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DAFTAR PUSTAKA

Amri, I., Giyarsih, S. R., & Ruslanjari, D. (2024). Tsunami risk awareness, hazard warning knowledge, and intended evacuation behavior among beach users in Bantul, Indonesia. *International Journal of Disaster Risk Reduction*, *109*, 104594. https://doi.org/10.1016/j.ijdrr.2024.104594

Aw, S., Sy, B., & Lacroix, P. (2026). *Assessment and Mapping of Multi-Hazard Risk for Decision Support in the Kedougou Region , Senegal (1995 – 2024)*. 1–32.

Badan Informasi Geospasial. (2020a). *Bathymetri Nasional (BATNAS)*. https://tanahair.indonesia.go.id/batnas

Badan Informasi Geospasial. (2020b). *DEM Nasional (DEMNAS)*. https://tanahair.indonesia.go.id/demnas

Badan Pusat Statistik Kabupaten Majene. (2023). Kecamatan Banggae dalam Angka 2023. *Badan Pusat Statistik Kabupaten Majene*.

Bastidas, P., & Petal, M. (2012). Assessing School Safety from Disasters. A Global Baseline Report. In *International Strategy for Disaster Reduction* (Issue January 2014).

Benazir, & Oktari, R. S. (2024). Assessing tsunami risk along the Aceh coast, Indonesia: A quantitative analysis of fault rupture potential and early warning system efficacy for predicting arrival time and flood extent. *Natural Hazards*, *120*, 4875–4900. https://doi.org/10.1007/s11069-024-06401-x

Benazir, Syamsidik, Idris, Y., & Putra, N. P. (2023). Connecting community's perspectives on tsunami risk to anticipated future tsunamis: a reflection from a progress of tsunami preparedness from a coastal community in Aceh-Indonesia after 19 years of the 2004 Indian Ocean Tsunami. *Geoenvironmental Disasters*, *10*(1). https://doi.org/10.1186/s40677-023-00252-7

Benazir, Triatmadja, R., Yuwono, N., Nurhasanah, A., & Kuswandi. (2013). Tsunami Force on Low Building and the Effect of Surrounding Buildings. *Proceedings of the 7th International Conference on Asian and Pacific Coasts (APAC 2013)*.

Bernard, E. N., Meinig, C., Titov, V. V, & Wei, Y. (2023). 50 years of PMEL tsunami research and development. *Oceanography*, *36*(2–3), 175–185.

BMKG. (2021). *Laporan Gempa Bumi M 6,2 Majene Sulawesi Barat 15 Januari 2021*. BMKG.

Charvet, I., Macabuag, J., & Rossetto, T. (2017). Estimating Tsunami-Induced Building Damage through Fragility Functions: Critical Review and Research Needs. *Frontiers in Built Environment*, *Volume 3*-. https://www.frontiersin.org/journals/built-environment/articles/10.3389/fbuil.2017.00036

Chrysostomou, C. Z., Kyriakides, N., Papanikolaou, V. K., Kappos, A. J., Dimitrakopoulos, E. G., & Giouvanidis, A. I. (2015). Vulnerability assessment and feasibility analysis of seismic strengthening of school buildings. In *Bulletin of Earthquake Engineering* (Vol. 13, Issue 12). Springer Netherlands. https://doi.org/10.1007/s10518-015-9791-5

Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). Social vulnerability to environmental hazards. *Social Science Quarterly*, *84*(2), 242–261. https://doi.org/10.1111/1540-6237.8402002

Dewa, H. P. N., Nirwansyah, A. W., Dewi, R. S., & Demirdag, I. (2023). Vulnerability analysis of school buildings to tsunami in the Cilacap coastal area. *Forum Geografi*, *37*(2), 117–133. https://doi.org/10.23917/forgeo.v37i2.23269

Fauzan, Jauhari, Z. Al, Agista, G. A., Yokota, A., & Putra, M. E. (2025). Seismic and Tsunamis Vulnerability Assessment of the Shelter School Building Structure with and

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without Retrofitting. *Journal of the Civil Engineering Forum*, *11*(1), 89–100. https://doi.org/10.22146/jcef.13432

FEMA. (2012). *Reducing the Risks of Nonstructural Earthquake Damage – A Practical Guide*. *December*. https://www.fema.gov

FEMA P-154. (2015). *Rapid Visual Screening of Buildings for Potential Seismic Hazards: A Handbook* (Issue January).

Fotopoulou, S., Karafagka, S., Petridis, C., Manakou, M., Riga, E., & Pitilakis, K. (2023). Vulnerability Assessment of School Buildings: Generic Versus Building-Specific Fragility Curves. *Journal of Earthquake Engineering*, *27*(11), 2994–3023. https://doi.org/10.1080/13632469.2022.2121791

Gentile, R., Galasso, C., Idris, Y., Rusydy, I., & Meilianda, E. (2019). From rapid visual survey to multi-hazard risk prioritisation and numerical fragility of school buildings. *Natural Hazards and Earth System Sciences*, *19*(7), 1365–1386. https://doi.org/10.5194/nhess-19-1365-2019

Gill & Malamud. (2014). Reviewing and visualizing the interactions of natural hazards. *Reviews of Geophysics*, *52*(4), 680–722. https://doi.org/10.1002/2013RG000445

Gill, J. C., & Malamud, B. D. (2016). Hazard interactions and interaction networks (cascades) within multi-hazard methodologies. *Earth System Dynamics*, *7*(3), 659–679. https://doi.org/10.5194/esd-7-659-2016

Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector. (2022). *Comprehensive school safety framework 2022–2030: For child rights and resilience in the education sector*. Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector. https://gadrrres.net/files/cssf_2022-2030_en.pdf

Hall, R. (2012). Late Jurassic-Cenozoic Reconstructions of the Indonesian Region and the Indian Ocean. *Tectonophysics*, *570–571*, 1–41. https://doi.org/10.1016/j.tecto.2012.04.021

Hamilton, W. (1979). *Tectonics of the Indonesian Region*. U.S. Geological Survey.

Hanks, T. C., & Kanamori, H. (1979). A moment magnitude scale. *Journal of Geophysical Research*, *84*(85), 2348–2350. https://doi.org/10.1029/JB084iB05p02348

Hayashi, Y., Tsushima, H., Hirata, K., Kimura, K., & Maeda, K. (2011). Tsunami source area of the 2011 off the Pacific coast of Tohoku Earthquake determined from tsunami arrival times at offshore observation stations. *Earth, Planets and Space*, *63*, 809–813. https://doi.org/10.5047/eps.2011.06.042

Kanamori, H., & Brodsky, E. E. (2004). The physics of earthquakes. *Reports on Progress in Physics*, *67*(8), 1429–1496. https://doi.org/10.1088/0034-4885/67/8/R03

Kappes, M. S., Keiler, M., von Elverfeldt, K., & Glade, T. (2012). Challenges of analyzing multi-hazard risk: A review. *Natural Hazards*, *64*, 1925–1958. https://doi.org/10.1007/s11069-012-0294-2

Kementerian Pendidikan dan Kebudayaan. (2021). *Sebanyak 103 Satuan Pendidikan Rusak Akibat Gempa di Sulawesi Barat*. Kementerian Pendidikan dan Kebudayaan Republik Indonesia. https://bpmpntt.kemendikdasmen.go.id/siaran-pers/sebanyak-103-satuan-pendidikan-rusak-akibat-gempa-di-sulawesi-barat/

Kramer, S. L. (1996). *Geotechnical earthquake engineering*. Prentice Hall.

Liu, P. L.-F., Woo, S. B., & Cho, Y.-S. (1998). *Computer programs for tsunami propagation and inundation (COMCOT user manual)*. Cornell University.

Marras, S., & Mandli, K. T. (2021). Modeling and simulation of tsunami impact: A short review of recent advances and future challenges. *Geosciences*, *11*(1), 5. https://doi.org/10.3390/geosciences11010005

Muhammad, D. F., Nastiti, S. F., Handayani, A. F., Chempakadewi, G., & Hamza, M. (2023). Analisa Kerentanan Seismik pada Struktur Eksisting Menggunakan Metode Rapid

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Visual Screening di Kota Malang. *G-Tech: Jurnal Teknologi Terapan*, *7*(4), 1415–1423. https://doi.org/10.33379/gtech.v7i4.3136

Nardo, M., Saisana, M., Saltelli, A., Tarantola, S., Hoffman, A., & Giovannini, E. (2005). Handbook on constructing composite indicators. In *OECD Statistics Working Papers* (Issue 03). https://doi.org/https://doi.org/10.1787/533411815016

Nugroho, O. W., Sagara, A., & Imran, I. (2022). The evolution of Indonesian seismic and concrete building codes : From the past to the present. *Structures*, *41*(May), 1092–1108. https://doi.org/10.1016/j.istruc.2022.05.032

Omira, R., Baptista, M. A., Miranda, J. M., Toto, E. H., Catita, C., & Catalão, J. (2010). Tsunami vulnerability assessment of Casablanca-Morocco using numerical modelling and GIS tools. *Natural Hazards*, *54*(1), 75–95. https://doi.org/10.1007/s11069-009-9454-4

Opabola, E. A., & Galasso, C. (2024). Informing disaster-risk management policies for education infrastructure using scenario-based recovery analyses. *Nature Communications*, *15*, 325. https://doi.org/10.1038/s41467-023-42407-y

Pagliacci, F., & Russo, M. (2019). Multi-hazard, exposure and vulnerability in Italian municipalities. *Resilience and Urban Disasters: Surviving Cities*, *April*, 175–198. https://doi.org/10.4337/9781788970105.00017

Papathoma, M., & Dominey-Howes, D. (2003). Tsunami vulnerability assessment and its implications for coastal hazard analysis and disaster management planning, Gulf of Corinth, Greece. *Natural Hazards and Earth System Sciences*, *3*(6), 733–747. https://doi.org/10.5194/nhess-3-733-2003

Peek, L. (2008). Children and Disasters: Understanding Vulnerability, Developing Capacities, and Promoting Resilience — An Introduction. *Children, Youth and Environments*, *18*(1), 1–29. https://doi.org/10.1353/cye.2008.0052

Pescaroli, G., & Alexander, D. (2015). A definition of cascading disasters and cascading effects: Going beyond the “toppling dominos” metaphor. *Planet@Risk*, *3*(1), 58–67. https://doi.org/10.30682/pr.2015.1.12

Pusat Studi Gempa Nasional. (2025). *Peta sumber dan bahaya gempa Indonesia tahun 2024*.

Richard, B. (2018). Assessment of Vulnerability of Escape Building against Earthquake and Tsunami at Padang City. *Journal of the Civil Engineering Forum*, *4*(3), 265–274. https://doi.org/https://doi.org/10.22146/jcef.34034

Roi, M., Asriwiyanti, D., Hendry, W., Deni, S., & Ginardy, H. (2023). Assessment of Seismic Vulnerability of School Buildings: A case study in Bandung, West Java, Indonesia. *Disaster Advances*, *16*(9), 49–59. https://doi.org/10.25303/1609da049059

Salam, M. A., Saputra, A., & Benazir. (2026). Evaluasi Kerentanan Bangunan Sekolah Dasar Dua Lantai Menggunakan Rapid Visual Screening (RVS) untuk Menentukan Prioritas Mitigasi Gempa Bumi di Kecamatan Banggae , Kabupaten Majene. *Simposium Nasional Teknologi Infrastruktur*, *April*, 1–7. https://snti.ft.ugm.ac.id/wp-content/uploads/sites/25/2026/05/G09_M.-ARIF-SALAM_Mitigasi-dan-Manajemen-Arif-Salam.pdf

Satake, K. (2014). Advances in earthquake and tsunami sciences and disaster risk reduction since the 2004 Indian ocean tsunami. *Geoscience Letters*, *1*(1), 1–13. https://doi.org/10.1186/s40562-014-0015-7

Satake, K., & Imamura, F. (1995). Tsunamis: Seismological and disaster prevention studies. *Journal of Physics of the Earth*, *43*(3), 259–277. https://doi.org/10.4294/jpe1952.43.259

Soviana, W. (2015). Analisis kerentanan bangunan gedung dalam menghadapi bencana tsunami di Kecamatan Kuta Alam, Banda Aceh. *Jurnal Dialog Penanggulangan Bencana*, *6*(1), 54–63.

Synolakis, C. E., & Bernard, E. N. (2006). Tsunami science before and beyond Boxing Day

Integrasi Kerentanan Multi-Bahaya Gempa dan Tsunami pada Bangunan Sekolah Dasar di Kecamatan Banggae
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2004. *Philosophical Transactions of the Royal Society A*, *364*(1845), 2231–2265. https://doi.org/10.1098/rsta.2006.1824

Triatmadja, R., Benazir, Tahalele, M., Kuswandi, & Pratomo, A. N. R. (2025). Impact of Tsunamis on Buildings in Array Layouts as Macro Roughness: Lessons from the 2018 Anak Krakatau Event Through DualSPHysics Modeling. *Natural Hazards*, *121*, 9679–9704. https://doi.org/10.1007/s11069-025-07178-3

UNDRR. (2022). *Hazard information profiles: Supplement to UNDRR-ISC hazard definition and classification review*.

UNESCO-IOC. (2022). *Standard guidelines for the Tsunami Ready Recognition Programme*. https://unesdoc.unesco.org/ark:/48223/pf0000381353

United Nations. (2015). The UN 2030 Agenda for Sustainable Development. In *Sustainable Development Goals Series: Vol. Part F2740*. https://doi.org/10.1007/978-3-031-07461-5_1

Wang, X. (2009a). *Numerical modelling of surface and internal waves with applications to tsunami modelling*. Cornell University.

Wang, X. (2009b). *User manual for COMCOT version 1.7*. Cornell University. https://www.semanticscholar.org/paper/USER-MANUAL-FOR-COMCOT-VERSION-1.7-%28FIRST-DRAFT%29-Wang/401de93588d6c28d0c3984044ad1f95b75dadab0

Wibowo, H. A., Meilano, I., & Virtriana, R. (2024). Assessing Potential Earthquake-Induced Structural Damage and Losses in School Buildings, West Java, Indonesia. *Papers in Applied Geography*, *10*(2), 138–153. https://doi.org/10.1080/23754931.2024.2323719

Yani, Y., Tusam, M., Larasaty, D., & Isnaini, N. (2024). Mapping Schools Vulnerability to Earthquakes: Case Study of Cianjur Earthquake 21 November 2022. *E3S Web of Conferences*, *600*(November 2022), 0–9. https://doi.org/10.1051/e3sconf/202460002007

Zhafira, T., Widorini, T., & Crista, N. H. (2023). Evaluasi Bangunan Struktur Sekolah Terhadap Kerentanan Gempa Dengan Asesmen Cepat. *Jurnal Teknik Sipil : Rancang Bangun*, *09*(01), 33–39.