



## Proceedings of the Resilient Cities 2013 congress

### Session: D3 Planning for resilient cities in Latin America and Asia

#### **Presentation: Advancing on local urban climate change agendas through multi – stakeholder collaboration.**

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#### **Abstract:**

This paper describes the methodological approach and progress made so far in the Riberas´ project, and the socio-institutional framework operating in four selected municipalities as we attempt to analyze what is there to support effective climate change adaptation and what else is needed. The main focus of the paper is placed on the multi-stakeholder process developed by the project. The Riberas project aims to analyze the impact of climate change and variability on coastal areas of the Rio de la Plata: Carmelo and Juan Lacaze (in Uruguay), Tigre and San Fernando (in Argentina); and through a multi-stakeholder process draft local climate change adaptation guidelines.

Based on mid term findings (currently the project is on its second year of implementation), the paper suggests the use of key activities as entry points to support the work of these four municipal governments and particular at risk communities, in advancing on drafting local climate change adaptation guidelines and include them within local development plans. The project involves generating a local information base (hydro-meteorological, socio-institutional, economic, and urban,) and its validation with different participating stakeholders to better inform local decisions, discuss present disaster risk situations and future scenarios.

#### **Keywords:**

Climate change adaptation, flood risk, local governance, multi-stakeholder processes, Rio de la Plata.

## 1 Introduction

As climate change impacts are felt locally there is an increasing interest in advancing in local adaptation plans and programs. There is some understanding of what such plans should include but much less is known on how they are implemented and with what implications (Bulkeley 2010; Hardoy and Romero Lankao 2011). This paper first describes the methodological approach and progress made so far on the Riberas project to later focus on the socio – institutional arrangements operating in the study areas and the strategies used to integrate multiple stakeholders in drafting local climate change adaptation guidelines. It is important to assess what is there to support effective climate change (CC) adaptation and what more is needed as we look for entry points to work in each particular study area in order to start including CC adaptation in their local agendas. This is 36-month research project funded by the International Development Research Centre (IDRC) that aims to analyze the impact of climate change (CC) and variability (V) on coastal areas of the Rio de la Plata: Carmelo and Juan Lacaze (Uruguay), Tigre and San Fernando (Argentina) and plan accordingly. For this it generates basic hydro-climatic, socio-economic, urban, and socio – institutional information as it progressively involves stakeholders in identifying local risks associated with floods and drafting local adaptation plans. The Riberas project is in its midterm phase of implementation.

## 2 Study area

The Rio de la Plata estuary is unique in terms of its size, more than 3 million km<sup>2</sup>, and the Rio de la Plata River basin is the fifth largest in the world; its main rivers are the Parana and Uruguay. The Rio de la Plata's dimension, shape and low depth, favours the propagation of ocean tides (maritime dynamics) into the river. Ocean tides, coupled with south-easterly winds generate a storm surge that drags water into the river, raising water level and producing floods in low lying coastal areas in Argentina and Uruguay. These events are known as "sudestadas". In addition strong winds cause severe coastal erosion and loss of beaches in the coast of Uruguay.

The main climate related hazards in the study area are associated with intense local rainfall, flooding of major tributary rivers (Paraná and Uruguay), and "sudestadas", which pose the greatest threat. The four selected cities are all located in the estuary of the Rio de la Plata: Carmelo and Juan Lacaze in the Department of Colonia in Uruguay; and Tigre and San Fernando in the north of the Buenos Aires Metropolitan Region (BAMR) in Argentina (see Table No.1). Flood risk is expected to increase in the next 100 years due to the combined effect of increases in the level of the Rio de la Plata (by 0.60 cm to 1 meter), and stronger winds and storm surges (Barros et al 2005). Information also shows correspondence between exceptional stacking of water on the coast and strong winds in both sides of the Rio de la Plata.

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However, impacts are not only related to climatic variables so the Riberas project also looks at the physical transformation of the territory due to urbanization and productive activities, socio - cultural practices, institutional arrangements and the socio-economic conditions of the population, which make some areas, and within these areas particular neighbourhoods and households, more vulnerable than others. The four coastal municipalities share common problems such as pressures generated by urban development and tourism in the case of Carmelo and Tigre; and the presence of economically vulnerable population exposed to floods on low – lying areas of Juan Lacaze, San Fernando and Tigre. On the other hand, they have important demographic, territorial, and institutional differences, while Tigre and San Fernando are within a metropolitan area and have local autonomous governments; Juan Lacaze and Carmelo are small municipalities, with recently elected authorities for the first time but still legally and administratively under the Department of Colonia.

Table N°1: General data of the study areas

	Inhabitants	Density inhab/km2 urbanized area	Population with UBN	Informal settlements population
Tigre	376.381*	2.560	20,3% (2001)	15,00 %
San Fernando	163.240*	7.100	16,1% (2001)	8,00 %
Carmelo	16.866**	3.182	21,87% Dep. of Colonia	0,90 %
Juan Lacaze	13.196**	3.770	21,87% Dep. of Colonia	1,47 %

\*INDEC 2010. In the case of Tigre and San Fernando, density excludes delta islands.

\*\* INE 2004

### 3 Project methodology

The project is divided in 3 overlapping stages. During the first stage we worked at a regional and municipal scale, preparing a technical diagnosis, gathering and analyzing all relevant information and identifying areas at risk from floods. To identify at risk areas we worked by overlapping hydro-meteorological, socio-economic, and urban development information (present and future tendencies)<sup>1</sup>. Information is geo-referenced and integrated in a visual format to work with local stakeholders.

<sup>1</sup>The hydro-meteorological component analyzed historical meteorological and flood records and is considering projections for 2030s, in order to produce maps showing potential flood areas with different recurrence and tendency in the frequency of events with sudestada and intense precipitation. An index was constructed defining socioeconomichomogeneous areas using census data: overcrowding conditions, housing conditions, health care and dependency on head of household. The urban component identified issues such as: population density, population with unsatisfied basic needs, land use patterns, historical flood risk, and topographic levels. These variables were integrated in a preliminary vulnerability index.

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Figure 1: Multi-criteria index map



Source: Riberas report (2012) - Índice de Evaluación Multicriterio. Mauricio Ceroni.

In addition we prepared a socio – institutional diagnosis to understand the structure operating in each of the study areas that can support CC adaptation planning and actions. Also, in the process of preparing the diagnosis, we confronted with key stakeholders preliminary findings of the other components of the project and identified stakeholders with whom to continue working during the following stage of the project. The initial diagnosis showed that there is correspondence between areas with high flood risk exposure and socioeconomically deprived areas and coincide also with at risk areas identified by key informants. It is also important to assess stakeholder's capacity to influence planning and policy making (Bartlett et al 2009).

During the second stage (present activities) we focus on specific at risk areas identified during stage one, and we work with community groups, local government, private sector and representatives of various governments and non- government institutions on risk perception, vulnerability and adaptation capacity, to advance on drafting local adaptation plans during the third stage of the project. An economic evaluation that points to potential economic losses of not taking action, aims to help identify needed local actions. We confront local urban development scenarios with hydro-climatic information to start discussing medium and long - term local adaptation actions.

These three stages in which we organize the work are crossed by two elements: a. the participatory approach in the construction of knowledge; and b. local stakeholder training through their participation in the project and as a strategy to strengthen local governance.

Much of what cities need to do in terms of adaptation is putting in place the infrastructure, services and institutions to meet everyday needs. This needs to be planned and managed in ways that guarantee that

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they will continue to work in the future, including coping with the increased risks and resource constraints that climate change will bring or is likely to bring (UN-Habitat 2011). But most city governments, and often neighbours' and community organizations, do not see these actions as having anything to do with climate change adaptation. Usually there is a lack of understanding of the co-benefits of adaptation planning, urban planning and environmental sustainability (Sharma and Tomar 2010). Likewise, it's difficult to involve community groups in actions such as land use, disaster risk management (DRM) and CC planning, as this are often seen as a government responsibility with no need of community involvement. An important aim of the Riberas project is therefore to raise local awareness over the links between urban and infrastructure planning, disaster risk management (including a good early warning and emergency service), housing, etc., and highlight the role different stakeholders play. The need for action on these crucial local aspects is used as the projects entry points, and serve a triple purpose: 1) work on solving particular local needs identified by local stakeholders, 2) generate interest and commitment with the project and therefore with working on drafting local cc adaptation guidelines, and 3) tie project results to local development needs.

#### **4 Socio-institutional component:**

##### **4.1 Institutional structures to support adaptation agendas**

Effective urban climate change adaptation needs appropriate urban climate governance, understood as “the ways in which public, private, and civil society actors and institutions articulate climate goals, exercise influence and authority, and manage urban climate planning and implementation processes” (Anguelovsky and Carmin 2011). Rather than governments making decisions in isolation, we are thinking of engaged states negotiating its policies and practices with those who are party to or affected by its decisions (Mitlin 2004).

An essential part of the Riberas project is to understand the socio-institutional framework operating in the four selected municipalities as we attempt to analyze what is there to support effective cc adaptation and what else is needed. We use a *multi-level governance* framework to better explore the linkages between different actors operating at different territorial levels, horizontally across and vertically between different levels of government as well as across a wide range of government and non- government actors (Corfee-Morlot et al 2009). In the case of CC, given the cross – cutting nature of the problem, in which different decision making and implementation structures simultaneously operate within the same territory, it is essential to be able to adequately characterize these relationships.

The preparation of the socio – institutional component involves an analysis of the institutional structure operating in each locality and working with local stakeholders to assess risk perception and climate

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change adaptation actions, identify the project's entry points, set up local working groups and draft climate change adaptation guidelines.

Initially we prepared a socio – institutional diagnosis and a stakeholder map covering local government, civil society, and existing networks with a mandate to address CC related issues (urban planning, environment, early warnings and emergency management, etc). We also included national and sub – national stakeholders that support or hinder local action. This was prepared through semi-structured interviews to key informants from national and sub-national government levels and representing different government areas, as well as with representatives of the private sector, community referents, representatives of civil society, etc.

Some of the variables we looked into during the interviews were: institutional capacity, urban and territorial planning, legal frameworks, integral approaches to urban – environmental problems and local development, development of multi-stakeholder processes, and capacity to work with vulnerable groups. We explored linkages between levels and sectors. We also looked into existing local plans, norms, and regulations that consider DRR and CC.

The institutional structures operating in Uruguay and Argentina are quite different. In Uruguay the attempt has been to integrate offices that have to do with planning, environment, disaster risk, water, and climate change within one Ministry, and develop a wide array of legal tools to support the necessary interaction between land use, water use, environment, disaster risk and climate change (e.g the Territorial planning and development law - ley de Ordenamiento Territorial y Desarrollo Sostenible – Law No 18.308 of 2008, the Water policy law - Law No. 18.610 of 2009, and the National Emergency System Law, Law No 18.621 of 2009). Changes contemplate also the active participation of citizens in drafting territorial plans, urban water plans and include disaster risk issues in the planning process. In Argentina, on the contrary offices depending from different Ministries have initiated a common program. They developed a Manual to work on vulnerability and adaptation at the local level and are attempting to implement it through the participation of the different offices and the engagement of sub-national governments (Secretaría de Ambiente y Desarrollo Sustentable 2011). Also the National Territorial Planning law has been drafted by the Sub-secretariat of Planning and Public Investment, which aim to incorporate climate change and disaster risk variables in territorial planning. Legislation regarding flood risk areas depends from the sub-national (provincial) level and dates from the late 1950's (Provincial Laws N° 6.253 and N° 6.254).

There is an attempt in both countries to integrate various themes within planning that incorporates disaster risk and climate change considerations, albeit each country follows a different path. However, in both countries there is little practical implementation. Uruguay has taken a step further and is integrating

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within one Ministry areas that are key in any attempt to better plan for climate change, has passed the legislation and is now in the process of drafting local plans. Yet pace is slow and it is proving to be quite difficult to implement the process as existing technical capacities and political support play a fundamental role.

## **4.2 Community involvement and developing multi-stakeholder processes**

Through workshops in selected at risk areas within each municipality we try to assess local adaptation processes and how risk perception shapes these actions. Applying a participatory mapping process we identify flood risk areas within the neighbourhood and other environmental risks that can exacerbate floods (e.g. uncollected solid waste, clogged drainage channels) and localize barriers to water drainage and structural measures to prevent floods, as well as institutions, evacuation centres, families with special needs, etc.

At the workshops we discuss:

a) **Information** regarding disaster risk and climate change (memory of past flood events, changes in frequency and intensity, problems associated with CC, knowledge regarding early warnings and river water levels, and the functioning of the local emergency committee, existing resources and integrated understanding of the problem Urban – environmental – disaster risk – climate change; b) **Prevention and adaptation practices** at family, neighbourhood, institutional and municipal levels; c) **Participation** (participation in planning and decision making regarding emergency actions associated to a hydro-meteorological event, networking, communication between stakeholders, etc); and d) **Local governance** (capacity to develop multi-stakeholder processes and articulate with vulnerable sectors)

In addition workshops are used as an opportunity to set up a committed local stakeholder group. Taking in consideration the particular characteristics, needs and proposals in each study area, we prepare a local working agenda. In all four cases, what to prioritize, how to proceed, and timing, is discussed with the local participating stakeholders aiming to generate a process that responds to local needs and is forward looking, incorporating notions of climate change. Therefore, each local working agenda identifies specific short term tasks or actions that can be undertaken by the group, aim to respond to some of the identified needs and are key elements when thinking of local adaptation. These are the projects entry points to start working on drafting local CC adaptation guidelines and incorporating these in local planning.

Entry points are issues local stakeholders want to work on (e.g. a people centred early warning system, cleaning and maintenance of drainage channels, etc.) or special opportunities that come up while the project is being implemented (e.g. preparation of local territorial plans and water drainage plans with

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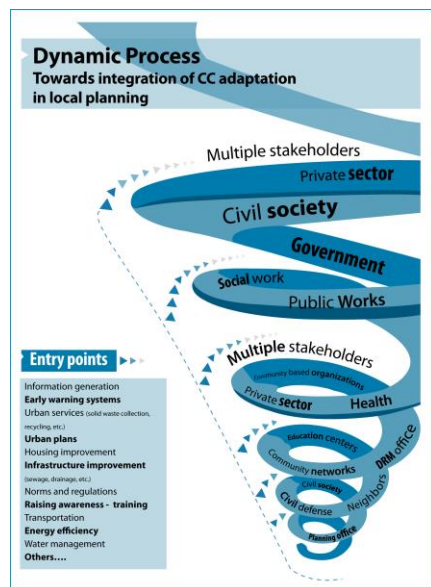
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national support). These actions not only solve a particular problem but generate local commitment with the Project, trigger new thinking and actions on CC and generate motivation to start advancing on drafting adaptation guidelines. It helps to visualize how many different themes connect with disaster risk, within a context of climate change and variability, and the role played by different stakeholders.

Figure 2 shows this dynamic process. There is a myriad of possible actions that can be used as entry points.



As the process advances more actions can be incorporated (the spiral gets wider) and more stakeholders get involved and work together (spiral width increases), generating synergies and involving more themes and stakeholders. There is no one size fits all; each place develops its own process. The spiral provides the idea of an on going process. Stakeholders and themes are not new, most exist within local structures and local responsibilities, but they do not necessarily work together or integrate actions within a broader planning process. The Riberas project has a specific time frame and gets involved in a portion of the spiral, supporting specific actions and multi-stakeholder processes to solve present problems while at the same time contributes to developing local adaptation guidelines. The idea is that the goals achieved during the project implementation are appropriated by local stakeholders and trigger further actions and planning that improves local adaptation plans.

As the project advances the information generated by other project components (hydro-meteorological, urban and economic) informs stakeholders and supports the preparation of local guidelines for CC adaptation. Access to specific technical information empowers stakeholders and contributes to narrow the information gap.

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### 4.3 How we are advancing in each municipality

In *San Fernando*, the Riberas project is working in an area at risk from “sudestadas”. The local community is well organized and operates through a network of community organizations that meet every week to discuss local problems. With them we organized a workshop with community organizations and neighbours and mapped risks, defined problems, actions needed and roles. A second workshop included local authorities (representing different local government areas) and representatives of organizations involved during emergencies (e.g. coastal guard, firemen). We discussed the risk map produced by the community, clarified roles and responsibilities, and identified and prioritized actions. Today we are working along three main entry points: a people centred early warning and emergency response system, cleaning and maintenance (solid waste collection and drainage channels) and trying to extend the neighbourhoods sewage network.

In *Tigre*, we had several meetings with city officials and representatives of community organizations and local institutions to discuss in which neighbourhoods to implement the project. Two neighbourhoods were selected, one affected by floods produced by intense rainfall and overflow of local streams and the other affected by sudestadas. We started to develop a strategy to strengthen the local early warning and emergency response system, and start thinking on DRM and CC adaptation.

In both *Juan Lacaze* and *Carmelo*, the national and sub-national government are developing local territorial plans and the water drainage plan (PAPU) for each city (MVOTMA 2011). Both government and Riberas project teams are working together to develop risk maps, analyze risk perception and start developing local adaptation guidelines. In parallel we are working with youths to raise awareness over CC issues and planning a short film.

In *Tigre* and *Carmelo*, and somewhat less in *San Fernando*, the private real state sector, boat yards and tourism activities add local development pressures. The Riberas project is trying to involve the private sector in the project.



Source: Tambussi L (2012). Riberas project

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## 5 Mid term project findings

*Differences between municipalities and selected at risk study areas:* Differences in scale and access to local authorities as well as particular local cultures are relevant. A key aspect of the Riberas project is its capacity and flexibility to develop processes not only suited to particular municipalities but also to particular local neighborhoods and groups. This includes developing the needed relations with sub-national and national structures.

*Norms and plans at the local, regional and national level:* In general, CC adaptation continues to be marginal in national and sub-national agendas. There are some advances related to new national institutional frameworks and programs but these are relatively new and still need time for actual implementation. At a sub-national scale, DRM and CC adaptation are new agenda issues and constantly compete for scarce resources. Legislation is either old or too new to be actually guiding policy, planning and action implementation at the moment.

*DR and CC local management structures:* DR and CC adaptation are not yet integrated into local development planning. Local governments do not have special financial resources earmarked to deal with disaster risk issues, much less to start planning for CC. Within DRM one of the few activities local governments focus on is on emergency response. There is not much integration of land use and territorial planning with DRM in local development plans. Each stakeholder (both government and non-government) intervenes over urban land in an un-coordinated way, trying to solve particular problems in isolation and not always with the necessary information and resources, often increasing risks: for example small informal dams built by individual families may in practice increase other neighbours flood risk, or final floor - ground level of houses or real state developments may not contemplate changing flood extremes or their impact on surrounding areas as they change local drainage patterns.

*Information generation:* Tensions generally exist between scientific information and the information needed to guide local planning and action. Generally the rhythm and types of information generated from the academic and scientific sector is not what local managers need, or includes local knowledge and perceptions. Language used is often inappropriate. At the same time it is difficult to share information between different disciplines. One of the goals of the Riberas project is to generate and integrate information coming from different disciplines and sources and make it available in a language that is useful to guide actions.

*Sensibility regarding the information generated:* Information generated by the Project is delicate in that it informs over probable flood risk areas, which is often prime coastal land. This information, if correctly used could lead to better land use norms that take into account flood risk and needed measures.

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Therefore information has to be adequately explained and shared, understanding that it is a first draft, based on existing information, not necessarily a finished product.

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