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Indonesia Disaster Knowledge Update - January 2023



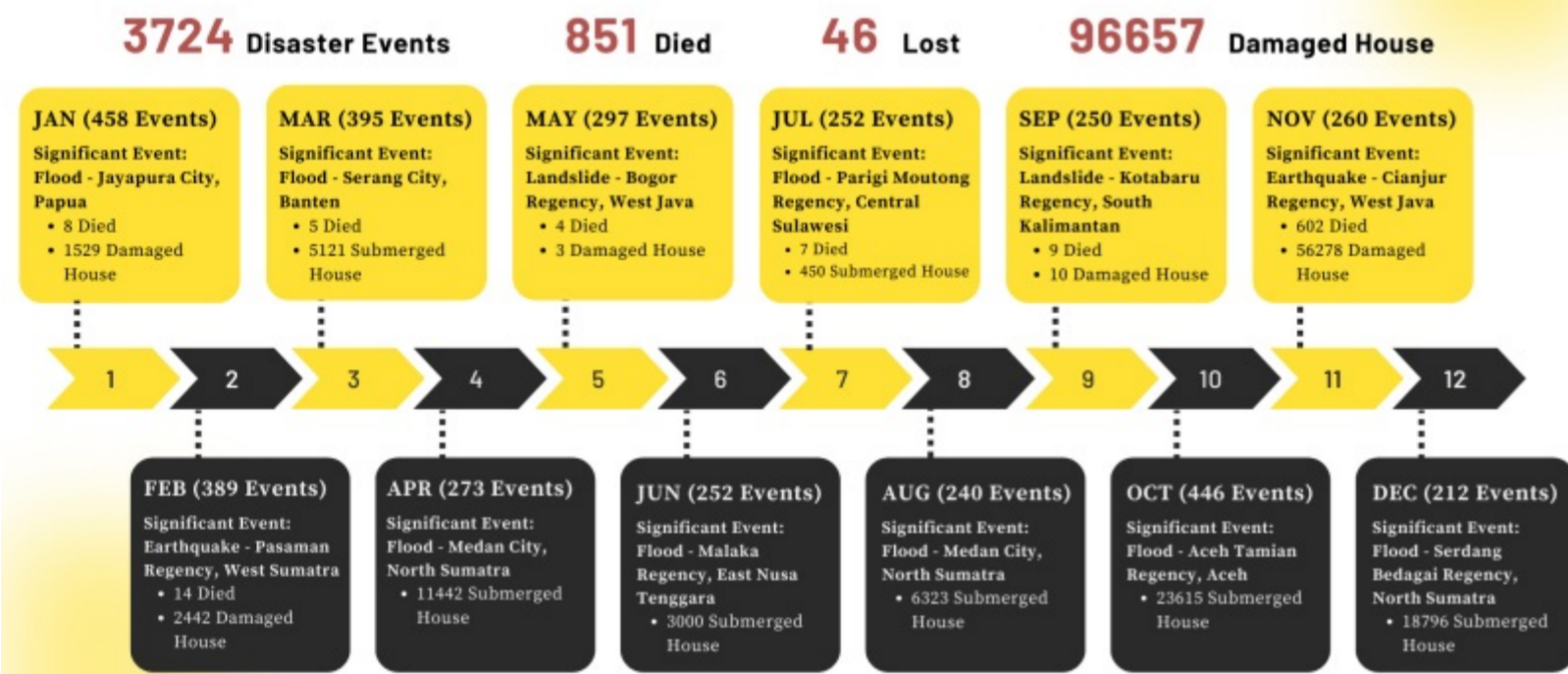
Disaster-related Research Publication in Indonesia of 2022 - A Year in Review

In 2022, 3,742 disaster events occurred in Indonesia and caused hundreds of people to lose their lives, and almost 100,000 houses were damaged. On a monthly basis, hundreds of emergencies due to disasters in Indonesia. The month with the most disaster events was January 2022, October, and February. Almost every month the country witnessed catastrophic disasters that substantially caused loss of lives or the economy. This situation highlights the importance of disaster risk management (DRM) strategies and implementation in the country.

Advancement on DRM is subject to the availability and quality of scientific basis. This shows the urgency of disaster-related knowledge management practices in Indonesia to provide the correct and timely information to all people who need the most, especially decision-makers. Knowledge creation and management create an enabling environment for empirical and evidence-based problem-solving and decision-making, thus increasing the capacity toward stronger disaster resilience.

Therefore, in this IDKU edition, we reviewed the disaster-related research literature published in 2022 to capture and identify the gap and the need for DRM strategies and actions in Indonesia.

DISASTERS IN INDONESIA IN 2022: AN OVERVIEW

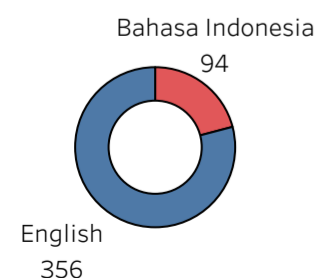


Source: gis.bnpb.go.id (data accessed on 15 January 2023)

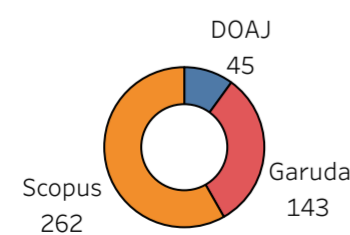
Research Articles Statistics

450 Publications | 289 Publishers | 432 Authors

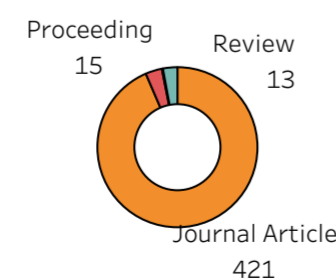
Publication Language



Repository/ Indexing

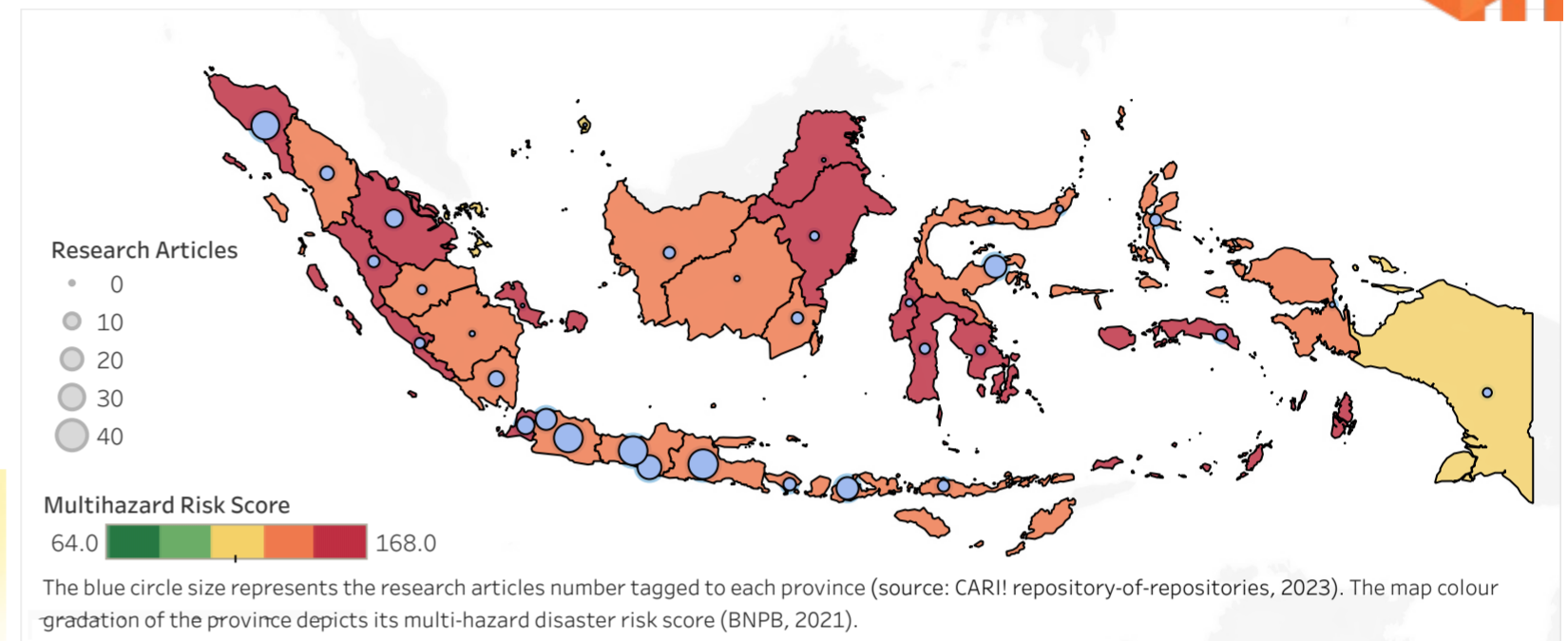


Publication type



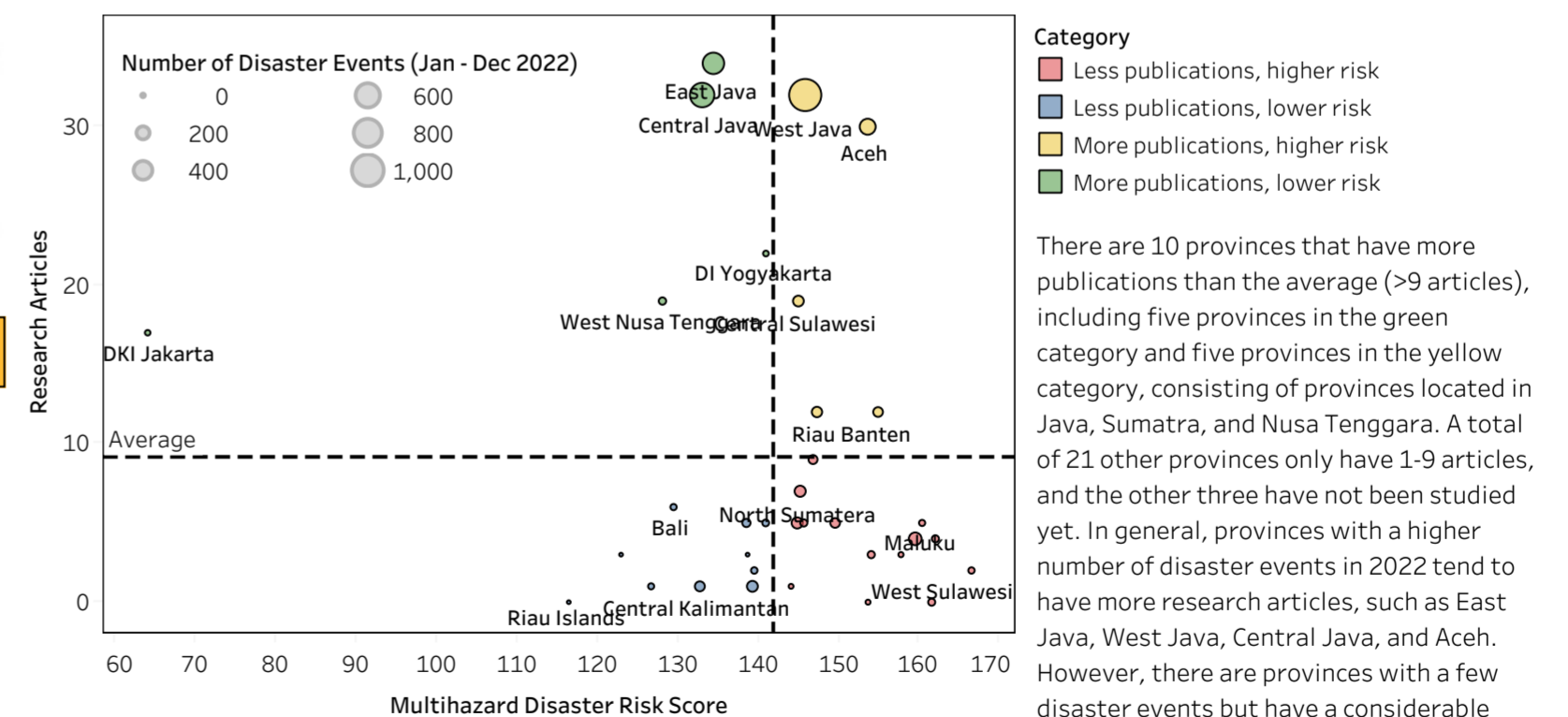
We examined research articles related to disasters in Indonesia published in 2022. The scientific articles were obtained from CARI! Knowledge Engine sourced from Scopus, DOAJ, and Portal Garuda repositories. All journal articles, proceedings, reviews, and book chapters were included in this analysis. Also, only articles written in English and Bahasa Indonesia were included. In total, we selected 450 research articles from 289 journal publishers to be reviewed in the subsequent analysis.

Research Articles Distribution Map



Throughout 2022, the research articles distribution map shows that the research locus is more concentrated in the provinces of Java and some provinces of Sumatra and Nusa Tenggara. While research studies in the provinces of Kalimantan, Maluku, Papua, and Sulawesi are quite a few, except in Central Sulawesi. The provinces with the highest number of articles were East Java (34 articles), Central Java (32 articles), West Java (32 articles), and Aceh (30 articles). Based on our record, there are research publications directly relevant to disaster management about North Kalimantan, Bangka Belitung Islands, and Riau Islands. This finding needs to be addressed in future disaster research, mainly for provinces with high-risk scores and no research record in 2022, for instance, Bangka Belitung and North Kalimantan.

Number of Research Articles VS Multihazard Disaster Risk Score by Province



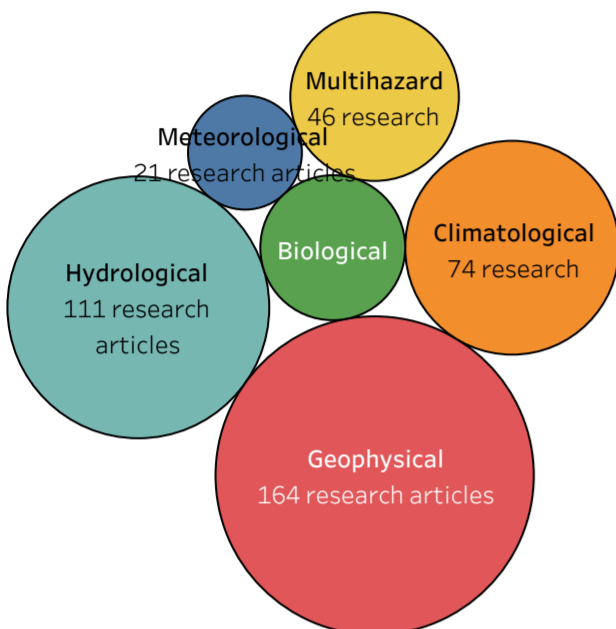
The quadrant plot shows the province's category (marked by different colours) based on the number of research articles (source: CARI!, 2023) and multi-hazard disaster risk score (source: BNPB, 2021). The circle's size depicts the number of disaster events in the province (source: BNPB, 2023).

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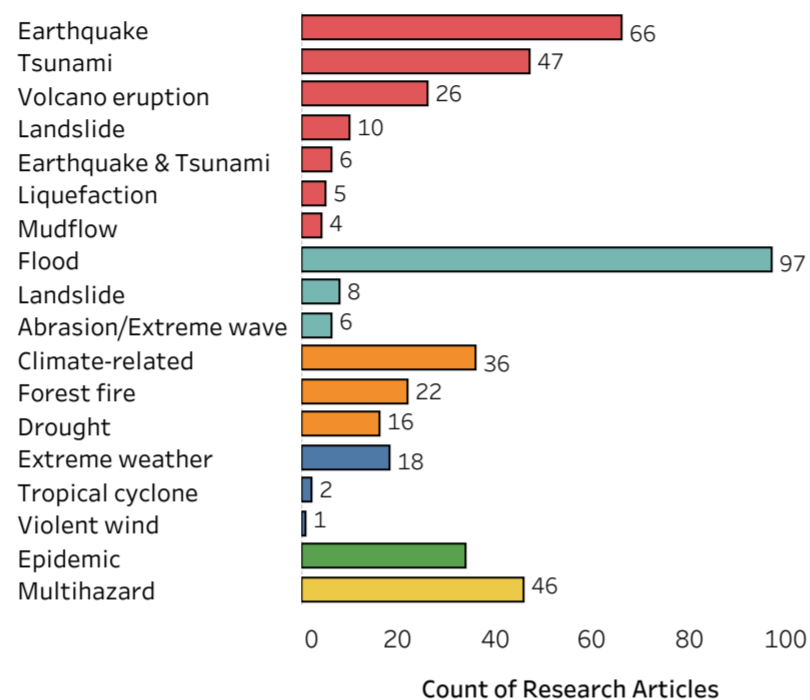


Research Articles by Hazard Cluster and Type

Research Articles by Hazard Cluster



Research Articles by Hazard Type



*Note that there are two different type of landslide hazard that classified into geophysic..

The hazard cluster and hazard type classification are based on UNDRR/ISC classification. Geophysical hazards are the most studied hazards with 164 publications, earthquake and tsunami hazards make up the most proportion of the cluster. Hydrological hazards take on the second position with 111 publications that largely focused on flood. Then climatological hazards are studied by 74 publications which consisted of adverse climate-related hazards, forest fire, and drought. Then multihazard research is studied by 46 publications. Biological hazard only consisted of epidemic hazards which are covid-19 examined by 34 publications. Meteorological hazards were least examined by researchers with 21 publications which primarily studied extreme weather hazards.

Top Research Articles

Perceived Risk of Being Infected With SARS-CoV-2: A Perspective From Indonesia

Authors: Harapan, H; Anwar, S; Nainu, F; Setiawan, AM; Yufika, A; Winardi, W; Gan, AK; Sofyan, H; Mudatsir, M; Oktari, RS; Wagner, AL
Published on DISASTER MEDICINE AND PUBLIC HEALTH PREPAREDNESS | Cited by 10 articles

School Location Analysis by Integrating the Accessibility, Natural and Biological Hazards to Support Equal Access to Education

Authors: Sakti, AD; Rahadianto, MAE; Pradhan, B; Muhammad, HN; Andani, IGA; Sarli, PW; Abdillah, MR; Anggraini, TS; Purnomo, AD; Ridwana, R; Yulianto, F; Manessa, MDM; Fauziyyah, AN; Yayusman, LF; Wikantika, K
Published on ISPRS INTERNATIONAL JOURNAL OF GEO-INFORMATION | Cited by 8 articles

An evaluation of community satisfaction with the government's COVID-19 pandemic response in Aceh, Indonesia

Authors: Adamy, A; Rani, HA
Published on INTERNATIONAL JOURNAL OF DISASTER RISK REDUCTION | Cited by 6 articles

Environmental Education: A Correlational Study among Environmental Literacy, Disaster Knowledge, Environmental Sensitivity, and Clean-Living Behavior of Post Tsunami Disaster in Aceh Communities, Indonesia

Authors: Yusuf, R; Yunus, M; Maimun, M; Fajri, I
Published on POLISH JOURNAL OF ENVIRONMENTAL STUDIES | Cited by 5 articles

Integration of Numerical Models and InSAR Techniques to Assess Land Subsidence Due to Excessive Groundwater Abstraction in the Coastal and Lowland Regions of Semarang City

Authors: Lo, WC; Purnomo, SN; Dewanto, BG; Sarah, D; Sumiyanto
Published on WATER | Cited by 5 articles

The list above is the top five disaster-related research articles in Indonesia based on the citation number as of January 2023 recorded by Scopus. Research related covid-19 studied by two articles, which focused on the preparedness and response phase. Another two articles researched education or school in integrated disaster risk phase management. One article studied the slow-onset hazard of land subsidence in Semarang City.

Top Investigated Cities



Top Investigated Provinces

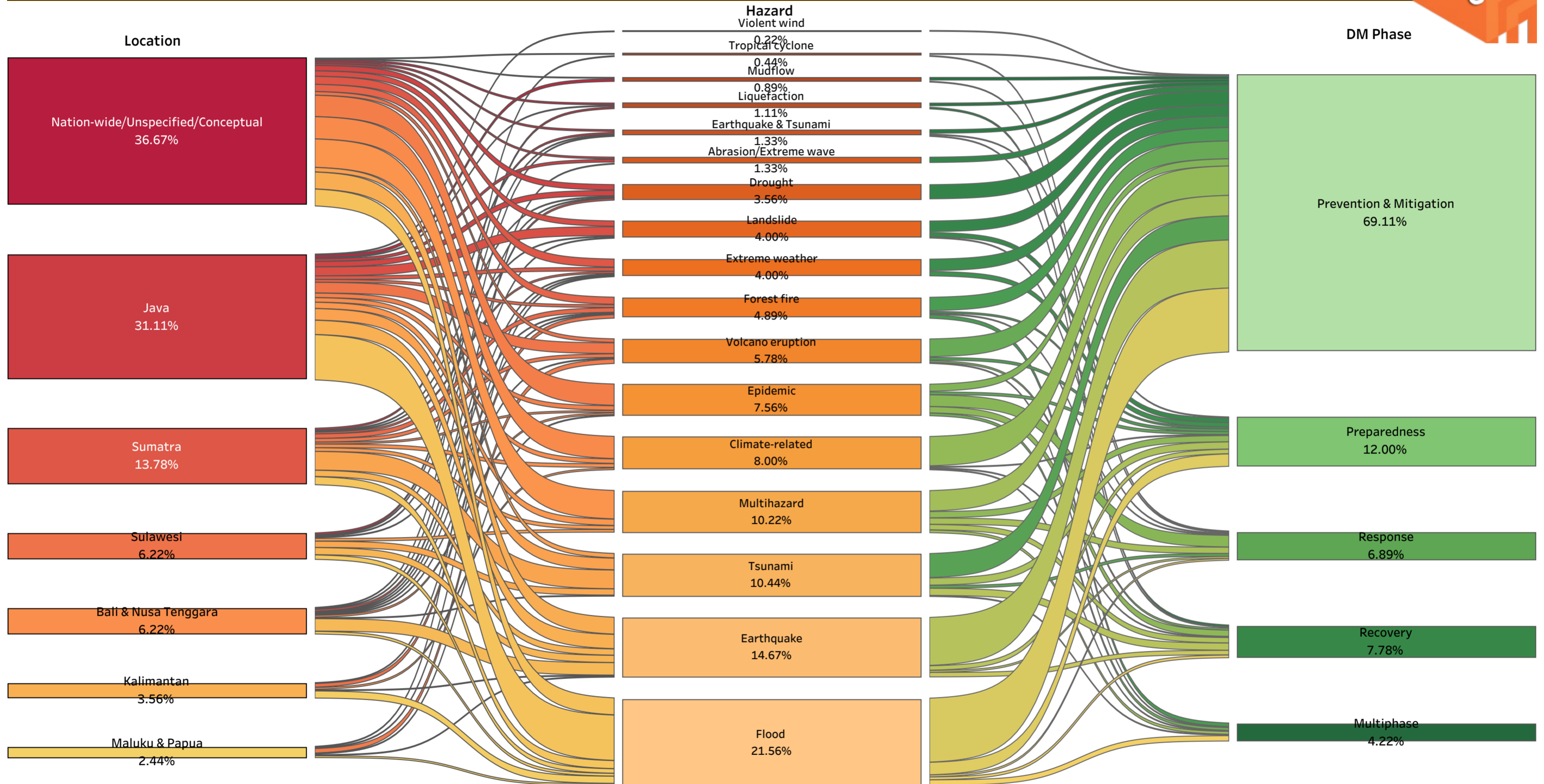


Top Author Affiliations



According to the locus of research, Palu City is the most frequently studied in 2022, with 12 research articles, followed by Semarang City with eight research articles, Surabaya City with five research articles, and other cities and regencies mainly located in Java, Sumatera, Sulawesi, and Nusa Tenggara. Meanwhile, the three provinces with the highest number of disaster-related studies were East Java, Central Java, and West Java. This indicates that research in the province tends to be situated in its capital city. Based on first author affiliation, Universitas Indonesia contributed as the most productive of disaster-related publications in 2022 with 30 publications. Other prominent university with a high number of publications is Universitas Gajah Mada (29 publications), Universitas Syiah Kuala (22 publications), and Institut Teknologi Bandung (17 publications).

Sankey Diagram of Publications: Location to Hazard to Disaster Management Phase



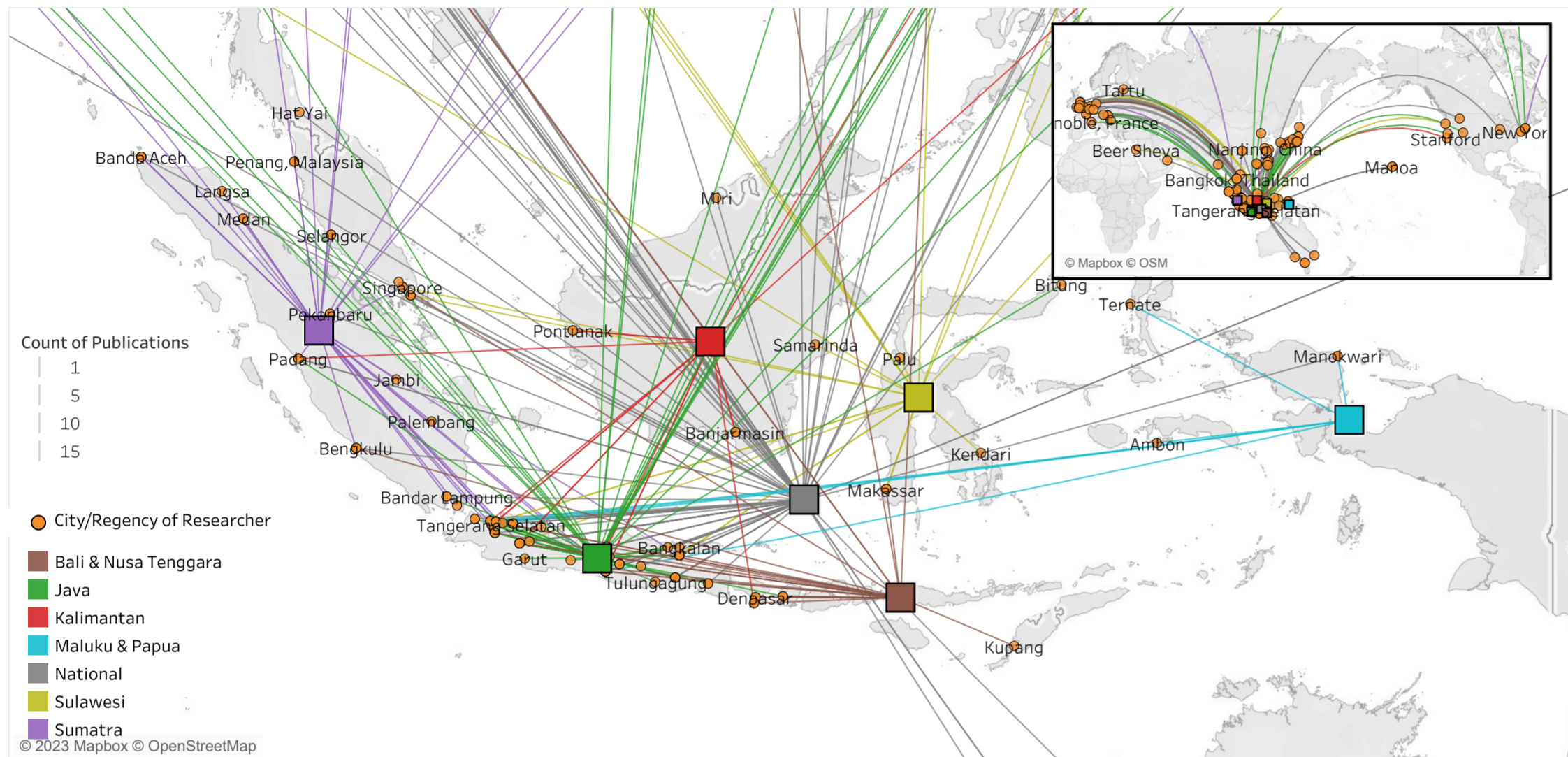
The Sankey diagram is visualized proportionally to the number of publications. The larger size of the box and the wider lines indicate a greater number of publications accounted for them. The Sankey diagram illustrates the distribution of research articles and their relations across studied location, hazard type, and disaster management phase.

The above Sankey diagram is analyzed to identify the relationship between the location of research, the studied hazard type, and the studied disaster risk management phase in each research article. More than a third of all articles (36.7% or 165 articles) were conducted disaster research on nationwide research, unspecified research location, or conceptual research, which tend to be studied together in relation to multihazard, climate-related hazard, and epidemic hazard types. The second position is Java Region (31% or 140 articles) which majorly studied flood hazards, and the third is the Sumatra region which majorly studied tsunami hazards. Other regions have less than 10% of the publications studied in relation to earthquake hazards in Sulawesi, Bali & Nusa Tenggara, and flood hazards in the Kalimantan region. Furthermore, the same pattern was found in all hazard types, which tend to be studied more in the disaster prevention & management phase. Except for the epidemic hazard that is frequently studied with a focus on the emergency response phase.

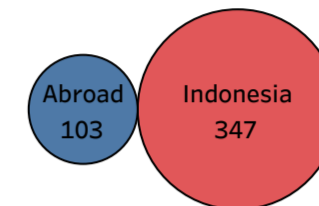
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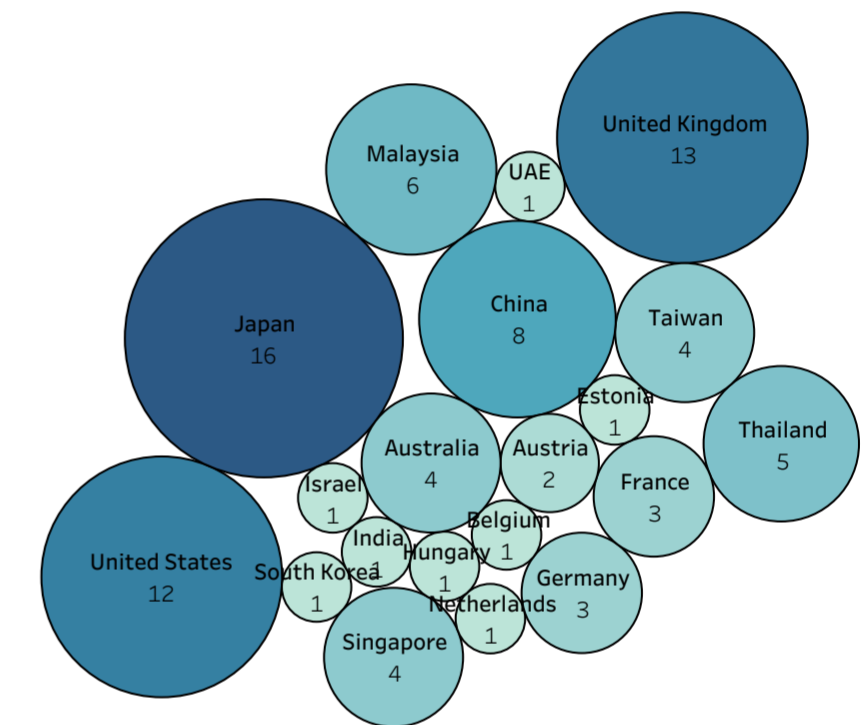
Where are the researchers located and where is their research conducted?



Affiliation Proportion



Countries of Affiliation Abroad



The map above plotted the city origin of the first author's affiliation location and their research locus by its region in Indonesia. At the national level research, a significant amount of researchers within the country and abroad contributed to the investigation in Indonesia. But the domestic researcher is largely affiliated based on Java, such as in the city of Yogyakarta, Depok, and Jakarta. While the abroad researcher has locations quite distributed from Europe, East Asia, and Australia-based institutions. Java region is investigated by many Java-based researchers and some abroad researchers mainly located in Europe and Japan. Sumatra region is quite proportionally researched by domestic and abroad researchers. Bali & Nusa Tenggara region was dominantly studied by researchers from Java and its own region researcher. Kalimantan region has lesser its own researcher that studied within the region, the same condition also applies to Papua & Maluku regions, as it has seen many researchers located from the outside region in Indonesia. While the Sulawesi region was investigated by quite a lot of abroad researchers from around the world. The left bubble chart shows the affiliation proportion of researcher numbers from Indonesia and abroad, it can be seen that Indonesian researchers surpass quite well. Looking at abroad affiliation countries, there found that researchers based in Japan, the United Kingdom, and the United States are the top three to study disaster-related research in Indonesia. More researchers from others countries across Asia and Europe are identified to conduct their study in Indonesia.

CARI! Recommendations: 2023 Disaster Research Agenda of Indonesia

- 1) The year 2023 is a year of preparation for the upcoming elections, preparation of Mid-term Development Planning, adjustment of Long-term Development, and various political-economy agenda at the national and sub-national levels. Researchers should be proactive in communicating and advocating their research aligning with political agenda and timeline. At the same time, policymakers, bureaucrats, and leaders in various sectors should ensure access to credible expertise in disaster risk management (DRM).
- 2) Reiterating the Global Assessment Report insights, disaster research in Indonesia should quantify the economic and social value of the country's risk profile. Research could either provide in-depth single-hazard analysis or consistently apply a multi-hazards approach. There is traction for finding knowledge-based for initiating and reinforcing a forecast-based approach for early actions as part of the country's early warning systems and disaster preparedness. The country needs researchers to systematically evaluate the performance of disaster emergency response & recovery.
- 3) From the spatial distribution, studies published in 2022 mainly chose East Java, West Java, Central Java, and Aceh as their study locations. This has the same pattern as studies published in 2021, which examined the East and Central Java regions. Indonesia strongly needs an incentive scheme to motivate researchers to investigate other areas. Science stakeholders may wish to prioritize research in Kalimantan due potential influx of investment and development for the new capital that would require a strong science basis in disaster. This year Indonesia is also conducting its major Strategic Environmental Assessment (KLHS) for Long-term Development Planning, researchers should prioritize the production of research products in Kalimantan, Papua, and Nusa Tenggara.
- 4) National universities from Java Island still dominate most domestic research production. This has been a recurring pattern. A meaningful change is needed to build the scientific capacity of researchers in other parts of Indonesia, especially in private institutions/universities.
- 5) Indonesia is the ASEAN Chair for 2023. Hence, disaster research should emphasize cross-boundary disaster risks and resilience building within the region and beyond. Indonesian researchers could put more effort into becoming an example for other ASEAN researchers in conducting excellent disaster research. A strategic partnership orchestration is crucial to incentivize researchers to leverage south-south cooperation opportunities and explore other new research partners and donors beyond the traditional one.
- 6) Disaster knowledge from Indonesia should be effectively managed and communicated to the world by reinforcing the message of Sustainable Resilience as part of efforts to fulfill strategic global commitments and frameworks.