

# Youth engagement in disaster response: Lessons from the volunteer work of a university-based student organization

Landicho, Christoper Jan B. ✉

Xavier School Nuvali, Philippines ([cjblandicho@gmail.com](mailto:cjblandicho@gmail.com))

Received: 27 June 2025

Available Online: 10 July 2025

Revised: 5 July 2025

DOI: 10.5861/ijrse.2025.25199

Accepted: 6 July 2025

ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS



## **Abstract**

The enactment of Republic Act 10121, or the Philippine Disaster Risk Reduction and Management (DRRM) Act of 2010, instituted a more proactive approach in reducing and managing disaster risks in the country. Civil society organizations, including student-led and other youth-oriented groups, are now recognized as key collaborators in its DRRM framework. Young people, in particular, can significantly contribute to strengthening disaster preparedness and response. Given the need to engage all sectors of society in disaster risk governance, this study specifically sought to examine the experiences of a university-based student organization in volunteering for disaster response efforts. The said student organization consists of members whose place of origin is known to be highly susceptible to natural hazards, such as typhoons, earthquakes, and volcanic eruptions. Data gathering was conducted through an online survey. Results suggest that members' involvement in disaster response reinforces their understanding of the importance of disaster preparedness. They expressed willingness to participate in DRRM activities but are often hindered by academic workload as well as financial and logistical constraints. Based on the findings of this study, practical implications on youth participation in DRRM were identified. These include partnerships with the school administration, local government units, other student organizations, and the private sector; training and capacity-building among its members; and fostering a deeper sense of commitment and service.

**Keywords:** DRRM, Philippines, student organization, volunteerism, youth

## **Youth engagement in disaster response: Lessons from the volunteer work of a university-based student organization**

### **1. Introduction**

Developing countries often bear the brunt of disasters (Al-Nammari & Alzaghal, 2015; de Leon & Pittock, 2017; Kenny, 2012). The frequency of natural hazards affecting these areas, as well as the vulnerability of the communities living therein, often result in high death toll, physical injuries, and disruption of local economies. The Philippines and its neighboring countries are often included in the list of these vulnerable regions. In 2015, the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) reported that almost 47% of the world's recorded disasters occurred in the Asia-Pacific region. This makes the area highly susceptible to the impacts of natural hazards. In that same year, over 15,000 of the region's population died due to disasters and the economic damages reached a staggering total of almost \$45 billion (UNESCAP, 2016). The Philippines alone recorded losses amounting to around PhP 20 billion per year during the period of 1990 to 2006 (Sia-Catedral, 2016). Seventy-four percent of Filipinos are vulnerable, and at least 60% of the land area is exposed to multiple hazards (Llanto, 2011).

While disasters have also afflicted more developed countries, physical damages, economic losses, and casualties are generally worse in developing nations (Khan et al., 2023). The societal and economic impacts of recent catastrophes have highlighted the need for better understanding of and preparation for disasters (Okuyama, 2008). Through the years, this concern has become increasingly apparent due to the upward pattern in the number of casualties, damages, and losses (Okuyama & Sahin, 2009).

In the Philippines, roughly 130 million people in total were affected by disasters from 1995 to 2015 (Santos, 2016). The country's geographic location along the Pacific Typhoon Belt and Ring of Fire, as well as its geophysical setting, render it highly vulnerable to hydrometeorological and geologic hazards (Asian Disaster Reduction Center, 2008). More than 300 extreme weather events were documented between 1993 and 2012 (Banwell et al., 2016). Examples include the massive flooding brought about by typhoon Ondoy (with international name "Ketsana") in 2009 and the storm surge during the 2013 super typhoon Yolanda (international name "Haiyan") (Santos, 2016; Sato & Nakasu, 2011). Active faults, such as the Marikina Valley Fault System which threatens the Metropolitan Manila area and nearby provinces (Rimando & Knuepfer, 2006), virtually transect the entire archipelago. Earthquakes can also be generated along subduction zones, which include the Manila Trench, Philippine Trench, and East Luzon Trough, among others (Galgana et al., 2007). The geologic history of the country has also been shaped by various volcanic processes. The eruption of Mount Pinatubo in 1991, considered one of the largest volcanic eruptions of the twentieth century (Rees, 2016), is a textbook example of active volcanism in the country.

Considering the risks associated with natural hazards in the country, the Philippine government has launched a number of disaster risk reduction (DRR) programs and campaigns in recent years. DRR refers to the organized system of identifying, assessing, and reducing the socio-economic, environmental, and other impacts brought about by disasters (Twigg & Bottomley, 2011). DRR activities also include a number of programs participated in by both the private sector and government agencies (Department of Interior and Local Government [DILG], 2011). In 2010, the Philippine Congress passed Republic Act 10121 or the Philippine Disaster Risk Reduction and Management (DRRM) Act. The enactment of this law shifted the country's DRRM policies towards a more proactive and preventive paradigm, rather than being reactionary in approach (Brower & Magno, 2011).

An effective anticipatory stance in disaster prevention requires consistency from the government and all other stakeholders. The potential damages from any natural hazard can be unpredictable and may be aggravated by other intervening factors. The case of super typhoon Yolanda illustrates how issues, such as

miscommunicating risks in mass media, may result in more serious consequences (Montemayor & Custodio, 2014). Moreover, socio-economic factors, including inaccessibility to healthcare, lack of social security, and rapid urbanization of the country's key economic zones, further amplify disaster risks (Banwell et al., 2016). Despite all of these challenges, empowering all sectors of society remains a potent defense against the devastating effects of natural hazards.

The Hyogo Framework for Action 2005–2025 highlights the involvement of civil society, non-government organizations (NGOs), and volunteer groups in DRRM (United Nations International Strategy for Disaster Reduction [UNISDR], 2005). The Sendai Framework likewise underscored preparedness, recovery, and response in curbing disaster risk (UNISDR, 2015). A study in Pakistan demonstrates how NGOs can serve as key actors in crafting policies, initiating training programs, and working closely with communities (Khan & Ali, 2015). More developed countries have also been providing assistance to various organizations in carrying out their disaster risk reduction projects. For example, the United Kingdom Department for International Development has aided five NGOs—Christian Aid, ActionAid, Practical Action, Plan, and Tearfund—in their various DRRM initiatives (Twigg & Bottomley, 2011). One of these organizations, Christian Aid, has previously advocated for a disaster management plan in the Philippines that emphasizes disaster risk reduction approach (Brower & Magno, 2011).

Previously established networks among local government units, academic institutions, and NGOs pushing for reforms in DRRM legislations significantly contributed to the ratification of the Philippine DRRM Law (Brower & Magno, 2011). One of these civil society organizations (CSOs) is the Disaster Risk Reduction Network Philippines or DRRNetPhils. This network of CSOs started from a group of advocates of community-based DRRM and currently serves as a CSO representative in the National Disaster Risk Reduction and Management Council or NDRRMC (Brower & Magno, 2011). Together with other DRRM networks in the country, they illustrate how CSOs can influence disaster management policies at the national level.

Student organizations and other youth groups serve as valuable sources of knowledge, experiences, and support in DRRM. Empowering young people to be engaged in DRR promotes their rights to be consulted, represented, and honed as communicators, educators, and actors in risk reduction efforts (Fernandez & Shaw, 2013). Literature has shown the effects of natural hazards on the youth and highlights the significance of engaging them in DRRM (Fernandez & Shaw, 2013; Gaillard & Pangilinan, 2010). When fully implemented, a participatory approach in DRRM entails the involvement of all members of the community, including the youth, and reinforces the objectives of disaster prevention, response, and recovery (Fernandez & Shaw, 2013).

Recent studies have pointed out the often-untapped potential of the youth in DRRM. Nonetheless, examples from the Philippines illustrate the promising contributions of young people in fostering a culture of disaster preparedness and resilience. Science clubs, for example, provide opportunities for students to learn more about disaster preparedness and support capacity-building efforts in their communities (Fernandez & Shaw, 2014). Children's organizations, such as student councils, can also be instrumental in lobbying for reforms in policy and practices. In Southern Leyte, campaigns from the student government organization eventually led to the relocation of their school away from a landslide-prone area (Mitchell et al., 2009). Among lakeshore communities in Laguna, Cruz (2022) noted that disaster preparedness is positively correlated with youth participation. Moreover, youth leaders have suggested ways to improve existing DRRM practices in their localities, such as early warning systems, information campaigns, and emergency preparedness, among others (Ancheta, 2022).

Given the need to engage all sectors of society in DRRM, this paper seeks to discuss how CSOs, particularly student-led groups, can act as collaborators in disaster risk governance, and examine the experiences of a university-based student organization as volunteers in disaster response efforts. While earlier studies have delved into the involvement in disaster-related activities of certain demographic groups, such as science clubs (Fernandez & Shaw, 2014) and *Sangguniang Kabataan* or youth councils (Fernandez & Shaw, 2013), the present

study aims to provide additional insights by focusing on a regional organization based in a state-run university in the Philippines.

## 2. Methodology

This study employed a descriptive research design, which aims to systematically describe a particular sample or phenomenon (Dulock, 1993). In particular, it followed the survey method plan which is used to determine the attitudes or opinions of the target population or sample (Creswell, 2009). The respondents were identified through purposive sampling. At the time of the study, said respondents were enrolled in a state-run university in Metro Manila and were members of a regional student organization whose place of origin is highly susceptible to natural hazards, such as volcanic eruptions, earthquakes, monsoon rains, and typhoons.

Data collection was conducted through an online survey, which included both closed- and open-ended questions. Utilizing an online platform to administer the survey was deemed advantageous as it is easily accessible, cost-efficient, and requires less time to disseminate and implement (Wright, 2005). Using a five-point Likert scale, the members assessed the organization's leadership skills, group dynamics, communication, external linkages, sense of volunteerism, and personal perceived effectiveness in disaster response efforts. They also answered follow-up questions regarding their experiences in volunteering and the challenges that they encountered. Data gathered through the online survey was summarized using descriptive statistics, such as the mean rating for each survey criterion. Responses to the open-ended questions were analyzed through basic qualitative analysis (Creswell, 2009), which provided additional insights into the respondents' perception of their involvement in disaster response activities.

A review of relevant literature on student organizations' involvement in DRRM was also done to provide sufficient theoretical grounding of the paper. Online search terms used include "student organization," "youth participation," "youth in DRRM," "DRRM in the Philippines," "disaster response," and "disaster response of students," among others. Moreover, this study adhered to established ethical standards in conducting research. Respondents were informed about the purpose of the study and the voluntary nature of their participation. They were also free to disengage from the study at any point without facing any negative consequences.

## 3. Results and Discussion

Fourteen members, corresponding to almost half of the organization at the time of the study, answered the survey. Ten respondents have been part of the organization for more than a year, while the remaining four were newly inducted. As mentioned earlier, this university-based student group was purposely chosen as it is composed of students coming from a region in the country that is highly susceptible to hazards, such as typhoons, earthquakes, monsoon rains, flooding, and volcanic eruptions. Based on their survey responses, members of the student organization revealed that they have participated in disaster response efforts, primarily through donation drives and partnerships with other groups, such as the university student council. They believed that getting involved in these activities is part of their social and moral responsibilities. Responses to the open-ended questions also suggest that students' firsthand experiences of disasters in their households or communities have led them to acknowledge the importance of immediate disaster response. They identified training, educational discussions, and social awareness campaigns as ways to improve their organization's involvement in DRRM efforts.

**Table 1**

*Members' evaluation of organizational effectiveness in participating in DRRM initiatives (n=14)*

Criteria	Mean	Interpretation
Sense of volunteerism	4.64	High
Group dynamics	3.26	Moderate
Communication	3.29	Moderate
External linkages	3.93	High
Personal perception of effectiveness	3.29	Moderate

Survey results describing the members' self-perceived effectiveness during their volunteer work for disaster relief and response are shown in Table 1. The mean ratings for all five criteria range from moderate to high. Highest ratings were recorded for the criteria of volunteerism and success of external linkages. The majority of the respondents also indicated moderate to highly positive perception of their leaders, communication structure, and group dynamics. However, certain issues and limitations can hinder the involvement of individuals and groups in initiatives related to disaster preparedness and response. Members of the student organization identified shortage in material and financial resources and the demands of students' academic load, as some of these challenges. Youth civic engagement contributes to the overall development of young people and their communities, but certain societal norms may also downplay their contributions (Clement et al., 2014).

In the case of the student organization described in this paper, personal motivation and effective organizational leadership have drawn its members to get themselves involved in volunteer work during disaster response. This is reflected by the overall mean scores of 4.64 and 3.26 for the survey criteria sense of volunteerism and group dynamics, respectively. The student organization became primarily engaged in DRRM-related activities through volunteer work. The majority of its members participated in donation drives for victims of volcanic eruption, typhoons, and flooding, in their home region and in other provinces. When asked about their inclination to join other DRR volunteer work, the respondents expressed their openness. This positive attitude towards youth civic engagement has long been linked to self-improvement and community development (Clement et al., 2014). In a study conducted in the United Kingdom, it was reported that volunteerism is propelled not only by altruistic motivations, but also by instrumental reasons—the urge to help the community, develop new learnings and skills, and enhance one's experiences for future careers (Smith et al., 2010).

Sustaining the organization's commitment to engage in DRRM-related activities is consistent with the proactive approach that the latter espouses. Increased community involvement can widen their network with the business sector, church leaders, elected officials, fellow youth organizations, and other sectors (Lekies, Baker, & Baldini, 2009). Some respondents attributed the success of their disaster response projects to the partnerships that they have established with other groups and to the support of both active members and alumni. They also expressed the need for the university's support for the different disaster response campaigns of student organizations. In general, members rated their external linkages as effective, with a mean score of 3.93. Other student organizations may adopt a similar approach and work with groups with the same advocacy for proactive DRRM practices.

With regard to their personal perception of effectiveness, members of the student organization recorded a moderate rating ( $M=3.29$ ). They acknowledged the importance of capacity building and training in DRRM, which entails investing time, resources, and manpower to achieve their intended goals. Encouraging more members to actively engage as DRRM leaders and volunteers also implies sustained involvement in the future. This orientation aligns with established association between future time perspective and volunteer's beliefs and actions (Maki, Dwyer, & Snyder, 2016). Moreover, respondents also mentioned that their participation in disaster response and relief efforts would have been more effective if more people were engaged.

Communication is another vital element needed in any DRRM initiative, especially during post-disaster response. In this study, members rated their organization's communication as moderately effective ( $M=3.29$ ) and credited the use of social media as an effective tool for disseminating and gathering vital information. Whittaker et al. (2015) described this emerging practice as digital volunteerism, which maximizes the accessibility of users to information and communication technologies and allows individuals to produce and share information to as many individuals as possible. Other social networking sites and platforms, such as Facebook, Instagram, and Twitter can serve as platforms for digital volunteerism given their rising popularity among users.

#### **4. Conclusion**

The findings of this study suggest that the student organization has the potential to make significant

contributions to disaster preparedness and response in their community. Most of its members consider altruistic motivations and effective linkages with partner organizations as determinants of their perceived effectiveness in disaster response efforts. Despite challenges and limitations, they acknowledge the importance of swift disaster relief and consider civic engagement as one of their responsibilities as a youth organization.

Literature shows that the youth is among the highly vulnerable sectors gravely affected by the onslaughts of disasters (Fernandez & Shaw, 2013). They suffer together with the rest of the community due to loss of lives, economic damages, and disrupted social services. Borden (n.d.) listed the impacts of disasters on toddlers, preschoolers, school-age children, and even adolescents, which include physical, academic, social, and emotional effects. Physical and emotional traumas caused by damages to properties, injuries, and the loss of loved ones negatively affect the well-being of everyone, including the young people. Schools and other educational institutions often suspend regular operations due to damaged buildings, inaccessible routes, and the temporary use of classrooms as shelters for evacuees. In the Philippines, the education sector is often disrupted by natural hazards, such as earthquakes, typhoons, and floods (Cadag et al., 2017). Recreational and other support facilities for children can also be impaired by disasters.

Youth participation in DRRM has recently been receiving growing support through several age-appropriate and inclusive policy frameworks (Head, 2011). Social and demographic factors, such as population, contribute to the appreciation of youth-led DRR studies in areas like the Philippines, Bangladesh, and Nepal—countries with large children populations (Tatebe & Mutch, 2015). As a component of DRRM, youth participation is considered to have improved the relief, rescue, and rehabilitation phases of disasters (Lopez et al., 2012). These observations underscore the importance of youth involvement in DRR (Fernandez & Shaw, 2012) and shift away from the notion that children are passive recipients of support (Mitchell et al., 2009).

Student organizations—with their strong sense of idealism, physical capability, and willingness to serve—should foster this sense of volunteerism among their members and sustain their socio-civic engagements. Volunteerism strengthens the connections among the different sectors of society, enhances the safety and cohesiveness of communities, and improves the social, mental, and physical well-being of those involved in it (Wu, 2011). It also addresses the negative view on non-professional or informal volunteers who are equally capable of rendering invaluable service in times of emergencies and disasters, despite operating outside of established professional systems (Whittaker, McLennan, & Handmer, 2015).

Based on the findings of this study, practical implications on youth participation in DRRM can be identified. Student organizations are encouraged to be actively involved in activities, such as information campaigns, first aid training, and disaster relief efforts, to sustain their interest and altruistic motivation to participate in all phases of the disaster risk management cycle. Partnerships with other youth-oriented groups, university student councils, and the university administration must be strengthened to ensure coordinated actions, expanded reach, and enhanced participation. Moreover, regional student organizations have the advantage of forging linkages with local government units, church leaders, and other community stakeholders in the municipalities, cities, and provinces represented by their individual members. With support, encouragement, and the necessary knowledge and skills, student organizations hold significant potential as key contributors to DRRM and community development.

## 5. References

- Al-Nammari, F., & Alzahal, M. (2015). Towards local disaster risk reduction in developing countries: challenges from Jordan. *International Journal of Disaster Risk Reduction*, 12, 34–41.  
<https://doi.org/10.1016/j.ijdr.2014.11.005>
- Ancheta, J. R. (2022). Youth participation and disaster: examining suggestions on disaster risk reduction management in Metro Manila, Philippines. *Disaster Advances*, 15(12). 22–30.
- Asian Disaster Reduction Center. (2008). *Philippines*.

- <http://www.adrc.asia/nationinformation.php?NationCode=608>
- Banwell, N., Montoya, J., Opeña, M., IJsselmuiden, C., Law, R., Balboa, G. J., Rutherford, S., Chu, C., & Murray, V. (2016). Developing the Philippines as a global hub for disaster risk reduction – A health research initiative as presented at the 10th Philippine National Health Research System Week celebration. *PLOS Currents Disaster*, 8, ecurrents.dis.5cf90566bb7791456dcf6b9baf6d4873. <https://doi.org/10.1371/currents.dis.5cf90566bb7791456dcf6b9baf6d4873>
- Borden, L. M. (n.d.). Promoting the health and well-being of families during difficult times Understanding the impact of disasters on the lives of children and youth. [https://cales.arizona.edu/sfcs/supporting\\_families/pdf/fs%203%20impact%20on%20youth\\_final.pdf](https://cales.arizona.edu/sfcs/supporting_families/pdf/fs%203%20impact%20on%20youth_final.pdf)
- Brower, R. S., & Magno, F. A. (2011). A “third way” in the Philippines: Voluntary organizing for a new disaster management paradigm. *International Review of Public Administration*, 16(1), 31–50. <https://doi.org/10.1080/12264431.2011.10805184>
- Cadag, J. R. D., Petal, M., Luna, E., Gaillard, J. C., Pambid, L., & Santos, G. V. (2017). Hidden disasters: Recurrent flooding impacts on educational continuity in the Philippines. *International Journal of Disaster Risk Reduction*, 25, 72–81. <https://doi.org/10.1016/j.ijdrr.2017.07.016>
- Clement, R., Deering, M., Mikhael, R., & Villa-Garcia, C. (2014). *Youth civic engagement & leadership*. [https://elliott.gwu.edu/sites/elliott.gwu.edu/files/downloads/Youth%20CE%26L\\_FINAL.pdf](https://elliott.gwu.edu/sites/elliott.gwu.edu/files/downloads/Youth%20CE%26L_FINAL.pdf)
- Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches* (3<sup>rd</sup> Edition). Los Angeles: SAGE Publications, Inc.
- Cruz, C. J. B. (2022). *Youth participation and disaster preparedness in selected Biñan, Laguna Lakeshore communities* [Bachelor’s thesis, University of the Philippines Los Baños]. UPLB University Knowledge Digital Repository. <https://www.ukdr.uplb.edu.ph/etd-undergrad/9244>
- de Leon, E. G., & Pittock, J. (2017). Integrating climate change adaptation and climate-related disaster risk-reduction policy in developing countries: A case study in the Philippines. *Climate and Development*, 9(5), 471–478. <https://doi.org/10.1080/17565529.2016.1174659>
- Department of Interior and Local Government. (2011). *The National Disaster Risk Reduction and Management Plan*. [http://www.ndrrmc.gov.ph/attachments/article/41/NDRRM\\_Plan\\_2011-2028.pdf](http://www.ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf)
- Dulock, H. L. (1993). Research design: descriptive research. *Journal of Pediatric Oncology Nursing*, 10(4), 154–157. <https://doi.org/10.1177/104345429301000406>
- Fernandez, G., & Shaw, R. (2013). Youth council participation in disaster risk reduction in Infanta and Makati, Philippines: A policy review. *International Journal of Disaster Risk Science*, 4(3), 126–136. <https://doi.org/10.1007/s13753-013-0014-x>
- Fernandez, G., & Shaw, R. (2014). Youth participation in disaster risk reduction through science clubs in the Philippines. *Disasters*, 39(2), 279–294. <https://doi.org/10.1111/disa.12100>
- Gaillard, J. C., & Pangilinan, M. L. C. J. D. (2010). Participatory mapping for raising disaster risk awareness among the youth. *Journal of Contingencies and Crisis Management*, 18(3): 175–179. <https://doi.org/10.1111/j.1468-5973.2010.00614.x>
- Galgana, G., Hamburger, M., McCaffrey, R., Corpuz, E., & Chen, Q. (2007). Analysis of crustal deformation in Luzon, Philippines using geodetic observations and earthquake focal mechanisms. *Tectonophysics*, 432(1–4), 63–87. <https://doi.org/10.1016/j.tecto.2006.12.001>
- Head, B. W. (2011). Why not ask them? Mapping and promoting youth participation. *Children and Youth Services Review*, 33(4), 541–547. <https://doi.org/10.1016/j.childyouth.2010.05.015>
- Kenny, C. (2012). Disaster risk reduction in developing countries: costs, benefits and institutions. *Disasters*, 36(4), 559–588. <https://doi.org/10.1111/j.1467-7717.2012.01275.x>
- Khan, A. N., & Ali, A. (2015). NGOs and disaster risk reduction in Pakistan. In Rahman, A., Khan, A.N., & Shaw, R. (Eds.), *Disaster risk reduction approaches in Pakistan* (pp. 281–294). [https://doi.org/10.1007/978-4-431-55369-4\\_15](https://doi.org/10.1007/978-4-431-55369-4_15)
- Khan, M. T. I., Anwar, S., Sarkodie, S. A., Yaseen, M. R., & Nadeem, A. M. (2023). Do natural disasters affect economic growth? The role of human capital, foreign direct investment, and infrastructure

- dynamics. *Heliyon*, 9(1), e12911. <https://doi.org/10.1016/j.heliyon.2023.e12911>
- Lekies, K. S., Baker, B., & Baldini, J. (2009). Assessing participation in youth community action projects: Opportunities and barriers. *Community Development*, 40(4), 346–358. <https://doi.org/10.1080/15575330903279648>
- Llanto, G. M. (2011). Mainstreaming disaster risk management in local governments. *Philippine Institute for Development Studies Policy Notes*, 2011(05). <http://dirp4.pids.gov.ph/ris/pn/pidspn1105.pdf>
- Lopez, Y., Hayden, J., Cologon, K., & Hadley, F. (2012). Child participation and disaster risk reduction. *International Journal of Early Years Education*, 20(3), 300–308. <https://doi.org/10.1080/09669760.2012.716712>
- Maki, A., Dwyer, P. C., & Snyder, M. (2016). Time perspective and volunteerism: The importance of focusing on the future. *The Journal of Social Psychology*, 156(3), 334–349. <https://doi.org/10.1080/00224545.2015.1090946>
- Mitchell, T., Tanner, T., & Haynes, K. (2009). *Children as agents of change for disaster risk reduction: lessons from El Salvador and the Philippines*. Children in a Changing Climate Research. <https://childreninachangingclimate.org/wp-content/uploads/2023/01/el-salvador-and-the-philippines.pdf>
- Montemayor, G. J. S., & Custodio, P. A. (2014). Communicating risks, risking (mis)communication: Mass media and the science of disasters. *Kasarinlan: Philippine Journal of Third World Studies*, 29(2), 39–74. <https://www.journals.upd.edu.ph/index.php/kasarinlan/article/view/5598/5031>
- Okuyama, Y. (2008). *Critical review of methodologies on disaster impact estimation*. [https://www.gfdr.org/sites/gfdr/files/Okuyama\\_Critical\\_Review.pdf](https://www.gfdr.org/sites/gfdr/files/Okuyama_Critical_Review.pdf)
- Okuyama, Y., & Sahin, S. (2009). *Impact estimation of disasters: a global aggregate for 1960 to 2007*. <https://www.gfdr.org/sites/gfdr/files/WPS4963.pdf>
- Rees, C. (2016). *The Philippines: A natural history*. Quezon City: Ateneo de Manila University Press. 348 pp.
- Rimando, R. E., & Knuepfer, P. L. K. (2006). Neotectonics of the Marikina Valley fault system (MVFS) and tectonic framework of structures in northern and central Luzon, Philippines. *Tectonophysics*, 415(1–4), 17–38. <https://doi.org/10.1016/j.tecto.2005.11.009>
- Santos, E. (2016, January 21). *Philippines among world's most disaster-prone countries*. CNN Philippines. <http://cnnphilippines.com/news/2015/11/25/philippines-fourth-most-disaster-prone-country.html>
- Sato, T., & Nakasu, T. (2011). 2009 Typhoon Ondoy flood disasters in Metro Manila. *Natural Disaster Research Report of the National Research Institute for Earth Science and Disaster Prevention*, 45, 63–74. [https://dil-opac.bosai.go.jp/publication/nied\\_natural\\_disaster/pdf/45/45-04E.pdf](https://dil-opac.bosai.go.jp/publication/nied_natural_disaster/pdf/45/45-04E.pdf)
- Sia-Catedral, L. (2016). *The Philippine DRRM (Disaster Risk Reduction and Management) System*. [http://www.adrc.asia/countryreport/PHL/2016/Philippines\\_CR2016A.pdf](http://www.adrc.asia/countryreport/PHL/2016/Philippines_CR2016A.pdf)
- Smith, K. A., Holmes, K., Haski-Leventhal, D., Cnaan, R. A., Handy, F., & Brudney, J. L. (2010). Motivations and benefits of student volunteering: Comparing regular, occasional, and non-volunteers in five countries. *Canadian Journal of Nonprofit and Social Economy Research*, 1(1), 65–81. <http://dx.doi.org/10.22230/cjnser.2010v1n1a2>
- Tatebe, J., & Mutch, C. (2015). Perspectives on education, children and young people in disaster risk reduction. *International Journal of Disaster Risk Reduction*, 14(Part 2), 108–114. <https://doi.org/10.1016/j.ijdrr.2015.06.011>
- Twigg, J., & Bottomley, H. (2021). *Disaster risk reduction NGO inter-agency group learning review*. [https://www.preventionweb.net/files/21185\\_drrreviewweb5b15d1.pdf](https://www.preventionweb.net/files/21185_drrreviewweb5b15d1.pdf)
- United Nations Economic and Social Commission for Asia and the Pacific. (2016). *Disasters in Asia and the Pacific: 2015 year in review*. [http://www.unescap.org/sites/default/files/2015\\_Year%20in%20Review\\_final\\_PDF\\_1.pdf](http://www.unescap.org/sites/default/files/2015_Year%20in%20Review_final_PDF_1.pdf)
- United Nations International Strategy for Disaster Reduction. (2005). *Hyogo framework for action 2005-2015: Building the resilience of nations and communities to disasters*. [http://www.unisdr.org/files/1037\\_hyogoframeworkforactionenglish.pdf](http://www.unisdr.org/files/1037_hyogoframeworkforactionenglish.pdf)
- United Nations International Strategy for Disaster Reduction. (2015). *Sendai framework for disaster risk reduction 2015-2030*. [https://www.unisdr.org/files/43291\\_sendaiframeworkfordrren.pdf](https://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf)
-

- Whittaker, J., McLennan, B., & Handmer, J. (2015). A review of informal volunteerism in emergencies and disasters: Definition, opportunities and challenges. *International Journal of Disaster Risk Reduction*, 13, 358–368. <https://doi.org/10.1016/j.ijdrr.2015.07.010>
- Wright, K. B. (2005). Researching internet-based populations: advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. *Journal of Computer-Mediated Communication*, 10(3), JCMC1034, <https://doi.org/10.1111/j.1083-6101.2005.tb00259.x>
- Wu, H. (2011). *Social impacts of volunteerism*. Points of Light Institute. [http://www.pointsoflight.org/sites/default/files/sitecontent/files/social\\_impact\\_of\\_volunteerism\\_pdf.pdf](http://www.pointsoflight.org/sites/default/files/sitecontent/files/social_impact_of_volunteerism_pdf.pdf)

