OPPTA Methodology for Intervention in Areas Affected by Risk in Latin America

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Abstract

In the period between 2011 and 2014, Observatorio Panamericano de Paisaje, Territorio y Arquitectura OPPTA simultaneously worked upon risk in five Latin American cities under the topic Emergency Interventions caused by natural and anthropogenic risk phenomena. To do so, the organization developed a concurrent methodology of research, proposals and action which helps analyze and compare processes, methods and ways of approaching infrastructural, architectural, landscape, social and economic issues relating to risk, natural disasters, changing climate and human pressure on the environment. It settled mechanisms and processes that allow to work through a multidisciplinary and transnational network. In the process, this network involves researchers, professionals and institutions from the public and private sector. A preliminary diagnosis, among other candidates, have selected five sites for the implementation of proposals. OPPTA conducted intensive research background and at the same time located strategic partners: universities, public institutions, civil society, and others. The proposed methodology is based on the development of five programs: Active Debates, OPPTA Competition, Priority Action, WikiPan and Publications, which deal respectively with research, specific architecture and landscape proposal, project implementation and finally the creation of an open database and the publication, which included the dissemination of results.

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The aim of research includes the study of risk and its associated problems, to simultaneously identify patterns, concurrences and differences at the technical, infrastructural, urban and territorial sustainability social, public policy and governance in Latin America. The particular context and specific problems to each site allowed approaches, from different perspectives, on emergencies resulting from natural or anthropogenic risk phenomena. This raises the common search for solutions, from urban to territorial management, sustainable development, infrastructure design and architectural and landscaping excellence that minimize vulnerability and strengthen the flexibility and resilience of the people affected by the impacts of emergencies -present and future-, often recurrent. As a result of the studies, the proposals resulting from OPPTA Competition and Active Debates, include technical solutions for each of the communities involved, with particular emphasis on those where it has been possible to develop the Priority Action Program, which incorporate sustainable and resilient development plans to ensure mitigation and endangered environment preservation.

1. Introduction

The Pan-American Observatory of Landscaping, Urban Planning and Architecture (OPPTA in its Spanish acronym) is a non-profit association which promotes and develops projects and research through an interdisciplinary methodology of networking that brings together professionals, experts and scholars from the fields of landscaping, urban planning and architecture. Between 2011 and 2014, OPPTA worked simultaneously on cities and territories affected by natural or human emergencies which had happened over a short period of time throughout the Americas. Emergency Interventions is the title used by the association to research and work on the subject of natural hazards, the effects of climate change, anthropic pressure on the environment, and their consequences on the redefinition of the city, the landscape and the urban fabric, on the understanding that natural and man-made environments are under mutual threat.

After an analytical process at a total of twelve sites in nine countries throughout the Americas, five study locations were selected to simultaneously apply the proposed methodology. This covered two levels: theoretical research, which was partly based on previously tested methodologies; and the action plans held through specific programmes with the aim of channelling research and proposals through public-sector policies and programmes that make feasible the implementation of plans and projects.

2. Methodology

The specific methodology proposed by the Pan-American Observatory was developed after identifying a deficiency in the transfer between research, proposal and action. The association acts as a bridge between researchers, local non-profit organisations, local and national governments and agencies operating on a Latin American level.

This methodological proposal aims to effectively and efficiently transfer joint interests and policies, and is divided into five programmes: Active Debates, OPPTA Competition, WikiPan, Publications and Priority Action. Each cycle starts and ends with a meeting, Active Debates, which introduces the preliminary work and determines the next topic of study, risk, for the 2011-2014 edition. The next phase of research identifies the sites to be analysed as well as the local partners, calling on pre-existing data and information. The diagnosis is not limited to data survey, detection maps, statistics, etc., but culminates in the development of two separate dossiers per site, which form the basis for the launch of the OPPTA Competition. This is an international call aiming to generate synergies and encouraging proposals on a transnational and interdisciplinary scale, thus fostering collaborative and cooperative work. Once the projects were submitted, the jury met to select the winning proposals, choosing the best pilot initiatives to implement. Subsequently, organised together with local partners, Working Committees were held at each of the sites, gathering together the successful bidders, consultants, local universities, municipal authorities, nationwide public services, non-governmental organisations and non-profit associations. At this point the Priority Action programme comes into action, with the aim of implementing the programmes and projects. All related information, studies and research are published on the Pan-American Observatory database, WikiPan, which facilitates disclosure and access to the data. Once edited, it is published through the Publications programme.
2.1. Study Topic 2011-2014: Emergency Interventions in five study cases in Latin America

Risk, whether geological, meteorological or anthropic, ravages the American continent, which, after Asia, is the second continent hardest hit by its devastating effects [5]. These are, in many cases, the result or consequence of human pressure on the environment, the overuse of resources and the shortage or absence of sustainable planning with regard to our surroundings. The Active Debate call held in 2011 particularly focused on the need to include this issue as a case study for the 2011-2014 call.

From a total of twelve candidates, five sites were selected for their particular relevance and viability. In Petrópolis (Rio de Janeiro, Brazil), there had been in 2011 one of the most dramatic episodes of rainy seasons in Brazil’s history, causing disastrous consequences for the habitability of the territory. In San Cristóbal, (Región del Dique, Colombia), in 2010, ‘la Niña’ phenomenon caused in the Canal del Dique region floods of such magnitude that, as in Petropolis, it was necessary to release a national warning. In both cases, the risk was associated with a problem of habitability since people have occupied territories unfit for urban use. Puerto Saavedra (Araucanía Region, Chile) is a planned area affected by constant earthquakes, tsunamis and the risk of flooding. In 2010, the earthquake and subsequent tsunami that devastated the Chilean coastline [7] hit the town once again, already badly damaged by the earthquake in 1960. In Cercado de Lima (Lima, Peru) and in Chimalhuacán (State of Mexico, Mexico), the risk is anthropic, associated with the development of irregular settlements where there are problems of uncontrolled informal
urbanization that lead to poor health and insecurity, together with serious environmental damage and overuse of resources [1].

2.2. **OPPTA Programmes in the five locations**

The first step was the theoretical research based on the study of similar experiences on a national and international level. In parallel, data and associated studies were launched and potential partners were located on a local or national level. The research methodology identified the essential elements of how the territory and the city operate and focused on analysing the vulnerability of these elements when considering the system as a whole [4].

The research phase culminated in the launch of the **OPPTA Competition**, under the title of Emergency Interventions. The international call served as a platform to simultaneously study proposals and solutions to the problems of the various sites covered in the Competition and to perform a comparative analysis of the risk. Following this phase, the action-focused programmes were launched, as was the invitation of professionals from the fields of architecture, engineering, planning and urban development, among other disciplines, to work specifically on each of the sites.

In Petrópolis, where informal settlements are located in an area prone to landslides and mudslides, it is actually anthropic pressure that is responsible for debilitating the natural environment and the deforestation of the Atlantic Forest, thereby leaving mountains at risk of landslides [3]. It should be questioned whether the onus lies on climate risk as a phenomenon or on the mismanagement of resources and the liveability of vulnerable and non-developed environments. Therefore, a call was made to find solutions to "consolidate an informal urban grid and an environmentally protected area, both under threat".

In San Cristóbal the problem affects a whole territory, the Canal del Dique sub-region. The urban viability and growth model of the sub-region involved looking for a sustainable model of land occupation, suitable for a flood-prone environment, with a population willing to learn how to live with risk, but not to leave the area [2]. Thus, the tender was called under the title of "how to manage the integral development of habitability in a territory affected by floods linked to climate change".

In Chile the terms and conditions of the tender, called under the title "how to recycle an urban grid which is under threat of natural disasters", place particular emphasis on restoring the liveability of the territory and commune, connectivity in public spaces as a way of ensuring the relationship between nuclei. Simultaneously the teams have been working on the image and urban grid of Saavedra Bajo, whose urban fabric is in a situation of deterioration and abandonment.

Cercado de Lima sits on a disused landfill, 'el Montón', around which grew a neighbourhood with an activity based on the collection of materials and informal self-organised recycling. It suffers from all kinds of environmental, institutional, health and security-related problems, so the research findings underlined the need to formalise housing programmes and recycling activities, as well as to regenerate public space, with the aim of "regenerating a non-planned settlement threatened by anthropic risks".

Chimalhuacán is part of an informal urban sprawl that has expanded due to irregular spatial planning processes that have seriously destabilised the urban and territorial sustainability of the town. This has jeopardised its own capacity for economic development and lead to the irreversible ecological degradation of the territory and a significant decrease in the quality of life of more than one million inhabitants. The imminent environmental collapse triggers the question of „restructure an urban fabric resulting from accelerated processes of urban sprawl“. As a result of the Competition, with 104 participating teams, 73 proposals received and 12 winners, we compiled and published as a complement to the diagnosis and research a catalogue of solutions and proposals that answer the problems of each site [6]. The Competition was decided at the meeting of the international jury held in Santiago de Chile on June 2012.

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1 Atlantic Forest is the name of a tropical forest biome dominating part of the Brazilian territory. It is a biosphere reserve and has a high degree of diversity and biological wealth. Further information is available on [http://www.rbma.org.br/rbma/rbma_fase_vi_06_estados_rj.asp](http://www.rbma.org.br/rbma/rbma_fase_vi_06_estados_rj.asp)
The detailed and comparative analysis, by country and between countries, aims to systematise transnational courses of action, from the perspective of creating sustainable and risk-resilient settlements in two ways: by their resilience to natural phenomena or to the anthropic pressure to which they are subjected, and by their ability to regenerate in the event of a traumatic incident. This analysis was compiled into a set of country reports and presented at each Local Committee: they reflect the problems detected, the lines of action defined in the diagnosis and the proposals of the winning projects. The main objective of the Committees held in each country was to bring together the agents connected to the subject matter and, with acting power in each location, to prepare a methodology for implementation. The winners, public services, municipalities, and public and private institutions involved in the work process were called to participate in these Committees.

As a result of the Local Committees, the ideal locations to launch the Priority Action programme were defined, so as to guarantee the transfer between research, proposal and action. The programme was finally carried out in Chile and Mexico.

If we consider the case of Chimalhuacán, the analysis performed together with the technical services of the Chimalhuacán Town Council, the Autonomous University of the State of Mexico, local experts and OPPTA resulted in a more systemic and complex study of the reality using a methodology that includes the socio-economic, environmental and urban dimensions. Three strategic lines were considered: Food (Urban Agriculture), Waste (Waste management) and Water (Collection and reuse of rainwater), which act simultaneously to strengthen the social fabric, improve economic conditions and solve the serious environmental problems of the city. To undertake these strategies in the Priority Action programme, three line-specific projects on different scales were defined: urban, neighbourhood and family. The projects were also integrated into urban planning and regulations projects, establishing a framework for citizen participation together with a framework of optimal governance for implementation. One of the recommendations included was that the microenterprise projects associated with each of the lines should be managed holistically through a business centre that empowers and assists the citizen throughout the process, records progress and results, measures the levels of economic productivity and its simultaneous impact on the levels of social cohesion and environmental integration. At the same time, this centre can be used as a platform for knowledge exchange.

In addition to all the promotional activities conducted by OPPTA, including conferences, lectures, seminars and workshops, several articles have been published, public presentations have been given at universities in the countries involved in the process, and two books titled Emergency Interventions have been published within the Publications programme. OPPTA website hosts a space known as WikiPan, a repository that collects and shares all the data collected, studied or processed throughout the research process.

3. Results, Discussions and Conclusions

On a methodological level, the most significant contribution was the application of a single working methodology that covers everything from research to action plans applied to the same subject matter and with individual features on a territorial, social, environmental, economic and political level. To achieve this, it was necessary to consolidate an international and interdisciplinary professional network and to create multi-sectoral ties as a way of tackling a highly complex issue in all its stages, from identification, diagnosis and research to the coordinated and joint proposal and line of action. In short, it is a methodology that promoted the complementarity of plans based on joint research and debate, complemented by the development of multidisciplinary and transnational proposals and visions, and ended with the simultaneous, joint and synchronous lines of action of key players to solve local problems.

From the point of view of the subject matter, the research stage already pinpointed the relevance of a multi-sectoral, interdisciplinary and international study, as it identified common problems, ongoing research, pilot early warning programmes, emergency response solutions or reconstruction protocols, which had not always been taken into account in programmes coordinated on a national level. At the international level, although there are organisations such as the
ISDR [8] or the PACIVUR programme in Andean cities, there are many joint actions and policies to be implemented in order to make intergovernmental programmes effective.

Meanwhile, a major shortcoming related to the continuity of post-emergency processes was identified, that is, the continuity of public policies upon resolution of the emergency to which society and all the media react effectively and altruistically. We are referring specifically to reconstruction or even ex-novo construction processes which take into account the risk to which a community is exposed and which form part of the equation for the project. It is appropriate, therefore, to develop programmes capable of reducing the disaster even when it is possible to reduce the risk, thus minimising vulnerability and increasing resilience. Therefore, the programmes work towards the sustainability of the territory and the city in the physical, social, environmental and economic sense of the word.

What diagnostic of each of the cities and territories under study, as well as the connections, coincidences and relationships that occur between them, show us to understand the links between anthropic risk, natural risk and climate change. The complexity of the proposed topic is made clear when we consider the vulnerability and effects caused in the territories, as well as the number of agents involved in the process, from civil society researchers, institutions, governments and multilateral agencies. Therefore, what we must now address in this coordinated and simultaneous process in several countries with different agents is the need to channel policies and permanent institutions, both civil society and public entities, so that they have a continuity at the national and transnational level, as the risk and climate change do not differentiate between territories or borders. Many countries try to cope with risk and climate change with the same policies and bureaucracies that their institutions had even before this problem existed. Institutions and territory and urban planning systems follow obsolete guidelines not connected to the problems that today threaten both city and territory: globalization, metropolization, climate change, deterioration and human pressure on the environment, etc. Therefore, there is a need to streamline institutions and revise policies, breaking the structures top-down [4] and proposing clear and effective alternatives to risk and land-use planning both in the territory and the city, to reach a more resilient and more sustainable scenario.

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