

**Mainstreaming DRM into sub-national and local development  
policies in Southeast Mexico**

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# 1 Introduction

The present study proposes the analysis of DRM strategies that had been implemented into subnational development plans and public policy instruments in the States of Chiapas and Tabasco, located in Southeast Mexico. It describes the methodological phases for the implementation of those strategies and the participatory process, with a multi-level approach, carried out with multiple stakeholders and UNDP advisory. These strategies are aligned with the SDGs 1, 2, 3, 5, 6, 11 and 13, and address the priorities 1 and 2 of the Sendai framework for Disaster Risk Reduction 2015-2030.

Because of its' geographic location, Mexico is highly exposed to a variety of geological and meteorological hazards such as hurricanes, droughts, wildfires, landslides, earthquakes, volcanic eruptions, among others. Significant conditions of vulnerability are also present at the territory, where more than 50% of the population live under circumstances of marginalization and poverty, according to official data (CONEVAL, 2016). In southern States, this part of the population is mainly located in rural and sub-urban settlements; most of them are also part of several indigenous peoples.

According to recent regional studies, in Latin America(OXFAM, 2015), Mexico is one of the most unequal countries regarding wealth distribution with a Gini Index below the average of the OECD Member countries. In addition to that, there has been an increase of environmental degradation, that in 2016 was equivalent to the 4.6% of the GNP standards in Mexico (Gutiérrez, 2018), mainly as a result of land-use change, deforestation and pollution, all leading to the reduction of ecosystem services that contribute to general human wellbeing, as well as disaster resilience. The interaction between hazards and vulnerability agents previously described, provide the conditions for high levels of disaster risks in some territories, a main obstacle for sustainable development.

In this regard, the Mexican Government and Civil Society have made important efforts towards disaster risk reduction. A step forward was the latests update of the General Law of Civil Protection<sup>1</sup>, and the enactment of its' correspondant regulations<sup>2</sup>. These legal instruments incorporate the Disaster Risk Management (DRM) approach and create a range of institutions tending to that end. Also the capacities of several public servants have improved since the creation of the National School of Civil Protection in its' different campuses, while and the early warning systems, for tropical cyclones and earthquakes, have been strengthened. These measures have proved effective in reducing the losses in lives during the past decade; however the outreach to local communities with a higher level of vulnerability is still very limited.

The capacities at the national level include the creation and implementation of financial instruments such as the "Natural Disasters' Fund" (spanish acronym: FONDEN) and the Natural Disasters' Prevention Fund (spanish acronym: FOPREDEN). Especial instruments of disaster risk transfer (parametric insurances), were launched by the federal government, specially fitted for the Mexican economic development levels and its high exposition levels to risks.

Another important tool for decision-making are the Risk Atlas, at national, State and municipal levels, which are designed to inform land-use planning and territorial management. However, some of the subnational Risk Atlas have still some technical shortcomings and are not being used by local authorities on a daily basis for decision-making in public matters.

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<sup>1</sup>DOF (in English: Official Federation Dossier), 2012.

<sup>2</sup>DOF (in English: Official Federation Dossier), 2014.

Studies by the OCDE (2013) and UNDP<sup>3</sup>, suggest that, during the last 25 years the National System of Civil Protection (spanish acronym: SINAPROC) has achieved significant improvements in the country, specially in planning, response and recovery capacities. Also, the socio-economic impact of disasters in Mexico has decreased in the last 5 years (CENAPRED, 2016), after 2013, when it was considered one of the contries with the highest expenditure for disaster response and recovery, in the Global Assesment Report<sup>4</sup>.

However, the disaster related losses and damages are still significant, resulting in the disruption of local development processes, impacting human health, food security, basic infrastructure, employment, ecosystems, and population ´s social tissue.

The present status recalls several Sendai Framework priorities, such as: the importance of engaging the underlying factors of disaster risk in a rentable way, making investments instead of relying largely in response and recovery<sup>5</sup>. To do so, a risk prevention approach is crucial in public decision-making concerning diverse development sectors. A risk reduction approach in development planning is required, starting at identifying public policies areas and private and social investments where risks keep building. Involving institutional areas different from Civil Protection, as well as social organizations, and private sector, and using a governance approach that considers the government and the society as stakeholders is key to achieving expected agreements and commitments towards resilience.

The above entails medium to long-term presence and work, thus territorial planning and management and governance strengthening are slow moving processes. It also implies an investment in structural and non-structural measures for risk management, starting with risks´ comprehension and going on with the improvement of preparedness, response and recovery when facing a disaster.

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<sup>3</sup>PNUD México. 2013. Mexico: Country Case Study: How Law and Regulation Support Disaster Risk Reduction. Mexico

<sup>4</sup>UNISDR. 2013. GAR-13 - From Shared Risk to Shared Value –The Business Case for Disaster Risk Reduction. Global Assessment Report on Disaster Risk Reduction. Geneva, Switzerland.

<sup>5</sup>UNISDR, 2015. Document of Sendai Framework: <https://www.unisdr.org/we/coordinate/sendai-framework>

The United Nations Development Programme (UNDP) in Mexico, working through its Risk Management Programme (PMR), has developed a preventive model for the 2014-2018 period based on over a decade of fieldwork experience in the south and south eastern States of the country. The model includes 3 strategic lines of action: 1) Strengthening local and institutional capacities, 2) Risk reduction mainstreaming into development public policies and 3) Socializing knowledge and generating actions that reduce local vulnerabilities and increase territorial, community and institutional resilience, contributing to the institutionalization of DRM into key development sectors.

Two case studies are addressed in the present document. The first one describes the work process in the State of Tabasco. This State is one of the 32 federal entities in Mexico and has a population of 2.395.272 according to the National Institute of Statistics and Geography in 2010 (Spanish acronym: INEGI). It is divided in 17 municipalities and 5 regions.

Tabasco, while occupying only 2% of the national territory, is composed of several waterways as rivers and lagoons, representing the third part of the freshwater resources of the country<sup>6</sup>. This geography makes the State susceptible to flood hazards due to its physic vulnerability but also because of the last 30 years land use planning model, that allowed disaster risk blind urban expansion and infrastructure investments. Such conditions combined with high poverty rates that go from 50 to 90% in its' 17 municipalities (CONEVAL, 2016), configure flood disaster scenarios that have emerged in 2010, 2008 and especially in 2007 rain seasons.

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<sup>6</sup>It can be consulted the digital maps of the National Institute of Statistic and Geography of Mexico <http://gaia.inegi.org.mx>

Paradoxically, Tabasco has a Human Development Index (HDI) of 0.795<sup>7</sup>, considered high in the southern part of Mexico, which can be attributed to the concentration of the oil and gas production in the State, mainly benefiting the city capital, Villahermosa, and other large urban settlements.

The second case study takes place in Chiapas. This State is in the Southeast of Mexico and is integrated by 122 municipalities, divided into 15 regions with a total population of 5,217,908<sup>8</sup>.

Because of its location, between Tabasco and the Guatemala border, and its' physical-geographical conditions, Chiapas is exposed to almost all-natural hazards, except for snowfalls. The State is in a high and medium degree seismic zone due to the confluence and dynamism of North America, Cocos and the Caribbean tectonic plates.

In addition to the above, more than 70% of the population is in poverty and extreme poverty, 30% in educational lag, 81.2% lack access to social security, while 29% of the population lives in overcrowded housing of poor quality materials. (CONEVAL, 2016) Again, such combination of hazard exposition and marginalization produces the level of high disaster risk exposure and vulnerability of the State.

In the following titles, we can find both subnational risk reduction experiences, lessons learned and opportunity areas of Chiapas and Tabasco, Mexico, systematized and detailed.

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<sup>7</sup> HDI Report, 2016

<sup>8</sup>INEGI, 2005. II Conteo de Población y Vivienda. Accessed July 17, 2018  
<http://www.beta.inegi.org.mx/proyectos/ccpv/2005/>

## 2 Background and justification

In March of 2015, the UN Conference, with plus 5,000 government representatives, NGO´s, UN Agencies, academic institutions and the private sector, adopted the Sendai Framework for DRR 2015-2030, which consists in a set of commitments and priorities for DRR decision-making. The main goal of the Framework was: “To focus in new risks prevention, reducing current ones, which also increases resilience”, this includes a solid institutional foundation for its’ fulfilment, particularly through normative, legislative and institutional frameworks for Disaster Risk Reduction.

Additionally, the UNISDR Global Assessment Report (GAR)<sup>9</sup>, reported that damage and loss from disasters keep increasing worldwide. According to the GAR-13, the following components could potentially backward this tendency: access to information, social commitment, resource availability, and monitoring systems to mainstream DRR in development sectors.

Furthermore, to plan DRM policies is thinking of disasters as unforeseen consequences of development, based on the assumption that “Risk is a social construction, a construction resulting from inadequate development processes that generate insecurity for the population or infrastructure (...) now development is incorporated as a cause of risk and disaster as an accumulator of wasted investments (...) Then it must be accepted that the DRM, prospective or corrective, are instruments of development.” (Lavell, 2010:24)

In this context, “Risk management refers to a complex social process, whose ultimate objective is the reduction or control of risk in society. It takes as a starting point the notion that risk as a social manifestation is a dynamic situation. The change in the risk conditions of a society or a subset of society is related to gradual changes in practices and the incidence of social practices at different levels, or with gradual or abrupt changes in environmental conditions (Cardona, 2008:6)

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<sup>9</sup> GAR, 2013

From this point of view, DRM is defined as a process and not as a product, and implies that:

- Its incorporation into public policies is transversal to all areas: part of the notion that development practices are the generators of risk
- Risk management should be incorporated into planning processes: refers to organizational, administrative and budgetary measures
- It must be considered in the long term: the risk is dynamic, and its management is also
- The relationship between multiple actors involved must be considered: it is a social process

In Mexico the growth of population especially in urban areas and development models that not consider risk variables, are the main causes of increased levels of damage and loss from disaster. This leads to:

- Public Policies that do not include low vulnerability standards;
- Lack of investments for strengthening technical and professional capacities at community and governmental level, the private sector and civil society;
- Constant public and institutional rotation (resilience is achieved in mid-term processes), and,
- Failing to use the existing disaster risk Atlas and risks analysis for daily strategies and decision-making in economic and government matters.

In the meantime, efforts to reduce poverty and generate a sustainable human development are increasingly threatened by disasters, mainly climate related ones, tied to the high vulnerability of certain urban and rural areas. Overall, UNDP in Mexico through its' Risk Management Programme (PMR), has over 15 years of experience in DRM in the poorest regions of the country. Currently the PMR is collaborating with 4 subnational governments, 43 municipalities and 77 communities, looking for territorial and organizational disaster resilience.

The PMR, in the past years, especially in the southern regions of Mexico, has focused its work in meeting the Sendai Framework priority actions; focusing in strengthening capacities and alliances (local, sectorial and institutional), analysis for risk identification and preventive measurements at local and municipality level, along with incidence in preventive public policies, all the above to achieve a territorial sustainable development.



## 2.1 Overall goals

The study aims to analyze DRM strategies that had been implemented into subnational development plans and public policy instruments in the states of Chiapas and Tabasco, Mexico, between the years 2014 and 2018. Describing the methodology phases for the implementation of those strategies and the process of work done with the participation of stakeholders and the advisory of UNDP along the process. For this purpose, two case studies where DRM is embedded in development plans and policies were carried out to highlight the factors which make it successful. Also, seeks to highlight constraints and threats for mainstreaming DRM in contexts of institutional vulnerability.

The first case study is an analysis of the process for implementing a subnational DRM strategy at the state level with the main goal of mainstreaming DRM for low-risk territorial planning in the state of Tabasco, Mexico. The axes of this strategy are a combination of capacity building actions, institutional arrangements and technical solutions that had been planned and implemented both at sectoral and intersectoral settings, with the participation of multiple stakeholders from government departments, academic and professional sectors.

The second case study is the analysis of the implementation of the local prevention strategy in the state of Chiapas, Mexico. Where DRM is institutionalized in local DRM action plans and the state Secretary of Civil Protection is leading the capacitation and conforming of local DRM committees which implement prevention and relief actions.

In summary, aims to highlight the gaps that should be addressed when subnational or local DRM strategies and development policies are analysed. It also looks to point out the main issues for projects where there are subnational or local governments as partners. Specifically, the challenges for institutionalization and sustainability of the DRM strategies, along different administrations<sup>10</sup>, at local and sub-national levels.

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<sup>10</sup> State governments last six years, while municipal ones only three.

## **2.2 Methodology**

This Case Studies had the support from PMR programme local and State counterparts in Mexico´s UNDP Office, which allowed to create an interdisciplinary team of specialists with over 15 years of experience in GIR-related subjects and public policy incidence.

The research included the compilation and review of documents generated by UNDP-PMR program on the mainstreaming process of DRM in the States of Tabasco and Chiapas in the past 4 years, out of which a summary, good practices and lessons learned are presented.

Interviews with key actors in the states of Chiapas and Tabasco were essential to integrate the case studies, and even for confirming the scope, and contents of final versions, such as governmental officers, national and international ONG´s, UN agencies and rural communities' leaders.

## **3 The Tabasco experience with intersectoral risk analysis for territorial planning**

As we broadly explained above, Tabasco has a high level of vulnerability combined with the presence of several hazards, the interaction of these factors turns it into one of the states at major risk in the country, being floods the main hazards. Floods have always been present in this territory, however in the past decades the most severe have occurred in 1999 and 2007.

The 2007 floods are remembered by most of the State's population due to its catastrophic consequences. The magnitude and impact of this disaster was enormous, causing serious damages and losses whose full recovery still has not been achieved even after 11 years. The cost of this disaster was evaluated by ECLAC on USD 2,918 million, as officially reported (CENAPRED, 2016).

### 3.1 After the floods: government actions and plans on DRM

The government of Tabasco implemented a series of actions tending to flood risk reduction in the state. These can be in the following phases of the disaster cycle: prevention, preparedness, response and reconstruction, considering a disaster risk management perspective as described in the Fig.1.

Actions of prevention and mitigation	Actions of response	Actions of reconstruction
<p>Water Integrated Plan of Tabasco (Spanish acronym: PHIT)</p> <ul style="list-style-type: none"> <li>• Construction of 5 regional centers of prevention, emergency attention and civil protection training (spanish acronym: CEREPAC).</li> <li>• Creation or strengthening of Municipal Units of Civil Protection.</li> <li>• Changes on the governmental administration structure</li> <li>• Development and implementation of instruments to help decision-making (disaster risk atlas, geographic information systems)</li> <li>• Update of the municipal regulatory framework of Civil Protection and the update of the State Law of Civil Protection.</li> <li>• Collaboration agreement with UNDP.</li> </ul>	<ul style="list-style-type: none"> <li>• Attention to Disaster.</li> <li>• Humanitarian Aid.</li> <li>• Creation of the State Risk Fund (spanish acronym: FOCOTAB).</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation of the reconstruction resources from the Natural Disaster Fund (spanish acronym: FONDEN).</li> </ul>

**Fig. 1: Actions of the Tabasco government after the flood of 2007.** Source: self-authoring.

To this point, the actions described show that the State of Tabasco began a risk management process after the disaster of 2007. These actions intended to reduce some of the vulnerabilities detected as factors that exacerbate risk in the territory, nevertheless a process of capacity-building in the Government and society, as well as institutional strengthening, needed to be added. Therefore, the Government of Tabasco signed a collaboration agreement with the UNDP for the period 2013-2018 for creating and enhancing disaster risk capacities.

### 3.2 The UNDP Risk Management Programme (PMR) in the Southeast of Mexico and its work in Tabasco

UNDP started working in Tabasco after the flood of 2007 participating in the coordination and management of humanitarian aid from the UN Agencies and international NGO's. Then the Risk Management Programme (PMR) conducted a participatory analysis of damages and needs, leading to prioritize water access and livelihoods' recovery in most of rural communities and afterwards the training for the formation of risk management committees. In solving one of the main humanitarian problems, water access, UNDP together with

its allies could launch a total of 34 drinking water systems called “kioscos azules” (blue kiosks) and support its local management in most rural settlements along the Usumacinta and the Grijalva rivers. These devices transform not suitable water for human consumption to drinking water, members of the committees were provided with training on its use and care.

Subsequently, the PMR worked in coordination with the State of Tabasco Planning Ministry, in the preparation of the "Civil Protection Master Plan" (Spanish acronym: PMPCT) in 2011. UNDP provided technical assistance from several of its specialists to support the preparation of this document from an integrated disaster risk management (DRM) approach for the first time. The main contribution of the Tabasco Master Plan is being a public policy instrument that seeks risk management from an intersectoral and crosscutting perspective.

The construction of the Tabasco Master Plan was carried out through the official counterpart Planning Committee for the Development of the State of Tabasco (Spanish acronym: COPLADET) integrated by representatives from all the State Government ministries, promoting integrated and more sustainable development from a double way approach: on the one hand, fostering gender and intercultural, protection of children and the environment and the sustainability perspectives; and, on the other hand, linking the Master Plan actions to all areas of State Government and not only to those of civil protection<sup>11</sup>. In spite of the success in the participatory build up process of the document, plus the existence of political will, the Plan has been implemented only in a partial way, prioritising with the recovery priorities after the 2008, 2009 and 2010 floods, and the quick response / contingency protocols.

In 2012, the process of Government's change after elections at the State and municipal levels, was accompanied by a new UN collaborative project whose main goal was to continue the implementation of the Master Plan, particularly stressing the preventive ones. At that time, work was done with UNDP advisory on the

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<sup>11</sup>Plan Maestro de Protección Civil, 2011. Accessed August 16, 2018  
[http://www.pmrMexico.org.mx/img/D\\_Publicaciones/19\\_PlanMaestro\\_Protecci%C3%B3nCivil\\_Tabasco.pdf](http://www.pmrMexico.org.mx/img/D_Publicaciones/19_PlanMaestro_Protecci%C3%B3nCivil_Tabasco.pdf)

improvement of 14 from a total of 17 municipal civil protection plans. Training and follow up advice for the implementation of such plans was provided to municipal officers from 2012 to 2014.

At the State level, a period of negotiation started with the new elected authorities, where working groups were accompanied to elaborate a 2012-2018 State Development Plan that incorporates the DRM into its' guiding points. Several information inputs were delivered, and training of new decision-making officers was carried to introduce them in the DRM concepts and methodologies, in order to achieve continuity of the Master Plan and follow up to the existing advances in the matter. Due to such transitional process, in December 2013, the Government of the State of Tabasco took over the Master Plan, enriching it with the new administration priorities, and agreed with UNDP and the rest of civil and academic counterparts to continue the process. Table 1 below summarizes the various UN projects carried out from 2011 to 2018 and some of its main results. As shown in the table, there has been a continuity process of mainstreaming DRM along already two Stat and three municipal administrations in Tabasco. Some of the results have been already institutionalized by the counterparts while other processes are still open.

**Table 1: Projects carried out by UNDP and the government of the state of Tabasco. Source: self-authoring.**

Projects	Objectives	Main Results
<b><i>Civil Protection Master Plan (2011)</i></b>	Incorporate the Disaster Risk Management approach in different Governmental areas.	Document of the Plan with intersectoral participation and official endorsement, as a guiding document of the public policy on DRM.
<b><i>Mainstreaming the Civil Protection Master Plan (2012-2013)</i></b>	Implement actions of the Civil Protection Master Plan through the elaboration of Municipal Civil Protection Plans.	Elaboration of 14 municipal civil protection plans (of a total of 17) with the participation of municipal officials from various sectors of each City Council. Training DRM programs for State and municipal officers. Workshops, consultancies and follow-up on the integration processes of DRM actions in the municipal plans and policies.
<b><i>Strengthening capacities of the Civil Protection System of the State through Disaster Risk Management training programs (2014-2015)</i></b>	Strengthening capacities in local and municipal actors. Conversion of Civil Protection plans into DRM plans. Feasibility study for the State School of Civil Protection.	Recommendations and update of the State Law of Civil Protection with a DRM approach. Diploma course for training municipal and State officers in 7 training including topics of disaster resilient development. Workshops, consultancies and follow-up advice to the municipal governments for mainstreaming DRM in their municipal plans and other policies. Collaboration with multiple actors (research institutes, universities, private sector and civil society).

<p><b><i>Tabasco seguro ante desastres (2015-2017) – 1ra fase</i></b></p>	<p>Incorporation of DRM's approach in public sectorial policies of 6 state dependences and of the municipalities of the State.</p> <p>Model of municipality resilient.</p>	<p>After municipal elections of 2015, 10 out of 17 municipal risk reduction plans were updated in 2016 with the participation of multiple actors.</p> <p>The DRM approach was incorporated into municipal normative instruments: City ordinances, environmental, land use planning and public infrastructure regulations were reviewed.</p> <p>Sectoral issues with DRM approach are being worked on: urban waste, banana and cocoa production, fisheries' invasive species, among others.</p>
<p><b><i>Tabasco safe from disasters (2017-2018) – 2nd and 3rd phase</i></b></p>	<p>Strengthening of civil society organizations.</p>	<p>Formation of a territorial information group in which seven State and one federal agency participate.</p> <p>Political agreements to unify criteria in legal frameworks regarding key areas such as the sector of public infrastructure, territorial planning and environmental protection.</p> <p>Follow up working groups were created with key non-governmental actors such as the Professional Association of Civil Engineers of Tabasco and Universities.</p> <p>Diagnosis of health sector vulnerability to Climate Change with a DRM approach incorporated (includes risk prospective scenarios and medium-term CC).</p> <p>Development of a diagnosis of capacities of civil society organizations in Tabasco.</p>

### **3.3 The intersectoral committee for territorial planning: a prevention strategy at subnational level**

During the entire UN partnership process in Tabasco, an average of 577 people per year were trained, some to be considered as installed capacities under the UNDP<sup>12</sup> approach. Also, an average of 60 to 80 working meetings were held per year, such as advising, follow up and workshops with Municipalities and State agencies. In addition, there were multiple activities with other stakeholders such as Universities, Professional sector associations, civil society organizations and private companies.

From the work done in the State, the following priority issues were identified:

- Disaggregated territorial information between sectors.

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<sup>12</sup> PNUD. 2009. Desarrollo de capacidades: texto básico del PNUD. New York: Departamento de Desarrollo de Capacidad.

- Limited decision-making instruments for territorial planning.
- Lack of coordination between sectors and governmental levels.
- Knowledge about DRM among public workers.

Based on this, a process with government officials from different sectors was initiated, which led to the creation of an intersectoral committee composed of actors from various sectors and levels of Government.

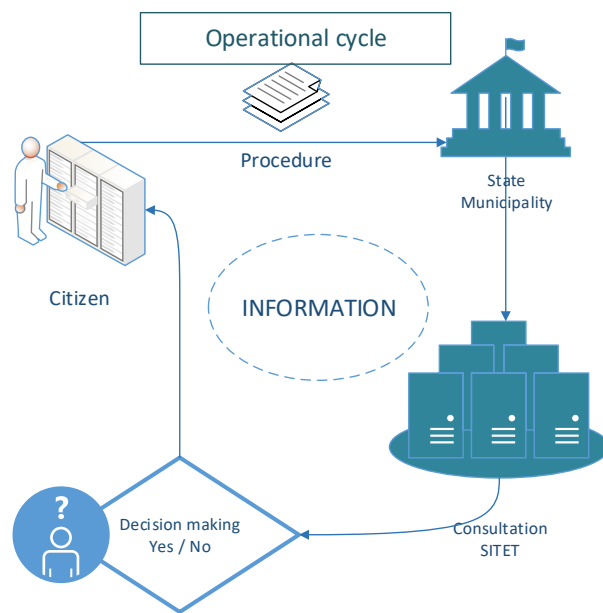
The main goal of this committee is to mainstream DRM into public policy in the main sectors for sustainable development. To this end a territorial information system of Tabasco (Spanish acronym: SITET) was created. This system aims to support the Master Plan intersectoral prevention strategy for low risk territorial planning based on open source software.

This strategy involves three lines of action: 1) Institutional arrangements that consist of the modification and homologation of regulations and processes at the State and municipal levels in the feasibility procedures for land use and construction licenses; 2) Capacity-building for risk reduction through training in the subject, and 3) Technical solutions for the use and management of information systems.

The SITET as a preventive strategy aims to be applied both at a multi-level tool: at the municipal level, efforts are being made to integrate a "single window" for receiving and the following up off all type of procedures, incorporating risk analysis into the evaluation of, for instance, construction permits.

At the State level, the system can be consulted by diverse sectors of government and used for regulating and decision-making the territorial planning, in order to reduce risks. The sectors that UNDP has worked with are Civil Protection, Environment, Urban Development, Infrastructure, Economic Development and Tourism, as well as special open government, legal and/or strategic investment projects.

The implementation of the SITET systems is still being carried out in several stages. In the first stage, the emphasis is on the risk analysis for infrastructure project permits and other planning decision making procedures, both for public and private investments. It is intended to streamline processes by shortening times, improving the quality of risk analysis, integrating costs and generating data for public consultation. The operational cycle of the strategy is shown in Figure2:



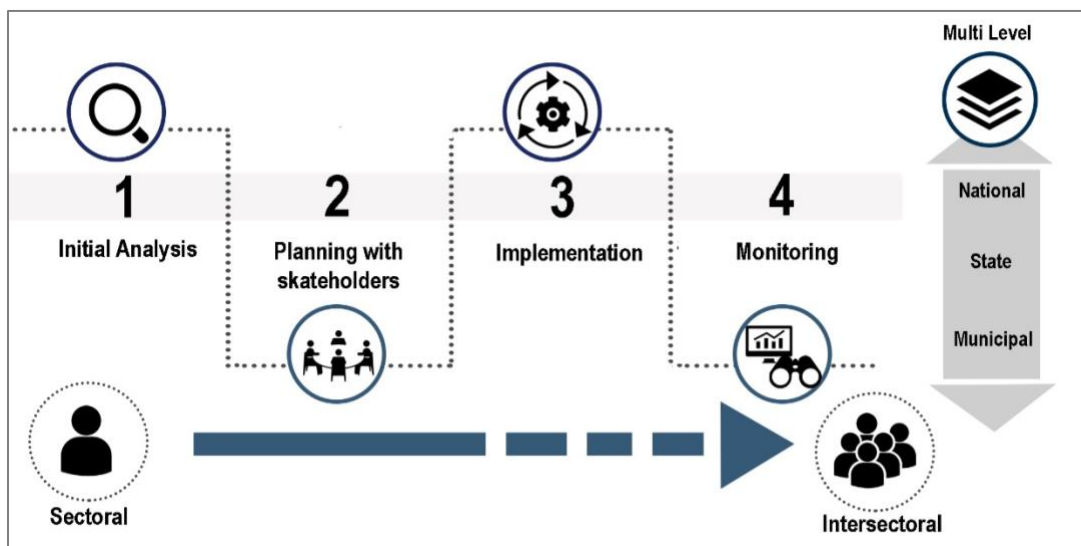
**Fig.2: operational cycle of the prevention strategy.** Source: self-authoring.

According to the figure, the citizen goes to a single window to carry out the procedures for a construction license. The procedures are standardized and coordinated between State and municipal agencies, including the payment of fees. It is the governmental agency that makes the consultation to SITET system and based on the results, authorizes or rejects the correspondent investment license. This process is before initiating any project and adds up the direct interaction with multiple government agencies into a simple and more agile procedure. In the near future, the system is intended to incorporate the possibility to check into the data base from other sectors such as private investors and NGO.

### 3.4 The work phases of SITET

The first phase of the process is the initial analysis as shown in Fig. 3. In this phase the work is focused on the **sectoral risk analysis**. The main goal is to have a risk appraisal that informs planning decisions. It includes building capacity for DRM in every sector of the Government working in the SITET. The risk analysis is usually carried out with the participation of stakeholders involved, identifying and prioritizing the main hazards and vulnerabilities.





**Fig.3: Work phases of the SITET process.** Source: self-authoring.

The second phase is planning, in which an intersectoral work space was needed. For that, an interinstitutional committee was created and a workplan designed, with a first goal to mainstream risk analysis into territorial planning policies and proceedings. The methodology of such plan included the integration of an information system that addressed the problem of disaggregated information and misuse. The system uses an open source software and it is managed and maintained by an specialized institute part of the Tabasco Government, Once all the tools available to create the system were launched, the SITET committee programmed the concrete actions and resources needed to fully operate the system. An open source software is being used to build the information system, this software does not need licenses and it is managed and maintained for a federal specialized institute part of the government.

Meantime, a UNDP specialized team used this information to elaborate risk maps at the State, municipal and landscape levels. These maps are part of the SITET system and they are starting to be used by the municipalities to inform decisions of the construction permits.

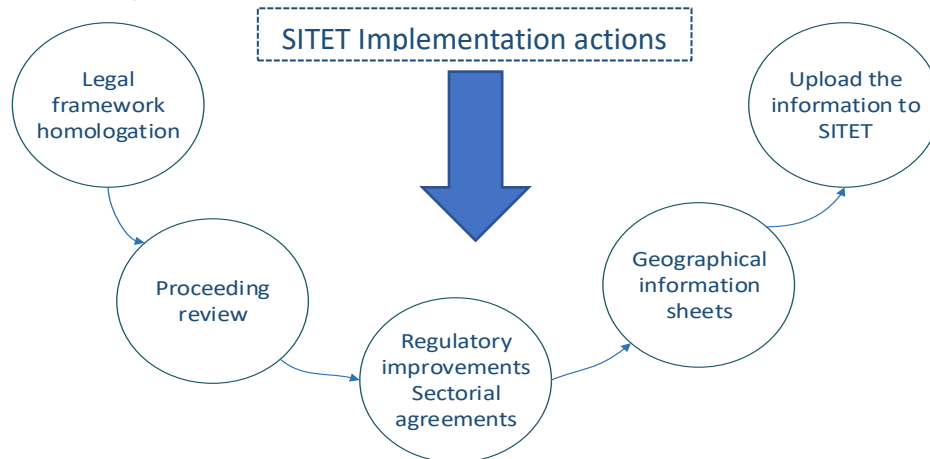
A legal framework revision and harmonisation is part of the SITET process since the beginning. As it is showed in the Fig. 4, in this phase steps to crosscut legal framework with DRM criteria are begin taken, at least in three sectors:

Civil Protection, Environment and Urban development. Not only the laws and acts have been revised, but also concrete procedures and tools.

Together with the legal changes, the necessary institutional arrangements have been analysed, and the Government determined to create intersectoral procedures for decision-making regarding territorial planning. For instance, to build up the feasibility studies on land-use that inform authorisation of construction licenses in alliance with external technical actors such as civil engineers and architects professional associations have been trained in the approved methodology for risk analysis. There has been multiple working meetings with representatives of the academic sector so they get to know the system and accept fulfilling the role of external controllers within the so called Advisory Committee that will be formed.

### 3.5 Lessons learned from the experience

The case study of Tabasco shows that, in order to mainstream the DRM at the subnational level, where few DRM



**Fig. 4 Implementation actions phase 3.** Source: self-authoring.

capacities are in place, a previous step are key for further successful development, such as a stakeholder analysis, design of an inter-institutional arrangement compatible with the existing legal status and bureaucratic structures. The project is viable only with the warranted access to a limited but steady budget, mainly for a local advising team, punctual experts, trainers, as well as workshops and trips. In the Tabasco case, the SITET has reduced transaction costs for bureaucracy, facilitating budget management and generating better communication between the governmental and non-governmental areas involved.

Finally, a key learning is using technological solutions only as complementary tools, which require training processes and participation in decision-making of all the actors involved. It is also important to work with open source software that do not depend on annual licenses and whose infrastructure is installed in official

computers and offices. This capacity building and empowerment not only reduces the vulnerability of State and local officers, but also allow for ownership of these resources and more sustainability over time.

- 4 This experience addresses SDG 11 sustainable cities and 13 climate action because it seeks territorial planning policies with low risk from the perspective of DRM and climate change. It also seeks to visualize and publish information which is key for the citizens in order to make decision about development and get involved in territorial and urban planning. This is why this experience addresses the priority 1 and 2 of Sendai Framework by giving more tools to understand risk and strengthening disaster governance. The Chiapas experience with DRM action plans at municipalities and communities' levels**

#### **4.1 Background and actors in Chiapas**

The State has faced numerous disasters that have caused loss of human lives, infrastructure, livelihoods and deterioration of ecosystems. Some of the most severe were the fires of 1998 due to prolonged drought and torrential rains in the same year on the coast of the mountain range "Sierra Madre"; the hurricane "Stan" in 2005 with an estimated loss of 10 billion pesos; floods, mudslides and landslides in 2007 such as the slope slip known as the "cap", which blocked the natural course of the Grijalva River by cold fronts 2-4, leaving dozens of life loses. In 2010 landslides and floods were suffered due to Tropical Storm "Matthew". The need posed by the State Government to improve several DRM aspects, such as effective preparedness and response, disaster risk reduction and to change from a reactive to a preventive approach, was received by UNDP in 2009, and by UN-ISDR in 2013.

In 2009, within the collaboration framework to achieve the Millennium Development Goals in Chiapas (MDG), the United Nations Development Programme (UNDP) offered its support to the State Government for improving disaster risk management. Since then, the Risk Management Program in Mexico (PMR), has provided technical assistance for the creation of the Institute of Civil Protection for the Comprehensive Management of Disaster Risks of the State of Chiapas (Spanish acronym: IPCMIRD), the National Civil Protection School, campus Chiapas, the Preventive Program for Municipalities and Communities (PP-5), along with an appropriate legal framework, personnel, budget, and administrative and technical capacities.

From 2009 to 2012, the UNDP & Chiapas Government project was consisted in strengthening the State Civil Protection System institutionally, as well as the capacities of the local population, with combined resources from the State and federal Government. Along with UNDP, participated also the NGO “Cinco Panes y Dos Peces”, the IPCMIRD, and the National University UNAM “Institute of Geophysics”. In that early stage, the project reached 30 pilot municipalities and more than 200 community committees, which were organized and trained in DRM.

After the 2010 floods due to Tropical Storm “Matthew”, which affected 22 municipalities, the Chiapas Civil Protection System created the Recovery Commission<sup>13</sup> with the objective of monitoring the "State Plan for Disaster Risk Reduction and Recovery for Sustainable development", a good public policy good practice that connects disaster recovery with resilient development.

#### **4.2 Main Achievements and the support methodology**

From 2013 to 2016, with more experience and consolidation, Chiapas Civil Protection became a central actor of the National Civil Protection System and received the highest thematic award as a system, the “Premio Nacional de Protección Civil”. Important legal reforms and institutional improvement continued in later years, including the State Civil Protection Law and its operating regulations, the creation of the Civil Protection Ministry, with far more budget and broader mandate; the 2016 Decree to enforce specialized DRM committees and plan at the 126 Municipalities and at every human settlement (more than five thousand rural communities<sup>14</sup>). Lately, in 2017, it was achieved that the Political Constitution of Chiapas recognize civil protection as a Human Right, while the National School of Civil Protection Campus Chiapas celebrated the student number 100,000, integrating the offer of DRM technical and bachelor's programs, a master's degree, and the newly created PhD in civil protection and risk management.

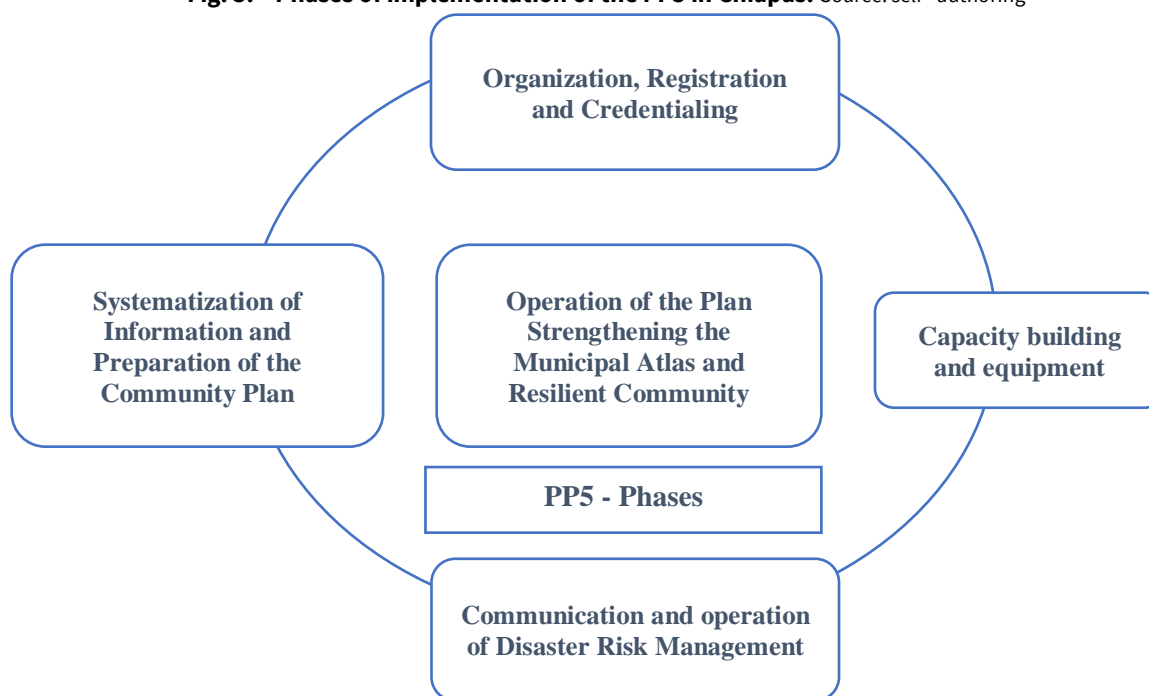
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<sup>13</sup>Intersectoral Commission for the Recovery and Prevention of the State of Chiapas (CIRPEC).

<sup>14</sup>Implementing actions within the cycle of integral disaster risk management preparedness, response, recovery and prevention, using their community plan, VHF radios, loudspeakers, monitoring disturbing phenomena, identifying their risks and addressing emergencies.

About UNDP support methodology to Chiapas, includes a medium-term model of training and advise, adapted to local times and needs. In the beginning, the PMR consolidated the methodology and its tools, which were transferred to the Civil Protection system and other local allies, which continued the implementation as UNDP partner but sharing decisions and leaderships. The cycle replicates the foundations of the of the UNDP-PMR methodology.

**Fig. 5: Phases of implementation of the PP5 in Chiapas.** Source: self - authoring



Local work in Chiapas has been strengthened with regional and national alliances with civil and private organizations that promote sustainable development with a DRM approach, such as the Gonzalo Río Arronte Foundation, and the so called National Alliance for Risk Reduction, integrated by OXFAM, World Vision, Ayuda en Acción NGO, and City-Banamex Foundation. The UNDP-PMR program has also worked with the local Alliance for Health, Food and Nutrition (Spanish acronym, ASAN), that includes 15 productive and social organizations, along

with coffee growers' cooperatives and the W. K. KELLOGG Foundation (WKKF)<sup>15</sup>. On the other hand, seeking to articulate efforts between the global agendas of climate change and risk reduction, the UNDP-PMR created a synergic agreement with Chiapas several Natural Protected Areas of the governmental National Commission of Natural Protected Areas (CONANP) which contributed a innovative “ecosystem based risk reduction” approach that enriches other policy and local DRM developments in the State, mainly through the participatory design of “adaptation and risk reduction landscape plans” that increase disaster resilience in strategic territories, with measures based on sustainable ecosystem management (EBA and Eco-DRM).

Between 2017 and 2018, after the serious effects caused in the Chiapas territory by the 8.2 magnitude earthquake of September 7, 2017, the collaboration between PMR and Civil Protection is consolidated from the effective response and coordination of the State system. In this context, the Trust for the Operation of the Integral Risk Management Fund for Disasters (FOGIRD) has been strengthened and its' inter-institutional Committee was created, enhancing institutional capacities<sup>16</sup>.

The culture of disaster risk prevention that has been implemented in Chiapas has allowed to save lives and increase community resilience in the presence of adverse phenomena, being catalogued by the United Nations as a reference at national and international level. Chiapas has proven a State capable of solving contingencies effectively, with full knowledge of the subject.

### **4.3 Lessons learned from the risk management process in Chiapas**

Local actors are key to DRM by generating risk reduction processes and carrying out sustainable planning in the short and long term, to avoid new risks in their territory. Working in a network or in partnerships with local NGOs is essential to analyse multi-cause risks at the territorial level, as well as generating proposals for reducing vulnerabilities in their communities. Some of the challenges of the local context are poverty and

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<sup>15</sup> WKKF. For more information visit: <https://www.wkkf.org/>

<sup>16</sup> Through the National School of Civil Protection Campus Chiapas, more than 100 thousand people have been trained and professionalized. For more information visit: <http://www.proteccioncivil.chiapas.gob.mx/>

marginality, which are exacerbated by phenomena such as climate change, low development budgets, short term planning and institutional weaknesses.

To achieve better results in facing such challenges, UNDP-PMR program along with Chiapas Civil Protection system took over a variety of methods and tools of dialogue, analysis, prospection and evaluation, some of them adapted, other created, collecting the knowledge and experiences of local governmental actors, NGO, research centres, productive and social organizations defenders of human rights, which were articulated by the UNDP local team, along a period of 10 years.

Among the methodological tools stand out the Participatory Rural Evaluation and Planning; the Guidelines for Participatory Identification and Analysis of Risk Natural and Social Phenomena from the PMR; the Participatory Risk Planning Guide with emphasis on vulnerabilities, from the PMR; the Community Plan for Resilience; the Electronic Platform of Civil Protection; the Process of Quality Control of Civil Protection Services with ISO 9001-2015, among others.

A value added to the DRM process in Chiapas, is the recent success when being used to tackle a new anthropogenic risk: social-environmental conflicts and population displacement. Civil Protection system has been appointed in charge of monitoring, early warn and first respond, as well as apply preventive measures, all in compliance with the State Displacement Law, voted because of the serious agrarian conflicts that exist since years ago, but lately arise with violence (spring 2018), undermining development programs and projects. The existing State Civil Protection system policy tools (namely the National School, the municipal and local committees, the social vulnerability analysis, among others), have proved successful for better managing such social threats as risks that can be analysed and reduced.

This experience addresses SDGs 1. No poverty; 2. Zero hunger; 3. Good health and well-being; 5. Quality education; 6. Clean water and sanitation; 11. Sustainable cities and communities and 13. Climate action. Because DRM processes are conducted through strengthening capacities in issues associated with underlying factors of risk such as poverty, health, education. In Chiapas, the Committees incorporated these issues in their DRM plans and also the coordinated system of Civil Protection allows to have better risk governance and effective mechanisms of resilience at local levels. This is also why this experience addresses priorities 1 and 2 of Sendai.

## 5 Conclusions

In Mexico, even though there is a progressive advance in the Civil Protection System at the national level, mainly regarding to disaster preparedness and response, it is necessary to strengthen mechanisms of risk prevention and mitigation, mostly at the subnational level where this progress is clearly unequal and mostly needed.

The review of these two case studies demonstrate that for developing countries like Mexico, the process to strengthening institutions setting, needs being present in the field and creating alliances and synergies to generate advocacy processes from a capacity development approach. Having not only an output approach in projects but mainly an impact strategy, both at the local and the sectoral levels, along with a mid-term timeline and budget, are some of the hallmarks of UNDP-PMR program work.

In general, such methodology is centred on development and strengthening of institutional and social capacities where DRM mainstreaming, increasing governance and resilience have been the guiding principles. For instance, prioritising multi-level governance has helped bringing together diverse actors and thus solving public challenges and allowed the Government to be sensible to innovative proposals and solutions, encouraging a sense of co-responsibility among these actors.

The following are some of the summarised lessons learned of the two case studies in Southeast Mexico, replicable to processes in other contexts:

- **At the territorial level, post-disaster contexts are opportunities to integrate disaster risk reduction and resilience in development processes.** In both States, it was found that previous disasters recovery and reconstruction processes were triggers to increase the understanding of the risks and to mainstream the DRM approach in different sectors of development.

- **Increasing institutional and community capacities for Disaster Risk Reduction, key to successful DRM, are medium-term processes and require a strong political will.** It should start by recovering knowledge of the local actors, reach multi-annual commitments, design action routes, identify entry points in key sectors of development and keep a maximum flexibility to adapt and take advantage of challenges as windows of opportunity for resilient development.



- **The generation of networks and strategic alliances give long-term sustainability in periods of governmental transition.** The links with sectors of the academy, private sector chambers, NGO and other civil society organizations, contribute to sustain processes through elections and administrative changes in the different levels of Government in Mexico.

- **The institutionalisation of DRM at the subnational levels requires to go beyond public policy instruments.** The process of DRM institutionalisation requires going deeper into installing capacities, institutional strengthening, multi-actor commitment, much further than the approval/voting of DRM policies; this includes providing tools and *ad hoc* technical solutions and innovations, governance arrangements and participatory tools that guarantee institutional and local ownership.

- **Impact assessment and knowledge management in DRM remains a challenge.** It is imperative to systematize and document cases of success and processes, and evaluated them with an integrated multi-dimensional approach, including cost-benefit and cost-efficiency analysis and impact evaluations aligned to monitoring systems that consider Sendai Framework indicators. This will allow greater replicability and create incentives for dissemination and exchange of good practices among governments and organizations at the regional level.

In conclusion, mainstreaming DRM at the sector and territorial levels requires a process of strengthening capacities and institutions, as well as empowering actors by giving them access to information and building bridges between the communities and the Governments.

## List of Abbreviations

CENAPRED	National Disaster Prevention Centre ( <i>Centro Nacional de Prevención de Desastres</i> )	INEGI	National Institute OF Statistic and Geography ( <i>Instituto Nacional de Estadística Geografía e Informática</i> )
CONEVAL	National Council to Evaluate Social Policy (Consejo Nacional de Evaluación de la Política de Desarrollo Social)	LGPC	General Civil Protection Law (Ley General de Protección Civil)
ENAPROC	National Civil Protection School ( <i>Escuela Nacional de Protección Civil</i> )	NGO	Non-governmental Organization
FONDEN	Natural Disaster Fund ( <i>Fondo de Desastres Naturales</i> )	OECD	Organisation for Economic Co-operation and Development
FOPREDEN	Natural Disasters Preventive Fund ( <i>Fondo para la Prevención de Desastres Naturales</i> )	PMR	UNDP Mexico - Risk Management Programme ( <i>Programa de Manejo de Riesgos</i> )
GAR	<i>Global Assessment Report 2013- Informe de Evaluación Global sobre Reducción del Riesgo de Desastre</i>	PMPCT	Civil Protection Master Plan of Tabasco
GIR	Holistic/ Integrated Risk Management ( <i>Gestión Integral de Riesgos</i> )	UNDP	United Nations Development Programme
		DM/DRM	Disaster (Risk) Management
		DRR	Disaster Risk Reduction
		SINAPROC	National Civil Protection System ( <i>Sistema Nacional de Protección Civil</i> )
		SITET	Territorial Information System for the State of Tabasco
		UNISDR	United Nations International Strategy for Disaster Risk Reduction

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