomena of international cooperation, namely, how and why disaster-related activities influence international cooperation or conflict (Kelman, 2012). It is well known that disasters have long-term political implications: one can think of the Mayan civilization's decline by drought (Haug, 2003) or the cyanide pollution on the Tisza in 2000, which created diplomatic problems for Hungary, Serbia, and Romania (Nagy & Kónya, 2003).

*Scientometrics* is also the product of the modern era. The publishing process, evaluation, opportunities, and regulations have changed. In the academic field, it is very important where, what, and how much we publish and who refers to our publications. This is what is required inter alia in the PhD degree process, during habilitation, and when applying for academic projects (Sasvári, Nemeslaki, & Duma, 2019). Measuring and comparing performance is now essential in science for practical purposes, recognition, and prestige. One of the possible sources of measuring scientific achievements is the quantity and quality of publications, references, and citations (Baker, 1990).

The objectives of the present study are conducting a desk research of the scholarship of disaster diplomacy, along with investigating its position among the academic fields. The article is structured as conceptual discussions, methodology to collect data for scientometrics, and analysis of the web-based data and empirical findings. Apart from the concept of disaster diplomacy, the article also focuses on its history and current research directions. This empirical scientometric research primarily extracted data from the Web of Science database and analyzed its content and a few predefined parameters. The conclusion section shows the scientific composition and classification of the discipline, based on the authors' expertise, the publishing journals' profile, and the categories of Web of Science (WoS).

Accordingly, two research questions are addressed. (Q1) What are the core subject areas concerned with disaster diplomacy and its linkages with a multi-disciplinary context? (Q2) How disaster diplomacy evolved through time along with the Hyogo Framework and Sendai Framework for Disaster Risk Reduction and other global frameworks?

## 2 Material and methods

The information used for the analysis was collected from the Web of Science (WoS) website, a scientific citation indexing service produced by Clarivate Analysis, a trademark of Thomson Reuters. In the present study, WoS has been used to search for and measure references and publications, enabling scientometric research across disciplines. Google Scholar, Scopus, and Science Direct databases can be used for similar analysis (Martín-Martín, Orduna-Malea, Thelwall, & Delgado López-Cózar, 2018), but WoS is applicable for citation analysis (unlike Scopus and Science Direct) and its database contains only referred works (unlike Google Scholar), hence in the present paper, only WoS is used as a maiden data source.

The research was commenced in August 2019 through the key phrase search of *disaster diplomacy* into the WoS search engine. Out of the initial result of 55 journal articles, one item was excluded because of the misfit with the scope of disaster diplomacy. Since the final 54 documents searched through the WoS form a too narrow research focus, other key terms<sup>a</sup> were also tried. However, the obtained journals were either included in our previous search results or did not fit with the scope of this research. These 54 papers will be referred to as “core documents” or “core articles” through the present study. These documents have 135 citations until the year 2018, which were used for scientometric analysis.

The results are statistically analyzed with the variables which may show some basic tendencies related to the field. *Publication year* shows the time distribution of documents, the *WoS category* loosely correlates to the academic field specified by the website. The *author* and the *journal* variables provide important pieces of information about the disaster diplomatic researches' scope. The above-mentioned variables are analyzed both in the core and citing documents as well. Further variables provided by the WoS search engine (e.g., *document type* and *funding organization*) are not examined as they do not show any significance regarding the scientometric analysis.

The core papers were examined manually in order to produce more variables among the core documents. After the articles were selected, data were extracted and recorded in a spreadsheet. The extracted data were *date of publication*, *title of article*, *name of journal*, *articles' focus by continent* and *reasons of diplomatic activity*, as well as the used *keywords*. The type of analysis can show four values determined by Kelman (Kelman, 2012, p. 18) for case studies: *geographical area* involves several disaster-related activities for a specific area, *specific disaster* covers a specific disaster event, *disaster type* focuses on a hazard type which occurs in numerous locations around the world, and *disaster topic* examines a theoretical problem not linked to a specific disaster type. The *articles' focus by continent* refers to the geographical context, and the *focus by the reason of diplomatic activity* refers to the examined hazard type. Lastly, the *used key terms* are collected from the articles.

In conclusion, the location of disaster diplomacy in science is determined. The taxonomic definition is based on three main components: the WoS category of the core and the citing articles, the authors' expertise, and the publishing journals' profiles. This might be deemed the main novelty of this research: the directions of research, the most popular topics, and their applied theoretical background are determined.

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a. *Disaster conflict, water diplomacy, water conflict, disaster governance, drought conflict, drought diplomacy, earthquake conflict, earthquake diplomacy, health diplomacy, flood diplomacy.*

### 3 Defining disaster diplomacy—The scholarship

Disaster diplomacy is a relatively new discipline, the basic premise of which explains that: disaster management cooperation develops regional relations and also promotes political cooperation (Petz, 2014, p. 35). As cooperative disaster relief is a task that requires close, coordinated cooperation, it is clear that it has a great deal of political potential (Pusterla, 2017). However, this short research, which is easily understood by the scientific community, needs explanation and even supplementation.

According to Feria-Miranda (Feria-Miranda, 1994, p. 249), in the 20th century, the political leadership around the world recognized that the importance of emergency management and disaster management was suddenly increasing, and that disaster risk management was also made part of the political practice (Shah et al., 2020). In this way, disaster management processes were not only the responsibility of the profession but were also increasingly emphasized in political decision-making. According to Albrecht (Albrecht, 2017), the way in which disasters are handled by a given government greatly influences political trust and culture. Thus, the occurrence of a catastrophe does not necessarily damage the political system but causes the government to react with its resources to manage and communicate the threat (Abney & Hill, 1966). Hollis also points out (Hollis, 2018, p. 27) that disaster is not an independent variable in itself, as it is highly dependent on economic, political, and social vulnerability. On one hand, this new approach emphasizes disaster vulnerability, but on the other hand, emphasizes the sensitivity of the political level alongside the social level. The phenomenon of disasters must, therefore, be examined in more depth, as a kind of political event, together with its response, communication, and other long-term effects (Olson, 2000).

The history of disaster diplomacy as a phenomenon dates back to the mid-20th century when various disaster events began to have a real impact on international relations, especially in developed Western countries (Clifford, 1956; Olson & Gawronski, 2010). However, the fact that disaster itself is a political phenomenon is quite a new idea. The first such approach was born in the 1960s (Abney & Hill, 1966), where the authors used a disaster approach different from before. The writings on the political impact of disasters in the 1970s (Glantz, 1977; Quarantelli & Dynes, 1976) generally only touched on the political dimensions and were limited to a small section of it. Subsequently, new research findings were published on the subject in the 1980s (Cuny & Abrams, 1983; Davis & Seitz, 1982) and the 1990s (Albala-Bertrand, 1993; Platt, 1999), and yet the discipline became truly popular post-2000. By this time, the authors (Constantinou, 2015; de Boer & Sanders, 2005; Lewis, 1999; Mulligan, 2013; Nel & Righarts, 2008; Olson & Drury, 1997) had already carried out a more extensive analysis,

and their case studies had sought to cover the entire political spectrum. As per the published peer-reviewed literature, Ilan Kelman (Kelman, 2005, 2006a, 2006b, 2007a, 2007b, 2018) is considered to be the most respected researcher in this still underdiscussed area, and moreover, it was he who created the term *disaster diplomacy* itself. According to Ilan Kelman, all transnational activities related to disasters and disaster management are part of disaster diplomacy (Kelman, 2012, pp. 12–13). Werker (Werker, 2010, p. 3) argues that disasters bring opposing parties closer together, albeit for a shorter period of time. However, this assertion is refuted by the events observed so far, which explain that in the event of disasters, even if the relations between the states concerned are conducive, mutual information retention is typical, and even after the incident, the blame for the other party may even worsen. The former can be observed, for example, between India, China, and Nepal in connection with the floods in 2017, where the disaster could have been prevented if the affected states would not have withheld their flood forecasting information (Adhikari, 2017). Disaster diplomacy is thus merely an opportunity to forge closer links between affected people and the risk-takers, but it is not self-evident that it will bring states closer to one another.

The diplomatic effects of international disaster management are usually short term, with rarely visible consequences over a decade, and the longer-term political impact of an event is not typical (Kelman, 2012, p. 40). Furthermore, it should be noted that disaster diplomacy and all kinds of international disaster management activities have an impact at several levels (e.g., government relations, civil society, etc.) (Kelman, 2012, p. 105). As many factors outside the governmental level are involved in international disaster management, they all operate within their own narrow specialization (Kuti & Földi, 2012). The overall impact of disaster management also affects all dimensions: interstate politics, culture, environment, social organizations, and even interpersonal relationships (Plebán & Endrődi, 2018).

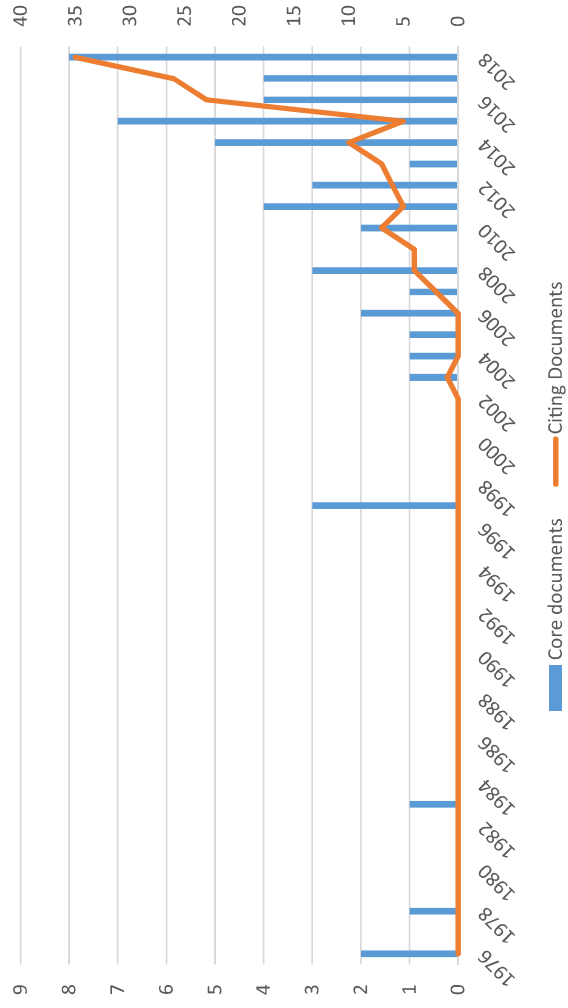
The humanitarian dimension of disaster diplomacy is extremely significant (Werker, 2010, p. 5). Accordingly, disaster relief is the easiest way for a donor country to gain a good international reputation. It also promotes popularity domestically: voters in richer states expect the political leaders to play an active role in helping the victims, and if the government does nothing after a major catastrophe, it can lead to social distrust. However, this behavior carries an in-built danger, and if developing countries receive all assistance from the international community in the event of an emergency, their own domestic disaster management system may not be improved, thus avoiding the responsibility of the population (Pal, Ghosh, & Ghosh, 2017). Therefore, disaster management and disaster relief also determine the legitimacy of a state, both domestically—among the population—and abroad—in the state's international relations (Jamieson, 2014, pp. 22–23).

#### 4 Results

The WoS database provided 54 items for our key term. The result consists of 39 research articles, 7 book reviews, 4 review articles, and 4 editorial materials. These publications have more than 200 citations from 135 different citing documents with an H-index of 8. These citing articles' dispersion is as follows: 110 research articles, 14 reviews, 9 editorial materials, and 2 "other" papers. Publication of articles on disaster diplomacy was skewed toward the recent years (Fig. 1). The oldest three papers originate between 1976 and 1978 which are book reviews about the same volume (Bailey & Ryan, 1975), examining the Lusitania disaster's diplomatic effects. Only a few works appeared between then and 2006, and subsequently, an increasing tendency can be observed. Although the year 2013 has only one item which interrupts the constant growth, the peak is undoubtedly the year 2018 with eight records. Among citing articles, an interesting phenomenon can be seen: the first citation goes back only to the year 2004. Thereafter, a general rise can be noticed, where the highest value at 35 references can be found also in 2018.

Table 1 shows the top categories among the documents searched through WoS. WoS assigns the articles to at least one subject category. (This value can be considered as an academic field.) Among the core articles, international relations and political science are the two values, including more than 10 articles. Therefore, social sciences (environmental studies, interdisciplinary social science, and area studies), natural sciences (geosciences, water resources, meteorology, and atmospheric sciences), and medicine (public, environmental, and occupational health and general internal medicine) are representing the disaster diplomacy context. Among the citing articles, natural sciences dominate with multidisciplinary geosciences, meteorology, atmospheric sciences, and water resources which have more than 20 items. Additionally, other natural sciences (environmental sciences, ecology, and geography), social sciences (international relations, government law, political science, and interdisciplinary social sciences), and medicine (public, environmental, and occupational health) dominate WoS top categories.

Table 2 provides information about the authors. It may appear at first that Ilan Kelman is the only author publishing core and citing documents as well and it is not surprising as he is the creator of the word *disaster diplomacy* itself. Besides, only Burkle, Ganapati, Koukis, and Yim have more than one article. One thing has to be remarked: two main invisible departments can be separated. Kelman, Ganapati, and Koukis mostly publish together as well as Burkle and Yim. In the citing publications, Kelman is followed by Caldron, Gaillard, Groot, Impens, and Pavlova with at least three citations. Other authors have cited disaster diplomacy articles only once or twice.



**FIG. 1** The publication year of core and citing articles.

**TABLE 1** WoS categories of core and citing documents.

WoS category of core documents	International relations	Political science	Public, environmental and occupational health	Environmental studies	Geosciences	General internal medicine	Water resources	Meteorology, atmospheric sciences	Interdisciplinary social sciences	Area studies	Multidisciplinary geosciences	Environmental sciences, ecology	Government law	Geography
Number of core documents	13	12	7	6	5	5	5	5	5	3	0	0	0	0
Number of citing documents	19	12	12	0	0	0	21	22	11	0	22	18	18	11



**TABLE 2** Authors published more than one core or two citing documents.

	Authors										
	<i>Kelman I</i>	<i>Burkle FM</i>	<i>Ganapati NE</i>	<i>Koukis T</i>	<i>Yim ES</i>	<i>Caldron PH</i>	<i>Gallard JC</i>	<i>Groot W</i>	<i>Impens A</i>	<i>Pavlova M</i>	<i>Other</i>
Number of core documents	10	3	2	2	2	0	0	0	0	0	94
Number of citing documents	9	0	0	0	0	3	3	3	3	3	320

Table 3 illustrates the most publishing journals. Among them,<sup>b</sup> the periodicals *Disasters*<sup>c</sup> and *Military Medicine*<sup>d</sup> have to be highlighted, which both have published five papers each. *International Journal of Disaster Risk Reduction*<sup>e</sup> and the *Prehospital and Disaster Medicine*<sup>f</sup> published three articles each, while the other journals published only one or two papers in disaster diplomacy. Among citing journals, similar names can be found. The highest value is 12 entries in the *International Journal of Disaster Risk Reduction*, the second highest is seven entries in *Disasters*, the third highest is four items in *International Journal of Disaster Risk Science (IJDRS)*<sup>g</sup> and *Prehospital and Disaster Medicine*. The list also includes six journals with three articles and many other periodicals with one or two citing articles.

The articles' geographical focus has also been analyzed based on the research focus of the articles from a regional/continental perspective (Fig. 2). Nine papers do not refer to a specific area at all, while several items mention more areas at the same time. By far Asia has the highest result with 22 mentions, which mostly refer to the South Asian region (India-Pakistan and Indonesia). America's 11 references are mostly limited to the United States, and Europe's five references are mostly limited to the Greece-Turkey conflict areas. Africa and the Pacific region only have a few mentions despite their high disaster vulnerability. The examined areas are only bilateral and intrastate conflicts, and papers regarding regional diplomacy were barely published.

Fig. 3 shows the source of the described diplomatic activity. Fourteen articles do not mention a specific source, while a few papers examine more of them. Most papers' attention goes to hazard types, like health-diplomatic issues (12

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b. Scimago Journal Ranking (SJR) is one of the most suitable databases for ranking the quality of journals. The starting point of the SJR is that the quality of international journal publications and the success of the publishing strategy can be quantified by the position of the publishing journals in their academic field. Methodologically, this is done by classifying the publications into quality classes (quartiles) based on the positions and rankings of the publishing journals in their fields:

Q1: Excellent journals that rank in the top 25% of their academic field.

Q2: Good journals, which are between 50% and 75% of their academic field.

Q3: Medium journals that are between 25% and 50% of their academic field.

Q4: Weak journals, which are in the bottom 25% of their academic field (Sasvári et al., 2019).

c. Q1 journal which publishes articles on earth sciences and social sciences. It places great emphasis on dialog between academia, policy-making, and the executive level. Publisher: Blackwell Publishing Inc., United Kingdom.

d. Q3 journal which deals primarily with health issues in the United States. Publisher: Association of Military Surgeons of the US, United States.

e. A fairly new (from 2012) Q1 and Q2 periodical. The published studies mainly deal with geological, technical, and security issues. Publisher: Elsevier, United Kingdom.

f. Q1 and Q2 journal, providing papers in emergency medicine. Publisher: Cambridge University Press, United Kingdom.

g. Q1 or Q2 journal which covers a variety of topics. Publications include environmental science, organizational science, geography, and development and security, all of which social aspects are relevant. Publisher: Springer Science, United Kingdom.

**TABLE 3** Publishing journals of core and citing documents.

	Journal														
	Disasters	Military Medicine	International Journal of Disaster Risk Reduction	Prehospital and Disaster Medicine	Cooperation and Conflict	International Affairs	Globalization and Health	Disaster Medicine and Public Health Preparedness	Hague Journal of Diplomacy	International Journal of Disaster Risk Science	Global Policy	Southern Medical Journal	Security Studies	Progress in Human Geography	Natural Hazards and Earth System Sciences
Number of core documents	5	5	3	3	2	2	2	2	2	0	0	0	0	0	0
Number of citing documents	7	3	12	4	0	0	0	0	0	4	3	3	3	3	3

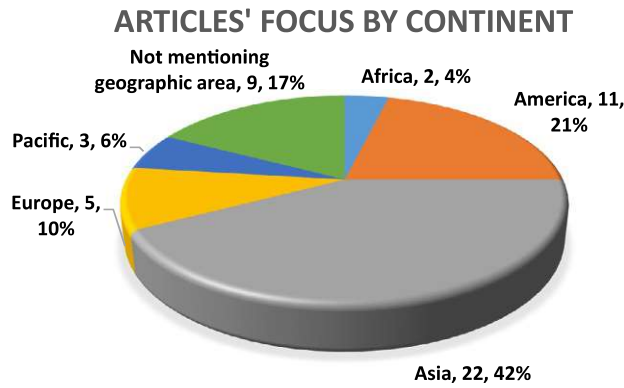


FIG. 2 Core documents' focus by continent.

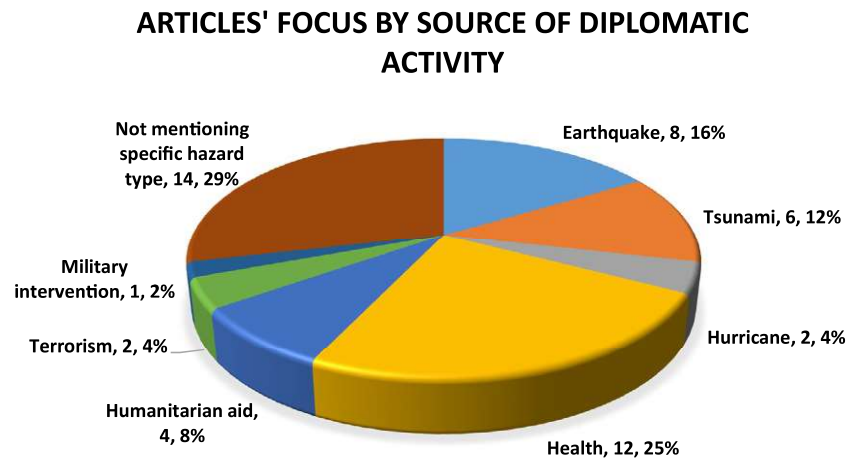


FIG. 3 Core documents' focus by the source of diplomatic activity.

items; e.g., epidemics, medical diplomacy, HIV, etc.). Earthquake and tsunami are mentioned eight and six times, while humanitarian aid, hurricane, terrorism, and military intervention have only a few values.

Table 4 shows the most referred keywords in disaster diplomatic articles. Besides the book reviews, the papers of *Military Medicine* are also excluded from the analysis as in this journal, keywords are not mandatory for publications. The academic field of *disaster diplomacy* itself occurs eight times as a keyword. *Disaster risk reduction*, *health diplomacy*, *international relations*, *diplomacy*, and *disaster* have four occurrences. *Aceh*, *China*, and *conflict* were included three times in the articles, while 13 keywords appeared twice and 107 keywords appeared only once.

**TABLE 4** Keywords occurring in the core documents.

Keywords	Occurrences
Disaster diplomacy	8
Disaster risk reduction	4
Health diplomacy	4
International relations	4
Diplomacy	4
Disaster	4
Aceh	3
China	3
Conflict	3
13 Other keywords	2
107 Other keywords	1

## 5 Discussion

Based on the above results, the WoS, and the manual analysis, some basic trends may be identified regarding the academic field disaster diplomacy. First of all, the publication years need to be discussed. The core documents were published mostly after 2003, and since then a slow but significant increase has been observed. Two important factors are added to this process: (1) the global frameworks and (2) the book *Disaster diplomacy*. Three main global strategies were published related to disaster risk management: the Yokohama Strategy in 1994, the Hyogo Framework in 2005, and the Sendai Framework in 2015 (de la Poterie & Baudoin, 2015). An increase can be seen in the published core documents, especially after 2005. Furthermore, citing documents also started to grow after the publication of Hyogo Framework. Kelman's book, the *Disaster diplomacy: how disasters affect peace and conflict* (Kelman, 2012), has gained great popularity, and among citing documents, an obvious increase happened after 2012. The data do not prove casualty between the two phenomena; however, the correlation is really interesting although it has to be mentioned that an overall increase in publications related to disaster science can be observed as well (Elsevier, 2017).

Among the core documents' WoS categories (academic fields), the absolute dominance of social sciences may be observed. Furthermore, natural sciences and medicine can be found as a related academic field as well. The citing articles show reversed results: the natural sciences have an absolute dominance,

while a lot of papers are in the field of social sciences and/or medicine. The authors' expertise of the core documents shows a largely similar value: their expertise varies from social, natural science to medicine. However, the citing authors are mostly physician and medicine experts. Kelman has to be mentioned as a determinative figure, he is an engineer and a management specialist, and he is the only person who published a core and a citing document as well.

The discussion of disaster diplomacy happens in high-ranked journals. Observing the journals' profiles, two main groups can be found. Some of the journals are focusing on both social and natural aspects of disasters (*Disasters, IJDRS*), while others' scope covers health and medical issues (*Military Medicine, Prehospital and Disaster Medicine*). Besides, *International Journal of Disaster Risk Reduction* deals only with natural scientific problems. The fact that the publishing platform of disaster diplomacy is diverse confirms the fact that it is a significantly multidisciplinary scholarship.

Based on the WoS categories, the authors' expertise, and the journals' profiles, the location of disaster diplomacy can be defined in the context of academic fields (Fig. 4). Disaster diplomacy is on the cross-section of three main disciplines: social sciences include multidisciplinary social science, political science, international relations, and (environmental) management and natural sciences include earth science and environmental science, while medicine and health cover environmental health issues as well as health diplomacy.



FIG. 4 Disaster diplomacy as an academic field.

However, it has to be emphasized that there is a great difference between the profiles of the core and the citing documents. The core articles cover subjects mostly related to social science, which is proven by the WoS categories, the authors' expertise, and the keywords as well. On the other hand, the citing articles' subject is natural science and health-related as the WoS categories and the authors' expertise confirmed so. This imbalance clearly shows that disaster diplomacy is not covered by a particular academic field, and it constructs rather an interdisciplinary scholarship.

The manual analysis of the web-based data found that a significant part of the core articles focuses on a geographic area or on a specific disaster event's diplomatic effect. A large number of articles are focused on disaster diplomacy in Asia, especially on India-Pakistan relations and Indonesia, and South America concerning the US' military participation after major disaster events. Interestingly, regional analyses were not published, only bilateral or intrastate ones. That is to say that there is a remarkable gap in regional case studies that could be improved in the future of the scholarship. Regarding hazard types, more than half of the articles examine health problems, earthquake, or tsunami, while 29% do not mention any specific ones. It is remarkable that the most discussed disaster type (health problem) is not an unequivocal one but rather a diversified area of environmental and social problems. Earthquake and tsunami appear frequently as those kill and affect the population the most while other significant disaster types (e.g., storm or wildfire) did not appear. The manual analysis showed that both geographically and at the source of diplomatic activity, the disaster diplomacy dialog is imbalanced, and the articles are primarily focusing on corresponding questions. Nevertheless, as the scholarship is a highly diversified academic field, the discussion also should be diverse. Various geographic areas, regional relations, and several other disaster types might be investigated in future scholarship as well.

## 6 Limitations

There are two main limitations of the present study. The WoS database is suitable only for citation indexes focusing on journals and articles. Books and other publications are not included. However, the analysis of an academic field cannot be comprehensive without book citations and publishers' reports. In addition, citation analyses can be criticized on a number of statistical grounds (De Vaus, 2009, pp. 243–284; Schoonbaert & Roelants, 2007), and we made only modest descriptive statements with simple influence measures. The social act of citations questions simple claims, and despite much progress, “a theory of citing” is still missing (Cronin, 1981, p. 16). Some even challenge the enterprise of full citation analysis (Macrobets & Macrobets, 1987).

Additionally, the number of publications is also a limiting factor. Based on the 54 core articles and 135 citing documents, only basic trends can be determined. Our research aimed at finding these basic tendencies of a fairly new and

emerging academic field. Nevertheless, according to a report prepared by Elsevier (Elsevier, 2017), the academic results in disaster science are mainly published in journal articles rather than books. Disaster diplomacy is a fairly new and emerging academic field; hence our basic tendencies may be representative. Although those cannot reflect the entire body of research on global disaster diplomacy, it will provide some evidence for future study.

## 7 Conclusion

The study undertook to map the academic field named *disaster diplomacy* using the Web of Science database used for citation analysis. During the research, we examined 54 core documents as well as 135 citing articles. Our variables were: document type, year of publication, WoS category, author, and publishing journal.

The analysis concluded that disaster diplomacy discourse is in journals, primarily in the form of articles and reviews, with most articles appearing in the 2010s. As a new academic field, only a few authors publish on the subject, and Ilan Kelman from Norway, who coined the term “disaster diplomacy,” is the most dominant scholar. However, based on the tendencies, we defined disaster diplomacy with a kind of taxonomical definition. On this basis, disaster diplomacy is fundamentally linked to three major disciplines: social sciences (multi-disciplinary social science, political science, international relations, and environmental management), natural sciences (earth and environmental sciences), and medical sciences (environmental health and health diplomacy).

Two research questions were addressed about (Q1) the subject areas concerned with disaster diplomacy and its linkages with a multidisciplinary context and (Q2) the relation between disaster diplomacy and the global disaster management frameworks. Interestingly, the core articles’ subjects greatly differ from the citing documents’ subjects. The former ones mostly relate to social sciences, while the latter ones cover natural science and health-related issues. Regarding the frameworks, no strict correlation can be observed, but an interesting factor may be mentioned. Parallel with documents in disaster science, a significant increase can be remarked after the Hyogo and Sendai Framework among core and citing articles as well. Hopefully, this tendency will continue in the future scholarship.

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