Key findings:

- In the Asia-Pacific region, policies that address disaster risk reduction and health increasingly recognize the synergies between the two sectors.
- Policies promote cross-sectoral collaboration and coordination as their main methods to integrate the disaster risk reduction and health sectors.
- To achieve this integration, the primary focus remains on protecting health outcomes and medical facilities in the aftermath of a disaster.
- Policies in the region can go further to prioritize public health management as a risk reduction strategy and a way to reduce vulnerability.
- While often articulated as guiding principles in both disaster risk reduction and health policies in the Asia-Pacific, gender equality and human rights receive little attention when disaster risk reduction policies address health issues and vice versa.

When Cyclone Amphan struck India and Bangladesh in May 2020, the two countries were struggling with rising COVID-19 infections (Ober, 2020). Hospitals were overwhelmed with victims of both disasters. Emergency responses to infrastructure and human damage lagged due to pandemic restrictions.

Amphan was not an exception. The first nine months of the COVID-19 pandemic coincided with 84 floods, droughts, tropical cyclones and other disasters around the world (Walton & van Aalst, 2020). These events are a reminder that climatological, hydrometeorological and biological hazards can compound each other; disaster and public health outcomes go hand in hand.

Countries and regions must build resilience to multiple hazards while ensuring the health of their communities. Recent global guidance, such as the Sendai Framework for Disaster Risk Reduction, further requires that they do so while following the principles of human rights and gender equality.

The following is a qualitative and descriptive analysis that shows the connections between disaster risk reduction and health, in existing policies at the regional and subregional levels in Asia and the Pacific. It also reviews how these policies address human rights and gender equality, which are drivers of vulnerability to both disaster and health risks, at the intersection of the two arenas. While policies have increasingly interwoven health and disaster risk reduction, most miss human rights and gender issues in this interlocking policy nexus.
Methods, definitions and linkages

The scope of the assessment here is limited to the following regional actors: the World Health Organization (WHO) Regional Offices for South-East Asia and Western Pacific, the UN Office for Disaster Risk Reduction (UNDRR) Regional Office for Asia and the Pacific (ROAP), the Association of Southeast Asian Nations (ASEAN), the South Asian Association for Regional Cooperation (SAARC), and the Pacific Community (formerly the South Pacific Commission, SPC).

During October to December 2020, policies and plans were gathered through direct searches on these actors’ respective websites, supplemented by Google searches for information beyond their websites. If available, iterations of the same policy were studied to capture discourse development. Peer-reviewed articles on the same topics were consulted to complement the policy review.

For the purposes of this study, disaster is defined as “a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts” (UNDRR, n.d.). Disaster risk reduction entails not only emergency response when a hazard strikes, but also the management and reduction of exposure and vulnerability to minimize losses and impacts of disasters.

Health is understood as “a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity” (WHO, 2006). Here, health is also a field or sector, including public health. Public health is defined as “the art and science of preventing disease, prolonging life and promoting health through the organized efforts of society”, focusing on long-term, population-level interventions (WHO/Europe, n.d.).

Healthcare and public health are subject to the impacts of flooding, earthquake, and other disasters, directly through physical injury, psychological trauma, and infectious diseases and indirectly through displacement, food and water insecurity, and other cascading impacts (UNDRR, 2019). During and after a disaster, disrupted health services and medical supply chains expose people with chronic diseases and other medical needs to additional risks (Canino et al., 1990; Egawa, 2015; Ochi et al., 2014).

Public health can play a proactive role in disaster risk reduction (Chan & Shaw, 2020) by decreasing associated risks and vulnerability of a population and improving disaster outcomes. Health and disaster risk reduction overlap through the health system, risk assessment approaches, chronic disease management in disaster, mental health support after disaster, and advocacy (Murray et al., 2015).

Parallel paradigm shifts in both disaster risk reduction and public health fields illustrate these interconnections. For example, disaster risk reduction has shifted from emergency management immediately after a disaster towards risk and vulnerability reduction before a disaster, and public health responses from disease eradication to prevention and health promotion (Murray et al., 2015; WHO, 2007).

Gender equality and human rights should not be overlooked in the intersection of disaster risk reduction and health. Determinants of health and root causes of disaster risks and vulnerability share common drivers, such as gender and social inequality leading to uneven access to services and resources, violations of rights, and poor health outcomes. Socially marginalized groups such as those with non-normative genders, children, the elderly, poor people, and persons with disabilities are unequally affected by disasters and inadequate health systems.

Disaster risk reduction and public health management can address these critical issues in synergy. Policy integration that does not address human rights and social dimensions can further exacerbate existing inequality. This research presents a snapshot of how gender equality and human rights are addressed at the disaster risk reduction–health policy nexus.

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DISASTER AND HEALTH

The overlap between disaster and health is clear when a disaster emerges from a biological hazard, as shown by past outbreaks of diseases that have reached epidemic or pandemic proportions, such as Ebola, Middle East respiratory syndrome (MERS), and, most notably, Covid-19. An ill-prepared health system worsens the conditions of both those infected and those in need of other healthcare resources mobilized in response to the epidemic or pandemic (e.g., Walker et al., 2015a).

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Synergies between disaster risk reduction and health

The global context for integrating disaster risk reduction and health includes a wide variety of international agreements and frameworks. The Sendai Framework for Disaster Risk Reduction 2015–2030 is the first global policy framework to substantially connect disaster risk reduction and health (Wright et al., 2020). It is followed by the so-called Bangkok Principles, for the International Conference on the Implementation of the Health Aspects of the Sendai Framework for Disaster Risk Reduction 2015-2030.

Arguably, the most important development in the disaster risk reduction and health nexus at a global scale is the Health Emergency and Disaster Risk Management (Health EDRM) Framework, which brings together the two sectors in connection to emergency management, humanitarian response and sustainable development (WHO, 2019). It integrates systematic management of health risks into all phases of disaster risk reduction. This marked shift at a global scale moves beyond a single disaster or public-health–only response to an all-hazards approach, taking into account hazards from natural causes, such as biological and hydrometeorological ones, as well as from human-made causes such as technological and societal ones.

Disaster risk reduction in health policies

This review finds that Asia-Pacific health frameworks are aligned with global policy direction in adopting an all-hazards approach, i.e. expanding the scope of health emergencies to include all types of natural and human-made hazards. The first to do so explicitly may have been the Western Pacific Regional Framework for Action for Disaster Risk Management for Health (DRM for Health), which recognizes the threats from multiple hazards and compound and hybrid disasters (WHO, 2015).

Other health-oriented policies have shifted away from a narrow focus on biological hazards. For instance, the Universal Health Coverage (UHC) action framework, a Western Pacific healthcare-oriented policy, takes into account health risks from natural and human-induced disasters, such as climate change and sea level rise (WHO, 2016). Other examples include the Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies (APSED III), which addresses health risks stemming from climate-related hazards and disasters such as cyclones and floods (WHO, 2017). Its earlier iterations (i.e. APSED 2005 and 2010), in comparison, had a narrower focus on emerging infectious diseases and other acute public health emergencies (Li & Kasai, 2011).

The ASEAN Post-2015 Health Development Agenda (ASEAN Health) similarly follows an all-hazards approach to health management, emphasizing environmental health threats, hazards, and disasters (ASEAN Secretariat, 2018). It considers disaster health management as a health priority, focusing on disaster and health emergency medicine and guiding countries to develop health emergency and disaster risk reduction strategies through public health awareness and emergency operating centres addressing all hazards (ASEAN Secretariat, 2018).

Health in disaster risk reduction policies

At the regional level, UNDRR ROAP integrates health explicitly into three priority areas, as outlined in the Action Plan 2018-2020 of the Asia Regional Plan for Implementation of the SFDRR 2015-2030 (UNDRR, 2018). The Action Plan promotes gender-sensitive and gender-responsive disaster risk reduction, ensuring universal access to sexual and reproductive health services, along with social safety nets and primary healthcare services, including maternal, newborn and child health (Priority 2 and 3). It also foregrounds disaster preparedness through comprehensive hospital safety and disaster management plans (Priority 4).

At the subregional level, for instance, the SAARC has increasingly integrated health into its disaster risk reduction framework. Leaders in the region have adopted a prevention

Considering Resilience

Disaster risk reduction and health can be linked by the concept of resilience. Documents reviewed for this study often refer to resilience with regard to health, health systems, disaster, and so forth. In many cases, however, they do not define what the terms mean. While often used to describe how systems respond to shocks and stresses, resilience itself is a highly debated concept with many definitions, backed by a rich literature dissecting how it is used and what it implies (see Brown, 2014; Olsson et al., 2015; Tiernan et al., 2019). Within the scope of this analysis, resilience terminology is used according to how it is referenced in the respective reviewed document.
and risk reduction approach that deals with drivers of health risks in disasters. Earlier disaster management approaches, such as the SAARC Comprehensive Framework on Disaster Management in 2007, overlooked health (SAARC Disaster Management Center, 2007). Yet, in the Post-2015 DRR Framework for SAARC Region (2014), SAARC prioritized health resilience through community resilience, school safety, and urban risk reduction, as well as the need to strengthen partnerships between the disaster risk reduction and health sectors, among others (SAARC Disaster Management Center, 2014). The policy aims at reducing urban health risks by focusing on water, sanitation and air quality.

Health has been on the agenda for more than a decade for Southeast Asian regional disaster risk reduction policies. In particular, the ASEAN Agreement on Disaster Management and Emergency Response (AADMER) integrated health into its five-year work programmes (AADMER Work Programmes 2010-2015, 2016-2020, and 2021-2025). The guiding principles for AADMER Work Programme 2010-2015 state its aim to complement other ASEAN sectoral policies, including health and pandemic preparedness and response programmes. The 2016–2020 programme called for consideration of epidemics, pandemics and other biological hazards in early warning and awareness communication. The latest iteration again underscores the need for more coordination between ASEAN disaster management and, among others, health sectors.

In the Pacific region, the link between disaster risk reduction and health was recognized early. Through the Declaration of the Pacific Health Summit for Sustainable Disaster Risk Management (2004), Pacific leaders sought “to improve the core capacity of our public health and medical systems. … Local disaster mitigation, preparedness, response and recovery capacities must be built on the existing public health and medical care systems” (Pacific Island Representatives, 2004, p. 5). The Declaration promoted comprehensive disaster risk management as part of the health sector and integrated medical and psychosocial care into all stages of disaster management and at all levels.

While health has been gaining attention in these policies, several frameworks have yet to include biological hazards as a driver of risk. The ASEAN Vision 2025 on Disaster Management is a people-centred, cross-sectoral approach to disaster risk reduction, but it has no reference to biological hazards, pandemics, or health issues (ASEAN, 2016). Neither the SAARC nor the Pacific Community disaster risk reduction policies reviewed in this analysis address biological hazards specifically.

Approaches to integrating disaster risk reduction and health in policies

Two approaches seem to be the norm for integrating disaster risk reduction into health policies, or vice versa. One is increasing collaboration and coordination between the two sectors. The other focuses on infrastructure safety, whether for health systems or disaster response, to safeguard health outcomes of disasters.

Increasing collaboration and coordination

Collaboration and coordination between disaster risk reduction and health, as well as with other sectors, are at the centre of many regional health policies. For example, the WHO sets these as a goal in the Regional Framework on Health in All Policies for South-East Asia, for countries in the region to integrate health concerns into relevant sectoral policies, including disaster management (WHO, 2014).

The DRM for Health framework promotes health contribution in all phases of the disaster risk management cycle and calls for multi-level actions and multisectoral interactions to ensure the health and well-being of populations at risk of or affected by disasters (WHO,
The DRM for Health also recommends the inclusion of health information in disaster risk assessment and alignment of health services with hazard and risk profiles.

Operationally, APSED III denotes that the health framework can be used for disaster response, and vice versa, that disaster management approaches can be adopted in case of health emergencies. National disaster management offices – key actors in disaster risk reduction – are one of APSED’s intended implementers. In addition, the UHC adds the importance of community participation in disaster management.

Similarly, the ASEAN-UN Joint Strategic Plan of Action on Disaster Management (2016-2020) mentions mainstreaming disaster risk reduction into other sectors, including health and reproductive health in particular (ASEAN and UN, 2016). The One ASEAN One Response framework calls for national disaster management offices and health actors to work together. The framework defines disasters to include pandemics specifically, and it frames the health sector as one of the sectors that should incorporate disaster risk reduction policies (AHA Centre, 2018).

The Pacific Community’s Framework for Action 2005–2015 recognizes health as one of the complementary sectors to disaster risk reduction (SPC, 2005). The Framework for Resilient Development in the Pacific (2016) continues to see health as one of the key sectors for disaster risk reduction and resilience, along with the education, water and sanitation, energy, and agriculture sectors, where impacts of disasters are felt and mainstreaming disaster risk reduction is needed (SPC, 2016).

The Post-2015 DRR Framework for SAARC Region suggests an integrated approach to ensure public health security, urban physical planning, and service delivery, along with capacity development for the health sector as one of the providers of emergency services.

Disaster-safe infrastructure
Besides cross-sectoral engagement, UNDRR ROAP, WHO Western Pacific and ASEAN also recommend that member states invest in disaster-safe infrastructure and ensure the disaster resilience of critical health facilities (ASEAN Secretariat, 2018; UNDRR, 2018; WHO, 2016). In particular, making health infrastructure safe from disaster is at the heart of the AADMER Work Programmes 2010-2015 and 2021-2025. In the former, the focus was on safeguarding health outcomes in the aftermath of disasters by building safe hospitals (AHA Centre, 2016), while the latter directs attention to enhancing knowledge and capacity regarding the resilience of health facilities. The 2016-2020 Work Programme, on the other hand, called for efforts to ensure inclusive access to essential services, including health services and facilities (ASEAN Secretariat, 2016).

Similarly, the Pacific Community’s Framework for Action 2005-2015 recommends the health sector, among others, adopt risk assessment codes of practice and design standards to secure health outcomes of disasters (SPC, 2005). The Post-2015 DRR Framework for SAARC Region outlines health safety and protection against illnesses as a priority area to be achieved via infrastructure development, health services, early warning, and social safety nets. It includes school safety measures to address health risks for children and safeguarding measures for schools as potential post-disaster clinics (SAARC Disaster Management Center, 2014, p. 2015).

Gender equality and human rights in disaster risk reduction and health integration
This analysis probed whether and how issues related to gender equality and human rights are considered when policies integrate health and disaster risk reduction. With the exception
of some policies that discuss gender inequality in health, no document reviewed in this research articulates a rights-based and gender-equal approach to integrating disaster risk reduction and health.

Human rights considerations are often restricted to overall policy goals, while gender inequality is often discussed as a driver of risks. Yet, in most cases, there is no detailed articulation of what gender (in)equality means or of differentiated risks across genders and intersecting identities. Nor do most policies interrogate existing power structures and root causes of vulnerability that inform health risks facing different social groups.

The UHC, ASEAN Health, and AADMER, for example, consider gender equality and human rights in their guiding principles, while APSED III and WHO's Regional Framework on Health in All Policies for South-East Asia explicitly address gender and social inclusion as determinants of health. Yet none of these frameworks specifically account for the implications of considering gender equality and human rights when creating links between disaster risk reduction and health policies.

The Post-2015 DRR Framework for SAARC Region is the only policy to recognize the agency and capacity of women in health and disaster risk reduction. The disaster risk reduction–focused policy considers women's leadership and gender equality a policy priority, recognizing women's contribution to disaster risk reduction to include not only healthcare skills but also leadership roles in building resilience. By focusing on women, however, the framework does not articulate nuances and differences in the capacity and vulnerability of people of all genders.

In ASEAN Leaders' Declaration on Disaster Health Management, countries declared their intent to strengthen disaster health management. In particular, in order to strengthen health emergency and disaster risk management programmes as part of national health systems, countries pledged to "mainstream a gender perspective into all phases of these programmes" (ASEAN Secretariat, 2018, p. 106). There is, however, no further articulation of specific approaches or implementation strategies.

Nonetheless, policy documents, particularly those at the regional level, tend to be aspirational and broad in their framing. It is thus difficult to assess how rights and equality are considered and implemented substantively and procedurally at the health and disaster risk reduction nexus. Furthermore, little is known about how they can best be articulated at the policy level to inform decisions and implementation on the ground. Further research, particularly at national and subnational levels, is needed to investigate the human rights and gender dimensions of integrated health and disaster risk reduction policies and strategies.

Discussion and conclusion

Overall, the value of integrating disaster risk reduction and health is recognized in regional and subregional policies in the Asia-Pacific. The policies and strategies reviewed in this research highlight numerous ways to ensure regional health and well-being through synergistic disaster risk reduction and health activities. This assessment also shows that gender equality and human rights could be considered missing at the intersection of disaster risk reduction and health in current regional and subregional policies.

In alignment with global policies, the WHO and UNDRR regional offices, as well as ASEAN, SAARC and Pacific Community policymakers, see disaster from all hazards as a threat to health, and health as an outcome of disaster risk reduction. However, the shift to a systems approach in health and ex-ante risk-driven perspective in disaster risk reduction has not been fully integrated and operationalized in disaster risk reduction and health policies respectively. Policies often focus on health emergency response and "safe-proofing" medical
facilities in the case of disaster. The integration of disaster risk reduction and health is most often pursued through increased coordination and partnerships between sectors and mainstreaming disaster risk reduction and health activities.

With the exception of the DRM for Health policy, few policies consider the role of health throughout all stages of disaster risk reduction. Most lacking are upstream prevention of health risks and building health resilience as a risk reduction strategy. Furthermore, most policies have not yet articulated in detail how to address biological, multi-hazard and compound risks.

There is little discussion of gender equality and human rights in these areas of integration, at least explicitly in public policy. Whether gender equality and human rights are in fact considered in the implementation of policies remains unclear. Indeed, a worthwhile debate is to be had around the most appropriate and effective entry points for equality and rights actions across the disaster risk reduction–health nexus. Possible important steps could include establishing a precedent through enacted disaster risk reduction and public health legislation, linked with international human rights law, for example.

Overall, room for improvement remains for embedding disaster risk reduction in health practices and vice versa. Future research and policy development need to go beyond increasing sectoral coordination and building resilient infrastructures to investigate how countries and regions can shift the disaster risk reduction and health nexus in line with the ex-ante approach to reduce risks and vulnerabilities. And a gender-equal and human rights–based approach to integration is needed to ensure inclusive and equitable outcomes of health and disaster risk reduction systems.

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look at the role of biological hazards and health. We initiated a new research project in response to in-country partners’ gender-equal risk reduction approaches. In 2020, in response to the impacts of the Covid-19 pandemic on resilience building efforts, the program initiated a new research project to look at the role of biological hazards and health dimensions of disaster risk reduction in the region.


