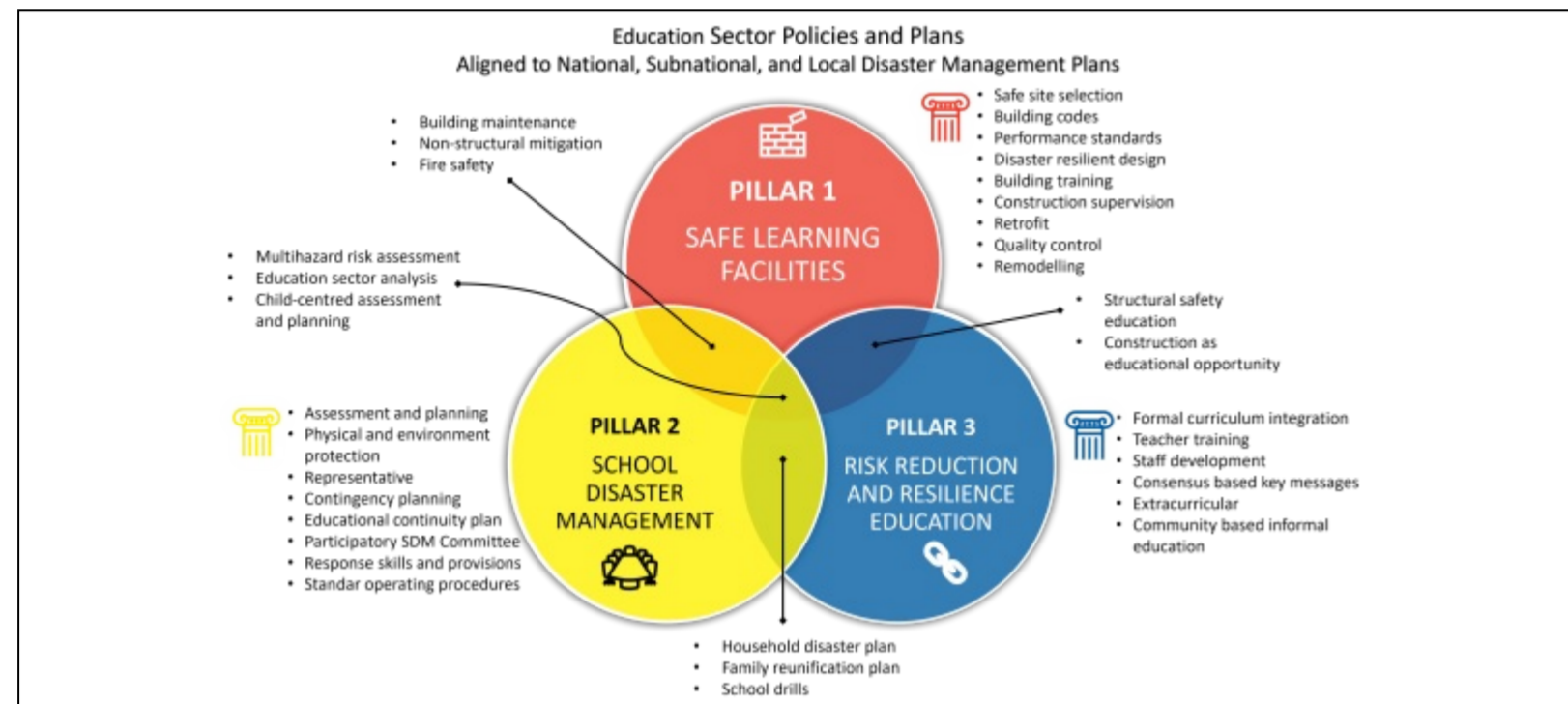


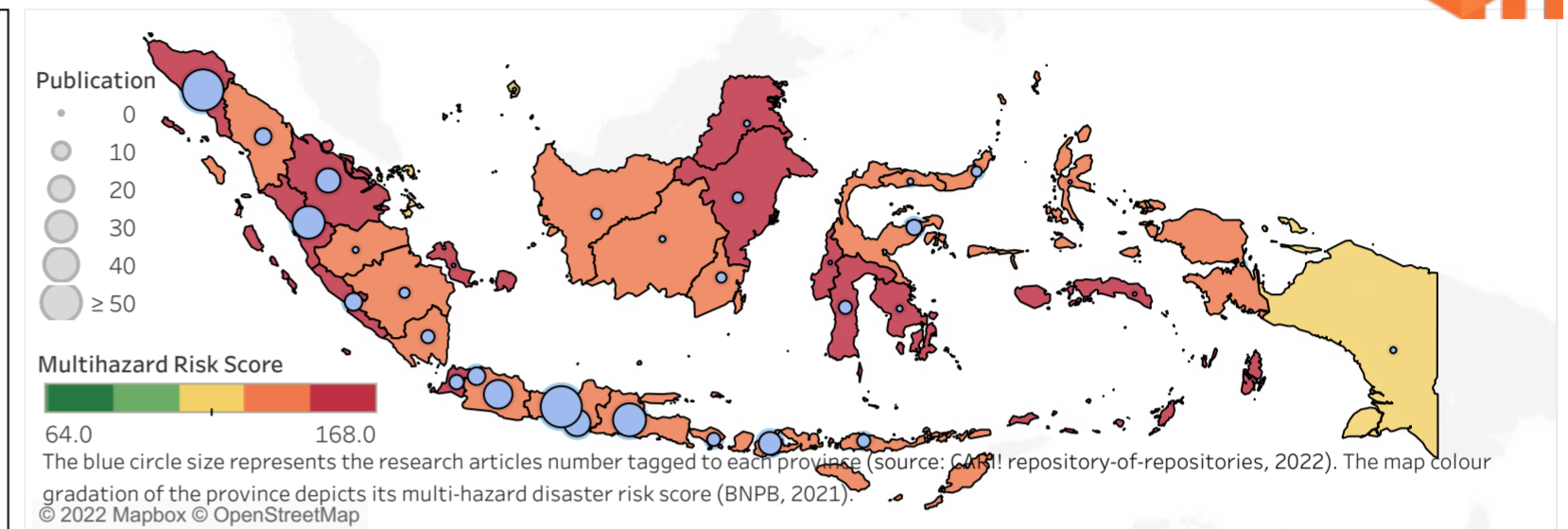


Research Publications about Disaster Education & Comprehensive School Safety in Indonesia

The Comprehensive School Safety Common Framework



Research Articles Distribution Map



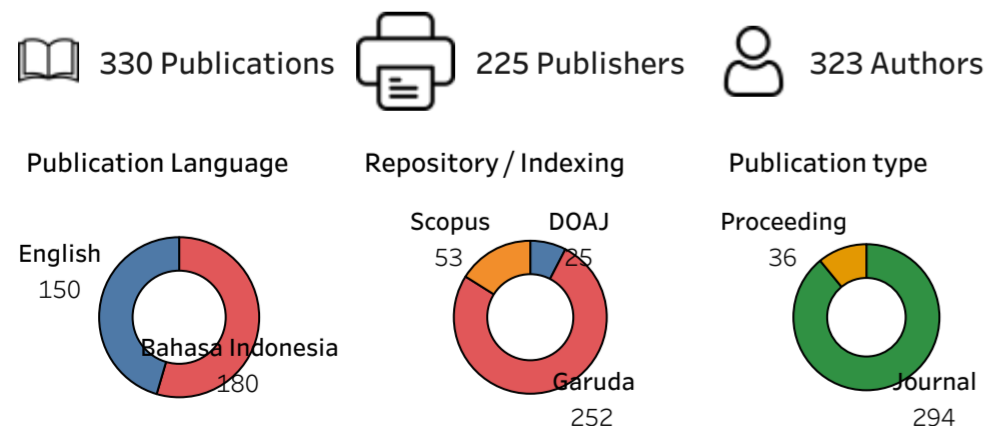
In July 2022 IDKU edition, CARI! review the landscape of disaster education & comprehensive school safety (CSS) scientific publications about Indonesia. In this review, we analyze various studies based on the three pillars of the CSS framework commonly used and officially adapted in the Indonesian context.

The three pillars include (1) **Safe Learning Facilities**, encompassing all efforts to make schools a safer place for learning to safeguard school communities from death and injuries due to structural collapse, damages, or malfunctions; (2) **School Disaster Management**, ensuring school community and education sector can plan and take necessary actions to mitigate, prepare for, respond to cope with and recover from hazard impacts and disaster events; and (3) **Risk Reduction and Resilience Education**, effort enhancing knowledge, attitudes, and skills imparting on disaster risk reduction and resilience to students and the common public to create a culture of safety. The three pillars are inseparable and have certain overlapping areas complementing one another. The three intersecting pillars are composed of key components of school safety and the areas of confluence, with sets of recommended interventions that involve the lead roles of key stakeholders.

As can be seen from the map, research on disaster education and CSS in Indonesia is still skewed towards several provinces in the country. The provinces with the highest number of research were Central Java (53 articles) and Aceh (50 articles). Provinces in Sumatra Island and Java Island tend to have a higher number of publications, while other provinces, especially in the eastern region, have a more limited number of publications. We found that some provinces have no research publications at all despite having a higher risk of disasters, such as Maluku, West Sulawesi, and Bangka Belitung provinces. The Word Cloud shows the most frequently studied cities/regencies. Banda Aceh city and Padang city topped the rankings with more than 20 publications. Meanwhile, other cities/regencies are far below with the number of publications below 10, namely Yogyakarta city, Semarang City, Klaten, Bantul, Central Jakarta, and others.

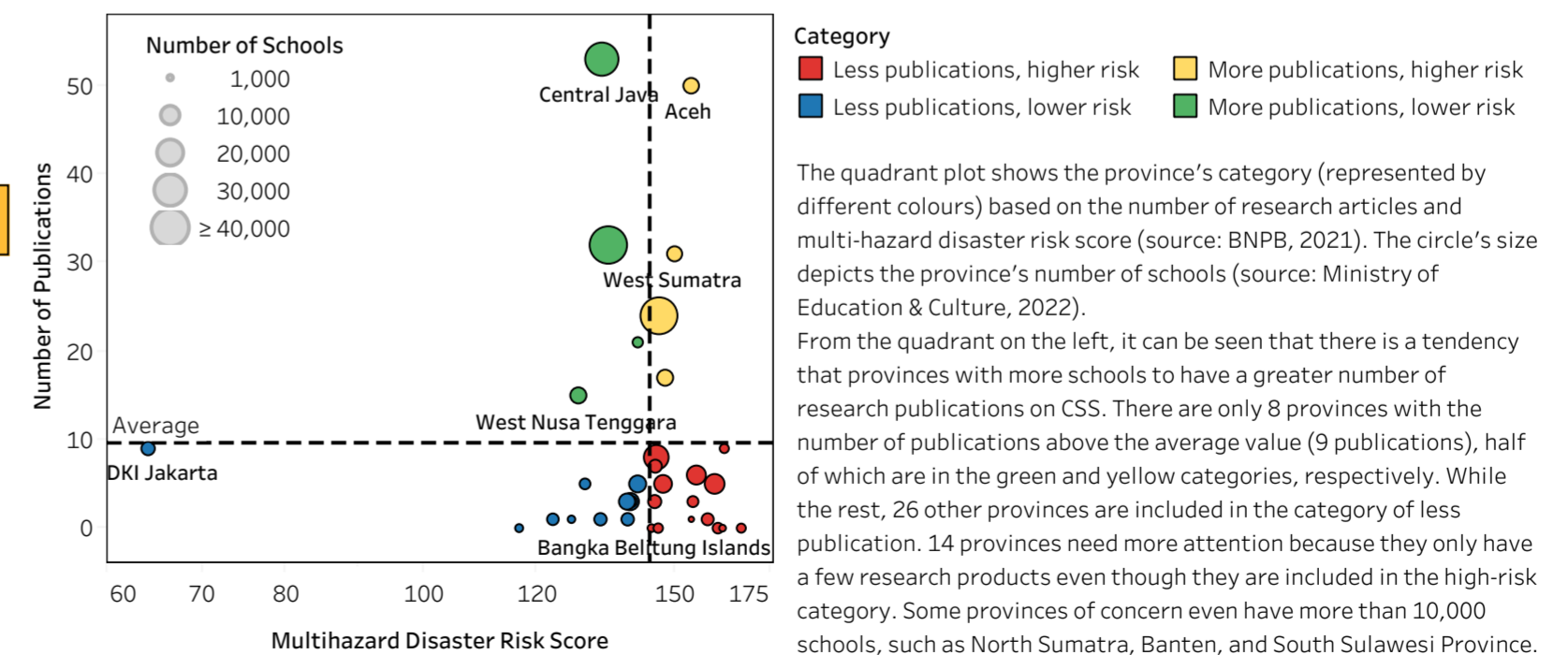
Reference: ASEAN (2016). "ASEAN Common Framework for Comprehensive School Safety". Seknas SPAB (2020). "Peta Jalan Program Satuan Pendidikan Aman Bencana 2020-2024"

Research Articles Statistics



For the purposes of analysis, we examined research articles that investigated any aspects of disaster education and comprehensive school safety. The scientific articles we used in this analysis were obtained from Scopus, DOAJ, and Portal Garuda repositories. Based on the multi-stage filtration process applied using 22 keywords on disaster education school safety, we obtained 330 research articles processed in the subsequent analysis.

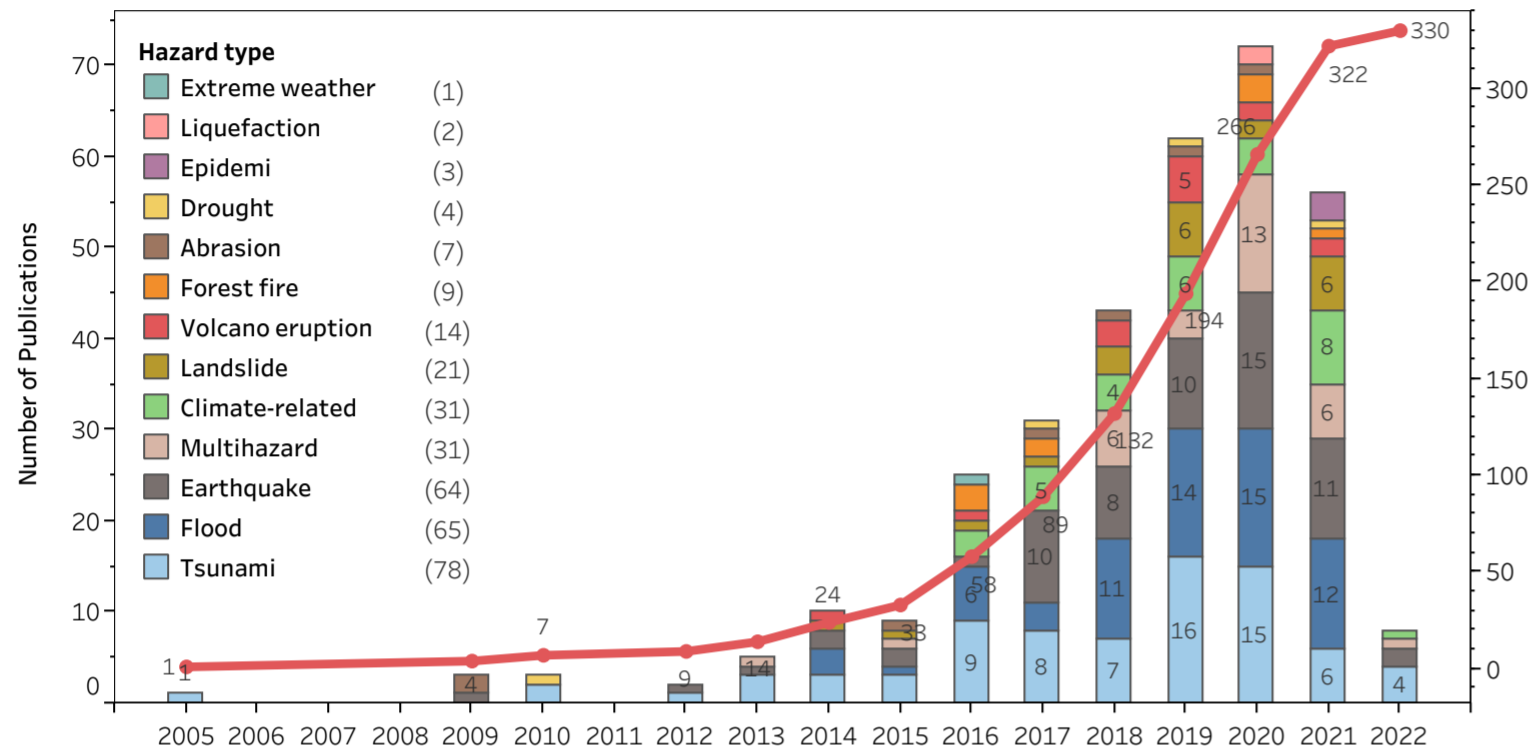
Research Articles VS Multihazard Disaster Risk Score by Province



Indonesia Disaster Knowledge Update - July 2022



Growth of Research Publication



The trend shows that the increasing number of research on disaster education and CSS accelerated after 2012 and peaked in 2020. Every year there are research publications on CSS within the context of tsunami hazards, occasionally followed by similar research on CSS and flood or earthquake hazards respectively. In 2021, CSS research on the hazard of the epidemic (to represent the whole variety of communicable diseases and public-health emergencies) emerged following the outbreak of COVID-19.

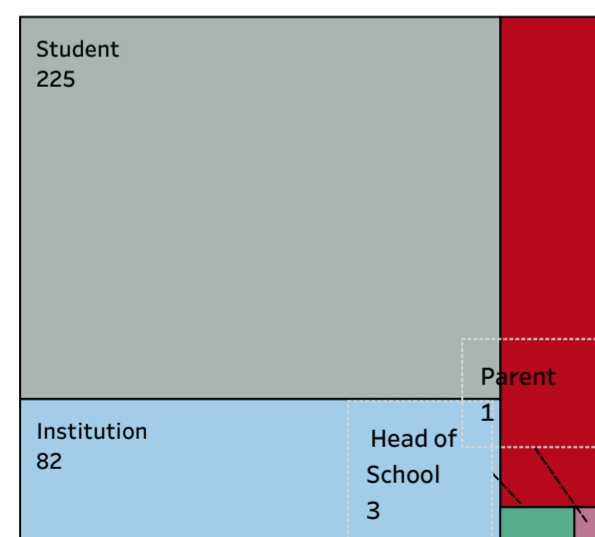
Top Research Articles

- Exploring minimum essentials for sustainable school disaster preparedness: A case of elementary schools in Banda Aceh City, Indonesia**
Sakurai A.; Bisri, M.B.F.; Oda, T.; Oktari, R.S.; Murayama Y.; Nizamuddin; Affan M. | International Journal of Disaster Risk Reduction
Published on 2018-08-01 | Cited by 14 articles
- The reconstruction of disaster knowledge through thematic learning of science, environment, technology, and society integrated with local wisdom**
Atmojo, S.E.; Rusilowati, A.; Dwiningrum, S.I.A.; Skotnicka, M. | Jurnal Pendidikan IPA Indonesia
Published on 2018-06-01 | Cited by 7 articles
- The Preparedness Level of School Community in Handling the Earthquake and Tsunami Threats in Banda Aceh City**
Nandi N. & Hawwina T | IOP Conference Series: Earth and Environmental Science
Published on 2018-05-04 | Cited by 3 articles
- Effectiveness of disaster-based school program on students earthquake-preparedness**
Adiyoso W. & Kanegae H. | Journal of Disaster Research
Published on 2013-01-01 | Cited by 2 articles
- Volcanic eruption risk for school building in Indonesia**
Retnowati, D.A.; Meilano, I.; Vitriana, R.; Hanifa, N.R | AIP Conference Proceedings
Published on 2018-07-18 | Cited by 2 articles

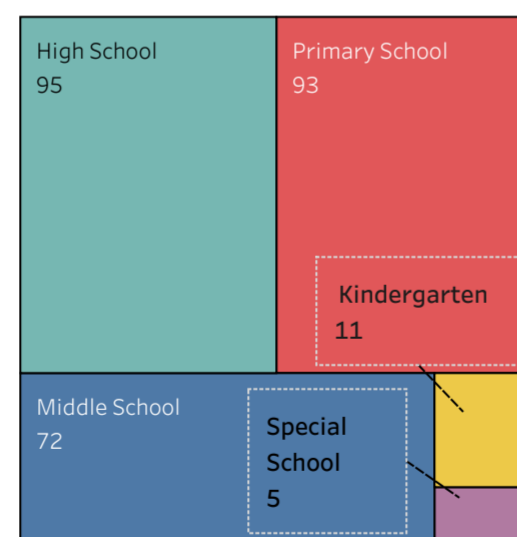
The list above is the top-five research articles on disaster education and CSS themes in Indonesia ranked by the number of citations from 2005 to 2022 sourced from the Scopus directory.

Number of Publications based on Participant, School level, and School type

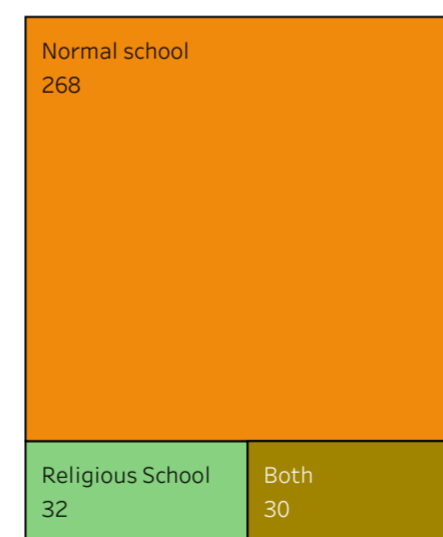
Research participant subject



School level

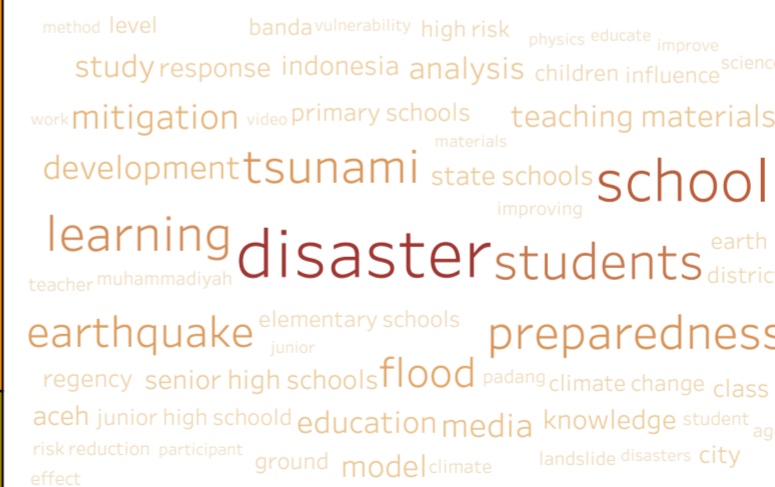


School type



Most CSS research publications consider the "students" as the main research object, and the rest examines school management, community, and teachers. A handful of research examines the role of school principals and parents. Senior high schools and primary schools were the most studied educational unit, followed by middle schools, and a small proportion of kindergartens and special schools (schools for disabled people). Most researchers studied both normal public and private schools, a few only studied religiously affiliated schools, and some studied both.

Top Words used in the Publication Title

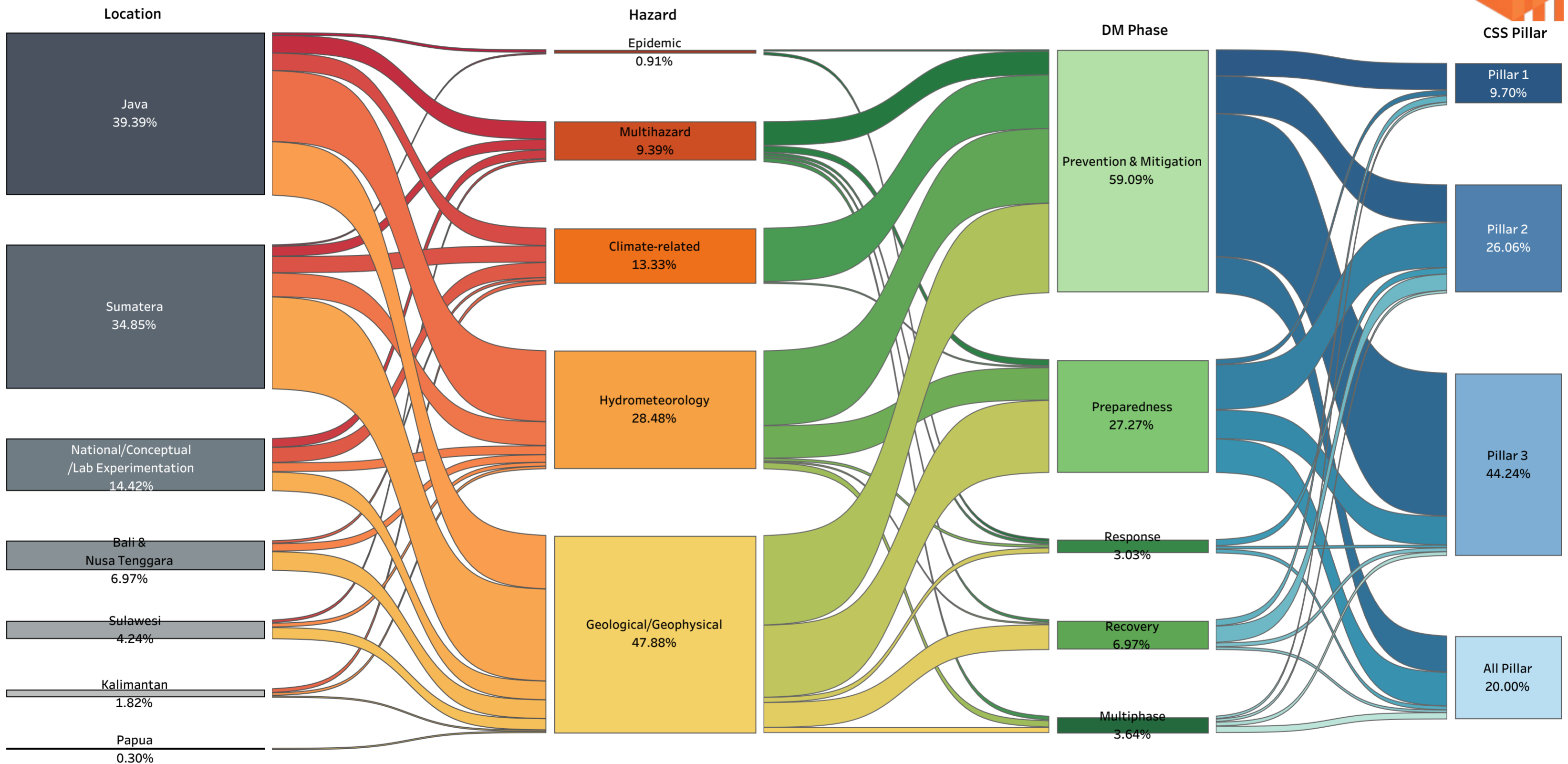


The word combination using "disaster", "preparedness", "earthquake", "flood", "mitigation" are some of the most frequently used words in the title of research publications on CSS. Looking at the themes based on sub-phase of disaster management, topics of public education, hazard assessment, and infrastructure improvement are the most frequently researched topic.

Top Investigated Topics



Sankey Diagram of Research Articles: Location to Hazard type to Disaster Management Phase to CSS Pillar



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 scientific publications and their relations across locations, type of hazards, and element (i.e. the box) as well as the number of publications connecting between the boxes.

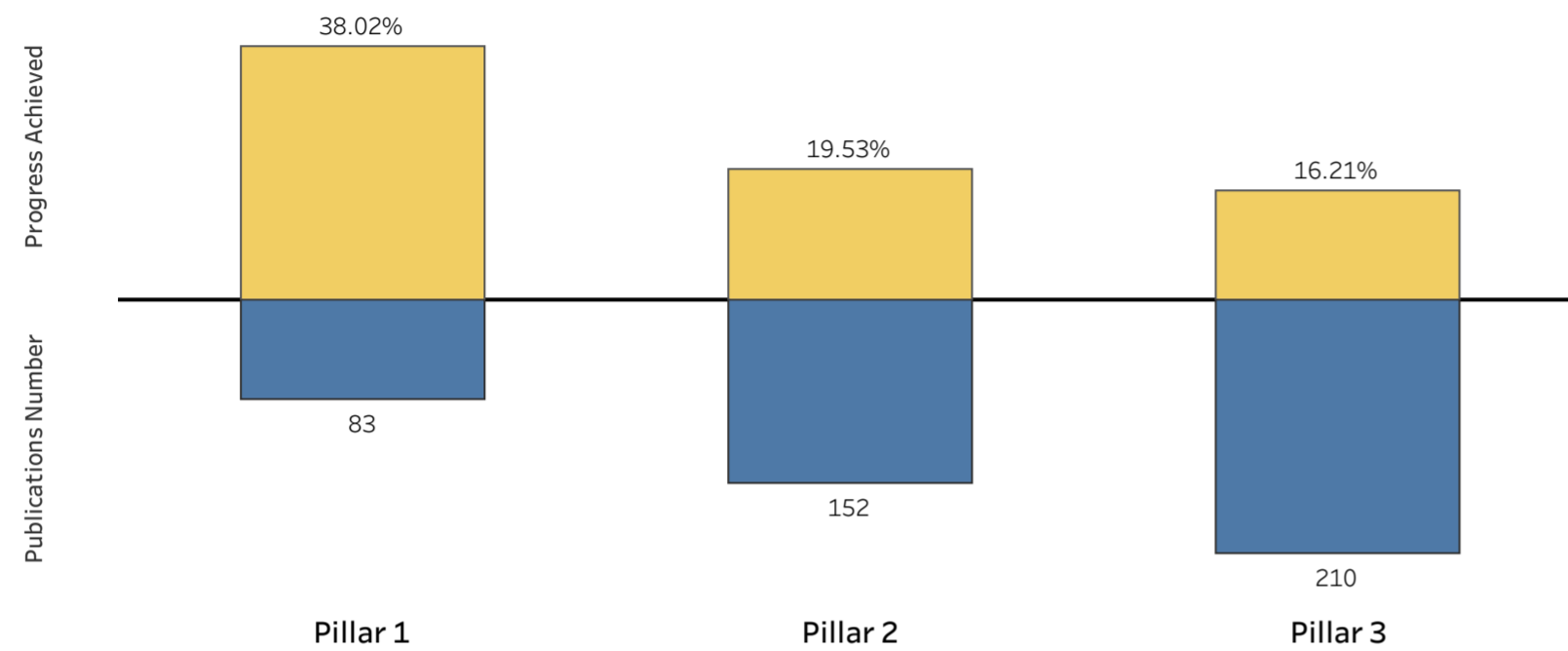
From Sankey above, we can see that the Java region is ranked at the top with the largest number of publications, where most of the research is related to hydrometeorological hazards. The Sumatra Region occupies the second position with the most publications where the research mainly considers geological hazards as the main risk factor for the school community. Meanwhile, national-scale or conceptual research publications tend to study geological hazards and climate-related hazards. The rest of the regions appear to be larger in disaster education and CSS research on geological hazards. All studies, regardless of their hazards, tend to focus on activities relevant to the prevention and mitigation phase. However, a substantial amount of CSS research and geological hazards are also relevant to preparedness-type of activities. The emergency response phase is the least studied phase. Research that connects prevention and mitigation with pillar 3 of the CSS is mostly about disaster awareness, and only a handful of them are relevant to Pillar 1. Naturally, research on the preparedness phase tends also investigate its roles and relevant to CSS pillar 2, namely disaster school management.

Indonesia Disaster Knowledge Update - July 2022



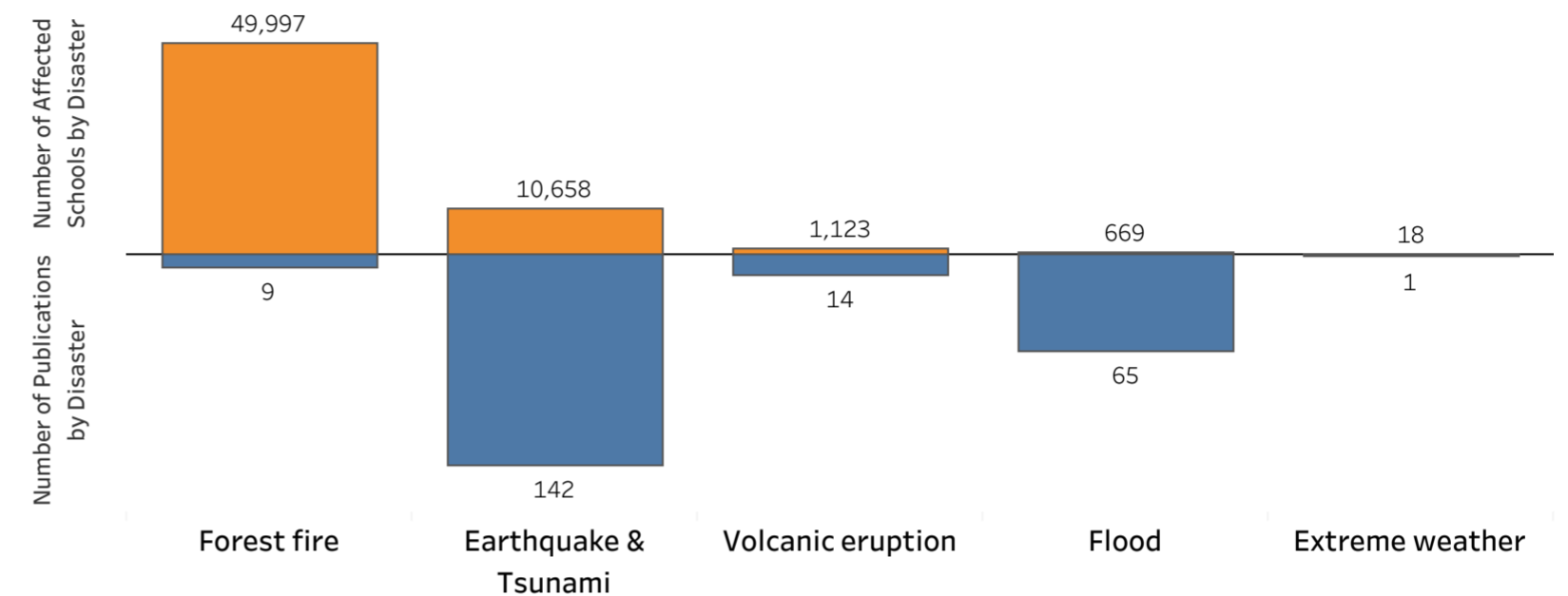
Important distribution and pattern: Disaster education & CSS research vis-a-vis relevant metrics

Comprehensive School Safety Measurement in Indonesia



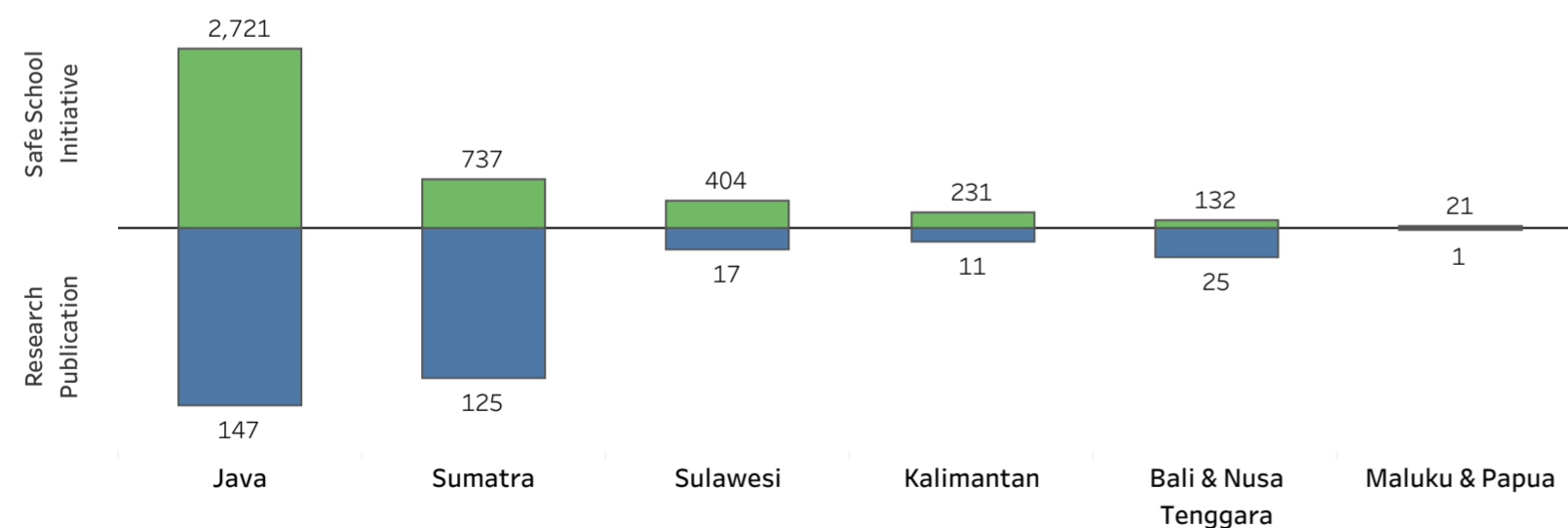
The diagram above shows the progress of the achievement of disaster-safe education units and the number of publications in each CSS pillar. An interesting pattern emerges that a large number of studies on a particular pillar does not necessarily mean that the achievement of that pillar is also high. Based on the level of achievement, sequentially pillar 1 occupies the top position, followed by pillar 2 and pillar 3. While at the publication level it is the opposite, pillar 3 is the most studied, then pillar 2 and pillar 1 after that. This also indicates that physical development for disaster-safe schools represented by pillar 1 is easier to achieve than non-physical progress such as school disaster management and disaster risk reduction knowledge. This finding confirms that the results of research or knowledge need to be transferred better within the scope of the education unit.

Number of Affected Schools by Disaster and Number of Publications



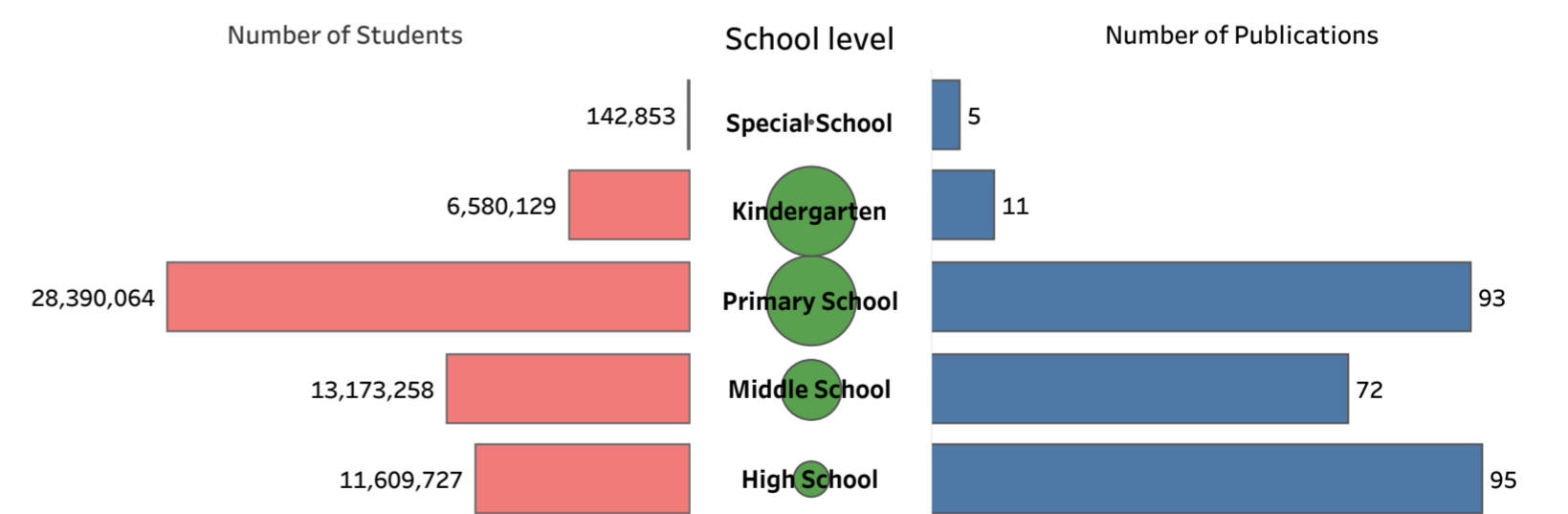
The bar chart above displays the number of schools affected by the disaster (2015-2019) and the number of CSS publications (2015-2019) by type of hazard. Forest and land fires are the disasters that have the most widespread impact on many schools, but in fact, there are very few research publications on schools related to forest and land fires. This is different from other types of disasters such as earthquakes and tsunamis, and also floods. Few volcanic eruption publications have researched its relation to disaster-safe schools. This underlines that more research about the forest and land fire and volcanic eruptions is needed in the school safety context.

Number of Safe School Initiative vs Number of Publications based on Region



The diagram above shows the number of disaster-safe school initiatives and the number of publications per region. In general, it appears that there is a pattern of regions that have more disaster-safe schools, so the number of publications also increases. Except for the Sulawesi and Kalimantan regions, although the number of disaster-safe schools is higher, the number of publications is still below Bali and Nusa Tenggara region.

Number of Students vs Number of Publications



Based on the diagram above, the elementary school level has the largest number of students and number of schools. Then followed by the education level of kindergarten, junior high school, senior high school, and special school. Based on the number of publications, high school education levels were the most studied, followed by primary and secondary education levels. Hence, this calls for more disaster education and school-safety research at the junior high school level, kindergarten, and special schools education.