Baseline Analysis: Global Trends in DRR and Best Practice in Latin America and the Caribbean

Working Paper 4 (Work Package 2)

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Presentation

Latin America and the Caribbean is the second region most affected by disasters according to the UN, 340 million people live in cities highly vulnerable to disasters, 80% of events, 71.8% of deaths and 80% of affected housing are in intermediate and small cities, the risk continues to increase annually (UNDRR, 2021).

However, it is important to recognise that in the region there are movements such as civil society organisations, organised groups, professional activists, public sector and private sector that are contributing to Disaster Risk Reduction (DRR) through various practices. Also, different international organisations are supporting communities to achieve their goals through technical support and advice, funding or recognising their good practices at a regional and international level. However, there are still pending and different challenges around DRR (Castro, 2017).

Given the great diversity of contexts and practices, this analysis focuses on the Sendai Framework, the current global agenda on DRR (UNDRR, 2015a). The analysis is based on the Sendai Framework, and the experiences in Latin America and the Caribbean based on this agenda. The analysis aims to identify cases and recommendations considered good practices in prevention and emergencies.

Citizen participation and the use of digital technologies are key topics of the Smart Urban Resilience project. Therefore, this analysis focused on the one hand, on participatory processes, the exchange of experiences, training, awareness-raising, education and culture, among others. On the other hand, on the use of technologies, which appear in a lesser way and are recognised as costly by the stakeholders in the region.

The analysis of good practices consisted of a review of publications, visits to official websites and online sources. The document is composed of two main sections. First, it describes the international trends Sendai Framework 2015-2030. Subsequently, it describes regional trends in Latin America and the Caribbean, subdivided into three sections: (i) presentation of trends; (ii) trends in knowledge generation: education, training, and participation; (iii) trends in implementation: plans, programmes, technology, and public policies.

1 Global Trends

1.1 Sendai Framework 2015-2030

1.1.1 Principles and priorities

The Sendai Framework for Disaster Reduction 2015-2030 emerges in 2015 following the third United Nations World Conference, to follow up the Hyogo Framework for Action (2005-2015), which focused on "increasing the resilience of nations and communities to disasters by 2015, a substantial reduction of disaster losses, both in terms of human life, social, economic, and environmental assets of communities and countries"(ISDR & UN, 2005).

Through the Hyogo Framework, progress has been made in reducing risks at different scales, however, disasters continue to increase, and their effects are present in communities and countries. Yet several factors aggravate the situation such as poverty, climate change, unplanned urban growth, policies formulated without considering risks, and technological limitations.

In this context, the Sendai Framework aims to guide disaster risk management cross-sectorally and at different scales. Therefore, it aims to:

> prevent the occurrence of new and reduce existing disaster risks by implementing integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disasters, increase preparedness for response and recovery and thereby strengthen resilience"(UNDRR, 2015a).

The Sendai Framework in relation to the Hyogo Framework brings new elements, including an emphasis on disaster risk, and an understanding that DRR is not a sector, but an approach to be implemented cross-sectorally and a broadening of risks. Furthermore, the Sendai Framework seeks not only to reduce losses but also to reduce disaster risk by focusing efforts on hazard exposure, vulnerability and capacities and hazard characteristics.

In line with the above, the Sendai Framework promotes complementary actions in terms of reducing exposures of people and things to hazards, reducing vulnerability and increasing capacities, and reducing the dangerousness of hazards. It is in this sense that the objective of the Sendai Framework mentioned above is threefold (preventing new risks, reducing existing risks and strengthening resilience).

It is worth mentioning that the Sendai Framework recognises the variety of actors and their co-responsibility in the design and implementation of interventions, and the importance at the local level of communities, institutions, knowledge, and strategies (UNISDR, 2015).

The Sendai Framework is based on 6 principles (UNISDR, 2015)

| Primary responsibility of the State to prevent, reduce, ameliorate | Shared responsibility between central and local sectors and stakeholders | Protection of people and their belongings, promotion of human rights | Commitment of the whole society (it is everybody's business, nobody is left out or left behind) | Full commitment of the executive and legislative branches | Coherence of plans, practices, and mechanisms across sectors and agendas |

Specifically with respect to the protection of persons, the Sendai Framework states:

> Disaster risk management aims to protect people and their property, health, livelihoods and productive assets, as well as cultural and environmental assets, while respecting all human rights, including the right to development, and promoting their implementation (UNISDR, 2015).

And with regard to everyone's collaboration:

> Disaster risk reduction requires the involvement and collaboration of all of society. It also requires empowerment and inclusive, accessible and non-discriminatory participation, with special attention to those disproportionately affected by disasters, particularly the poorest. Gender, age, disability and cultural

perspectives should be integrated into all policies and practices, and women's and youth leadership should be promoted. In this context, special attention should be given to enhancing organised citizen volunteering (UNISDR, 2015).

Based on the latter, the Framework establishes the following 4 priorities:

1 To understand	• Understanding disaster risk
2 To strengthen	• Strengthen disaster risk governance to manage disaster risks
3 To invest	• Investing in disaster risk reduction for resilience
4 To enhance	• Enhance disaster preparedness for effective response and to "build back better" in the areas of recovery, rehabilitation and reconstruction
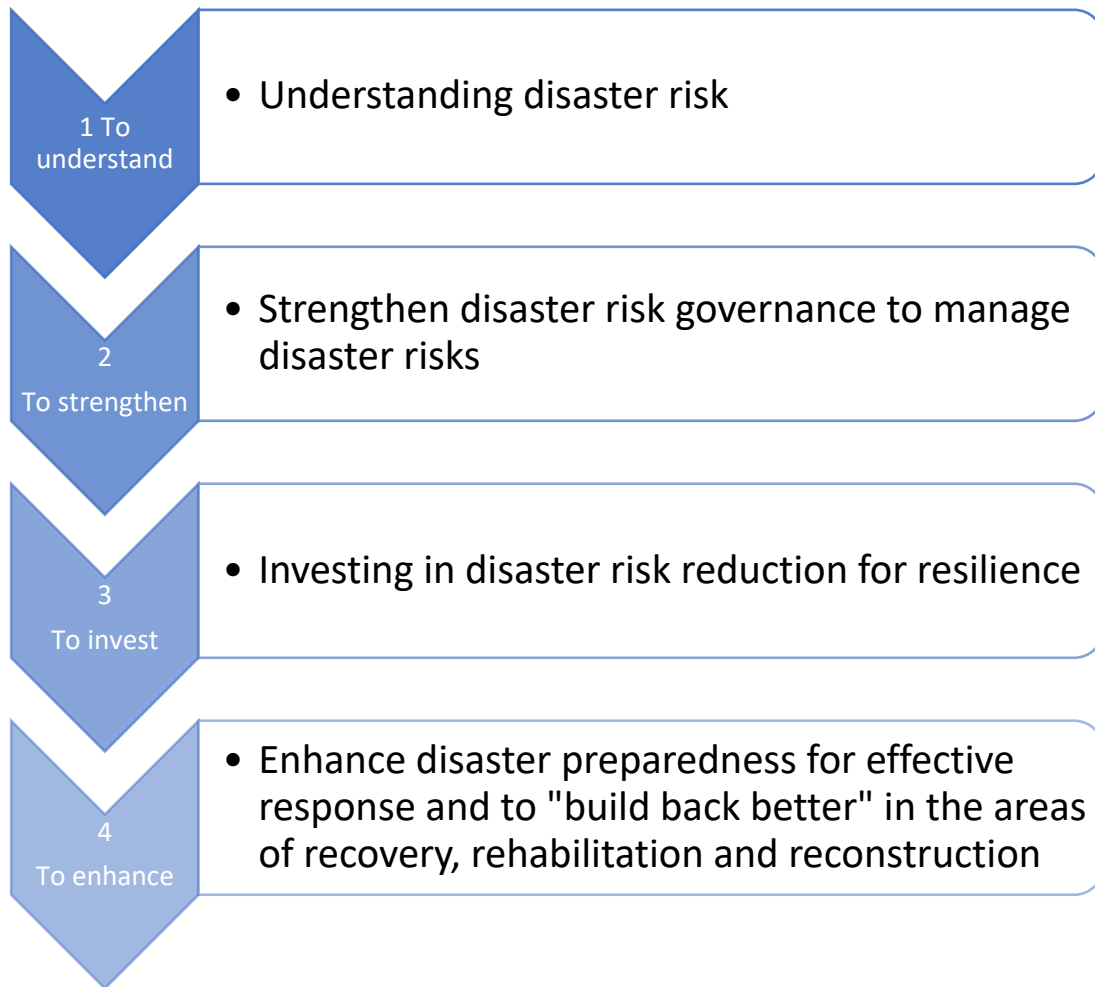
In addition, it involves the following 7 goals:

A	Significantly reduce global disaster mortality by 2030, and achieve a reduction in the global disaster mortality rate per 100,000 people in the decade 2020-2030 compared to the period 2005-2015
B	Significantly reduce the number of people affected globally by 2030, and achieve a reduction in the global average per 100,000 people in the decade 2020-2030 compared to the period 2005-20159 (sic)
C	Reduce economic losses directly caused by disasters as a share of global gross domestic product (GDP) by 2030
E	Significantly reduce disaster damage to vital infrastructure and disruption of basic services, such as health and education facilities, including by building their resilience by 2030
F	Significantly increase the number of countries with national and local disaster risk reduction strategies in place by 2020
G	Significantly enhance international cooperation for developing countries through adequate and sustainable support that complements action taken at the national level for the implementation of this 2030 Framework
H	Significantly increase the availability of, and access to, multi-hazard early warning systems and disaster risk information and assessments transmitted to people by 2030

With respect to the first priority, the Sendai Framework recognises the importance of strengthening the use of technologies:

> Promote and strengthen, through international cooperation, including technology transfer, the exchange and use of, and access to, non-confidential data and information, as appropriate, community technologies and geospatial and space-based technologies and related services; maintain and strengthen in situ and remotely sensed observations of the Earth and climate; and strengthen the use of media, including social networks, traditional media, big data and mobile phone networks, in support of national efforts for effective disaster risk communication, as appropriate and in accordance with national legislation (UNISDR,2015).

With respect to the goals, it identifies that to achieve them it is necessary to promote actions in practice and to give continuity to the existing ones:

Develop effective global and regional campaigns as tools for public awareness and education, building on existing ones (*e.g.* the "One Million Safe Schools and Hospitals" initiative, the "Making Cities Resilient - My City is Getting Ready" campaign, the United Nations Sasakawa Award for Disaster Reduction and the annual International Day for Disaster Risk Reduction) to promote a culture of disaster risk reduction: My city is getting ready", the United Nations Sasakawa Award for Disaster Reduction and the annual International Day for Disaster Risk Reduction), to promote a culture of disaster prevention, resilience and responsible citizenship, generate understanding of disaster risks, support mutual learning and exchange of experiences; and encourage all public and private actors to actively participate in such initiatives and create new ones at local, regional and global levels" (UNISDR, 2015).

1.1.2 Previews

Six years after its implementation and in the current situation the world is facing due to the COVID-19 pandemic, the goals of the Sendai Framework are at risk due to the economic and social priorities of the countries to face the needs due to the coronavirus. Indeed, the way risk is measured and managed will have to be transformed (UNDRR, 2021).

According to the Regional Assessment Report on Disaster Risk in Latin America and the Caribbean (UNDRR, 2021), an advance at the end of 2020 is that most of the countries in the region had DRR strategies, plans and policies (target E of the Sendai Framework). Another advance is the effort to promote regional and subregional strategies for DRR: Strategy for Disaster Risk Management in the Caribbean for CDEMA/CARICOMA member countries, the Central American Policy for Comprehensive Disaster Risk Management, the Andean Strategy for Disaster Risk Management, and the Strategy for Disaster Risk Management of MERCOSUR countries.

On the other hand, local strategies based on national ones is one of the goals with minimal or no progress.

Finally, countries have not shown development on targets A, B, C and D which are key to measuring the effectiveness of their work.

1.2 Articulation of DRR with other global agendas

In the last decade, the discussion on DRR and in particular on the Sendai Framework has been linked to the global Climate Change agendas, the Sustainable Development Goals and the New Urban Agenda (UN-Habitat, 2016; United Nations, 2015a, 2015c). Specifically in April 2019 the first conference on synergies between the 2030 Agenda and the Paris Agreement was held in Copenhagen and September of the same year the UN climate action summit focused on generating connections between these (Zhenmin & Espinosa, 2019) . On the other hand, the IPCC and UNDRR underline the role of DRR and climate action in achieving the SDGs (IPCC, 2018; UNDRR, 2019b) , and research is ongoing on the relationships between risks, sustainable development and climate change(Kelman, 2017) .

Illustration 1Articulation of global agendas. Source: UNDRR (2019b: 362).
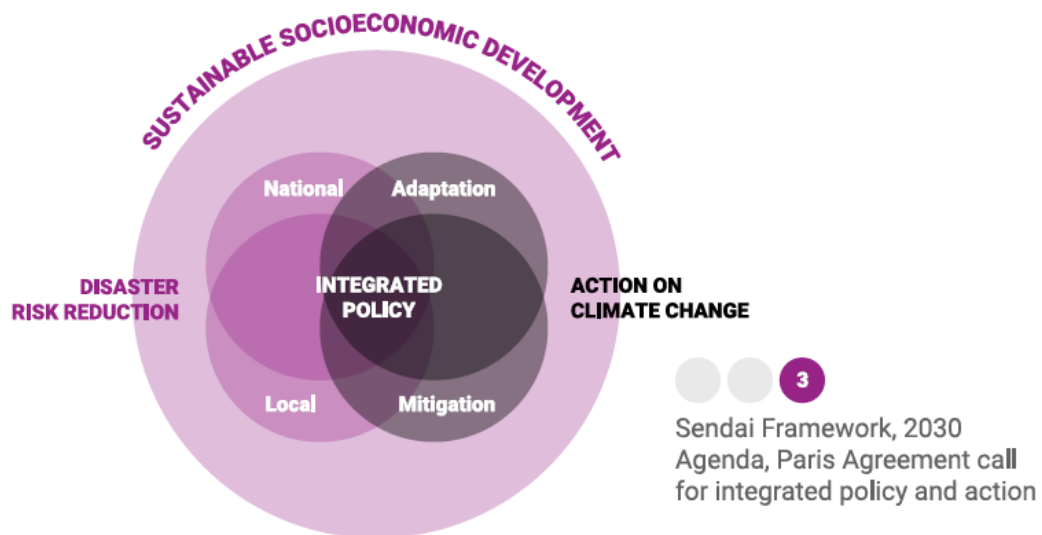
2 Best Practices Latin America and the Caribbean

2.1 Presentation

2.1.1 Universe of practices analysed

The practices analysed have been implemented through different initiatives of the following initiatives: Sasakawa Award, UNDRR's "developing resilient cities" campaign, ARISE good practices of the private sector in DRR and the UHPH (Urban Housing Practitioners Hub) best practice competition initiatives (see table 1).

Sasakawa Award. This award is given by the United Nations for Disaster Reduction, recognises the work of individuals and institutions for practices and initiatives aimed at reducing risk and vulnerability in communities. In addition to certificates of distinction and merit, the award is accompanied by $50,00 USD for the winners and is awarded at the Global Platform for Disaster Reduction (UNDRR, 2016). In 2015 were the first awards aligned to the Sendai Framework, it should be noted that this recognised award was established in 1986.

Global Campaign "Making Cities Resilient". The UNDRR through its global campaign "Making Cities Resilient" manages to influence in Latin America with support solutions and tools to governments and local actors, to improve their activities, reduce disaster risk, increase resilience. This initiative works through strategic partners, its implementation is based on the Sendai Framework (UNISDR, n.d.). Within the global campaign is "Municipalities of the month" where they are dedicated to promoting the work that local governments develop, each month recognises experiences on how local governments in Latin America address risk management.

ARISE Good Practices of the Private Sector in DRR. The United Nations Office for Disaster Risk Reduction (UNDRR) launches the call for "Good practices of the private sector in DRR" with the purpose of promoting experiences on how the private sector participates in DRR and exchange experiences in the Americas region. The practices in the private sector contribute from the implementation of DRR in their companies, businesses, and communities to be more resilient. In addition to the joint work of the private and public sector for DRR, they work aligned to the Sendai Framework (ARISE, n.d.).

UHPH Best Practices. The Urban Habitat and Housing Practices Platform is an open space for knowledge exchange and dissemination of practices for actors working on housing and urban habitat in Latin America and the Caribbean. The

platform links the digital space with face-to-face interactions for people to work, interact with each other and have access to information and practical solutions. They work aligned to the 2030 Agenda, hand in hand with UN Habitat, and promote international frameworks for sustainable development, climate change mitigation and disaster reduction (UHPH, 2020).

Table 1 . Description of initiatives

2.1.2 Detonator of experiences

In general, the development of practices that are being implemented in the Latin American and Caribbean region is triggered by a past event that has marked the territory and the population (directly and indirectly) or by the recognition that the territory of intervention is vulnerable.

With regard to the first trigger, this coincides with the idea that a disaster gives a guideline to initiate mitigation processes as Uriarte (2010) points out "the experience of overcoming together the difficulties of a disaster can contribute to develop significant social ties between those involved, signs of belonging and collective identity" or "past experiences help to raise awareness for change" (Carrizosa et al., p.211). Indeed, the past experiences of overcoming adversities within a territory in a collective manner, but there are also the memories of the present such as commemoration dates, acts of homage to victims, changes in action protocols, creation of institutions, among others, which act as a reference to the past.

With regard to the second trigger, *i.e.* the recognition that a territory is vulnerable and acts on it, giving rise to practices that are not necessarily linked to an event, as mentioned by Uriarte "community resilience is built on a daily basis, when people get involved in improving the environmental conditions of their community, participate in the reduction of climate change, in responsible consumption, in the implementation of human rights and social justice, in the resolution of conflicts" (2010). In this sense good practices involve seeking better living conditions, which influence the reduction of disaster management.

2.1.3 Sendai Framework linkage

The experiences developed in the region are contributing to the achievement of the triple bottom line of the Sendai Framework: preventing new risks, reducing existing risks and strengthening resilience. In addition, they are aligned with the Sendai Framework's goal of "driving action in practice and giving continuity to those already existing at the regional and global levels".

It should also be noted that the practices that are being developed through these initiatives revolve around participation and alliances with different sectors. In this sense, risk management is being carried out with the participation of the public sector at the three levels, the private sector, NGOs, academia and civil society. This, as the Sendai Framework establishes in its guiding principles

> Disaster risk reduction requires the involvement and collaboration of all of society. It also requires empowerment and inclusive, accessible and non-discriminatory participation, with special attention to those disproportionately affected by disasters, particularly the poorest. Gender, age, disability and cultural perspectives should be integrated into all policies and practices, and women's and youth leadership should be promoted (UNISDR, 2015).

2.1.4 Lines of action

The general lines of action are as follows: (i) knowledge generation: education, training, and participation; (ii) implementation of plans, programmes, technology, and public policies.

Out of a total of 61 (100%) practices analysed in Latin America and the Caribbean, 39 practices focus on knowledge generation (64%) and 22 on the implementation of plans, programmes, technologies, and public policies (36%).

Trend in lines of action

36%

64%

■ Knowledge generation: education, training and participation
■ Implementation: plans, programmes, technology, and public policies
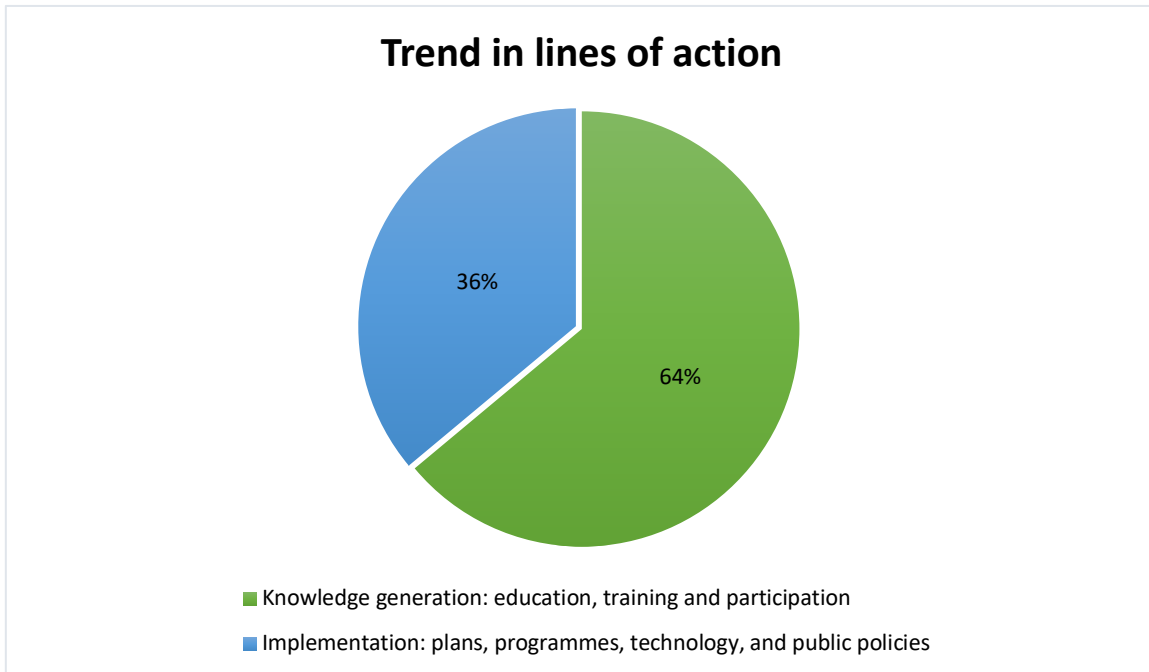
Graph 1 . Trends in lines of action

The following is a brief description of each of the practices.

2.2 Knowledge generation: education, training, and participation
2.2.1 Nocami, Cundinamarca, Colombia

Advances in Disaster Risk Management in Urban Settings: Towards Building Resilience in Communities with the Highest Degree of Vulnerability in the Nocaimera Community:

The participation of the municipality of Nocami in the campaign made its work in building resilience visible and facilitated the exchange of knowledge with other municipalities in Colombia affected by the 2010-2011 winter wave that have managed to recover from the effects caused and from different disasters. This has made it possible to understand the type of solutions and needs in their territory aligned to the National Risk Management System and incorporate the Risk Management Culture in the community. Finally, exposing their experience in the IV Regional Platform for Risk Reduction allowed them to consolidate themselves as a municipality aware and interested in building resilience, these discussion spaces provided the guideline to learn about other experiences and future allies. The municipality of Esteban Echeverría took advantage of the situation within the

Campaign to consolidate its risk reduction work and exchange experiences with different actors (UNDRR, 2015).

2.2.2 Lima - Peru

Advances in Disaster Risk Management in the district of Carabayllo:

The district of Carabayllo worked on risk estimates, prevention actions, risk reduction, preparedness before, during and after a disaster. They also worked in coordination with different agencies to articulate the National Risk Management System, with public and private institutions to strengthen their capacities and conduct meetings of the Working Group on Disaster Risk Management and the civil defence platform. Due to the experiences based, it is a priority of the district to promote a culture of disaster prevention (UNDRR, 2015b).

2.2.3 Paez - Cauca Colombia

Recovery of knowledge for the resilience of the Nasa Indigenous people in the municipality of Paez - Cauca Colombia: memory, observation, dream, and algorithm - pink:

Nasa is an indigenous people of the municipality Paez-Cauca Colombia, due to past experiences such as an earthquake, an avalanche and the reactivation of the volcano Nevado del Huila, they started a process of reflection-action-reflection for the reduction of risks due to volcanic events, based on a relationship with mother earth, alterations in nature and loss of cultural practices caused the accumulation and construction of risks in the territory.

The development of reflection-action-reflection led to the recovery and harmonization of knowledge from both the internal and external world accompanied by the ROSA technique (acronym for Remembrance, Observation, Dream and Algorithm). It should be noted that the Nasa Indigenous people in 2015 received recognition as one of the eight champions in disaster risk reduction globally awarded by UNDRR (UNDRR, 2015f).

2.2.4 Juan Lacaze - Colonia - Uruguay

Juan Lacaze advances in integrated risk management to increase resilience at the local level Juan Lacaze, Colonia, Uruguay:

The municipality of Juan Lacaze represented by the mayor, the team of councillors and the community work under the slogan "Well simple" a Sustainable and Resilient

municipality. They started with a clean-up project promoted by the Municipality together with key partners. In addition, a waste collection centre was opened to avoid the risk of flooding. These are some of the first steps and they are looking for an analysis of their hazards and vulnerabilities to reduce them and increase their capacities in disaster risk reduction. The municipality is motivated to advance in Risk Management, requesting its incorporation in the Global Campaign Developing Resilient Cities My city is getting ready! (UNDDR, 2016.) .

2.2.5 Palmira - Valle del Cauca - Colombia

Building an integrated risk management policy from the local level:

The efforts of the municipality of Palmira were led by Dr. José Ritter whose work is to promote changes in the way social actors engage to increase collective resilience to disaster risks. Their participation in the strategy has helped to align the local agenda for integrated risk management. In recent years they have worked on disaster risk management: formulation and implementation of planning instruments, educational texts, consolidation of the municipal risk management fund and land use planning programme. Finally, it should be noted that the mayor-elect for the 2016-2019 period ensured sustainability by incorporating progress (UNDRR, 2015h).

2.2.6 Wiwili - Jinotega -Nicaragua

Commitment to disaster risk awareness and education programmes to reduce vulnerability in your municipality:

The municipal government represented by the mayor, Dr. Karla Morales, has as a priority in her administration: a) to promote education and training programmes on disaster risk reduction in schools and local communities, b) to strengthen the Early Warning System. In addition, from time to time the equipment is reviewed and the authorities and communities receive training on how to act during an emergency. The municipality of Wiwili has a Municipal Disaster Response Plan that incorporates protection measures and evacuation routes for different scenarios and the plan is continuously reviewed and updated (UNDRR, 2015g).

2.2.7 The Canton of El empalme - Ecuador

Road towards disaster risk reduction and strengthening of cantonal resilience Autonomous Decentralised Municipal Government of Canton El Empalme, Ecuador:

The municipality is exposed to multiple phenomena: droughts, earthquakes, floods, landslides and forest fires. Therefore, the government has undertaken actions to reduce the risk of disasters and increase its resilience. Through the implementation of the "Ten Essentials" of the Making Cities Resilient Campaign, it consists of a series of steps that local governments can take to make their cities resilient to disasters. In the case of the municipality, they applied aspects of the essential: 3, 5, 6, 8, 9 and 10 in each of them different actions were carried out ranging from training, infrastructure, budget allocation and protection to natural buffer zones (UNDRR, 2017a).

2.2.8   Manaus - Brazil

Disaster resilience is part of cultural change:

Through participation in the campaign the city of Manaus strengthens its work to reduce risk in the territory and exchange experiences nationally and internationally. The Mayor of Manus mentioned "Community Advocates says it is based on the principle that no government has the capacity to solve all issues that may affect the community. It is therefore imperative that people cooperate with government authorities to, in their own interest, solve different problems that may affect the same" (UNDRR, 2015e).

2.2.9   Indaiatuba - São Paulo - Brazil

Resilience is citizen-centred:

After an unusual tornado in the region, the administration of Indaiatuba understands by "resilience that all actions should be oriented to human development, beyond the collective welfare" (R. Sandrini, quoted by UNDRR). Indaiatuba is a city that is aiming for resilience and has placed the citizen as the central axis of its growth, taking into account: mobility of people, access, products and sustainable human development and not only physical-spatial development (UNDRR, 2015d).

2.2.10 Chacao - Miranda - Venezuela

In Chacao, Risk Management continues to be a transversal axis in Public Policies for Sustainable Development:

The mayor of Chacao promoted a public policy on environmental and risk for the municipality, so that they work to prevent events that affect the inhabitants. Among the actions they carried out are: two cleanings a year of the streams and creeks as

a technique to address the hydrometeorological risk, also the drains in the streets and avenues to prevent flooding. One of the government's priorities was to return public spaces to the citizens, with new wide pedestrian sidewalks and inclusive access ramps for people with disabilities or physical limitations, as established by the Sendai Framework (UNDRR, 2016b).

2.2.11 Mexico City - Mexico

Urban Resilience Profile / Instituto de Investigaciones y de Estudios sobre Alertas y Riesgos, Organisation: A.C. IIDEAR:

Promoted by the Ministry of Agrarian, Territorial and Urban Development (SEDATU) through a participatory methodology supported by the UNISDR campaign and applied in 14 cities. As a first result, a series of indicators were designed and adapted to recognise areas of opportunity, after which the main action was to develop a document that will help to know the level of resilience of the cities and based on the indicators developed, three workshops were held. Among the results, the following stand out: on the one hand, the lag of the financial issue and on the other hand, the lack of linkage between land use planning and risk management. The dialogue and the implementation of immediate actions allowed the municipalities to know their level of resilience and identify their areas of opportunity to strengthen their risk management capacity. The interesting thing about this practice is that the system can be developed in any city that requires it and adapt the methodology(ARISE, 2019) .

2.2.12 Mexico City - Mexico

Business Continuity and DRR: Towards Business Resilience in Mexico City/ Organisation: Keizoku, SA. de CV:

The Business Continuity and DRR model was designed by Keisoku S.A. de C.V. according to the phases of Integrated Risk Management (Identification, monitoring, early warning system, prevention, response preparedness, actions for business continuity and resilience) which is applied in medium and large companies where employees are highly trained. In the earthquake of September 19, 2017, all the advised companies did not collapse or stop their operation. The main objective in Keizoku is to provide innovation in prevention and risk reduction in companies and thus be able to maintain economic development and productive operation which improves resilience in the continuity of enterprises. This model and its methodology can be applied for all types of enterprises by obtaining the specialised knowledge of different facets of business continuity(ARISE, 2019) .

2.2.13 Jalisco - Guadalajara - Mexico

Training and professionalization strategy in Integral Risk Management/ Organisation: Centro Universitario DIPA A.C.:

Through a diploma programme, the Centro Universitario DIPA A.C. addresses different risks from the social construction, intervention, prevention actions, management and response to an emergency. The interesting thing is that 70% of its three graduating generations work in government institutions of civil protection and emergency medical services, this allows them to strengthen and expand their knowledge to put it into practice in projects and programmes in integrated risk management, response and emergency prevention. This practice can be implemented by actors, only adapting the needs of competence, knowledge and practices(ARISE, 2019).

2.2.14 Tabasco - Mexico

PRAIM - Programa de Resiliencia Ante Inundaciones Mexico / Organisation: Zurich Mexico:

A programme promoted by Zurich and through the Mexican Red Cross as the operating agency, its main objective is to build resilience in the communities of Tabasco that are affected every year by floods in the Usumacinta basin. The programme has worked with 20 communities in the municipality of Jonuta to increase their resilience to flooding events. In order to achieve these results, they worked on three lines of action: community education, the organisation of brigades and the implementation of projects that allow them to maintain their livelihoods. The results were favourable, since the brigades obtained a certification and approval by Civil Protection of the state of Tabasco and Mexican Red Cross created from this programme the National Resilience Commission, as well as there are also programmes working under the same model in other states of the country. the new challenges are to add more actors from the private and public sector, as well as the implementation of technology (ARISE, 2019) .

2.2.15 Mexico City - Mexico

Comprehensive hospital response protocol for emergencies and disasters, based on a safe hospital/Organisation: The American British Cowdray IAP Private Hospital:

The American British Cowdray IAP Medical Centre provides tertiary level hospital care located in Mexico City. However, it is exposed to earthquakes, a large

population, vulnerable people and difficulties in accessing health services. In the event of an emergency or disaster, the population goes to the nearest hospital centres for immediate attention, which complicates care for the staff. For this reason, the medical centre has implemented a comprehensive protocol based on a safe hospital that allows for a rapid response in the event of an emergency or disaster. The response plan is based on the participation of the staff (medical and non-medical). This protocol is ideal for replication in public and private hospitals, it is only enough to adapt to the needs(ARISE, 2019) .

2.2.16 San José - Costa Rica

Strengthening Public-Private Partnerships for Disaster Risk Reduction in Costa Rica/ Organisation: National Commission for Risk Prevention and Emergency Response:

 The Standardization Unit and the National Commission for Risk Prevention and Emergency Response, together advance with a new initiative in the country to develop risk management actions for the public and private sector. In 2017, two seminars were held with the participation of various stakeholders, where they addressed regulatory frameworks in risk management, the national risk management plan 2016-2020 and the national risk management policy 2016-2030. As an action, they promote the development of the emergency preparedness and response plan in workplaces and public occupation centres that can be adjusted to the needs of companies(ARISE, 2019).

2.2.17 Chiriqui - District of Boquete - Panama

Prepared Hotels Disaster Risk Management / Organisation: Hacienda Los Molinos Boutique Hotel & Spa:

The hotel is located in one of the most seismic areas of the country and was built on the banks of a canyon, this is added to a rainy climate, besides being in a tourist area. As part of the actions they trained 40 hotel employees in tourist safety, first aid, emergency brigades, health, etc., they also placed signage, fire extinguishers, hotel emergency plan and implementation of drills. Due to their actions the hotel is worthy of a certification of first mountain hotel prepared. The results that stand out is that the client feels safe and choose them as a safe destination. This practice is important because it benefits the guests and can be promoted in other businesses(ARISE, 2019) .

2.2.18 Bogotá - Colombia

Diploma in Disaster Risk Management/Organisation: Colombian Red Cross:

The course focused on personnel operating in disaster risk management at the three levels, which seeks to reinforce knowledge of risk management and emergency tools and operations within national and international regulations. The virtual platform is designed to ensure updates, sustainability and dissemination, as well as a common language that is easy for everyone to understand. The initial product was created in three modules: Basic Course, Administrative Course and Operational Course, with a total of 192 hours. The present programme is free to use, easy to access and above all it provides tools for decision making in disaster risk management, therefore, it is a dynamic diploma course and can be accessible to all the public(ARISE, 2019).

2.2.19 Various districts - Colombia

Risk assessment in organisations in Colombia. Approaches, difficulties and options for improvement/ Organisation: Fundación para la Gestión del Riesgo, FGR:

The research work focused on how organisations in Colombia evaluate risks, what are their tools and methodologies, as well as their areas of opportunity and difficulties. The risks studied were emergencies, disasters, business continuity and environmental, in the evaluation of tools were identified the most used and areas of opportunity. The assessment is implemented to all types of organisations, *i.e.,* with local, regional, national and international market, likewise the work can be extended to any type of organisation that requires it (ARISE, 2019) .

2.2.20 Calima el Darien - Colombia

I.P.E.D. Programme (psychological intervention in emergencies and disasters) /Organisation: Universidad Libre:

The Psicoclies Foundation in alliance with the Universidad Libre, created the IPED Programme in order to introduce the topic "Mental health in emergencies and / or disasters" implemented in three components: 1) training 2) field team and 3) research and development team, in order to sensitise, educate and train all those working directly in risk management in emergencies and disasters. The programme aims to lessen the impact of a disaster or emergency on the mental health of victims and to provide special support to vulnerable populations. On the other hand, although the programme operates under the parameters established by the WHO in

its MhGap programme, the lack of resources has limited the continuity of the project, therefore, the Universidad Libre in its psychology programme implemented the topic as an elective subject(ARISE, 2019).

2.2.21 Piura - Peru

Ecovolunteers in action to empower local people in vulnerable areas in disaster reduction management, Chosica, Peru/ Organisation: UN Volunteers/UNDP Disaster Risk Management:

Inhabitants of Lurigancho Chosica live in a vulnerable area located on the banks of the Rimac River, there is also a resistance to relocate because of their low income. For this reason, the group of eco-volunteers Nasst Travel intervened in disaster reduction management and sustainable projects, for example, members of the Association Los Jardines de Cajamarquilla in 2017 began with a cleaning and training on the care of the environment, water and urban solid waste collection. This practice is a model that allows other communities to become aware(ARISE, 2019).

2.2.22 Macaé - Rio de Janeiro - Brazil

Combating the Vulnerability to Chemical Dependency Aiming at the Reduction of Social Human Disaster Risks in Macaé RJ, Brazil/ Organisation: Fazenda da Esperança:

Macaé is a city where Brazil's largest oil hub has been installed, which has brought about great changes with various social problems: violence, drug trafficking and drug consumption. It is from this perspective that the anthropo-social disaster risk approach is proposed with the aim of combating vulnerability. The project recognised that vices, criminality and marginality do not seem to be related to risks linked to earthquakes, hurricanes and tsunamis. However, both are present and occur constantly, there are direct and indirect victims. For this reason, the project seeks the cooperation of different sectors to provide technical assistance, courses, donation of materials and equipment to be used by people who want to give up drugs, as well as to promote inclusion, self-esteem and training. This experience came from a private entrepreneur and liberal professional who knows the organisation Hacienda de la Esperanza that emerge in various social fields, the idea arises to generate a computer lab from donations to improve the quality of life of attendees (ARISE, 2019) .

2.2.23 Saint Michael - Barbados

Supporting the effective management of Sagicor and its experience in business continuity management/ Organisation: Sagicor Life:

SAGICOR through a policy for the management of its business continuity "Support and commitment to effective management" and through a responsible monitor the companies of the South Caribbean comply with the requirements of this policy that also provides funding and strategies for disaster risk reduction. In addition, they conduct annual awareness campaigns on various hazards, including hurricanes. The company recognises that the Caribbean region is not adequately prepared and informed on the subject of risk and as a large company is exposed to face some impact on human resources or information technology infrastructure. This is why the protection of its employees and facilities are a priority for the company. In 2017 the territory of Dominica and St. Martin were affected by the 2017 hurricane season. The big challenge for SAGICOR was the issue of communications to investigate the situation of the team and their needs. As a measure they expanded their communication network through the use of cell phones, despite the interruptions in telephone lines the cell phones enabled better communication (ARISE, 2019) .

2.2.24 Roseau - Dominica

The Dominica Association of Industry and Commerce hosts an exhibition on business recovery/Organisation: Dominica Association of Industry and Commerce:

 After the passage of Hurricane Maria in 2017, Dominica was devastated, as well as the private sector was seriously affected. For this reason, the Dominica Association of Industries and Commerce (DAIC) through a business recovery expo officiated in 2018 sought to "inform, link and protect", having two priorities: i) to foster among companies and businesses skills through networking and business support capabilities, ii) to increase the capabilities of businesses to protect themselves through knowledge and skills to reduce disaster risks. The main factor of disaster risk is linked to the lack of knowledge and information to mitigate risk. The exhibition was implemented in an interactive, informative and creative way targeting businesses with presentations from local and regional experts on business recovery issues and was complemented by product exhibits, financial services, insurers and consulting and construction companies, with the purpose that businesses can increase their resilience(ARISE, 2019) .

2.2.25 Roseau - Dominica

Apprenticeship in the hotel and tourism sector: Fort Young Hotel/ Organisation: Fort Young Hotel:

For the Caribbean countries including Dominica, the hotel and tourism sector is of great importance for the contributions to the GDP. However, after the passage of Hurricane Maria in 2017 the situation changed. In the particular case of the Fort Young hotel, its infrastructure was severely affected. After impact resulted in immediate problems such as access to food and water supply. Previously the hotel already had a disaster plan in place, however, the document is not considered a business continuity plan even though the document includes several elements. The hotel's plan includes: a steering committee divided into pre-, during and post-event units, training and certification in resuscitation and first aid, a contact book, a backup communications system, storage, data protection, water, electricity and food supply, and key personnel responsible for security. Having a plan in place was important to cope with the hurricane, however, the strength of the hurricane limited their preparedness, the plan worked to a certain limit, it tested the hotel's capacity, but they were able to resume some activities after the hurricane. The hotel addressed the deficiencies to improve for future events (ARISE, 2019) .

2.2.26 Santo Domingo - Dominican Republic

Strategies for the management of emergencies derived from Natural Phenomena / Organisation: Molinos Modernos:

 Dominican Republic is located in the centre of the Antillean archipelago, for this reason it is exposed to hydrometeorological phenomena, in 2017 it was affected by hurricanes Irma and Maria. Molinos Modernos is a value chain of wheat and cereals, every hurricane season they prepare by sending an alert to the collaborators about the hurricane forecast. The Occupational Health and Safety (SOSI) team assigns personnel to monitor hurricane conditions on a daily basis in order to provide immediate follow-up and activate the occupational health and safety committees. In 2017 the impact to the business was minimal, to mitigate the risks they did the following: employees living in vulnerable areas were the first to move to their homes, foreign staff were taught the preventive measures that were in the country, operations were stopped and protection to infrastructure. All actions were reported to the country's emergency committee and the regional emergency committee. This practice can be repeated every cyclone season and allows companies to promote disaster prevention (ARISE, 2019) .

2.2.27 Port-au-Prince - Haiti

Seismic risk reduction through seismic-resistant improvements in Latin America and the Caribbean7Organisation: Build Change:

The organisation Build Change, after the success obtained in the reconstruction of Haiti in 2010, launched a regional programme for Latin America and the Caribbean in 2012, which consists of implementing the process of evaluation and renovation of vulnerable housing exposed in seismic zones. In Bogota, a pilot project was developed, similar to the one in Haiti, for technical assistance in housing restoration in order to avoid human and economic losses in the next events. In the city of Medellin, with the support of Lloyds Charities Trust, they launched a similar programme and in Guatemala, they created a manual to evaluate and mitigate seismic risks in housing in conjunction with the Guatemalan Association of Structural and Seismic Engineering. So far, the results have been: 1498 safer houses, 7670 people who have safer conditions and 11357 people trained to apply seismic-resistant construction techniques. The initiative was recognised by the World Bank in 2017 as an action contributing to urban resilience (ARISE, 2019) .

2.2.28 Port-au-Prince - Haiti

Private sector spearheading public-private partnership for a culture of disaster resilience in Haitian schools/ Organisation: Alternative Insurance Company (AIC):

The insurance company (AIC) is working on an innovative strategy for disaster risk management in Haiti, this consists of a contest where they invite primary school students to participate, which develop a project on disaster risk management in their community, the winners get a fund for the operation of their project and educational funds for team members. Haiti is exposed to many risks due to natural events; this project aims to bring together key actors from the private sector, public and civil society to promote a culture of resilience and above all to motivate young people to work in their community. The winning projects have worked in their community, such is the case of the Lycée Justin Lherisson, which is located in an enclaved area, in Anse-a-Foleur, its exposure to a tsunami is high, so training, evacuation plan, signage and drills were carried out. Meanwhile, the company ensures the dissemination of the projects using media, promotion of the winning schools, supervision of the implementation of the projects, as well as performance measurement in relation to indicators and community satisfaction. the projects carried out in 2018 benefited 2600 families in three municipalities. In three years of

work, they were able to observe areas of opportunity in the implementation of the projects, likewise included new schools: rural, public and private(ARISE, 2019) .

2.2.29 Port-au-Prince - Haiti

Port-au-Prince - The inclusion of personnel in disaster preparedness and response activities: a key element for business continuity experienced by Digicel Haiti - Digicel Haiti/ Organisation: DIGICEL:

The company Digicel offers internet and telephony services in Haiti, with a high percentage of users in the market, to cope with the frequent cyclones in the Caribbean the company implemented a "Business Continuity Plan in cyclone emergency" in order to maintain the safety and welfare of staff, security and protection of equipment, as well as the core network and computer services. The continuity of telephone network activities after a disaster is of utmost importance, but without the preparation of personnel in the operation and repair of equipment it will not be possible, which is why Digicel's continuity plan not only focuses on its equipment and assets, but also on its work team. As preventive measures in the event of a disaster the company; - trains staff to deal with disasters, trains emergency personnel and awareness activities, identifies emergency teams in operations for support in Haiti and other Caribbean countries and establishes relationships with medical providers. After an event, it provides team-building opportunities, psychological and medical care, offers financial loans, provides 5 days off for recovery, and deploys emergency teams in-country to meet operational needs. With this planning, in 2017 telecommunications recovery could be obtained in less than 72 hours(ARISE, 2019) .

2.2.30 Paraguay

Model of social accompaniment for resettlement of populations at risk. Organisation: Habitat for Humanity Paraguay. Category: Integration and Prevention of Informal Settlements: Bañado Norte is a geographical area of the city of Asunción where the neighbourhood of Chacarita is located, with 5 flood zones in informal settlements near the river:

The population is affected every rainy season, causing the population to be displaced for a defined period of time. The project seeks to implement a Social Development Plan, the intervention consists of two steps: (i) Relocate the affected families through accompaniment on moving voluntarily to another home; (ii) Strengthen the community on issues of citizen participation, coexistence and social integration. The results achieved: territory of intervention characterised

geographically, technically and socially, 80% of families relocated voluntarily, 58 elected leaders and 30 in election processes, formation of subcommittees and neighbourhood commission, strengthening of participation and training based on the new housing. Finally, the expected result is to propose this methodology as a model of intervention to follow in the state and implement processes of social integration and sustainability in the neighbourhood(UHPH, 2020).

2.2.31 Peru

To improve the living conditions of the inhabitants of a marginal urban area in the northern cone of Lima. Organisation: Asociación Mano a Mano Perú. Category: Habitat mitigation, adaptation and resilience to climate change and disasters:

The city of Lima is vulnerable to climate change, earthquakes and the El Niño phenomenon, part of the city is built informally. The project is developed in the village of La Ensenada, located in mountainous and dangerous areas, with social and economic challenges. The project is based on improving living conditions, training a group of women with specific characteristics, their participation consists of working participatively in construction of retaining walls, community gardens, improvement of public spaces. On the other hand, they provide care in situations of risk. Among the achievements are a) training of women in masonry, plumbing and reading plans, b) as for the 100% funds, half are covered with their own resources and the other half with public and private resources, c) construction of a house on solid foundations and d) improvements in the management of other projects with the municipality. In the long term they hope to build 80% of the green areas in the community, improve the environment and create new public spaces and favour social inclusion and economic development(UHPH, 2020d).

2.2.32 Peru

Building Confidence for the affected areas. Organisation: BBVA Microfinance Foundation. Category: Innovative mechanisms for financing and access to housing solutions:

Peru is annually damaged by the El Niño phenomenon, this has added other factors such as the concentration of population, its location and soil quality, increase the vulnerability of people. The project seeks to promote local development from the improvement of housing with vulnerable entrepreneurs and that their homes function as businesses. For this reason, the initiative provides a sustainable constructive and financial solution that includes technical assistance and training in DRR. Among the results achieved are a) 1,500 clients with credits for home improvement, b) 2,500

families sensitised, c) 360 master builders trained and d) training, training of actors and clients on materials, plans and construction budget. Finally, they hope to increase the number of beneficiaries, implement accompaniment models, increase resilience to possible emergencies and continue promoting local development (UHPH, 2020c).

2.2.33 Campinas - Brazil

The Department of Civil Defence of Campinas in Brazil /Type: Organisation:

The resilience plan of the city of Campinas, Brazil works on the integration and participation of society as a whole in order to create a resilient city. After the city was affected in 2003, which caused a large number of human and economic losses, the municipal committee decided to increase investment in public policies and strategies for disaster risk reduction. In 2012, the city joined the Resilient Cities campaign My city is getting ready! For the development of this programme, risk protocols have been created, emergency committees for the protection of children and adolescents in high-risk areas, youth council and municipal council in the city, both with the objective of increasing the participation of women in the creation of public policies, also a resilient project was implemented in high-risk communities through mapping and emergency shelters and humanitarian assistance with a focus on vulnerable people. This is why the Department of Civil Defence of Campinas was recognised and awarded the Sasakawa prize for its inclusive approach and its constant work to build a resilient city(UNDRR, 2019).

2.2.34 India

The Mahila Housing SEWA Trust (India) /Type: Organisation:

Distinguished for its inclusive practices that bring together scientific and Indigenous knowledge, in addition to empowering women living in slums, enhancing the resilience of entire families to cope with disasters, as well as vulnerable groups children, the elderly and people with disabilities (UNDRR, 2019c) .

2.2.35 India

Mr. Pramod Kumar Mishra/Type: Independent candidate:

Better known as PK Mishra, he was recognised for his track record and contribution in resilience to communities exposed to floods and droughts, as well as his social

commitment to inclusion, inequality and poverty, has contributed to the protection of socially and economically marginalised communities (UNDRR, 2019a).

2.2.36 Japan

Sasakawa Allan Lavell Award:

The work of researcher Allan Lavell was cited by the Sasakawa Award jury as "a model for all time" and recognised for his hard work and dedication in contributions to disaster risk reduction that take a multidisciplinary and holistic approach(UNDP, 2015).

2.2.37 Jamaica

Certificate of Distinction Ivy Gordon, director of the Jeffrey Town Farmers Association, Jamaica:

The Farmers' Association is located in the northwest of Jamaica, the community sits on steep terrain and is home to the country's largest landslides and is increasingly vulnerable to hurricanes, floods and earthquakes. Jeffrey Town is a role model for disaster risk reduction that uses agriculture as a platform for sustainable development and as a mechanism to redress risk.

2.2.38 Australia

Certificate of Distinction Australian Business Roundtable for Disaster Resilience and Safer Communities:

Bringing together six leaders who influence public policy through evidence-based reporting on the unsustainable cost of disasters to life, property and the economy. The purpose of the Australian roundtable is to make communities safer by improving disaster resilience and climate change preparedness.

2.3 Best practices: implementation of plans, programmes, technology, and public policies.

2.3.1 Esteban Echeverria - Argentina

Intergovernmental coordination to improve the resilience of the city:

According to data from the United Nations Framework Convention on Climate Change (UNFCCC) have determined changes and trends in climate variables in Argentina and specifically for the municipality that is located on the shores of the Rio

de la Plata; increase in extreme precipitation that would imply economic impact from flooding. The municipality has been linked with national and local agencies to carry out works that allow them to be resilient. On the one hand, they have taken on the task of determining the contingencies and action plans within the territory. On the other hand, they have focused on the problem of floods and anticipated climatic phenomena. In terms of infrastructure, they have increased the water network, sewage network and a local nature reserve that provides environmental services. This has allowed them to coordinate with authorities and academia, constantly carrying out participatory management and decision-making processes(UNDRR, 2015).

2.3.2 Caracas - Venezuela

Venezuela "Caracas Ciudad para la Vida: La Organización para la Resiliencia frente a los Desastres en la Alcaldía Metropolitana de Caracas - Venezuela":

The Metropolitan Area of Caracas is composed of the municipalities: Libertador, Chacao, Baruta, Sucre and El Hatillo, from 2012 they accept the urban strategic planning and through the Environment Management generate a line of action Caracas environmentally sustainable through three departments: 1) Comprehensive Risk Management and Environmental Monitoring, 2) Environmental Audit and 3) Environmental Education. Its function is to formulate, update and implement the Metropolitan Plan for the Reduction of Environmental Risks and Adaptation to Climate Change (PM-RRAACC), which governs the environmental expectations of the Metropolitan Caracas Plan 2020 and is the guiding instrument for environmental public policies in order to help reduce environmental risks and adapt to climate change. One of its objectives is to involve various actors: public, private and academic sectors that contribute to the reduction of vulnerability. They also work with other environmental sustainability projects, quality of life of citizens and sustainable expansion(UNDDR, 2015).

2.3.3 Bugaba - Chiriquí - Panama

Bugaba- Chiriqui, Panama. Bugaba advances in integrated risk management to increase resilience at the local level:

The municipality of Bugaba joined the Global Campaign "Making Cities Resilient" in 2014, has developed various contributions in integrated risk management: Implementation of the Strategic Plan: I) Risk Management and Resilience for Sustainable Development 2016-2021 and Capacity Building for Disaster Risk Management, II) Climate Change Adaptation at the Local Level, III) implementation

of the Sendai Framework and IV) Piloting of Local Urban Indicators. An element that is important to highlight in Bugaba is the sustainable management of watersheds and buffer zones. In the territory there is a network of rivers that are used by human settlements and for irrigation of agricultural crops. In addition, the areas that are protected offer multiple benefits for citizens, disaster risk reduction and adoption to climate change(UNDRR, 2016a).

2.3.4 Rio de Janeiro - Brazil

Winter Plan of Petrópolis, RJ, Brazil: preparation for drought and forest fire contingency:

The Petrópolis City Council in coordination with the Secretary of Civil Defence and Voluntary Actions, for the first time elaborated a Winter Plan for the municipality consisting of a plan of anticipated and coordinated actions in different points of the city and the execution of resources for the contingency of droughts and forest fires. Based on this, strategic plans (matrices of activities/responsibilities) were made to confront the threats and involve the authorities as responders. The work was developed the first three months of autumn and was undertaken in winter 2017. Finally, the trial involved 77 government agencies, civil society and 231 individuals the information generated is on a virtual platform(UNDRR, 2017c) .

2.3.5 San Martin - Buenos Aires - Argentina

Municipality of San Martín, Province of Buenos Aires, Argentina, A disaster risk management policy:

After suffering floods in 2013, the municipality of San Martin has incorporated the Disaster Risk Management policy as an element for local development. Through the Decree (128/17) the participation of key actors and mechanisms for prevention and mitigation of risks and emergency response is amplified. In the municipality, the Risk Management Team works, composed of representatives of the secretariats that continuously meet to structure risk reduction, prevention and mitigation policies, taking into account risk management as a cross-cutting axis for local policies (UNDRR, 2017b).

2.3.6 San Antonio de Areco - Argentina

Risk management for resilience in the strategic development "Generando Arraigo", municipality of San Antonio de Areco:

San Antonio de Areco, located on the banks of the Areco River, frequently suffers from flooding due to river flooding. In 2009 they experienced an unusual flood that affected 10% of the population and no emergency alert was issued. The authorities in charge in 2010 incorporated risk management and resilience building into the development policy "Generando Arraigo" based on education, work, housing and migration. Six actions for resilience stand out: (i) Installation of weather stations, as a measure of prevention and early warning; (ii) Development of a mobile phone application "Alerta temprano Areco" that sends information to society; (iii) updating of the land use planning code, which integrates water risk areas; (iv) a monitoring and early warning centre that also works with schools and the general public; (v) activities with the Argentine Red Cross; and (vi) creation of the Municipal Risk Management SystemUNDRR, 2018).

2.3.7 Duran - Ecuador

Durán, Ecuador, regularising informal settlements to ensure Good Living:

The municipality of Durán seeks to strengthen its capacities: technical, social, cultural, to be resilient and to replicate the process in other cities. The cornerstone is to develop capacities to adapt to climate change through a communication platform with updated data. The purpose is to facilitate tailored national policy decisions for climate compatible development(UNDRR, 2015c).

2.3.8 Iztapalapa - Mexico

Multiple Early Warning System Iztapalapa/Instituto de Investigaciones y Estudios sobre Alertas y Riesgos A.C:

 In the Iztapalapa delegation, the Multiple Early Warning System (SMAT) was implemented to alert the population to possible flood threats, the system was placed in the already installed infrastructure of the seismic alert. This began in early 2016, the first stage was aimed at the points of highest incidence of flooding which coincide with the most marginalised population. A few days after it became operational, heavy rains were recorded, which allowed alerting the population and reducing the recovery from 10 days in the last event to only 3 days. For a good functioning of the SMAT, meetings with neighbourhood brigades are of great importance in conjunction with the authorities for the construction of protocols for action in case of an alert, two years of its operation have reduced the effects on the population and material losses, as well as creating awareness in the population about the importance of keeping the streets clean and avoiding the saturation of drainage and communication between population and government. The system was recognised during the global platform

for disaster reduction 2017. Currently the SMAT has the potential to be used anywhere thanks to technology (ARISE,2019).

2.3.9 Monterrey - Mexico

Public-Private Partnerships for building resilient communities /Organisation: CEMEX:

The business continuity and DRR model was designed by Keisoku S.A. de C.V. according to the phases of integrated risk management (identification, monitoring, early warning system, prevention, response preparedness, actions for business continuity and resilience) which is applied in medium and large companies where employees are highly trained. In the earthquake of September 19, 2017, all the advised companies did not collapse or stop their operation. The main objective in Keizoku is to provide innovation in prevention and risk reduction in companies and thus to maintain economic development and productive operation which enhances a resilience in business continuity. this model and its methodology can be applied for all types of companies obtaining specialised knowledge of the different facets of business continuity (ARISE, 2019) .

2.3.10 Mexico City - Mexico

Integrated Risk Management, Social Inclusion and Resilience in DRR legislative frameworks: a Mexican case/Organisation: Consultoría Social Integral, Mexico:

 The Integral Social Consultancy has been responsible for providing advice and advocacy to incorporate Risk Management and Resilience in the national legislative framework and the Political Constitution of Mexico City, promoting Inclusive Risk Management. Its advocacy within both legislations was through technical advice in order to orient the laws to the Sendai Framework for DRR. Some of the benefits are the strengthening of public policies on protection and integrated risk management, as well as new models and obligations. The consultancy worked in coordination with civil protection specialists, academics, private sector, federal legislators and local constituents to bring Mexican laws in line with the normative standards of the Sendai Framework. The opportunity to replicate this practice depends on legislative timing and the presence of electoral processes, making it difficult for proposals to have an impact(ARISE, 2019).

2.3.11 Mexico City - Mexico

19 September in Mexico, Damage Assessment and Management System/Organisation: IIDEAR:

Due to the geographical location of Mexico City, it is an area exposed to earthquakes, the earthquake of September 19 caused serious damage in the Iztapalapa delegation, also suffers from a phenomenon called subsidence. The plan consisted of three steps: a) Identification, compilation and organisation of damage data; b) analysis and geological studies; c) evaluation and prioritization of the actions of attention and support. Four actions were identified: repair, reinforcement, reconstruction and relocation. In total, they evaluated 20,103 homes where approximately 141,000 people live. Attending to each of those affected allowed them to individually analyse their needs and propose better alternatives for inclusive care. This practice can be duplicated, it is only a matter of adapting it to the needs of the territory (ARISE, 2019).

2.3.12 Choloma - Honduras

Integration of Private Enterprise in Risk Management in Honduras / Organisation: Honduran Maquila Association:

The National Risk Management System (SIANGER) in coordination with the private sector for Integrated Risk Management and the Trocaire initiative, managed to consolidate the organisation between the private sector and the Permanent Contingency Commission (COPECO) where the private company establishes its emergency committee, this allows the company to be prepared inside and outside its area (communities near the company). The integration of different actors allowed updating the guide developed and the creation of emergency plans (ARISE, 2019) .

2.3.13 Heredia - Costa Rica

Business Continuity: The resilience strategy for public utilities and public-private partnerships/ Organisation: Empresa de Servicios Públicos de Heredia S.A.:

 The public utility company of Heredia S.A. oversees the management and administration of essential services (drinking water, electricity, public lighting, sanitation, etc.) for this reason it is important to know the vulnerabilities to the services. Seven points are managed in the action framework: 1) Analysis of risks and vulnerabilities; 2) Vulnerability and exposure of cortical infrastructure; 3) Development of management measures; 4) Establishment of emergency plans; 5)

Communication strategies; 6) Follow-up of actions; 7) Training of intention in crisis. The above allowed to create a resilient risk mitigation system from the implementation of business monitoring (ARISE, 2019).

2.3.14 Valle del Cauca, Calima, El Darien, Restrepo - Colombia

Asset management and climate change "Reservoir level drop, Central Hidroeléctrica Calima", an experience to share / Organisation:

Empresa de Energía del Pacifico - EPSA, a CELSIA company: The Calima Hydroelectric Plant, due to its biological diversity and strong winds, is a national and international tourist attraction for water sports and ecotourism, in addition to the economic contribution. The El Niño phenomenon in 2016, affected the country with low rainfall, increased evapotranspiration, decreased flows and as a result the declaration of energy emergency by the Minister of Mines and Energy, to make use of water reserves to support the national energy system. For this purpose, local and environmental authorities, communities and technical team were taken into account in order to make decisions jointly and avoid future claims to the company. Therefore, the need arose to build a contingency plan that took into account the biotic, technical and social component and the participation of various stakeholders, this allowed the creation of a network of care and accurate, preventive response and increased team capabilities to respond to an emergency situation (ARISE, 2019).

2.3.15 Piura - Peru

Tejiendo Futuro / Organisation: UN Volunteers/UNDP Disaster Risk Management:

Weaving Future is a disaster risk management initiative that began its work in 2017 with the objective of recovering the livelihoods of 250 artisans made up of 6 associations. The main activity and local livelihood in Catacaos are the toquilla straw handicraft, in 2017 they were affected by the phenomenon of the coastal child and as a result 70% of the craftswomen lost their jobs. The integration of the private sector Kwow how with its "turn of business" from the perspective of the disaster as an opportunity to generate business continuity plans in the face of disasters. The work consisted of two stages: a) economic reactivation, leading to a fund to buy inputs and the future of production does not stop before the rains, b) an alliance was generated with key actors, to conduct a post-disaster assessment. This initiative can be replicated with another group of artisans who go through a situation of vulnerability and risk of losing their working capital in the event of a phenomenon (ARISE, 2019).

2.3.16 Santiago - Chile

Use of drones in forest fire risk prevention and monitoring of threats such as floods/ Organisation: Universidad Bernardo O'Higgins:

In Chile, different communities have been affected by continuous forest fires and landslides. From the analysis of remote sensing, they identified risk areas and emergency care, this consists of taking images and processing that can identify fires and landslides. Drone technology this type of technology allows a) rescue of people, b) decision making in fire response and evacuation in landslide processes, c) allows to manage resources for the implementation of response. So, this practice has advantages to be replicated in various countries, by the effective, efficient and timely response to disasters (ARISE, 2019) .

2.3.17 Mendoza - Argentina

Seismic assessment and vulnerability reduction in schools/Organisation: SOLIDUS-Engineers Consultants:

 The province of Mendoza is located in a seismic zone of Argentina, among some of the risks it faces is the infrastructure in schools, in its 1500 schools attended by 500,000 students, however 900 of them do not meet current requirements. For this reason, several schools could be vulnerable in case of an earthquake of great magnitude. For this reason, provincial authorities have invested through SOLIDUS to carry out a seismic assessment and rehabilitation of four schools. The assessment consisted of 2 stages: i) studies of the materials that make up the structure, ii) identification of structural and non-structural deficiencies. The rehabilitation consisted of looking for innovative strategies to keep the buildings operational. In addition to the government and private consultants, the National Technological University was incorporated to test other innovative technologies (ARISE, 2019) .

2.3.18 Roseau - Dominica

Establishing a Culture for Business Continuity Planning: The National Bank of Dominica/ Organisation: National Bank:

One of the main problems when a disaster strikes is access to cash and financial services, as well as the risk that financial institutions run by interrupting operations, loss of communications and reliable transportation services. The National Bank of Dominica went through a similar situation in the aftermath of Hurricane Maria. The bank opened its doors in 1976 and is the largest bank in Dominica. Years before

Hurricane Maria, the bank focused on flood, hurricane and tsunami hazards. Subsequent work on the risk management and continuity framework was recorded integrating the elements of risk identification and mitigation. In addition, the plan contains an internal team that is responsible for monitoring the weather in order to activate the emergency and business plan in a timely manner. Finally, the Bank implemented its plan before the arrival of the hurricane, then started with the recovery process, it should be noted presented an opportunity to know their weaknesses and improvements for example the bank acquired satellite phones to avoid communication problems (ARISE, 2019) .

2.3.19 British Virgin Islands

Organising for resilience: The British Virgin Islands yachting industry/ Organisation: Charter Yacht Society of the British Virgin Islands:

The tourism and hospitality industry represents a significant sector in economic activity and GDP. The yachting and cruise industry defines the tourist culture of the British Virgin Islands, but at the same time it is one of the most unsafe in the presence of hurricanes. After Hurricane Maria, the private yachting sector suffered losses of $51 million. Because of previous hurricane impacts, the yachting industry recognises the importance of keeping boats afloat and ready for business. For this reason, most industries had a business recovery plan that they have implemented and tested over time and in hurricanes and storms. However, insurance costs have increased, and small (local) property owners do not have the financial capacity because of the increase in insurance. The industry has managed to organise itself, however, they mention the following lessons: 1) The industry can self-organise, however, recovery efforts require inclusion and support from the state; 2) Infrastructure is a key factor such as communication networks, for example, the high cost of maintenance of communication phones; 3) The backlog of insurance companies, delays the ability to reopen; 4) The role of international and recovery agencies play an important role; 5) Collaboration between local actors: private sector, public and organisation play a key role(ARISE, 2019) .

2.3.20 Colombia

Sustainable Neighbourhoods: Integral Improvement of Neighbourhoods Comuna 8 / Organisation: Empresa de Desarrollo Urbano de Medellín (EDU) and Universidad Pontificia Bolivariana (UPB) Category: Integration and Prevention of Informal Settlements:

The city of Medellin is distributed in zones, communes (*comunas*) and neighbourhoods, in 2015 column 8 in zone 3 inhabited 137,000 people, the settlements are located in steep areas and unmitigable risk, coupled with the lack of community facilities and other problems. From the Sustainable Neighbourhoods Programme is how the project that seeks to reorganise the neighbourhoods is implemented, through the management of different institutions and the agreement with the communities to carry out the implementation of new spaces. The results obtained between 2014 and 2019 was the execution of 9 million dollars, a) the next expected results is to benefit in a second phase to another two sectors (2022-2023), b) 2,500 families of the four sectors benefited, c) increase of public space and social equipment, d) give sustainability to the work developed in the first two sectors and complement the 4 sectors in the next period (2010-2023) and finally in the long term e) implement the programme in the 6 areas of the city (UHPH, 2020a).

2.3.21 El Salvador

Vulnerability Reduction Programme in Urban Squatter Settlements. Organisation: Vice-Ministry of Housing and Urban Development of El Salvador. Category:

Habitat mitigation, adaptation and resilience to climate change and disasters: The San Salvador Metropolitan Area (SSMA) is affected by flooding that causes damage to infrastructure and loss of human lives. The impacts are even more severe in the periphery where there are precarious urban settlements living on the banks of rivers. The programme aims to implement a comprehensive intervention plan to ensure flood control in the affected neighbourhoods through a Drainage Master Plan: execution of works and public infrastructure. Two results have been achieved so far: repair of the vault over Quebrada Chilsmuyo and the execution of 6 integral improvement projects. The next expected results are a) start of buffering works for the macro rainwater drainage, b) development of a master plan that prioritises the AMSS drainage system, c) reduction of vulnerability and improvement of the living conditions of families, d) construction of a lamination lagoon system and e) construction of retention works and repair of works (UHPH, 2020e).

2.3.22 Jamaica

Building Resilience and Capacities for Emerging Disasters in precarious Settlements in Portmore. Organisation: Habitat for Humanity International (HFHI). Category: Habitat mitigation, adaptation and resilience to climate change and disasters:

Portmore is a coastal city of the country's capital, presents precarious settlements, poor state in public spaces and lack of infrastructure for water and sanitation

services, and lack of MSW treatment. The area is exposed to natural hazards and the vulnerability of its settlements increases the risk of disasters. The purpose of the project is to increase resilience in vulnerable neighbourhoods and households through disaster risk reduction-oriented neighbourhood improvement: community infrastructure, housing, water and sanitation, waste management, urban organisation and planning. The project has made an impact in several areas: a) more than 550 houses incorporate improvements and construction techniques, b) 21 demonstration toilets with technology that does not require sewage network, c) more than 3,300 beneficiaries with MSW management, d) more than 720 participants in disaster preparedness training, e) 500 households in land tenure regularization procedures and f) grassroots committees and associations with local leaders. The project also expects to advance pilot practices and safe methods for disaster risk mitigation (UHPH, 2020b).

3 Conclusion

The following key messages emerge from the mapping and analysis of best practices:

- It is of utmost importance to establish channels of communication between the different local stakeholders in the territory in order to achieve citizen participation and concrete risk management actions: "all types of risk management must be based on and connected to the local level. If local needs and objectives are ignored, any type of risk management will fail" *(Dorta et al., 2008, p. 06).* It is worth noting that no matter how small local actions may seem, they contribute to risk management on a global scale.

- Part of the success of these practices is based on sharing their knowledge and experiences, as this allows them to consolidate and generate new networks and alliances. In this sense it is important to remember that "learning networks between cities encourage the exchange of experiences, both errors and solutions, such exchange networks can be global, regional or national, without forgetting that management is a field where interaction and cooperation is fundamental" (Carrizosa et al., 2018. p. 211). Moreover, that this exchange provides a landscape to develop practices adapted to the territories through flexible processes that are sensitive to differences.

- The implementation of good practices in DRR can start from closer issues such as housing, neighbourhood improvement or territorial intervention (training, execution of works and implementation of projects).

- It is essential to recognise that disaster risk management in the region is still under construction and requires the participation of all. Mapped practices and initiatives are forging the way to promote DRR; however, the challenges are daunting such as climate change, urban growth, environmental degradation and the emergence of pandemics. In this context, there is a need to build resilience and harness the advantages that technologies bring to the development of DRR.

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