Climate Centre

Urban climate risks

and the role of social protection

Briefing Note

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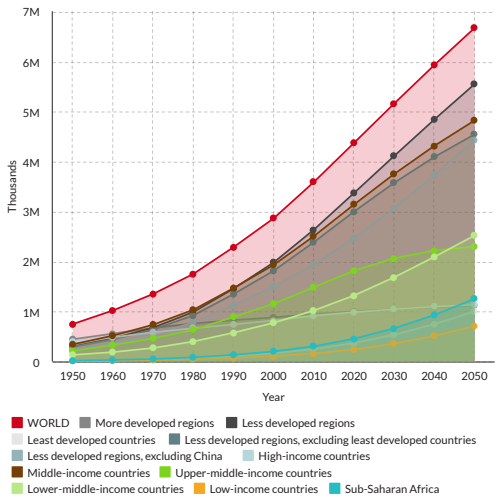
This brief gives an overview of the different climate-related hazards that urban spaces are at risk from and explains why social protection (SP) can be effective in addressing these risks. This is the first brief from the 'Urban climate risks and the role of social protection' series, which provides an introduction to the role of SP in tackling urban climate risks. The second brief, which includes country case studies that show how SP is being used to address climate-related hazards, can be found here.

From 751 million people in 1950, the world's urban population had grown to 4.2 billion people by 2018. It is projected that by 2050, 68 per cent of the world population will be living in cities (United Nations Department of Economic and Social Affairs (UNDESA) 2018). Rapid transformation of rural and semi-rural areas into urban agglomerations, increased birth rates and mass migration of people from rural to urban areas has driven the unprecedented growth of cities and towns. With the increasing number of cities, there is a growing number of vulnerable people living within them. A once-in-30-year extreme event, such as floods, drought or heat, could double the number of poor urban labourers in countries that are highly vulnerable to a changing climate, including Malawi, Mexico and Zambia (Ahmed *et al.* 2009).

Annual Urban Population at Mid-Year by region, subregion and country, 1950-2050 (thousands)



Source: https://ourworldindata.org

Climate change has unavoidable impacts on human settlements, including urban spaces. Built assets and a concentration of economic activities within urban areas, along with an increasing population, are particularly exposed to climate events. As a result, many cities are at risk from multiple hazards and potential failures of critical infrastructure, generating new systemic risks (Oppenheimer *et al.* 2015). To tackle these emerging systemic risks, SP systems and their usability in urban contexts can be considered.

In urban areas, a number of meteorological hazards are now likely to occur more often than in the past, and possibly with greater intensity. Most cities are vulnerable to at least one type of natural hazard (UNDESA 2018). While there are a range or urban hazards that cities and towns are exposed to, the six most common urban climate-related risks are discussed in the box below.

Box 1: Key climate-related disasters with adverse consequences for urban systems

1. **Floods:** Floods are the most frequent climate-related disaster, and they are particularly damaging to urban areas (Jha *et al.* 2012). In 2015, an estimated 1 billion of the global population was as potentially exposed to floods, with the highest percentage of them residing in Asia (76.9 per cent) and Africa (12.2 per cent) (European Union 2017). Urban floods, resulting from inadequate waste management and clogging of drainage channels are generally more expensive and challenging to manage. This is primarily due to a higher concentration of people and assets in urban areas, relative to rural floods (European Union 2017).

2. **Drought:** While commonly associated with rural impacts, droughts can impact an urban population both directly (e.g. lack of drinking water) and indirectly (e.g. increase in food prices). Drought in rural areas, which act as the primary suppliers of food to the cities, can impact cities indirectly due to food shortages.

3. **Extreme heat:** It is estimated that 74 per cent of the global population will be exposed to lethal heatwaves worldwide by 2100, if carbon emissions continue to increase at existing rates (Mora *et al.* 2017). Urban areas, in general, are particularly vulnerable to heatwaves due to the compounding urban heat-island effect – the phenomenon in which manmade urban areas are significantly warmer than the surrounding rural areas (Oke 1982). In 2010, Moscow experienced the strongest heatwave of the present era, killing more than ten thousand people (Smid *et al.* 2019).

4. **Cyclones:** (both tropical and extra-tropical) can cause storm surges and waves that jeopardise the safety of coastal populations (UN Habitat 2011). These storms have increased in intensity since the 1970s, especially in the North American and northern Indian Oceans (UN Habitat 2011), with the strongest storms getting stronger (UN Habitat 2011). The location of cities and the type and quality of their infrastructure, building codes or compliance with codes may influence the destructiveness of cyclones.

A builder cooling down with cold water during heat wave.
Source: Shutterstock

5. **Landslides:** According to the World Bank, around 300 million people – or about 5 per cent of the world's population – live in areas exposed to the risk of landslides (Kjekstad and Highland 2009). Increasing urbanization, including urban development on marginal and hazardous land, rapid land-use change and removal of vegetation for buildings or pavements, can lead to higher rates of weathering and soil erosion resulting in an increased likelihood of landslides (Jha *et al.* 2012).

6. **Sea level rise:** The global rate of sea level increase since the mid-19th century has been higher than any time in the previous two millennia (Jha *et al.* 2012). Sea level rise creates a number of threats, both direct and indirect, to urban areas and dwellers. Directly, saltwater intrusion threatens the availability of freshwater supply from groundwater resources located close to the coast (IPCC 2007). This is already the case in a number of coastal cities, such as Buenos Aires and New Orleans (De Sherbinin *et al.* 2007; IPCC 2001). Also, sea level rise and storm surges compound the risk of floods in coastal and low-lying urban areas (De Sherbinin *et al.* 2007; IPCC 2001).

With evidence showing that climate change is increasing the likelihood of extreme events, more and more of these hazards are expected to affect large urban areas (IPCC 2007). The spatial impact of climate-related hazards varies in type and magnitude. Each hazard can often trigger a sub set of hazards; for instance, tropical cyclones can bring intense winds, storm surges and heavy rainfall, as well as trigger secondary hazards such as landslides or coastal flooding.

These hazards have direct consequences on the lives and livelihoods of people in urban areas. Increased poverty and homelessness, unemployment and loss of income opportunities, food insecurity and health risks are a few of the most serious impacts that can arise from these hazards. More variability and the greater likelihood of extreme events – for example, flooding, sea level rise, heatwaves and drought present new threats which, together with rapid and unplanned urbanization, present the potential for risks – often impact the poorest people disproportionately; many of whom live in

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unplanned informal settlements with limited access to support. For example, research has shown that in most countries, poor urban households are more exposed to floods than the average urban population (Hallegatte *et al.* 2015).

Urban planning and disaster management plans for cities in recent years have attempted to integrate climate risks, but this is complicated especially because the nature of cities and their populations are ever-changing and transient. Adaption options requiring high-value investments may often be stalled due to limited resources, or the short political terms. National governments are often found to rely on external help and humanitarian support in the aftermath of a disaster. For instance, Indonesia received about 1 billion US dollars from the World Bank for supplement relief and reconstruction efforts in the disaster-affected areas after the devastating cyclone in 2018 (World Bank 2018). However, such support will have limited impact in preventing the long-term damage caused to people due to unemployment and poverty. This undermines the efforts of countries to eradicate poverty and improve access to basic services for their people. SP programming can help to address these different and emerging forms of urban risk.

Rational for using social protection to address urban climate risks

SP is key to safeguarding people and their vulnerabilities in the face of shocks. The different impacts of climate hazards – such as impoverishment, unemployment and food insecurity – are the very risks that countries have been trying to address using SP policies and programmes. While climate related hazards cannot be prevented from occurring, their impacts can be reduced through preparedness and anticipatory action.

The focus of SP systems in many developing countries has traditionally been targeted at rural areas, especially in Africa and Asia, where some of the most at-risk populations are located. But as the global urban population increases, and poverty becomes concentrated in urban areas, it becomes important to understand how to make safety nets work in urban settings.

Considering urban risk reduction from an SP perspective highlights overlapping objectives: economic growth, poverty alleviation as well as urban risk management. As actions by municipalities and individuals form an important determinant of urban risk, SP investments may be used to influence actions or other investments aimed at reducing risk in already vulnerable populations (UN Habitat 2011).

Box 2: Why use social protection for addressing urban climate risk?

- Strong, adequate and efficient national SP systems can reduce the dependence of governments on emergency aids and external humanitarian intervention, which often arrive too late after the disaster has affected the population adversely.
- SP instruments, when well-designed, can target different vulnerability groups (e.g. older people, children, people with disabilities, unemployed people etc.) and address risks specific to certain vulnerabilities like old age or disability. It is difficult to include this strategy in urban planning and disaster management, which take more macro-level approaches.

While there is limited experience and evidence of SP addressing climate-related vulnerabilities in urban areas in low- and middle-income countries, mainstreaming climate risks into SP policies is an important area to be explored. SP interventions may promote actions to mitigate risk or build adaptive capacity among urban communities. Public works for urban areas, including the maintenance of drainage channels and the prevention of riverbed silting, can improve the flow of river water or storm drainage, thus reducing flood risks. Training for beneficiaries could induce specific behaviours such as maintaining homes, installing flood resilient flooring or roofing, or engaging in healthy practices to avoid heat stroke. Employment schemes may allow individuals to diversify their incomes and make investments to reduce their exposure, or help them to better manage the consequences of extreme events. Where poverty or other socioeconomic factors are fundamental in determining vulnerability, economic or social improvements through safety net programmes – such as universal education, regular cash transfers and even social care services – may initiate transformative changes that can essentially reverse factors of exposure, vulnerability or coping (e.g. moving to a better part of town, buying homes with air conditioning).

An elderly woman is rescued from her flooded home in York, Yorkshire, UK, after both the River Ouse and Foss burst their banks/Alamy

Reasons why using SP systems can be efficient in addressing urban climate risks:

There are existing social registers and lists of potentially vulnerable beneficiaries (pensioners, unemployed people, people with disabilities, women and children).

These beneficiary lists can be validated with data from different sources, due to the presence of different agencies (e.g. employment offices, urban women's councils, disability associations).

Pre-existing payment channels (like bank accounts) can be used in delivering regular SP benefits.

New bank accounts can also be opened in a shorter time due to the presence of more developed banking networks in urban areas.

The possibility of using electronic banking systems for delivering cash is high in urban areas.

Urban community infrastructures – like schools, public libraries etc. – which are often present across cities, can be used for sheltering people affected by extreme events or as distribution points for cash/food/vouchers.

Urban transport networks are better developed in towns and cities and can ensure continuity of service as well as the speedy delivery of assistance.

Information and communication channels – like television and social media etc. – can be used to broadcast emergency warnings quickly and easily.

The mobilization of actors and volunteers as well as control personnel from civil–military networks can be deployed in the case of rapid onset events.

The self-registration of beneficiaries can be possible given that urban populations have greater access to education, information and technology.

Municipality-level offices and actors can be prepared to act in anticipation as part of official city planning mandates.

SP instruments are often designed to target different forms of vulnerability (age, disability, illness, unemployment, marginalization), which are differently exposed to changing climate hazards. Of the various mechanisms currently being considered to address urban climate risks, SP can have certain advantages of being used and implemented in cities. The next brief explores how SP instruments from different urban cities can potentially reduce or mitigate the extreme consequences of some of these risks.

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