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Regional: Advancing Inclusive and Resilient Urban Development Targeted at the Urban Poor

Knowledge Note: Community Infrastructure for Strengthening Resilience of the Urban Poor

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Contents

Key Points

- Resilient community infrastructure is vital to resilience-building, by reducing the exposure of low-income community residents, their housing, and assets, to the hazards caused by climate change.

- Community-driven development (CDD) can be a means of delivering small-scale community infrastructure (like drainage, flood control measures, mangrove reforestation for coastal cities) while also fostering inclusive urban governance and creating livelihood opportunities, essential to promoting socio-economic resilience.

- Community infrastructure should be integrated into the design and construction of city-wide infrastructure: doing so can be a way of actively involving the urban poor as equal partners in urban planning processes to ensure an inclusive urban future.

- Community workers can be trained in resilient building and infrastructure design and construction, including no-regrets infrastructure measures, working with local government engineers to ensure compliance to appropriate design standards.

- Community infrastructure is essential to responding to COVID-19 and building resilience to other infectious diseases, by providing communities with necessary sanitation infrastructure such as clean water and drainage.

- Innovative financing mechanisms are required to fill the current investment gap, including building the capacity of local governments to raise funds and draw on climate finance, and approaches such as blended finance to ensure funds reach communities at the very local level.

A. Introduction

1. Climate change presents a major threat to the lives and livelihoods of low-income urban residents in Bangladesh, Indonesia, and the Philippines. Large numbers live in informal settlements or 'slums', comprising 47% all urban residents in Bangladesh, 31% in Indonesia and 43% in Philippines.[1] The living conditions of many low-income urban residents, especially those in informal settlements, puts them at higher risk from the impacts of climate change – as they may lack basic risk-reducing infrastructure such as adequate sanitation, storm drains, paved pathways, running water, electricity, and access to services like primary healthcare. In addition, they may be living in poor quality housing, and many face the added threat of eviction due to the lack of security of tenure. Informal settlements are also frequently located on marginal land and therefore can be more exposed to climate change hazards like flooding and storm surges. Taken together, these factors compound their already higher levels of vulnerability to climate change, arising from poverty and irregular incomes.

2. This knowledge note considers the problem posed by a lack of community infrastructure in the context of a changing climate and fast-developing towns and cities that may be leaving the urban poor behind.[2] Drawing on the experiences of countries across the region, but particularly focusing on Bangladesh, Indonesia and the Philippines, the knowledge note assesses existing initiatives to address gaps in provision of community infrastructure, and identifies ways in which this infrastructure can contribute to building the resilience of low-income urban dwellers. It highlights the importance of community-led infrastructure initiatives such as community-driven development (CDD) as a mechanism for enhancing not only climate resilience but also social cohesion within communities and urban governance at a city scale. It also recognises that CDD alone cannot address the magnitude of need, and that to build the resilience of the urban poor, investments in community infrastructure will also need to come from other sources and be integrated to citywide infrastructure planning and provision. The note considers the enabling environment that can facilitate provision of community infrastructure, including possible governance arrangements, and identifies ways to plug the gap in investment needs.

B. Community Infrastructure in the Face of Climate Change

3. **Urban areas are hotspots of climate and disaster risk.** Urban areas concentrate people and economic activities. They are also reliant on networks of infrastructure which need to be adapted to changing hazards and levels of risk as the climate changes if they are to protect urban residents and activities. For example, climate change leads to higher temperatures which can be further raised through the urban heat island effect, creating conditions in which the health and wellbeing of urban residents – particularly those living in poor quality housing and dense settlements with poor ventilation and construction standards – are negatively affected. In addition, the effects of more frequent or heavier rainfall – compounded by patterns of urban development which increase runoff, and inadequate or maintained drainage infrastructure – creates or worsens problems of urban flooding. A 2015 risk analysis showed that 21 of the world's 100 cities most exposed to natural hazards are in the Philippines and eight are in Bangladesh,[3] and these cities lack the adequate infrastructure to minimize the impact of these hazards, particularly on those living in informal settlements.

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[1] https://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS?locations=BD-ID-PH

[2] Community infrastructure, as defined by Global Facility for Disaster Reduction and Recovery, primarily refers to small scale basic structures, technical facilities and systems built at the community level that are critical for sustenance of lives and livelihoods of the population living in a community. See pdna-guidelines-vol-b-community-infrastructure.pdf (gfdrr.org)

[3] Verisk Maplecroft. 2015. *Natural Hazards Risk Atlas 2015*

4. **The urban poor frequently live in neighborhoods lacking reliable basic services such as healthcare, water supply, and sanitation, and infrastructure including drainage, adequately spaced roads, and open spaces.** Climate change not only affects the homes of the urban poor and vulnerable groups but also the places of livelihoods which can be affected by flooding, heat, and damage from storms. Climate change and economic drivers are also pushing rural migrants to urban areas, where the lack of affordable housing means that many resort to living in informal settlements, contributing to their expansion, and exposing more people to climate hazards. Thus, building resilience to climate and disaster-related shocks and stresses is essential for sustainable and inclusive urban development and reducing poverty.

5. **Good quality community infrastructure is essential to addressing the underlying drivers of vulnerability of the urban poor (see Table 1).** Infrastructure offers protection of assets (such as food vending carts of street vendors or equipment for home workers) from climate-related damage, assets which are essential for many already insecure livelihoods. Infrastructure protects the local population from flood waters being contaminated with sewage or solid waste, helping to ensure the population stays healthy and therefore income-earning potential is not lost. Community infrastructure like access roads also ensures continued access to essential services such as education and healthcare, contributing to the resilience of the population.

6. **The resilience of the urban poor will also depend on the adequate provision of larger-scale infrastructure on a city-wide scale**, to adequately protect the wider urban area from the impacts of climate change. Therefore, community infrastructure needs to be considered in the broader context of the city's planning and implementation of infrastructure. While such infrastructure is important to meet needs of communities, there are hazards or risks faced by cities as a whole but particularly impacting on the urban poor, which can only be addressed by large scale infrastructure projects, such as sea walls or protected water supply.

How community infrastructure addresses climate hazards and provides co-benefits

Necessary community infrastructure	Climate hazard addressed	Co-benefits
Storm drains	Sea level rise, flooding, extreme storms	Public health
Paved pathways and roads	Sea level rise, flooding, landslide, extreme storms	Access for emergency services, livelihood opportunities, healthcare and education
Embankments/ sea walls/ mangroves	Sea level rise, storm surge, extreme storms, heat stress	Provision of ecosystem services (e.g., water purification, fish nurseries)
Evacuation routes/ centers	Flooding, storm surge, landslide or other disaster, extreme storms	Can be used in any type of sudden onset disaster
Piped water / raised communal taps / protected tube wells	Flooding, saltwater intrusion, extreme storms, heat stress	Public health, communicable disease control
Sanitation (sewage or septic systems)	Flooding, sea level rise, extreme storms	Public health
Solid waste management	Flooding, sea level rise, extreme storms	Public health, environmental protection
Electricity	Heat stress	Facilitates education and livelihood opportunities
Public open space	Heat stress	Access for emergency services, evacuation route, livelihood opportunities

Source: International Institute for Environment and Development

1. Infrastructure provision for the urban poor

7. **Informal settlements are frequently located on marginal land such as shorelines, riversides and steep slopes, or flood-prone lowlands, where they will be particularly exposed to the impacts of climate change.** Migration to urban areas is seen by many as a strategy to transition out of poverty and escape rural climate impacts, yet access to the necessary risk-reducing infrastructure remains a challenge for many urban dwellers across Asia, particularly if they live in informal settlements. Their homes may be built of poor-quality materials, without adequate ventilation, lighting and space per person – and therefore having appropriate infrastructure provision can help to mitigate the negative impacts of these deficiencies. The density of many informal settlements means that there is little outside space which can be essential for promoting ventilation and can provide an evacuation space during sudden onset disasters.

8. **Provision of water and sanitation remains challenging**. Even in a major economic hub such as Jakarta, Indonesia, over 40% of the population does not have access to piped water, while across the country, 9 million urban poor lack access to safe water and have to pay 10-30 times more the public price to buy clean water from private providers. In Bangladesh, 50% of beneficiary households surveyed by the National Urban Poverty Reduction Programme (NUPRP) have access to safely managed drinking water, with tube wells being the main source.[4] In the Philippines, however, 96% of the urban population has access to basic safely managed drinking water services, and 83% have access to basic sanitation services.[5] The situation may be particularly challenging for those residing in informal settlements where access to public sector infrastructure provision may be restricted, because they have no recognised tenure.

9. **Informal livelihoods makes provision of basic services and safety nets even more essential.** Lack of provision of basic infrastructure and services such as healthcare and education, combined with poor quality shelter, insecure livelihoods and minimal social protection, means the urban poor may be less able to prepare for shocks and stresses such as those caused by climate change. As a result, the impacts of climate change may be felt more strongly by these populations, whether these are sudden-onset or slow-onset. Because many residents of informal settlements have irregular and small incomes from informal work, climate change impacts can have knock-on effects on their livelihoods, as well as on their health and ability to access education and healthcare.

C. Challenges to Community Infrastructure Provision

10. **Tenure security will often determine provision of infrastructure**. Part of the challenge to implementing community infrastructure lies with the tenure status of the settlements in question. Informal settlements and slums have been built outside the 'formal' system of laws and regulations that are meant to ensure resilient structures, settlements and systems. They may not comply with the rules and regulations on land-use, buildings and infrastructure and service provision. Many (but not all) are on land that is illegally occupied. As a result, they may not benefit from upgrading programs or infrastructure provision initiatives that are targeted at 'formal' communities that have some form of security of tenure and are recognised by the government. Where community infrastructure initiatives are driven by the local community residents, through CDD projects, funding and security of tenure remain a problem. It may be challenging to mobilise

[4] NUPRP Baseline Survey Report, 2020
[5] Philippines Statistics Authority, Annual Poverty Indicators Survey, 2019

community members to invest funds and implement improvements if there is a risk of eviction, real or perceived.

11. **Lack of local government capacity to provide community infrastructure continues to be a problem.** The limited capacities of urban local governmens to respond effectively to rapid urbanization and high levels of rural to urban migration, brings further challenges when it comes to protecting the population against climate-related disasters. Local governmental bodies in certain countries are under-financed and already struggling with challenges of provision of basic infrastructure and housing for the wider area, particularly for lower income population groups. Additionally, in many cases, city authorities are not fully informed about the potential future impacts of climate change in urban areas.

12. **Community infrastructure projects may require support external to the communities to succeed.** This support may need to come from international funders or government agencies to be at sufficient scale, and can take different forms, thus there needs to be flexibility for different scales and types of CDD. This includes programs which can be scaled up by making use of existing community organizations and structures, including structures which were created as a result of past local, national and international programs. These structures could include community development committees or savings groups, as well as ties to local authorities.

13. **There is a lack of synergy between different community-level programs which focus on different priorities, such as upgrading, community infrastructure, or disaster risk reduction.** At any given point in time there may be a number of different upgrading and community infrastructure programs that are unfolding at a community-scale across cities. Sometimes these take place in the same areas concurrently. Yet, due to institutional culture and bureaucracies, these programs may work in parallel but in an uncoordinated manner, resulting in a lack of efficiencies and lost opportunities for economies of scale and potential duplication, or in a worst-case scenario, maladaptive investments. An example of this from Indonesia is that different slum upgrading, and community infrastructure programs establish separate community groups, which takes time, resources and creates competition for the enrolment of volunteers and community leaders from the same group of residents. It would be more effective if programs would establish a single community institution or community group on which they could all draw. These community-level bodies could then continue even after the programs conclude and be used by newer programs in the future, functioning as a community-level governance structure.

14. **All infrastructure provision should take current and future climate risks into account.** However, there remain gaps in knowledge and skills about the most appropriate climate-resilient infrastructure designs and construction techniques, at the level of the community and local authorities and practitioners. Urban planning should consider infrastructure needs, scale and location, to avoid the possibility of displacing climate impacts further downstream, for example. Associated with this is the limited accessibility of downscaled data and projections about climate change impacts at the local level, to inform infrastructure planning, designs and implementation, for example with regards the necessary size of storm drains or the height of outdoor taps or tube wells to provide access even during flooding. At a minimum, new infrastructure investments should apply ‘no regrets’ principles to avoid maladaptation and building codes and engineering standards should be updated to reflect this. Where possible, new infrastructure can provide good opportunities to integrate nature-based solutions, for example in terms of natural drainage and natural cooling and ventilation. Nature-based solutions can also offer mitigation co-benefits.

D. Towards Resilient Communities

15. While provision of basic infrastructure remains a challenge, there are nevertheless many ongoing initiatives which seek to provide resilient infrastructure in innovative ways. These operate on different scales and may be led by different types of actors, ranging from community members themselves, to national government and international donors. Drawing on some of these examples, the following section highlights some of the ways that community infrastructure can be provided in ways that are efficient, strengthen capacity, and build resilience for the urban poor. In particular, CDD responses can be well-suited to infrastructure programs which address some of the challenges highlighted previously, and can provide co-benefits in terms of enabling inclusive and resilient cities.

1. Community level responses

16. **Community infrastructure projects can be an entry point for fostering CDD initiatives and vice versa.** CDD is an approach that gives community groups control over planning decisions and investment resources for local development. Communities that are united and organized can be in a much better position to negotiate for tenure security if needed, the onsite infrastructure improvements necessary to withstand climate risks or disasters, or the terms and location of their resettlement (where this is necessary). Where community members have a say in the provision and prioritization of the infrastructure, community infrastructure can better respond to their needs. By fostering community organisation and cohesion, the process also strengthens their collective and individual resilience to climate change and other shocks and stresses. Supporting community organisations to work with local governments to implement infrastructure upgrading programs is often the cheapest and most effective way to build resilience to climate change impacts. Local governments may encourage community associations to take responsibility for the maintenance of government-built community infrastructure and provide technical training or capacity building that could motivate community members/associations to initiate other projects or activities.

17. **NGOs can support CDD processes, for example by helping to organise communities and to channel funding from external donors to community savings groups.** In Yogyakarta, Indonesia, informal riverside settlements were upgraded using revolving city-level loans and an Asian Coalition for Community Action (ACCA) grant to provide loans to families, for infrastructure upgrading (improving riverside walkways) and housing improvements.[6] This demonstrated an alternative strategy for improving these riverside settlements in a way which ends river encroachment and builds resilience through better housing and infrastructure. The process also addressed the problem of insecurity of tenure as the community negotiated the right to stay on the government land they already occupied, aligning with the local government's plans to solve the problems of riverside kampungs in the whole of Yogyakarta. Similar approaches have been implemented in other cities with riverside informal settlements, as a means of addressing the problem of insecure tenure and lack of access to basic services and adequate housing, while also fostering relationships between local communities and local government. The communities also received technical support from community architects who helped communities in negotiations for land. Where necessary, NGOs can also help communities to organise and build social cohesion ahead of CDD processes.

18. **Community builders can be trained in resilient design and construction as part of the design of urban CDD activities.** Training for community workers or volunteers in urban poor communities should include resilient design and affordable no-regrets infrastructure measures that can be implemented as community infrastructures. Working with local government engineers

[6] Asian Coalition for Housing Rights (ACHR). 2014. 215 Cities in Asia. ACHR, Bangkok

will be critical for the community workers to seek guidance and to ensure compliance with the government's design standards. Using community workers to implement infrastructure construction projects also generates income for the local residents, including women, who may in some cases organise themselves as contractors for external hire, and therefore contributes to their economic resilience, while often being more cost-effective than hiring contractors.

19. **Community infrastructure is important but needs to be supported by and integrated with larger-scale citywide infrastructure.** A CDD approach can be a useful component of larger scale projects that minimize hazards and mitigate effects of climate change in cities. While community infrastructures are important to address local needs of communities, there are hazards or risks faced by cities particularly impacting on the urban poor which can only be adequately addressed through large scale infrastructure projects. This means for example that community-level infrastructure should be connected to city-scale infrastructure, such as drainage networks. Consultation and engagement with government agencies and private sector contractors can ensure that large infrastructure initiatives employ CDD elements. If these projects require resettlement, this should provide informal settlers living in danger zones or project-affected areas with secure tenure and all the necessary infrastructure and services, as well as ease of access to livelihood opportunities. An example is the Metro Manila flood management project that crosses territorial boundaries between cities and involves community-driven resettlement of affected families. It is designed in ways that enable communities to participate in designing and implementing resettlement and empowered them to work with local government and key shelter agencies towards building their preferred community, including ensuring their livelihoods.[7]

2. Integrating local communities into infrastructure initiatives

20. **Government initiatives have been implemented to address deficits in infrastructure provision in urban areas, which may also involve the local communities in the process**. For example, Indonesia's Kampung Improvement Program (KIP) ran for 25 years (starting in 1969) and improved the lives of over 15 million residents in urban areas nationally through the provision of improved housing, community infrastructure and basic services. This evolved into the *Program Penanggulangan Kemiskinan di Perkotaan* (P2KP) (1996-2006), which developed community-based institutions at the neighbourhood level as a path to sustainable poverty reduction. P2KP subsequently transitioned into *Program Nasional Pemberdayaan Masyarakat* (PNPM) *Mandiri – Perkotaan* (2007-2014) that carried the emphasis on poverty alleviation but also focused on slum upgrading. Another government initiative focusing on infrastructure provision is the KOTAKU Program (2016 onwards), run by the Ministry of Public Works and Housing. This initiative aims to deliver 100% access to drinking water and sanitation and work towards slum- free cities. Between 2015 and 2018, the program successfully improved 23,407 hectares of slums across the country.[8] Even though climate risk was not explicitly considered within this program, improved drainage, access to drinking water and improved structural resilience of housing units delivered by this program will help the urban poor deal with a variety of climate induced shocks and stresses.

21. **International funders have also fostered initiatives that aim to fill gaps in community infrastructure alongside addressing poverty reduction.** Bangladesh has seen a number of

[7] World Bank. 2017. Project Appraisal Document on a Proposed Loan to the Republic of the Philippines for a Metro Manila Flood Management Project. http://documents.worldbank.org/curated/en/ 192891506823261036/pdf/ PHILIPPINES-PAD-09082017.pdf (accessed on 25 April 2020)

[8] Asian Development Bank. 2022. Building Resilience of the Urban Poor in Indonesia. Manila. https://www.adb.org/sites/default/files/publication/763146/building-resilience-urban-poor-indonesia.pdf

projects, driven largely by international funding bodies, which support improved services for urban residents through means which rely on and foster CDD processes. For example, the Urban Partnerships for Poverty Reduction program (UPPR, 2008-2015) was the single largest urban poverty reduction programme in Bangladesh, funded by UNDP, UKAID, the Government of Bangladesh and the beneficiary communities. UPPR's theory of change for urban poverty reduction centered on communities themselves being best placed to decide how to prioritise investments and who amongst them is most in need of support.[9] There were three main components to the program: a) grants for construction of basic infrastructure and services; b) support for livelihood support programs through a community contract system; c) capacity building of local governments to address the needs of the urban poor. Community action plans were developed, from which prioritized community contracts were developed for settlement improvements and socio-economic activities. By June 2014, 5302 community contracts were approved, with a budget of USD 5.6 million to provide support for additional small-scale infrastructure works. This meant that 246,000 households received water supply, 186,000 built latrines, and 470,000 benefited from drains and footpaths.[10] Under UPPR, city governments in different cities granted land leases to the existing communities for 99 years, demonstrating an approach to ensuring security of tenure for vulnerable communities.

22. **Schemes for delivery of social services and livelihood support can integrate community infrastructure initiatives, and while these are often targeted at rural populations, it is possible to apply these in the urban context too**. For example, in the Philippines, the KALAHI-CIDDS CDD approach was piloted in a peri-urban municipality in Cavite and in Manila and Malabon in 2013. Barangay Ligtong III in Rosario, Cavite implemented dredging and desilting of a creek and construction of a line canal as its subproject to address flooding, which generated employment for community members through cash-for-work activities.[11] The pilot also supported business development most suited to help the target community. The KALAHI-CIDSS process includes setting up community-level committees like a procurement committee, and audit and inventory committee, which coordinated with the municipal government. Some challenges encountered during the pilot included lack of willingness of some residents to devote time to community meetings and activities essential for organizing the community, and ensuring inclusiveness and people's participation in decision-making processes. This is where having community-level institutions or committees is important to ensure a sustained point of contact within the community.

23. **Community infrastructure projects can be a means of rebuilding following climate and disaster events**. CDD projects offer a platform for outreach to affected populations that can simultaneously respond to disasters, provide income, and contribute to longer-term resilience. Infrastructure engineers and community workers should be familiarised with low-cost construction technology and low-cost climate and disaster resilient construction materials – for both sudden-onset events such as cyclones, and slow-onset events such as heat stress. In Bangladesh, the government's Urban Resilience Project (URP) strengthened the capacity of government agencies to respond to emergency events, alongside strengthening systems to reduce the vulnerability of future building construction to disasters in Dhaka and Sylhet. The project sought to create an enabling environment for coordinated, locally managed disaster risk management based on three

[9] Urban Partnerships for Poverty Reduction (UPPR). 2013.Retrieved from http://www.upprbd.org/

[10] UPPR. January to June 2014 report.

[11] Government of the Philippines. Department of Social Welfare and Development. KALAHI-CIDSS Program. https://ncddp.dswd.gov.ph/site/news_profile/77

core pillars of disaster resilience in an urban setting: i) effectively respond to urban disasters; ii) reinforce existing infrastructure, and (iii) ensure resilient construction.[12]

24. **Infrastructure investments outside the community should also consider the livelihoods of outdoor workers**. For example, informal street vendors, who are especially exposed to heat stress during the day, would benefit from tree-planting for shade, public water fountains and access to public toilets. Their wider needs in terms of accessible and affordable transit options, which themselves remain resilient in the face of climate change, should also be integrated into citywide infrastructure development, as should access to services like healthcare and education.

25. **Nature-based solutions (NBS) can be mainstreamed into community infrastructure, providing co-benefits for climate change mitigation, public health and livelihoods**. Natural solutions can complement or replace 'hard infrastructure' to support resilience for the urban poor through reducing temperatures, managing storm water and flooding, improving urban water supplies, protecting urban coastlines and reducing wind erosion. Examples like water-sensitive upgrading which addresses the needs of informal settlements facing a range of water-related stressors, through techniques such as rainwater harvesting, creating green spaces for water cleansing and food cultivation, recycling wastewater and restoring natural waterways[13] - all examples of sustainable urban drainage systems. Importantly, these approaches can also generate co-benefits around livelihoods, reduced pollution, and recreational opportunities for low-income groups. For example, in Dhaka, NBS include parks, gardens, green roofs, rainwater harvesting, green façades and walls, porous pavements, and green and blue belts. An evaluation of these strategies found that rooftop gardens had very high levels of social acceptance and economic feasibility, and was commonly practiced in Dhaka, particularly among house owners,[14] and provided an additional source of food or income.

E. Creating an Enabling Environment

1. Infrastructure for all

26. **Tenure remains a key barrier to successful investments in community infrastructure.** Where official slum upgrading initiatives focus only on settlements with security of tenure, vast numbers of people remain left behind and highly vulnerable to climate change impacts. Targeted policy shifts are therefore required to address this gap, and to include informal settlers in schemes to improve community infrastructure. Approaches such as collective land title, can be one way to ensure more inclusive urban upgrading using a CDD approach. In this approach, communities organize around savings groups to establish a cooperative (through which low-interest loans for improving housing and infrastructure are channelled) and provide the community a secure land tenure collectively. This can enable cooperation between local communities, local governments, and other stakeholders, creating new and more inclusive urban governance in the process. The Philippines' Community Mortgage Program managed by the Social Housing Finance Corporation applies a concept of community ownership of land, to facilitate land ownership, site development, and housing construction.[15]

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[12] Bangladesh Urban Resilience Project. https://www.gfdrr.org/sites/default/files/publication/Bangladesh%20v4.pdf

[13] Revitalising Informal Settlements and their Environments. https://www.rise-program.org/about

[14] Moumita, D. F. (2015) Green Water Defense as Flood Mitigation Approach for Dhaka District. A Dissertation for the Degree of Master in Disaster Management. BRAC University, Dhaka.

[15] The community ownership is only at the initial phase of purchasing the land from a private landowner. The land title is later "individualized" as the community members amortize their loan from the Social Housing Finance Corporation over a number of years.

27. **The diversity of the urban poor needs to be recognised in order to adequately address their specific infrastructure needs**. In addition to residents of informal settlements, the urban poor may also include migrant workers and migrants from rural areas pushed by disasters and climate events, the 'floating poor', the homeless and street dwellers, and residents of unrecognised settlements. Access to infrastructure outside the community will also be important for livelihoods – such as maintaining roads to ensure continued accessibility of workplaces during times of flooding or storms, and providing communal taps in marketplaces to ensure sanitation and hydration for market vendors during droughts or extreme temperatures. All need to be served by basic risk-reducing infrastructure in order to build their resilience to climate change impacts.

2. Data needs

28. **Communities should be involved in data collection such as hazard mapping and projections, which will help to prioritise investments in infrastructure at both the community and city scale.** At the neighbourhood level, community characteristics that drive vulnerability can be assessed alongside hazards and climate risk projections to identify neighbourhood scale interventions, including community infrastructure that can be undertaken through CDD-type approaches. It can also include poverty and housing data, drawing on existing surveys but with additional community participation through mapping and validation. Surveys that are undertaken by community-based organizations in low-income urban neighborhoods can collect data on controversial and sensitive issues because the questions are being asked by residents or community leaders who are known and trusted. The adoption of an adaptive planning and design approach based on assessing the serviceability or resilience of planned infrastructure against a number of likely local climate change scenarios could also be considered. This planning exercise could involve communities who can share their experiences of past climate events and their impacts on existing infrastructures as additional data for the scenario-based assessment.[16] At the city scale, mapping can identify highly exposed areas, deficiencies in infrastructure provision, and concentrations of vulnerable populations – and therefore be used to prioritise investments in infrastructure, and to ensure community-level infrastructure is properly integrated to trunk infrastructure, such as drainage channels.

29. **Data needs to be disseminated not only among the necessary local government officials, engineers and experts, but also to local communities in accessible forms.** While certain kinds of early warning and disaster preparedness information is communicated to vulnerable populations, information on a broader number of variables that influence risk (such as access to sanitation or changes in quality and quantity of ground water) should also be distributed to the urban poor in accessible formats to inform individual and community decision making to mitigate risk. This can be done through community radio, community meetings, use of 'serious games', and other workshops facilitated by NGOs, and also through school curricula, to raise awareness about climate shocks and stresses which need to be prepared for.

3. Institutional arrangements

30. **Urban development plans and strategies need to integrate land and housing for the urban poor, in anticipation of growing urban populations**. This housing needs to be located in areas that offer easy access to employment opportunities, connected to mass transit, and essential services such as healthcare and education. Affordable housing needs to come with the

[16] For a recommended methodology for undertaking this type of scenario-based community infrastructure planning and design, see ADB. 2022. *Regional: Advancing Inclusive and Resilient Urban Development Targeted at the Urban Poor, Building Resilience of the Urban Poor: Using Climate Change and Disaster Risk Information in Designing Pro-Poor Investments in Community Infrastructure*. Consultant's report. Manila (Project Number 51325-001).

necessary essential infrastructure to ensure resilience to shocks and stresses, ranging from climate change impacts like flooding and heat stress, to pandemics like COVID 19. Land banking by local governments could be one way of meeting this need, however it should also consider future climate projections and hazard maps, so as to ensure low-income populations are not housed in areas where they will be exposed to further hardships or where massive infrastructure investments are required to provide the necessary climate resilience.

31. **Urban governance processes should be streamlined through inter-departmental coordination to avoid duplication and ensure integrated investments.** One way to do this is through a body to coordinate urban resilience actions on the ground. The coordinating body can work across sectors to ensure that climate risk is considered throughout urban development initiatives, to coordinate institutional responses to climate-related hazards and disasters, to share relevant information and climate data, and to develop proposals for international climate change finance[17]. Mainstreaming or integrating climate risk into existing health, housing, social protection and community development policies and programs is essential for enhancing the resilience of the urban poor.

32. **Urban governance needs to be inclusive of low-income communities.** Many communities have existing bodies such as savings groups or community development committees that can be the point of contact for CDD initiatives to upgrade infrastructure, to ensure all decisions are fully inclusive. Examples include the city development funds which were established in Bangladesh, Indonesia and the Philippines under the ACCA program, whereby communities within a city pool their savings and revolve these for upgrading – involving the local government in decision making processes. In the Philippines, the urban poor coalition are represented on the city housing board which oversees land use planning and city budgeting, and ensures that when there is an order for eviction of an informal settlement, the legally mandated requirements for community consultation and adequate relocation, including community infrastructure and services, are complied with.[18] Some cities have Urban Poor Affairs Offices which focus on the needs of the urban poor. These bodies can ensure different initiatives are not causing duplication and can provide up-to-date, localized data about community needs and coordinate the involvement of local workers in construction. Where communities are not yet organized, external initiatives funded by the government or international donors can provide the impetus to organize, with support from actors such as community architects or NGOs.

33. **The capacity of local government officials needs to be enhanced to design, finance and implement appropriate local infrastructural interventions that build climate resilience for the urban poor.** Training curricula for local government officials, urban planners, and architects should emphasise the value of working on affordable, climate-resilient infrastructure that meets the specific financial and space constraints of slum dwellers and other urban poor, in order to build up a body of qualified engineers and planners who also value community participation in the process. They should also be trained in approaches such as nature-based solutions which offer multiple co-benefits for the urban environment and residents. Local government officials should receive capacity building on the importance of building the resilience of the urban poor, not only with regard infrastructure but also health, social and economic resilience. This can include taking measures to support CDD initiatives, whether this be with technical information to assist community decisions, or in-kind, such as by providing necessary equipment for construction work or space for community meetings.

[17] https://www.preventionweb.net/organizations/17387
[18] ACHR. 2012. 165 Cities in Asia: Third yearly report of the Asian Coalition for Community Action program.

F. Specific Investment Opportunities

1. Build capacity to manage projects at the local level

34. **The capacity of local government to access and manage climate finance needs to be enhanced**. Initiatives aimed at building the capacity of municipal and city governments focused on enhancing their authority to access climate finance, to manage its disbursement, and their ability to deliver actions to enhance resilience are needed. Key to this is increasing the capacity of local governments to generate diverse revenue streams that can support community-driven infrastructure projects. This can be done by increasing their ability to generate local taxes in order to diversify from central government funding, and by strengthening their fiduciary management systems to enhance their readiness for international climate finance. Climate change coordination offices can assess the scale of necessary finance and work with domestic and international finance channels to access funds. Municipalities should develop comprehensive resilience plans which clearly prioritise investment needs and therefore can help to direct investment.

35. **Financing for community infrastructure needs to reach different actors and bridge different scales.** International climate finance in particular tends not to reach the local level, but finance that reaches organized community groups is an important means of strengthening community infrastructure. Organized community groups that drive CDD processes can make sure priorities of the urban poor are factored in local planning and ensure accountability for urban poor communities, when they are included in local decision-making processes and committees. This will require strengthening the capacity of the urban poor on climate change awareness and to identify climate change solutions and to manage finances, as well as to negotiate with local governments to fund their priorities. There are many examples of organised communities that have established savings funds which then enable them to access further funding from external sources such as international donors, cities or municipalities, or religious organisations. Examples include communities that received ACCA funds to upgrade their infrastructure, ranging from a 500 USD grant supplementing 600 USD of community funds to pave a community road in Indonesia, to a 750 USD revolving loan to build a seawall in Davao, the Philippines.[19] Low-income urban communities with established savings groups often have higher levels of financial literacy and may already have collective financial management structures in place.

36. **Government agencies that work closely with the urban poor and community-level groups in low-income urban neighbourhoods can help to ensure funds are spent appropriately and effectively.** Finances that are generated by city/municipal governments and/or allocated to cities/municipalities will be most effective if these have the appropriate political will and technical capacity to use these funds to build resilience for the urban poor. Financing mechanisms are also needed that bridge different scales, for example linking community-level drainage with trunk infrastructure.

2. Fill urban-specific financing gaps

37. **Financing for CDD projects that build urban resilience needs to be identified, secured and sustained for impact.** Central governments need to work with local governments to understand their needs and help them access the appropriate funding channels both

[19] ACHR. 2012. 165 Cities in Asia: Third yearly report of the Asian Coalition for Community Action program.

domestically and internationally. A mechanism to ensure coordination amongst state actors in terms of securing climate finance can help to avoid duplication of effort and ensure better integration across programs funded by different sources. A climate-specific national fund, such as Bangladesh's Climate Change Trust Fund, can help to operationalise climate change action by financing not only government agencies but also civil society actors such as NGOs. The Trust Fund was formed by the Government of Bangladesh in 2009 to finance the implementation of the Bangladesh Climate Change Strategy and Action Plan (BCCASP) and the government has been allocating an average of USD 100 million/year to this, though much of this is going to rural areas.[20]

38. **There is potential to develop more innovative approaches for financing resilience for the urban poor.** In addition to more traditional taxes and fees, innovative financing approaches for urban resilience such as municipal bonds, land value capture mechanisms and private sector investments can make a substantial difference to the quantity of climate finance available for enhancing resilience and give local governments the agency to determine investments. Loans and grants will not be sufficient to meet the scale of financing required to address climate risk so new and different approaches need to be considered.

39. **Building resilience for the urban poor will require additional and re-focused financing and the blending of different finance streams.** Although many existing programs and activities already contribute to strengthening the resilience of the urban poor, the extent of the challenge means that additional resources will be required. Effectively supporting the resilience of the urban poor will require financing from a range of sources, delivered by a range of institutions, using a range of instruments and complimentary approaches, based on good evidence, and monitored and delivered at appropriate volume and appropriate subsidiarity and scale. Blending funds from multiple sources – including community savings groups, local governments, national governments, international donors and finance streams and the private sector – can help address the specific needs of the urban poor. Government and non-government agencies can play an essential role as guarantors during early stages of projects to help increase feasibility of investment. The financial literacy of many organised community groups, including those driving CDD projects, should be recognised and integrated into the financial management of projects to ensure transparency and accountability.

[20] https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID%20CEADIR_Climate%20Finance%20in%20Bangladesh.pdf