

The Making Cities Resilient Campaign

Resilience of Cities to Disasters in Central Asia and South Caucasus



UNISDR

The United Nations Office for Disaster Risk Reduction (UNISDR) coordinates Disaster Risk Reduction across the United Nations system. It also facilitates and monitors implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 which was adopted by the World Conference on Disaster Risk Reduction in Japan March 2015.

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Introduction

It is predicted that by 2030 over 55 percent of the population in Asia will live in cities. Associated urban risk has also increased. An extreme and changing climate, earthquakes, and emergencies triggered by man-made hazards are putting pressure on people and threatening the prosperity of cities.

Central Asia and the Southern Caucasus are no exception. The urban population is growing in the region. More than 30 per cent of region's population is estimated to live below the poverty line. There is significant internal rural-urban and cross-border movement of population.

The region has high exposure to a range of natural hazards, including earthquakes, floods, landslides, mudslides, avalanches and sand storms. Urban dwellers often live in dilapidated and poorly planned constructions.

Most existing residential, public and industrial buildings, facilities and infrastructure were built in the 1970-80s. A majority need to be assessed for their safety and current risk profile. Cities face several challenges, including the need to determine their priorities of urban risk management and to develop plans of action that, among other things, strengthen coordination among concerned departments.

The degree of damage and destruction from disasters can be reduced. Disaster risk reduction is not limited to preparedness and response, but is a key determinant for sustainable urban development. Cities are engines of national growth and have high potential for developing their governance systems and capacities.

The Making Cities Resilient Campaign

Global Campaign

The vision of the campaign is to achieve resilient, sustainable urban communities.

The campaign urges local governments to take action now to reduce cities' risks to disaster.

The objectives of the Making Cities Resilient campaign are threefold, and can be achieved through building long-lasting partnerships:

Know more

Raise the awareness of citizens and governments at all levels of the benefits of reducing urban risks

Invest wisely

Identify budget allocations within local government funding plans to invest in disaster risk reduction activities

Build more safely

Include disaster risk reduction in participatory urban development planning processes and protect critical infrastructure

"My City is getting ready" is a rallying call for all mayors and local governments to make as many cities as possible as resilient as possible. It is also a call for local community groups, citizens, planners, academia and the private sector to join these efforts.

While the campaign addresses citizens - those who live in urban areas and who elect the decision makers who can take the necessary steps to make their cities safer - the campaign's principal target groups are mayors and local governments of cities of different sizes, characteristics, locations and risk profiles. Mayors and local governments are the agencies who can take action and make our cities safer. Mobilizing these important actors in the disaster risk reduction process is essential to making cities resilient.

Ms. Margareta Wahlström, head of UNISDR

"The Making Cities Resilient Campaign launched five years ago now has over 2,800 participating cities and towns with a combined population of some 700 million people. It is clear that the risk in cities is growing faster than our ability to reduce them. We need to innovate and ensure that solutions, tools and methods for resilience building are not only available, but also accessible"

Ten Essentials for Making Cities Resilient

Page 25: How to Make Cities More Resilient
A Handbook for Local Government Leaders

Further information can be found at www.unisdr.org/campaign/resilientcities/

1. Put in place **organisation and coordination** to understand and reduce disaster risk, based on participation of citizen groups and civil society. Build local alliances. Ensure that all departments understand their role in disaster risk reduction and preparedness.
2. **Assign a budget** for disaster risk reduction and provide incentives for homeowners, low income families, communities, businesses and the public sector invest in reducing the risks they face.
3. Maintain up to date data on hazards and vulnerabilities. **Prepare risk assessment** as and use these as the basis for urban development plans and decisions, ensure that this information and the plans for your city's resilience are readily available to the public and fully discussed with them.
4. Invest in and maintain **critical infrastructure that reduces risk**, such as flood drainage, adjusted where needed to cope with climate change.
5. Assess the safety of schools and health facilities and upgrade these as necessary.
6. Apply and enforce **realistic, risk compliant building regulations and land use planning principles**. Identify safe land for low income citizens and upgrade informal settlements, wherever feasible.
7. Ensure that **education programmes and training** on disaster risk reduction are in place in schools and local communities.
8. **Protect ecosystems and natural buffers** to mitigate floods, storm surges and other hazards to which your city may be vulnerable. Adapt to climate change by building on good risk reduction practices.
9. Install early warning systems and emergency management capacities in your city and hold regular public preparedness drills.
10. After any disaster, ensure that the **needs of the affected population are placed in the centre of reconstruction**, with support for them and their community organisations to design and help implement responses, including rebuilding homes and livelihoods.



Milestones and Strategic Planning

5 Phase Plan

Page 59: How to Make Cities More Resilient
A Handbook for Local Government Leaders.

More information can be found on page 62-65

Phase One	Organizing and preparing to apply the Ten Essentials	<ol style="list-style-type: none"> 1. Prepare institutional setting, raise awareness 2. Convene actors, formalize participatory process 3. Plan and execute the process
Phase Two	Diagnosis and assessment of the city's risk	<ol style="list-style-type: none"> 4. Be acquainted with the city's risks 5. Conduct a risk assessment 6. Analyze the local environment and actors 7. Prepare an assessment report
Phase Three	Developing a safe and resilient city action plan	<ol style="list-style-type: none"> 8. Define vision, objectives and main actions 9. Define programmes and projects 10. Institutionalize and sustain the disaster risk reduction plan
Phase Four	Implementing the plan	<ol style="list-style-type: none"> 11. Implementation and resource mobilization 12. Ensure broad participation and ownership
Phase Five	Monitoring and follow-up	<ol style="list-style-type: none"> 13. Monitor, follow up and evaluate the plan 14. Disseminate and promote the plan

Vulnerable river banks in Bishkek, Kyrgyzstan



Making Cities Resilient in Central Asia and South Caucasus (CASC)

Campaign in CASC

The United Nations Office for Disaster Risk Reduction (UNISDR) and the European Commission Humanitarian Aid and Civil Protection department (ECHO) have formed a partnership to strengthen the resilience of cities to disasters in Central Asia and the South Caucasus.

The UNISDR-ECHO partnership comes under the Disaster Preparedness Programme, known as DIPECHO. It supports the building of local capacity to: assess risks of natural hazards; update city development plans to make them risk sensitive; increase accessibility of expertise in disaster risk reduction; and foster exchange of experiences and good practices. The project also seeks to generate more interest in urban resilience, specifically that more cities from the region join the Making Cities Resilient campaign.

The project **“Strengthened Disaster Risk Reduction in Central Asia and the Caucasus through greater fostering of the Hyogo Framework for Action priorities”** aimed to integrate disaster risk reduction into national and local policy and development priorities. In 2014, eight municipalities from the region joined the Making Cities Resilient campaign: Noyemberyan and Berd in Armenia; Tbilisi and Gori in Georgia; Ust-Kamenogorsk and Ridder in Kazakhstan; and Bishkek and Karakol in Kyrgyzstan, connecting with over 2,750 member cities around the world. These cities are the focus of this project.

The initiative ran between October 2014 and December 2015. It worked with city administration teams to establish a permanent local capacity for periodic multi-disciplinary assessment of risk of disasters. Following this, each municipality would then be in a position to develop plans to make their cities more disaster resilient.



Housing on vulnerable river banks in Bishkek, Kyrgyzstan



The project also aimed to change attitudes and approaches to hazards from 'response' to 'prevention', from 'recovery' to 'strengthening resilience'. It encouraged a more inclusive approach under the leadership of central and local authorities.

The cities sent senior delegations to the regional training programme 'Urban Risk Reduction: Making Cities in Central Asia and South Caucasus Region Resilient to Disasters', in Almaty, in June 2015. Three mayors, four deputy mayors, and heads of departments and municipal services as well as the national coordinators from four countries attended.

The training focused on applying the Local Government Self-Assessment Tool (LGSAT) methodology. It contains 41 indicators/key questions that capture the many aspects of building city resilience to disasters. The programme also provided guidance for preparing plans of action to address issues identified in the LGSAT assessment.

After the training, city representatives formed expanded work groups for detailed risk assessments of their respective locations. The assessments, conducted with technical input and guidance from UNISDR, provided an objective picture of the status of disaster preparedness of the cities.

Based on the LGSAT assessments, the cities developed 'Resilient City Action Plans'. While some actions can be accomplished in the short term, others require longer-term cooperation, capacity building, detailed and informed analysis, and stronger partnerships.



City Stories

Berd, Armenia

The city of Berd, in north-east Armenia, sits near the border with Azerbaijan, in the valley of the River Tavush. Berd lies 800 meters above sea level and is surrounded by mountains. It is located in an active seismic zone, with potential for earthquakes, magnitude of 7-8 degrees (Richter). Berd is a small town, with a population of around 8,500 people. It does not have large industrial enterprises. The River Tavush that flows across Berd is the source of drinking water.

In addition to the threat of earthquakes, the city is prone to landslides and wind storms. In March 2004, a storm damaged almost all buildings in the city.

More than 30 apartment buildings and over 1,000 houses were damaged, along with schools, kindergartens, and hospitals. The electricity supply was cut. Thousands of trees in the city and nearby forests were uprooted. Total damage was estimated at USD 1 million. Ecological systems suffered long-term loss.

Human economic activities also pose a threat. The systematic cutting of the forest in the Tavush basin resulted in a 70% reduction in the annual discharge of water in the river. The water treatment system has not functioned for 35 years; sewage is discharged directly into Tavush river, exposing the population to potential epidemics, such as cholera.

Mr Haroutyun Manucharyan Mayor of Berd

“Since Berd is located in a seismic zone, earthquakes are the city's most common natural threat... Most buildings in the city, built from the 1960-70's no-longer meet building codes... 50% of the buildings in the city don't meet today's building standards”

Central square, Bishkek, Kyrgyzstan





The massive 1988 Spitak earthquake also affected Berd. There were no human losses, but houses were damaged; some have not been restored until recently. Generally, low levels of income prevent residents from restoring their homes. Many people live in homes that are dangerously damaged. Most residences were built in the 1960s-1970s; the safety of people living in such homes is a major issue for the authorities. At the same time, the limited financial capacity of the Berd administration does not allow repair and reconstruction of even the most dangerous houses.

The local authorities believe that this challenge can only be addressed through a state programme for rehabilitation of housing.

The international experience of implementing low cost, efficient measures for disaster risk reduction is useful for small towns with limited resources, such as Berd.

Impressively, the initial plan of action for DRR in Berd includes the integration of risk reduction actions in the sector development plans of the city. This aims to reinforce the housing infrastructure and rehabilitation of drainage and sewage systems.

Mr Haroutyun Manucharyan, Mayor of Berd

“For such a small and unsafe city as Berd, for the people who carry out its security it is essential to gain such knowledge of risk reduction. We know about the everyday risks but the knowledge that we get during the project gives perspective on the more concrete steps in the future.”

Part of Gori city landscape, Georgia





Berd, Armenia

A delegation from Berd attended the training programme in Almaty in June 2015. They returned to create a working group to initiate the Local Government Self-Assessment Tool (LGSAT) with the support of various municipal services and departments.

The assessment's key findings include:

- The Berd municipality lacks a DRR coordination group. Although the Government of Armenia considers DRR a priority area, and a National DRR strategy was adopted in 2012, there are no legal or administrative acts enabling local authorities to work in DRR
- Education and awareness raising programmes in DRR are not available at the local level
- DRR is a new concept, and local authorities have not yet established cooperation with the population and private sector.
- Local authorities do not have specifically assigned resources for DRR; the budget does not include a special item for DRR
- Risk assessments for development sectors have not been conducted previously. The municipality has only general information on hazards and vulnerable areas of the city. The initial assessment of the housing stock affected by the 1988 earthquake revealed that the required scale of retrofitting is beyond the capacities of the city administration
- The City development plan of Berd was adopted in 2006. Since then the plan has not been updated. As such, the current resilience of key infrastructure has not been determined
- Risk assessment of schools and hospitals have not been conducted for significant hazards
- The city does not have a plan of evacuation in major disasters

Karakol, Kyrgyzstan





The Mayor of Berd, Mr. Haroutyun Manucharyan, says, "... the knowledge, acquired through the project, and based on the assessment of risk, will help the municipality to develop a plan of action to address various challenging issues, including rehabilitation and reinforcement of structures and facilities of the city".

The initial plan of action for resilience of Berd recommends to:

- Create a municipal working group for DRR, based on the Armenia Law on Local Governments, with clear responsibilities and functions of participants; identify potential partners for cooperation; organize education and awareness raising process for the DRR working group
- Develop a plan of risk assessment; involve required experts and state structures; study possibilities for financing local risk and vulnerability maps
- The working group for DRR should review ways of informing the population to strengthen resilience to disasters, based on assessment of risk and vulnerabilities
- Put together a sectoral development plan based on all inter-connected risk factors and hazards. Application of risk and hazard maps in development planning should become mandatory
- Develop a mechanism for engagement with the private sector and local population in DRR; prepare relevant information materials to disseminate among the population and representatives of the private sector
- Organize meetings to raise awareness among vulnerable groups. Develop new approaches and gather information to involve representatives of vulnerable population in the DRR working group. Involve social protection and health services. Ensure that the interests of vulnerable groups are taken into account
- Ensure that DRR is included in sectoral development plans. Ensure that financial resources for DRR are available. Study the possibility of extra-budgetary financing for DRR
- Promote DRR through parliamentarians and various citizen initiatives to develop alternative loan and insurance programmes aimed at providing financial services for vulnerable households for disaster preparedness
- Promote accessible programmes of micro-financing, aid, discount loans, low-interest loans for households affected by disasters
- Develop cooperation with small business organizations to ensure their functioning during and after disasters



Noyemberyan, Armenia

Noyemberyan is a small city in Armenia with a population of around 5500. It sits in a mountainous area in the north-east of the country, 191 km from Yerevan. The municipality borders Georgia in the north and Azerbaijan in the east.

Noyemberyan lies 800-900 meters above sea level. The city covers 4,009 hectares and is surrounded by forests. The landscape is diverse, with mountains and small valleys. The climate is humid and subtropical, with relatively mild winters. There are no large industrial enterprises in the municipality.

Noyemberyan is in a seismic risk zone with potential for earthquakes of magnitude 7-8 on the Richter Scale. Landslides are also a significant hazard. In 1997 a 7.0 earthquake occurred and in 2002 a 5.5 tremor shook the city.

Several buildings suffered significant damage. The safety of people living in damaged and dilapidated houses is an issue. More than 750 houses are considered dangerous for occupation.

The limited financial capacity of the city administration prevents repair or reconstruction of some of the most dangerous houses. The local authorities believe a state programme for rehabilitation of housing is required.



Flood defences in Karakol use large stones to protect the vulnerable river banks



Active landslide zones in the city are a real threat for residents in several areas. One 300-metre landslide in October 2011 killed seven people and destroyed 35 cars.

Disaster risk reduction (DRR) is a priority in Armenia and is regarded as an inherent element of national security and sustainable development. On 7 March 2012, the Government of Armenia adopted a National Strategy for DRR. The Strategy and National Plan of Action 2012-2015 have provision to include DRR into the sectorial planning of cities. Changes in the 'Law on Local Government' have strengthened the integration of DRR into the development programmes and processes, especially at the community level.

After the UNISDR-ECHO training, the city put to use the Local Government Self-Assessment Tool (LGSAT) methodology. The team of three who participated in the training involved all local authority services and departments in a detailed review of the city's hazard risk profile. With UNISDR support, a risk assessment was conducted. It served as the baseline for preparing a plan of action to strengthen disaster resilience in this small provincial town.

The LGSAT assessment revealed a number of areas where local government can use existing resources to improve the situation. It also pinpointed how a more systematic approach can be applied to changing attitudes, approaches and engagement of various stakeholders.

The Mayor of Noyemberyan, Mr. Vanush Amiraghyan, said "the project had enabled his city to carry out its first-ever disaster risk assessment. He is confident that the assessment will enable the municipality to develop a city resilience plan of action. This will address the various challenges, including rehabilitation and reinforcement of debilitated structures and facilities."

**Ms. Madhavi Malalgoda Ariyabandu,
Sub-Regional Coordinator CASC (UNISDR)**

"We expect that these 8 cities provide an example, not only for the region but beyond the region for the rest of the cities in the world who are active in the Making Cities Resilient campaign and working on urban risk reduction"



Noyemberyan, Armenia

The key findings from Noyemberyan's assessment include:

- Disaster risk reduction is not a priority in the process of city development planning; there are no relevant structures at municipal level
- Local authorities do not have the financial resources, expertise and experience for implementing Armenia's National DRR Strategy
- Local budget provision does not include DRR; however, DRR can be included in sectoral plans of national government organizations in accordance with the National DRR Strategy
- DRR is a new approach within disaster management; the required partnerships and working relations are yet to be established. This would need the creation of appropriate capacity at the municipal level
- There are no mechanisms for providing financial services to protect vulnerable groups and households before catastrophic events
- Local risk assessments previously have not been carried out; the population relied on traditional knowledge of hazards and coping with threats
- The LGSAT provided a comprehensive overview of risk, vulnerability and resilience. The process prompted discussion of new directions, actions and partnerships to address gaps and deficiencies. The LGSAT findings against the assessment's 41 indicators helped the Noyemberyan authorities compose its Plan of Action.

The plan recommends to:

- Identify mechanisms to involve the city's population and the private sector in dialogue and collaboration on DRR
- Prepare a set of information on risk and hazards to share with the city's population and private sector
- Engage central government to integrate DRR in local sectoral development plans
- Discuss possibilities to institutionalize extra-budgetary financing for DRR, response and recovery at the local level
- Develop a strategy for financial support of DRR activities at the local level
- Create a mechanism for regular monitoring of the physical /structural conditions of educational and health institutions (critical infrastructure)
- Define roles and responsibilities to implement the of Plan of Action



Gori, Georgia

Gori is the administrative centre of Shida-Kartli and is located 76km from Tbilisi. It sits in the Kartli valley 588m above sea level, at the confluence of the Mtkvari River and its tributary river Liakhvi. The city is surrounded by mountains from the south and west. The city's population is 54,700. There are no large industrial enterprises.

Gori is in a 7-8 degree earthquake zone (Richter scale). In 1920, an earthquake measuring about 8 points destroyed most of the city. Wind storms are frequent and often destructive; they destroy trees, rip off roofs, and cause other damage.

Heavy rains cause floods, destroy the electricity and water supply systems, and contaminate drinking water. There are also areas prone to landslide. Torrential rains also result in clogged drainage systems and the interruption of communications.

In May 1996, the Liakhvi River flooded, destroying a dam 15km from Gori. The water in some places reached as high as the second floor of buildings. The city was not ready for such a challenge. Again, in June 2015, the city was flooded after two days of torrential rain. The shortage of sewage collectors and the debris-clogging of storm water systems contributed to the flooding.

After the training workshop in Almaty in June 2015, under the leadership of the Mayor, Mr. Zurab Jirkvelishvili, a working group was tasked to conduct a risk assessment using the Local Government Self-Assessment (LGSAT) methodology. Prior to this, Gori municipality did not have a system for disaster risk reduction.

Resilience ratings varied from 1-3 (on the scale 1 minor achievement; to 5 comprehensive achievement). The assessment engaged experts and heads of services and departments of the Gori City Hall. Consequently, an action plan was proposed.

Monument in Central Square;
Bishkek, Kyrgyzstan





Gori, Georgia

The LGSAT assessment found the following:

- A lack of structure to coordinate disaster risk reduction, and no mechanism to develop partnerships with the private sector, and the population. Such relationships only form when a specific need arises, such as after, rather than before, disasters
- The local authorities do not have sufficient financial resources for DRR activities. Funding is needed for the full cycle of risk reduction projects (assessment, design, construction, and monitoring)
- Hazard and risk assessment has not been prioritized. Risk reduction measures are included in the development plans of the city only in extreme emergency situations only to eliminate local and small scale threats
- A lack of strategies and mechanisms at national and local level to encourage private companies to invest in DRR
- A disaster risk assessment of key vulnerable sectors previously has not been carried out. Local authorities periodically monitor such areas and to the extent possible include preventive measures in the development plans of the city. No assessment of seismic risk has been carried out in 20 years
- As such disaster risk is not taken into account in city development plans

**Davit Japaridze,
Director, Gori
Municipality
Development
Agency, Georgia**

“today we are trying to gain international experience which is available at the UNISDR. Mechanisms of resilience have been developed, tested and applied by different cities in the world and it works – it is not necessary to come up with something new. You just have to replicate the available experience, adapt it to the local problems and mentality of the population. Make it more applicable to the needs of our city.”

Mr. Nodar Kutibashvili, Deputy Director, Civil Protection, Emergency Management Department, of the Ministry of Internal Affairs said that

‘up-to now, there was no specific plan for disaster prevention in cities. With the recent law approved in 2014 demanding that all cities, urban territories in the country prepare disaster risk management and disaster response plans, this project provides an invaluable example for hundreds of cities in Georgia’.

The working group, led by the Municipal Development Agency of Gori, developed a Gori City Resilience Action Plan. It includes specific actions against each of the 41 indicators in the LGSAT.

The next phase includes steps to:

- Analyze the existing legal framework to seek to establish a Center for Emergency Operations that includes DRR at the city level
- Create a constituent committee under the leadership of the Mayor
- Develop tools for effective coordination in emergency situations
- Appoint responsible persons and develop job descriptions
- Strengthen the capacity of employees of the Center for Emergency Operations including in DRR, through training and exchange of experience at the international level
- Stage regular exercises to improve coordination between all emergency services (4 times a year)
- Conduct regular risk assessment and monitoring (2 times a year)
- Provide information on threats and hazards to the population
- Provide explanatory information on DRR, using advanced information methods and systems
- Develop and periodically update risk maps of the city, by zones
- Ensure the city development plan takes into account all risk factors
- Review the city development plan after the adoption of the new Construction Code of Georgia, ensuring that all factors of risk are taken into account
- Ensure that all municipal departments and services receive complete information on hazards identified in the risk assessment
- Establish systematic monitoring of status of schools and health facilities, in cooperation with the ministries of education and health; ensure the inclusion of private hospitals
- Create a database of schools and hospitals and initiate relevant improvements
- Prioritize preparedness of schools and hospitals to disasters
- Develop a strategy to raise awareness of the importance of disaster preparedness, and for including structures of special importance (preschools and schools, hospitals) in disaster risk reduction activities





Tbilisi, Georgia

Tbilisi is the capital and the largest city of Georgia. It is located on the banks of the river Mtkvari (Kura). Currently, Tbilisi covers an area of about 350 sq km. The city stretches almost 30km along the valley of the Kura River. It sits 380 to 770 meters above sea level. The city has a population of almost 1.2 million people and contributes 70 percent of Georgia's national economy.

The municipality is governed by the Tbilisi City Assembly (Sakrebulo) and the Tbilisi City Hall. The City Assembly is elected once every four years. Its mandate includes electing the Mayor. Tbilisi is an historic city. The large 'old Tbilisi town' consists of old buildings densely built across slopes and along the river.

The city's main hazards are floods, earthquakes, strong winds, and landslides.

In the Tbilisi area earthquakes have the potential to reach magnitude 7.0 on the Richter Scale. The importance of adhering to building codes and standards is clear.

After participating in the LGSAT training, the Tbilisi municipality compiled a comprehensive risk assessment of the city. Various local government departments and services contributed. The assessment included several elements ranging from the institutional and legislative aspects of risk management to the level of preparedness of private sector managers for emergency situations.

Over the past 20 years, earthquakes have affected many people and caused significant economic losses. An earthquake on 25 April 2002 killed 6 people and affected 19,156 others.

In May 2012, heavy rain caused mudslides down ravines towards homes in Ortachala, an old district in the south of Tbilisi which sits between the river Mtkvari on the one side and high mountains on the other.

The heavy rain uprooted trees and mud slid down the hill and blocked the drainage system. This changed the direction of the water and diverted it towards houses and roads. The flooding killed five people and dozens were injured. On June 7, 2015, heavy rain and hailstorm caused flooding in eastern Georgia affecting 8,800 people. Six days later, repeated heavy rain worsened the situation, causing mudflows and flash flooding of the rivers Vere and Mtkvari. It seriously affected the central districts of Tbilisi and nearby villages and resulted in at least 19 people being killed.

In light of these events, Tbilisi City Hall launched the development of a 'Plan of Action for Resilience', covering risk and emergency management.

The initiative applied the Local Government Self-Assessment Tool (LGSAT) methodology developed by UNISDR and used in over 2,600 cities throughout the world.

The level of resilience and preparedness was rated on a five-degree scale; most of the indicators were rated at 1-2-3 points, based on professional and objective estimation.

The LGSAT assessment in Tbilisi found the following:

- Disaster risk reduction is a new approach, and the local authorities do not yet have the capacity or appropriate mandate, knowledge and resources. The required partnerships are yet to be established
- Comprehensive risk assessment previously have not been carried out; the authorities do not have the data for identifying steps and actions, priorities, and distribution of resources
- The city government has information on specific hazards by territory and major development sectors; however, there has been no detailed analysis of threats and vulnerabilities
- The city has not assessed residential buildings; old and poorly maintained buildings comprise 30 percent of the housing stock. About 20 percent of the city's population lives in houses considered unsafe. Houses of special cultural and historic value are being restored and reinforced, but not in sufficient scale
- Financial support is envisioned only for response and recovery. The June 2015 floods revealed that the city did not have the means for an adequate response and had to request national government assistance
- Construction sometimes takes place without proper authorization, including in exposed areas, some of which have been destroyed in floods
- The current general plan for land use in Tbilisi does not include disaster risk reduction actions

Deputy Mayor of Tbilisi Mr. Irakli Lekvinadze

mentioned the relevance and the value of this project now has increased manifold with the devastating flash flood in the city on 13 June which resulted in colossal loss of life and property. Deputy Mayor assured that the learning of the flash flood experience will be an important part of the city risk assessment to arrive at action plans which reflect the most urgent priorities of Tbilisi.



River and buildings, Bishkek



Tbilisi, Georgia

The Plan of Action for Resilience has been submitted to the Mayor. It recommends to:

- Include disaster risk management and disaster management plans in the general city development plan, in accordance with the Law on Civil Protection of Georgia. It emphasizes the need to establish appropriate partnerships
- Establish a working group at Tbilisi City Hall consisting of experts and representatives of all departments and municipal services; organize appropriate training and overall capacity building
- Include the private sector in the working group for DRR
- Promote legislative measures to provide tax breaks for private sector entities to invest in DRR
- Initiate a legislative act on incentives to increase involvement of the private sector in DRR
- Establish a 'DRR line' in the municipal budget; ensure that financial allocations are available
- Identify extra-budgetary sources of financing for DRR
- Promote initiatives for developing state credit and insurance programmes to ensure financial services for vulnerable households before disasters and for reconstruction post-disaster
- Include representatives of especially vulnerable groups in the working group for DRR
- Design and create an effective early warning system
- Develop all-hazard risk maps for Tbilisi; ensure accessibility to risk information for all stakeholders
- Better inform the population of local trends in disaster risk



Flood damaged school in Tbilisi, Georgia



Ridder, Kazakhstan

The city of Ridder is located in the north-east of Kazakhstan. It sits in the 'Rudny Altai' area at the foot of the Ivanovo range, in the upper reaches of the river Ulba (a tributary of the Irtys). The city was founded in 1786 and named in honour of the discoverer of ore deposits, Russian mining engineer Philip Ridder. The population is 57,969 and the city is a major center of mining and processing of metals.

The city is located in a seismic zone with the possibility of earthquakes up to 8 points on the Richter Scale. Man-made hazards include mining related incidents, household and industrial fires, incidents involving chemically hazardous objects, including the release of highly toxic substances, and subsidence and the collapse of buildings.

Due to its geographical location and the intensive development of mining, the city is exposed to a variety of hazards. In terms of natural hazards, the most common are seasonal floods, mudflows, landslides and avalanches.

On 20 September 2011 the city experienced a large fire which destroyed 282 hectares of forest, three farms, and 8 km of power lines. In April 2014, the destruction of a mine roof caused a huge rock fall that formed a 30 metre crater. Fifty-eight families had to be evacuated.

Khbraly Sabiyev, Head of Mobilization Unit for Civil Defence and Emergency Situations, Akimat of Ridder, Kazakhstan

"We would like to include the ten point checklist, essentials for making cities resilient in the development plan of the territory of Ridder and to incorporate it into our existing safety data sheet. It is relevant to the efficiency of our work in emergencies."

Flood in Ust-Kamenogorsk, Kazakhstan





Ridder, Kazakhstan

After receiving the training held in Almaty the city team launched a comprehensive hazard and risk assessment of Ridder, applying the Local Government Self-Assessment Tool (LGSAT) methodology.

The three-member team from Ridder brought together the professional and administrative experience and knowledge of more than 20 staff from the city administration. The discussions resulted in a detailed picture of the local hazard and risk profile based on the 41 indicators of the LGSAT.

The assessment highlighted the following:

- The funds available for disaster management (2 percent of the municipal budget) are used primarily for response and rehabilitation after disasters; no funds are allocated for disaster risk reduction
- The centralized system of early warning is obsolete; the system does not cover all residential and employment areas
- Risk information, although regularly updated on a regional level and shared with city authorities, does not reach all administrative and business structures and levels
- Most buildings and facilities in Ridder were built between the 1950s-1970s, and require detailed seismic resilience assessment; this includes education and health care facilities and institutions
- The current construction, maintenance and safety norms and regulations are adequate; however, their application should be improved
- The population is not trained in evacuation and safety measures; the knowledge of such actions is limited to theoretical information provided by local disaster management structures



Primary school damaged in flood, Tbilisi



Mr. Zhomart Muratov, Mayor of Ridder

“This project will enhance the knowledge and expertise of the city administration in disaster risk reduction. The introduction and adaptation of the experience and the work of other cities in the global campaign ‘Making cities resilient’ is very useful.”

Based on the risk assessment the city administration developed a Plan of Action for Resilience, under the guidance of the Deputy to the Akim (Mayor). A draft was submitted to the Akim. The risk assessment recommended to:

- Provide additional staff responsible for DRR and/or secure professional expertise to build DRR capacity
- Expand the functions and mandate of the existing Akimat Commission for emergency situations to increase attention to DRR; include representatives of social protection and health care systems in the Commission
- Cooperate with East Kazakhstan regional disaster management department to develop, update and distribute thematic risk maps
- Coordinate periodic updates and revisions of the Ridder city risk map based on hazard risk assessments
- Periodically update the city development plan of Ridder including changing risk trends
- Expedite the review process on the public facilities located in high risk areas, attend to retrofitting and re- construction
- Develop a plan of financial support to assess the risk of educational and health facilities; assign responsibilities in such an assessment
- Install anti-avalanche gabions and terraces in the harbor area and in the Gromotukha river gorge
- Strengthen sharing the local hazard risk information with population and the early warning systems
- Improve interaction with the population and the private sector to strengthen their engagement in disaster risk reduction; determine ways to intensify private sector involvement within the existing legislation
- Promote the development of new financial services of local micro-credit organizations to provide resources for the population for disaster risk reduction measures
- Prepare a proposal to East Kazakhstan regional government to intensify DRR activities among the population
- Involve trade and production associations to ensure their uninterrupted functioning during and after disasters
- Promote, with the private sector, more financial assistance to their staff and to the city population in the event of a disaster



Ust-Kamenogorsk, Kazakhstan

Ust-Kamenogorsk (or Oskemen): Emperor Peter I of Russia established this city in the north-east of Kazakhstan in 1720. It sits at the confluence of the Ulba and Irtysh rivers, the latter being one of the largest in Eurasia. Ust-Kamenogorsk is 280km west of Mount Belukha, the highest point of the Altai Mountains. The area is historically referred to as 'Rudny Altai' – 'Mining Altai'.

Ust-Kamenogorsk is the administrative centre of the East Kazakhstan region. It has a population of 326,000 people (2012); the city is a major centre of metallurgy, machine-building industry development, processing, and chemical and food industries.

The municipality is at high risk of flooding and earthquakes. The city's location in the Altai mountain range – part of the Mediterranean-Asian belt of seismic activity – puts it at risk of earthquakes of up to 9 points intensity on the Richter scale. The existence of several industrial enterprises that use toxic substances or produce toxic waste also poses a threat of various man-made hazards.

The last major flood in the city occurred in April 2010. A sudden rise in temperature caused rapid snow melt in the basin of the river Ulba. River banks were threatened as were 300 houses, schools, roads, and communication systems. Ust-Kamenogorsk launched a major effort to prevent damage. Within a week, the city constructed a dam that protected it from large-scale flooding.

Gori hospital building, Georgia





Mayor of the city of Ust-Kamenogorsk, Mr. Temirbek Kassymzhanov, said that “the key task of the city administration is to take effective measures to protect the city from natural hazards”.

The flooding experience demonstrated the importance of: possessing risk and hazard information; taking early action to reduce threats; and having sufficient funding to take such measures. The experience also revealed the importance of coordination between different departments and actors to reduce risk and prepare for and respond to disasters.

Following the LGSAT training in Almaty in June 2015, Ust-Kamenogorsk assigned a team to assess the city’s disaster risks and capacities. The city administration used the Local Government Self-Assessment Tool (LGSAT) methodology.

The assessment team, working with a UNISDR project expert, involved all of the city’s main departments and services to gather and review relevant information. Forty-one indicators were used to assess the city’s preparedness for disasters against a five-point scale, with one being ‘minor achievement’ and five being ‘comprehensive achievement’.

Gori City Mayor Mr. Zurab Jirkvelishvili (second left) with city risk assessment team





In assessing the project's contribution to effectively addressing this problem, **Mr. Temirbek Kassymzhanov: Mayor of Ust-Kamenogorsk, said,**

"We were given a great chance - to participate in the global campaign to strengthen the resilience of cities; one of our tasks now is to learn and use international experience and achievements in this area for the benefit of our city and the population."

Ust-Kamenogorsk, Kazakhstan

The LGSAT assessment highlighted the following:

- Disaster management in the city administration focuses on response and recovery and is organized in accordance with legislative acts of the country
- The existing legislation allocates only 2% of the city budget for disaster management. This allocation is adequate only for disaster response and for mitigation of losses from small-scale disasters. It is not sufficient for measures such as riverbank reinforcement, resettlement of population from hazardous zones, seismic reconstruction and retrofitting
- Funds and responsibility of disaster management activities are assigned to various ministries and their local departments. Therefore, local administration should strengthen coordination with such ministries and departments for better planning and utilization of resources
- Communities, local organizations and the private sector do not have sufficient knowledge and understanding of disaster risk reduction and the application of risk reduction measures
- The city's business sector is still developing. Its participation in disaster management is limited to individual humanitarian support after disasters and to general activities towards the city's well-being such as tree planting, reduction of air pollution, including from power generation
- Private sector managers are not adequately aware and trained in disaster risk reduction and emergency response



The team developed a comprehensive plan of action in accordance with the LGSAT findings. It comprises various spheres of activity within the mandate of the city government that require coordination with national structures. The plan, thus far, highlights the need to address the following:

- The city commission for emergency situations to include and prioritize disaster risk reduction in its work
- Senior personnel of Akimat (City Hall) and experts of municipal departments and services to be included in national training programmes for emergency and disaster management/disaster risk reduction along with senior representatives of private sector
- A regional data base to be created in the East Kazakhstan Region, with detailed information and analysis for all emergency situations, hazards and disasters
- A detailed request for financial resources for disaster risk reduction should be submitted to the Ministry of Finance and to the regional administration
- The city administration should work on the mobilization of extra-budgetary funds for DRR in partnership with local NGOs
- A legislative initiative should be launched on introducing favourable taxation for private sector organizations implementing and investing in DRR activities
- More effective dissemination of risk information among the city's population
- Revisions in the city development plan to reflect risk status and trends, including disaster risk reduction measures in the 2016-2020 Plan of Development of Ust-Kamenogorsk



Bishkek, Kyrgyzstan

Bishkek is the capital and largest city of the Kyrgyz Republic; it was founded in 1825 on the orders of the governor of Kokand, Madali Khan. The population is more than 900,000 and the city is divided into four administrative districts. It is located in the north of the republic, in the central part of the Chu valley, at the foothills of Kyrgyz ridge. This area is characterized by high seismic activity. Specific local geological conditions increase the effect of earthquakes on the surface. As such, the type and condition of soil is an important consideration in mitigating possible natural and man-made hazards.

The city's geology and geography influence floods, the groundwater table, landslides, and wind. These factors also implicate the impact of various man-made hazards at industrial sites.

In 2015, the city recorded three major emergencies associated with natural hazards. First in winter, severe frosts caused ice congestion on the river Ala-Archa with a consequent threat of flooding in large areas. Measures to remove the ice jams helped avoid inundation.

Second, in spring heavy rainfall and mudflow in Manka-Jar valley caused floods and disruption. Several buildings in the residential area of Archa-Beshik were affected.

Third, in summer the city experienced a destructive wind storm (speeds of up to 27 m/s). Fifty-four houses were damaged. There was also severe disruption of power supply systems. Early warnings issued by the Ministry of Emergency Situations and the State Agency of Hydrometeorology in each situation were helpful.

According to the risk assessment conducted in the summer of 2015, the city lacks: technical equipment for the specialized services of the city; and funding for disaster preparedness.



Market sellers, Kyrgyzstan



The Local Government Self-Assessment Tool (LGSAT) indicated a number of other shortages and gaps, including:

- The city development planning process does not involve the social sector
- The city budget does not foresee resources for DRR; funding is provided only for post-disaster early recovery works
- The city's population does not have insurance for disasters
- Existing and forecasted hazards and risk are taken into account only in the construction of large apartment blocks. Individual (private) construction often violates construction norms and standards.
- Disaster risk is not taken into account in the communications and transport sectors
- There are no unified standards and methods for regular risk assessment
- Regular training for actions in emergencies is organized but is only desktop exercises. Community leaders and the business sector are not involved
- Development planning pays attention to environment protection; however, intensive construction processes have damaged the city's storm water drainage networks



Training workshop with city officials in Bishkek



Bishkek, Kyrgyzstan

The LGSAT assessment provided the basis for a City Resilience Action Plan, developed by the team headed by Vice-Mayor of the city Mr. Bakytbek Dyushembiev:

- All local government departments should regularly receive training on DRR basics; a responsible person should be assigned for the task
- A Council for disaster risk reduction should be established at the office of Mayor; members of the Council should receive comprehensive training in DRR. The Council should include representatives of community groups, business sector, and vulnerable groups
- The city budget should include an allocated special item for DRR; extra-budgetary sources of funding for DRR should be sought
- Local authorities should cooperate with local trade and industry associations to develop mechanisms to ensure their uninterrupted functioning during and after disasters
- Periodic assessment of risk should be established specifically for vulnerable sectors of development; all development decisions should be based on risk information
- The practice of informing the population on developing threats and risk trends should be expanded, including in terms of early warning systems
- Risk maps for Bishkek should be prepared and periodically updated; construction of housing and infrastructure should take these risk maps into account
- Modern technologies and means should be used to protect key infrastructure and public facilities; the required financial resources should be secured



Karakol, Kyrgyzstan

Karakol, founded in 1869, is the largest city in the Issyk-Kul lake region of Kyrgyzstan. It is located at the foot of mountains, 12km from Issyk-Kul's east shore. The picturesque landscape, of mountain rivers, beautiful hill slopes and alpine valleys, attracts tourists throughout the year, especially in winter. The city has well developed infrastructure for sports and tourism; although along with other sectors of the city economy it is in need of development and investment.

The population of Karakol is 65,000 people, most of whom are engaged in services, tourism, and the food industry. The city hosts a number of industrial enterprises and several educational institutions.

Because of its location, the city is prone to various hazards such as earthquakes, landslides, snow avalanches and floods. The increase of hydro-meteorological related disasters in the last decade is also probably linked to global climate change. In such a context, the Mayor of Karakol, Mr. Ryskul Kalygulov, regards building resilience to disasters as an important part of protecting the city's wellbeing and prosperity.

Karakol city is under regular threat of disasters. The largest recent calamity was the July 2011 flood. A sudden increase in temperature and continuous rains caused an accelerated melting of glaciers. The river Karakol that crosses the city swelled and destroyed 20 meters of river embankment above the Przhevalski Street bridge. Nearby residential and public buildings were also damaged.

Mr. Ryskul Kalygulov the city Mayor of Karakol

noted that "... the Resilient Cities project provides a unique opportunity to learn from cities in the region and elsewhere on how to identify and integrate effective approaches to reduce disaster risk in the work of local authorities".



Kazakhstan team at group work

Karakol, Kyrgyzstan

In July 2015, the city applied the Local Government Self-Assessment Tool (LGSAT) methodology and its 41 indicators. The assessment rated Karakol on a score between 2 and 3, on a scale of 1-5. This provided the baseline for developing a plan of action to strengthen the city's disaster resilience.

The risk assessment indicated a number of areas that require attention:

- Institutional and administrative arrangements do not include a special line item in the city budget for disaster risk reduction
- The municipality does not possess technical, financial, intellectual and other resources required for effective disaster risk reduction and early recovery
- Business and trade associations do not promote DRR among their members
- The city government does not disseminate information on local trends in disaster risk and ways to reduce it among the population
- Private construction frequently violates design and construction norms and standards
- Training and information programmes in disaster management do not involve the private sector, NGOs and community leaders

Following the risk assessment, the Mayor of Karakol issued a resolution ordering the establishment of the Council for Organization and Coordination of Disaster Risk Reduction in the city. The resolution brings together all of the city's departments, sections and services to coordinate DRR-related action. The first meeting of the Council finalized the plan of action. Its first resolution was to include the City Council (Kenesh) in the Council for Disaster Risk Reduction. The authorities supported this recommendation and further discussions involved the chairman and the deputies of the city parliament.

The plan of action involved more than 30 representatives and experts of city services and departments, local NGOs, social and economic sectors. The sections that require significant institutional, administrative and financial resources were initially viewed as challenging. However, as participants identified constructive approaches many became more feasible. The unanimous conclusion was that training, education and exchange of experience are the first priority to address both short-term and long-term tasks in the Plan of Action.

Mr. Ryskul Kalygulov, Mayor of Karakol, who also participated in the deliberations of the "Local Government" Major Group at the 3rd United Nations World Conference for Disaster Risk Reduction (WCDRR) in Sendai in March 2015 said

"The information, knowledge of modern methodologies and approaches promoted in the 'Making Cities Resilient' campaign was useful in the assessment of risk and development of a plan of action for building the resilience of Karakol city to disasters. With this learning and exposure we will improve the effectiveness of our strategy and practical actions, and improve the disaster resilience in our city, the knowledge and skills gained at the training workshop provide a great resource to strengthen preparedness of the city to disasters", says the Mayor."

The Plan of Action includes the following components:

- The Council for Organization and Coordination of Disaster Risk Reduction should include representatives of all municipal structures and potential partners
- The detailed mechanism of functioning of the Council should be developed and enforced, to ensure effectiveness of its work and procedures
- The municipality and local council should study the possibility of legislative initiatives to stimulate involvement and investment by the private sector in DRR
- Information on vulnerable groups in the city should be periodically reviewed
- The authorities should develop a mechanism for informing vulnerable groups about hazards and risk through media, social protection and health care
- Plans of assistance to vulnerable groups during emergencies should be developed, with involvement of NGOs and volunteers
- Disaster risk reduction activities should be included in the city budget as a separate line item; the financial allocations for DRR should be coordinated and approved by the city council (Kenesh)
- Extra-budgetary sources of financing for DRR should be researched; the authorities should develop partnerships with NGOs and international organizations; the options for stimulating investment by the private sector and NGOs in DRR need to be studied
- The municipality should cooperate with emergency management structures in obtaining detailed risk maps for all hazards, and share the maps with all stakeholders
- The city development plan should be revised to consider risk trends
- Responsibility for protection of public infrastructure and facilities in disasters should be strengthened
- Sources of funding for the assessment of risk for educational and health facilities should be sought; responsibilities and roles defined
- Alternative ways of informing and educating population on DRR and on behaviour in emergencies should be developed and implemented (video, games, cartoons, etc.)
- The practice of regular training for response and preparedness should include the private sector, in particular tourism agencies

Mr. Ryskul Kalygulov, Mayor of Karakol



The Way Forward

The main issues, gaps and needs identified in the assessment of all eight cities have, of course, local characteristics, but all broadly fall within the four priorities for action of Sendai Framework for Disaster Risk Reduction. Under each priority, the project has confirmed the importance of the following:

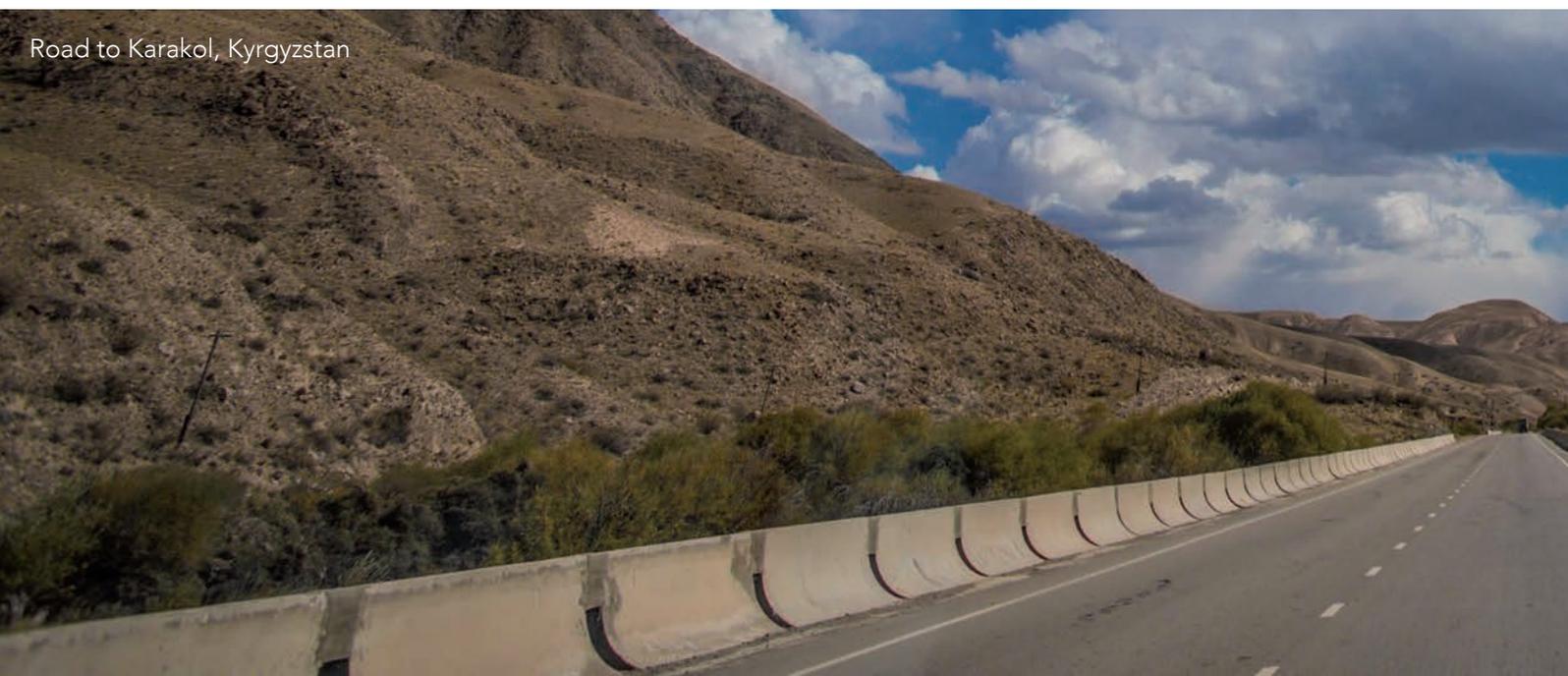
Priority 1 Understanding disaster risk: The need for available and accessibility of risk information, and risk-informed decision making in urban planning

Priority 2 Strengthening disaster risk governance to manage disasters: The need for a strong institutional and administrative framework for disaster risk reduction at the local level; creation and strengthening of disaster risk governance at the city level; a DRR-oriented approach in disaster management; risk inclusive local development; the participation of all sectors of society; influence in national processes; and cooperation between national and local governments

Priority 3 Investing in disaster risk reduction for resilience: The need for available resources – such as finance, human, risk information, knowledge, partnerships and administrative – for disaster risk reduction and the building of resilience

Priority 4 Enhancing disaster preparedness for effective response and to “Build back better” in recovery, rehabilitation and reconstruction: The need for commitment to implement and adhere to norms, rules, and standards in construction, development, and preparedness

Road to Karakol, Kyrgyzstan



The eight cities have taken a collective step forward to implement the priorities of the Sendai Framework at the local level. Their Resilient City Action Plans all focus on building sustainable local capacity to protect local populations, infrastructure and community services and assets.

The Action Plans re-iterate the importance of all-of-society engagement in city resilience building; women and men, children and youth, consideration of the concerns of specifically vulnerable groups and the collaboration of public and private sectors.

This project has been an outstanding example of international partnership in support of dynamic city partnership. This theme of collaboration – a cornerstone of the Sendai Framework – needs to be strengthened. The nature of disaster risk is complex and requires an inclusive and participatory approach under the leadership of national, and of course, city authorities.

The eight cities are now well placed to implement the Sendai Framework. To maintain their momentum, the cities will need ongoing support to implement their plans within overall local and national development plans. This will include periodic risk assessments, risk-informed building codes, land use planning, and building local institutions, such as 'DRR councils for governance'.



A colorful, stylized illustration of a city skyline at the bottom of the page. The buildings are in shades of purple, green, and yellow. There are wind turbines, a large yellow sun, and a small white bird flying in the sky.

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