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Key messages

- Partnerships and networking play key roles in building resilience by helping to sustain programmes and facilitate learning exchanges among stakeholders, thus providing room for improvement and innovation.
- Climate- and ecosystem-smart disaster risk reduction approaches are feasible at the city level, but integrating them into development plans requires time and resources, as well as solid commitment from local chief executives and community members.
- Existing institutional mechanisms such as national laws and local ordinances can help push the resilience agenda forward.
- Integrating climate science and information along different timescales in different disaster risk reduction approaches is an effective entry point to urban resilience.
- However, local governments should not look at the concepts of climate change adaptation, ecosystem management and restoration, and disaster risk reduction in isolation but consider them systematically and plan holistic interventions.

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Building resilience to climate change locally: The case of Valenzuela City, Metro Manila

Valenzuela City is one of the 16 cities that make up 'Metro Manila', or the National Capital Region. Of the 144 cities in the Philippines, Valenzuela City is the 13th most populous, with approximately 570,000 inhabitants.¹ Located 14 km north of Manila, it is a highly urbanised and affluent industrial and residential suburb situated in a low-lying area and bordered by three interconnecting rivers: the Tullahan, the Polo and the Meycauyan. The confluence of these rivers makes Valenzuela vulnerable to flooding during high tides and also to flash floods, which occur regularly during the rainy season. During periods of heavy rainfall and high tides, stagnant water from floods can sometimes stay in the area for up to 4 weeks due to insufficient drainage, improper solid waste disposal and simply too much water. People are often stranded inside their homes with limited food and water supply, and are exposed to water-borne diseases such as dengue and leptospirosis, as well as coughs and colds. Businesses and entrepreneurs, such as street vendors, furniture makers, small-scale autorepair shops and fish-food processors must watch as the means of their livelihoods are submerged under water. Office workers can also suffer from a lack of income if they are unable to go to work due to flooding.

Higher flood waters began to manifest in Valenzuela City in the early 1980s.² Areas that had not normally experienced flooding events became regularly inundated. Land use has been greatly influenced by the changing rainfall patterns. Early on, farmland was converted into fishponds, as stagnant flood water continued to form pools after each rainy season, especially in areas near the rivers. However, by the 1990s the ponds failed to yield enough fish and were replaced with residential subdivisions.³ These land-use changes

have resulted in lower production and fewer varieties of vegetables and *palay* (rice); and less fishing in the area of the Northern Luzon, affecting both people's diet and economy, not only in Valenzuela but also nearby cities and provinces of Bulacan. For instance, people in these areas used to produce high quality shrimp, prawns, crabs and fish varieties like *talakitok*, *ayungin* and *sapsap*. They would enjoy eating crabs and shrimps, which were freely available, but, due to the land use changes, these foods are now prohibitively expensive.

Because of these impacts, Valenzuela City was chosen in 2011 as one of five project areas under the Philippines component of the Partners for Resilience (PfR) programme. PfR is a collaboration of five Netherlands-based organisations (CARE Netherlands, Cordaid, the Netherlands Red Cross, the Red Cross/Red Crescent Climate Centre and Wetlands International), along with 30 civil society partners in the global South. By integrating climate change adaptation and ecosystem management and restoration into disaster risk reduction, the programme aims to build resilient communities. First aid training, basic life support, disaster preparedness, participatory video training, contingency planning workshops, community flood drills, facilitation of stakeholder meetings and formulation of solid waste management plans are some of the activities empowering the communities to address increasing and changing risks. The programme recognises that poverty, risk and vulnerability are inextricably linked with decision-making processes and with resource and power distribution within a society. PfR assists communities together with their *barangay*⁴ (neighbourhood) officials to work harmoniously in times of catastrophe and to be active partners with government in implementing disaster risk reduction.

In PfR, working on community resilience is effectively based on four building blocks that encourage communities to:

1. anticipate risks
2. respond when disaster strikes
3. adapt to changing risk patterns

4. transform themselves to address the underlying factors and the root causes of risk.

These building blocks are implemented at the household, community and landscape levels, and are underpinned by eight key principles:

1. working on different timescales
2. recognising geographical scales
3. strengthening institutional resilience
4. integrating disciplines
5. promoting community self-management
6. stimulating learning
7. focusing on livelihoods
8. forming partnerships.

The Valenzuela City chapter of the Philippine Red Cross, with support from the Netherlands Red Cross, has been implementing a PfR project in five *barangays*: Balangkas, Coloong, Malanday, Tagalag and Wawang Pulo.

Implementing the PfR programme in Valenzuela City

In building community resilience, the PfR programme, through its integrated resilience-building approach, focused on the city's growing concerns over flooding and livelihoods. Specifically, the programme aimed to:

- increase the level of understanding and ownership among people of flood-associated problems
- integrate plans and programmes into institutional mechanisms to address these problems
- adopt environmental approaches in urban areas, and
- empower people through partnerships and volunteerism.

Raising awareness and a sense of ownership of the problem

Through synchronised activities – which included integrated risk assessments, training sessions and planning processes – stakeholders learned the various factors that put them at risk from climate change-related impacts and disasters. Participants included the Local Government Unit (LGU) and active groups such as 4Ps (Pantawid Pampamilyang Pilipino Program), Batang Rex (teenagers), Win Youth Club (teenagers), Win Mothers Club, religious groups (Catholic and Born Again) and pedicab drivers' associations. To identify local priorities and appropriate disaster risk reduction actions, the project used a modified Vulnerability Capacity Assessment (VCA), which included seasonal calendars, historical timelines, climate forecasts and information on the ecosystem and watershed of which the LGU is a part. This helped community members to understand the changes they have been experiencing over the years. The VCA also revealed that one of the community's main livelihood projects – the production of water hyacinth – has in fact contributed to the increased flooding in their area because it clogs drainage channels.

Integrating climate variability and environmental concerns into local policies and programmes

Because of the increased level of awareness, the LGU started developing actions to address these problems. They not only learned of the many adaptive actions their communities have taken over the years in order to reduce their level of risk,

but also realised how interconnected the problems are – and that solving them requires an integrated approach. It became clear that the flooding was caused by a number of factors including unsustainable livelihood practices, poor land use planning and increased rainfall that has become more intense and less predictable.

The VCA results formed the basis for the enhancement and revision of their local disaster risk reduction and management plan, a mandated plan for all LGUs in the Philippines. This revised version was a dramatic improvement on the previous one, focusing mainly on the materials and supplies needed to respond to disasters. The plan is now more detailed, holistic and comprehensive, covering the different risk-contributing factors and how best they can be addressed.

The PfR framework is slowly being integrated into local government policies and processes at the city level. In 2013, the LGU proposed the mainstreaming of climate- and eco-smart disaster risk reduction strategies by instituting changes in the city guidelines and protocols. One example is the GREENING project, which requires new applications for building permits, businesses, parking lots and residential areas to allocate 20% of their area to trees and landscape improvement. Penalties will be levied for violations. This was presented and proposed by Valenzuela City to the Housing and Land Use Regulatory Board, a national government agency in charge of land use planning and development.

Developing contingency and early warning action plans along different timescales

For years, the LGU has had many disaster risk reduction initiatives, but these have mostly focused on very short timescales and on disaster preparedness and the ability to respond, rescue and provide relief goods. Through PfR, the *barangay* LGU and active stakeholders have learned that flooding- and livelihood-related problems can be viewed within a continuum of risks occurring along different timescales. By using the 5–10 weather forecasts issued by the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), which is the national meteorological office, community members were able to develop contingency plans on possible flooding events based on the rainfall data or typhoon signal. Likewise, in anticipation of strong typhoons, LGUs use seasonal forecasts to anticipate possible impacts and coordinate the necessary plans of action. With proper access to, and understanding of, climate and weather forecasts, citizens of the *barangays* can address their vulnerability to flooding problems and consider their livelihood options, thereby increasing their capacity to adapt over the short, medium and long term. The city has also strengthened its relationship with the regional and local offices of the PAGASA. This partnership helped them gain better access to forecast information; identify thresholds; and develop short-, medium- and long-term actions based on these warnings.

The LGU has also incorporated scientific forecasts into the development of worst-case scenarios in contingency planning and community drills. Three quarters of the population was engaged in climate-informed contingency planning workshops, which helped community members identify who will do what, where, when and how, based on PAGASA forecasts. By July 2014, the project had completed several community drills among more than 6,000 community members in the Balangkas, Coloong, Malanday and Tagalaga *barangays*. These drills facilitated evacuation centre management, as seen with Severe Tropical Storm Trami in July 2013. This was a significant improvement compared to pre-PfR involvement, where people were not organised and did not follow either the early warnings or the evacuation processes. The short-term early warning and recommended early actions were featured in several national television and radio networks in the country, including ABS-CBN News Live, GMA News and DZMM radio.

Environmental approaches to building adaptive capacities

The city has likewise developed an increased level of awareness of the need to protect its remaining trees and parks. Based on an understanding of how trees can reduce siltation problems in the already-clogged river system, community members planted trees in areas vulnerable to flooding to help mitigate flooding incidents, both in their LGU and for other communities in the same river basin. Likewise, improved solid waste management has

shown promise. Through a knowledge-sharing partnership between the Philippines Red Cross-Valenzuela City Partners for Resilience and health workers, at least 10% of the population is now cleaning and segregating solid waste in the Palomares Compound of Coloong, Lingahan of Malanday, and the Capalad Extension of Balangkas. The city has also begun a recycling programme, which has helped to reduce the amount of trash clogging the city's waterways.

The city is also exploring an early warning system based on a river basin approach, together with the LGUs that share the watershed. PfR has helped neighbouring LGUs to discuss how the actions of one community can affect and create negative impacts (e.g. flooding) on the others. LGUs have also begun discussing community-based warning systems, and water gauges have been placed in different areas around the watershed, both upstream and downstream. The gauges use improvised bells, called *batingting*, made out of liquid petroleum gas cylinders that serve as an alarm when a hazard event occurs and evacuation might be necessary. The *batingting* produces a very loud sound when hit by a metal stick. that can reach up to 100 metres in radius. It is strategically placed in low lying areas of the community, making it a community-based early warning system that is owned and managed by the community. The first alarm increases people's vigilance: people will prepare to evacuate on the first alarm, taking time to pack their belongings and secure their properties. The second

alarm provides the signal for them to evacuate their houses and go to the pre-arranged evacuation point. On the third alarm, they must evacuate the area. This system complements the information being provided by other early warning signals set up by different stakeholders in one of the rivers that contribute to the flooding in the area, the Tullahan River. The PfR programme is working to harmonise existing early warning instruments installed along the watershed.

Empowerment and resilience building through volunteerism

PfR helped implement several community programmes in Valenzuela City. One of them is the Red Cross 143 (RC143), a nationwide volunteer programme of the Philippines Red Cross which helps LGUs and their communities to readily respond to any type of disaster. The number '143' signifies that for each *barangay* there are 44 members – one leader plus 43 volunteers – who serve as the eyes, ears, hands and feet of the Philippines Red Cross in the area. The RC143 programme primarily focuses on disaster preparedness and response, health and welfare, and voluntary blood donation. Specifically, they focus on disaster prediction, planning, preparedness and response.

PfR uses the RC143 programme to raise people's awareness of vulnerability and disaster risks, and to help build resilience by increasing communities' adaptive and environmental capacities through disaster risk reduction. The volunteerism is no longer just focused on activities related to

disaster response; volunteers also participate in activities that help them make proactive decisions based on forecasts, early warning information and risk assessments.

Enabling factors

National and local policies

The PfR programme is based not only on the provisions of national policies on solid waste management (Republic Act 9003), climate change (Republic Act 9729), and disaster risk reduction and management (Republic Act 10121), but has also contributed to ensuring implementation of the laws at the *barangay* level. These national laws were independently enacted, and each required LGUs to come up with specific plans of action. The laws' mutually reinforcing provisions were very difficult to implement at the local level. For instance, the laws mandated LGUs to integrate disaster risk reduction, climate change adaptation and environmental concerns into local development plans, without providing guidance on how to do so. This is where PfR came in. The Valenzuela City project helped push the agenda forward by teaching communities the different provisions, while at the same time helping them to see the convergence points and to develop local plans aimed at addressing the underlying causes of vulnerability in the highest-risk areas.

Partnerships and volunteerism

Equally important are the community organising strategies and partnerships of the Philippines Red Cross through its local chapters and the RC143

volunteers. Their presence on the ground has already established strong relationships with the community members and LGUs, and these served as natural entry points for disaster risk reduction, climate change adaptation and ecosystem management and restoration activities under PfR. The dedication of RC143 volunteers to serve the vulnerable members of the community is priceless.

Partnerships are key – whether they are between LGUs and communities; LGUs and the national meteorological office; contiguous LGUs; national government agencies and LGUs; organisations and volunteers; or among the community members themselves. These partnerships help build trust and confidence that people are united in trying to find ways to address risks and their underlying causes. They also help sustain and even improve programmes based on the exchanges of knowledge between groups.

Stimulating learning

The use of various participatory approaches has contributed to changing the mindsets of community members. They are becoming more open to the many climate-smart, risk-reducing activities that exist. Participatory videos were particularly effective as they helped communities realise the need to adjust or transform their behaviour and actions to collectively help lower their risks. During the 2013 Disaster Consciousness Month, a video titled 'PfR in the Lens' was shown to almost 3,000 community members, including local leaders and chief executives from Valenzuela City, as well as from the

neighbouring cities of Malabon and Caloocan, and even in some parts of the neighbouring province of Bulacan. This helped provide the space for a more open dialogue on how the PfR integrated approach can help build capacity and resilience to disasters.

Challenges

Local governance and institutional resilience

The PfR Valenzuela City project faced implementation delays because of differences in the timing of local elections for mayor and barangay officials. This forced project implementers to conduct several orientation sessions in order to convince new leaders about the project's importance and relevance to their communities. The PfR has a new Memorandum of Understanding with the new mayor of Valenzuela City to ensure the city's continuing support for the project until 2015. The change in leadership also meant another round of discussions with members of the Local Disaster Risk Reduction Management Office.

Implications for decision-makers and practitioners

This case study shows that building resilient urban communities through an integrated approach of disaster risk reduction, climate change adaptation and ecosystem management and restoration is possible. However, it is not easy and it does not happen overnight. A lot of investment in people, time and other resources is needed to sensitise people and change behaviour, help LGUs provide institutional support, and motivate

communities to adopt life-changing skills in order to anticipate, adapt and respond to changing risk patterns. When successful, these communities can address the root causes of risk and transform their responses, so avoiding potential disasters.

National and local policies and institutional mechanisms are key for effective disaster risk reduction. These provide the backbone for initiating changes on the ground. Particularly with a decentralised local governance structure – such as in the Philippines, where LGUs are empowered to move things forward – the presence of a national law provides guidance for the country to move forward as a whole. For example, local resolutions and ordinances enhance existing laws such as the Ecological Solid Waste Management Act of 2000 (RA 9003): from this foundation, LGUs may form *barangay* solid waste management councils and resolve – down to the household level – how solid wastes should be segregated and collected.

It is also important to ensure that risk assessments are done properly and include the different variables that will help communities understand and identify their capacities and vulnerabilities with respect to the changing climate. Through this, they can achieve a more realistic analysis of the risk situation, which should become the basis for local policies, plans and programmes. Participatory risk assessments also allow community members to own the process and provide them with a voice to decide how, what and for whom the

various programmes are implemented by the LGU. Risk assessments can also form the basis for the development of worst-case contingency plans that can more accurately address past and possible future risk scenarios. This helps community members rise above complacency by visualising various potential disaster scenarios and deciding on various roles and actions.

Finally, this case study shows how disaster risk reduction, climate change adaptation and ecosystem management and restoration actually interact on the ground. Rather than treating them as silos, they need to be addressed in a more holistic way. The integrated PfR approach is an effective way to build climate- and ecosystem-smart, resilient communities.

Endnotes

- 1 Socioeconomic profile 2007 on the City of Valenzuela website. Source: National Statistics Office
- 2 Phillippines Red Cross (2011) *Valenzuela City Chapter Partners for Resilience Programme Vulnerability and Capacity Assessment 2011*. PRC Valenzuela City Chapter/City Planning and Development Office.
- 3 Phillippines Red Cross (2011). Op. cit. I Witness Water World Episode, October 18, 2014
- 4 As the basic political unit, the *barangay* serves as the primary planning and implementing unit of government policies, plans, programmes, projects and activities in the community, and as a forum wherein the collective views of the people may be expressed, crystallised and considered, and where disputes may be amicably settled. (Sec 384 of the Local Government Code of the Philippines).



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