

Socio-economic impact of multi-hazards on urban settings: possible approaches to building resilience among urban communities in Sri Lanka as learned from the COVID-19 Pandemic

Thushara Kamalrathne¹, UTG Perera², Nanduni Jayasinghe³, Dilanthi Amaratunga⁴

¹ University of Peradeniya, ² University of Colombo, ³ Louisiana State University, USA, ⁴ University of Loughborough, UK
thusharak@arts.pdn.ac.lk

Abstract

The detrimental impacts of the COVID-19 pandemic on socio-economic structures were doubled due to many countries encountering concurrent hazards, particularly climate-induced hazards. The impact of such compound hazards on urban communities was intense and complex for several reasons. On the other hand, the vulnerability of urban communities was a significant factor during compound hazards, as preparedness and response measures became crucial for addressing the full spectrum of urban diversity. This paper aims to investigate the socio-economic impacts of the COVID-19 pandemic and the compounded hazards encountered during it on urban societies across Sri Lanka, with a focus on vulnerable groups. A desk study was conducted in two stages to collect data. The first stage involved a comprehensive search of international peer-reviewed literature on urban planning, multi-hazard risk management, urban resilience frameworks, and disaster vulnerability. In the second stage, the research focused on examining various studies that assess the implications of COVID-19 and concurrent hazards concerning the socio-economic effects on urban society in Sri Lanka. Data was analysed using the thematic approach. Findings suggest that urban, vulnerable communities have been more adversely affected than their relatively well-off counterparts. In a multi-hazard context, these vulnerabilities can be compounded, pushing such communities into greater deprivation. While urban resilience is key to mitigating multi-hazard risk, it is important that equity and justice concerns are embedded in resilience-building efforts.

Keywords: COVID-19 pandemic, Urban communities, Vulnerable communities, Multi-hazards

Introduction

The outbreak of the contagious SARS-CoV-2 virus paralyzed global social and economic structures, putting resource-limited nations in serious jeopardy due to their fragile socio-economic conditions and a lack of preparedness for such a significant disease outbreak. Many countries faced concurrent hazards during the critical stage of the COVID-19 pandemic, including volcanic eruptions, floods, landslides, hurricanes, tornadoes, and other epidemics like dengue and Ebola. This made it extremely challenging to respond to and prepare for multiple hazards simultaneously. As a result, the COVID-19 era served as a wake-up call for many governments, prompting them to develop more sustainable infrastructure, governance, and policies aimed at enhancing disaster resilience, particularly in the context of multi-hazards (Hariri-Ardebili, 2020; Rogers et al., 2020; UNDRR, 2020).

The scale of impact can vary based on the nature and intensity of an event, regardless of whether the hazard is natural, biological, or man-made. However, the impact of multi-hazards tends to be much more severe due to the complexity and cascading nature of risks and vulnerabilities associated with concurrent hazards, compared to those posed by standalone hazards (Quigley, Attanayake, King, & Prideaux, 2020, Kamalrathne et.al 2024). Many such events were reported during the COVID-19 pandemic. For instance, the Pacific Islands, particularly Vanuatu and Palau, experienced Cyclone Harald alongside a prolonged drought, while Indonesia faced significant challenges from heavy rain and flooding amid the COVID-19 outbreak (UNDRR, 2020). In Congo, two health epidemics, including an Ebola outbreak, coincided with the COVID-19 pandemic (Nachega et al., 2020). Roth (2021) noted similar concurrent incidents during the Ebola epidemic and the COVID-19 pandemic in Guinea. India also encountered adversities due to Cyclone Amphan, along with a deadly fungal infection known as black fungus, during the COVID-19 pandemic (Dyer, 2021). Several European countries experienced massive flooding, and the Spanish Island of La Palma suffered a volcanic eruption followed by numerous earthquakes, which forced the evacuation of over 6,000 people from the surrounding areas. These combined hazards, faced by various countries, highlight the urgent need to build resilience in the context of multi-hazard situations (Kamalrathne et.al, 2024).

Research suggests that socially and economically vulnerable communities face greater risks during situations involving multiple hazards. Multi-hazard scenarios can lead to a range of cascading effects, which can be categorized as primary, secondary, and tertiary impacts (Quigley et al., 2020; UNDRR, 2020; Wu, 2020). In this context, the disaster risks faced by the most vulnerable groups often become critical due to marginalization, resource deprivation, and challenging geo-social conditions. Among these vulnerable populations, the urban poor—including street families, those without shelter, and residents of shanty towns and slums—have been significantly affected by the adverse effects of COVID-19. Additionally, certain urban communities have been identified as neglected groups that should be prioritized in urban development initiatives and regeneration programs, particularly in developing countries (HiPCITYHUB, 2021). Recognizing the importance of this pressing issue, there have been proposals to focus on building resilience in post-pandemic development programs as a strategy for multi-hazard preparedness in many developing nations (Salama, 2020). Addressing this critical gap this paper intends to explore key challenges faced by urban communities due to compound hazards encountered during the COVID-19 pandemic.

Methodology

This paper aims to investigate the socio-economic impacts of the COVID-19 pandemic and compound hazards encountered during the pandemic on urban societies across Sri Lanka, with a focus on vulnerable groups such as underserved settlers, informal workers, migrant workers, and small and medium-sized enterprises. The research has two main objectives: first, to thoroughly examine the various dimensions of socio-economic impacts on these urban communities, and second, to explore strategies for building urban resilience to different types of hazards, drawing on knowledge from global best practices and lessons learned from mitigating the impact of COVID-19. The research will adopt an interpretivist epistemological perspective, recognizing that understanding socio-economic risks requires insight into the real-life situations affecting societies and communities.

The first stage involved a comprehensive search for international peer-reviewed literature related to urban planning, multi-hazard risk management, urban resilience frameworks, and disaster vulnerability. This search utilized academic databases including Web of Science, Scopus, and Google Scholar.

The search terms were derived from a preliminary scoping review and included keyword combinations such as "urban resilience," "multi-hazard," "COVID-19," "pandemic," "vulnerable communities," "informal settlements," and "disaster preparedness."

In the second stage, the research focused on examining various studies that assess the implications of COVID-19 and concurrent hazards concerning the socio-economic effects on urban society in Sri Lanka. This focus was the driving force behind the second phase of the study. Aligned with Denzin (2012), the research incorporated various forms of secondary data, including statistics and reports from the Disaster Management Centre, the Ministry of Health, the Department of Census and Statistics, the Urban Development Authority, and the Central Bank of Sri Lanka. It also included reports from international institutions such as the World Bank, the United Nations, and the International Labour Organization. Data analysis was conducted using a thematic strategy.

Results and discussion

Socio-economic Impacts of COVID-19 on Vulnerable Communities in Urban Areas

a) Increased risk of infection and economic deprivation among underserved settlers in Sri Lanka

The city of Colombo, regarded as Sri Lanka's commercial and industrial hub, has seen a rise in the influx of migrants from rural areas over the past couple of decades. Rural residents migrate permanently to cities with aspirations of improved living conditions, lucrative income generation opportunities and better education for children. However, increased internal migration from impoverished rural areas to urban areas, coupled with globalisation and industrial relocation have not only facilitated the spatial expansion of urban areas but also resulted in the creation of unplanned underserved settlements.

A survey carried out by the Urban Development Authority (2011) of Sri Lanka has estimated that approximately 68,812 households live in 1,499 underserved settlements in Colombo. These settlers account for more than 53% of the total population in Colombo city, while their settlements make up around 9% [around 900 acres] of the city's total land area (Urban Development Authority, 2017). These settlements have been mainly established as encroachments on government-owned land, reservations or land

owned by private institutions (Urban Development Authority, 2017; Razick, 2014).

Underserved settlements are characterised by poor, unhygienic living conditions that have been conducive to COVID-19 transmission. These settlements lack basic amenities such as water, ventilation, sanitation, drainage, waste collection and sewers, while the possibility of physical distancing and self-quarantine has been constrained due to space limitations and overcrowding in the settlements (Corburn et al., 2020; United Nations – Sri Lanka, 2020). In Sri Lanka, certain large COVID-19 clusters were reported from small, urbanised areas that constituted underserved settlements. The COVID-19 cluster reported from Bandaranayake Mawatha, Colombo exemplifies how the risks of pandemics are interwoven with poverty, deprivation and marginalisation (Karunanayake, 2020). The said cluster consisted of a restricted and congested living space where around 62 families resided on a 20 perch land. The housing units not only lacked basic services such as those mentioned above, but also were too small and congested to allow for physical distancing and self-quarantine (Karunanayake, 2020). Furthermore, the livelihoods of underserved settlers have been highly vulnerable to the unfavourable economic effects posed by the pandemic, as the majority of these settlers are employed in the informal sector. Loss of livelihoods have pushed these settlers into further deprivation and marginalization resulting in such settlers being trapped in debt and poverty cycles that transgress generations.

b) Livelihood vulnerability among informal sector workers

The informal sector makes up a significant proportion of total employment in Sri Lanka. For instance, informal employment in the country accounts for approximately 90% of agriculture sector employment, 66% of secondary/industry sector employment and 52% of tertiary/service sector employment. While job losses induced by COVID-19 have been experienced by people from all strata of society, the livelihoods of informal sector workers have been at a greater risk (The World Bank, 2021). For example, construction has been identified as one of the salient industries in urban areas of Sri Lanka given the largest proportion of its output being generated in the Western Province: the region with the highest rate of urbanisation in Sri Lanka (Central Bank of Sri Lanka, 2020). The industry particularly stands significant in terms

of creating employment opportunities for unskilled workers, many of whom are daily wage earners (Wijeratne, 2019). Lockdown measures imposed, particularly in response to the first wave of the pandemic have temporarily halted activities of construction projects. This has resulted in a substantial loss of income for daily wage earners in the industry and has therefore induced them to shift to agriculture-based occupations. This would result in a shortage of labour for the construction industry during the pandemic recovery phase (Siriwardana & Jayasekara, 2020).

Several reasons can be attributed to the disproportionate effects posed by the pandemic on the livelihoods of informal sector workers. Primarily, records indicate that informal employment and poverty go hand in hand. A recent study by the World Bank (2021) on the economic and poverty effects of COVID-19 has demonstrated that informal sector employment is concentrated within the lower end rather than the upper of the earnings distribution. Therefore, informal sector workers are characterised by pre-existing vulnerabilities such as low income, deprivation and poor living conditions which undermine their capacity to effectively cope with external shocks. Secondly, informal sector workers do not have access to job-related social protection benefits such as unemployment insurance. Neither are these workers adequately targeted by social protection schemes such as welfare programs administered by the Government of Sri Lanka (Institute of Policy Studies, 2018).

In addition to this, informal sector workers have not been entitled to emergency relief, assistance and support provided by organisations in response to the COVID-19 pandemic. For example, the Sri Lanka Tourism Development Authority [SLTDA] has taken the initiative to provide relief measures and support to smaller and vulnerable stakeholders such as tourist drivers and tour guides who were registered with SLTDA prior to COVID-19, thus deviating from their former practice of providing support to predominantly larger stakeholders (Sri Lanka Tourism, 2020). Nevertheless, informal sector workers have not been able to benefit from such relief measures.

This has been highlighted by the Chairperson of the Sri Lanka Tourism to Lanka Business Online who confirmed that, “unfortunately, since 60% of the tourist service providers in Sri Lanka belongs to the informal sector who haven’t registered with SLTDA, many have not been able to avail the relief

measures which is brought to authority's notice" (Lanka Business Online, 2020).

c) Loss of livelihood opportunities for migrant workers

Residents of Sri Lanka's rural and estate sectors frequently relocate to cities in pursuit of better employment prospects. For instance, records show that the estate industry has consistently suffered from high rates of malnutrition and poverty (Jayawardena, 2018; Ranathunga & Gibson, 2015). In the past, the estate sector—which is mainly made up of rubber and tea plantations—has been marked by low pay, subpar housing, and restricted access to essential services, which has strongly encouraged out-migration to urban areas (Shanmugaratnam, 2000). According to a study by Dharmadasa et al. (2018), out-migration of skilled workers from the estate sector has significantly decreased the depth and severity of poverty, despite being detrimental to the productivity of the plantation industry, particularly the tea industry.

Internal migration trends in Sri Lanka show that rural migrants seeking jobs in construction, manufacturing, domestic work, and the service sector primarily migrate to urban areas, especially Colombo and the surrounding districts (Department of Census and Statistics, 2012). These migrants frequently take on unstable jobs, such as daily wage work and informal contracts, which offer greater earning potential than rural wages but little job security (Hettige & Mayer, 2000). According to Kelegama and Tilakaratna (2014), the remittances sent by these urban migrants are a major source of income for rural households, improving living conditions, supporting children's education, and reducing poverty in sending communities.

However, the COVID-19 pandemic's economic effects led to a reverse migration of workers, forcing those who had left estates in pursuit of better employment opportunities to return because they had lost their jobs. Migrant workers immediately lost their jobs as a result of the lockdown measures put in place during the pandemic, especially those working in the unorganised sector without social security or employment contracts (World Bank, 2021). Many migrants were forced to return to their rural homes due to their inability to pay for urban living expenses without income and their inability to access social assistance programs (United Nations Sri Lanka, 2020). This reverse migration phenomenon was observed across South Asia, with similar patterns

reported in India and Bangladesh, where urban-to-rural return migration intensified existing vulnerabilities in rural areas (Ratha et al., 2020).

In light of the findings of Dharmadasa et al. (2018), it is plausible to argue that such reverse migration is likely to intensify poverty among estate sector households, given the absence of remittances from migrant workers, thus pushing them into further deprivation. The sudden influx of returnees to rural and estate areas created additional pressure on already limited local employment opportunities and resources (Arunatilake & Jayawardena, 2010). Furthermore, the psychological and social impacts of failed migration attempts, including loss of dignity, accumulated debt, and disrupted social networks, compounded the economic hardships faced by these workers and their families (De Silva & Sumarto, 2018).

The pandemic also highlighted the vulnerability of circular migrants, or workers who relocate between rural and urban areas for work on a seasonal or periodic basis. When movement restrictions were put in place, these workers—who make up a sizable portion of the urban informal workforce—found themselves stranded without support systems (Gunatilleke et al., 2021). Many migrant workers were left in limbo when they were denied access to emergency relief programs due to a lack of proper documentation, official employment records, or proof of urban residency (Institute of Policy Studies, 2020).

Additionally, children of migrant workers, many of whom had attended urban schools, were impacted by the disruption to their education brought about by reverse migration. Returning to rural areas frequently meant dropping out of school or moving to a school with fewer resources, which could prolong poverty cycles across generations (UNICEF Sri Lanka, 2020). Due to their disproportionate employment in industries severely impacted by the pandemic, such as domestic work and clothing manufacturing, and the fact that they frequently took on additional care responsibilities upon returning to rural households, women migrant workers faced unique difficulties (Ruwanpura, 2021).

This reverse migration has long-term effects that go beyond short-term financial losses. In addition to changing labour market dynamics in both sending and receiving regions and requiring policy interventions that address the structural vulnerabilities that make migrant workers especially vulnerable to economic shocks, the disruption of established migration patterns may also

change rural-urban linkages (Jayasuriya & Weerakoon, 2021). Building resilience among migrant workers requires inclusive urban planning that takes into account the needs and rights of temporary and migrant populations, formal recognition of employment in the informal sector, and comprehensive social protection systems that are portable across geographic locations (International Labour Organisation, 2020).

d) Loss of earnings for small and medium-scale businesses

The economic effects of COVID-19 have been more adverse on Small and Medium Scale Enterprises [SMEs] than on larger businesses. For instance, the Small and Medium Garment Exporters Association (SMGEA), which has 80 factories under its membership, reports that small- and medium-scale businesses in the textiles and garments sector have been the most severely affected, particularly due to limited working capital resulting from order cancellations. Apart from this, most SMEs within the textiles and apparel industry source raw materials, such as accessories and fabrics, from wholesale agents who import them from China and India. Lockdown, travel and trade restrictions imposed due to COVID-19 have resulted in a supply chain breakdown, which obstructed production in SMEs in the textiles and apparel industry (Gunawardana, 2020).

Additionally, SMEs have lacked access to forms of formal financial support to survive the pandemic period. Elucidating this, the Business Resurgence Survey Report [2001], jointly published by the Federation of Chamber of Commerce and Industry of Sri Lanka (FCCISL) and PWC Sri Lanka, reveals that only 20% of SMEs surveyed have benefited from the Central Bank-supported refinance schemes that have been administered through banks and other financial institutions. The same survey reveals that 11% of the SMEs were awaiting approvals for such support. On the other hand, 36% of SMEs have been compelled to resort to financial support from informal sources such as family, friends and well-wishers, while 87% of SMEs have not received any kind of financial assistance (FCCISL & PWC, 2021). As a result of these, the very survival of SMEs in this sector has been challenged.

Further, with reference to the tourism sector, Gunawardana (2020) reveals that many of the indirect employment opportunities generated from the industry's value chain are linked to small and medium-scale enterprises

operating as handicraft traders, gem and jewellery shops, laundries, liquor shops etc. The author simultaneously emphasises that the ripple effects of the pandemic have been worse for such players because they are “(i) are too small to downsize, (ii) are less diversified in their economic activities, (iii) have lower capitalisation, and (iv) lack various financing options” (Deshapriya & Nawarathna, 2020, p. 5).

e) Health vulnerability among urban sector workers

Free trade zone (FTZ) workers are a key group within Sri Lanka’s urban workforce. Women employed in the textiles and apparel sector, many of whom have migrated from rural areas for employment, constitute the majority of FTZ workers (Rajapakse et al., 2018; Business and Human Rights Resource Centre, 2020). Factories in these zones became major infection sites during the second wave of COVID-19, which began in early October 2020 following the detection of a cluster of over 1,000 cases linked to an apparel factory in Minuwangoda, Gampaha (Amaratunga et al., 2020; Rodrigo, 2020; PTI, 2020). As FTZ factories emerged as prime sites for viral transmission, the health and safety of FTZ workers were placed at significant risk.

The living conditions of resident workers were a key factor contributing to the heightened risk of infection. While some FTZ workers reside in factory-operated hostels, most live in privately run residences surrounding major urban zones, commonly referred to as boarding houses. Conditions in these residences are often overcrowded, with rooms shared by two to five people, toilets shared among 20 to 30 residents, shared bathing areas, poor ventilation, and limited space (Gunawardana & Padmasiri, 2021). Beyond overcrowded housing, shop floor labor regimes also indirectly contributed to increased infection rates. Studies show that strict managerial control on the shop floor limited workers’ ability to access timely healthcare, even when they were showing symptoms of COVID-19 (Hewamanne, 2021; Wickramasingha, 2022).

Construction workers also constitute an important segment of the urban sector workforce. Studies document measures taken by construction authorities to enhance worker welfare during the COVID-19 pandemic, such as relocating workers to dormitories outside construction sites, possibly due to limited space within the sites themselves.

However, the implementation of health and safety measures at construction sites remained nascent. For instance, Niroshana et al. (2021) find that although concern for health and safety practices among construction authorities increased during the early lockdown period, this heightened attention was not sustained in later phases of the pandemic. Moreover, while the use of face masks and dust masks increased with the onset of COVID-19, the use of personal protective equipment (PPE) more broadly remained low. The same study also reports inequalities in access to services such as screening facilities, quarantine strategies, and testing between laborers and higher-level construction staff (Niroshana et al., 2021).

Dimensions and approaches of urban resilience in understanding vulnerabilities in the context of multi-hazard: An Overview of Best Practices from the Global Context

This section describes some of the key dimensions and approaches of urban resilience that have been recognised and proposed as best practices in the global literature. These dimensions and approaches are discussed in light of their applicability and potential for addressing the socio-economic issues faced by urban, vulnerable communities expounded above. In the review of global literature, three interrelated dimensions were identified as critical components of resilience in urban communities: society and well-being, the economy, and governance and institutions.

Society and Well-being

It is evident through the issues discussed above that the effects of the pandemic have been more adverse on communities with pre-existing vulnerabilities. Corresponding to this, at the global level, literature on the dimension of 'society and wellbeing' places emphasis on the inclusion of different layers of the community in the urban planning process, especially the vulnerable groups, marginalised groups, different age groups, gender and ethnicities (UN-Habitat, 2024; Patel et al., 2020). These communities should be incorporated throughout the urban planning process for better and more sustainable results. Safety and well-being criteria improve the stability of these communities. Safe and healthy communities are more capable of withstanding and responding to shocks (Shi et al., 2022; Nieuwenhuijsen & Braubach, 2024). Because the effects of catastrophes are typically felt unevenly in communities, with

disadvantaged groups bearing the brunt of the burden, equity and diversity are critical (Kumi-Amoah et al., 2024). Improving equity will be an effort to address this issue.

Public Participation

Further, under the main area of society and wellbeing, public participation has been frequently highlighted in the academic literature. Public participation can be defined in a number of ways that reflect the specific objectives of an organisation or a project. Public participation is identified in two broad areas in studies as a means and participation as an end (Wallin et al., 2024; Owuondo, 2024). Participation as a means aims at more effective implementation of urban planning programmes and projects through active citizen involvement in project implementation through labour and/or financial or in-kind contributions. This is a major factor in the implementation stage of the urban planning process, where the project's execution is permanently evaluated and monitored, and implementation technical sheets are defined with the aim of providing efficiency profits to all levels of sustainability (Anthony Jnr, 2023). This has been frequently employed worldwide during reconstruction and relocation after a hazardous event as well.

Participation as an end implies that citizens come up with ideas, take part in the decision-making process, assume responsibility and finally arrive at self-management (Moore & Thompson, 2024). As an example, consulting with the community and relevant stakeholders is an important part of urban land-use planning to ensure transparency and incorporate a wide range of interests into the overall urban plan (Konsti-Laakso & Rantala, 2024). This was highlighted in most of the studies where communities and key stakeholder groups play a significant role in the urban land use planning process.

Social Capital

Another aspect of society and community well-being refers to social capital, such as place attachment, secure and healthy communities, equity and diversity for vulnerable groups, and contextual knowledge for the learning process (Xiong & Li, 2024; Shah et al., 2024). Levels of social capital are believed to be associated with levels of resilience among individuals and the community (Zhang et al., 2024; Fazey et al., 2022). This society and well-being factor has garnered a lot of attention in the urban resilience literature,

and it is thought to have a big impact on community self-sufficiency and resilience (Liu et al., 2025). This represents an acknowledgement that physical and engineering solutions alone will not suffice to create resilient communities.

In the Sri Lankan context, successful mitigation of the socio-economic issues induced by the pandemic on underserved settlers may call for upgrading their living conditions through relocation to improved living environments with better housing facilities and disaster-resilient features. While a number of such projects have been executed for purposes of urban regeneration in Sri Lanka, in light of the discussed literature, it's crucial that such relocation projects encourage settlers' participation both as a means and an end while preserving their social networks and support systems. This can potentially serve to overcome the resistance of settlers to relocate, thereby ensuring the effectiveness of such projects.

Economic Resilience

Considering the unfavourable effects posed by COVID-19 on the livelihoods of vulnerable communities such as informal sector workers, migrant workers and SMEs, building economic resilience stands paramount in efforts to enhance urban resilience. The capacity and skilfulness of a community's working population to sustain its dependent population determines its economic resilience. The availability of well-paying jobs is also related to resilience (Taqwa & Setiawan, 2025; Khan & Emon, 2024). Economic resilience, with its security, stability, and dynamism, ensures the redistribution of goods and resources for both individuals and society to recover from disaster damage. The protection and development of livelihood in a hazardous scenario, in particular, is critical for resilience since it provides the foundation for adapting to tough situations (Sinniah et al., 2024).

Business Continuity and Economic Diversity

Appropriate planning is required to minimise potential business disruptions. The existence of a business mitigation plan will be critical for this aim. To protect the community's economic stability, such a strategy should contain financial instruments and insurance programmes (Krishnan et al., 2024).

Community members should be aware of the value of community savings for increasing redundancy and resourcefulness, as well as the

importance of collective resource ownership for keeping access to resources where competition is fierce. Inward investment and economic diversity are markers of a community's ability to attract and retain firms while mitigating the negative effects of economic decline (UN, 2024; Lamorgese et al., 2024). Communities that rely on a single industry will be more exposed to disruptions. To secure inbound investment and business continuity, both large and small enterprises are required.

There is evidence that local small companies, as opposed to massive chain stores, are more effective in keeping money circulating within the local economy (SEED, 2021). This also generates additional tax income and strong networks via which local businesses interact and employ local workers. Integration with the regional economy and partnership agreements are also vital for improved shock absorption and a faster recovery process (Ali et al., 2023). In addition, public-private partnerships are required to appropriately prepare individual firms and urge them to participate in collective efforts (Patel & Kumar, 2024).

Governance and Institutions

Efforts to build resilience among urban communities should be backed by effective institutional collaboration. Governance and institutions play a crucial role in guaranteeing the continuous operation of urban systems before, during, and after a disaster (Dai et al., 2024; Nieuwenhuijsen & Braubach, 2024). Further, the government should empower the institutions and facilitate them in the process (Zhang et al., 2021). Studies have highlighted the importance of a common platform for experts and these institutions to present their plans, findings and innovations in urban planning (Wang et al., 2021).

Worker Safety and Health

Further, given the increased risk of pandemics to the health and wellbeing of urban sector workers such as FTZ and construction workers, it is important that governance in the context of urban resilience prioritizes worker welfare and occupational health and safety. This may involve establishing provisions to ensure adequate worker facilities (e.g., residential accommodations) and embedding appropriate health and safety practices within relevant policies and regulatory frameworks (Trias & Cook, 2021). Moreover, the Media as a stakeholder should be used to empower the early warning, awareness and

hazard education systems, which play a key role in urban planning in those disaster-prone regions (Gautam & Khadka, 2024).

Conclusion

The effects of COVID-19 have been disproportionate. Urban, vulnerable communities have been more adversely affected than their relatively well-off counterparts. In a multi-hazard context, these vulnerabilities can be further compounded, pushing such communities to further deprivation. While urban resilience is key to mitigating multi-hazard risk, it is important that equity and justice concerns are embedded in resilience-building efforts. Further, it is necessary that urban resilience is viewed and achieved as a holistic outcome of urban planning and development. The paths to urban resilience are complicated and reliant on interdependencies, necessitating an understanding of a city in parts as well as a whole. This is consistent with the statements of some researchers that there is a need for more comprehensive assessments that take into account urban resilience as a whole. As a result, more comprehensive evaluations that take into account different dimensions of urban resilience may be required to provide the necessary knowledge for decision-making and actions to address the dangers and uncertainties that urban communities face. Finally, it's of critical importance for the resilience-building process to be backed by multi-sectoral institutional collaboration and a legislative and policy environment that allows for such a mechanism.

References

- Amaratunga, D., Fernando, N., Haigh, R., Jayasinghe, N., 2020. The COVID-19 outbreak in Sri Lanka: Asynoptic analysis focusing on trends, impacts, risks and science-policy interaction processes. *Prog. Disaster Sci.* 8, 100133. <https://doi.org/10.1016/j.pdisas.2020.100133>
- Ali, M. S., Demir, E., & Shamout, M. D. (2023). Supply chain resilience in the face of uncertainty: An empirical investigation. *International Journal of Production Economics*, 267, 109064.
- Anthony Jnr, B. (2023). Community participation in urban planning through digital transformation platforms. *Journal of the Knowledge Economy*, 14(2), 1247–1271.
- Aoki, N. (2018). Sequencing and combining participation in urban planning: The case of tsunami-ravaged Onagawa Town, Japan. *Cities*, 72, 226–236. <https://doi.org/10.1016/j.cities.2017.08.020>

- Arunatilake, N., & Jayawardena, P. (2010). *Labour market trends and poverty in Sri Lanka*. Institute of Policy Studies of Sri Lanka.
- Athukorala, P., & Resosudarmo, B. P. (2006). The Indian Ocean Tsunami: Economic Impact, Disaster Management, and Lessons. *Asian Economic Papers*, 4(1), 1–39. <https://doi.org/10.1162/153535105776249863>
- Bowen, T. (2018). *Social Protection and Disaster Risk Management in the Philippines*.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Burton, C. G. (2015). A Validation of Metrics for Community Resilience to Natural Hazards and Disasters Using the Recovery from Hurricane Katrina as a Case Study. *Annals of the Association of American Geographers*, 105(1), 67–86. <https://doi.org/10.1080/00045608.2014.960039>
- Business & Human Rights Resource Centre, 2020. Sri Lanka - Business & Human Rights Resource Centre [WWW Document]. URL <https://www.business-humanrights.org/en/from-us/covid-19-action-tracker/sri-lanka/> (accessed 3.5.21).
- Chandra, A., Acosta, J., Stern, S., Uscher-Pines, L., Williams, M. V., Yeung, D., Garnett, J., & Meredith, L. S. (2011). *Building community resilience to disasters*. RAND Corporation.
- Corburn, J., Vlahov, D., Mberu, B., Riley, L., Caiaffa, W. T., Rashid, S. F., Ko, A., Patel, S., Jukur, S., Martínez-Herrera, E., Jayasinghe, S., Agarwal, S., Nguendo-Yongsi, B., Weru, J., Ouma, S., Edmundo, K., Oni, T., & Ayad, H. (2020). Slum Health: Arresting COVID-19 and Improving Well-Being in Urban Informal Settlements. *Journal of Urban Health*, 97(3), 348–357. <https://doi.org/10.1007/s11524-020-00438-6>
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage Publications.
- Dai, Y., Zhang, X., & Li, H. (2024). Collaborative governance in disaster management and sustainable development. *Public Administration and Development*, 44(3), 257–273.
- Denzin, N. K. (2012). Triangulation 2.0. *Journal of Mixed Methods Research*, 6(2), 80–88. <https://doi.org/10.1177/1558689812437186>

- Department of Census and Statistics. (2012). *Census of population and housing 2012*. Department of Census and Statistics, Sri Lanka.
- De Silva, I., & Sumarto, S. (2018). Poverty and vulnerability in Sri Lanka: From a chronic poverty perspective. In *Chronic poverty in Asia: Causes, consequences and policies* (pp. 201–226). Springer.
- Deyshappriya, N. P. R., & Nawarathna, A. M. D. B. (2020). *Tourism and SME Development: Performance of Tourism SMEs in Coastal Tourist Destinations in Southern Sri Lanka*. ADBI Working Paper Series, 1164.
- Djalante, R., Holley, C., & Thomalla, F. (2011). Adaptive governance and managing resilience to natural hazards. *International Journal of Disaster Risk Science*, 2(4), 1–14. <https://doi.org/10.1007/s13753-011-0015-6>
- Dyer, O. (2021). Covid-19: India sees record deaths as "black fungus" spreads fear. *BMJ*, 373, n1238. <https://doi.org/10.1136/bmj.n1238>
- Fazey, I., Schöpke, N., Caniglia, G., Hodgson, A., Kendrick, I., Lyon, C., Page, G., Patterson, J., Riedy, C., Strasser, T., Verveen, S., Adams, D., Goldstein, B., Klaes, M., Leicester, G., Linyard, A., McCurdy, A., Ryan, P., Sharpe, B., & Young, H. R. (2022). Building community resilience in a context of climate change: The role of social capital. *Ambio*, 51(6), 1371–1387.
- FFCISL & PWC. (2021). *Business Resurgence Survey Report*. FFCISL & PWC. <https://www.pwc.com/lk/en/assets/fccisl/PwCLK-FCCISL-Business-Resurgence-Survey-Report>
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80–92. <https://doi.org/10.1177/160940690600500107>
- Gautam, S., & Khadka, A. (2024). Evolution of disaster risk governance and its implication to resilience building in Nepal. *Disaster Prevention and Resilience*, 3(1), 5.
- Gunatilleke, N., Mayer, M., & Jayasuriya, S. (2021). The socio-economic impact of COVID-19 on informal workers in Sri Lanka. *Journal of South Asian Development*, 16(2), 223–245. <https://doi.org/10.1177/09731741211014742>
- Gunawardana, D. P. (2020). *The Impact of COVID19 on the MSME Sector in Sri Lanka*. UN DESA/DSDG. https://sustainabledevelopment.un.org/content/documents/26277Report_The_Impact_of_COVID19_to_MSME_sector_in_Sri_Lanka.pdf

- Gunawardana, Samanthi, and Buddhima Padmasiri. 2021. "Samanthi Gunawardana and Buddhima, Padmasiri - Groundviews."
<https://groundviews.org/author/samanthi-gunawardana/>.
- Hariri-Ardebili, M. A. (2020). Living in a multi-risk chaotic condition: Pandemic, natural hazards and complex emergencies. *International Journal of Environmental Research and Public Health*, 17(16), 5635.
<https://doi.org/10.3390/ijerph17165635>
- Hettige, S., & Mayer, M. (2000). *Sri Lanka's informal economy: A small sector with big issues*. International Labour Organization.
- Hewamanne, Sandya. 2021. "Pandemic, Lockdown and Modern Slavery among Sri Lanka's Global Assembly Line Workers." *Journal of International Women's Studies* 22(1):54–69.
- HiPCITYHUB. (2021). *Developing urban poor communities & improving local governance: A case for empathy, local solutions and improving local governance in Nigeria*. HipCity Innovation Centre.
<http://www.hipcityinnovationcentre.org>
- ICRA Lanka Limited. (2021). *Economic and Poverty Impact of COVID-19*. Institute of Policy Studies. (2020). *Rapid assessment of the social and economic impacts of COVID-19 on vulnerable populations in Sri Lanka*. Institute of Policy Studies of Sri Lanka.
- International Labour Organization. (2020). *COVID-19 and the world of work: Impact and policy responses in Sri Lanka*. ILO Country Office for Sri Lanka and the Maldives.
- Jayasuriya, S., & Weerakoon, D. (2021). Economic challenges and policy responses to COVID-19 in Sri Lanka. In *COVID-19 in South Asia* (pp. 145–168). Routledge.
- Jayawardena, P. (2018). *Malnutrition in Sri Lanka: A persistent problem*. Institute of Policy Studies of Sri Lanka.
<https://www.ips.lk/talkingeconomics/2018/04/09/malnutrition-in-sri-lanka-a-persistent-problem/>
- Kamalrathne, T., Jayasinghe, N., Fernando, N., Amaratunga, D., & Haigh, R. (2024). Managing compound events in the COVID-19 era: A critical analysis of gaps, measures taken, and challenges. *International Journal of Disaster Risk Reduction*, 112, 104765.
<https://doi.org/https://doi.org/10.1016/j.ijdr.2024.104765>
- Kamalrathne, T., Amaratunga, D., Haigh, R., Kodituwakku, L., & Rupasinghe, C.

- (2024). Epidemic and Pandemic Preparedness and Response in a Multi-Hazard Context: COVID-19 Pandemic as a Point of Reference. *International Journal of Environmental Research and Public Health*, 21(9), 1238. <https://www.mdpi.com/1660-4601/21/9/1238>
- Karunanayake, C. (2020). *Pandemic recovery in urban settings: Planning for the unplanned*. Institute of Policy Studies of Sri Lanka. <https://www.ips.lk/talkingeconomics/2020/10/28/pandemic-recovery-in-urban-settings-planning-for-the-unplanned/>
- Kelegama, S., & Tilakaratna, G. (2014). *Poverty and inequality in Sri Lanka*. Asian Development Bank.
- Khan, A., & Emon, M. M. H. (2024). Exploring the economic resilience of small and medium enterprises during financial crises. *Small Business Economics*, 63(4), 1247–1265.
- Konsti-Laakso, S., & Rantala, T. (2024). Managing community engagement in urban planning: Contemporary practices and innovations. *European Planning Studies*, 32(8), 1546–1563.
- Krishnan, S. N., Ganesh, L. S., & Rajendran, C. (2024). Entrepreneurial interventions for crisis management: Lessons from the Covid-19 pandemic's impact on entrepreneurial ventures. *International Journal of Disaster Risk Reduction*, 72, 102830.
- Kumi-Amoah, E., Boamah, E. F., & Cobbinah, P. B. (2024). On mapping urban community resilience: Land use vulnerability, coping and adaptive strategies in Ghana. *Journal of Environmental Management*, 370, 122426.
- Lamorgese, A., Patnaik, M., Linarello, A., & Schivardi, F. (2024). Management practices and resilience to shocks: Evidence from COVID-19. *Management Science*, 70(12), 9058–9072.
- Lanka Business Online. (2020). *SLTDA creates provisional licensing to assist SMEs*. <https://www.lankabusinessonline.com/slt-da-creates-provisional-licensing-to-assist-smes/>
- Liu, X., Wang, H., & Chen, Y. (2025). The impact of social capital on community resilience: A comparative study of seven flood-prone communities in Nanjing, China. *Land*, 13(8), 1145.
- Moore, S., & Thompson, J. (2024). Making space: A new way for community engagement in the urban planning process. *Sustainability*, 16(5), 2039.

- Nachega, J. B., Mbala-Kingebeni, P., Otshudiema, J., Mobula, L. M., Preiser, W., Kallay, O., Michaels-Strasser, S., Brienza, R., Palma, A. M., & Muyembe Tam-Fum, J. J. (2020). Responding to the challenge of the dual COVID-19 and Ebola epidemics in the Democratic Republic of Congo—Priorities for achieving control. *American Journal of Tropical Medicine and Hygiene*, 103(2), 597–602. <https://doi.org/10.4269/ajtmh.20-0642>
- Nieuwenhuijsen, M., & Braubach, M. (2024). Urban planning, design and management approaches to building urban resilience: A rapid review of the evidence. *Cities & Health*, 8(5), 932–955.
- Niroshana, Nayana, Chandana Siriwardana, and Ravindu Jayasekara. 2023. “The Impact of COVID-19 on the Construction Industry and Lessons Learned: A Case of Sri Lanka.” *International Journal of Construction Management* 23(15):2521–38. doi:10.1080/15623599.2022.2076016.
- NIST (National Institute of Standards and Technology). (2016). *Community Resilience Planning Guide for Buildings and Infrastructure Systems, Volume II*. NIST Special Publication 1190. <http://dx.doi.org/10.6028/NIST.SP.1190v1>
- Owuondo, J. (2024). Community engagement in urban planning: A catalyst for sustainable development. *International Journal of Research and Innovation in Social Science*, 8(4), 167–181.
- Patel, R., Sanderson, D., Sitko, P., & De Boer, J. (2020). Investigating urban vulnerability and resilience: A call for applied integrated research to reshape the political economy of decision-making. *Environment and Urbanization*, 32(1), 197–216.
- Patel, S., & Kumar, R. (2024). Public-private partnerships in building urban resilience: Contemporary approaches. *Urban Studies*, 61(8), 1542–1558.
- PTI, 2020. Sri Lanka’s second COVID-19 wave has high transmissibility: Study- The New Indian Express [WWW Document]. New Indian Express. URL <https://www.newindianexpress.com/world/2020/oct/31/sri-lankas-second-covid-19-wave-has-high-transmissibility-study-2217619.html> (accessed 1.12.21).
- Quigley, M. C., Attanayake, J., King, A., & Prideaux, F. (2020). A multi-hazards earth science perspective on the COVID-19 pandemic: The potential for concurrent and cascading crises. *Environmental Systems and Decisions*, 40(2), 199–215. <https://doi.org/10.1007/s10669-020-09772-1>
- Ranathunga, S., & Gibson, J. (2015). The factors determine household-poverty in the estate sector in Sri Lanka. *Global Business and Economics Research Journal*, 4, 17–30.

- Rajapakse, S., Morin, F., Ostbye, T. and De Silva, V. 2018. 'Healthcare seeking behaviour among female garment workers in Koggala Free Trade Zone, Sri Lanka', *JCCPSI*, 24(4), p. 149-155.
- Ratha, D., De, S., Kim, E. J., Plaza, S., Seshan, G., & Yameogo, N. D. (2020). *Migration and development brief 33: Phase II - COVID-19 crisis through a migration lens*. World Bank.
- Razick, R. (2014, May 6). Slum relocation a blessing in disguise? *Daily Mirror Sri Lanka*. <https://www.pressreader.com/sri-lanka/daily-mirror-sri-lanka/20140506/282497181677663>
- Rodrigo, P., 2020. Sri Lanka clothing recovery hit by second COVID-19 wave. [WWW Document]. URL https://www.just-style.com/analysis/sri-lanka-clothing-recovery-hit-by-second-covid-19-wave_id140072.aspx (accessed 1.10.21).
- Rogers, D. P., Anderson-Berry, L., Bogdanova, A.-M., Fleming, G., Gitay, H., Kahandawa, S., Kootval, H., Kruczkiewicz, A., Mocko, G., Paterson, S., Shumake-Guillemot, J., Silverman, J., Tikk, D., Verdin, J., & Wang, W. (2020). COVID-19 and lessons from multi-hazard early warning systems. *Advances in Science and Research*, 17, 129–141. <https://doi.org/10.5194/asr-17-129-2020>
- Roth, E. (2021). *Key considerations: 2021 outbreak of Ebola in Guinea, the context of N'Zérékoré*. Social Science in Humanitarian Action (SSHAP). <https://doi.org/10.19088/SSHAP.2021.016>
- Ruwanpura, K. N. (2021). Women workers in Sri Lanka's apparel sector: Vulnerabilities exacerbated and alternatives highlighted by COVID-19. *Gender, Work & Organization*, 28(S2), 158–172. <https://doi.org/10.1111/gwao.12528>
- Salama, A. M. (2020). Coronavirus questions that will not go away: Interrogating urban and socio-spatial implications of COVID-19 measures. *Emerald Open Research*, 2, 27. <https://doi.org/10.35241/emeraldopenres.13561.1>
- Schwind, K. (2009). *Community resilience toolkit: A workshop guide for community resilience planning*. Bay Localize. http://www.baylocalize.org/files/Community_Resilience_Toolkit_v1.0.pdf
- SEED. (2021). *Eco-inclusive enterprises driving green recovery pathways*. SEED Initiative.
- Shah, A. A., Khan, A., Ullah, A., Khan, N. A., & Alotaibi, B. A. (2024). The role of social capital as a key player in disaster risk comprehension and dissemination: Lived experience of rural communities in Pakistan. *Natural Hazards*, 120(5),

4131–4157.

- Shanmugaratnam, N. (2000). Modernisation and tradition: Changing contexts of the tea plantations in Sri Lanka. *Norsk Geografisk Tidsskrift*, 54(4), 139–147.
- Sharifi, A., & Yamagata, Y. (2016). Urban resilience assessment: Multiple dimensions, criteria, and indicators. In *Advanced Sciences and Technologies for Security Applications* (pp. 259–276). Springer. https://doi.org/10.1007/978-3-319-39812-9_13
- Sherrieb, K., Norris, F. H., & Galea, S. (2010). Measuring capacities for community resilience. *Social Indicators Research*, 99(2), 227–247. <https://doi.org/10.1007/s11205-010-9576-9>
- Shi, C., Liao, L., Li, H., & Su, Z. (2022). Which urban communities are susceptible to COVID-19? An empirical study through the lens of community resilience. *BMC Public Health*, 22, 70.
- Sinniah, S., Shahbudin, A. S. M., & Yusoff, Y. M. (2024). Investigating the factors of SMEs' business resilience in the post-pandemic crisis of COVID-19 with technology adoption as a quasi-moderator. *Cogent Business & Management*, 11(1), 2301135.
- Siriwardena, C. S. A., & Jayasekara, R. (2020). *Sustainability and life beyond COVID-19: The new normal of Sri Lankan construction industry*. The Green Guardian.
- Tang, Z., Brody, S. D., Quinn, C., Chang, L., & Wei, T. (2008). Moving from agenda to action: Evaluating local climate change action plans. *Journal of Environmental Planning and Management*, 53(1), 41–62. [https://doi.org/10.1061/\(ASCE\)1527-6988\(2008\)9](https://doi.org/10.1061/(ASCE)1527-6988(2008)9)
- Taqwa, N., & Setiawan, B. (2025). Resilience of small and medium-sized enterprises in times of crisis: An umbrella review. *Review of Managerial Science*. Advance online publication.
- Trias, A. P. L., & Cook, A. (2021). Future directions in disaster governance: Insights from the 2018 central Sulawesi earthquake and Tsunami response. *International Journal of Disaster Risk Reduction*, 58, 102180.
- UNDRR. (2020). *Combating the dual challenge of the COVID-19 and climate related disasters*. <https://www.undrr.org/publication/undrr-asia-pacific-covid-19-brief-combating-dual-challenges-climate-related-disasters>
- UN-Habitat. (2024). *World cities report 2024: Urbanization and development—Emerging futures*. United Nations Human Settlements Programme.

- UNICEF Sri Lanka. (2020). *Socio-economic impact of COVID-19 on children in Sri Lanka*. UNICEF.
- UNISDR. (2017). *Report of the Open-ended Intergovernmental Expert Working Group on Indicators and Terminology Relating to Disaster Risk Reduction*. https://www.preventionweb.net/files/50683_oiewgreportenglish.pdf
- United Nations. (2020). *UN advisory paper: Immediate socio-economic response to COVID-19 in Sri Lanka*. COVID MPTF.
- United Nations. (2024). *Strengthening capacities for enhancing the resilience of micro-, small, and medium enterprises (MSMEs)*. UN Department of Economic and Social Affairs.
- Urban Development Authority. (2017). *Urban regeneration programme*. <https://www.uda.gov.lk/urban-regeneration-programme.html>
- van der Heijden, J. (2016). Opportunities and risks of the "new urban governance" in India: To what extent can it help addressing pressing environmental problems? *Journal of Environment and Development*, 25(3), 251–275. <https://doi.org/10.1177/1070496516642500>
- Wallin, S., Staffans, A., & Strandell, A. (2024). Civic engagement in urban planning and development. *Land*, 13(9), 1446.
- Wang, C., Dong, X., Zhang, Y., & Luo, Y. (2021). Community resilience governance on public health crisis in China. *International Journal of Environmental Research and Public Health*, 18(4), 2123.
- Wickramasingha, Shyamain, and Geert De Neve. 2022. "The Collective Working Body: Rethinking Apparel Workers' Health and Well-Being during the COVID-19 Pandemic in Sri Lanka." *Global Labour Journal* 13(3). doi:10.15173/glj.v13i3.5082.
- World Bank. (2021). *Sri Lanka: Poverty and welfare - Recent progress and remaining challenges*. World Bank Group.
- Wu, B. (2020). Social isolation and loneliness among older adults in the context of COVID-19: A global challenge. *Global Health Research and Policy*, 5, 27. <https://doi.org/10.1186/s41256-020-00154-3>
- Xiong, A., & Li, Y. (2024). The role of social capital in building community disaster resilience—Empirical evidences from rural China. *International Journal of Disaster Risk Reduction*, 110, 103856.
- Zhang, L., Zhao, J., Liu, J., & Chen, K. (2021). Community disaster resilience in the

COVID-19 outbreak: Insights from Shanghai's experience in China. *Risk Management and Healthcare Policy*, 13, 3259–3270.

Zhang, Y., Wang, H., & Liu, X. (2024). How does social capital facilitate community disaster resilience? A systematic review. *Frontiers in Environmental Science*, 12, 1496813.