



REGATTA
Regional Gateway for Technology Transfer and Climate
Change Action in Latin America and the Caribbean

REGIONAL EXCHANGE OF KNOWLEDGE AND EXPERIENCES OF
ADAPTATION TO CLIMATE CHANGE IN LATIN AMERICA AND THE
CARIBBEAN



Center for Food and Development Research (Mexico)
Ministry of Environment of Chile (Chile)

5-9 June 2017, Mexico

3-7 July 2017, Chile



1. INTRODUCTION: PARTICIPATING ORGANIZATIONS AND OBJECTIVES

The United Nations Environment Programme ([UN Environment](#)) and the [Regional Getaway for Technology Transfer and Climate Change Action in Latin America and the Caribbean \(REGATTA\)](#), along with the [Global Adaptation Network \(GAN\)](#) and the [Climate Technology Center and Network \(CTCN\)](#), launched a regional initiative for the exchange of knowledge and experiences on local adaptation to climate change for Latin America and the Caribbean, which seeks to connect professionals working on issues of adaptation in order to promote peer learning and the exchange of experiences and good practices¹.

The main objective of this initiative was to facilitate the flow of knowledge on adaptation at the local level in the region through an effective dialogue in the field that allowed participants to visualize processes and exchange experiences to strengthen individual and organizational capacities.

The first exchange of this initiative in Latin America and the Caribbean took place between the [Center for Research on Food and Development \(CIAD\)](#)² located in Mazatlan, Mexico, and the [Ministry of Environment of the Republic of Chile](#)³. Its **main objective** was to exchange experiences about environmental awareness and governance, building collaborative networks and implementing participatory assessment methodologies and environmental management to strengthen **local capacities** to adapt to climate change.

On one hand, the main results the Chilean delegation in Mexico expected to get were:

- I. To strengthen their knowledge about **participatory assessment** and environmental education tools for strengthening the adaptive capacity of communities to climate change.
- II. To learn about theoretical approaches and practical experiences of joint work with **communities** regarding adaptation to climate change.
- III. To learn about practical experiences of **environmental education** for the community, promoted by the State.

On the other hand, the main results the Mexican delegation expected to get were:

- I. To strengthen their knowledge about the **Municipal System for Environmental Certification (SCAM)** implemented by the Ministry of Environment of Chile.

¹For more information, see <http://www.cambioclimatico-regatta.org/index.php/en/latenews/item/convocatoria-intercambio-de-aprendizaje-sobre-adaptacion-local-al-cambio-climatico-en-america-latin-and-the-caribbean>

²The Center for Research on Food and Development (CIAD), is a regional community initiative associated to a conservation area, an academic organization and a civil society, that aims at contributing to sustainable development and the welfare of society in the areas of food, nutrition, health, regional development and natural resource management through the making, application and dissemination of scientific and technological knowledge as well as innovation and training of social capital. In the area of environmental education, the center has developed and implemented several local workshops in the region aimed at promoting capacity building for adaptation to climate change in vulnerable communities and to promote local strategies of environmental education.

³The Ministry of Environment of Chile is the government agency responsible for the design and implementation of policies, plans and environmental programmes at different levels in order to promote sustainable development and local environmental governance programs. In the Ministry there is an area that works directly with municipalities and communities, which is the environmental education division and it is responsible for implementing programs and instruments to promote local environmental management, particularly in those areas most vulnerable to climate change.

- II. To learn about theoretical approaches and practical experiences of **local governance** on sustainable use of local resources.
- III. To learn about practical experiences of **environmental education** promoted by **municipalities** to enhance the communities' capacities.
- IV. To learn about practical experiences of inter-municipal associations to foster planned environmental purposes, particularly focus on preservation and climate change.
- V. To learn from practical experiences of **decontamination** of a bay coordinated by the municipality to enhance resilience and reduce sensitivity to climate change.
- VI. To promote a vision for the redesign and implementation of the project *Sustainable School paths of peace* to tackle climate change.

A total of 9 people participated in the exchange including: four delegates associated to the CIAD, four public officers from the Ministry of Environment of Chile and a representative of the **UN Environment** Regional Office for Latin America and the Caribbean Climate Change Unit. It is worth mentioning, that during the visit to Mexico, Carlos Rungruangsakorn, chief Director of the Department of Local Environment Management, participated during the activities. This enriched the exchanged and set a path for future collaboration between the two organizations (see table 1).

Table 1.- Participants

MINISTRY OF ENVIRONMENT OF CHILE	
<p>Maria Jose Esquivel Municipal System for Environmental Certification (SCAM) Department of Local Environmental Management Ministry of Environment of Chile mesquivel@mma.gob.cl</p>	<p>Maximiliano Cox Municipal System for Environmental Certification (SCAM) Department of Local Environmental Management Ministry of Environment of Chile mcox@mma.gob</p>
<p>Julia Rojas Basculo Department of Local Environmental Management BioBio Regional Secretary Municipal System for Environmental Certification (SCAM) Ministry of Environment of Chile Jrojas.8@mma.gob.cl</p>	<p>Maria Angélica Sáez Estay Department of Environmental Education Ministry of Environment of Chile asaez@mma.gob.cl</p>
CENTER FOR FOOD RESEARCH AND DEVELOPMENT	
<p>Maria Carolina Ceballos Coordinator of the Network of Environmental Educators of Sinaloa Member of the State Council for Climate Change Center for Food and Development Research (CIAD) carolinac@ciad.mx</p>	<p>Víctor Manuel Millán Department of Environmental Education Center for Food and Development Research (CIAD) chmito_0888@hotmail.com</p>
<p>Ana Luisa Toscano Direction of Environmental Management Training Center for Education and Training for Sustainable Development (CECADESU) Secretary of Environment and Natural Resources (SERMANAT) ana.toscano@sermanat.gob.mx</p>	<p>Abel Ulises Romero Direction of Environmental Protection Secretary of Sustainable Development Government of the State of Sinaloa Abel.ur@hotmail.com</p>

UN ENVIRONMENT	
Sebastián Rodríguez Claros Adaptation Specialist Climate Change Unit Regional Office for Latin America and the Caribbean United Nations Environment Program (UN Environment Program) Sebastian.rodriguez.affiliate@pnuma.org	
External participants- Visit to Chile	
Carlos Rungruangsakorn Chief Director of the Department of Local Environment Management Department of Local Environmental Management Ministry of Environment of Chile	

2. VISIT TO MEXICO

The first part of the exchange between the CIAD and the Ministry of Environment of Chile took place **from 5th to the 9th of June, 2017** in the region of Sinaloa, Mexico. The main objective of this visit for the officials from the Ministry of Environment of Chile was to learn about the model implemented by the CIAD to perform **analyses of local vulnerability** to climate change, highlighting threats, risks and priorities in the field. The visit was also an opportunity for the visiting delegation to become familiar on the way this model is implemented in **communities highly vulnerable** to climate variability and climate change. It is important to mention that the CIAD has incorporated this methodology to provide the basis for the development of capacity building strategies to climate change in Sinaloa.

During the 5-day exchange, the main objective was to learn and understand how the model used to perform analyses of local vulnerability implemented by the CIAD allows to identify factors such as: livelihoods, goods and services, occupation of space, community organization and local governance systems. For this purpose, several presentations on the importance of understanding vulnerability to climate change as a dynamic process rather than a static one were given. This was subsequently complemented with visits to two communities in order to understand their local reality and to visualize the context of vulnerability around them.

This confluence of activities contributed to the success of the exchange as it allowed the officials from the Ministry of Environment of Chile to understand firsthand the importance of implementing a **participatory based assessment model** to understand how vulnerability to climate change is a local process of social construction, influenced by multiple social, political, economic and environmental conditions.

The **vulnerability analysis model** known as "*modeling of the socio-ecological system based on livelihoods*" is a highly participatory model that seeks to understand the past, present and future reality of the local context viewed from different areas. It allows to identify those factors that contribute to the level of vulnerability in order to provide the basis to build climate resilience

strategies or actions. The model is based on the need to understand, from a systemic vision, the complexity of interactions occurring in contexts that expose pre-existing vulnerabilities.

The key aspect of this model is centered on engaging a high level of **citizen participation**, since it is the only way to recognize features of a socio-ecological system which directly or indirectly influence on the level of vulnerability of a community, including: i) livelihoods, ii) available and accessible social and environmental good and services, iii) scale of occupation and vocation of the territory, and iv) community organization and local governance.

Through this process the model seeks to **strengthen capacities** for a better planning of adaptation to climate change in the medium and long term, since the first step consists of a systematic recognition of a community welfare in order to have a meaningful understanding of the climate hazards and understand why pre-existing conditions increase the sensitivity and exacerbate the impacts of climate change.

In summary, the model involves the construction of sub-systems models together with target communities, through people's narratives to understand the local context and its externalities. The interpretation and analysis of each subsystem is made from a comprehensive and multi-layer scope that can be done at different scales:

- I. At the entire socio-ecological system previously defined.
- II. At municipalities/watersheds scale, within the system.
- III. At community level.

The **definition** of the socio-ecological system is a key factor since -depending on the scale of the system- the relation may vary between the ecosystem processes, the livelihoods of the population, the social organization and their relation with the territory.

The main **benefits** of using this model to identify vulnerabilities are: i) due to the identification of existing relationships among the system factors, socio-environmental conflicts arising from livelihoods can be recognized and addressed, ii) it allows to understand and prioritize the areas in which adaptation efforts and strategies should be focused, iii) this model allows to contextualize climate change in a common language to the daily reality of communities.

Following this analysis, comprehensive adaptation **routes can be formulated** to plan actions in the medium and long term, particularly with an approach aimed at reducing existing, ongoing and potential vulnerabilities. The idea is that the planning and implementation of these routes is done together with the communities considering aspects such as:

- Identification of possible solutions.
- Design and implementation of priority solutions.
- Recognition of Impact of solutions.
- Consideration of available funding sources.

As previously mentioned, the presentation of this model was complemented by a series of visits to communities that took place during three of the five days of the exchange. On one hand, a visit to the **Green Camacho Bay**, which is a bay in the western of Sinaloa State was done. This visit included the presentation of a program of preservation and protection of beaches and turtle conservation, in which climate change is used as a crosscutting issue for the design and implementation of the

different programs. On the other hand, during the fourth day and half of the fifth day a visit to the **Reforma**, which is a coastal community dedicated to fishery was performed. During this last visit, the methodology of **vulnerability analysis model** was applied to understand the community local context and its structure, and provide basis for future resilience building initiatives in the area. During these two visits, several discussions were given on topics such as: environmental education focused on building capacity to climate change, diversification of livelihoods as an adaptation measure to climate variability and climate change, and sustainable use of natural resources as a road to adaptation planning.

In conclusion, these visits served as scenarios to implement the socio-ecological modeling methodology of the CIAD in the field to make a reconstruction of the past, present and future vulnerabilities of the community system. Furthermore, working with the communities was key for the delegates of the Ministry of Environment of Chile to understand the background of the model and its application in the field. This allowed for a deep reflection on how this could be replicated and integrated into the current environmental management processes carried out in Chile and the benefits that it entails to provide the basis for adaptation planning processes.

1.7 EXECUTIVE SUMMARY OF THE VISIT TO CHILE

The second part of the exchange took place from the **3rd to the 7th of July, 2017** in Santiago de Chile and Concepción. The participants of the Mexican delegation had the opportunity to become familiar with the **Environmental Certification System (SCAM)** implemented by the Ministry of Environment of Chile to build environmental management capacities at the **municipal** level, including actions correlated to effective adaptation to climate change.

The SCAM seeks to institutionalize the local environmental management efforts in the territory. Currently, Chile has 201 of its 345 municipalities in various stages of certification in this system, ranging from a basic certification to a level of AVAC certification of excellence, where municipalities choose an environmental vocation to concentrate their efforts.

The activities during the visit to Chile focused on understanding the SCAM, so during both the first day and half of the second day of the 5-day-visit, several **presentations** in the Ministry of Environment were carried out. These presentations were subsequently complemented by numerous **visits** to municipalities of **Santiago de Chile and Concepción** with the respective mayors in government buildings, educational institutions and communities' members of the Sustainable Communities Program of the Ministry of Environment (see attached list 1).

The visits to these municipalities, which were in different stages of the SCAM, were important to become familiar, understand and deeply comprehended the initiatives undertaken during the different stages of the individual certification process of the municipalities, and the way in which they face their environmental problems and plan their environmental management in their territory. Additionally, in some municipalities the members of the delegation of Mexico were able to directly interact with the community members who expressed the benefits, opportunities, achievements and impacts of the system.

The SCAM is a holistic system of **voluntary nature** that allows municipalities to settle in the territory as models of environmental management where the municipal organic, infrastructure, personnel,

internal procedures and services provided to the community integrate the environmental factor in all its activities. This system also seeks to guarantee the continuity of local environmental management in the country regardless of political will through the formalization and institutionalization of environmental management in the medium and long term.

The relevance of the SCAM lies in the fact that it is an important mechanism for **strengthening the local capacities** of municipalities through an empowerment scheme. The main benefits of the SCAM are:

- It is a program involving all the institutions of the municipalities with the aim of **mainstreaming** the environmental variable in the internal and external procedures such as the municipal community work plan.
- It is a mechanism of **knowledge** generation through environmental assessments and systematization of knowledge. This includes the evaluation of the environmental system and the creation of roadmaps for municipalities.
- The SCAM has managed to **systematize** the environmental diagnosis for the development of realistic environmental strategies that include community participation.
- The SCAM supports the **internal coordination** of the various units and municipal departments because they must develop and implement commitments to environmental certification at various levels. Therefore SCAM functions as an umbrella that allows homogenizing instruments and managing in a coordinated manner.
- Certified Municipalities can **apply for grant funds** directly or indirectly, receiving higher scores on their application.
- The SCAM Municipalities generate **autonomous networks of joint work** to improve the management of local governments in different areas of environmental interest and integrate efforts within the same region.
- SCAM Municipalities have the **technical support** from the Ministry of Environment through regional managers in order to develop training programmes for municipal officers and technicians on certification issues and issues that affect their territories.

In addition, the SCAM is complemented in Chile with an additional programme of environmental awareness and education known as the **National Environmental Certification System of Educational Establishments (SINCAE)**, which is a voluntary national program established since 2003 that provides public certification to educational establishments that successfully implement environmental education strategies in their school communities. This system has established a strategic partnership with the SCAM because one of the requirements is that 50% of the schools are certified under the SINCAE and therefore there is coordination between both certification systems that ensures the synergy of efforts in the country. It's worth mentioning that the SINCAE does not grant monetary incentives. Incentives are more inclined towards recognition, and therefore often the initiative for certification comes from the educational communities themselves.

Finally, the main challenge of the SCAM is that municipalities often have limited institutional autonomy and little fiscal autonomy and financial resources to implement their responsibilities for environmental services.

3. LESSONS LEARNED

The ten-day-exchange among the officials associated to the CIAD and the Ministry of Environment of Chile allowed participants to learn about the local reality of the two regions and become familiar

with capacity building methodologies on environmental management related to adaptation to climate variability and climate change.

On one hand, the importance of building adaptation to climate change from the understanding of vulnerability as a **dynamic element** of the systems and how it is socially built from preexisting factors was highlighted. Similarly, it was recognized the importance of having an **institutional instrument** capable of mobilizing assets in an efficient way to manage actions at the local level. These instruments complement each other and seeing them on the field allowed both organizations to cover knowledge and capacity gaps that they sought to address.

In the CIAD there is a clear understanding of the identification of vulnerabilities and they have developed a strong **citizen participation scheme** which seeks to understand the reality of the communities as a starting point to build planning and action strategies to tackle climate change. However, in Mexico there is a deficit in terms of **implementation** of institutional mechanisms to create top-down environmental management actions, as well as limitations in **institutionalizing** public policies for the empowerment of environmental management at the local level.

Chile has a strong **local environmental management** system with policy instruments to promote actions that seek to enhance the resilience of socio-ecological systems. It also has an environmental education scheme that seeks to provide skills and knowledge to people in order to implement effective environmental actions and create bottom-up pressure for generating environmental management actions by the government. However, there is still a gap in the capacity to effectively install climate change in a cross-sectorial approach and to implement **participatory assessment based mechanisms** in order to understand the current vulnerability of the communities.

The combination of presentations and visits in which it was possible to observe and understand how the proposed models operate and are implemented with local communities contributed to the success of the exchange and allowed the participants to gain a more holistic vision to advance on their environmental management efforts oriented to enhancing a greater resilience and adaptability to climate change.

Moreover, the exchange served as a platform for generating future steps aimed at implementing these instruments in both countries. In Mexico, the implementation of an environmental certification system such as the SCAM is perceived as an excellent opportunity to mobilize assets and empower municipalities to generate local actions. However, it should be noted that this certification model is adapted to the local reality of Chile, so in order to replicate the system it must be understood and adapted to the local context. In Chile, the integration of a participatory diagnostic model that allows an early identification of vulnerabilities and an understanding of the local reality of the communities is perceived as a key instrument to strengthen the actions that are being implemented and to mainstream climate change within the SCAM from an initial stage.

4. ANEXES

Appendix 1.

Visits to Municipalities in Santiago de Chile and Concepción

Calera de Tango (AVAC pilot municipality)	Municipality of Calera de Tango	In this municipality, a visit was made to the Municipality building in which a presentation was made with members of the Department of Environment and their respective mayor Erasmus Valenzuela . During the meeting about 12 people participated including the exchange participants.
	La Villa Neighborhood	A visit was made to the community of the La Villa neighborhood, in which about 7 women members of the neighborhood action board participated.
Independence (Municipality certified as intermediate level by SCAM)	Antu-Huilen Children's Garden (Spring Sun)	A visit was made to the Antu-Huilen Children's Garden part of the SINCAE since 2016. Three members of the educational community participated in this visit as well as 3 members of the SINCAE of the Ministry of Environment.
	La Independencia Community	In the Comuna la Independencia, a visit to a neighborhood part of the program of sustainable communities of the Ministry of the Environment was made. A presentation was organized with the mayor of Gonzalo Durán in which several initiatives framed within the SCAM process were presented: including mitigation and urban adaptation measures such as the establishment of community urban agriculture gardens. Around 30 people from the community attended the presentation with whom there was the opportunity to establish a dialogue and understand the level of citizen participation that the SCAM includes in its environmental management actions.
Concepción (Municipality certified as excellence level by SCAM)	Municipality of Concepción	During this visit a meeting in the municipality was held with the mayor Álvaro Ortiz and 10 other government officers, including Andrea Aste , Director of Environment of the municipality. During the presentation, there was a discussion about the experience of this municipality in reaching the level of excellence in SCAM. Participants also discussed initiatives, achievements, challenges, opportunities and future steps, such as the cross-cutting integration of issues such as adaptation to climate change within the process of environmental management planning.
Hualpén (Municipality certified as excellence level by SCAM)	Thomas Jefferson School Educational Center	In the municipality of Hualpén, a visit was made to the Thomas Jefferson School, part of the SINCAE, together with Mayor Katherine Torres , in which she presented the school and its community environmental management initiatives and discussed the certification process of this school as an example of processes of sustainability and environmental responsibility in the municipality. Among the initiatives, adaptation measures such as school community gardens were presented. During this visit,

		about 60-70 community members, including government officials, members of the school's educational community, students, parents, and neighbors, gathered.
	Municipality of Hualpén	A visit was made to the municipality of Hualpén in which about 7 members of the local government and the community participated. During this visit, environmental management initiatives were presented within the municipality's certification process.
San Pedro de la Paz (AVAC pilot municipality)	Municipality of San Pedro de la Paz	During the visit to the municipality of San Pedro de la Paz a meeting was held with the mayor Audito Retamal along with 8 additional members of the local government. This municipality is one of the few in the country to be an AVAC pilot, so the process that has taken place and the success factors that have enabled them to reach the highest stage of the SCAM were presented.
Burbot (Municipality certified basic level by SCAM)	Municipality of Lota	A visit was made to the municipality of Lota in which Mayor Mauricio Velásquez and about 6 members of local government participated. This municipality is at a basic level so the meeting focused on the challenges of putting forward an early planning strategy.