

# #27

## Urban Resilience and Sustainability



Peer Learning  
San Jose, January 2020

 **UN HABITAT**  
FOR A BETTER URBAN FUTURE

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UN Office for Disaster Risk Reduction

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# Foreword

**Local and regional governments in Central America and the Caribbean face multiple hazards that put at risk cities and territories. A good part of these hazards are related to extreme weather events such as hurricanes, heavy rainfall, and droughts. Due to climate change, the intensity and frequency of weather-related extreme events will increase further and raise the risks of disasters in the whole region.**

This reality has led us in San Jose, Costa Rica, to work to improve our resilience by identifying impending risks, establishing strategies to mitigate them, and preparing the communities in case they should strike. We have also worked together with the national government and other cities in Costa Rica to create departments and focal points to work across territories and levels of government to coordinate disaster preparedness.

However, urban resilience is more than just a series of disaster risk reduction measures. These initiatives must be embedded in a general strategy for sustainable urban development that makes our cities inclusive places that provide opportunities for all citizens. This major challenge can only be confronted successfully if partnerships and cooperation are put at the front. This calls for multi-level cooperation and assistance within countries but also with international actors. The local and regional level must receive the necessary financial and technical support to increase resilience and drive the transition towards sustainable development.

Mayors from the whole Latin American region face similar challenges in their cities and effective solutions can be transferred from one territory to the other. This is why networks of local and regional governments are so important. Nationally, our local government associations function not just as the voice of cities but also as hubs for local knowledge and capacity building. Networks like UCLG, FLACMA and CAMCAYCA enable local knowledge transfer between cities and regions within and beyond Latin

America. City-to-city cooperation presents a promising opportunity to foster the development towards sustainable and resilient cities, and UCLG's learning agenda plays an important role to facilitate such learning processes between the members of our network.

In this sense I am proud that my city, San Jose hosted, together with the National Union of Local Governments of Costa Rica (Union Nacional de Gobiernos Locales), this peer learning on urban resilience and the localization of the Sendai Framework for Disaster Risk Reduction. I want to thank UN-Habitat, UNDRR, CAMCAYCA, FLACMA and UCLG for their partnership that made this learning exchange possible and I hope that this gathering is just the beginning of a longer learning process between all the participating local government associations and cities that joined us from the whole Central American and the Caribbean region.



**Johnny Araya**

Mayor of San Jose  
and UCLG Co-President

# 1. Introduction

## Peer Learning as tradition of the municipal movement

UCLG as the network of local and regional governments and its associations has a long tradition of city to city cooperation across national borders and continents. The peer learning methodology developed and promoted by UCLG Learning follows this tradition of the municipal movement and creates opportunity for knowledge exchange and cooperation between the members of the network. Over the last years UCLG has facilitated numerous of such learning exchanges on different topics and with members from all continents. However, indifferent of the topic peer learnings are always demand driven and reflect the interests of our members and their citizens and local leadership. Moreover, a central characteristic is the learning process between cities as peers where the participants are teacher and student at the same time. They are encouraged to share their knowledge and know-how while listening and learning at the same time from the other participants.

The main objectives of a Peer Learning are:

- **The transfer of local knowledge**, capacity and experience from city to another city
- **Establish technical assistance** for common challenges of participating cities
- Foster and establish **cooperation between participating cities**

# UCLG's Agenda on Resilience and Disaster Risk Reduction

**Disasters usually occur locally and challenge the capacities of local and regional governments to recover and respond. As the closest governance level to the people, they are the first on site when a disaster strikes. Furthermore, the majority of measures regarding disaster risk reduction fall under local or regional responsibility and they are frequently related to municipal service provision. In other words, local and regional governments are at the forefront of disaster risk reduction.**

The Sendai Framework for Disaster Risk Reduction outlines the global objectives to increase disaster resilience and reduce losses in the period from 2015-2030 and specifically highlights the central role of local and regional governments for the accomplishment of this global agenda. Awareness raising around disaster risk reduction happens at the local level and it is the responsibility of local governments to encourage commitment among citizens. Moreover, cities and regions need to increase their capacity for disaster risk management if disaster resilience is to be increased globally. UCLG as the global network of local and regional governments and their associations was actively involved in the formulation process of the Sendai Framework<sup>1</sup> since its initiation, and was able to successfully lobby for the full consideration of the local and regional level. Since its adaption in 2015, UCLG has been continuously involved in the steering and evaluation of this global agenda and represents the local and regional level at all central meetings and events. Furthermore, Resilience and Disaster Risk Reduction is also a central topic within the network and its relevance for local and regional governments is intensively discussed within one of the four UCLG policy councils; *safer, resilient and sustainable cities, capable of facing crises*. In addition, the working group on territorial prevention and management of crises - composed by leading members of the network - leads joint action on resilience and disaster risk reduction and supports the UCLG core program. This strong representation of resilience and disaster risk reduction within the consultation mechanisms of the network demonstrate the relevance of these topics for the local and regional level.

1. <https://www.undr.org/implementing-sendai-framework/what-sf>



UCLG's participation in the Global Platform for Disaster Risk Reduction 2017 and 2019



An example of UCLG's commitment to the objective of the Sendai Framework is the integration of the topic in its learning agenda. Over the last years a series of learning exchanges on Resilience and Disaster Risk Reduction were facilitated with different nodes of the network. The peer learning methodology presents a great opportunity to foster the knowledge exchange between cities and to create a continuous learning process within the network. For the future, UCLG will also include the Sendai Framework in learning around the localization process. More concretely, UCLG will develop complementary to its Learning Modules on SDG Localization a guide for the localization of the Sendai Framework. With this additional learning tool, Resilience and DRR will be further strengthened within the network and even more local and regional governments and their associations can be mobilized to engage in the localization of the Sendai Framework.

UCLG Peer Learning on Disaster Risk Reduction in Surabaya 2018.



+ info:

Local and Regional Disaster Risk Reduction (note #24, UCLG peer learning)

## 2. Central America and the Caribbean – cities and territories at risk

### Disaster Trends

Latin America and the Caribbean is the second most disaster-prone region in the world. Between the 2000 and 2019, the region was affected by 1,205 disasters,<sup>2</sup> among them 548 floods which make this kind of hazard the most common in the region. The second most frequent hazard recorded were storms, which accounted for 330 disasters in the corresponding period. This includes 17 hurricanes on average per year and 23 category 5 hurricanes which are major threats to cities and territories with high vulnerability. Furthermore, the region has high seismic activity as evidenced by the 75 major earthquakes that occurred in the same period. For example, the 7.0 magnitude earthquake that devastated Haiti in 2010 caused the loss of 230,000 lives and displaced 2 million people.

The region is commonly affected by drought, intense rains, cyclones, and the El Niño and La Niña phenomenon. The impact is especially relevant within the context of food security and the important role of the agroindustry in many countries of the region. Moreover, the current outlook for the future expects a further increase in economic losses due to disasters and even higher numbers of affected people in the region. In addition, climate change is leading to higher frequency and intensity of climate-related extreme events such as droughts, floods, and storms. The good news is that both national and local governments are investing in disaster risk reduction that will reduce the economic impact and losses in the region.

It is undeniable that cities are the hubs for opportunities and offer potential for economic and social development. However, as more and more of the population is now living in cities, unplanned urbanization also brings challenges for local governments to ensure the safety and well-being of the

2. [https://reliefweb.int/sites/reliefweb.int/files/resources/20191203-ocha-desastres\\_naturales.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/20191203-ocha-desastres_naturales.pdf)

population. Central America and the Caribbean are especially affected by risk caused by unplanned settlement expansion, poor quality of housing, urban poverty and other consequences that challenge the livelihood of citizens. The rapid expansion of urban areas also destroys important eco-systems that have buffer functions regarding disaster risk and provide cities with necessary eco-system services such as water and food. Disaster risk reduction in Central America and the Caribbean therefore requires an integrative approach that puts disaster risk reduction at the heart of the sustainable development agenda.

## The Sendai Framework for Disaster Risk Reduction 2015-2030

In March 2015, the Member States of the United Nations adopted the **Sendai Framework for Disaster Risk Reduction 2015-2030**.<sup>3</sup> The global framework aims to substantially reduce disaster risk and losses in lives, livelihoods, and health and the economic, physical, social, cultural and environmental assets of persons, businesses, communities, and countries.

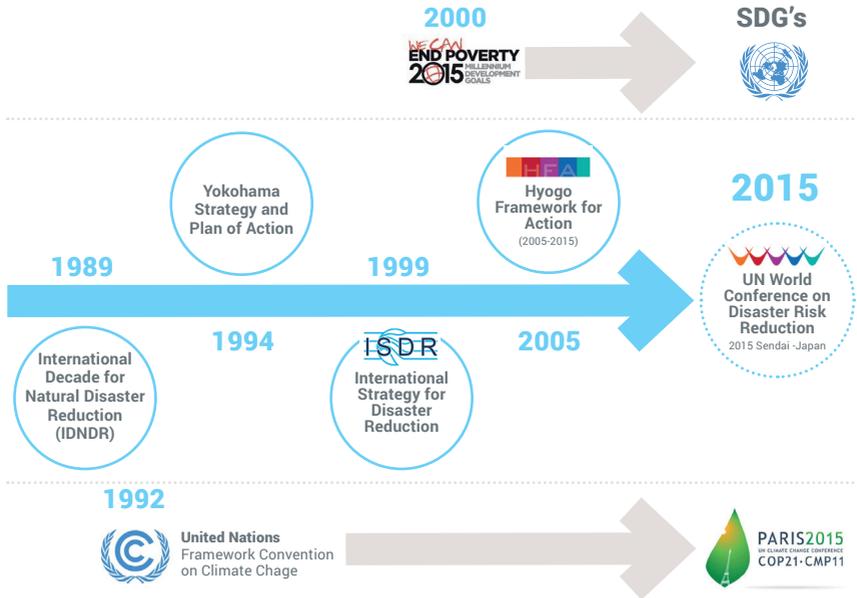
It sets out four specific priorities for action: 1) Understanding disaster risk; 2) Strengthening disaster risk governance to manage disaster risk; 3) Investing in disaster risk reduction for resilience; 4) Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation, and reconstruction. It highlights the significant shift from responding to disasters to managing the "risks" that create them to reduce disasters and losses. Indeed, its goal aims to prevent the creation of new risk, reduce existing risk, and invest in resilience while managing residual risk.

The Sendai Framework, although a voluntary and non-binding agreement, highlights explicitly the role of the States to reduce disaster risk but stresses that the responsibility should be shared with all other stakeholders. Disasters create not only human but also social and economic losses. Sustainable development, therefore, cannot be achieved without adequate local actions to reduce disaster risk. The Sendai Framework calls for strong coherence between disaster risk reduction and sustainable development action, while the 2030 Agenda for Sustainable Development recognizes the Sendai Framework as part of the foundation for achieving the Sustainable Development Goals (SDGs).

3. [https://www.preventionweb.net/files/43291\\_sendai-frameworkfordrren.pdf](https://www.preventionweb.net/files/43291_sendai-frameworkfordrren.pdf)

## Retrospective of Global Action for Disaster Risk Reduction

Source: UNDRR



Coherence is also found in the seven global targets of the Sendai Framework. These targets will support the assessment of global progress towards the expected outcome: the reduction of disaster risk. Global Targets A, B, C and D aim to substantially reduce: global disaster mortality, people affected by disasters, economic losses and damage to critical infrastructure caused by disasters and the disruption of basic services due to disasters. Global Targets E-G are set to increase: the number of countries with national and local DRR strategies by 2020, enhance international cooperation, and increase the availability of and access to multi-hazard early warning systems. Targets A-E are shared with some of the indicators of SDGs 1 (poverty), SDG 11 (sustainable cities and communities) and SDG 13 (climate action).

These seven targets are primarily addressed to national states even though their achievement depends considerably on local and regional governments. More concretely, when looking at Targets A, B and D, it

becomes clear that they cannot be achieved with national action alone but require the implementation of disaster risk reduction measures at the local level. Target D of the Framework might illustrate the critical role of local and regional governments even better as the provision of basic services is widely local. Target E includes the clearest reference to the local and regional level as it calls explicitly for the establishment of local disaster risk reduction strategies. Finally, Target G on early warning and risk reduction awareness requires at least a strong involvement of local and regional governments. Furthermore, it is important to understand that the Sendai Framework for Disaster Risk Reduction is not an isolated global agenda but complements frameworks like the Paris Agreement on Climate Change and the New Urban Agenda and it has to be implemented in coherence with the Sustainable Development Goals (SDGs).

## Links between the Targets of the Sendai Framework and the SDGs

Source: UNDRR

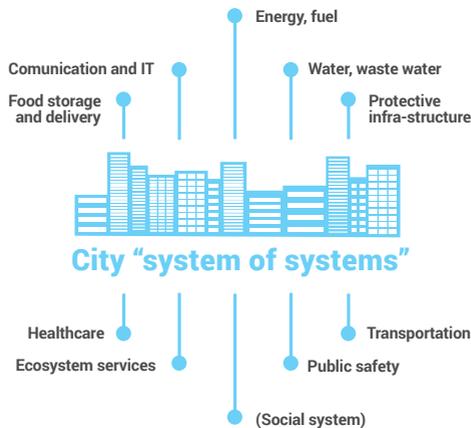
Sendai Framework for Disaster Risk Reduction 2015-2030

SUSTAINABLE DEVELOPMENT GOALS



## Resilience has to address the “system of systems” that makes up a city

Source: UNDRR



## Local Action – Making Cities Resilient Campaign “My city is getting ready!”

In 2010, the United Nations Office for Disaster Risk Reduction (UNDRR) and its partners, inter alia UCLG and UN-Habitat, launched the **Making Cities Resilient Campaign** with the primary aim to raise awareness of local governments and cities on the need to reduce disaster risks. To date, more than 4,300 cities have signed up to the Campaign with the mayor's commitment to making cities resilient.

Paving ways towards disaster risk reduction and disaster resilience building at the local level, the Campaign unpacks the concept of disaster resilience into the '*10 essentials for making cities resilient*'. Besides, the '*Disaster Resilience Scorecard for Cities (Scorecard)*' was launched in 2017 to support local governments and cities in developing a baseline snapshot of the progress and status of the disaster resilience building. Developed by IBM, AECOM and UNDRR with the support from the European Commission and USAID and replacing any predecessor version of the Scorecard and the Local

Government Self-Assessment Tool, the Scorecard helps local governments and cities to reflect on the existing gaps and identify potential actions to further increase disaster resilience.

## 'Ten Essentials for Making Cities Resilient'

The Campaign proposes a checklist of Ten Essentials for Making Cities Resilient that can be implemented by mayors and local governments. The checklist derives from the Sendai Framework. Achieving all, or even some, of these ten essentials will help cities to become more resilient. They are :



**Essential 1: Organize for disaster resilience.** Put in place an organizational structure and identify the necessary processes to understand and act on reducing exposure, its impact and vulnerability to natural hazards.



**Essential 2: Identify, understand and use current and future risk scenarios.** City Governments should identify and understand their risk scenarios, and ensure that all stakeholders both contribute to, and recognize these.



**Essential 3: Strengthen financial capacity for resilience.** Understand the economic impact of disasters and the need for investment in resilience.



**Essential 4: Pursue resilient urban development and design.** The built environment needs to be assessed and made resilient as applicable.



**Essential 5: Safeguard natural buffers to enhance the protective functions offered by natural ecosystems.** Identify, protect and monitor critical ecosystems services that confer a disaster resilience benefit.



**Essential 6: Strengthen institutional capacity for resilience.** It is important ensure that all institutions relevant to a city's resilience have the capabilities they need to discharge their roles.



**Essential 7: Understand and strengthen societal capacity for resilience.** Social “connectedness” and a culture of mutual help has a major outcome on the impact of disasters of any given magnitude.



**Essential 8: Increase infrastructure resilience.** Understand how critical infrastructure systems will cope with disasters the city might experience and develop contingencies to manage risks caused by these outcomes.



**Essential 9: Ensure effective preparedness and disaster response.**

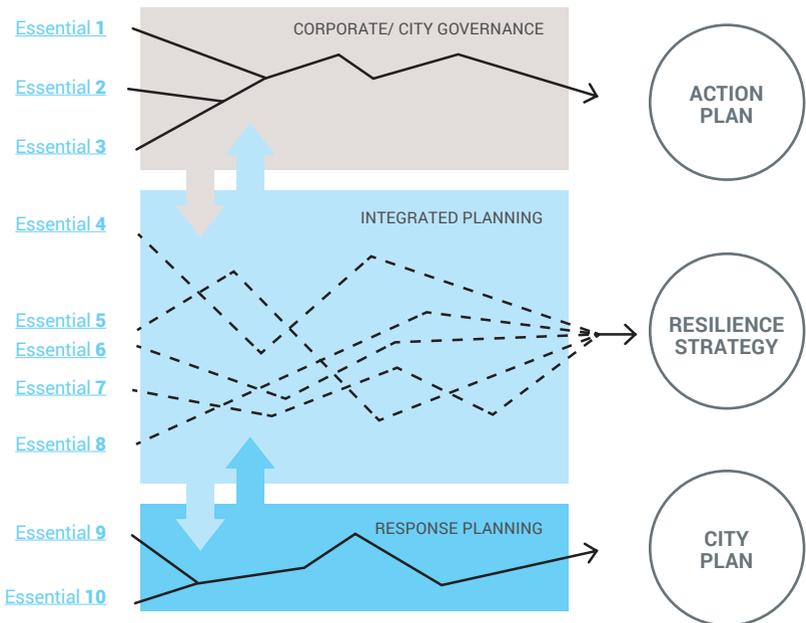


**Essential 10: Expedite recovery and build back better.** Recovery, rehabilitation and reconstruction can to a considerable degree be planned ahead of the disaster.

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### City Plan/ Resilience Strategy/ Action Plan

Source: UNDRR



## MCR Campaign Tools – 'The Disaster Resilience Scorecard for Cities (Scorecard)'<sup>4</sup>

The Scorecard provides a set of assessments that will allow local governments to monitor and review progress and challenges in the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030, and assess their disaster resilience. It is structured around UNDRR's Ten Essentials for Making Cities Resilient and is a free self-assessment tool. It is made available by the UNDRR, to be used by cities or local government.

The primary purpose of the **Disaster Resilience Scorecard for Cities**<sup>4</sup> is to:

- **Assist countries and local governments in monitoring** and reviewing progress and challenges in the implementation of the Sendai Framework;
- **Enable the development of a local disaster risk reduction strategy** (resilience action plans). A multi-stakeholder dialogue and approach between key city stakeholders will be necessary to complete the Scorecard, and is essential in the push towards more resilient cities.

There are two levels of assessment:

- **Preliminary level:** This approach is suggested for use in a 1 to 2 day city multi-stakeholder workshop. In total there are 47 indicators, each with a 0 – 3 score;
- **Detailed assessment:** This approach is a multi-stakeholder exercise that may take 1 – 4 months and can be a basis for a detailed city resilience action plan. It includes 117 indicator criteria, each with a score of 0 – 5.

A consultative addendum on resilience of Public Health Systems is also available<sup>5</sup>

4. <https://www.unisdr.org/campaign/resilientcities/toolkit/article/disaster-resilience-scorecard-for-cities>

5. <https://www.unisdr.org/campaign/resilientcities/toolkit/article/public-health-system-resilience-scorecard>

### 3. City 2 City Learning – practices and local knowledge

At the heart of every peer learning is the exchange of local practices. The participants are asked to prepare one practice from their city or region that has been implemented successfully and that has the potential to be transferred to other local and regional governments. The exchange takes place through poster presentations using the “gallery walk” methodology. Posters are presented simultaneously in rounds and in a relaxed atmosphere that triggers discussion and interaction between the presenters and the audience. Furthermore, the various rounds of presentation allow participants to see most of the practices in an interactive group setting. At the Peer Learning in San Jose, Costa Rica, that took place from 14th - 16th of January 2020, a total of 6 practices were presented and will be further introduced in the following paragraphs.

Source: UCLG



## **Local Risk Management Plans**

### **An experience from Municipalities of the Dominican Republic**

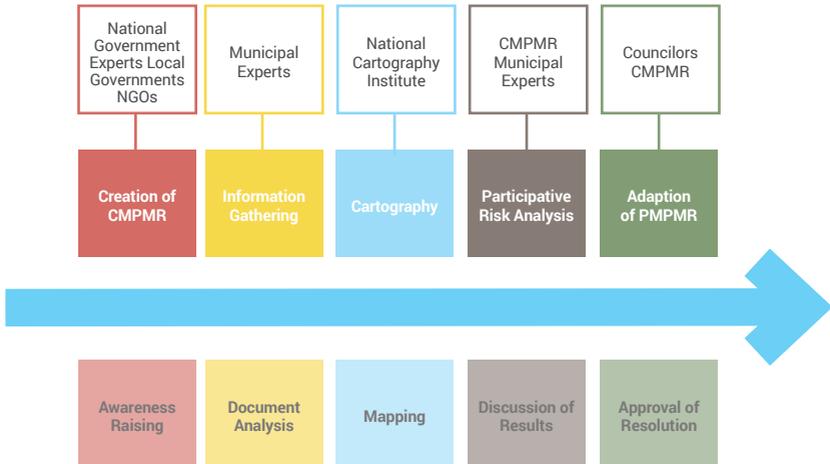
The municipalities of the Dominican Republic are among the 10 most affected local governments when it comes to extreme climate events world-wide. This means that the municipalities of the island are frequently threatened by hurricanes, thunderstorms, flooding, wild-fires, and droughts. At the same time, local governments are responsible for a range of competences that are directly related to the reduction of disaster risk in their territory such as spatial and urban planning, building regulations, and land use, which provide them with a certain scope of action. Apart from these sole responsibilities, local governments also share the competence for civil defense and general disaster risk reduction with the national level. Furthermore, a national integrated disaster risk reduction plan has been established to reduce the vulnerability of the island's municipalities to disasters.

At the local level, municipal disaster risk management plans (Spanish abbreviation: CMPMR) are a powerful tool to make cities and territories more resilient. The development of these plans consists of various steps and includes stakeholders like civil society, NGOs, and the national level. In a first step, a municipal committee for disaster prevention, mitigation, and response (Spanish abbreviation: CMPMR) is established. These committee plays a central role in disaster risk management at the local level and is responsible for the development of municipal plans for disaster risk reduction. The next step is the assessment of the resilience and risk exposure of the municipality with the assistance of local experts and the national cartography institute. Taking this assessment as a basis, the municipal committee for disaster prevention, mitigation, and response carries out a participatory risk analysis. The last step is the adoption of the plan by the municipal council which converts the plan into municipal policy.

The establishment of municipal committees and plans for disaster risk management have helped to improve the resilience of the municipalities in the Dominican Republic and show the commitment of local governments to reduce disaster risk. However, adequate financial and human resources provided by the national level are a precondition to make these initiatives successful.

## Steps and Central Actors for the Development of a Municipal Disaster Risk Management Plan

Source: FEDOMU



## In summary:

**Challenge:** High exposure to climate related risks and shared competences for disaster risk reduction between local and national level

**Strategy:** Development of an integral and participative municipal disaster risk management plan

**Lesson:** Need for a participative and integral approach to disaster risk management that includes local authorities and society, but also receives the necessary technical and financial support from the national level

**Transfer:** Integration of disaster risk reduction into municipal budgets and policies to assure consideration in local action.

## Local Strategies for sustainable development and resilient municipalities

### Experience from Panama

The local government association of Panama (Spanish abbreviation: AMUPA) identified the lack of awareness of local governments regarding disaster risk as the main challenge to make Panama's cities and territories more resilient. To mobilize municipalities and to promote local solutions to local problems, the local government association launched a comprehensive plan to increase the awareness and commitment of local governments across the country.

As a first step, a commission for risk management within the local government association was established and equipped with a clear mandate, steering committee, and budget. Furthermore, the commission prioritized partnerships and an integral approach from the very beginning and aligned their strategy with universities, international organizations, and other central actors.

The commission started its work with the organization of a series of workshops bringing together the communities, local experts, and mayors to raise awareness for disaster risk management and to promote a participative approach for local action. Among other methods, the combination of folklore and cultural traditions with disaster risk management was successfully used to



Workshops for awareness raising for disaster risk reduction.  
Source: AMUPA

increase participation. Moreover, the commission went on to provide technical assistance to the municipalities, supporting the creation of departments for disaster risk reduction within municipalities and fostering networks for learning and cooperation between municipalities. Another important aspect of the initiative is the combination of disaster risk management with local development. Linking disaster risk management with eco-tourism, ecology, agriculture, or livestock practices can help to mobilize the communities and facilitate the acceptance and adoption of disaster risk reduction measures.

In a first phase starting in 2017, ten pilot municipalities were closely supported, and in 2018 an online portal for local disaster risk management was established. The portal is based on the experiences from the pilot municipalities and aims to facilitate local action within the country. Moreover, and as consequence of the work of the commission, at least 12 municipalities have established a department for disaster risk management and local interest and awareness has been significantly increased across the nation.

## In summary:

**Challenge:** Lack of awareness about disaster risk reduction among local governments

**Strategy:** Creation of a commission within the local government association to address local disaster risk management

**Lesson:** The commitment of local leaders is central for action in local disaster risk reduction. Their engagement and the linking of disaster risk management with other relevant topics around local development can significantly increase interest and local action

**Transfer:** Consideration of local realities and challenges when approaching municipalities about disaster risk reduction. Favor participative approaches that includes all stakeholders and government levels.

## Integrated Municipal Waste Management Local Action from Honduras

In the era of climate emergency, Honduras has committed to reduce greenhouse gas emissions by 15% by the year 2030. To succeed in this objective, the improvement of waste management, commonly a local and not a national responsibility, is essential. Municipalities in Honduras are well aware of this responsibility and are acting to contribute to its achievement. A few municipalities in the north-west of the country, for example, have joined efforts to ensure that their territories improve waste treatment practices and contribute thereby to fight climate change.

In 2007, the association of the municipalities of the *Sensenti Valley*, which consists of the municipalities *San Marcos* and *San Francisco del Valle*, started to collaborate with the neighboring association of the municipalities of *Güisayote*, which consists of the municipalities of *Sensenti*, *La Labor* and *Lucerna*, to develop a common integral waste management strategy. Until that moment, each municipality was disposing their solid waste in several open dumps within the corresponding territory. The only recycling that occurred was carried out by informal waste-pickers “Pepenadores” and the insufficient sealing of the dumps caused serious environmental pollution. To tackle this issue, the two associations of municipalities decided to build a joint waste plant to collect and treat the solid waste from all five municipalities. In 2012 the new plant was ready and an intermunicipal waste-agency was formed to manage the collection and treatment of solid waste in the whole territory. The informal waste-pickers that worked before at the open dumps were integrated into the new plant as micro-entrepreneurs responsible for the recycling and sale of materials. Their engagement didn’t just guarantee a formal recycling scheme for solid waste for the first-time, but also generated more than a million libras of profit in the

Image of open  
dumpsites and  
the new solid  
waste treatment  
plant. Source:  
AMHON.



first few years. Additional campaigns in the municipalities helped to increase awareness about waste reduction and recycling, contributing to a more efficient and environmentally friendly system of waste treatment.

The example of inter-municipal cooperation for services like solid waste collection and treatment has recently inspired other municipalities and has expanded to other territories of the country since 2016. This innovative approach has also received positive feedback from the national level which promotes such inter-municipal cooperation. Acknowledging the success of the first cooperation in *Güisayote* and *Sensenti*, the example has also shown that such inter-municipal cooperation requires political will at the local level and a certain level of technical and financial resources that allow municipalities to invest and execute such projects. If these conditions are given, local governments can contribute their part to the reduction of greenhouse gases and to a transition towards a sustainable future in the whole country.

## In summary:

**Challenge:** Lack of modern solid-waste collection and treatment in municipalities and insufficient resources to tackle the issue individually

**Strategy:** Creation of an inter-municipal waste management strategy that allowed the joint construction of a modern waste plant, enabled recycling, and improved collection efficiency

**Lesson:** Inter-municipal cooperation can be a mechanism to overcome financial limitations around municipal service provision, but political will and a minimum of resources are required

**Transfer:** Learning and exchange provide the opportunity to transfer the practice of inter-municipal cooperation to other communities, but support from national or international actors facilitates the expansion of this practice.

## Reducing the risk of flooding for an urban micro-basin

### Managing San Jose's Ocloro river in **Costa Rica**

The city of San Jose, Costa Rica's capital and main urban center, tends to face heavy rainfall during its rainy seasons which lead to a sudden rise of the city's rivers and creeks. This is a particular problem for the most flood prone areas of the city, located around one of Ocloro river's micro-basins. The densely populated area suffered in the past several years from heavy flooding which caused serious damage in the neighborhoods and disturbances to the whole urban system.

In 2015 the city of San Jose launched an initiative to better manage the risk of flooding in this area starting with a comprehensive analysis of the hazards and risks. The analysis shed light on the hydrological and topographic reasons for the flooding and enabled a better understanding of the risk for people and infrastructure. The city, together with the affected communities, local politicians, local experts, and international institutions such as the Inter-American Development Bank, developed a risk mitigation plan.

The plan consists of three stages to mitigate the risk for flooding, aiming for short term solutions with a horizon of three years, mid-term solutions with a horizon of six years, and long-term solutions with a horizon of 15 years. In the short term and to directly reduce the risk for humans and infrastructure, two bridges were renewed, one street was enlarged, and the most critical points of the drainage system were widened. These first interventions in the infrastructure could already reduce the risk for flooding and are accompanied by soft-interventions such as new green spaces and increased greening of roofs and walls to facilitate natural retention and infiltration. For the medium- and long-term horizon, 11 critical points of intervention have been identified that require major refurbishment. These include the construction of two new bridges, extension of the canalization and drainage system, and the re-creation of green spaces. These interventions will go along with a general change of the aspired urban form, from low raise buildings to medium raise buildings that free up green spaces. In addition, an early warning system was established to guarantee on-time preparation and evacuation in case of flooding.



Images from a flooding in San Jose and map of the Ocloro river in San Jose.  
Source: Municipality of San Jose

The approach from the city of San Jose shows the value of technical and scientific expertise accompanied by strong political support and the inclusion of communities and local stakeholders. The strategy to mitigate the risk in several steps with different time horizons allows immediate action and a long-term solution to the problem.

## In summary:

**Challenge:** Repeating flooding of an urban area located in a micro-basin

**Strategy:** Long-term mitigation strategy with different steps that assures immediate action but also long-term risk reduction

**Lesson:** Integration of solid technical and scientific knowledge into urban disaster risk reduction measures, combined with engagement of all stakeholders including national and international experts and support by the political leadership

**Transfer:** Creating a broad consensus among political leadership, civil society, and technical experts when developing a strategy to mitigate disaster risk

## Reducing Flood Risk in the Twin Towns

### An example from **Belize's** Cayo District

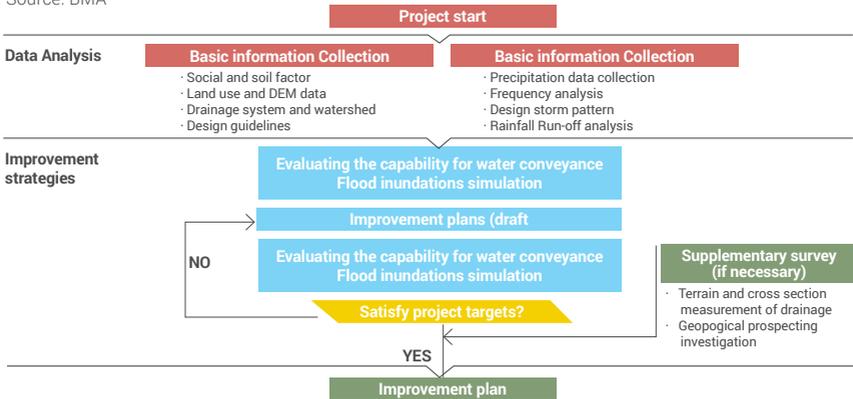
Belize is among the countries most at risk from the impacts of climate change, ranked as the 8th most affected country in the world in 2015. The main risks are related to storms and consequential heavy rainfall, strong winds, and flooding. On average, Belize is hit every three years by a major event that causes significant losses and damage. This puts municipalities in a difficult situation, especially as they depend largely on climate sensitive industries, namely tourism and agriculture. The twin towns of San Ignacio and Santa Ana in the western part of the country are additionally suffering from a topography that makes them especially vulnerable to flooding. Given this challenge, the municipalities developed a comprehensive plan to reduce their risk.

As a first step, the twin towns established a network with experienced national and international partners such as the Ministry of Health, Ministry of Environment, the Pan-American Development Foundation, and the Taiwanese Development Cooperation. Together with these partners, a mixed-method approach to tackle the local risk of flooding was developed. On the one hand, workshops for awareness raising and community-based education regarding disaster risk management were organized, in parallel to special trainings for the capacity building of local technicians. In 2019, at least 30 hours of training were provided by 20 national and international trainers. At least 100 businesses or households received training, more than 40 city officials improved their capacity regarding disaster risk management tools, and two volunteer events were held to implement low-cost flood risk reduction measures.

On the other hand, investments in risk assessment through GIS and early warning systems helped to improve the mitigation and preparation aspects of the territory's disaster risk management. Additionally, efforts to improve relevant regulations and to guarantee their enforcement were made. Representative examples for the outcome of this mixed-method approach and its implementation in the city's build environment are the new permeable pavers that facilitate the natural infiltration of water, new drainages, and bioremediation ponds and culvert expansions. In addition, the early warning system monitors the precipitation and river levels at several critical points. Owing to this combination of investments in the build environment, early warning, and increased awareness and capacity of citizens, city officials and businesses, the twin cities were able to significantly increase their resilience to flooding.

## Scheme of the disaster risk analysis and strategy development regarding flooding

Source: BMA



## In summary:

**Challenge:** The twin cities of San Ignacio and Santa Ana are very vulnerable to the risk of flooding due to climate change and the specific topography of the territory

**Strategy:** Development of a strategy together with national and international experts that includes interventions in the built environment but also capacity building for local citizens, public officers, and businesses regarding disaster risk management

**Lesson:** It is important to involve residents, local businesses and other regional and international partners to gather the maximum expertise and resources possible when tackling climate related risks

**Transfer:** Municipalities can pro-actively establish a network of national and international partners that allow the transfer of external knowledge into the municipality but also enable technical and financial assistance for projects.

## **Building back better in the municipality of Arecibo after a hurricane**

### **An example from Puerto Rico**

In 2017, hurricane Maria hit Puerto Rico and caused the heaviest destruction ever recorded in the territory. One consequence was the total loss of the energy and water supply on the whole island presenting a major challenge for the municipalities. Local governments had to improvise the provision of basic services for their citizens after a total collapse caused by the hurricane. The most urgent need was to provide water and shelters for the affected citizens. One of these affected municipalities was the city of Arecibo.

After the first response to tackle the emergencies regarding water and shelter provision, the municipality of Arecibo was in a difficult process of recovery and reconstruction. The municipality had to immediately reallocate an important part of its budget towards reconstruction as the assistance from the regional and federal government involved a very slow bureaucratic process. Even after the request for assistance was approved, the transfer of the funds took a long time. Therefore, Arecibo had to double their resources for infrastructure repair and maintenance, while maintaining other citizen services.

In order to deal with this complicated situation and better prepare for future disasters, the city took a list of measures within the reconstruction process. One objective was to increase awareness and knowledge for disaster risk reduction measures along the community. A series of workshops were organized for this purpose, including education around the correct discharge of waste in order to protect the river and canalization systems. Furthermore, partnerships with local actors such as community groups and churches were established to increase the outreach of these campaigns. In order to assist the local economy and reduce financial losses caused by the disaster, the municipality provided help for new and existing businesses and, in particular, tried to empower female entrepreneurs.

Along with these measures, investments in the built environment were undertaken with the goal to increase the municipality's disaster resilience. These measures included the installation of mobile water filters to guarantee the provision of portable water in case of disasters and the improvement of the communication systems through fiber optic technology. In some cases, the relocation of buildings to less vulnerable areas of the city was also proposed, especially in the case of critical infrastructure like shelters or hospitals. Moreover, the municipality launched

an initiative for local food production and storage to help reduce the dependence on transport in case of disasters.

The example of Arecibo shows the potential to link disaster response with reconstruction following the build back better principle. The initiatives and measures taken during the reconstruction process will significantly increase Arecibo's resilience and better prepare the city for future disasters.



Disaster response and build back better strategies in the municipality of Arecibo. Source: FAPR

## In summary:

**Challenge:** A hurricane caused record damage and interrupted water and energy provision of Arecibo and all other municipalities in the country

**Strategy:** Along with a handful of measures to immediately respond to local emergencies, the municipality used the reconstruction process to “build back better” and increase its resilience in the long term

**Lesson:** Combining immediate response and reconstruction with the “build back better” principle provides the opportunity to increase resilience above pre-disaster levels

**Transfer:** Identify possible risks and increase mitigation and preparedness measures to recover quicker from a disaster

## 4. City Resilience Profiling Tool “Light”

The City Resilience Profiling Tool, created by UN-Habitat, supports local governments develop resilience strategies by gathering verifiable data on the city’s performance, risks, stakeholder groups and their power to act. The profile also identifies the enabling or limiting policies, plans and initiatives that influence the city’s resilience. Given the complexity of systems within a city, full implementation of the City Resilience Profiling Tool can be an extensive exercise spanning several years. For some cities, earlier results and action are required in order to build momentum and show the value add of developing a resilience agenda.

Through the Making Cities Sustainable and Resilient Action, supported by EC DEVCO, the City Resilience Profiling Tool has been further developed into a lighter and more user-friendly tool with the guidance and support of United Cities and Local Governments (UCLG). Whereas the initial version gathered extensive data on the entire city as a starting point, then refined down to the priority action areas, the lighter version utilizes local knowledge as the starting point and filters down the data gathering. Local knowledge is gathered through a series of questions and consultations with the local government and seeks to gather basic information on risks, key stakeholders, the build environment and policy contexts.



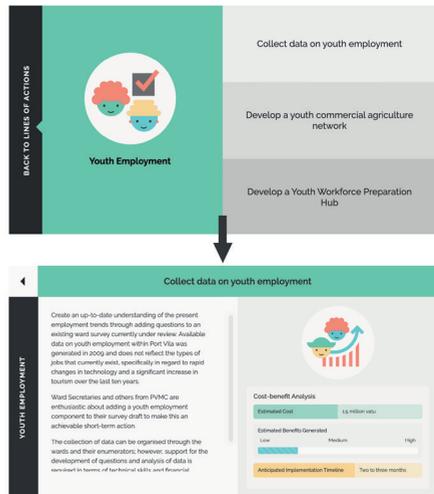
### City Profiles

These cities are or have implemented UN-Habitat’s City Resilience Profiling Tool.

With these key pieces of information, UN-Habitat’s 1400+ potential indicators and benchmarks contained within the City Resilience Profiling Tool are reduced to a more manageable number, allowing the local government to complete data collection over four or five months. Once the critical data has been gathered, UN-Habitat facilitates a workshop with the local government to identify prioritized and realistic actions that can be conducted in the city. These Actions for Resilience form the basis of a strategy and are divided into three groups:

- 1. Direct Implementation:** actions that the municipality can implement directly using existing resources and competencies. These measures can include increasing efficiency of processes such as water management to reduce the risk of drought, or increased data sharing to avoid duplicate efforts.
- 2. Joint actions:** the local government can initiate and lead these actions but will require partners and other agents to fully complete the action. These actions may include scaling up or facilitating existing initiatives being implemented by local NGOs on informality, food security or awareness raising.
- 3. Lobbying:** the local government does not have the competency, mandate or resources to implement these actions but should prioritize lobbying to the adequate government level or for policy change. Examples of these actions may include presenting the case to national governments for reform of building codes or decentralizing aspects of risk reduction to the local level.

The advantage of the profiling approach is that actions, vulnerabilities and progress can be monitored and tracked over time. The profile is live and can be updated as actions are completed. In some cases, the local government has decided to establish a permanent resilience unit within the municipality to continue working on the resilience actions in the city. This unit works best when other municipal departments actively commit to sharing knowledge, data, and progress with the resilience unit, and the engagement of key stakeholders in the city (private sector, community groups, national government) is promoted.



Examples of Action for Resilience on Youth Unemployment in the city of Port Vila. Source: UN-Habitat

A number of cities that have implemented the City Resilience Profiling Tool have already published their resilience strategy. These can be found on the Urban Resilience Hub, an open platform facilitated by UN-Habitat to promote local action on resilience.

## 5. Field visit to Santa Ana – a pilot city in resilience profiling

**Resilience is an objective that all cities can strive for, large and small. The level of resilience in a city is dependent upon individual and collective capacity of all the composite parts, meaning that resilience in one city does not look the same as resilience in another. To capture this uniqueness, UN-Habitat's resilience profiling is a flexible approach that allows cities to take stock of their vulnerabilities and decide on actions that fit their realities. UN-Habitat is supporting resilience profiling in many cities across the globe from large capitals to small island cities, from tropical climates to extreme arctic environments. In 2019, resilience profiling was initiated in Santa Ana in Costa Rica. UCLG is supporting this project through the national government association (Union Nacional de Gobiernos Locales). As well as adding value and perspective to the resilience profiling in Santa Ana, it is hoped that this involvement will allow for scale-up within the country.**

Santa Ana is a fast-growing intermediary city in the greater San Jose area and very engaged in resilience and disaster risk reduction as the municipality's membership of the Making Cities Resilience Campaign demonstrates. Under the leadership of the vice-mayor of Santa Ana, the municipality has committed to further increase its efforts by developing its resilience profile using the City Resilience Profiling Tool. The application of the tool will establish a city-wide vision for resilience unique to the city of Santa Ana, and a set of tailored and prioritized actions the city can take to increase its resilience. The ultimate goal of the profiling exercise is to identify actions that the city can lead to make impactful change in the city for residents. Throughout the process, the resilience profiling is building consensus among key actors (all levels of government, private sector, NGOs, community groups) around the resilience vision of the city and the path to achieve it.

## The field visit

For the peer learning, this ongoing collaboration provided the opportunity to share first results of this piloting with the participants. Therefore, a field visit to the municipality of Santa Ana was scheduled for the second day of the peer learning. The visit was led by the municipal resilience officer and had the objective to provide the participants with an idea on the most relevant hazards for Santa Ana and to introduce the disaster risk management of the municipality. The first stop was a new high-end condominium project in the hills above the city. Santa Ana can count on a large number of new up-scale housing projects that target, due to the proximity, San Jose's upper-middle class and upper-class. However, this development was built in an area highly vulnerable to landslides caused by a layer of soil that turns easily unsafe and moves during heavy rains. This precondition caused a major landslide during the construction of the project that put the success of the development at risk. During the visit, the developer of the condominium received the group and showed them the technical measure undertaken to guarantee the safety of the buildings and to reduce the risk for future landslides. This first stop stressed the importance of cooperation between private developers and the municipality which is the basis for quick and effective measures for disaster risk reduction.

The next stop took the group to a neighborhood that is very exposed to the risk of flooding from a close river and that is characterized by the relatively low medium income of its citizens. The group visited a few houses that are especially vulnerable due to their proximity to the river and limited escape routes. The main challenge for this neighborhood regarding disaster risk management are the difficult ownership structures and the morphology of the terrain. Therefore, the focus of the municipality lies on effective evacuation plans and early warning of affected households.

Visit of a neighborhood exposed to flooding from a nearby river. Source: UCLG



After this last stop, the participants were received by the vice-mayor of the city, Laura Carmiol, for a joined lunch with city officials. During this break participants could exchange with municipal experts and discuss the impressions from the morning visit. In the afternoon the participants were officially welcomed by the vice-mayor of Santa Ana and experts from the municipality facilitated a debriefing of the field visit with additional information and discussion.

The rest of the afternoon was reserved for the presentation of the cooperation project of UN-Habitat and UCLG regarding resilience profiling. In presence of city officials and the vice mayor, the experts from UN-Habitat shared the first findings and outcomes of the resilience profiling for Santa Ana. During the field visit and the debriefing, participants discussed their understanding of Santa Ana's resilience story. Like all cities, it is characterized by risk stemming from the natural world but also stresses that stem from human activity. Particularly pertinent for the city's resilience is its intrinsic relationship with that of the capital city of San Jose, and the opportunities and challenges this represents.

## Resilience beyond natural disasters

For UN-Habitat, a resilient urban system is characterized by its ability to function when faced with shocks or other disruptions, and its ability to actively reduce the negative impact of these shocks on people and infrastructure. A key part of reducing negative impact in Santa Ana is to address underlying stresses that make its people and systems vulnerable in the first place.

Source: UCLG



In collaboration with UN-Habitat, the municipality firstly identified shocks, stresses, and challenges that are pertinent in the city. In Santa Ana, this was initiated through a risk survey circulated throughout the local government to gather different perspectives on risk within the city.

The preliminary results of this survey show for Santa Ana two major stresses that are both related to the rapid growth of the city. On the one hand the increasing use of individual traffic vehicles, and insufficient public transport are causing major congestions during the rush hours. On the other hand, a series of problems related to water management present a major stress. More concrete, increasing droughts due to climate change, shortages in the water provision for households and agriculture and the soil- and groundwater contamination caused by a lack of waste water treatment.

### Data towards Actions

Using the inputs and risks identified in the initial stage of the profiling exercise, priority data was identified for the municipality to gather. The purpose of data collection is to support findings with trackable information and identify the source of vulnerability, as well as potential resilience-building actions. Data collection is led by the local government and can be used as a baseline to track changes, trends and shifts. In Santa Ana, this meant collecting data on 8 areas of urban performance (Built environment, Supply chain and logistics, Basic infrastructure, mobility, municipal public services, social inclusion and protection, economy, ecology). In order to gather this data, the city drew on existing local data from the different departments and the general census. For data that was neither existing nor possible to obtain, extrapolations and estimations were used to create proxy values.

### Actions for Resilience

The next step in the resilience profiling in Santa Ana will be to combine the risk analysis with the data collection to define impactful resilience actions. This process will once again engage stakeholders to ensure buy-in and commitment to the defined actions. Collectively, the actions for resilience can form the basis for a resilience strategy in the city, while also serving as an evidence base for funding applications or partnerships with city, national or international partners.

## 6. Conclusions

The objective of a peer learning is the exchange of local knowledge and practices, the ad-hoc creation of new knowledge and the establishment of partnerships that enable a longer learning process between the participants. The gathering in San Jose provided an optimal opportunity to enable all of these three objectives and the local practices presented in the previous chapter 4 demonstrate the diversity and value of local knowledge regarding urban resilience and disaster risk reduction. Taking these practices and the further exchange that happened during the peer learning as a basis, this chapter intends to generalize the findings and draw conclusions that can be transferred to other cities and territories. The chosen approach for this aim is a clustering of the main findings along 6 principles that are highly relevant for urban resilience and disaster risk reduction.

### Effective territorial multi-level governance

Local and regional governments are at the forefront of disaster risk reduction, and are the first level to respond and coordinate the rescue and relief operations in case a disaster strikes. Given this undoubted responsibility, the results of the learning exchange confirmed the need for clear and effective multi-level governance mechanisms to ensure that the local and regional levels can fulfill this expectation. This means, on the one hand, a clear division of tasks between the local, regional, and national level, and a full mandate for the local and regional level regarding the most relevant competences for disaster risk mitigation such as spatial planning, urban development, natural resource management, waste collection, and water provision. Local leaders and experts know their city and territory best and must be enabled to take measures for disaster risk mitigation through the execution of local competences. On the other hand, this means also that the local and regional level must receive adequate financial and technical support from the national level. The national government must deliver the enabling environment that cities and territories need to increase their resilience.

## Partnership and Cooperation

These two principles are one of the bases for sustainable development (SDG 17) and are also central for disaster risk reduction. Furthermore, partnership and cooperation are relevant at all levels. Inter-municipal partnerships provide an excellent opportunity to join forces at the local level and overcome limitations regarding financial or technical resources through cooperation. International actors such as UN-Agencies, development agencies, or banks can also become valuable partners for local and regional governments. It is important that these actors cooperate directly with the local level and assist with technical cooperation that increases the capacity of municipal experts and the community. Moreover, financial support can enable necessary investments in infrastructure and provide positive impulses for the local economy.

## Integral and participative Disaster Risk Management

Disaster risk reduction is in its nature a cross-cutting issue that requires an integral strategy and cannot be successful if a sectorial approach is applied. Therefore, city or region wide disaster risk reduction strategies must be established that include all relevant stakeholders and institutions. This exercise must be carried out in a participative manner that ensures a collaborative development including local communities, NGOs, and private sector. In this way a reflection of the local reality, which is the basis for a broad consensus, can be guaranteed.

## Synergies with other Global Agendas

One of the big contemporary challenges for cities and territories regarding disaster risk management are hazards triggered or reinforced by climate change. This requires, on the one hand, initiatives for climate change mitigation to slow down this dynamic, and, on the other hand, measures for climate adaption in order to increase climate resilience. This example demonstrates the interdependency of the Sendai Framework with the Paris Agreement for Climate Change and the need to align these two global agendas

to better highlight its synergies. Moreover, urban resilience is also a result of several other factors related to sustainable development such as poverty, health, security, and economy. Therefore, disaster risk management must be embedded in the 2030 Agenda and aligned with the corresponding SDGs.

## **Local action for disaster risk reduction and Build Back Better**

The aim of disaster risk management is to reduce the probability that a disaster occurs and to lower its impacts, but, should one happen, local and regional governments are the first to respond. Once the rescue operations are completed, the recovery phase starts. Commonly, national and international help fades out in this phase and local and regional governments must lead the redevelopment process. However, this is also an opportunity to increase the city's or territory's resilience by applying the principle of Build Back Better.<sup>6</sup> Instead of just restoring the same conditions as before, the redevelopment can be used to reduce risk by either avoiding extremely vulnerable areas, or by increasing the resilience of buildings and communities in such places.

6. [https://www.recoveryplatform.org/resources/guidance\\_notes\\_on\\_recovery](https://www.recoveryplatform.org/resources/guidance_notes_on_recovery)

## **Local Government Associations and Networks as catalyzers of action and learning**

Local government associations are a pivotal actor in the localization process. They are focal points for national and international actors as well as for all the municipalities within the country. They are critical for the dissemination of awareness raising campaigns and tools but also essential for the local follow-up of such activities. Furthermore, local government associations have the potential to be a hub for city-to-city learning and cooperation. As such they can facilitate knowledge exchange activities within municipalities of the country and also bring them together with local government associations and municipalities from other countries. Moreover, local governments association are the voice of local and regional governments at the international stage through their participation in networks and global advocacy activities.

## Towards resilient cities and territories – The way ahead

The gathering of local government associations and cities from the Central American and Caribbean region to exchange local knowledge on urban resilience and disaster risk reduction must be the starting point of a longer learning process rather than a punctual meeting. Local and regional governments are at the forefront of a number of global challenges such as climate change and disaster risk reduction. It is in cities and territories where global agendas such as the Paris Agreement and the Sendai Framework can be achieved. It is the collective number of local actions that will inevitably lead the transformation towards a sustainable future. This is why cooperation and learning among local and regional levels of government is so important. This learning process must go beyond national boundaries and connect local and regional governments that share similar realities and challenges. Such local knowledge transfer enables transformative action that is crucial for the implementation of global agendas. In this sense, the peer learning held in San Jose intends to trigger such cooperation and exchange that continues after the gathering and hopefully engages also other nodes of the UCLG network. This peer learning note addresses in particular this last aim as it provides access to the main outcomes and practices even for people who could not attend the gathering in San Jose.

UCLG will continue to actively promote the role of local and regional governments and their associations regarding resilience and disaster risk reduction. The successful work on global advocacy will be carried on, and, as is the case for the Making Cities Resilient Campaign and its successor, even reinforced. Furthermore, learning on resilience and disaster risk reduction will continue to be a priority of the network. The development of a pedagogical publication, a learning module, that will function as a guide for training of trainer workshops within the UCLG network underlines this commitment. With the launch of the Learning Module that is envisaged for the second half of 2020, UCLG further underlines the importance of the Sendai Framework and its agenda for the local and regional level. The good and strong cooperation with UCLG sections and members, as well as also other partners, will be at the center of all Learning, following the principle of co-production. Special gratitude must be paid to the co-organizers that made this peer learning in San Jose possible: UN-Habitat, UNDRR, FLACMA, CAMCAYCA, and the local government association of Costa Rica (Unión Nacional de Gobiernos Locales). The key to sustainable cities and territories is cooperation and co-creation for which this peer learning definitely can be referred to as a good example.

## Partners

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