Global Assessment Report
on Disaster Risk Reduction

GAR 2011

What Role for Low-income Communities in Urban Areas in Disaster Risk Reduction?

David Satterthwaite

2011

ISDR

iied

What role for low-income communities in urban areas in disaster risk reduction?

IIED[1]

CONTENTS

1. Introduction

This paper is about the role of low-income community organizations in urban disaster-risk reduction in low- and middle-income nations. It is well known that it is generally those with the lowest incomes that face among the highest risks of disasters in urban areas. This is largely because they live in poor quality housing in informal settlements that often develop on sites at risk from flooding or land-slides. These sites also lack risk-reducing infrastructure and services – for instance drains, health care and emergency services.[2]

Around 900 million urban dwellers in Africa, Asia and Latin America live in informal settlements because they cannot afford to buy, build or rent safer accommodation on safe, legal sites with risk-reducing infrastructure and services. In addition, they usually get little support after a disaster that destroys or damages their homes, because the inhabitants of informal settlements are not considered eligible for any support for rebuilding or rehousing. So in part, the key issue is what they can do themselves to reduce disaster risk. But far more importantly, it is about how much disaster risk reduction is served when low-income groups (and more generally those living in informal settlements) can work well with local governments (and other actors) to identify and act on disaster risk.

Most discussions and reports on disaster risk reduction (and more recently those on climate change adaptation) do not begin to understand the complexities of cities and the vulnerabilities of large sections of their populations. In large part, this is because of how little attention most international agencies have given to cities – although this is beginning to change.[3] But most discussions of disaster risk reduction and of climate change adaptation do not understand how urban contexts and urban governance systems can greatly increase or decrease disaster risk.[4] They do not pay much attention to the roles and responsibilities of local government or understand the complexities in local government and its relations with the inhabitants and civil society organizations within their jurisdictions. They think or assume that lessons from rural areas in community-driven disaster risk reduction or climate change adaptation can be applied to urban areas. Their discussions of governance focus at the national level when it is local governance failures that account for so much disaster risk. And in post-disaster actions, they fail to understand the political, institutional and regulatory blocks that urban authorities can provide to effective relief and rebuilding. Two revealing tests to gauge the interest in urban areas are first to search in any report on disaster risk reduction or climate change adaptation for the words 'city' or 'urban' (often very little or no discussion of these) and second to search for references to 'local' to see if there is any discussion of the roles and responsibilities of city and municipal governments (again often very little or no discussion of this).

But cities figure heavily in lists of places that have had the most serious disasters. They also feature heavily in lists of locations with among the highest levels of disaster risk – both from the perspective of the number of people at risk and the assets at risk. But no-one has compiled a list of the cities with the lowest levels of disaster risk. We have not given enough attention to the

---

[2] Hardoy, Jorge E., Diana Mitlin and David Satterthwaite (2001), *Environmental Problems in an Urbanizing World: Finding Solutions for Cities in Africa, Asia and Latin America*, Earthscan Publications, London, 448 pages; IFRC (2010), *World Disasters Report 2010: Focus on Urban Risk*, International Federation of Red Cross and Red Crescent Societies, Geneva, 211 pages; United Nations (2009), *Global Assessment Report on Disaster Risk Reduction: Risk and Poverty in a Changing Climate*, ISDR, United Nations, Geneva, 207 pages. Note that many of the team that prepared this document also helped prepare the 2010 World Disasters Report.
[3] United Nations 2009 and IFRC 2010, op. cit.
[4] Although this is less the case in Latin America although much of the key literature is in Spanish

cities where there are no disasters because the buildings, infrastructure, services and management of urban expansion can cope with (for instance) storms, floods or earthquakes.

A review of the levels of disaster risk facing cities would certainly find that many of those facing the highest risks were in locations with particularly serious risks – from, for instance, earthquakes, cyclones or floods. But there are very large variations in, for instance, mortality from disasters in cities facing comparable disaster hazards that are the result of differences in the effectiveness of government in developing resilience to these hazards.[5]

Cities might be considered inherently risky as they concentrate people, buildings and infrastructure that can collapse, industries (many of which work with hazardous or flammable chemicals) and motor vehicles. There are also many examples of large disasters from, for instance, industrial accidents or bus or train crashes or ferries capsizing. But there is also the evidence that well-governed cities have dramatically reduced the incidence of such disasters and the scale of their impacts.

Of course, the wealth of a country or a city has a major influence on the number of deaths or serious injuries caused by disasters. Most of the cities with the smallest numbers of deaths or serious injuries would be from high-income nations and most of those with the largest numbers would be in low- and middle-income nations. We know the main reasons for this: good quality housing linked to good quality infrastructure and services dramatically reduces the scale of risk for most disasters or perhaps more to the point prevents potential disaster hazards causing disasters – as, for instance, a cyclone or heavy rainfall causing no deaths or serious injuries. Disaster-risk for cities in low- and middle-income nations is strongly linked to the proportion of their populations not living in good quality housing on safe sites with infrastructure and services. Also to urban expansion that takes place without the management of land-use and changes in land-use that can and should be so central to disaster risk reduction.

One response to the above could be to assume that economic development is what underpins disaster risk reduction. That cities over time get wealthier and this provides the basis for disaster risk reduction. But as this paper will discuss in more detail, many cities with successful economies are actually getting more at risk from disasters. Economic success is not underpinning disaster risk reduction; indeed, it is often greatly increasing disaster risk as economic success encourages in-migration but with no provisions to ensure the needed growth in good quality housing stock served with infrastructure to match the expanding population

In addition, to assume that economic development will provide the basis for disaster risk reduction neglects the key issue that disaster risks can be dramatically reduced in cities in low- and middle-income nations. This can also be done in cities that do not have wealthy economies. It must also be emphasized that most of the world's urban population is now in low- and middle-income nations and most of the growth in the world's population in the next few decades is likely to be in urban centres in these nations.[6] And then, as a later section in this paper discusses, there is climate change which will add new levels of risk and much expanded exposure of urban populations to disaster risk.

[5] See United Nations 2009, op. cit. on this – for instance in comparing deaths from cyclones between the Philippines and Japan.
[6] United Nations, Department of Economic and Social Affairs, Population Division (2010), *World Urbanization Prospects: The 2009 Revision*, CD-ROM Edition - Data in digital form, POP/DB/WUP/Rev.2009, United Nations, New York.

What this paper is interested in is how cities can reduce disaster risk, learning from the cities (and smaller urban centres) in low- and middle-income nations that have achieved this. Most of these follow a different path to cities in high-income nations. What it will highlight is many innovations in local 'governance' – both in what local governments do and as importantly in what they do not do but what they encourage and support from their citizens, community organizations and other civil society groups. It is this local governance (and the space and support it provides for community driven solutions) that makes possible the dramatic reduction of disaster risks without needing to be underpinned by high per capita incomes. Of course, it depends on a larger local capacity to invest in risk-reducing infrastructure and services but even here, the way this is done (and the way citizens and civil society can contribute to this) has large implications for what can be afforded. This paper also highlights how organizations formed by residents of settlements at high risk (including informal settlements) can contribute to this. It highlights the importance for disaster risk reduction of a new generation of mayors and civil servants who understand this and act on it. It also highlights how this is important not only for preventing disasters but also for reducing their impacts and 'rebuilding back better' after disasters.

2. What is the difference between development, disaster risk reduction and climate change adaptation?

One of the great innovations in disaster risk reduction was to realize that it was rooted in good development practice, especially in cities. This was stressed in various key documents from the 1980s and elaborated and developed, especially in certain Latin American nations, stimulated and supported by La Red (Red de Estudios Sociales en Prevención de Desastres en América Latina – Network of Social Studies in the Prevention of Disasters in Latin America).[7] As a later section will describe, there are plenty of case studies to show needed action at local, city and national level but mostly in a few Latin American nations. Similarly, for climate change adaptation, one of the key innovations was the recognition that it too was rooted in good development practice – and in disaster risk reduction – and the application of this recognition to cities.

The 2009 *Global Assessment Report on Disaster Risk Reduction* highlighted the scale and nature of extensive risk to disasters whose impacts in terms of deaths, serious injuries and damage or destruction of assets usually go uncounted. This helped change perspectives on disaster risk reduction and provided a more accurate basis from which to consider disaster risk reduction in and around cities and city-districts. It also looked beyond the conventional metrics of disaster impacts - mortality and billions of dollars worth of damage - to the impacts of disasters on livelihoods and on assets for those with limited assets and on how much disasters contributed to impoverishment. Of course, the devastating economic losses faced by low-income groups as they lose their homes and most of their possessions often seems small because the value of the assets they lost were so modest and they lived in homes of poor quality that were ascribed little value.

---

[7] See, for instance, http://www.desinventar.org/

Good development is not only what governments must do but also what they allow and support at local level and at community level. [8] This is especially the case where local government lacks capacity and funding for needed investments – for instance in trunk infrastructure. So many experts give guidelines for government action that assume that it is government that delivers the solutions – and so they always increase the roles of government. But in doing so, they set up government to fail because it lacks the capacity or willingness to take on such roles. There is a need to look at how people on the ground are taking care of their risks, understanding risk and developing mechanisms to address risk. This also shifts government response to supporting people's demand for risk reduction. It needs a new style of urban management – not doing but allowing to do. This is especially important when government agencies are too weak. It also needs a new financial system to allow people and their organizations to do more (and government to do less), especially in areas where they have been allocated responsibilities they cannot fulfil. It is very difficult to respond to a large disaster if the response is centralized and local organizations are not strong and supported. Box 1 gives an example of how community organization from within a group of informal settlements changed 'disaster risk reduction' from evicting them to supporting them.

Box 1: Surabaya: Disaster risk-reduction along the river organized and managed by the settlers in informal settlement

In 2002, the municipal government of Surabaya warned the inhabitants of riverside settlements in six *kampungs* (villages), that they were to be evicted. The official justification for this was that riverside dwellers' waste was reducing the rivers' capacity, resulting in rising water levels and flooding. These *kampungs* had existed for over 40 years, and had a well-established sense of community and place. Together, they began to learn about the relevant laws and developed the confidence to fight. Along with Uplink[9] they lobbied the national Minister of Public Works, the ministry under which the policy was constituted. After meeting with the riverside communities, the minister asked the local government to stop the evictions and instead form a joint riverside community/government team to prepare an alternative solution to propose to him. While the team did come up with a document, they failed to agree on recommendations: the government team recommended the relocation of the communities while the people's team opted to remain in their settlements. The community organization formed by the residents (The *Paguyuban Warga Strenkali Surabaya*) commissioned its own study of the rivers, with the help of an Indonesian environmental NGO, Ecoton, and the University of Gajah Mada. This found that most solid waste and pollution came from factories along the river, not the riverside communities. The communities at risk managed to shift the official policy from relocation to redevelopment by developing their own proposals to show how flooding could be avoided and city development promoted through upgrading. As a member of the province's parliament noted, there is a large difference between communities threatened with eviction saying 'help us

---

[8] This paragraph draws from three background papers prepared for the 2011 Global Assessment Report: Archer, Diane and Somsook Boonyabancha (2010) "Seeing a disaster as an opportunity; harnessing the energy of disaster survivors for change"; Pelling, Mark (2010), "Urban governance and disaster risk reduction in the Caribbean: The experiences of Oxfam GB" and Johnson, Cassidy (2010), "Eleven Years On: The landscape of community and civil society involvement in disaster response and disaster risk reduction emerging from the 1999 earthquakes in Turkey." These will be published in *Environment and Urbanization* Vol 23, No 2, October 2011. See in particular the paper by Archer and Boonyabancha on new financial mechanisms to support community organization and action.

[9] Uplink Surabaya is part of a national network of 14 secretariats across Indonesia, established in 2002 by the Urban Poor Consortium (UPC). Its focus is to show the strength of people, to help establish community organisations like PWS, and to support them throughout their development.

because we are poor' and saying 'listen, we have this problem and here is a possible solution'. The riverside communities won the right to stay as long as they upgrade their homes and work with the government in cleaning the river and clearing space for river-side roads without evicting residents.

SOURCE: Some, Wawan, Wardah Hafidz and Gabriela Sauter (2009), "Renovation not relocation: the work of Paguyuban Warga Strenkali (PWS) in Indonesia", *Environment and Urbanization*, Vol. 21, No. 2, pages 463-476.

3. Mapping disaster risk

How best to map disaster risk for a city depends on the existing information base. When a city government has complete information about all households, buildings, neighbourhoods and enterprises within its jurisdiction and all these have basic infrastructure and services, these can provide the basis for mapping disaster risk. Especially if there are accurate, detailed, location-specific records of the impacts of extreme weather and other events that caused accidental deaths and injuries. Other data sources can be drawn on – for instance records from hospitals, police and fire services. Thus, a detailed disaster risk map can be developed from existing data.

But most urban centres in low- and middle-income nations do not have such an information base. As noted already, most urban centres have a significant proportion of their population living in informal settlements that lack infrastructure and services (and for many also lacking good quality buildings). It is within these informal settlements that much of the disaster risk is concentrated, yet these are also settlements for which there is little or none of the data needed for mapping and identifying disaster risk. There is also the problem in many nations of no recent census – or of census data that is not made available to local authorities in a form that allows its use for risk mapping. It is also difficult for city governments to fill this data gap, as any data gathering exercise will usually be viewed with suspicion or even hostility by the inhabitants of informal settlements. If a government has failed to provide them with infrastructure and services and declares them illegal (and often threatens them with eviction), why would their data gatherers be trusted? And how can external data gatherers know whether the data they collect is correct, especially if the data is to be used for determining household's eligibility for upgrading or rehousing? Many informal settlements have a complex mix of landlords, tenants and sub-tenants; there are often many units that belong to landlords that do not live in the settlement. If there is the possibility of a programme to install or improve infrastructure or legalize land tenure, local or absentee landlords will want to ensure that all their houses are registered to them and not to their tenants. The landlords and 'unofficial' landowners[10] in informal settlements may also oppose any mapping or data gathering measures if they feel this threatens their incomes or land tenure.[11] Meanwhile, families in informal settlements will inflate their numbers if they think this will bring advantages – for instance to get a bigger plot or two land plots. And even if all the above difficulties can be solved, it is still a slow and expensive process for government officers or the organizations government contract to interview each household and collect data.

But there is a well-developed alternative approach that has been tried and tested in many cities and this is to involve the inhabitants of the informal settlements in this data gathering and

---

[10] Unofficial because they do not have legal tenure and they may actually have no legal basis for their 'ownership' and thus for extracting rents

[11] Weru, Jane (2004), "Community federations and city upgrading: the work of Pamoja Trust and Muungano in Kenya", *Environment and Urbanization*, Vol. 16, No. 1, pages 47-62.

analysis. Of course, this depends on city and sub-city (eg district or ward) authorities agreeing to engage and work with these inhabitants but if they do, the data gathering problems listed above disappear or are much reduced.

Three critical steps to getting disaster risk reduction in which households and community-organizations need to be involved are:

1. **The quality of the risk and vulnerability mapping**; how can this build the knowledge base <u>and</u> get the engagement of those who need to act on it - in districts or neighbourhoods at risk, from local government (and often higher levels of government) and within the disaster response agencies.

2. **The extent to which doing this mapping brings in all the key stakeholders** (so they learn from it and feel committed to it, especially community groups from the settlements most at risk and the local government offices who need to be engaged in disaster risk reduction). There are now a growing number of studies that show how consultations with low-income groups in informal settlements can produce detailed data about risk and vulnerability – see Box 2. Does the mapping process involve or bypass local consultations, discussions and data gathering? Developing risk maps and collecting needed data from each neighbourhood and district is made much easier if there are representative community-based organizations that can contribute to this as examples given below will show.

Box 2: Residents of Lagos's informal settlements report on the risks they face

Interviews with the residents of four informal settlements in Lagos found all were at risk of flooding but the scale and nature of flood-risks varied by settlement and within each settlement – for instance in Makoko, those living next to a channel had more severe floods than others. Flood waters almost always entered homes and over 80 percent of respondents reported that they had been flooded 3 or 4 times during 2008. Poor drainage was seen as the main cause of floods although also mentioned were the amount of solid waste dumped in the street or drains and the encroachment of drainage channels by buildings.

 Source: Adelekan, Ibidun O. (2010), "Vulnerability of poor urban coastal communities to flooding in Lagos, Nigeria", *Environment and Urbanization*, Vol. 22, No. 2, pages 433-450.

---

3. **The extent to which mapping disaster risk helps develop the needed relationship between communities at risk and the local government** (and disaster response agencies). So much disaster risk reduction depends on what local government does, allows and supports. Actually, what it allows or supports may have more importance than what it does, because of what community organizations within informal settlements can do if they get official support.

Two examples will be presented here of this alternative approach – from Cuttack in India[12] and from a range of urban centres in the Philippines. Both of these are underpinned by representative organizations formed by the inhabitants of informal settlements – the Homeless

---

[12] This draws from Livengood, Avery et al (2011), "Participatory settlement mapping by Mahila Milan", to be published in *Environment and Urbanization*, Vol. 23, No. 2 in October 2011.

People's Federation of the Philippines and, in India, the National Slum Dwellers Federation (and its Orissa member federation) and *Mahila Milan* (a federation of women's savings groups formed by those living in informal settlements). Of course, this alternative approach depends on local government recognizing the validity and utility of this approach. But as importantly, it depends on these urban poor organizations and federations offering to work with local governments and demonstrating the knowledge and resources they can bring. There are many other examples that could be presented here of this alternative approach – also from nations or cities where there are slum/shack dweller federations.[13] This is also no coincidence in that these federations have visited each other and learned from each other – and there are comparable examples that could be presented from Thailand, South Africa, Kenya….[14]

Box 3 describes the shift by the Philippines Homeless People's Federation from community-driven disaster response to disaster risk reduction. This included the capacity to gather the data needed from all settlements at risk within a city and develop the mapping to allow the identification of the most appropriate disaster risk reduction measures.

Box 3: Shifting from community-driven disaster response to disaster risk reduction in the Philippines

The Philippines Homeless People's Federation is a national network of 161 urban poor community associations and savings groups with more than 70,000 members from 18 cities and 15 municipalities. The national federation and member local federations are engaged in many initiatives to secure land tenure, build or improve homes and increase economic opportunities, working wherever possible with local governments. They have also been working in locations impacted by disasters, building community-capacity to take action to meet immediate and long-term needs (see Box 7 for more details). Drawing from this experience, the Federations is also developing initiatives for risk reduction as it identifies at-risk communities in cities and municipalities and supports the design and implementation of risk reduction. City-wide enumerations identify and support at-risk communities and help provide documentation on informal settlements for which there is little or no official data. The Federation and PACSII (an NGO that supports the Federation) are now identifying and profiling at-risk communities in 12 cities and 10 municipalities located in Luzon, Visayas and Mindanao. Budget constraints mean this has to identify and prioritize communities that are most at risk so this focuses on informal settlements located under bridges, on cliffs and other landslide prone areas, coastal shorelines and riverbanks, public cemeteries, near open dumpsites and those in flood-prone locations. This will provide accurate profiles of marginalized settlements that are highly-at risk in the city and wider region.

The Federation is also partnered with The Environmental Science for Social Change (ESSC) that is knowledgeable in disaster mapping and risk assessment and this helps to capacitate communities to undertake a community-driven risk assessment and mitigation (CRAM). The Federation overlays the CRAM results with local maps which the ESSC helped develop for the selected high risk communities. The enumeration, CRAM results and map overlays show the

---

[13] See the website of Slum/Shack Dwellers International where the work of the many national federations are reported - http://www.sdinet.org/

[14] See Boonyabancha, Somsook (2005), "Baan Mankong; going to scale with 'slum' and squatter upgrading in Thailand", *Environment and Urbanization*, Vol. 17, No. 1, pages 21-46; Karanja, Irene (2010), "An enumeration and mapping of informal settlements in Kisumu, Kenya, implemented by their inhabitants", *Environment and Urbanization*, Vol. 22, No. 1, pages 217-239; see also http://www.sdinet.org/ritual/enumerations/

socio-economic and environmental vulnerabilities of communities to disaster and can bolster the credibility of the Federation in engaging with city stakeholders (especially the local government unit) in planning for disaster risk reduction.

The Federation lacks the resources to support disaster risk reduction initiatives in all high-risk communities so it is advocating that local government at *barangay* (neighbourhood) and city levels incorporate enumeration and risk assessment in their development planning so marginalized communities can be profiled and assessed. The Climate Change Act of 2009 (RA 9729) and the Philippine Risk Reduction and Management Act of 2010 encourage barangay and city government to take the results of enumerations into consideration in their disaster response and risk reduction plans.

The up-scaling of disaster risk reduction will be pushed forward, supported and sustained by four factors: **strong community networks** (that can lobby for disaster risk reduction policies that are community-driven), **alternative financial facilities** (including support for insurance for low income households and loans for reconstruction or rehabilitation and upgrading), **technical support** (to advise on site selection, land acquisition, housing and settlement designs, zoning based on geo-hazard maps and easy-to-comply building standards) and **community-based information system**s (including community enumeration and risk assessment).

SOURCE: Homeless People's Federation of the Philippines (2010), *Addressing Vulnerabilities through Support Mechanisms: HPFPI's Ground Experience in Enabling the Poor to Implement Community-rooted Interventions on Disaster Response and Risk Reduction*, A background paper prepared for the 2011 Global Assessment Report on Disaster Risk Reduction, 16 pages. This will be published in October 2011 - Carcellar, Norberto, Jason Christopher Rayos Co and Zarina O. Hipolito (2011), Addressing vulnerabilities through support mechanisms: HPFPI's Ground Experience in Enabling the Poor to Implement Community-rooted Interventions on Disaster Response and Risk Reduction, *Environment and Urbanization*, Vol 23, No 2.

The mapping process in Cuttack in India builds on more than two decades of experience in data gathering by the community organizations formed by the inhabitants of informal settlements and other districts – through a partnership between local *Mahila Milan* groups and the local (city or state) slum dweller federations.[15] What makes this process in Cuttack unusual is that this community-driven data gathering includes the preparation of digital maps at the city scale for the city authorities. And these maps and the data gathered about each informal settlement are being used to negotiate the support needed for upgrading (or where existing sites are too risky, land for rehousing) and thus also disaster risk reduction. Slum dweller federations and *Mahila Milan* groups are also preparing comparable maps and profiles of all informal settlements in Bangalore and Pune.

The first step in this mapping is to develop an initial list of informal settlements. Local governments generally have such a list but it needs checking and it is often incomplete. The next stage is to work with the *Mahila Milan* savings groups and Federation members to check the list – and this ends up identifying many more informal settlements. In Cuttack, the city-wide survey

---

[15] Patel, Sheela (2004), "Tools and methods for empowerment developed by slum and pavement dwellers' federations in India" *Participatory Learning and Action (PLA)* 50, October, Pages 118-119; Appadurai, Arjun (2001), "Deep democracy: urban governmentality and the horizon of politics." *Environment and Urbanization*, Vol 13, No 2, pages 23-43; Patel, Sheela, Celine D'Cruz and Sundar Burra, (2002), "Beyond evictions in a global city: people-managed resettlement in Mumbai." *Environment and Urbanization*, Vol 14, No 1, pages 166-171.

found 77 informal settlements that were not on the official list; in many other cities in India, official lists of 'slums' have been found to be very incomplete.[16]

With a list of all informal settlements, visits can be planned to each by *Mahila Milan* representatives and staff from a support NGO. At this meeting with the residents and their community leaders (often this is centred on that community's *Mahila Milan* savings group), a profile of the settlement is developed that includes details of who lives there, the nature of their tenure of the land, the buildings and the extent of provision for infrastructure and services. It also includes questions about extreme weather (and its impacts on them) and other risks they face (or faced in the past). Then this group walks the boundaries of the settlement, marking it with a GPS device (points are marked at every turn, and when the boundary is a straight line, every 5-10 meters). As residents walk with the team doing the mapping, they comment on boundaries and characteristics which help the visiting team understand the settlement. From this is produced a profile of the settlement and a map of its boundaries (that can be imported into a digital map of Cuttack). Points marked in the GPS device, are uploaded onto Google Earth in the office computer. Using the path tool in Google Earth, the federation member connects the points to create boundaries corresponding to each mapped settlement. Slum profile data collected by *Mahila Milan* (usually during the mapping process) is entered into an excel spreadsheet and selected data can also be incorporated into the map, attached to the boundary maps.

This process is then repeated for all informal settlements – and from this comes an accurate, detailed, disaggregated data base on risk and vulnerability for the whole city that is combined with a city-wide map showing the boundaries of all informal settlements and with the data from the settlement profile linked to the map and so incorporated into a GIS system.

The city-wide mapping in Cuttack is underway. The city authorities have been supportive of this – and also recognize that this process can help produce the information base they need to get central government funding for a city-wide upgrading programme. The mapping and data gathered should provide the basis for agreement between city government and the residents of informal settlements on what needs to be done – although it will be difficult to reach agreement on what needs to be done in settlements that cannot be protected from flooding – see Box 4. There are also various obstacles that have to be overcome. Some relate to the relations between the civil society groups involved in the mapping and the government – for instance on what data needs to be collected and from whom. Some relate to mapping difficulties. For many informal settlements, there is no agreement on their name and a settlement may have more than one name or have residents that give different parts of it different names (for instance, those living along a street may refer to their settlement by the name of the street whereas those living further from the street give the settlement another name). Of course, what is needed is a complete list of settlements each with a name that is agreed on by residents and local government but this is not easily achieved. The ambiguities in the name given to many informal settlements (or how the names are spelt) present particular difficulties when bringing the data from the settlement profiles into the GIS and linked to the settlement boundaries. If there is no local *Mahila Milan* group within these settlements, it can be more difficult to get the needed data, although often local informants can be found that help provide this. But in some settlements, there is hostility to the mapping process, as local residents fear it is linked to possible eviction or other government measures they want to avoid. In more consolidated settlements where there are mixtures of

[16] Agarwal, Siddarth and K. Sangar (2005), "Need for dedicated focus on urban health within national rural health mission", *Indian Journal of Public Health*, Vol. 49, No. 3, pages 141-151; Agarwal, Siddarth (2011), "Health and inequality in urban populations in India", Environment and Urbanization, Vol. 23, No. 1.

good and poor quality housing, some residents or property owners may not want the settlement to be designated as a 'slum'.

Box 4: The Ring Road Settlement in Cuttack

This settlement with around 1,200 households gives an example of the difficulties in getting disaster risk reduction for low-income groups. The city of Cuttack in Orissa is bounded by the river Mahanadi and its tributaries and much of it is protected from flooding during the monsoon season by an embankment on which runs the ring road around the city. But this settlement is on the river side of the embankment and so has no protection from floods when the river level rises. It gets flooded in years when the monsoon rains are particularly heavy. There have been plans to move the inhabitants that go back several years – and initially a site 20 kilometres away was suggested but refused by the inhabitants. Now a land site for their resettlement has been identified some 7 kilometres away but the transfer of this land to the municipality has still not been sanctioned by the Government of India. The land site is too small to accommodate the households in the housing designs that they would prefer. They would have to be rehoused in small apartments in four or five storey buildings. A group of households are now opposing the move, in part because of the small apartments into which they would be moved, in part because where they live now provides them with more space and other advantages (for instance winds and lower temperatures) and they would prefer to live here and cope with the flooding when it comes. The last serious flood they experienced was in 2008 – and it reached up to their roofs so they and their movable possessions and livestock moved up to the ring road that is on top of the embankment. The flood waters typically stay 10-15 days, after which they move back and rebuild or repair their homes. Obviously, the municipality does not want them occupying the road when it floods as this disrupts traffic. It is also short of land so is constrained in what it can offer this community for relocation – and there are over 300 other informal settlements in the city also seeking infrastructure, services and tenure or alternative sites. The settlement cannot be protected from flooding yet it has proved problematic to find alternatives to them staying there.

SOURCE: Livengood, Avery et al (2011), "Participatory settlement mapping by Mahila Milan", *Environment and Urbanization*, Vol. 23, No. 2.

More generally, for this kind of community-driven approach to mapping and data gathering to be effective, it needs local governments to see its potential and its utility to them. It will not work if local government sees those in informal settlements as 'illegals' with no right to government services or as encroachers. It is very difficult to do this if local government is weak or disinterested or both. It will also be constrained where local government is constrained in its capacity to work in informal settlements (for instance with public agencies not being allowed to work in settlements that occupy public land). In Cuttack, as in many cities in India, many informal settlements are on land owned by central government agencies and it has proved very difficult to get these agencies' support for upgrading.

Much of the above discussions on mapping risk is to provide the information base to guide development – in this instance either upgrading of existing settlements or support for those who live in settlements at risk to move. But risk mapping is also important to inform and support the measures that reduce risk from, for instance, storms, by moving temporarily from their homes. In the absence of needed infrastructure, there are more modest initiatives that can reduce risks. These might include spreading awareness of risks and of appropriate responses (eg early

warning systems that reach low-income communities, community measures to clean drains when heavy rainfall is expected, the identification and if needed improvement of evacuation routes). [17]

Risk mapping was a central element of disaster risk reduction initiatives supported by Oxfam-UK in Santo Domingo, Georgetown, Port-au-Prince and Cap Haitien. These followed a broad public awareness raising campaign – and the risk mapping was a practical mechanism for bringing together a core group of engaged citizens with project team members. This core group often fed into the leadership of community groups. Risk mapping involves the identification of hazard, vulnerability and capacity. Methodologies range from those that apply sophisticated technologies to map and model risk and scientific skill with which to quantify hazard probabilities and potential impact scenarios, to those that rest on local and lay knowledge and the production of maps using everyday materials. The choice of methodology in part rests on the extent to which risk mapping is aiming for scientific rigour and accuracy in outcome, or is conceived as a tool for awareness raising and community building around risk and its management. The risk mapping is needed to produce the basis for helping select and locate small scale mitigation works; it is also needed to build community capacity, although getting the balance right between technical and lay input was not easy. In Guyana a lack of technical capacity led to maps having limited practical use – many simply showed road networks with an arbitrary line to indicate that flooding was a greater hazard further inland. By contrast, risk mapping in Cap Haitien deployed a highly technical approach with resulting geographic information system maps only accessible through a small number of lap top computers. Technology afforded some legitimacy to the project for local government but alienated local actors and proved short-lived as computers broke. In Santo Domingo, technical mapping was undertaken in parallel with community mapping projects, in one instance community leaders stood on a bridge and pointed out places prone to flooding. This approach worked well as it gave a visible face to the project and helped consolidate the leadership group while the necessary technical data was also collected and finally both types of data combined (see Box 5).

Box 5: Risk mapping in Santo Domingo

Santo Domingo is exposed to flooding and landslides associated with tropical storms and hurricanes and many low income communities are at high risk – as in the thousands of dwellings perched on precarious limestone cliff faces and ravines or on the flood plain immediately adjacent to the River Isabella. A social development NGO, the Instituto Dominicano Desarollo Integral (IDDI) has been working on community capacity building in low-income neighbourhoods built around projects including solid waste management, microcredit, infrastructure provision, education programmes and primary health promotion facilitated through a network of street level community health promoters. This long history of engagement in social development (including an active network of local health promoters) and good relations with communities at risk and with government actors provided the basis for moving into disaster risk reduction.

Community level work on this was split into three phases. Months 1-6 included sensitisation and awareness raising (including family visits, talks with groups of families, video forums and discussion, community theatre, a song contest and vulnerability fair to celebrate the international day of Disaster Risk Reduction), training (including monitoring hazards and early warning,

---

[17] Pelling 2010, op. cit.

emergency shelter management and first aid), risk mapping (both using community and technical knowledge) and community group formation. Months 7-12 saw the completion of physical mitigation works including emergency access stairs, bridges, drains and walkways along ravines (applying the risk maps and managed with community groups). Three early warning and evacuation drills were practiced with increasing complexity. The first used only a megaphone with no preparation for the community, the second was able to use constructed evacuation routes and identified emergency shelters, the third integrated non-local actors – ambulances, civil defence – and simulated injury. The aim was to prepare people and agencies, but also to witness the contributions of each stage of the project and maintain community interest. The wider risk management community and the public were engaged through a media campaign 'Reduce Vulnerability' using television and radio. Actors such as Civil Defence, the Police and Dominican Red Cross sat on local committees and were made aware of the project from its inception. The municipality was integrated into the project through its role in coordinating disaster response with civil defence and as a gatekeeper to political interests and the provision of basic needs underpinning disaster risk reduction. Months 13-15 focussed on facilitating the transfer of responsibility to the communities although IDDI kept in touch with committees and individuals through a range of other social and environmental projects with additional interaction during times of disaster.

SOURCE: Pelling, Mark (2011), "Urban governance and disaster risk reduction in the Caribbean: The experiences of Oxfam GB" *Environment and Urbanization* Vol 23, No 2, October.

---

4. What community-level action can do and cannot do

In most urban contexts, what community-organizations can negotiate from their local government is as important if not more important for disaster risk reduction than what they can do themselves. So much urban disaster risk reduction depends on the availability of infrastructure that the residents of informal settlements cannot install themselves. The willingness of individuals to invest in collective actions for risk reduction in their settlement also depends on how secure they feel from eviction and their tenure status (for instance tenants are usually unwilling to invest in improving the housing they live in). This willingness also depends on the nature of their relationship with local government. But the contribution of community-level organization and action to disaster risk reduction can also be greatly enhanced where local governments and other key bodies (for instance civil defence organizations) recognize their role and support them.

Individuals and households at risk take measures to reduce these risks – as examples from informal settlements in Lagos and Dhaka illustrate. Many of the houses in Korail (one of Dhaka's largest informal settlements) are close a lake and reservoir while some are actually built over the water. Among the risk reduction measures taken, some people move to a safer location when heavy rainfall is expected but most cannot afford to miss a work day and they fear they may not be allowed to return. Many households had taken measures such as making barriers across door fronts, increasing furniture height (often putting them onto bricks), making higher plinths and arranging higher storage facilities (eg shelves higher up walls). For houses near or on the water's edge, structures are on stilts with platforms constructed higher up the stilts. Wooden planks for flooring are preferred as they suffer less from water clogging once floods subside. Building on stilts also allows some expansion over the lake. During flooding or water clogging, most residents sleep on furniture, use movable cookers for food preparation (that can be used on shelves or on top of furniture); some shared services with unaffected neighbours. The

risks were accepted in that this is a good location for employment since it is near high-end residential and commercial areas and it attracts people mostly in service jobs such as cleaners, rickshaw pullers and workers in ready-made garment industries.[18]

In the four informal settlements in Lagos described in Box 2, there were some community initiatives to clear blocked drainage channels but most responses were by households as they constructed drains, trenches or walls to try to protect their houses or filling rooms with sand or sawdust; foodstuffs and other household items were also stored on shelves or cupboards above anticipated flood levels. Three quarters of respondents received assistance from family and friends after flood events; far fewer received assistance from government or religious organizations. Discussions with households living near the water's edge and on higher ground drew out their experience of climate variability, hazards and coping strategies. Those interviewed highlighted how any climate hazard reduces earnings through missed working hours or days.[19]

Local organizations often have considerable importance in supporting local, pragmatic, uncostly responses to disasters. To give just one example, in barrio Parque el Rey, in the Municipality of Moreno (one of the peripheral municipalities within Greater Buenos Aires in Argentina), a local community organization that manages a soup kitchen and provides extra-curricular school support for local children, acts as an "unofficial" evacuation centre during floods caused by intense rains. The area is low, with marshlands and lagoons, which coupled with individual practices such as elevating plots or building small walls to keep water out, have altered the local drainage pattern, increasing flood risk in the neighbourhood. The evacuation centre is becoming more organized and better supplied with food, mattresses and clothes and neighbours have learned when to move to the evacuation centre. Initiatives like this will remain very localized and limited in any capacity to actually reduce the risks unless they receive the recognition and support from local governments and/or other civil society organizations.[20]

The work needed to develop and sustain community initiatives for disaster risk reduction is often underestimated. It is often assumed that each settlement has an organized body with community leaders that are interested in working on reducing disaster risk.[21]. Each community has its own complex web of social, economic and cultural dynamics, mediated by power relations and conflicts. It often takes much more time, energy and imagination to develop strong community organizations that can withstand the ups and downs of local development processes than to build basic infrastructure.[22] Governments and international agencies often fail to recognise that the work needed to create and support effective community organizations should precede all other activity.[23]

So it is difficult to get or retain engagement of the inhabitants of settlements at risk in collective action unless it shows some success (for instance in getting the engagement and support of local government) and unless it is built on a network of resident organizations in which residents feel that their interests are represented. In Cuttack and in the Homeless People's Federation of the Philippines, as described earlier, existing representative community organizations (women's

[18] Jabeen, Huraera, Adriana Allen and Cassidy Johnson (2010), "Built-in resilience: learning from grassroots coping strategies to climate variability", *Environment and Urbanization*, Vol. 22, No. 2, pages 415-431.

[19] Adelekan, Ibidun O. (2010), "Vulnerability of poor urban coastal communities to flooding in Lagos, Nigeria", *Environment and Urbanization*, Vol. 22, No. 2, pages 433-450.

[20] Hardoy, Jorgelina and Gustavo Pandiella (2011), "Local disaster risk reduction in Latin American urban areas", *Environment and Urbanization*, Vol. 23, No. 2, to be published in October 2011

[21] Colina F, J. Delgado, V. Jimenez, J. Lafaille, A. Linayo, J.L. Mosquera (2004). Pilot Study of Community Based Disaster Management Strategy for Earthquakes. Case of La Vega", FUNDAPRIS – JICA. Pilot Study of Community Based Disaster management Strategy for Earthquakes: ProVention CRA toolkit. Case Study.

[22] Hardoy and Pandiella 2011, op. cit.

[23] Colina F et al 2004, op cit, pages 14-15.

savings groups) got engaged in disaster risk reduction but their continuity does not depend on disaster risk reduction work because these save together and engage in development activities. In the example given above in Santo Domingo, continuity in disaster risk reduction was in part achieved because in involved a network of health promoters within each settlement at risk. In a review of civil society initiatives after the 1999 earthquake in Turkey, it was generally civil society organizations that were already established and had good links with government agencies that received more state support than those formed after the earthquake.[24] What makes the examples in Cuttack and the Philippines unusual is that the civil society organizations were grassroots organizations, not local NGOs.

It is also difficult to get disaster risk reduction in informal settlements if there is no support for community organizations from local governments and civil defence organizations. In comparing the experience of Oxfam UK in supporting Disaster Rick Reduction in the Caribbean, community groups in Georgetown and Haiti were constrained by a lack of support from government agencies. In Georgetown, lack of capacity and perhaps an unwillingness to share authority and a worry that this may undermine local government's legitimacy meant few positive responses to requests from community groups for access to local machinery to clean drains. Community organizations also received no formal recognition from higher levels of government or from the Guyana Civil Defence Commission. In Haiti, a rigid bureaucratic culture in government discouraged community groups as they could not get the formal letters granting approval of plans of action or the appropriateness of risk maps. Without these, group members felt they lacked legitimacy to act and were unwilling to act outside of formal procedures. Both the Guyanese and Haitian cases show the power of government at local and higher levels to slow-down and stifle community action through bureaucratic process. In neither case was government actively hostile to community action but such action was discouraged by the lack of active support and official recognition. In Santo Domingo a more open and diversified urban governance regime and one with a long history of local action at political and practical levels meant local activity was recognised as legitimate. This received further support from the local NGO IDDI that was respected by communities and local government and that provided continuity in support and key actors in urban governance including the Red Cross, Civil Protection and local development committee group (Junta de Vencinos) sat on community committees. Generating trust between local government and community groups takes time and external funders may under-estimate the time needed to achieve this. IDDI offered one way around this dilemma.[25]

As the initiatives of the Homeless People's Federation of the Philippines described in Box 3 make clear, working at scale on disaster risk reduction depends on support from government. While the efforts of communities in the Philippines and elsewhere to develop and implement their own disaster-risk reduction have produced concrete results, to move from small-scale success stories to becoming a mainstream approach to city development requires government support. Communities can only maximize and control the development drivers that are inherently theirs such as their savings, acquired capacities, and the support given by their Federation and support NGO (PACSII). Government support is needed for getting land (or tenure of land already occupied), the formulation of enabling policies on the city and national level (including more flexible building codes), and institutionalizing the community-driven process at neighbourhood, district and city levels.

---

[24] Johnson 2010, op. cit.
[25] Pelling 2010, op. cit.

Local government's effectiveness in disaster risk reduction is also much enhanced if it supports and services community-level actions in all informal settlements – for instance in monitoring local conditions that cause floods or exacerbate their impacts (eg the conditions of drainage channels, drainage channel maintenance, solid-waste collection) and in supporting community-capacity for disaster preparedness and when needed evacuation.[26]

International agencies engaged in development and disaster risk reduction in urban areas (and increasingly those engaged in climate change adaptation) are constantly frustrated by the incapacity or unwillingness of local governments to act. One response is to highlight household and community-driven solutions (although usually with households and communities seen more an implementers than as those with the right to determine what is done). Of course, if done well, this can bring many benefits but disaster risk reduction in urban contexts depends on larger investments; you need the big infrastructure into which to slot community-based investments for most disaster risk reduction. For instance, when most low-income informal settlements are embedded in a much larger built-up area, their residents need a larger system of storm and surface drains in which their own efforts to install, improve and maintain drainage can fit.

If an external agency really is committed to getting strong and effective partnerships between community groups and local governments, they also have to have the capacity and flexibility to maintain a local presence (as this often takes longer than conventional project cycles). Also since the time frame for actually getting local government engagement is so uncertain, there is a need for flexibility in project time frames (it is a bit silly to have a precise timetable in a project design that is seeking to influence local government as if one can anticipate when and how quickly this can succeed). There is also a surprising reluctance of external agencies to work direct with grassroots organizations – which is especially important where local governments lack capacity or willingness to work with their citizens.

5. Locating Disaster Risk Reduction within the bigger developmental framework

Working at city scale

Many good disaster risk reduction initiatives are local in scale – focused on a particular settlement or district. But to get disaster risk reduction at a city scale needs a larger process – for instance addressing deficiencies in infrastructure and services, getting land-use management systems to contribute to risk reduction and getting the regulatory framework for buildings and land-use right. Also getting all the key stakeholders engaged in this. Box 6 gives the example of Manizales – where it is the joint contribution of many actors (local government, community organizations, extra-local government, a local university) that has made it so effective.

Box 6: Manizales – integrating development and disaster risk reduction

The city of Manizales in Colombia is well known for its innovation in both development and environmental action programmes.[27] Local disaster risk reduction has long been integrated into

---

[26] See López-Marrero, Tania and Petra Tschakert (2011), From theory to practice: building more resilient communities in flood-prone areas, *Environment and Urbanization*, Vol. 23, No. 1, pages 229-249.

[27] Velasquez, Luz Stella (1998), "Agenda 21; a form of joint environmental management in Manizales, Colombia", *Environment and Urbanization*, Vol.10, No.2, pages 9-36; Vélasquez, Luz Stella (1999), "The local environmental

these, so now the disaster risk management plan is integrated into the city's development plan and its environmental policy and action plan. There has also been continuity in this emphasis on disaster risk reduction and environmental management over the last 15-20 years, even as the city government changed (although each city administration placed more emphasis on certain aspects and not on others).[28]

Certain key aspects of the experience of Manizales need highlighting: the involvement of the population in each district in risk mapping and responses; the capacity to bring together all key local stakeholders, and the capacity to work where needed with regional and national bodies.

Perhaps the main achievement has been the capacity to bring the local and regional government, the private sector, universities and representatives of community organizations into a participative process.[29] This has been supported by new legislation - for example the Urban Planning Law (1999 – Ley de Ordenamiento Territorial) requires that all urban plans be discussed by Local Planning Committees (Consejo Territorial de Planeación) involving civil society, universities and institutions[30].

A municipal disaster prevention system has been an integral part of local policies since the 1980s and this had included risk mapping, micro-zoning to identify risk zones (and build accordingly) and the application of construction codes. It also included identifying settlements particularly at risk from landslides, working with their inhabitants to relocate them to safer sites and converting the land at risk into locally managed neighbourhood parks with measures to stabilize the slopes.[31]

The disaster risk reduction programme also includes community preparedness and education, institutional coordination, research and particular initiatives to reduce vulnerability and enhance resilience. For example, the programme Guardianes de Ladera (Slope guardians) involves 112 women who receive training on creating and maintaining slope stabilization in the neighbourhood where they live; they also report on any problems and communicate their experience to others. They are supported by a team formed by professionals and technicians from Corpocaldas, the Municipality of Manizales, Red Cross., Aguas de Manizales and the Institute of Environmental Studies (IDEA – Instituto de Estudios Ambientales) of the National University's campus in Manizales.

Environmental observatories have been created in each of the 11 *comunas* into which the city is divided to support public engagement and the implementation of the city's environmental plan. These monitor progress on environmental conditions and progress on these is summarized and

action plan for Olivares bio-comuna in Manizales", *Environment and Urbanization*, Vol.11, No.2, pages 41-50; Velásquez, Luz Stella (2005), "The Bioplan: Decreasing poverty in Manizales, Colombia, through shared environmental management", in Steve Bass, Hannah Reid, David Satterthwaite and Paul Steele (editors), Reducing Poverty and Sustaining the Environment, Earthscan Publications, London, pages 44-72.

[28] Velasquez Barrero Luz Stella (2010) La Gestion del Riesgo en el contexto ambiental urbano local: Un reto permanente y compartido. Caso Manizales, Colombia. Background paper prepared for GAR 11.

[29] Marulanda Liliana M (2000), El Biomanizales: Política Ambiental local. Documentación de la Experiencia de Gestión Ambiental Urbana de Manizales, Colombia. Instituto de Estudios de Vivienda y Desarrollo Urbano (IHS) dentro del marco de implementación del poryecto: Apoyo para la implementación de Planes Nacionales de Acción del Habitat II (SINPA). Mimeo. Also Hardoy Jorgelina and Gustavo Pandiella (2009) "Urban Poverty and Vulnerability to climate change in Latin America", *Environment and Urbanization*, Vol 21, No 1, pp 203 – 224.

[30] Velasquez Barrero 2010, op. cit.

[31] Velasquez (2008) and Velasquez Barrero 2010 op. cit.

displayed publicly in a simple set of indicators – the environmental traffic lights (semaforos ambientales).[32]

Other risk reduction measures include
- tax reductions to those who implement measures to reduce housing vulnerability, in areas with high risks of landslides and flooding
- an environmental tax on rural and urban properties spent on environmental protection infrastructure, disaster prevention and mitigation, community education, and relocation of at risk communities[33].
- A system of collective voluntary insurance to allow low-income groups to have insurance for their buildings. The city government has an agreement with an insurance company and allows any city resident to purchase insurance coverage through municipal taxes.[34]

The government of Manizales coordinates with other government levels, both regional (through for instance Corpocaldas[35] that has been involved in many of the processes described earlier) and national. There is a regional seismic observation network that involves all coffee producing regions (Eje cafetero), river basin management public-private consortia, and the National System for Prevention and Response to Disasters (Sistema Nacional para la Prevención y Atención de Desastres), which works with the Municipal office for prevention and emergency (Oficina Municipal para la prevencion y atencion de Desastres – OMPAD).

But in most cities in low- and middle-income nations, local government lacks the institutional capacity and government willingness to work with low-income groups that is so important for Manizales' success and higher levels of government provide little or no support to help them do so.

Land use management
For any well governed city, land-use management (and management of changes in land use) is an important part of risk reduction as it should serve to guide urban expansion and development away from areas or sites at risk and ensures new land is available for housing and urban development with needed infrastructure. It should be complemented with appropriate building regulations. But most local governments in low- and middle-income nations have no functioning land-use management system. Many have no control of the process of urban expansion. Or they have lost control; whereas once they had land-use plans and zoning to guide this, now where these exist they are constantly eroded or ignored. Land set aside for public purpose is not protected – and so often acquired and built on illegally by private developers. And it is so common for urban expansion and consolidation to happen with no provision for infrastructure - or even for protecting existing infrastructure (including drainage channels) so these get filled or encroached. So many powerful vested interests are engaged in land speculation and in profitable land-use changes that are not authorized. With no planning and no effective land-use management, a city's growth is largely defined by where illegal settlements develop and by where a range of ad-hoc projects and developments take place, undertaken with

---

[32] Velasquez Barrero 2010 op. cit.

[33] Velasquez Barrero 2010 op. cit.

[34] Fay, Marianne, Francis Ghesquiere and Tova Solo (2003) *Natural Disaster and the Urban Poor*, in En Breve, October, No.23, World Bank, pages 1- 4.

[35] Corpocladas: Corporacion Autonoma Regional de Caldas. Responsible for environmental management and sustainable development in the Department of Caldas, Colombia

no coordination.[36] It is not possible to build disaster risk reduction into city expansion if this is the case.

Laws on land-use do not fulfil their intended purpose if they are not backed by rules and regulations and institutions that can implement and supervise them. Or if elites can always find ways of using the law to serve their purpose. In Asia and Africa, colonial empires may have disappeared but their rules and institutional attitudes remain. Weak, ineffective, poorly funded city governments still have structures, regulations and ambitions that are similar to city governments in high-income nations that have little or no backlog in infrastructure and budgets 100 to 1000 times higher per inhabitant. For instance, in the rapidly urbanizing province of Cavite, to the south of Manila "The conversion of rice land into industrial, residential and recreational uses represents a political process in two senses: first, policy choices are made relating to the use of land that reflect a particular set of developmental priorities; and second, the facilitation of conversion involves the use of political power relations to circumvent certain regulations. These points are made at three different, but interconnected, levels: at the national level of policy formulation; at the local level of policy implementation and regulation; and at the personal level of everyday power relations in rural areas." [37]

City governments should be taking measures to help ensure sufficient land is available for housing in locations that are not at high risk. Yet in many cities, the ratio between land prices and average incomes increases to the point where most land-use changes happen outside the formal market and many take place on land ill-suited to development.

Using rules and regulations. The core justification for land-use and building regulations is for health and safety – in other words for reducing risks. Yet they often create risk, as what they demand and the measures needed to meet these demands are too expensive or bureaucratically cumbersome. Or they are undermined by corruption. So this pushes more and more housing and settlements outside the regulations (although in a proportion of illegal developments, some of the regulations are followed because this increases the chance of them being legalized). And then when illegal settlements have consolidated, often their inhabitants press for legalization.

One of the most significant changes in urban governance in Africa and Asia in the ten to fifteen years is the expansion of federations of slum or shack dwellers or homeless people that offer city governments partnerships in development and risk reduction. Examples of these have already been given for Cuttack and for urban areas in the Philippines. These federations also learn from each other and have formed their own small umbrella groups to help them do so - Shack or Slum Dwellers International (SDI).[38] SDI member federations build local movements at a neighbourhood level, primarily around land and basic services. The network grew from the seven founding members in 1996 (South Africa, India, Zimbabwe, Namibia, Cambodia, Nepal and Thailand) to 16 core affiliates in 2006 (Kenya, Malawi, Uganda, Ghana, Tanzania, Zambia, Sri Lanka, Philippines, Brazil) with links to a further ten countries by 2010 (Pakistan, Indonesia, Bolivia, Argentina, Nigeria, Sierra Leone, Angola, Mozambique, Swaziland, Egypt). The methodology used by SDI federations encourages local communities to design housing solutions to address their needs, refining these solutions through practice. The federations also seek, in general, to be non-confrontational in their relations with local authorities with the understanding

---

[36] Hardoy, Mitlin and Satterthwaite 2001, op. cit.

[37] Kelly, Philip F. (1998), "The politics of urban-rural relationships: land conversion in the Philippines", *Environment and Urbanization*, Vol.10, No.1, pages 35-54.

[38] See http://www.sdinet.org/ for more details

that city wide solutions to the problems of insecure tenure and lack of infrastructure and access to services need to be in place.

National federations have achieved significant success with secure tenure in Kenya, Malawi, South Africa, India, Namibia, Thailand, the Philippines and Zimbabwe. Strong local groups have also been able to negotiate for state support to secure land or land tenure for over 150,000 families. This includes access to basic services. The experiences of the federations highlights the importance of strong local politicised organisations if community solutions are to be allowed to prevail and if communities are going to have the capacities they need to take up new challenges once they have negotiated tenure or negotiated new land sites on which to build homes. In terms of disaster preparedness, there is an increasing awareness in the federations about how to develop work with local authorities and local NGOs to plan their developments and to minimise disaster related risk.[39] This is illustrated in Box 7.

Box 7: The partnership between community organizations and the city government of Iloilo in the Philippines

The partnerships established between local and national government, grassroots organizations and the Homeless People's Federation of the Philippines started before the devastation caused by Typhoon Frank in 2008 – for instance in the implementation of a community-led upgrading programme. The partnership was strengthened after the Typhoon. The government of Iloilo recognized that the urban poor and their support organizations are partners in the city's development. It provided many opportunities for them to participate in local decision making through representation in technical working groups and multi-sectoral bodies and allowing more room for engagement and for effecting change in local policies. The scale and scope of housing delivery, upgrading, post-disaster assistance and other basic services were much increased because of the resource-sharing from the partnership.

Local government extended facilities/equipment and personnel (site engineer, surveyors, mappers) to provide technical assistance to the Federation on housing and disaster rehabilitation measures and these also lowered the cost of projects. A portion of the relocation site was allocated to the construction of temporary housing units and communal facilities for Typhoon-Frank affected families.

Being a member of the Resettlement and Monitoring Task Force, the Federation assisted in social preparations and other resettlement-related activities conducted by local government. This include an Information Dissemination Campaign among communities living in danger zones (along riverbanks, shorelines and those directly affected by the city's infrastructure projects) who will be transferred to government relocation sites.

The city government, through the Iloilo City Urban Poor Affairs Office, assisted in the federation's social mobilization which include mapping of high-risk/disaster-affected communities and identification and prioritization of communities to be given post-disaster assistance (temporary houses and material loan assistance for housing repair). A range of international organizations also supported this partnership (the Asian Coalition for Housing Rights, Homeless International, Slum Dweller's International and Misereor). The communities

---

[39] Mitlin, Diana (2008), "With and beyond the state; co-production as a route to political influence, power and transformation for grassroots organizations", *Environment and Urbanization*, Vol. 20, No. 2, pages 339-360.

also worked with the University of San Agustin-College of Engineering and Architecture, University of the Philippines Visayas & Western Visayas College of Science and Technology as these provided technical support to poor communities living in high-risk areas.

SOURCE: Carcellar, Norberto, Jason Christopher Rayos Co and Zarina O. Hipolito (2011), Addressing vulnerabilities through support mechanisms: HPFPI's Ground Experience in Enabling the Poor to Implement Community-rooted Interventions on Disaster Response and Risk Reduction, *Environment and Urbanization*, Vol 23, No 2, October.

Beyond city boundaries

Political and administrative boundaries rarely coincide with risk production processes that cause or contribute to disasters. It is common for many of the settlements most at risk from flooding or slope failure to be in informal settlements outside municipal boundaries or in the weaker. more peripheral municipalities within larger urban agglomerations made up of many different municipalities. Increased flood risk for a city is also so often linked to changes beyond its boundaries over which the city government has little or no influence – for instance from deforestation, changes in land use and agriculture, channelling and dyke construction. In the case of the floods that devastated Santa Fe in 2003 and 2007 that will be discussed in more detail in section 6, among the factors contributing to the flood were deforestation and changes in land use outside city boundaries.

In December 2009, several small and intermediate size cities in Argentina (including Salto, Pergamino, Arrecifes, Carmen de Areco and San Antonio de Areco) were flooded as high rainfall contributed to local rivers overflowing their banks. San Antonio de Areco, a town of over 21,000 inhabitants, was hit particularly hard – and 3,000 people had to be evacuated. The city government could not address the causes of the flooding. In part this was linked to the whole region having above normal rainfall – and linked to el Niño. But many other factors contributed to the floods including the lack of controls within the Areco river basin: narrow sections of the river that were not dredged, bridges and highways that impeded water flow, changes in land use that had increased the speed of run-off and local drainage channels constructed by property owners with no coordination that also increased water run-off.[40]

There are examples of coordinated actions among neighbouring local governments. In Metropolitan San Salvador, the Consejo de Alcaldes del Area Metropolitana de San Salvador (COAMSS – Committee of Mayors of Metropolitan San Salvador) work together on certain issues such as water provision, solid waste treatment, environmental protection and city infrastructure. This is supported by the Oficina de Planificacion del Area Metropolitana (OPAMSS – Planning Unit for the Metropolitan Area). After the earthquakes in 2001, this Unit started work on micro-zoning of risk in the basin of the Ilopango Lake which also called for the involvement of other municipalities within the basin that were outside the metropolitan area.[41]

Associations and networks of local governments have also been created to unite efforts in addressing risk reduction. After Mitch, the municipalities of La Masica, Arizona, Esparta, San Francisco and El Porvenir in Honduras, founded a inter-municipal association named Mancomunidad de los Municipios del Centro de Atlántida (MAMUCA) to join efforts and

---

[40] IFRC 2010 op cit
[41] Lungo Mario (2007), "Gestion de Riesgos nacional y local" in Clarke Caroline and Carlos Pineda Mannheim (eds) *Riesgo y Desastres. Su Gestion Municipal en Centro America*. Publicaciones especiales sobre el Desarrollo No 3. BID, pages 19-27.

create a platform for dialogue and cooperation in preparing for extreme events and to coordinate local response.[42]

The importance of support from national government is discussed at the end of section 7, as consideration is given to how national government supported the city innovations that are the focus of this section.

6. What builds household and community resilience.

If disaster risks are well understood, predictable and well mapped, the responses that remove or reduce this risk can be precise. Most innovations in disaster risk reduction were in response to particular disasters. In addition, knowing the likely intensity and timing of extreme weather events (for instance for the onset of the monsoon rains) also allows households, communities and governments to take measures to limit costs.[43] It becomes more difficult to do so when risks are less predictable – for instance in the timing of storms and in their intensity. As will be discussed in more detail later, climate change brings two additional problems. The first is change or likely change in the future in the intensity and/or frequency of extreme weather and who is exposed to this – and also changes in its timing. The second is changes that increase risks that may not cause disaster-events (for instance changing and often declining availability of fresh water) or changes that have not caused disasters in the past but may well contribute to them in the future (for instance higher temperatures especially within heat islands and additional flooding risks produced by sea-level rise).

In considering what reduces risk, there are measures that reduce many risks (for instance good quality housing built on safe land sites with good infrastructure and services) and measures that help people cope (for instance households' savings with a safe institution and insurance). So if disaster risk is uncertain, there is a need to build a general resilience to extreme weather and other stresses and shocks and this can be done at household, community and city-levels.

In high-income nations, this general resilience is largely built by government agencies as many of the measures that help protect populations from disasters were not installed to prevent disasters but to supply everyday needs – sewers and drains, health care services, emergency services (including fire services, police and ambulances). The application of the regulatory framework including building codes and zoning regulations should also contribute to resilience. So here, a city's resilience to extreme weather events is rooted in good development practice – the comprehensive web of institutions, infrastructure and services that meet everyday needs. It also forms a basis for resilience to climate change that can be adjusted and added to – and many city governments in high-income nations have already explored what kinds of adaptation they will need to build resilience to climate change.[44] Here, households and community organizations do not need to be active to ensure, for instance, that drains are in place and kept clear. But they do need to take on more active roles in urban areas where this web of institutions and infrastructure does not serve them. And as discussed already, large sections of the urban population in low- and most-middle

---

[42] Bollin, Christina and Friedegund Mascher (2005) *Honduras: Community – based disaster risk management and intermunicipal cooperation. A review of experience gathered by the special intermunicipal association MAMUCA.* GTZ

[43] For a case study of the careful and precise risk-reducing actions of low-income households, see Stephens, Carolyn, Rajesh Patnaik and Simon Lewin (1996), *This is My Beautiful Home: Risk Perceptions towards Flooding and Environment in Low Income Urban Communities: A Case Study in Indore, India*, London School of Hygiene and Tropical Medicine, London, 51 pages.

[44] See for instance Greater London Authority (2008) *The London climate change adaptation strategy – draft report*, http://legacy.london.gov.uk/mayor/publications/2008/docs/climate-change-adapt-strat-summary.pdf

income nations are not served by this web of institutions. Building resilience at household and community level to disasters can build on measures that households and communities already take – for instance the measures described in section 4 and the savings groups that are the foundation of the slum/shack dwellers' federations mentioned earlier. Representative community organizations can also be part of resilience both in what they do (for instance risk and vulnerability mapping to inform disaster risk reduction and disaster preparedness) and in what they negotiate from local government. There are the obvious limitations in what households and community organizations can do autonomously as discussed in section 4. Here, the example of successive floods in the city of Santa Fe in Box 8 illustrates both good and bad practice – and also the importance of civil society groups organizing and making demands.[45] The Box shows how civil society alone cannot act on disaster risk reduction and modify the conditions that produced the disaster in the first place – although it can reduce risk by neighbourhood processes that generate awareness, train inhabitants in risk reduction, prepare risk maps for the community and develop emergency plans. In most cases it is the coordinated work between government and civil society that reduces risk. However, the channels and vehicles of participation are rarely there to support this kind of coordinated work. Here, the effectiveness of disaster risk reduction is not just what a local government does but also what it encourages and supports. Local governments will often claim that there is provision for participation but in practice it is usually a passive participation with little real involvement of citizens or civil society groups in the design and selection of programmes: they are the pupils of the training courses, members of the emergency committee or part of the work force in the mitigation works.[46] This is common in many development initiatives.

Box 8: The responses of government and civil society to floods in Santa Fe, 2003-2010[47]

The city of Santa Fe, in Argentina, (with a population of 489,595 in 2001[48]) is set between the low lying areas of the Parana River basin and the Rio Salado. Much of the city developed on low-lying land, with embankments and dykes meant to provide protection. In 2003, the river Salado flooded a third of the city, displaced 139,886 people and 27,928 households were affected.[49] In certain neighborhoods, with 3 metres of water inside the house, people had to move quickly to their second floor. It took a month for the water to go down. Among the factors contributing to the flood were higher and more intense rainfall, deforestation and changes in land both along the river basin, and around the city. Two sections of the infrastructure built to defend the city from the River Salado were completed by 1995 but the last section was not in place in 2003. In addition, the pumps and drainage systems installed to evacuate water in protected areas did not work because of vandalism, lack of maintenance and the fact that electric power was off and there weren't any portable generators.[50] Other infrastructure such as the

---

[45] Hardoy, Jorgelina with Gustavo Pandiella (2010), *Local disaster risk reduction in Latin American urban areas*, background paper for the ISDR 2011 (and to be published in *Environment and Urbanization* Vol 23, No 2, 2011),
[46] Mansilla Elizabeth with Alice Brenes and Julio Icaza (2008), *Centroamérica a 10 años de Mitch. Reflexiones en torno a la reducción del riesgo*. Cepredenac, Banco Mundial.
[47] Based on interviews held on August 2010 with Sandra Gallo (Canoas), Guillermo Infran (INUMA) and Arnaldo Zapata (Secretaria de Aguas, Ministerio de Agua, Servicios Publcios y Medio Ambiente of the Province of Santa Fe, and Hardoy and Pandiella 2010, op. cit.
[48] INDEC Instituto Nacional de Estadisticas y Censos (2001) Censo Nacional de Poblacion y Vivienda, Indec, Buenos Aires.
[49] Natenzon Claudia (2006) Inundaciones catastróficas, vulnerabilidad social y adaptación en un caso argentino actual. Cambio climático, elevación del nivel medio del mar y sus implicancias. Paper submitted to Climate Change Impact and Integrated Assessment. EMF Workshop IX, Snowmass, Colorado. July 28 – august 7.
[50] Natenzon 2006 op. cit.

highway connecting the city of Santa Fe with the city of Rosario created barriers to water runoff, though studies had pointed to the need to double the size of highway bridges.[51] The flood caught city authorities unprepared even though the Instituto Nacional del Agua (INA) was monitoring water flows and peaks, and had informed both city and provincial authorities.[52] Floods in 2007 once again exposed the lack of official action and the same city areas were flooded. This time, water receded much quicker and defenses had been completed. However the emergency system implemented by city government did not work. City authorities transmitted evacuation information by radio during the night so no one heard it.

During the emergency period after the floods of 2003, actions from civil society (evacuees and NGOs) developed around organizing the evacuee centres. As the government was ill-prepared, most of the responses fell to the evacuees and other community members and institutions that could help them. The floods brought together people with very different socio economic backgrounds; both middle and low class neighborhoods had been affected. They organized themselves in a "movimiento de inundados" (a movement of flooded people) to demand solutions. Three months after the floods, this movement set up a black tent in the plaza in front of the government's office; the tent (Carpa de la memoria y la diginidad – Carpa Negra) would stay in the plaza until answers were given to all those affected by the floods and that those responsible were taken to court. The tent was there 170 days, after which different groups formed from among the movement's members. The shared goals became less clear and each organization began to follow its own particular path, differentiated by the type of work they promoted, their organization style and relations with government (some were more ready than others to work with government). These groups included:

- Those that continue to pursue the judicial claim and prepared the first court cases (work on preparing a list of victims and those that suffered different physical and psychological traumas).
- Marcha de las Antorchas - march of the torches around the plaza in front of government house every Tuesday, following the example of the Madres de Plaza de Mayo, claiming for justice and maintaining the issue in the public agenda
- IN-NU-MA (Inundaciones nunca mas – Floods never again), a civil society institution created after the floods to work on the social needs of the people living in the neighborhoods affected by the floods.
- Comite de Solidaridad (Solidarity Committee), mostly formed by institutions and NGOs that supported evacuees and the Human Rights House of the Province of Santa Fe, they have been compiling information on victims, post trauma effects, etc. to prepare the court cases.

Despite these differences, there is a shared learning and respect of each other. They all get together on the 29th of every month at the plaza to keep the memory of the floods alive, each anniversary they hold an assembly and prepare a document that is sent to the government.

Meanwhile, CANOAS, a local NGO involved in neighbourhood improvement of low-income settlements and that became very much involved during the emergency and participates in the solidarity committee, recognized that there wasn't much understanding among local actors of the concepts of risk, risk reduction, vulnerability and their relation to development issues. In the 5 neighborhoods where they worked, they supported a neighborhood process generating awareness, training on risk reduction and the preparation of risk maps for the community and an

---

[51] Natenzon 2006, op. cit.
[52] Asociacion Civil Canoa, http://canoa.org.ar/DDHH02.html

emergency plan. This was tested during the flood events in the city in 2009-2010 due to heavy rains, not river overflow. The evaluation was that these neighborhoods were much better prepared and organized than the rest of the city. City government is now reproducing the model developed in there neighborhoods.

One of the biggest challenges was to address the loss of or damage to housing after the floods. The mechanisms used have been very problematic. Housing projects were slow to start and used a technology that was considered for emergency housing, not permanent housing. The land allocated for housing was far away from transport networks, and houses were constructed without complete infrastructure and social services. There was little scope for participation: who were relocated and to which neighbourhood and the criteria used for selection and house designs were not much discussed with those affected.[53] Many could not return to their homes – but it took up to four years for provisions to be made for their relocation.[54]

After both the floods of 2003 and 2007, the city authorities recognized that in the last 50 years, there has been no official urban land policies and that people settled where and how they could, prioritizing proximity to work places or social networks. There was no long term development plan for the city, or where there were measures intended to reduce risk, they were not enforced. There was no attempt to work in collaboration with communities and representatives of civil society – as illustrated by the failures of the housing programme noted above.

However, changes in government both at the provincial and the city level have brought about changes in the organizational structure and policies. A unit of Disaster Risk Reduction has been created and this is working to develop better emergency plans, community risk maps and maintain and complete needed infrastructure within the city. At the provincial level, within the Secretariat of Water of the Ministry of Water, Public Services and Environment, support is provided to programmes for urban flood protection and drainage and water retention. The first of these supports urban areas on their work on risk reduction, mostly infrastructure support. The second supports the creation of more river basin committees (integrated by local governments and local rural producers with assistance from the province) and measures to reduce peak flows during rains and to channel rainwater into reservoirs and ground water. These contributed to the fact that during the heavy rains of 2009-2010 (190 mm in 11 hours) the city was less affected than in 2007.[55]

SOURCE: Hardoy, Jorgelina with Gustavo Pandiella (2010), *Local disaster risk reduction in Latin American urban areas*, background paper for the ISDR 2011, to be published in *Environment and Urbanization* Vol 23, No 2, October.

So the case study of Santa Fe is a reminder of how much city residents depend on local government for disaster risk reduction – yet where this is not provided, how important it is for each neighbourhood to have effective disaster preparedness provision and for civil society groups to be able to influence local government responses after a disaster for relief, for rebuilding and for measures to reduce disaster risk.

---

[53] Asociación Civil Canoa. http://www.canoa.org.ar/PrPe-Recons.html
[54] Elguezabal, Sergio Refugiados ambientales: los exiliados del Mundo, by Telenoche Investiga.
[55] Interview held on August 2010 Arnaldo Zapata (Secretaria de Aguas, Ministerio de Agua, Servicios Publicos y Medio Ambiente of the Province of Santa Fe).

7. Learning from innovation

Innovative cities

Many of the cities with the strongest evidence for disaster risk reduction come from Latin America. This region also has many examples of cities that became less at risk from extreme weather and earthquakes as basic infrastructure was improved and extended and housing conditions improved (mostly through large-scale support for upgrading in informal settlements). Many factors have contributed to this but perhaps the most important has been political changes driven by citizen pressures that produced stronger local democratic governments, for instance a shift to elected mayors and city councils, and decentralization so city governments had a stronger financial base.[56] There have also been innovations in local governance in many nations to increase the direct influence of citizens on resource allocations and budgets – for instance through participatory budgeting.[57] There are also many examples of elected mayors with agendas that support the expansion and extension of infrastructure and services to informal settlements and many of these come from outside the established political parties.[58] It was interesting to see a group of mayors in Colombia (from Bogota and Medellin) actually standing for the presidency in 2010 and although they did not succeed, the support they got was in large part from their records as innovative and effective mayors.

Linked to this, there are also important changes in attitudes by mayors and other politicians in regard to informal settlements; whereas in many Latin American nations in the past, informal settlements were ignored or bulldozed, now their upgrading and incorporation into the formal city is much more widely accepted. In part, this comes from democratic pressures as city governments (politicians and civil servants) were pressed to view those who live in informal settlements as legitimate citizens with a right to make demands on them and from this to also involve them in discussions about priorities. This can also be explained by a longer experience with urbanization and with predominantly urban societies than in Africa and Asia. Also important is the influence of a group of Latin American academics and practitioners who, over the last 25 years have promoted new approaches to disaster risk management which stressed disaster risk reduction, local action and local government responsibility, and working with vulnerable groups to understand and address disaster risk (see in particular the work of La Red de Estudios Sociales en Prevencion de Desastres en America Latina - La Red - created in 1992).

Major disasters in the region have also been important for triggering changes in approach – for instance, after the devastation caused by Hurricane Mitch, governments in Central America recognized that the best way to respond to disaster risk was to reduce it and in many nations, legislation was changed and the institutional framework that dealt with emergency situations shifted to risk-reduction.[59] Of course, strengthening local government capacity for integrating disaster risk reduction into local development does not mean that community organizations

---

[56] Fernandes, Edesio (2007), "Implementing the urban reform agenda in Brazil", *Environment and Urbanization*, Vol. 19, No. 1, pages 177-189; Campbell, Tim (2003), *The Quiet Revolution: Decentralization and the Rise of Political Participation in Latin American Cities*, University of Pittsburgh Press, Pittsburgh, 208 pages.

[57] Cabannes, Yves (2004), "Participatory budgeting: a significant contribution to participatory democracy", *Environment and Urbanization*, Vol. 16, No. 1, pages 27-46.

[58] Almansi, Florencia (2009), "Rosario's development; interview with Miguel Lifschitz, mayor of Rosario, Argentina", *Environment and Urbanization*, Vol. 21, No. 1, pages 19-35; Dávila, Julio D. (2009), "Being a mayor: The view from four Colombian cities", *Environment and Urbanization*, Vol. 21, No. 1, pages 37-57.

[59] Gavidia Jorge (2006), *Priority Goals in Central America. The development of sustainable mechanisms for participation in local risk management*, in Milenio Ambiental, No 4, pp 56 -59. Journal of the Urban Environment Programme (UPE) of the International Development Research Centre, (IDRC) Montevideo; IFRC 2010 op. cit. (especially Chapter 7)

necessarily get more scope and support – but at least local government is more easily approached than regional or national bodies; also more rooted in local contexts and more accountable to local citizen groups.[60]

In Medellin, Colombia's second largest city, a landslide in 1987 covered Villatina, a neighbourhood of consolidated houses in an area considered stable with road access and public services. The disaster, in which 500 people were killed and 300 houses lost, highlighted the deficiencies of the city administration in terms of risk management. The city had systems in place to respond to emergencies but after this disaster and after cold spells of 1988 and 1989, the local government created the Sistema Municipal de Prevencion y Atencion de Desastres (SIMPAD – Municipal system for disaster prevention and response). Part of its function was to plan and promote development, and coordinate prevention, education, response and reconstruction; this included ensuring disaster prevention was factored into the city's development plan. Linked to this was a major upgrading programme, the Programa de Mejoramiento de Barrios Subnormales de Medellin (PRIMED – Low income neighbourhood integral improvement programme), training for municipal staff and modernized information and monitoring systems. The city government showed political will and commitment to include risk reduction in all areas and government actions and a strong commitment to improve conditions and infrastructure in informal settlements.[61]

Certain city governments in Latin America and in other regions go beyond this and recognize the utility for development and disaster risk reduction of working with those most at risk and seeing their capacity to contribute knowledge, resources and capacities to what needs to be done. This is most often seen through their support for community organizations and local NGOs that work with them as in the cases of Manizales and of Santo Domingo given earlier. The example of community organizations working with the local government in Iloilo goes beyond this, as this local government developed a partnership with these community organizations and the supporting national Homeless People's Federation of the Philippines (see Box 7).

Partnerships need partners who want to work together and to see the utility of doing so. It is a step beyond local governments seeing the value of contracting community organizations to undertake certain tasks as it recognizes and supports these organizations to influence what is prioritized and done. Most examples of this depended on grassroots organizations and their networks or federations demonstrating to local governments their capacities and their willingness to work in partnerships and then senior civil servants or politicians responding positively. Most such partnerships are not addressed specifically to disaster risk reduction but to development needs – but so often these development needs coincide with disaster risk reduction as they include the extension of infrastructure and services and more secure tenure – and sometimes support for improving the quality and stability of what were previously precarious housing. The examples given earlier of federations of slum or shack dwellers negotiating tenure of the land their members occupy or new land on which to build are also contributing to better quality housing and so also reducing disaster risk.

One example of a civil society-local government partnership that addressed development needs is the community police stations and committees (police panchayats) that have been set up in

---

[60] IFRC 2010, op. cit.
[61] Cardona Arboleda, Omar D, Luis F Gonzalez Miranda and Luis F Linares Lopez (2007) "Organizacion Institucional para la Gestion de Riesgos" in Clarke Caroline and Carlos Pineda Mannheim (eds) Riesgo y Desastres. Su Gestion Municipal en Centro America. Publicaciones especiales sobre el Desarrollo No 3. BID, pages 142-185.

Pune and Mumbai in India. These are formed through a partnership between two grassroots federations, the National Slum Dwellers Federation and *Mahila Milan* and the police.[62] In most informal settlements in these two cities, there is no police presence and no police station. So local police panchayats were set up made up of ten representatives from the settlement (seven women, three men) appointed by the residents' organizations and a local police officer. A room is made available in each settlement as the police's local headquarters. The main value of this is support for law and order. The police panchayats also address many of the complaints and small disputes that the police always have difficulties dealing with. But it also means a structure in each settlement linked to the police trusted by the inhabitants that can act – as in the responses of these police panchayats when much of Mumbai was flooded in 2005. This example in India is encouraging other police forces to think of supporting comparable initiatives.[63]

Two of the most successful initiatives to upgrade informal settlements at scale relied on community-local government partnerships and both have contributed to reducing disaster risk. The first is the sewers and storm drains produced by the inhabitants of lanes in informal settlements supported by the Pakistan NGO the Orangi Pilot Project-Research and Training Institute. This began by supporting households in each lane in informal settlements to plan, implement and finance their own sewers connected to household toilets and then by showing local government how they could plan, finance and implement the larger 'external' trunk sewers into which the neighbourhood sewers feed.[64] The second is the partnerships between community organizations and government in Thailand for upgrading, supported by the national government's Community Organizations Development Institute (CODI). This provides infrastructure subsidies and housing loans direct to community organizations formed by low-income inhabitants in informal settlements who plan and carry out improvements to their housing or develop new housing and work with local governments or utilities to provide or improve infrastructure and services. From 2003 to 2010, within the *Baan Mankong* (secure housing) programme, CODI supported initiatives reached over 80,000 households in communities in 249 urban centres.[65] Support is also provided to networks of community organizations formed by the urban poor, to allow them to work with municipal authorities and other local actors and with national agencies on urban centre-wide upgrading programmes. This initiative also supports the regularization of insecure or illegal land tenure.

The association of municipalities in Honduras (MAMUCA) described already not only allowed action on a larger scale but also helped shift national disaster management systems to a cross-community level. It involved participatory diagnosis and planning (taking stock of disaster risk management capacities and identifying relevant actors), awareness raising, prioritization of strategic reconstruction activities, participation in local decision making through public

---

[62] Roy, A N, A Jockin and Ahmad Javed (2004), "Community police stations in Mumbai's slums", *Environment and Urbanization*, Vol. 16, No. 2, pages 135-138; SPARC-NSDF-Mahila Milan (2010), *Citywatch India*, Issue 6, June.

[63] Satterthwaite, David (2011), *How local governments can work with communities in the delivery of basic services*, paper prepared for the World Bank.

[64] Hasan, Arif (2006), "Orangi Pilot Project; the expansion of work beyond Orangi and the mapping of informal settlements and infrastructure", *Environment and Urbanization*, Vol. 18, No. 2, pages 451-480; Hasan, Arif (2010), *Participatory Development: The Story of the Orangi Pilot Project-Research and Training Institute and the Urban Resource Centre*, Karachi, Oxford University Press, Oxford, 325 pages.

[65] Boonyabancha, Somsook (2005), "Baan Mankong; going to scale with 'slum' and squatter upgrading in Thailand", *Environment and Urbanization*, Vol. 17, No. 1, pages 21-46 and Boonyabancha, Somsook (2009), "Land for housing the poor by the poor: experiences from the Baan Mankong nationwide slum upgrading programme in Thailand", *Environment and Urbanization*, Vol. 21, No. 2, pages 309-330; see also www.codi.or.th/housing/Frontpage.html

meetings, and involving MAMUCA in the national and regional disaster risk management system - the Regional and National Permanent Commission for Contingencies (COPECO). This helped improve evacuation actions during rainstorms, through community–based disaster reduction practices and encouraged the formation of local emergency committees integrated with municipal emergency committees and COPECO.[66] The municipal emergency committees are chaired by the Mayors and involve representatives of the local council and local institutions such as the police, the fire department and the Red Cross.[67]

In the Andean region, the *Proyecto Regional de Reducción de Riesgos en Capitales Andinas* (the regional project to reduced risk in Andean capitals) has sought to strengthen the capacities of La Paz, Lima, Quito, Caracas and Bogotá to reduce risks and to support alliances between local mayors, information exchanges, tools, and local norms and regulations that ensure that risk management is included within local development plans.[68] Andean countries have also set up the Andean Committee for Disaster Prevention and Response (CAPRADE – Comite Andino para la Prevencion y Atencion de Desastres) to coordinate and promote policies, strategies and plans for disaster prevention, mitigation, response, rehabilitation and reconstruction. This includes an initiative to support disaster prevention within the Andean region (PREDECAN – Proyecto de Apoyo a la Prevencion de Desastres en la Comunidad Andina).[69] In Central America, six countries (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panamá) work together within the Sistema de Integracion Centro Americano (SICA) that set up the *Centro de Coordinación para la Prevención de los Desastres en America Latina –* CEPREDENAC - to support risk prevention and mitigation. In terms of risk management, particularly after Hurricanes Mitch and later Stan, Central American countries have recognized that disaster management is not the exclusive concern of civil defence institutions or a single organization, but rather an integral part of policies and actions at different government levels, involving different sectors and offices.[70]

It is still difficult to get national programs and networks to support local action and necessary coordination between local governments, although the example given of CODI's work shows how a national government agency can do so. Within local governments, risk reduction needs to be promoted and supported in almost all sectors of local government and coordinated between them and this is no easy task institutionally, especially as the larger and more powerful departments or secretariats – for instance for public works – do not see disaster risk reduction as their responsibility.[71] Reviews on the actions, programmes and structures set up after Hurricane Mitch show mixed outcomes in terms of how they managed to embed disaster risk within local development and thus address the structural causes of vulnerability.[72]

---

[66] Bollin, Christina and Friedegund Mascher (2005) *Honduras: Community – based disaster risk management and intermunicipal cooperation. A review of experience gathered by the special intermunicipal association MAMUCA,* GTZ.

[67] Lungo 2007 op. cit.

[69] Von Hesse, Milton, Joanna Kamiche and Catherine de la Torre (2008) Contribucion tematica de America Latina al Informe Bienal y Evaluacion Mundial Sobre la Reduccion de Riesgo 2009. (GTZ-PNUD). Part of the Latin American Contribution to the 2009 Global Assessment Report on Disaster Risk Reduction, ISDR, pages 19-20

[70] Gavidia 2006 op. cit.

[71] Lavell Allan (editor) (2005), *La Gestión Local del Riesgo. Conceptos y practicas*. Programa Regional para la Gestión del Riesgo en América Central. CEPREDENAC – PNUD. See also Roberts, Debra (2010), "Prioritising climate change adaptation and local level resiliency in Durban, South Africa", *Environment and Urbanization*, Vol. 22, No. 2, pages 397-413.

[72] Gavidia 2006 op. cit.

The case of Manizales (Box 6) shows how its long-term development process is sustained by the collaborative work of government (at different levels), research institutions, community representatives and the private sector. Most training and active participation in the city's programmes are targeted to technicians from government and institutions (much of it on disaster risk reduction). Still there is room for improvement in terms of involving local communities. Apart from the information produced by the observatory, other simple indicators need to be developed to promote participatory planning. In addition, the lack of continuity in community training and involvement has hindered community appropriation of the process and empowerment. A new initiative in which bioManizales is involved is Placodes (Plataforma de Capacitacion para America Latina y el Caribe – a training Platform for Latin America and the Caribbean) and this aims to share experiences and train technicians, local governments and community organizations on adaptation to climate change.[73]

National frameworks that support innovative cities

The previous section described how five municipalities in Honduras had formed an inter-municipal association to support disaster risk reduction and the influence this had on national disaster management systems. The innovations described in Manizales were supported by national government both through supporting decentralization, giving more power and responsibilities to local governments and national risk reduction systems that support risk reduction at the city and municipal level. This included a national law passed to support disaster risk reduction and a National System for Prevention and Response to Disasters (Sistema Nacional para la Prevención y Atención de Desastres). This system seeks to have a broad approach to disaster issues, working on prevention as well as planning for sustainable development. It has a national coverage and integrates public and private organizations, NGOs and citizen groups at different territorial levels (national, regional and local). It is decentralized and the main responsibility lies with the municipal administrations. Each territorial level operates through a committee. A National Calamity Fund (Fondo Nacional de Calamidades) has been set up to address the needs generated by disasters and implement preventive actions.[74]

Examples of good city and municipal practice are often linked to particular forms of support from higher levels of government. The successes of Manizales and of other cities such as Medellin are possible because a national government structure exists that supports working with local governments. In line with supporting decentralization processes, in giving more power and responsibilities to local governments, national risk reduction systems have been created to support risk reduction at the city and municipal level.

The National System for Disaster Prevention, Mitigation and Response (SINAPRED) [75] developed in Nicaragua share some of the approaches of that in Colombia.[76] This was set up in 2000 to work with local governments to strengthen disaster preparedness and management by integrating disaster mitigation and risk reduction into local development processes.[77] Several municipalities are incorporating preventive planning especially in regard to approving building licences and land use changes, and

---

[73] Velasquez Barrero 2010 op. cit. and Plataforma de Conocimiento para el Desarrollo Sostenible (Placodes), Promoviendo el desarrollo local endógeno y resilientes al cambio climático y los desastres en América Latina y el Caribe, Contribuyendo a la Campaña Global para ciudades y gobiernos locales mas Resilientes, ISDR.

[74] Von Hesse, Kamiche and de la Torre 2008, op. cit.

[75] The Sistema Nacional para la Prevencion, Mitigacion y Atencion de Desastres was initially known by the acronym SNPMAD and later changed to SINAPRED.

[76] IFRC 2010, op. cit.

[77] Von Hesse, Kamiche and de la Torre 2008, op. cit.

different sectors including health, education, and planning are sharing disaster risk information.[78] The system is supported by a National Disaster Fund.

Several Latin American countries have enacted new legislation or are in the process of making amendments so as to meet the challenges of development and disaster risk reduction; in many cases these included the transformation of emergency response agencies into national risk reduction systems.[79] There is an increasing trend of decentralizing these systems and enhancing local capacities for disaster risk management.

However, most of these national systems are relatively new and need time to consolidate. Although there are interesting cases, the real involvement of local actors is very limited in most countries.[80] There is a worry that local governments can be allocated responsibilities for which they lack the capacities and resources.[81] As noted already, no government gets recognition for the disasters its programmes prevented – and so risk reduction investments are not seen as priorities and have to compete for scarce resources with what are judged to be more pressing needs. This is only overcome where, as in Manizales, disaster risk reduction is seen as part of local development and where collective interests overcome individual and party political interests.

The duration of policies is often tied to the duration of particular party political groups/administrations and as new administrations come in, programmes are abandoned and staff changed.[82] Often party political interests mediate in the relation between local, regional and national governments. For instance, the province of Santa Fe in Argentina, led by an opposition party since December 2007 has not received any funds from the national government aside from a tax to soya bean production (revenues are shared between different levels of government), and some funds to finish work started by the previous administration.[83]

In most cases, disaster risk reduction is still not integrated into development plans, a narrow focus persists, and there is reticence to address disaster risk as a cross-cutting issue, drawing in all relevant departments and divisions of local government.[84]

8. After the disaster; rebuilding local capacity

Engaging with survivors

Post disaster, one of the key issues is how to unlock and organize the energy of the survivors so their needs and priorities are addressed and their skills and resources can be used.[85] This will not happen if they are not organized. The experience of the Asian Coalition for Housing Rights and of the Homeless People's Federation of the Philippines suggests that support for those affected to talk and discuss with each other has to be done from the earliest stages – including in the relief camps or tent cities. In Thailand after the 2004 Tsunami, the Bang Muang camp

---

[78] IFRC 2010, op. cit.

[79] Gavidia 2006, op. cit.

[80] Bollin and Mascher 2005, op. cit.

[81] Von Hesse, Kamiche and de la Torre 2008, op. cit.

[82] Mansilla with Brenes and Icaza 2008, op. cit.

[83] Interview held on August 2010 Arnaldo Zapata (Secretaria de Aguas, Ministerio de Agua, Servicios Publcios y Medio Ambiente of the Province of Santa Fe).

[84] Lungo 2007 and Roberts 2010, op. cit.

[85] Archer and Boonyabancha 2010, op. cit.

housed 850 families. The camp was managed by the survivors who set up working groups to address different needs – for housing (mapping where they used to live), livelihoods, welfare, children's activities, food supplies and cooking, camp hygiene, water supply, medical care…. Tents were set up in groups of 10 families and 3 group zones and each zone had its leader. Meetings held every evening to which anyone could come. Building this collective management system from the very beginning also helped prepare survivors for longer-term tasks of negotiating with the state and external agencies for secure land and rebuilding and livelihoods.[86]

But government institutions so often see post-disaster response as something they organize for the survivors; it is also seen as a technical issue and it may also be that central government agencies take over from local governments that should be more accountable to and closer those affected. In Turkey, after the 1999 Earthquake, massive regeneration was planned but done entirely by government (mostly central government) with little or no involvement of those affected. Here, as in many other places, government rebuilding or support for rebuilding focused on those who were registered property owners. The central government's Mass Housing Administration would build houses for property owners but not for tenants (see Box 9) and even these were planned and built without consultation. Here, as in so many nations, government takes on far more than it is capable of - although the motivation for large construction projects is of course enhanced by the ways these can reward politicians and their clients and patrons.

Box 9: The difficulties facing non-property owners; the case of DepDer Duzce

In Duzce, one of seven Disaster Affected People's Associations was founded after the two earthquakes in 1999. Many of the initial members were those who had been property owners before the earthquakes and they got resettled in new housing provided by the government. But those who had been tenants were not provided with housing and two years after the earthquake, many families were still living in prefabricated houses or tents. Then the municipality began demolishing these units without providing alternative accommodation. Association members demonstrated in the capital, Ankara. One solution they sought was cheap land and loans so they could build their own cooperative housing. They stayed 75 days in Ankara to press for this but they got no response and some association members were detained. In 2001, members of this association formed a cooperative to help those without houses; at one point they were promised a piece of land by the municipality but this was withdrawn and the land given to the Mass Housing Administration. Other cooperatives were granted large plots of well-located land so this cooperative opened a law suit in 2003; its members also returned to Ankara, stayed 144 days and still got no result. Ten years after the earthquake, the cooperative still had not got land. They feel that they did not get land because they were low-income groups. Members of the cooperative were offered luxury housing built by the Mass Housing Administration but they refused (because these were too expensive).

SOURCE: Johnson, Cassidy (2010), "Eleven Years On: The landscape of community and civil society involvement in disaster response and disaster risk reduction emerging from the 1999 earthquakes in Turkey", Background paper for the 2011 GAR, to be published in *Environment and Urbanization* Vol. 23, No 2, October 2011.

In Turkey, after the 1999 Earthquake, many community-based and civil society supported initiatives for disaster recovery and risk reduction developed but mostly as reactions to the state's top down recovery institutions and approaches to recovery (and who did or did not get

---

[86] Asian Coalition for Housing Rights (ACHR) (2005), *Tsunami; How Asia's Precarious Coastal Settlements are Coping after the Tsunami*, Housing by People in Asia 16, ACHR, Bangkok, 52 pages.

included in these). Many tried to cooperate with the state, or at least to work within the state system – for instance when it came to getting land on which to build. But their scale, scope and success were stifled by a lack of government support.[87] If they were unable to work within the system to get access to what they needed, they acted in an adversarial way – for instance staging protests against the central government in the capital Ankara and with lawsuits. But this brought little success in terms of gaining cooperation or even attention of the government, although it did prove important for building solidarity among people. Key issues raised by civil society groups include not only the exclusion of many of those affected but also the need for government agencies to be open and honest about the disaster recovery activities that they were planning and implementing.

Building back better

The destruction of housing is often one of the most dramatic visual images of a post disaster site – but in almost all urban areas, the reconstruction of homes is far more complex than simply the construction of physical structures. Relocation may be required if the site is longer safe or simply not accessible. There are almost always complications around compensation – with large sections of the population impacted not considered eligible – as noted above after the 1999 earthquakes in Turkey.   Tenants may be denied rights altogether or may only receive very minimal assistance – although there are examples of this being avoided; in Mandaue that was destroyed by a fire, the inhabitants were organized (and supported by the Homeless People's Federation of the Philippines) and they re-blocked their settlement and made provision for long term tenants as well as owners.[88]

Large government funded house reconstruction programmes after disasters mirror many of the limitations of most public housing programmes. These include a refusal to rebuild on the sites preferred by those they are built for – post disaster where the survivors previously lived - and the use of distant sites far from survivors' livelihoods. Residents may be frustrated by inappropriate designs and unfamiliar building materials. Costs are often high as those with the greatest incentive to manage costs (ie. local residents) are not included in decision making; for the same reason, there are frequently concerns with the quality of building materials and/or construction. Allocations made by those outside the community are unlikely to be sensitive to local dynamics and local elites frequently capture the process, securing their own interests ahead of those in greater need. In some cases, the tenure status of these new units may also be uncertain. As a result of these difficulties, there are often high levels of dissatisfaction and many residents may not take up the units built for them or abandon them or sell them to others. For instance, in the aftermath of earthquakes in Turkey and Peru, many of the houses built for the affected people remained unoccupied while the affected people reverted to their old ways of building and remain vulnerable to future risk.[89] Box 10 describes the ineffectiveness of the construction approach after the 2004 tsunami in Sri Lanka.

---

[87] Johnson 2010 op. cit.; also Ganapati, Emel N. (2009), "Rising from the Rubble: Emergence of Place-based Social Capital in Gölcük, Turkey", *International Journal of Mass Emergencies and Disasters,* Vol. 27, No 2, pages 127-166; Kubicek, Paul (2002), "The Earthquake, civil society and political change in Turkey: Assessment and comparison with Eastern Europe" *Political Studies*, Vol. 50, pages 761-778; Jalali, R. (2002) "Civil society and the state: Turkey after the earthquake" *Disasters*, vol. 26, no. 2, pages 120-39; Yarar, B. (2005) "Civil Struggle for the "Housing Right" After the Earthquake: A Case study on the "Dep Der" in Duzce", The 7th European Sociological Association Conference, "Rethinking Inequalities", Poland.

[88] Rayos Co, Jason Christopher (2010), *Community-driven Disaster Intervention: The Experience of the Homeless Peoples Federation Philippines*, IIED/ACHR/SDI working paper, IIED, London.

[89] Lyons, Michal and Theo Schilderman (Editors) (2010), *Building Back Better: Delivering People-centred Housing Reconstruction at Scale*, Practical Action Publishing, Rugby, 390 pages.

Box 10: Building back better in Sri Lanka

Following the tsunami in December 2004, around 100,000 dwellings were completely destroyed in Sri Lanka and 44,290 damaged. Two very different programmes were established by the state Task Force for Rebuilding the Nation to support house reconstruction: a centralised donor assisted programme and a more decentralized owner-driven programme. The donor assisted programme excluded any influence by beneficiaries at all stages while the owner driven approach devolved most activities related to planning, layouts, design and construction to local beneficiaries. The donor assisted programme was intended to assist 50,000 families displaced by an extended buffer zone in the coastal areas. Those in need who lived land outside the buffer zone were targeted by the owner driven programme. Changes in the designation of the buffer zone (from 100-200m to 50-100m) resulted in 23,659 home owners being transferred from the donor assisted to the owner driven approach. Entitlement was provided to those whose homes were certified as destroyed or damaged.

Drawing on agency data, key informant interviews and beneficiary perspectives, Lyons (2008) concludes:
- satisfaction is higher in the owner driven programme; there are serious concerns with quality in the houses built by contractors.
- when the owner driven approach needed to acquire land, this has been adjacent to existing settlements with available infrastructure. The majority of donor assisted housing is on greenfield sites which require further infrastructure investment. This lack of facilities has meant that families may be reluctant to relocate. Lack of livelihood opportunities close to the sites is also a deterrent.
- Housing costs in the owner driven approach are between $5-6000 without infrastructure while an equivalent unit in the donor assisted programme costs between $7-9000
- Complaints from those living in units constructed by the owner driven programme are less than ten per cent of completions, those in the donor assisted programme are 19 per cent.

One significant problem was that the land that the donor programme was able to secure was poor in quality and both programmes suffered from inflation in building materials and a lack of trained staff. In the case of the owner driven programme, site management was undertaken by beneficiaries supported by technical staff as required and groups negotiated costs down. Infrastructure investment was generally not needed as the sites were close to existing investments.

The Owner Driven Programme had initially been seen as a smaller adjunct to the donor assisted programme but by the end of 2006, it had produced far more units and units that were occupied much more quickly. By December 2006, 73 per cent of all dwellings started or completed were being realised through the owner driven approach. Community structures benefited from participation in the owner driven approach. In most cases, groups of five are established to manage the process and certificates of completion are only given to such groups. Communities spread the vulnerable families across these groups to ensure the required support. Thus the owner driven programme produced more houses, more quickly, of better construction quality, and at less cost. Space standards are generally better and the designs, layouts, and locations more acceptable to beneficiaries. The programme appears to have fostered a cooperative local social fabric and institutions. Although the owner driven approach was considered in the initial months to be of less significance, in practice it has proved to be the more productive.

Regardless of the direct benefits received by households receiving homes, a further area of concern is the wider impact of the approach with communities experiencing a sense of powerlessness and increased dependency. Josephine Torres Cavoelos, president of a community organization in Buscran in Bicol (the Philippines) explained how entitlements were reduced in the months following the disaster with names being taken off the list. She argues that while there are 600 to 800 families in the area that need assistance, there are only 200 free houses with maybe another 150 free houses to come. The process of waiting for units that may not arrive is disempowering, preventing community members from being proactive in addressing their needs. This sense of powerlessness may exacerbate psychological difficulties experienced through the trauma of the disaster itself.

From one-to-one assistance to support for community-driven reconstruction

A second approach to reconstruction has been what is often termed owner driven development – and Box 10 above provides an example of this. Here, external agencies work with owners to support them to rebuild their housing, drawing on the successful experiences with upgrading. This helps speed up a responsive household-led reconstruction process through providing additional resources (cash or building materials) and in some cases technical assistance (in part to improve the ability of houses to build in resilience to local hazards). Costs are kept down as local skilled building workers are used and families help with unskilled labour and where possible the use of recovered materials. But this approach may only serve property owners. The regulatory and tenure framework may not be supportive of incremental development and receiving post-disaster support may be associated with the imposition of inappropriate minimum standards that raise the costs of construction and reduce the effectiveness of investments.

A third approach to reconstruction is for external agencies to engage community organizations in identifying strategies to support construction and physical improvements. Box 11 shows how it has been done by the Homeless People's Federation of the Philippines. Here, there are very good possibilities for 'building-back-better' to remove or greatly reduce disaster risk. This Box illustrates the depth of community engagement that is required for the process. A superficial community process will not successfully manage the reconstruction in a way that prevents the benefits from being secured by a few. Locally managed inclusive and representative groups have to be able to manage both finances and construction if they are to be successful in supporting their members to address their shelter needs. They need to be able to understand the regulatory context and identify the required amendments, and to negotiate with politicians and officials.

Box 11: The growing role of the Homeless People's Federation of the Philippines in disaster response

The Homeless People's Federation of the Philippines and its support NGO PACSII were pulled into disaster response and risk reduction by a series of disasters, starting with the Payatas trash slide, triggered by heavy rains in 2000. This killed 288 people, buried hundreds of homes and displaced close to a thousand waste pickers. Without any background on disaster-response, the Federation engaged in rescue and relief coordination and later supported the survivors to acquire

land and build their houses outside of the garbage dump. Then in 2006, there was the landslide that buried a whole settlement in Leyte and the Mount Mayon mudflow and flash flood (more than 300 died in each of these), followed by the fire in Mandaue in 2007 (c. 1000 homeless), the flash flood in Iloilo in 2008 (500 killed, 261,335 affected) and flash floods in and around Manila in 2009 (464 died, 529 injured, hundreds of thousands affected).

A post-disaster response process was developed from the Federation's experience with these. This begins with Federation leaders and volunteers going to the disaster site and starting *initial data gathering* on the severity and scope of destruction in terms of lives lost, number of affected families and immediate needs of victims. The Federation touches base with disaster response structures like the local Disaster Coordinating Council. Federation volunteers are often the only team coming to the disaster site without any material help and this can make community contact difficult since victims are in a needy state and most expect relief from organizations who visit them. If funds allow, the Federation gives relief to communities who have not been reached by outside help. The data gathering serves as an entry point for engagement with community and local government. The information gathered is used to assess immediate needs of families, especially the women, children and elderly, for inclusion in the appeal for emergency funding to international organizations with whom the Federation is in contact. Since Federation volunteers are rooted in communities, they are often the first to provide a damage assessment and this is what local government units and outside organizations involved in rescue and relief operations rely on.

Data gathering is supported by *trust and contact building.* The Federation leaders expect scepticism and even refusal to engage with the documentation from disaster-stricken communities and local authorities. So local leaders and local government officials are shown their experience in this – and this supported by learning exchanges and exposure visits to other communities which adopted the Federation program and were given support to implement their post-disaster rehabilitation/reconstruction plan.

At the heart of all the Federation's interventions is the community *savings program* although this is difficult to introduce to disaster victims who often have lost most or all their material possessions and feel that they should receive resources, not provide them themselves. For instance, after the mudflow and flash floods in Bicol, federation members were accused by local government officials and some NGOs of extorting money from the victims. In addition, those affected do not believe that a few pesos saved each week can help finance solutions, although they can see the effectiveness of savings in other schemes they visit or learn about.

Organizational formation and registration: This supports the formation and registration of a community association alongside the savings programme although this usually takes a couple of years to come to fruition as it entails a lot of preparation on the ground. Federation members help capacitate local volunteers and potential leaders to take on lead roles in this and once the organization is formally created and registered, the Federation then assists in its development and strengthening.

Disaster-affected communities choose the kind of interventions they prefer and the Federation and PACSII have developed five types of disaster interventions:

Immediate - House material loan: the flash flood triggered by Typhoon Ketsana in 2009 damaged thousands of houses in poor communities in Metro Manila and those affected sought refuge in different evacuation centres. The congested state of most such centres placed families,

children and elderly members in particular, at health risk. Affected families, whose houses were not destroyed wanted to leave and go home but first they needed to repair their houses. The Federation made available loans of up to Php 7,000 payable within one year. The affected families or the community will be responsible for the loan repayment. Activities conducted for this intervention include mapping communities and identifying families who need material loan assistance, organizing a material loan assistance workshop, validation of the loan proposals of affected families, setting up a community-driven procurement process that includes canvassing, price negotiations, purchasing of construction materials, and delivery and warehousing (if applicable) with the participation of the house repair loan applicants

Midterm - Transit housing: This has been utilized by the Federation for the survivors of the landslide in Guinsaugon, Leyte and for the displaced families of Typhoon Frank in 2006 and Typhoon Ketsana in 2009. It is particularly useful in urban contexts where land is scarce and affected families do not want to be relocated outside the city limits far from their sources of livelihood. Transit houses in Leyte and Iloilo were dismantled after occupants moved to their permanent houses. The one in Quezon City will serve as a re-usable evacuation centre of the barangay since it is among the high risk areas in Quezon City owing to its low-lying location that is prone to flooding. The technical nature of transit house construction necessitates capacity building for the participants. Workshops on community procurement and house design boost the involvement of housing participants in all phases. The community procurement process helps capacitate them to get standard quality materials at the lowest cost. The house design workshop ensures that the everyday needs of families are considered in the design of the units. The housing participants also help plan the work schedule based on the availability of construction materials and labour support.

Long-term- land acquisition **for housing:** This was pioneered in Payatas (Quezon City) when the Federation purchased 30,000 square metres of land in 1998 in Montalban, Rizal. This cost Php 3.9 M or US$ 86,666. The disaster-affected communities in the municipalities of Guinobatan, Daraga and Camalig in the Bicol region followed suit in 2007 and 2008. The communities engage in land research, soil study and negotiations with owners before making the purchase.

House construction in a safe location is the end result of disaster interventions. The housing projects in Mandaue and Iloilo cities, supported by the Federation, exemplify the processes inherent in a community-rooted and driven development initiative as the participants went through a process of social preparation, capacity building, project planning, implementation and management to actualize a housing project.

Sources: Rayos Co, Jason Christopher (2010), Community-driven Disaster Intervention: Experiences of the Homeless Peoples Federation Philippines,IIED/ACHR/SDI working paper, IIED, London, 54 pages and Carcellar, Norberto, Jason Christopher Rayos Co and Zarina O. Hipolito (2011), "Addressing vulnerabilities through support mechanisms: HPFPI's Ground Experience in Enabling the Poor to Implement Community-rooted Interventions on Disaster Response and Risk Reduction", *Environment and Urbanization*, Vol 23, No 2.

In Myanmar, following Cyclone Nargis, the victims received assistance from outside NGOs in the reconstruction of their homes. Community leaders, when questioned, said that they were very pleased that the NGOs gave houses to the people. However, when they were asked whether they would prefer to decide themselves how to use this money to build their houses, or let an outside NGO come in and build their homes, they all preferred to retain control over the construction. Local communities could build houses at a seventh of the cost of external

agencies that was better quality and in doing so also strengthened themselves. Communities can also come up with imaginative methods when money is limited, with solutions tailored to individual need. The Khawmu network of 18 settlements with houses damaged by cyclone Nargis received financial support from the ACCA (Asian Coalition for Community Action) programme and Selavip, totaling US$ 60,000, for the reconstruction and repair of homes. However, with 700 homes affected, there were too many for the limited financial support, and too many to pick a few beneficiaries. So the settlement committees together sat down and examined the scale of housing need, prioritizing the most urgent cases and agreeing as a village who would get what kind of support. All construction work was done by the residents, who bought materials and built collectively, keeping costs so low that they were able to repair or rebuild all homes. Each family received the financial support as a loan, but instead of this loan being repaid in cash, they developed a system of repayment by rice, into the newly-established community rice bank, further increasing the villages' self-sufficiency.[90]

This support for strengthening community organizations is particularly important in that individually, those impacted by a disaster are not strong enough to define and then influence what is done. If households come together, they will have a stronger power to participate and make demands. Additionally, as a group, they will find comfort from each other. So instead of providing aid to households or cash for work (which also allows room for manipulation and corruption as all the decisions are on the giver's side), an alternative approach is to pool the individual survivors together, giving the relief support to the group, and allow the group to decide amongst its members how this relief should be shared out.

So good past practice suggests the need to create space for those affected; support measures that build onto their will to survive. So harness this as new force for change. Strengthen and support collective action. Set up working groups. Support collective management from very beginning and this helps prepare survivors for longer term tasks of negotiating for secure land and rebuilding communities and livelihoods. Bring in experienced community leaders from other places.[91]

Box 11 provided an example of needed local procedures for long term rebuilding. Start with quick survey and mapping. Link communities and community organizations and networks and provide flexible finance to support their work. Get them engaged in temporary housing construction and in management. Set up committees for addressing different issues – livelihoods, services, agriculture, children's groups, housing group (mapping where they used to live), planning, land re-adjustment…. Avoid compartmentalized responses, avoid waiting for government. Support learning through exchange visits. Support their own capacity and negotiating power to deal with their own context and their own local government.

In Joe Slovo, an informal settlement in Cape Town, a small group of active savers with the South African Federation of the Urban Poor were able to extend their work and link to other residents after a fire in March 2009 destroyed about 500 shacks and left 1500 homeless. When the local authority suggested flattening the area the community organization resisted at they were under threat of eviction at the time. A consensus in the community was eventually established and several hundred temporary shelters were erected with the assistance of a local NGO. In the context of South Africa, high technical standards and the opportunities available for housing subsidies, it is not possible to use the opportunity of the disaster to catalyse an

---

[90] Archer and Boonyabancha 2010 op. cit.
[91] Archer and Boonyabancha 2010, op. cit.

incremental shelter improvement programme. However, the response to the fire has been critical in nurturing a collective response within the community to their longer term tenure security. The community organization in Joe Slovo is now negotiating with the provincial and city government to be allowed to do an inclusive development on the site; the previous government plans were to relocate a considerable number of residents 20 kilometres away in a peripheral settlement. In this case the primary impact has been to engender a new unity in the settlement enabling groups to address both their immediate (disaster recovery) and their longer term tenure security needs.[92] At the same time, the community groups and their support NGO continue to engage with the local authorities and national government agencies responsible for preparing for and responding to disasters to promote this approach.

Flexible finance[93]

Once there is a clear understanding of the need to let the communities of survivors be at the core of their recovery and rehabilitation after a disaster, then outsiders can support this process through the provision of flexible finance. This needs to be flexible enough to give the power to the survivors to collectively work out their particular development needs. If the allocation and use of funds is too strictly controlled, if the poor do not have the power to access the funds, then desirable change in affected families through reconstruction may not be achieved. It is also common for some community leaders to be stronger than others – communities are not free of power politics – so the management of money needs to avoid rewarding people with more power who are putting themselves first. It is important to build a collective spirit from the beginning, so communities see each other as allies and partners, not as competitors for external funding. This can start with discussions to increase understanding of each other's needs, and to start thinking of the solution process by which funds can be used to solve problems.

Ideally, a revolving fund system would provide a longer-term and a more sustainable financial solution, though it is more difficult to achieve and manage in the short run or in the very early stages of post-disaster response. Giving away money as grants sometimes brings out competition between individuals, whereas a collective fund can solve communal problems through communal decision-making. The fund can function as a tool to make people discuss their needs with each other and so its management strengthens the community process that becomes a new way of doing things.

There should be different funds for different needs. Keeping separate fund accounts for various functions allows them to be managed by different sets of needy people, thus balancing out power within the community, especially where the former leaders hold too much power. This also helps to link different groups to work actively together through a larger communal process – and improves the transparency of donations and contributions to the fund. Ideally everyone should have a say in how the funds should be used.

The joint management of funds for disaster rehabilitation can also build partnerships among various development organizations to work, link and collaborate together. In Sri Lanka, NGOs and community organizations have been collaborating, through the creation of CLAPNET Fund, a coalition of local organizations which assisted communities following the 2004 Indian Ocean Tsunami. CLAPNET encourages cooperation between organizations, and arose after the different groups helping tsunami victims met to discuss experiences and problems, and create a

---

[92] Community Organization Resource Centre and the Joe Slovo Community Task Team (2009) *Joe Slovo Household Enumeration Report*, Langa, Cape Town June; Herbstein, T (2009) The Joe Slovo blocking out project: a diary of events (March 2009), Community Organization Resource Centre, Cape Town.
[93] This section is drawn from Archer and Boonyabancha 2010, op. cit.

common platform to link their work. A joint fund was set up, managed by all the groups, including community representatives from the Women's Bank and other community networks, with a seed fund of US$ 100,000 from the Asian Coalition for Housing Rights - ACHR (supported from Misereor/Homeless International). This has evolved into a central fund for both disaster situations and to meet other needs of poor communities. The coalition allows for collaboration between the organizations and sharing of expertise, for instance, all the affected communities to be supported by the CLAPNET Fund had received assistance from the Women's Bank to help organize into savings activities and link to this Bank's support structure. The fund has been used to support pilot projects that can encourage change through new ways of doing things, ranging from income generation grants to land purchase loans, housing improvement, all the while linking with larger community network and local government

Some rules of thumb that have worked:

Focus on the local, use local materials, draw on local skills. Decentralize funding to lowest rung of government. Work with local masons. Avoid unnecessary restrictions (for instance funding only available for people who have bank accounts). Avoid allowing the Institute of Engineers restricting or controlling what is done.

Avoiding the problems brought by out-sourcing by central governments and external funders. Many governments and international agencies hire local companies to build or rebuild housing and infrastructure. These companies feel no need to discuss what they do with those who have been affected. Success is judged by how many houses built. Usually this is done with little or no engagement and often what is built is unnecessarily expensive, poor quality and often in the wrong place.

Work instead with communities, using their ability to organize and to negotiate. Community organizations often need to recapture some of the roles taken or managed by NGOs. Community organizations can also help withstand the corrupt officials that want backhanders and the agencies wanting to control them. Relief usually does not challenge the power structures but to build-back-better usually needs changes in these structures. Organized communities can also push politicians to see the political advantages of investing in risk reduction for low-income communities.

Avoiding post-disaster disasters such as eviction: Post-disaster, in most urban (and some rural) areas, eviction is almost always an issue as survivors are not permitted to return to their settlements to rebuild. Communities need to be organized and often need to network and support each other to prevent this.[94] Low-income groups are always weak and they will not get the support of the system unless they are organized.

How external support can divide communities: Avoid targeting relief at individuals that so often brings out competition among survivors for relief – and who take whatever is given without questioning its validity or usefulness. Avoid aid agencies focusing on 'the most deserving' which is difficult to do and to enforce. Also avoid making people passive as professionals and agencies try to do everything themselves.

---

[94] See Syukrizal, Ade, Wardah Hafidz and Gabriela Sauter (2009), *Reconstructing Life: After the Tsunami: the Work of Uplink Banda Aceh in Indonesia*, Gatekeeper Series 137i, IIED, London, 18 pages.

Let affected persons group together. Let them set their criteria and develop their ways of working. This includes choosing how to use money and how collectively to help and support the poorest. So this means funds in collective control but with transparency in its use and management. Avoid rewarding only strong community leaders. Let the collective assess how to rebuild. Collective fund then later can develop into a revolving fund.

Shift from supply side to demand side focus. External funding comes into a disaster site with too many procedures, too many steps for approval, too many organizations, to slow a response. Big money gets stuck and does not reach those in need with what they need. Multiple bureaucracies, government ministries and agencies compete to control funding flows. Local developers are often quick to use the chaos to grab land. Governments often rush through new regulations that hinder responses – even making illegal the reconstruction of settlements.[95] The is little recognition of what the relief agencies cannot do.

Build-back better includes better relations with government agencies. Supporting communities and helping fund their initiatives can also do much to build people's and community's relationship with local government. Where this happens, the scale and scope of what can be achieved increases greatly – as seen in the examples from the Philippines given earlier.

9. And now we have climate change to add to risks and vulnerabilities[96]

Much of what is mentioned above works well for building resilience to the likely impacts of climate change in the next few decades. But there are additional needs – for instance to build resilience to changes that do not manifest themselves as disasters (for instance changing and often declining availability of fresh water) or have not caused disasters in the past but may well do so in the future (for instance higher temperatures and heat island effects and additional risks produced by sea-level rise). And, of course, there is a need to change certain practices within cities and within their surrounding regions now to avoid building risk and vulnerability into the urban fabric – for instance drainage systems with larger capacities where rainfall is likely to increase or may be more concentrated, urban expansion managed with measures to ensure sufficient green space and other measures to moderate high temperatures and to reduce surface flood volumes and speeds…. Decisions made now on land-use management (especially changes in land use and the expansion of the built up areas) and infrastructure expansion will influence the extent of a city's resilience far into the future. Here, it is possible for land-use management to support risk reduction, concentrating new developments on safe sites served by infrastructure, ensuring provision for public services and space for recreation, protecting watersheds and other areas that provide ecological services and avoiding the development of risky sites. But so much urban expansion takes place where local governments are 'not making such decisions' as land owners, developers and businesses (and often government bodies) develop and build on sites not guided by any plans or norms that relate to risk reduction or infrastructure provision.[97]

---

[95] See Syukrizal, Hafidz and Sauter 2009, op. cit.

[96] This section draws heavily on Dodman, David (2010), "Civil society, local government and climate change adaptation", Background paper for ISDR, IIED, London, 12 pages, to be published in *Environment and Urbanization* Vol 23, No 2, October 2011.

[97] Kelly 1998, op. cit.

Disaster risk reduction in any location has always been informed by what has happened – the past record of disasters. As discussed already, some of the best examples of local governments (and some national governments) taking disaster risk reduction more seriously were in large part catalyzed by disasters. But climate change adaptation means also preparing for what will come as well as what has come. Climate change impacts bring not only changes in extremes but also changes in means and in who is exposed. All successful urban centres have had to incorporate features that make them suited to their geographical and environmental setting and this setting will be altered by climate change. Designing and implementing climate change adaptation is also challenged by the levels of uncertainty. Future greenhouse gas emissions scenarios help us explore likely impacts in the global climate system arising from different scenarios for changes in global emissions and while these give local governments an idea of likely or possible impacts, they cannot provide the precision and detail and way that these changes will impact on very particular local contexts. So climate change adaptation for urban areas is in part building a generic resilience to a diverse range and scale of possible impacts and in part taking actions to reduce risks from those impacts that are certain (eg sea-level rise) or very likely.

Addressing the backlogs: So many cities and small urban centres in low- and middle-income nations have very large backlogs in the provision for basic infrastructure and services and large sections of their population living on land at high risk from extreme weather. To state the obvious, you cannot adapt infrastructure (roads, paths, bridges, drains, electricity distribution, water pipes and water treatment plants, sewers….) to climate change if there is no infrastructure. You cannot improve the capacity of health care and emergency services to help in disaster preparedness and disaster response in settlements where there is no health care or provision for emergency services.

Roles and responsibilities of civil society in adaptation: These are similar to those that make disaster risk reduction work well – helping in the assessment of risk and vulnerability to serve community-level and city or district level actions and get appropriate government action and having community-level organizations able to serve and support community-based adaptation. Community-based and non-government organizations have developed a range of participatory methods to assess hazards, vulnerabilities and capacities in support of community-based disaster risk reduction.[98] These have the potential to reduce risks generated or exacerbated by climate change, but to do so effectively they will require greater awareness of the changing risks associated with climate change, which will in turn require better use of climate information at the community level.

Limits of community-based adaptation: Previous sections have discussed in detail what community-level action cannot do for disaster risk reduction without local government support and the large limitations in the capacity (and often willingness) of urban governments to reduce disaster risk. For climate change adaptation, one common response to such institutional deficiencies is to recommend community-based adaptation and there are many case studies showing the adaptive responses that individuals, households and communities make in informal settlements (as discussed earlier for informal settlements in Lagos and Dhaka). But almost all informal settlements are embedded in a larger built-up area and these need a larger system of storm and surface drains into which their own efforts to install, improve and maintain drainage or channel flood waters from their homes can fit. They need road, path and bridge networks

---

[98] See Schensul, D and D Dodman D (2010), *Populating Adaptation: incorporating demographic dynamics in climate change adaptation policy and practice*, Concept paper prepared for UNFPA/IIED conference on Population Dynamics and Climate Change, Mexico City, October; also van Aalst M, T Cannon and I Burton (2008), "Community level adaptation to climate change: the potential role of participatory community risk assessment" *Global Environmental Change* Vol 18, pages 165-179.

beyond their settlements to allow them to evacuate if needed. The willingness of individuals to invest in collective actions for risk reduction in their settlement also depends on how secure they feel from eviction and their tenure status (for instance tenants are usually unwilling to invest in improving the housing they live in).

Climate change adaptation in urban areas will need the kinds of institutional changes for local, provincial and national governments that were described in section 7 for disaster risk reduction – national frameworks and funding to support local governments and associations of local governments. It will need to address urban-rural linkages (for instance for each urban centre's reliance on productive and protective ecosystem services, food and water supply and management) that cross local government boundaries and to work within the context of the multiple flows between urban centres in terms of goods, people, capital and information that underpin the economy of urban centres.

Ensuring that adaptation to climate change in urban areas meets the needs of low-income groups "requires promoting democratic and accountable local governance structures to raise awareness, ensure the exchange and integration of various knowledge and skills, identify needs and priorities, evaluate scenarios and build collectively negotiated strategies."[99] But this is far more easily stated than achieved. It is correct to stress how essential this is for DRR and for climate change adaptation but in the nations where local government systems have achieved this, it was only achieved after a slow, difficult and contested process.

Civil society and local governments have different but complementary capacities to reduce particular threats. For example, in relation to flooding, local communities are often best positioned to manage localized flooding as a result of inadequate drainage; local authorities are best placed to cope with flooding from small streams with catchment areas almost entirely within the urban built up area; while action is required from national agencies if major rivers (with their river basins in several different administrative regions) overtop their banks.[100]

Involving civil society at an early stage in the adaptation planning process is important not only to ensure that what is planned serves local needs but also to gain key insights from local knowledge and to ensure broader support for eventual interventions. Actions of local authorities can also help low-income groups to respond at the individual and household level to the shocks and stresses that will arise as a result of climate change. Better sharing of forecasts on extreme weather events, and better provision of evacuation services are just two ways in which households can be supported in their own responses.

By working together, civil society and local governments can also help to avoid "maladaptation" from taking place. Maladaptation refers to actions that are carried out to reduce immediate vulnerability to particular events, but that will have negative consequences in the medium- or long-term. Without working closely with local (and national) governments to understand and address future effects of climate change (and all of the uncertainties related to this), local communities may respond in ways that increase the risks they will face in the future. And unless local authorities work closely with civil society, the actions they propose to reduce risk and build resilience may not relate to the everyday conditions (and risks) that are faced by low-income groups.

---

[99] Jabeen, Allen and Johnson 2010, op. cit.
[100] Douglas, Ian, Kurshid Alam, MaryAnne Maghenda, Yasmin Mcdonnell, Louise McLean and Jack Campbell (2008), "Unjust waters: climate change, flooding and the urban poor in Africa", *Environment and Urbanization*, Vol. 20, No. 1, pages 187-206.

Drawing from earlier sections, there are examples of local-government driven initiatives and of civil society driven initiatives that reduce disaster risk; there are also a few examples of partnerships between local governments and civil society – most coming from organizations and federations formed by those living in informal settlements (or 'slums') that have demonstrated to city governments their capacities to contribute to infrastructure and service provision and risk reduction – building houses, upgrading informal settlements, improving provision for water and sanitation, setting up community policing, revising inappropriate standards, mapping and enumerating informal settlements. These federations have also demonstrated a capacity to map risk and vulnerability at city level. These federations also offer city government partnerships to do all the above and where city and municipal governments have started to work with these federations, there is development and disaster risk reduction that can also be added to or adjusted for climate change adaptation.

But to move forward on this, perhaps it will need some strong, well-documented examples of city and municipal governments developing appropriate responses. Showing how to deal with the uncertainties. How to get buy-in for adaptation (and disaster risk reduction) from all key sectors. How to develop the needed understanding of how climate change related risks and vulnerabilities are likely to change (that needs real engagement with those most at risk). This has to include a capacity to take needed actions and build the needed institutional capacities and partnerships with grassroots organizations and other civil society groups. City officials in many low- and middle-income nations may be increasingly aware of climate change and there are certainly a growing number of city governments that have commissioned studies of what climate change implies for their city. But as yet, these do not influence infrastructure investments and land-use management – or the regulatory framework.[101]

Conclusions: What are the respective roles of government and community organizations in disaster risk reduction?

One of the most dramatic differences between high-income nations and most low- and middle-income nations is the scale of disaster risk faced by their low-income urban populations. Another is the importance of community-based organizations in reducing disaster risk. In high-income nations, even their low-income urban populations are served by many routine government measures that reduce disaster risk; in most low- and middle-income nations, they are not. In reviewing the most effective ways to get disaster risk reduction in urban areas in much of Africa, Asia and Latin America and the Caribbean, especially for their low-income populations, the role of community-organizations is far more important – in what they do, in what they negotiate, in what they can offer local governments as partners in disaster risk reduction. Community-organizations also have great importance in post-disaster response – and often far more importance than that recognized by external relief agencies.

In high-income nations, it is governments (and mostly local governments) that have had the key roles in reducing disaster risk and in building resilience to, for instance, extreme weather,

---

[101] Hardoy and Pandiella 2009 and Roberts 2010, op. cit.; also Revi, Aromar (2008), "Climate change risk: A mitigation and adaptation agenda for Indian cities", *Environment and Urbanization*, Vol. 20, No. 1, pages 207-230 and Awuor, Cynthia B., Victor A. Orindi and Andrew Adwerah (2008), "Climate change and coastal cities: The case of Mombasa, Kenya", *Environment and Urbanization*, Vol. 20, No. 1, pages 231-242.

variations in freshwater supplies and earthquakes. There is universal provision of needed infrastructure – for drinking water and provision for sanitation within everyone's home, drainage, electricity, all-weather roads and paths and phones. There is a comprehensive web of institutions to ensure these are provided and also to ensure all buildings and enterprises meet health and safety standards that take account of extreme weather. Urban populations in such nations take for granted that such institutions, infrastructure, services and regulations protect them from disasters – including extreme weather, floods, fires and technological accidents. Their effectiveness is not easily measured because you cannot measure what does not happen. But these stop disasters – for instance as heavy rainfall or high winds do not cause disasters. One gets a sense of their effectiveness by looking at the decline in disaster-related deaths and injuries over time in cities in high-income nations or by comparing disaster-related deaths and injuries between cities in high-income nations and low or middle-income nations with comparable levels of exposure but very different outcomes.

Many of the measures that reduce or remove disaster risk were not really installed to do so but to supply everyday needs. Good quality health care services available to all and supported by good emergency services (including fire services, police and ambulances) meet every day needs but also form a critical component of disaster risk reduction (for instance helping provide early warning and supporting those that need to act and move quickly) and rapid, effective post-disaster response. Sewer and drainage systems that serve daily requirements can be made to help cope with storms. In high-income nations, almost all urban dwellers live and work in buildings that meet health and safety regulations (through building codes, building material standards and land-use management) and that are served by infrastructure designed to cope with an expected range of extreme weather. Consequently extreme weather events rarely cause a large loss of life or to serious injury – and when they do, governments generally review and adjust their responses. Although occasionally such events cause serious property damage, the number of people seriously impacted by this is much reduced by property and possessions insurance. The monetary cost of the government or government-funded institutions to do all the above is also accepted by almost all the population and the costs of these routinely funded through charges and taxation. While private companies or non-profit institutions may provide some of the key services, the framework for provision and quality control is supplied by local government or local offices of provincial or national government. All the above have contributed much to higher life expectancies in cities and much reduced risk from disasters.

In these nations' cities, the residents of particular neighbourhoods or districts do not need to organize to demand from government the infrastructure and services needed for disaster risk reduction or to seek to reduce risks themselves in the absence of government action. Here, as noted above, all buildings and urban expansion have to meet official standards and urban expansion is controlled so it avoids dangerous sites. There are lapses – important lapses in some instances which mean catastrophic disasters such as the impact of Hurricane Katrina on New Orleans or the impact of the heat wave in Europe in 2003. There are policy measures that can be criticized – for instance new urban developments permitted on sites at risk and government underwriting insurance for wealthy property owners in areas at high risk. But unlike urban areas in low- and most middle-income nations, there is no need for large sections of the urban population to organize at district or neighbourhood level to demand they get the infrastructure and services they need or to take measures themselves because local government is unable or unwilling to provide these. No family in urban areas in high-income nations, however poor, expects to live in a home made of temporary materials, to have to build this on land that they occupy illegally (from which they are often bulldozed), to have to walk several hundred yards to collect water from a communal standpipe shared with hundreds of others or to have no toilet in

their home, no drainage system and no service to collect household wastes. Of course, there are still particular groups, settlements or buildings in high-income nations that are not adequately protected – but these represent a very small proportion of their urban population whereas in many cities in low and middle-income nations these include 30-60 percent of the population. In high-income nations, there are also channels through which those who feel inadequately served or excluded can complain – through the courts, through ombudsmen, through their local politicians. Of course, community-based and other civil society organizations had key roles in the past in getting the political and institutional changes that produced the safer cities and neighbourhoods.

Low- and middle-income nations often have city and municipal government structures that are similar to those in high-income nations. Indeed, their planning legislation and their building and planning codes and regulations are often modelled on those in high-income nations; for many nations in Africa and Asia, many such codes and regulations date back to colonial times when these were actually instituted only for the areas of the city inhabited by the colonial officers and their allies (and from where national populations were excluded). Yet these urban governments do not have the competence, capacity, funding and often even the willingness to reproduce the many measures that are standard practice in high-income nations to reduce disaster risk. Only a very small proportion of urban centres in low- and middle-income nations have a comparable web of institutions, infrastructure, services and regulations to high-income nations, although there are very large variations between such centres in the extent of provision and the extent of coverage. For instance, the proportion of cities' populations living in legal homes built meeting appropriate building regulations varies from 10-20 percent to close to 100 percent. The proportion of the population living in homes adequately served by sanitation, waste water removal and storm drains varies as much; most urban centres in Africa and Asia have no sewers and for many of those that do, these serve only a very small proportion of the population. This is not just in cities with little economic success; it includes many cities that have had economic success such as Mumbai and Nairobi both with around half their population in informal settlements. It is also common in such cities for the local authorities and utilities to refuse to extend to informal settlements the infrastructure and services that do so much to reduce disaster risk – or they are prevented from doing so by law or regulation. There are no statistics on the proportion of the urban population in low- and middle-income nations covered by good quality fire services or rapid response to serious injuries or illnesses (including ambulances and hospitals able to provide rapid treatment) but the inadequacy or complete absence of such services is evident in most informal settlements. Only 1 per cent of households and businesses in low-income countries and only 3 per cent in middle-income countries have catastrophe insurance, compared to 30 percent in high-income nations.[102] Meanwhile, there is little or no provision within city and municipal governments to guide urban expansion so it avoids sites at risk (especially where these have high commercial potential) and ensures provision for open space and utilities. Land-use planning and management should help ensure the availability of legal land plots with infrastructure that low-income households can afford – so they do not need to occupy land illegally or get land in illegal subdivisions –but it does not. The failures of policy and practice by city and municipal governments produce the large proportions of their populations living in informal settlements – yet these same governments so often worsen conditions still further by their hostility to the residents of these settlements. Or they simply use them as a vote bank yet never actually provide the needed infrastructure and basic services. The

---

[102] Munich Re (2005), *Natural Disasters according to Country Income Groups*, 1980-2004, Munich Re NatCatSERVICE, Munich.

huge disaster risks faced by so much of their populations is revealed when extreme weather or an earthquake hits the city. These risks stem mainly from the limitations of their governments.

But there is strong evidence from cities in Africa, Asia and Latin America of the effectiveness of another way of implementing disaster risk reduction. This is where city or municipal governments work with the inhabitants of the informal settlements and their community organizations to ensure better provision for the infrastructure and services that contribute to disaster risk reduction and do so on a continuous basis, as household, community and local government resources permit. One of the defining characteristics of this way is a commitment by government to support 'slum' or informal settlement upgrading rather than ignoring them or seeking to bulldoze these. Of course, the wide range of cities that have taken up this approach means that the balance between what governments do and what households and community-based organizations do varies a lot. The examples of where this has worked well given in this paper cover a great range of cities – including successful cities in upper-middle-income nations and less successful cities in low-income nations. But in all, there was a recognition by local government officials and politicians of the areas where so much more can be achieved if local government supports the investments and capacities that community organizations can bring. A recognition too of how community-investments (what Arif Hasan calls 'the small pipes') can be integrated into municipal investments ('the large pipes') in ways that greatly lower unit costs.

Of course, because this way of addressing disaster risk reduction has at its core a change in attitude and in organizing for action among civil servants and politicians, the particular way it happens differs a lot from city to city. In many nations, as described in detail in the paper, it depended in part in a new generation of elected mayors that came not only with a commitment to improve conditions in informal settlements but also an understanding of the need to involve organizations from these settlements in doing so. In most of the cities where community organizations have been most effective, it owed much to the organizations formed by the urban poor themselves that were representative and capable of working together (usually in federations of 'slum' or shack dwellers or homeless people) and willing to offer local governments their collaboration. Much of the innovation described in this paper comes from such federations, including the tools and methods they have developed that allow them to be such effective partners for local governments and to work at city scale. But none of the examples given in this paper happened easily. Local government staff always have difficulties in ceding any decision-making powers to community organizations, especially if they are judged to be from 'illegal' settlements. Much improved community-local government relationships and the successes they bring may have been catalyzed by particular civil servants or politicians and this is threatened when their term of office ends or they move. Many community leaders are not representative or accountable and are enmeshed in patron-client relationships with local government. And there is always the challenge of taking what works well for a particular settlement or district to larger scale – and shifting from projects to city-wide processes. But the range of successful experiences coming from very different economic and political contexts suggests that the core principles of this approach have wide validity.

Post-disaster, in all the urgencies to get action, there are perhaps even more difficulties in getting acceptance from government and international agencies of the role of community organizations. Yet as examples given in this paper show, a key part of reconstruction is allowing the survivors to come together, to meet, to share their grief, to begin to plan for themselves, to define their priorities and to manage their fulfilment. To build or rebuild their own community organizations and to find that these are effective in getting their needs addressed is such a central part of 'building-back-better'. So building-back-better refers to more

than what is built; it also refers to the better relations developed between grassroots organizations and local governments as they work together to meet needs and build greater resilience to likely future shocks.