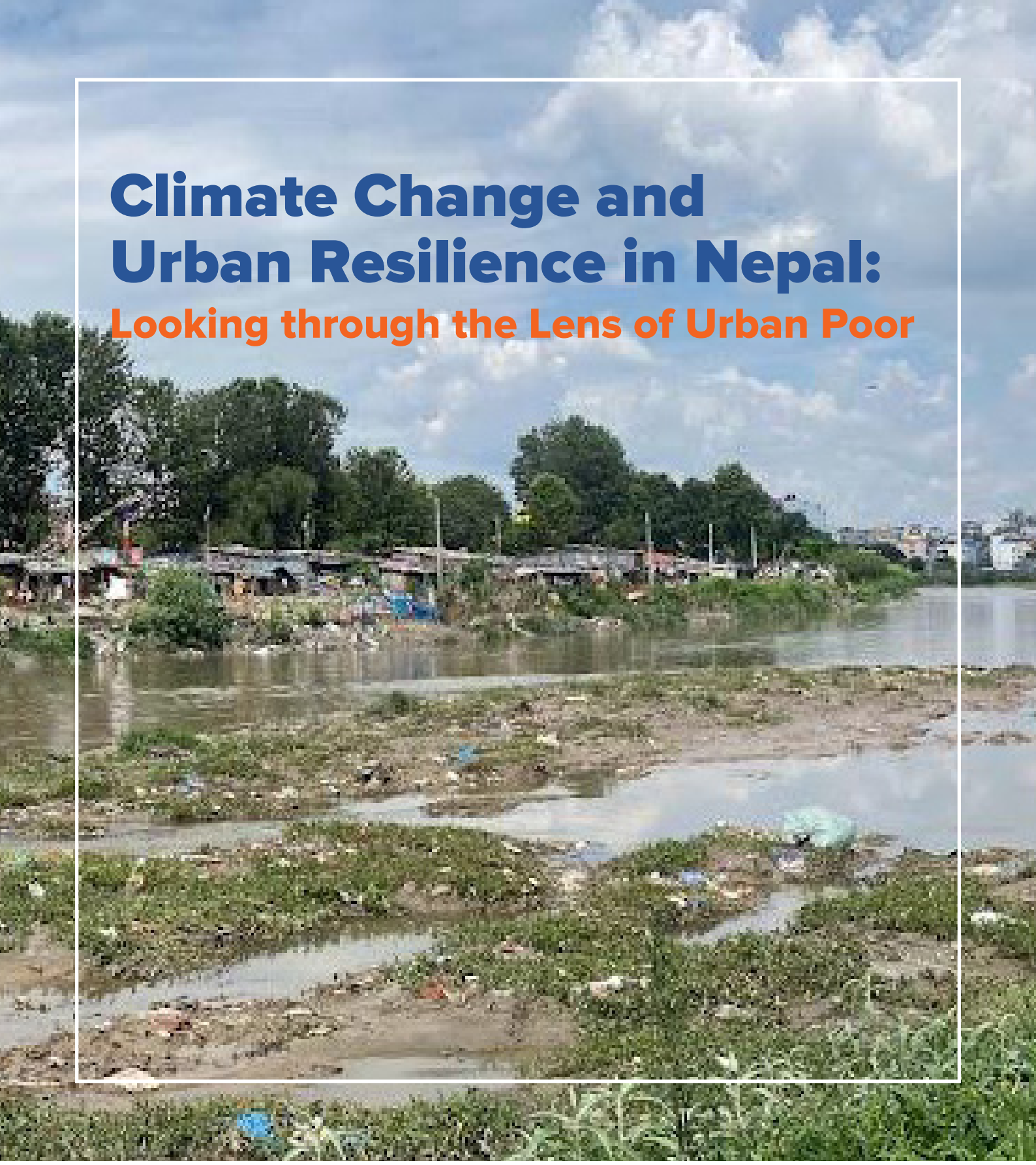
Climate Change and Urban Resilience in Nepal:

Looking through the Lens of Urban Poor



CLEAN ENERGY NEPAL

CANSA
CLIMATE ACTION NETWORK
South Asia

Published by
Clean Energy Nepal (CEN)
Talchikhel, Lalitpur, Nepal, 2023

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Printed By
Worldwide Print Solution, Kathmandu, Nepal

This report "Climate Change and Urban Resilience in Nepal: Looking through the Lens of Urban Poor" has been produced by **Clean Energy Nepal** and **Climate Action Network South Asia (CANSA)** with support from **Misereor.**

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Established in 1999, Clean Energy Nepal (CEN) is a non-profit, independent non-governmental organization that uses evidence-based advocacy, education and dialogues to ensure environmental preservation and sustainable development. CEN investigates issues relevant to clean air and urban mobility, energy and climate change, to generate actionable knowledge; uses campaigns to raise awareness among the public regarding the current and impending impacts of urgent environmental issues and work as advocates to make related policies and practices sustainable. CEN also facilitates discussions, information sharing and knowledge management among key stakeholders and engage in participatory research work that directly benefits grassroots community. Find us online at www.cen.org.np; Twitter: @CE_Nepal; Facebook: CleanEnergy Nepal.

Acknowledgments

This report has been developed by compilation of information available in various documents published by the Government of Nepal, national and international organizations working on issues of climate change, urban poor and urban development. The report also includes case stories from informal settlements in and around Kathmandu.

The report was written by the CEN team comprising Nabina Tiwari, Sonam Shrestha, Dr Nagamindra Dahal, Barsha Parajuli and Prashanta Khanal. The report has also been enriched with case stories from the informal settlements with the support of Anjali Sai Chalise and Anju Koirala.

The writing team benefited greatly from the comments and suggestions from Nakul Sharma, Ruchi Chaudhary, Sanjay Vashist, Purnima Joshi, besides other colleagues from the CANSA Secretariat. Furthermore, this report also benefited from the discussions with external stakeholders including CRTN, PGN, PRC, DBI, ISET Nepal, and Lumanti Nepal, at a consultation workshop. While drafting the report, engagement with multi-stakeholders has supported us in developing a better understanding and engagement on urban resilience.

Sincere gratitude to CANSA and Misereor for the support that has made it possible to understand the impacts of climate change to the urban poor communities at the country level. We hope this document will bring an understanding of the impacts of climate change on urban poverty and trigger CSO partners to integrate urban resilience into their scope of work through collaboration and coordination. We look forward to collective action on urban resilience and low carbon pathways.

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Program Coordinator
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Executive Summary

More than half of the world's population lives in urban areas today, and by 2050 over two thirds of the population is expected to live in urban areas. Although Nepal is one of the least urbanized countries, it is ranked among the rapidly urbanizing countries in South Asia. Nepal has witnessed a dramatic rise in urban population – from 17.07 percent to 66.08 percent (National Census through 2011-2021) with a majority (64 percent) of the population being in the working age group. Critical drivers of rural migration include unemployment, access to quality education for the children, access to health facilities, social discrimination, loss of livelihood triggered by low productivity in agriculture due to climatic factors, including erratic rainfall, lack of market for local agri-products, among others. The increasing migration trend from rural to urban areas has been attributed to urban poverty (which is a complex and multidimensional issue) and informal settlements. Further, Nepal ranks 4th and 30th in terms of climate change and flood risk respectively. People's lives and livelihoods are at risk due to climate-induced multiple hazards, mainly floods, landslides, cold waves, heat stress, droughts, windstorms, lightning strikes, communicable diseases, and fires. The poor and marginalized, female-led households, and those in low-income informal settlements are among the most affected by the impacts of climate change. Moreover, the exposure is further intensified by the overcrowded living conditions, lack of basic facilities and infrastructures, unsafe housing, poor sanitation, etc. Also, with the increasing climate crisis, cities will have the added burden of addressing urban poverty and concerns of the urban poor, who are expected to adversely affect the sustainable development capabilities of Nepal by aggravating pressures on the environment as municipalities are found to have varied sensitivities and adaptive capacities.

It is estimated that there are about 40 informal settlements in Kathmandu alone (2008). Among them, a majority (24) are situated along the river banks of Bagmati, Manohara, Bishnumati, Dhobikhola and Tukucha. A total of 12,726 people (6,612 males and 6,114 females) live in 2,735 households. This accounts for 2.9 percent of the total population of Kathmandu. These urban informal settlements lack basic urban facilities such as education, health care, access to information, credit, water supply, and sanitation.

This report is an outcome of a desk review and a quick study of selected informal urban settlements along the Bagmati rivershed, namely, Balkumari-Manohara river, Paurakhi Basti-Kupandole, Sinamangal informal settlement, street vending sites and relocated settlement at Kritipur, from the Kathmandu Valley of Nepal. The settlements, often referred to as informal settlements, are particularly vulnerable to the impacts of climate change and climate change-induced hazards, mainly due to their

location in areas that are prone to flooding as well as the lack of access to basic necessities including housing, sanitation, water, healthcare, food, education, and social services. The selected cases of urban poor are analyzed against the national policies and plans on climate change conventions, namely, National Determined Contributions, National Adaptation Plans and National Climate Change Policy, among others. A majority of the households belonging to the informal settlements had left their rural homes for reasons that included lack of resources for livelihoods, unemployment and hope for better education opportunities for children. However, due to lack of formal education and skills, the informal settlement dwellers are engaged as an informal labour force which lack the promise of a regular income.

Key issues associated with the urban poor include lack of government recognition to the informal settlements, basic safety of lives and livelihoods, frequent flooding and inundation of the settlements followed by disease outbreaks contributed by the results of poor hygiene and sanitation conditions, loss of jobs and savings due to health issues, multiple dimensions of urban poverty and occupational vulnerability. Urban air pollution, urban mobility, waste management, water and food security, and public health are the key factors impacting the livelihood of climate vulnerable urban poor communities. The Constitution of Nepal guarantees a clean environment as a fundamental right. There are key government acts, policies and programs in relation to provisions on climate-resilient cities and urban poor. These include National Climate Change Policy (2019), Nationally Determined Contribution, Nepal Adaptation Plan, Environment Protection Act (EPA), Kathmandu Valley Air Quality Management Plan (2020), Disaster Risk Reduction and Management Legislations, Policies and Plans, Disaster Risk Reduction and Management Act (2017), National Urban Development Strategy, Land Use Policy and 15th Periodic Development Plan.

Provided that the right policies are put in place, urbanization offers an opportunity to create sustainable, livable and vibrant cities for everyone. Cities pursuing climate action also have an opportunity to generate growth, increase employment thus tackling the issue of urban poverty, and increase well-being for urban dwellers, especially urban poor and managing significant savings from avoided health costs and expenditure on fossil fuels.

The key recommendations for building the resiliency of urban poor in the Nepali cities are:

- Assess risks and vulnerability of informal settlements and urban poor to climate impacts and environmental hazards for informed decision making and effective planning.
- Support to build climate-resilient urban settlements or relocation to safer settlements.
- Design programs to improve the economic livelihoods of the urban poor and provide social protection/safety nets which is crucial to building the resiliency of urban poor
- Integrate urban poor in the city planning and governance
- Support informal economy for building inclusive and resilient urban futures.
- Invest in and extend infrastructure and services to low-income neighborhoods to address poverty and to build inclusive and equitable future cities.

Chapter 1
Urbanization, Climate Change and Urban Poverty in Nepal

1.1 Urbanization and Urban Poverty: The Two Realities

The world is urbanizing rapidly, especially the developing countries. More than half of the world's population lives in urban areas, and by 2050 over two thirds of the population is expected to live in urban areas (United Nations, 2019). Nepal is no more an exception.

Nepal is one of the least urbanized countries, but it is also one of the rapidly urbanizing countries in South Asia (Muzzini et. al., 2013). Until 2015, the number of urban municipalities in Nepal were just 58. However, currently there are altogether 293 local governments categorized as urban municipalities including Metropolitan, Sub-Metropolitan and Municipalities, among 753 local governments. According to the National Census 2011 of Nepal, the urban population was 17.07 percent and the rural population was 82.93 percent. The recent National Census 2021 preliminary data shows that the urban population of Nepal has reached 66.08 percent whereas the rural population has declined to 33.92 percent. Moreover, a majority (64 percent) of the population of working age resides in urban areas. Among all, Kathmandu Metropolitan City has the highest population. This increase in the urban population is mainly a result of restructuring of the former rural areas into urban areas, where the criteria for defining urban population only considers the people living in the urban municipalities and the rest as rural populations. In addition to the re-stratification of rural municipalities to urban municipalities, rural-urban migration and natural growth of population are the reasons behind the huge change in urban population.

With increasing urbanization, growing urban poverty and inequality remain the key challenges that cities around the world are facing. Urban poverty is basically characterized by poor housing and/or accommodation, lack of basic sanitation and water supply, food security, energy and health safety. Urban poverty is a complex and multidimensional issue.

Between 2000 and 2014, the proportion of the world's urban population living in slums declined by 20 percent, however the number of people living in slums actually increased from 807 million to 883 million over this period, because of the lagged rate of new home construction compared to the rate of urban population growth (United Nations, 2019). The COVID-19 pandemic has increased poverty and resulted in the emergence of the 'newly poor'. Projections suggest that globally, COVID-19 likely pushed between 88 and 115 million people into extreme poverty in 2020 (Habitat, U.N., 2022) Many of the new poor will be living in urban areas, further adding to the burden on cities.

In Nepal, the critical drivers of rural migration include unemployment, access to quality education for children, access to health facilities, social discrimination, which includes Dalit, the most marginalized community in Nepal. Migration is also linked to the loss of livelihood triggered by low productivity on agriculture due to climatic factors including erratic rainfall, lack of market for local agri-products. People migrate from rural areas to cities in pursuit of better living standards; however, the increasing migration trend has been attributed to urban poverty. Most of these migratory populations lack formal education and with inadequate skills and exposure, they work in informal sectors including small factories, restaurants/hotels, construction sites, public transportation and as street-vendors. On one hand, the earnings from these informal sectors are very low and on the other these income sources are not secured, which compels them to reside in informal settlements with poor living conditions.

Despite the increase in urban population, the newly formed municipalities lack basic infrastructure facilities. Further, urbanization has led to increased environmental pollution with huge traffic congestion, excessive production of solid waste, degradation of air quality, poor water quality, flooding and so on.

In Nepal, 17.4 percent, i.e., almost 5 million people, are categorized as poor. The 15th Development Plan (2019/20-2023/24) aims to reduce Multidimensional Poverty Index (MPI) to 11.5 percent. Two-thirds of the total Nepalis live in urban areas. Out of the total, 67.3 percent of Nepali population living in urban areas, i.e. 47.6 percent of people are below the poverty line. (NPC, 2021).

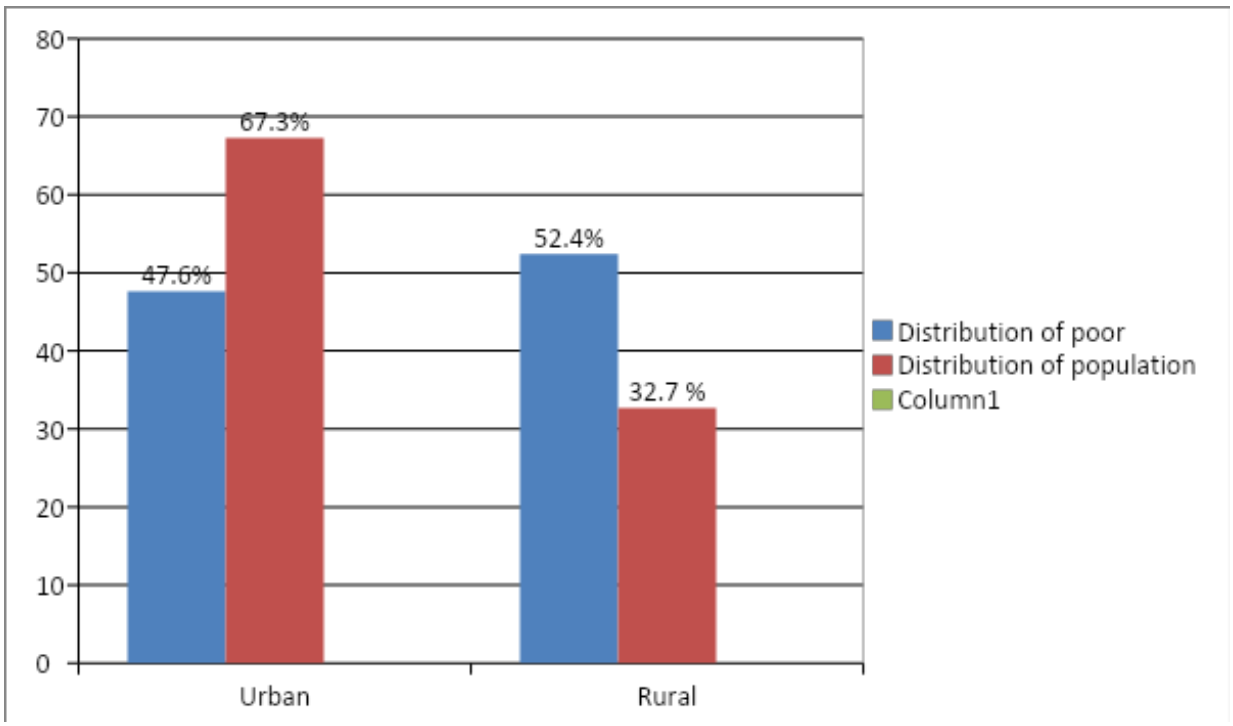

Figure 1: Distribution of Poor and Population by Rural/Urban Areas, 2019 (NMICS, 2019 data)

Nepal Labour Force Survey 2017/2018 data says the unemployment rate in Nepal is 11.4 percent with male 10.3 percent and female 13.1 percent. The unemployment rate is highest among young people aged 15-24 and 25-34 years. The data also reveals that one in every five employed persons in Nepal are involved in agriculture, which is the largest working industry followed by Trade industry at 17.5 percent and construction at 13.8 percent. However, the biggest employment sector is the informal

sector with 62.2 percent. Some 4.3 million youth have sought employment abroad through formal and informal channels.

Though two thirds of the total population in Nepal is involved in agriculture, the unproductiveness of agriculture compounded by shifting weather patterns and climate-induced stress have made agricultural income highly insufficient to support families and limited non-agricultural jobs, high debt burdens, and decline in food production due to the generational fragmentation of land holdings has led to migration from rural to urban areas. The rural-urban migration and haphazard settlements within cities have resulted in increased numbers of environmental as well as social problems. Uncontrolled rapid urbanization, low socio-economic growth, inadequate capacity to cope with housing needs and poor imbalanced governance has caused an increase in urban poverty (Shakya, 2010). Unchecked and unplanned settlements especially in the surrounding areas of erstwhile cities in places that have least economic land valuation such as river flood plains or sewerage fronts; landfill sites, etc., have resulted in concretization of natural ecosystems, which work as lungs or restraints absorbing excessive rainfall, flood water, in case of disasters. Unclear and inconsistent policy regime, poor municipal services, urban disaster risk and environmental vulnerability, managing the politics of slums, and transforming informal economy, are the five key urban challenges for inclusive urbanization (Devkota, K. 2018).

1.2 Climate Change Impacts in Nepali Urban Areas

The pace of urbanization has become rapid, and is likely to increase significantly in the future. The urban population in Nepal has increased by 0.4 percent in 2021 in comparison to the previous year reaching a peak in 2021 with 21.01 percent (Statista, 2019). Climate change is projected to increase risks for people, assets, economies, and ecosystems, including risks from extreme events in urban areas. Multiple stresses caused by rapid urbanization, industrialization, and economic development are compounded by climate change and are expected to adversely affect the sustainable development capabilities of Nepal by aggravating pressures on the environment.

Snowstorm, hailstorm, avalanche, glacial lake outburst, heavy rainfall, famine, flood, landslide, inundation, droughts, windstorm, cold wave, heat wave, thunderbolt, earthquake, volcanic eruption, forest fire, droughts, forest fire, influenza, flu, snake bite, accidents, fire, environmental pollution, deforestation, etc. are the natural and non-natural disasters that Nepal has been facing. Nepal has been ranked as the 30th most risk prone country in the world in terms of floods and landslides. In Nepal, climate-induced disasters cause around 65 percent of all disaster-related annual deaths. The average annual economic loss from climate-induced disasters is about 0.08 percent of the GDP (2018/19 figures at the current rate). In extreme years, like 2017 when Terai floods occurred, the economic loss and damage from a single disaster event was around 2.08 percent of the GDP (2017/18 figures at the current rate). Multiple studies have predicted that there would be an increase in loss and damage caused by climate-induced disasters in the future (National Framework on Climate Change Induced Loss and Damage, 2021).

On 15th June 2021, Melamchi town of Sindhupalchowk district were buried under debris brought down by catastrophic flooding of the Melamchi and Indrawati rivers. Multiple factors triggered by the rain resulted in the catastrophic flood. The flood left five people dead, six injured and 20 missing. The disaster led to the complete damage of 337 houses, one hydropower plant, 13 suspension bridges, seven motorable bridges, ten trout farms, the green city park and obstructions on the roads at many places (NDRRMA - Nepal Flood and Landslide Incident Report).

It is likely that municipalities in Nepal are at risk in the future due to increased temperature and extreme variability in rainfall triggering massive climate hazards. Populations and livelihoods are exposed to climate-induced events, mainly floods, landslides, cold waves, heat stress, droughts, windstorms, lightning strikes, communicable diseases, and fires.

The municipalities of Nepal are found to have varied sensitivities and adaptive capacities that may incur loss and damage differently in subsectors such as socio-economy and infrastructure. The poor and marginalized, female-led households, dependent populations, and low-income informal settlements are most affected by the impact of climate change (Nepal VRA report, 2020).

With the increasing climate crisis, cities have the additional burden of addressing urban poverty and concerns of urban poor. Poor people live in the most marginalized and vulnerable lands within the city, such as along the banks of polluted rivers, landslides and inundation/flooding prone areas, putting them particularly at high risk to the impacts of climate change and environmental hazards. The exposure is aggravated by overcrowded living conditions, lack of basic facilities and infrastructure, unsafe housing, poor sanitation, etc.

Chapter 2
Field Observations: Case Studies of Urban Poor

2.1 Informal Urban Settlements

The high rate of rural poverty and lack of access to basic services have caused internal displacement and attracted people to settle in urban areas, resulting in informal settlements. The formation of informal settlements is closely associated with rural-urban migration. Of the migrants currently residing in urban areas in Nepal, 87.9 percent had moved from rural parts of Nepal, 4.8 percent from other urban areas and 7.4 percent from outside Nepal (National Labour Force Survey 2017/18). Most of the people living in informal settlements have migrated from rural areas of different districts of Nepal. The Ministry of Urban Development also reports an increase in informal settlements in the fast-growing cities of Nepal: Kathmandu and Pokhara, as well as in other popular migrant destinations such as Dharan, Birganj, Bharatpur and Mechinagar. The river bank seems to attract most migratory populations and is therefore highly crowded with poor families. In 1985, it was estimated that there were only 17 squatter areas in Kathmandu, but the number has gone up to 40 in 2008. Among the 40 settlements, a majority (24) are situated along the river banks of Bagmati, Manohara, Bishnumati, Dhobikhola and Tukucha. There are a total of 12,726 people (6,612 men and 6,114 women) living in 2,735 households in the 40 squatter settlements of the valley (Lumanti, 2008). Similarly, about 2.9 percent of the total population of Kathmandu lives in informal squatter settlements (Kathmandu Metropolitan City/ WB, 2001).

These urban informal settlements lack basic urban facilities such as education, health care, information, politics, credit, water supply, and sanitation. Moreover, the inhabitants of these informal settlements are either excluded from social, economic and political spheres, or are being mobilized in the interests of political parties. These settlements lack safe electricity, proper drainage leading to poor health of the inhabitants as well as poor educational achievements of their children. For decades, the issues related to the poor families living in the slums and squatter settlements have not been addressed (Lumanti, 2008). Among the very few recreational options, the kids residing in informal settlements swim in the nearby polluted rivers, play along the river banks littered with waste. In November 2022, there was a dispute between the Kathmandu Metropolitan City and Thapathali slum residents. The High-Powered Committee for Integrated Development of the Bagmati Civilization had issued a notice on 11 November 2022, stating that it had given ten days' notice to remove the houses and other structures built illegally on the river banks. That was not the first time that the squatter settlement had become a public concern, and finding a solution was challenging to the state torn between its aim to develop a world-class city, and its obligation to protect human rights within its borders.

Some Cases that Highlight the Stories of Urban Poor in Nepal

Case 1: Life in Informal Settlements around Kathmandu

Manohara Informal Settlement

Ruma Sunwar, a 36 year old, migrated to Kathmandu with her family from Sindhupalchowk district, Bagmati Province in pursuit of a better future for her children, as Kathmandu offered better services, including education. However, having no secure livelihood options, they ended up living in Balkumari informal settlement on the banks of the highly polluted Manohara river. Two decades have passed since then, but not much has changed for her family. She and her husband, both have been working as labour at construction sites, which is again an informal labour force offering no job security. As a result, they still live in a small temporary metal-frame house. Ruma's family very often suffer with illnesses such as fever, common cold, allergies, and they are not alone in this journey. 19 other families have been residing there for the past two decades. These settlements have temporary houses with small toilets, community tube-wells to meet water needs (two or three houses share a common tube well) and rely on jar water for drinking. Despite poor housing and sanitation, they have access to electricity but it is merely limited to lighting while other energy needs are met by LPG and biomass (during winter). The riverbank bursts during monsoon and at times the water even reaches the settlement. Besides, these families undergo mental distress fearing forceful eviction by the local government and the neighbourhood blaming them for the river pollution.

Figure 2: Housing at Manohara squatter, Kathmandu

Paurakhi Basti Informal Settlement

Chandraban Lama, resident of Dhading, a neighbouring district of Kathmandu, moved out 15 years ago when his incomes were merely enough to meet his family's basic needs. He has been living at the Paurakhi Basti of Bagmati corridor, Kupandole, Kathmandu. Common cold and asthma is a common sight in his neighbourhood, which could be due to the close proximity of the settlement to the busy road and polluted river. Besides his home, there are 136 households with 750 individuals residing in this settlement. The settlement has access to electricity but sanitation and drinking water is an issue. Even the slightest rainfall is enough to spill the river from its banks and flood the houses. Mr. Lama has witnessed clashes with the local government multiple times. The concrete housing seen within

the settlement during the initial phases was demolished by the local government but now temporary metal frame houses are prevalent. The clashes with the government is still a persistent issue which covers the national headlines time and again.

Sinamangal Informal Settlement

Sita Hayu has been living in the Sinamangal informal settlement on the banks of the holy Bagmati river for almost four decades. She and her husband have been working as labour but the earnings are hardly enough to feed their family of three. Her family migrated from Sarlahi, Terai region, in search of better opportunities. The housing status is very poor as temporary houses made up of CGI sheets, wood, and metal trusses. Even a slight rainfall is enough to disturb the settlement with sewers overflowing and sewage water entering the shelters. In addition, the temporary settlements with poor housing conditions have increased the vulnerabilities of the communities to other risks. A recent example of this is the fire incident during the COVID lockdown. The fire that was sparked off by an electric short circuit, claimed three shelters; fortunately, there was no human casualty.

Figure 3: Housing at Sinamangal squatter

Observation: \The informal settlement dwellers from all three locations of Kathmandu, share some common trends:

- Informal settlement dwellers are migrants from rural to urban areas.
- Adult individuals lack formal education and skills.
- Poor housing and sanitation conditions.

Informal settlements are isolated from the rest of the neighbourhood, which further aggravates physiological, social, and economic crises among informal settlement dwellers.

Relocation at Kirtipur

Figure 4: Min Bahadur BK and residents in Kirtipur Awash Chhetra

Min Bahadur BK, a 65 year old ex- policeman, is now residing at Kirtipur Awash Chhetra – a resettlement area - along with nine of his family members. He had lived at the Bishnumati informal settlement for 12 years before shifting to Kirtipur Awash Chhetra. Min Bahadur belonged to an agrarian family of Nuwakot, midwestern Nepal, lying along the banks of the Trishuli river. However, when the property was divided among his four brothers, he had to opt to migrate with his family (that included his six-month-old daughter) and ended up settling at the Bishnumati informal settlement because his remuneration as a policeman was insufficient to sustain his family. After moving to Bishnumati, he started working as a blacksmith (ironworker) making small metal items and lived in a small shelter along the riverbank. The shelter was battered frequently by floods especially during the rainy season. In addition to this, health issues including diarrhea, vomiting and respiratory problems plagued his family often. His one-year-old daughter lost her life to diarrhea; he still feels guilty for not being able to save her life. Now with his two sons working – one at a jewellery shop and another at Whoopeland, a famous amusement park, things are much easier.

In 2005, NGO Lumanti supported the rehabilitation of 42 households from Bishnumati informal settlement. Besides 42 families from Bishnumati informal settlement, two once-homeless families (who were rendered homeless due to the road extension at Kalanki, Kathmandu) reside here. The families are happily paying the monthly premium of NPR 2000 since the construction phase. Some of them have paid off their debt and have received the complete house ownership while others await ownership of theirs. The **Kirtipur Awash Chhetra** meets the basic needs of housing with access to electricity, water supply, waste collection services. LPG is the primary source of cooking fuel but biogas plants are also installed. A few households have also installed solar panels that provide enough electricity to light bulbs.

2.2 Street Vendors

Street vendors are another category of urban poor and a significant part of the informal economy of the country. Due to the absence of jobs in the public and private sectors, many migrants set up their own businesses to earn their livelihood. Low entry barriers, flexible working time, inadequate opportunities in the formal sector, failure in other businesses, lack of adequate skills required in the formal sector and disability are major factors for people to engage in street vending. This has led to a rapid growth of the informal sector in most of the cities of developing countries in general, and Kathmandu in particular. The informal sector and street vending have provided an opportunity to make a living in the urban areas of Nepal.

According to the National Economic Census 2018 Analytical Report, of the approximately 900,000 business establishments, half are not registered; but they employ thousands of people contributing to the informal economy. The country has over 34,000 street businesses accounting for 3.7 percent of total establishments, providing income to over 45,000 people, many of them living in poverty in the capital. The majority of street business entities have annual revenue/sales under NPR 100,000, and a significant number of street business entities reported a deficit in annual profit.

In Nepal, street vendors sell goods like fresh vegetables, prepared foods, consumer electronics, clothes, cosmetics, building materials, utensils, etc., which many consumers, especially low-income consumers, prefer over retail outlets and shopping malls as street vendors provide goods at relatively lower prices. Street vendors in Nepal are a vital part of the informal economy. Street vendors can contribute to a green economy by promoting sustainable consumption, reducing waste through reusable or biodegradable packaging, creating green jobs, providing affordable and healthy food options, and supporting local economies.

Street vending is also increasing in all urban areas. Street vendors run their businesses in a vulnerable situation in the Kathmandu Valley, facing challenges like lack of institutional credit facility, corruption or extortion by police, local or political gangs, their goods being damaged by vehicles or pedestrians, loss due to unusual weather patterns, and so on.

On 10 January 2023, Kathmandu Metropolitan City (KMC) announced that it would be illegal to conduct informal businesses, such as hawking and vending, on the streets of Kathmandu. Nepal Street Vendors' Unions (NEST), with support from StreetNet International organized a mass protest across Kathmandu on 10th January against the Kathmandu Metropolitan City (KMC)'s "clean-up" operation that has threatened the livelihoods of more than 34,000 street vendors.

Section 11 of the Local Government Operations Act 2074 (2017) gives right to the municipal police for implementation of city's law and policies. The law also permits the municipal police to conduct "surveillance" and "management" of local markets and parking facilities, and protect public land and property. The act, however, does not mention the use of police force to detain street vendors and destroy their goods.

Street Vendors: A case study from Kathmandu Valley

In the Kathmandu Valley 450 street vendors were randomly selected and their responses were collected. Out of the total number of street vendors, 40.89 percent were male, and 59.11 percent were female. People of different age groups were found to be involved; ages ranged from 17 to 84 years, with the average age being 44 years. Most of them, i.e., 310 were found not to have any educational qualifications, whereas 128 respondents had a secondary education, 10 respondents had higher secondary education and two respondents even had a bachelor's degree. The data shows though there are some educated street vendors the majority of 69 percent do not have an educational qualifications.The average monthly household expenditure was NPR 26,200. The highest monthly expenditure was NPR 57,000 whereas the lowest was NPR 8,200. The study has found that most of the respondents (82 percent) were from out of the Kathmandu Valley. Only 18 percent were from the Valley. Out of the total, 82 percent of respondents were fixed vendors, whereas 18a percent were mobile vendors. On average, street vendors had an experience of 15 years.

Some key reasons given by respondents for choosing street vending were lack of skills to work in formal sectors, lack of financial capital to make investments in other sectors, having sufficient income in street vending, being disabled, being a farmer, etc.

This case study was taken from the article: 'Street Vending, Income Generation and Poverty Implication: The Case of the Kathmandu Valley, Nepal', 2020

Figure 5 : Street Vendors in Boudha and Sinamangal, Kathmandu

Cases of street vendors of Kathmandu

Case 1: Bhagwati Maaji, a permanent resident from Sindhupalchowk, shifted to Kathmandu with three members of her family in 2021, for access to better education for her son. Her son is currently getting a primary education in a public school. They live in a rented house – a congested room with a common bathroom facility. She has a small vending business at Balkumari road which is usually busy with people and heavy traffic. After spending about seven to eight hours along the roadside, her earnings are just enough to buy vegetables for a daily meal. Rainfall has been posing a major obstacle in recent times. Moreover, recent government action to evicting street vendors has made her fearful that she will be evicted and won't be able to operate her business anymore.

Case 2: Megh Kumari Pandey, 61 year old a permanent resident of Gorkha, migrated to the capital city with her husband almost four decades ago. Back then, her husband was working for the Department of Customs. However, her alcoholic husband died leaving her helpless. The responsibility of two children, food, rent and the entire financial burden passed onto her. To cope with this, she opted to vend fire-grilled corncobs along the roadside. She has been doing this for almost 29 years within the periphery of the Sinamangal-Baneshwor-Maitidevi area . Over time, she developed asthmatic symptoms and the doctor advised her to stay away from smoke. However, she has no other option. Adding to her woes, the Kathmandu Metropolitan police have already confiscated her stall multiple times. Further, in recent years, the unusual rainfall pattern has been hampering her business.

Figure 6: Megh Kumari Pandey selling roasted corn on the roadside

Her only hope every day is to run her business properly without any disruption, but with no roof and changing weather patterns, especially the erratic rainfall patterns has resulted in a loss in her business. She hopes the government will intervene and offer support to street vendors like her.

2.3 Key Issues Associated with Urban Poor

The key issues associated with urban poor are outlined as follows:

I. **Informal settlements are synonymous with urban poor**: Lack of government recognition of informal settlements poses a bottleneck to overcome socio-economic vulnerabilities of the urban poor. In addition to the distress caused by socio-economic poverty, social stigma faced by residents of the informal settlements is equally painful as they are considered illegal settlers on public land.

II. **Urban poor are deprived of basic safety of lives and livelihoods**: A majority of informal settlements where a sizable population of the urban poor live, are unsafe because of risk of floods, inundations, breakout of vector-borne diseases and air pollution. They have poor or no access to safe water supply, sanitation and waste management. Jar water serves as the only source of drinking water. Children, the elderly and people with disability are among the most vulnerable groups among households in the informal settlements, and therefore are in need of immediate support. Over the years, insecurity over land tenure has seemingly decreased, leading to residents attempting to improve their housing conditions. Yet insecurity prevails and most residents are afraid to improve their housing or add infrastructure as they may be evicted, so do not want to waste their limited finances on unpredictable circumstances. The residents have temporary or semi-permanent housing which is prone to damage often, especially during floods in the monsoons.

III. **Adverse impacts of climate change on health and livelihoods**: Frequent flooding and inundation of the settlements followed by disease outbreaks as a result of poor hygiene and sanitation conditions have made the lives and livelihoods of these urban residents very insecure. Loss of jobs and lack of savings due to health issues is a common problem. And, the severity grows during frequent disease outbreaks and acute air pollution.

IV. **Multiple dimensions of urban poverty**: Urban poor who are highly vulnerable to climate change-induced hazards suffer from multiple dimensions of poverty. These include unsafe housing and lack of or poor access to safe water, sanitation, basic health care, clean energy and loss of jobs or working days. LPG was mostly used for cooking and sometimes firewood was also being used.

V. **Occupational vulnerability**: A majority of the workforce from informal settlements are engaged in high laborious and low paying occupations mainly because of lack of proper education and vocational training. The nature of employment is temporary or daily wage. Job uncertainty in absence of appointment letters on the part of employers is common. The majority of employment involves menial jobs such as garbage collection, clothes washing, welding, auto repair and painting. Garbage collection and segregation and street-based enterprises are often hazardous to their health. The health of the people is affected by the dirty and unhygienic conditions of work, where there is greater chance of infection of different diseases. Because of the menial occupation, they rank low in social respect among members of the society. Their work and wage is highly dependent on weather, climate and seasons.

Chapter 3
Factors Impacting the Livelihood of Climate-Vulnerable Urban Poor

3.1 Urban Air Pollution

Urban poor communities are particularly vulnerable to the negative effects of urban air pollution. The exposure to and impact of air pollution are not equally distributed and are particularly prevalent in poor countries, and the poor, women, children and marginalized communities are often more exposed. The exposure is higher among them as pollution sources are disproportionately located in low-income neighborhoods and mostly due to their low-paying outdoor jobs. People living in poorer neighborhoods often reside near major sources of air pollution. They are therefore more likely to have higher everyday exposure to greater pollution levels. Human health can be significantly impacted by air pollution, especially respiratory and cardiovascular disease. The negative impacts of pollution on health may be exacerbated in poorer communities due to a ack of access to high-quality healthcare. Urban poor may be more dependent on outdoor work, such as manual labour or street vending, which can expose them to higher levels of pollution. As per WHO air pollution kills 1 in 9 worldwide with 6.7 million deaths in 2019 alone where 4 million deaths were linked to exposure to outdoor fine particulate pollution. Furthermore, the financial burden of medical expenses linked to pollution-related diseases can be devastating for people living in poverty.

In Nepal, vehicular emissions, industrial emissions, open burning of waste, biomass burning (for cooking and heating, burning of garbage and agricultural residue and forest fires), unmanaged construction, poor road conditions, population growth, urbanization, land use change and trans-boundary pollution are some of the most important factors responsible for air pollution. Out of them, vehicular emissions are the primary contributing factor due to consumption of fossil fuels (Shakya et al., 2017). Effective transportation systems are important for social prosperity, having significant impacts on economic growth, social development and the environment. Electric vehicle use is increasing in Nepal. Sajha Yatayat, Sundar Yatayat, Degoo and a few others operate public electric vehicles in Nepal nowadays. Safa Tempo, a battery-powered three-wheeler public transport vehicle, was introduced in Kathmandu in the mid-1990s with the support of the Global Resources Institute (GRI) and the United States Agency of International Development (USAID). According to a report, around 750 jobs were created in battery charger manufacturing, battery charging stations and EV operations. Additionally, around 600 jobs for drivers have been created. The introduction of Safa Tempo also created an opportunity for women to own and drive the three-wheeled EVs.

It is important for policymakers to address the underlying social and economic factors that contribute to this relationship of air pollution and the urban poor community, as well as take measures to reduce air pollution and improve public health in these communities.

3.2 Urban Mobility

The relationship between urban poverty and urban transport is poorly understood. Poorer communities might have limited access to reliable and affordable transportation making urban mobility a significant factor impacting the urban poor communities. Urban mobility can have a significant impact on urban poor communities, as they often have limited access to affordable and reliable transportation options. They might only have inconsistent access to transportation options or may reside in places where it is difficult to get about. This can make it difficult for residents to access jobs, healthcare, education, and other essential services.

Lack of access to transportation can have negative impacts on health, making access to healthcare services unavailable or even difficult due to having to walk long distances to get to the workplace or for any essential services. This can lead to increased stress, physical strain, and chronic health problems. But even if transportation is available, the cost of transportation is increasing. could be a major burden for people with low living standards. Public transport fares have increased by 28 percent across the country in 2021 and are on the rise. Limited mobility can also contribute to social isolation and exclusion, as people may not be able to participate in community events or access social networks outside of their immediate neighbourhoods.

The empty, eerie housing project in Ichangu Narayan built for the resettlement of squatters evicted from Thapathali remained unused as the squatters never moved into those buildings. The squatters said the cost was too high, it was too far from the city centre where a majority of them work, and there was no public transportation or schools for their children. When the project was launched, Ichangu Narayan was a sleepy farming village, quite different from the satellite town, but it has transformed in recent years. Public transportation was limited and so were jobs available to a squatter. Sustainable urban mobility solutions, such as public transportation, electric vehicles, and cycling have a positive environmental impact. Promoting these modes reduces air pollution, noise levels, and congestion in urban areas making a positive and improved air quality, and a healthier living environment for the urban poor, who often reside in areas disproportionately affected by pollution.

3.3 Poor Waste Management

Solid waste management is one of the major challenges for municipalities of Nepal. Due to uncontrolled urbanization, a rapidly expanding population, lack of basic infrastructure for integrated solid waste management, and deeply ingrained misconceptions about trash management, cities in Nepal are experiencing enormous problems. The urban poor, who often live in densely populated areas with limited access to basic services, are particularly susceptible to health risks associated with inadequate waste management, including water contamination, respiratory issues, and the transmission of infectious diseases.

Poor waste management, such as open dumping or uncontrolled waste disposal, can lead to the spread of diseases and the proliferation of pests, posing a direct threat to the health of the urban poor, making them more vulnerable. Led by urbanization and the growth of residents living in the city, the waste of factories, commercial buildings and even households got dumped in the river. A huge amount of waste being dumped on the banks of rivers in Kathmandu where the squatters reside, affects the health of the urban poor, making them more vulnerable.

Kathmandu Valley generates around 1200 metric tonnes of solid waste, of which 50 percent comes from the Kathmandu Metropolitan City alone. The landfill site at Sisdole, formerly a gorge, around

27 km southwest of Kathmandu is spread over 740 ropanis (37.65 hectares), is still being used although it has already reached its capacity. According to the records maintained by the Kathmandu Metropolitan City, more than 800 tons of municipal solid waste (MSW) every day ends up at the Sisdole dump landfill site. Since, waste is either dumped or burned haphazardly, the urban poor especially in developing countries are more vulnerable. Also, poor solid waste management can cause blockage to stormwater and sewerage networks that can lead to waterlogging and flooding. This particularly affects the urban poor who live along the rivers in urban centres.

Urban waste can be a beneficial resource when managed properly. Initiatives to recycle waste and upcycling, open doors for employment, entrepreneurship, and income production, especially for the urban poor. Engaging in waste management activities, such as waste picking, sorting, and recycling, can offer a source of livelihood and economic empowerment for marginalized communities.

3.4 Water Scarcity

Water security in Nepal's urban areas is threatened by changes in land use, population expansion, and related factors such as migration from rural areas, haphazard development, and degradation of recharge zones. Water scarcity is likely to become an even bigger challenge as water delivery systems, natural or artificial, are likely to become inequitable with increases in concentrated populations in specific areas. Water scarcity has significant implications for the urban poor, as they often face disproportionate challenges in accessing an adequate and reliable water supply.

The urban poor may have little or no access to piped water supply systems, making them rely on more unconventional and often irregular sources like public taps, communal wells, or water vendors. As water scarcity intensifies, the competition for limited water resources increases, leading to higher costs and reduced availability of clean water for the urban poor. The urban poor become particularly susceptible to waterborne infections as they lack enough access to clean water due to water shortages. When there is a shortage of clean water, people may turn to using contaminated water sources or poor sanitation techniques, which can spread water-related diseases such typhoid, diarrhea and cholera. The urban poor, who often live in overcrowded and unsanitary conditions, are particularly susceptible to these health risks. Limited access to water might affect various aspects of their lives, including livelihoods and income generation.

Rain water harvesting can be a way out for residents, commercial offices and others, especially poor people. Rainwater harvesting, water conservation, waste-water reuse, recycling and recharge can be a key part of a sustainable urban water management strategy.

Water Scarcity Scenario at Kathmandu

The demand for water in Kathmandu is 470 million litres per day, but with a limited production of 114 million litres per day, only 91 million litres is supplied in the city on average. Still, the regular water supply managed by the government is far from meeting the demand of Kathmandu. Kathmandu Upatyaka Khanepani Limited (KUKL) is the only water company which provides all drinking water and waste-water related services in Kathmandu valley. Rainwater harvesting (RWH) has a lot of potential in urban areas of Nepal, especially the rapidly growing cities like Kathmandu. Kathmandu Valley receives 1,448 mm rainfall annually on average. RWH also prevents water from going to the sewer and reduces urban flooding.

With the interaction of hazards and vulnerable conditions, disasters take place and when such catastrophic events hit the cities or urban areas, they are referred to as urban disasters. In comparison to other continents, Asia has been facing the brunt of disasters. It has been hit by earthquakes, flash

floods, landslides, and many more disasters which resulted in the death of many people and the continent itself suffered from the largest economic damage (IFRC, 2014).

Urban poor populations are often more vulnerable to the impacts of disasters due to various socioeconomic circumstances and living situations. The urban poor often reside in informal settlements with inadequate housing and infrastructure. These communities are more vulnerable to the effects of natural disasters like floods, landslides, or storms because they are situated in high-risk locations like floodplains and steep slopes. Poor construction quality, lack of structural stability, and insufficient access to basic services, increase the vulnerability of housing and infrastructure in these areas, resulting in heightened risks during disasters.

The urban poor typically have limited financial resources, lack access to social safety nets, and face economic hardships. These factors constrain their ability to cope with and recover from disasters. Lack of access to healthcare services, emergency assistance, and social support systems further exacerbate the challenges faced by the urban poor during and after disasters. Urban disasters can lead to the displacement of the urban poor from their homes. They may be forced to seek temporary shelter in overcrowded evacuation centres or move to other vulnerable areas. Loss of income and livelihood opportunities further exacerbate their poverty and make it challenging for them to recover from the impacts of disasters.

Disasters in urban areas can create health risks for the urban poor. Floods and other water-related disasters can contaminate water sources, increase the risk of waterborne diseases, and create unsanitary conditions. The lack of access to proper sanitation facilities and overcrowded living conditions in informal settlements further compound the health risks faced by the urban poor during and after disasters.

In the context of Kathmandu, every monsoon the squatter settlement of nearly 200 families gets inundated several times by the Bagmati. The settlements near the riverbanks are swept away when the river swells to dangerous levels. Most of the informal settlements in Kathmandu are located in the floodplains of rivers, putting them at flood risk. Most of the flood incidents occurred during the monsoon season from June to September. Kathmandu receives a major portion of its annual rainfall during the monsoon season, causing a rise in water level in the rivers.

It takes time for residents to come back to their normal life after flood incidents as they need to rearrange and manage everything affected by the flood. During this period, they can't go to work for around a week and children miss school. Many residents, mostly children, suffer from colds, fever, itching skin, and diarrhea after flood incidents. The river itself is polluted because city sewerage gets mixed into the river without any treatment.

Figure 7: Flood in Manohara Informal settlements, Bhaktapur on 10 August 2022
Image Source: My Republica

3.5 Food Security

Two-thirds of the population of Nepal is engaged in agriculture, contributing to 26 percent of the national GDP. While Nepal's overall demand for food increases over time, unregulated urbanization of plains and fertile land, particularly in the Terai, has put downward pressure on the food supply in the country.

The urban poor often have limited access to nutritious food due to various factors such as high food prices, lack of grocery stores in their neighborhoods, and limited transportation options. When food prices are high or fluctuating, it places a strain on their finances, leaving them with less money to allocate to other essential needs such as housing, education, healthcare, and transportation. This limits their ability to improve their overall standard of living or invest in income-generating activities. Food security plays a crucial role in achieving economic stability for the urban poor. When individuals have consistent access to affordable and nutritious food, they are better able to maintain good health, attend work regularly, and perform productively. This stability improves their chances of finding stable employment, securing income, and escaping poverty.

Rooftop Farming: A solution to food security and climate change adaptation for urban areas

With urbanization, food insecurity issues surface and urban agriculture could be a means to decrease food supply risks (Corbould, 2013). Urbanization is leading to the loss of agricultural lands in Nepal which results in the import of food from outside to meet the food demand (MoUD, 2017). Highly populated urban centres are growing, where undeveloped or green spaces are hard to find. This can create food scarcity in town. The advancement of urban and peri-urban agriculture can help to manage urban waste for food production; provide support for weak economic sections of people; better public health due to greenery and help to improve urban management (MoUD, 2017). National Planning Commission of Nepal (NPC, 2016) in the 14th Plan, recommended the promotion of urban agriculture in urban areas to produce food itself to some extent and maintain greenery by realizing the concept of Food Green City (FGC), i.e. integrating urban agriculture with urban planning. Many people who lack cultivable land and space in and around their concrete houses in urban areas can practice rooftop farming, which somehow solve food security problems and contribute to sustainable agriculture.

Rooftop Farming (RTF): A Case Study in Kathmandu

A study "Assessment of the linkage of urban green roofs, and supply, and diversity status in Nepal", conducted in 2020, recorded the diversity of planting materials in Kathmandu. Mostly, vegetables were grown in styrofoam crates and waste bags, flowers were grown in earthen pots, plastic pots, and bottles (bottle gardening was reported in a few houses of Kathmandu). Also, vegetables like tomato, eggplant, okra, and chili were found to be planted in recyclable materials like waste bags and waste jars. The utilization of planting materials, especially by recycling the waste bags, bottles, cans, and jars, is also one of the contributing factors for a reduction in waste and reducing garden maintenance costs (Thapa et al., 2020). The use of household waste materials as planting materials for promoting sustainable urban ecosystems and reduction in waste generation has been recommended by Sanyé–Mengual et al. (2015).

Why people are not willing to adopt RTF

1. Heavy load on roof
2. Lack of technical knowledge on setting up and management of rooftop garden
3. Lack of leisure time to maintain the home garden, roof damage, and lack of manpower to manage home gardens

3.6 Public Health

Quality health means mental, physical, social and emotional wellbeing of the people. Millions of people living in urban cities with no sufficient living space, healthy food, clean water and sanitation are vulnerable to transmissible and non-transmissible diseases. Nearly one in two urban dwellers in developing countries live in low-income urban settlements, such as informal settlements, with all that this implies in terms of living conditions and health (Lee, 2007). Those settlements have no or very limited access to basic necessities like clean and healthy food, water, sanitation, sufficient living space, and adequate housing. Several existing municipalities of Nepal lack basic minimum facilities such as clean drinking water, proper drainage system, hospital, playground, metallic road, recreation and so on. The existing environmental degradation such as air pollution, water pollution, soil pollution, noise pollution, prevalence of new diseases, disaster events, and so on, have further reduced the health of urban people. Informal settlements in Nepal are concentrated on the banks of urban and peri-urban rivers. They are subject to health and sanitation challenges due to poor quality housing and inadequate sewage, drainage, and drinking water facilities. They have limited access to health services, education and work opportunities are available to a tiny minority and the job is informal and not secured. These communities are prone to transmission of contact-related diseases such as measles, tuberculosis (TB), malaria, dengue, and diarrhea, that are all linked to living in unsanitary crowded environments.

Figure 8: Informal settlement in Manohara river

Also, the most recent COVID-19 pandemic has revealed the vulnerabilities of urban people, especially the urban poor. It corroborates the poor quality of health facilities/systems in Nepal. This needs to be better planned, taking into consideration the needs of the urban population, especially the poor and marginalized, who always struggle to secure their better health.

Chapter 4
Government Legislations, Policies and Plans in Relation to Climate-resilient Cities and Urban Poor

The Constitution of Nepal guarantees a clean environment as a fundamental right. Article 16 of the Constitution, states that “each person shall have the right to live with dignity”, Article 31(1) states that "every citizen shall have the right to live in a clean and healthy environment”, whereas Article 34 (4) states that “every citizen has the right to access to clean drinking water and sanitation”. Similarly, Article 51 states that the state will adopt a policy to reduce the risks to the environment from industrial and physical development and to adopt the principle of sustainable development. The Constitution also provisions that the victim will have the right to get compensation from the polluter according to the law for the damage caused by environmental pollution or degradation. The Constitution has also committed to “build an egalitarian society to ensure economic equality... and social justice” and has provision to provide land to landless Dalits and provide shelter for those who do not have means for arranging housing.

Some of the key government acts, policies and programs in relation to provisions on climate-resilient cities and urban poor are briefly summarized.

4.1 Climate Change Legislations, Policies and Plans

One of the key objectives of the **National Climate Change Policy (2019)** is to enhance climate change adaptation capacity of persons, families, groups, and communities vulnerable to, and at risk due to climate change. The policy also includes development of safe, sustainable and resilient habitats and infrastructures. Although there are no targeted policies and plans in relation to urban poor and climate change, there are some relevant policies. The policy mentions that the “social security of persons and families, who are highly vulnerable to and at risk, will be guaranteed for recovery of damage to be caused by climate-induced disasters.” It also makes mention of the “concerns of women, Dalit, indigenous people, Madheshi, Tharu, Muslim, oppressed groups, backward class, minorities, marginalized, farmers, labourers, youth, children, senior citizens, persons with all forms of disability, pregnant women, incapacitated and disadvantaged persons or groups will be addressed in matters related to climate change.” **Climate Change Adaptation Program** will be implemented by integrating it into socio-economic development, alternative income generation and poverty alleviation programs. It states that at least 80 percent of the amount will be ensured for implementation of programs at the local level and the budget will be allocated to targeted marginalized and vulnerable community in areas affected by climate change.

In December 2020, Nepal submitted its **Second Nationally Determined Contribution (2020)** or NDC to UNFCCC with the targets for the year 2021-2030 in the sectors such as Energy, Agriculture, Forestry, and Land use (AFOLU), Industrial process and product use (IPPU). Some of the targets that could directly benefit urban poor is clean cooking: ensuring 25 percent of households use electric stoves as the primary cooking mode, installing 500,000 improved cookstoves, and an additional 200,000 household biogas plants. Under the urban settlements sector, the NDC emphasizes on building low carbon and climate-resilient urban settlements in all municipalities.

As required by the Cancun Adaptation Framework under UNFCCC and also by the National Climate Change Policy, the Government of Nepal has prepared the **Nepal Adaptation Plan (2021),** or NAP, with the vision to set Nepal on a pathway of socio-economic prosperity by building a climate-resilient society and reducing the risk of climate change impacts on people and ecosystems at the three levels of government. Although there are no explicit plans targeted at urban poor, the NAP's objective is to build the climate resilience of vulnerable people in both rural and urban sectors. On rural and urban settlements sector, the plan includes piloting climate-resilient city planning, resettle/relocate climate and disaster-vulnerable populations, study and identify vulnerable settlements and safer locations for resettlement. The NAP also includes plans to provide accessible and early information to all prioritizing people living in climate-vulnerable areas, improve health and quality of life of all urban and rural dwellers. On GESI section, the plan includes promotion of participation and involvement of vulnerable groups to reduce the disaster risks and identification of social safety nets for building resilience to disaster, and promote climate-resilient alternative businesses for livelihood enhancement especially for vulnerable people.

4.2 Environmental Legislations, Policies and Plans

The **Environment Protection Act (EPA) (2019)** is the main law on 'environmental protection' which provides the legal mandate to protect the fundamental rights of each citizen to live in a clean and healthy environment, to provide victims of environmental pollution or degradation with compensation by the polluter for any damage resulting from the pollution or degradation, and to maintain a proper balance between environment and development, as well as to face the challenges posed by climate change. The Act mandates the Government of Nepal to set necessary standards for the mitigation or doing away with the impacts of pollution, while prohibiting any person from creating pollution in such a manner as to cause significant adverse impacts on public health and environment contrary to the standards, and to conduct monitoring and evaluation ain order to ensure compliance with the standards. The Act specifies the prioritization of women, persons with disabilities, children, senior citizens and economically indigent communities who are more vulnerable to effects of climate change in the adaptation plan.

The **Kathmandu Valley Air Quality Management Plan (2020)** was developed incorporating various components for air quality with the motive to maintain good air quality in Kathmandu valley. It recognizes the importance of reducing emissions from transport, industries, construction, and waste management. This plan highly encourages the shifting of current fossil fuel-based mobility to clean mobility, as well as upgrading vehicle emission standards, emissions testing, and conversion of ICE vehicles to electric. It also aims for the adoption of an integrated Environment Management Plan as a plan to curb air pollution. However, the plan does not have targeted activities to address the air pollution exposure to urban poor, who are among the most vulnerable communities, given their lack of economic means to mitigate exposure or access to medical treatment.

4.3 Disaster Risk Reduction and Management Legislations, Policies and Plans

The Government of Nepal has enacted several legal, institutional and policy measures in disaster risk management over the last few years. The **Constitution of Nepal (2015)** has set the policy of early warning, disaster preparedness, rescue, relief and rehabilitation for preventing water-induced disasters, developing sustainable and reliable irrigation through river management and minimizing the risks from disasters caused by natural hazards. The **Disaster Risk Reduction and Management Act (2017)** covers all aspects of disaster management. The act focuses on protecting people's life, property, religious and cultural heritage, and reducing disaster risks. The Act has the following related provisions related to climate-resilient cities and urban poor and vulnerable communities:

- Prepare risk sensitive development and land use planning;
- Relocate or cause to relocate the people and communities in safe zones who are living along the riverbanks, in steep slope lands threatening to landslide and inundation threatening areas or any other disaster risk threatening areas;
- Lay down a special plan and program for women, children, senior citizen, Dalit, marginalized groups and communities, people with disabilities who are at disaster risk, and implement and cause to implement the same;
- Identify the most vulnerable communities and implement or cause to implement the risk reduction programs;

The **National DRR Strategic Action Plan (2018–2030)**. These frameworks empower local governments under the federal system as a crucial body to deal with disaster risk reduction and management activities. One of the principles of the action plan is empowerment and inclusive, accessible and non-discriminatory participation, paying special attention to people disproportionately affected by disasters, especially the poorest in its disaster risk reduction and management. The action plan includes developing climate-smart cities; preparing integrated guidelines of local level Disaster Risk Management and Climate Change Adaptation Guidelines and Directives; making a provision for disaster affected families living below the poverty line to activate insurance benefit automatically if impacted by the disaster; promoting investment in increasing resilience by investing in programs and trainings related to employment, skill development and health services as per the interest and necessity of women, children, and other backward communities for raising their standard of living.

4.4 Urban Planning Legislations, Policies and Plans

The **National Urban Development Strategy (2017)** has been developed with a vision of a balanced and prosperous urban system, which considers resilience among one of the five guiding principles. It provides strategies for urban development for the next fifteen years by covering various sectors of urban areas such as infrastructure, environment, system, finance, economy, investment, land and governance. This strategy has emphasized the need for integrating resilience in urban system and community plan formulation, incorporating disaster risk management component in urban development plans, and promoting integrated safer settlements. It also stressed on mainstreaming of informal economy by provisioning of space and time for specified informal economic activities and capacity building as well as alleviation of urban poverty by implementing targeted Community Development Program (CDP) focused on urban poor prioritizing program and pro-poor urban planning (housing, infrastructure, transportation).

Among others, the **Land Use Policy (2015)** has the provision to devise land use plans to ensure a hygienic, beautiful, well-facilitated and safe human settlement, sustainable and planned urbanization of the country; to identify all types of vulnerable zones on the basis of geographical and geological study; to mitigate the impacts of climate change; to develop a green belt, open spaces, and areas for gardening, playgrounds and entertainment venues in the urban or rural areas of residential settlements; and to develop green belts and open spaces along the rivers, roads, on both sides of canals. The policy also includes relocation of vulnerable and unsecured human settlements and prescribing minimum standards of basic infrastructure, greenery and open spaces/zones in line with Building Code and Standards.

4.5 Land Management and Other Relevant Policies and Plans

The amended **Land Act (1964)** provides a legal framework to allow ownership of land for "landless squatters" and "unmanaged dwellers". The major highlights of the legislation are[1]:

- The land authority shall distribute the land equally among the landlord and the tenant, thus protecting the land rights of the tenants and dispelling dual ownership over land.
- Landless squatter families who have no land anywhere in the country and have no economic means to procure a piece of land will be provided with a parcel of land and land title free of cost for one time up to a designated size preferably at their original site of informal holding or relocated to any other appropriate site as deemed necessary in case they are currently residing in designated critical areas. The law provides for some restrictions to ensure the family does not become landless again.
- In case of other informal tenure holder residing on government land for more than ten years and who also have registered land elsewhere in the country, they may be provided with land title for the piece of land up to a designated size upon payment of levy calculated on the basis of their economic status, residential status, type of land, area of land, land value, duration of the informal landholding, and status of landholding elsewhere.

The **National Land Policy (2019)** commits to securing tenure and land ownership, protection of land rights, rehabilitation of the landless, squatters and informal tenure-holders for improved housing, equitable access to land for all, including women and vulnerable groups.

Under the **Local Government Operation Act (2017**), the provisions are made for the roles, responsibilities and rights of local government. According to this act, disaster management is one the main tasks of the municipality. The municipality is responsible for implementation; monitoring and evaluation of the DRR act policies, and plans. It stresses on DRR preparedness, establishment of Emergency Operation Centres (EOCs), risk and vulnerability mapping, provision of disaster funds, search and rescue, recovery and reconstruction, and the Community-Based Disaster Risk Management (CBDRM) program. It states that each municipality shall coordinate with civil society, local organizations, NGOs and the private sector for local disaster-risk management. Also, the municipality is responsible for the management of unorganized settlements at the local level.

The **15th Periodic Development Plan** aims to reduce the percentage of people below poverty line from baseline of 18.7 percent in 2019/20 to 9.5 percent by 2023/24. The plan also includes provision of a clean and pollution-free environment and development and implementation of climate adaptation plan at the local level for climate-resiliency.

1 New land legislation guarantees tenure security and access to land for all Nepal, GLTN. https://gltn.net/2020/02/26/new-land-legislation-guarantees-tenure-security-and-access-to-land-for-all-nepali/

Chapter 5
Recommendations for Building the Resilience of Urban Poor

A common concern about the urban poor is about their livelihood and capacities, economy and access to basic services like health, water, sanitation and education. Climate change and exposure to environmental hazards have further aggravated the vulnerability of urban poor and added further burden to the governments to address their well-being. Building the resiliency of urban poor requires adoption of a multidimensional approach to addressing poverty and inequality, especially in accessing economic opportunities and basic services. The local/city governments are the key institution for addressing urban risks, mainstreaming climate change and disaster risk reduction in its policies, plans and programs, delivering basic services, and collaborating with federal and provincial governments on the well-being of urban poor, including relocation and addressing the land rights.

Also, increasing urbanization has significant implications for climate change, air quality, water availability and quality, land use and waste management. Provided that the right policies are put in place, urbanization offers an opportunity to create sustainable, livable and vibrant cities for everyone. Cities pursuing climate action also have the opportunity to generate growth, increase employment to tackle the issue of urban poverty, and increase well-being for urban dwellers especially urban poor and for significant savings from avoided health costs and expenditure on fossil fuels.

The key recommendations for building the resiliency of urban poor in the Nepali cities are:

- **Assess risks and vulnerability of informal settlements and urban poor to climate impacts**
  Neighborhood or community-level assessment of risks and vulnerability is important to understand the degree of exposure of urban poor to climate disasters and environmental hazards and to understand the interdependencies between the systems, sectors and services that urban poor depend on. The assessment is a prerequisite for informed decision-making and effective plans to address the concerns and build the resiliency of urban poor.

- **Support to build climate-resilient urban settlements or relocation to safer settlements**
  Many urban poor lives in marginal undesirable lands within the city that are at high risk of climatic disasters and environmental hazards such as air pollution, river pollution, flooding/inundation and landslides zones. In Nepal, most urban poor settle along the river corridors making them vulnerable to flooding/inundation and diseases because of the polluted river. The local government needs to invest in making the informal settlements resilient to climate impacts and

environmental hazards. If located in the high-risk areas of disasters such as in flood-prone areas, the governments should work to relocate them to safer areas with easy access to the city's economic zones where most of the urban poor usually make living out of. Thorough consultations with the people living in the informal settlements and concerned stakeholders need to be done, which is often seen missing in the process of relocation of informal settlements.

- **Integrate urban poor in the city planning and governance**

  City planning is often carried out without the considerations and needs of the urban poor, and sometimes even at the expense of urban poor, for example, the plan to bulldoze informal settlements along the Bagmati river corridor to build roads or other urban infrastructures without a relocation plan and strategy. The government as well has a negative attitude towards street vendors. Street vending should not be viewed just as a problem but if managed properly it brings opportunities to society like income generation, poverty implication and providing inexpensive goods and services to the low-income consumers and improving the livelihoods of thousands of poor and unskilled people of the country.

  The urban planning policies and plans needs to consider whether the particular policies and activities are improving or affecting the well-being of urban poor. Integrating accessible green public space, sidewalk design with space for street vendors, dedicated space for street-vending, affordable housing, affordable public transport and cycle lanes in the city planning targeting the informal or low-income settlements can greatly help to build the resiliency of the urban poor. Programs to clean up river pollution and proper solid waste management improves the health and sanitation status of urban poor people residing on the banks of rivers and marginal lands.

- **Design programs to improve the economic livelihoods of the urban poor and provide social protection/safety nets**

  Improving the economic livelihoods of urban poor is the key to building their resiliency, including their climate resiliency. New programs should be formulated which can better engage the urban poor, including migrant youth and women, in productive sectors. The programs can extend from providing vocational training to enhance technical skills, engaging them in urban farming, providing incentives and technical support, and ensuring that the urban poor have access to credit, can help in transforming their livelihoods. In return, cities will benefit economically and socially.

  Social protection is a powerful policy tool for addressing urban poverty and inequalities, building resiliency of urban poor, and redistributing wealth. Social protection schemes can offer cover for health insurance, basic income, access to affordable housing, free education, which can directly contribute to the enhancement of quality of life, providing access to these basic needs and a safety net from the vicious poverty cycle.

- **Support informal economy for building inclusive and resilient urban futures**

  Most urban poor in Nepal are involved in informal economy such as street vending, waste/recyclable materials collections, and daily wage work. Rather than considering them as illegal occupiers and a nuisance to the cities, as the city governments of Nepal often do, they should recognize them as those who have rights and need support and contribute to the city's economy and its functioning. While securing their livelihoods, the urban poor often provide essential services to the city dwellers and are involved in providing low-cost

goods such as vegetables and street foods that sustain poor and low-income communities of the city. Urban poor are also involved in the waste management and sanitation sector as well as in collecting recyclable materials providing vital services to keep the city clean and hygienic. Rather than removing street vendors from the streets, the local government ought to embrace them as a part of the informal economy and provide space and support to the street vendors.

- **Invest in and extend infrastructure and services to low-income neighborhoods**
  Without the political reach and often the unclear legality of the informal settlements, many of the urban poor are deprived of essential services and it is often left to the individuals to manage basic needs for themselves. It is critical to invest in and extend infrastructures and services – electricity, drinking water, sanitation, access to an affordable urban transport system (affordable public transport, cycle lane network, proper sidewalk), access to health services – such as to informal settlements or low-income communities, to address poverty and to build inclusive and equitable future cities.

Annex

Clean Energy Nepal organized a half-day "Stakeholder consultation" with multiple stakeholders in Kathmandu on 10 March 2023. The key objectives of the consultation was to discuss the major issues of the urban poor and policies relating to the urban poor and policies relating to the urban poor and also come up with key recommendations/ suggestions to make smart cities that are climate resilient. The consultation brought together 21 participants including government officials, academia, civil society, media and other stakeholders working for urban resilience.

Recommendations from CSO consultation (way forward)

GROUP WORK: Towards Climate Resilient Cities (Issues, Gaps and recommendations through the Lens of Urban Poor)

Group 1: Electric vehicles and Urban air quality

Issues and gaps

- Vehicular pollution contributed to 33 percent of air pollution,
- Access to electricity in poor residences and related houses,
- Control of waste burning, control of dust blowing and pollution.

Recommendations

- Electric transportation for public, transportation with incentive to transport entrepreneur as well
- Simplify the process that requires formal documents to get electricity meters.

Group 2: Water scarcity and Food security

Group 2 participants wanted to convert water scarcity into water security.

Issues and gaps:

- Over-extraction of ground water and drying of tap water,
- Contamination causing quality issues (bacteria, heavy metals and chemicals).
- Health issues, impacts on multipurpose (drinking, domestic and agriculture), hygiene practices.
- Affluent people wasting water (car washing), lack of adequate monitoring, lack of strict implementation and less funding in management.

Recommendation for management of water security

- Water treatment
- Regular monitoring on proper implementation of regulations
- Conservation of ponds, aquifers
- Involvement in academic research and innovations as a recommendation for the management of water security
- Increase funding for accessibility, integrate modern and traditional technology, identify and interact with local champions
- Rainwater harvesting

Food security

Issues and gaps

- Insufficient production and consumption
- Food contamination
- Low quality food purchase, consumption and related health and nutrition issues: buying food at cheaper price which gets easily spoilt, and food waste

Recommendations

- Identifying and verifying actual urban poor
- Regulated stressed vendors
- Mobilization of food banks with proper storage
- Affordable canteen with variety of foods, food enterprise involving urban poor
- Establishment of seed banks
- Urban farming, management of markets, food safety and agriculture in academics

Group 3: Urban waste management and Waste water treatment

Issues and gaps

- Cleanliness, proper drainage, implementation of plans and policies
- Formulation of action plans along with policies
- Decentralization of waste resource centers and use of government land as landfill sites
- Health of waste workers should be considered
- Entrepreneurship in water sector to be created
- Boost to the recycling sector
- Plastics waste management and recycling

Recommendations

- Considerations of the health of waste workers
- Promoting the entrepreneurship in waste sector, boosting up of recycling sector
- Proper management of plastic wastes and promotion of recycling sector
- Possible options available for livelihood in waste management as an organized sector

Group 4: Urban Disaster/Housing and Urban Health

Issues and gaps

- Public transportation
- Hazardous materials
- Management of urban waste and its hazardous impact in the community
- Situation of street vendors as a threat to the safety of people on the road
- Ongoing constructions
- Animal and human conflicts
- Floating and seasonal population
- Unfriendly affordable housing policy (DUDBC)
- Suggestions related to the health services accessibility, social protection issues like insurance, social security, and allowances and water recharge.

Recommendations

- Formation and implementation of contextual policy, strategy like Urban ORR Strategy, Street Vendors Act, Land Use Policy, GESI-informed policies and practices. Further there were considerations such as inter agency co-operation and collaboration, public private partnership (PPP), capacity development, education and awareness, policy and advocacy campaigns, participatory policy making and affordable housing policy.

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