



Good practices in the development of a strategy to strengthen water governance in rural communities in Quintana Roo, Mexico



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Acronyms and abbreviations

ASK	<i>Amigos de Sian Ka'an</i> (Mexico)
IDB	Inter-American Development Bank
BMZ	Federal Ministry for Cooperation and Development (Germany) <i>Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung</i> (Germany)
CONAGUA	National Water Commission (Mexico) <i>Comisión Nacional de Agua</i> (México)
EFGH	Community Water Management Strengthening Strategy <i>Estrategia de Fortalecimiento de Gestión Hídrica Comunitaria</i>
CReW	Caribbean Regional Fund for Wastewater Management
GEF	Global Environment Facility
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>
PCA	Training Programme for Accompaniment <i>Programa de Capacitación para el Acompañamiento</i>
PGC	Community Management Proposal <i>Programa de Gestión Comunitaria</i>
PFC	Capacity Building Program <i>Programa de Fortalecimiento de Capacidades</i>
SDGs	Sustainable Development Goals

Context

The state of Quintana Roo is located in the eastern part of Mexico's Yucatan Peninsula. It is politically divided into 11 municipalities and its central region is inhabited mainly by indigenous Mayan villages. This state is characterized by high rainfall, low topographic slope, and high infiltration capacity of the soil, which favours the recharge of aquifers that play an important role in supplying water to the population (CONAGUA, 2020). However, the high permeability of the terrain increases the risk of groundwater contamination from the surface, compromising its availability and access for human consumption (Herrera et al., 2018).

To strengthen resilience to climate change and to mitigate water scarcity in rural communities of Quintana Roo, the project "Adequate water management in the Maya Ka'an destination and protected areas of Quintana Roo" is being implemented, which has been promoted by Amigos de Sian Ka'an (ASK) in collaboration with the Gonzalo Río Arronte Foundation and SAC-TUN. The first stage of the project considered the installation and management of eco-technologies in 12 communities in Quintana Roo. These are technologies designed and built for the benefit of a community and that allow taking advantage of natural resources in a sustainable way (Guzmán, 2015).

Subsequently, a second phase of the project "Appropriate Water Management in the Maya-Ka'an Targets and Protected Areas of Quintana Roo" was launched to strengthen the capacity of 33 communities in Quintana Roo and promote the sustainability of the eco-technologies introduced. The second phase was developed in close collaboration with the regional GEF project CReW+.



Figure 1: Community well in poor condition for water supply in a community in Quintana Roo. Photo: ©GIZ/CAPSUS

The **GEF CReW+ components** include the creation of innovative, small-scale (local, rural, peri-urban and community) technological solutions for Integrated Water and Wastewater Management. This document shares good practices in the diagnosis of rural communities in Quintana Roo and the development of a capacity building programme to improve water management in some of its communities.

The **GEF CReW+ Project** "An integrated Approach to Water and Wastewater Management using Innovative Solutions and Promoting Financing Mechanisms in the Wider Caribbean Region" is a partnership project funded by the Global Environment Facility (GEF) and co-implemented by the Inter-American Development Bank (IDB) and the United Nations Environment Programme (UNEP) in 18 countries of the Wider Caribbean Region. This innovative project builds on the successful previous phase called "The Caribbean Regional Fund for Wastewater Management (CReW)" (2011-2017).

The Global Environment Facility (GEF) has provided \$22 million in grants and financial resources and mobilized nearly \$120 billion to co-finance more than 5,200 projects and programmes. The GEF is the largest trust fund focused on enabling developing countries to invest in nature and it supports the implementation of international conventions on biodiversity, climate change, chemicals, and desertification. It unites 184 governments, as well as civil society, international organizations, the private sector, and other partners.

In Mexico the GEF CReW+ is – on territory managed by Amigos de Sina Ka'an A.C. – being executed by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the IDB. This project was taken over by the GIZ through its global programme Sanitation for Millions, which was launched in 2016 by GIZ and the German Federal Ministry for Economic Cooperation and Development (BMZ) as lead donor. Sanitation for Millions is a multi-donor initiative to address water and sanitation issues and contribute effectively to achieving Sustainable Development Goals (SDGs) 6, 4 and 3. It is implemented in 14 countries on three continents.

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Challenge

In the first phase of the project "Adequate Water Management in the Maya Ka'an Destination and Quintana Roo Protected Areas" implemented by the organization Amigos de Sian Ka'an, 347 eco-technologies were installed in 12 communities in the districts of Tulum, Felipe Carrillo Puerto, and José María Morelos. The beneficiary communities were selected because they were highly marginalized, lacked public services related to water, and showed high interest and commitment.

However, after the first measures were implemented, it was found that the overall use of the installed technologies was low (< 40 %). One of the reasons for discontinuation was a low socio-cultural acceptance, as some of the eco-technologies did not match the perceptions and preferences of their users. The evaluation noted the importance of addressing the social dimension even better during the implementation of technologies to be effective and sustainable. The need for a more intensive preparation of the owners to properly manage the technologies was also reflected.



Figure 2: Kanché in San Antonio Segundo. Kanché is a traditional Mayan method for planting vegetables. Photo: ©GIZ/CAPSUS

In addition, there was a high disparity between the degree of use among the beneficiary communities. For example, in the community of Tres Reyes all the eco-technologies installed have been used effectively while all those implemented in Mulichén were abandoned. Thus, there is a need for customized solutions developed through a participatory approach with the community.

Table 1. Abandoning of eco-technologies in the first stage of the project "Adequate water management in the Maya Ka'an destination and protected areas of Quintana Roo" (Amigos de Sian Ka'an & CAPSUS, 2020).

Eco-technology	Reason for abandoning
Cistern	Structural division and damages
SCALL Rainwater Harvesting System	Difficult to repair sth.
Biofiltres	Humidity and mosquitos
Dry Toilets	Difficult to keep it clean and to pass on advantages
Kánches	Challenges in community administration
Allotment	Migration and disinterest
Bottom Discharge Tank	Possible waste of water
Pumping systems with bicycles	Redundancy in water pumping
Composter	Traditional waste management

Strategy

A socio-environmental diagnosis and capacity-building programme was developed for the proper water resource management in rural communities in Quintana Roo. The preparation of the Strengthening Community Water Governance Strategy (EFGHC) document was contracted to a private sector provider in collaboration with Amigos de Sian Ka'an as part of the CReW+ project. However, for the implementation of the steps of this strategy, funding was provided by partners and ASK grantees such as Sac Tun and the Gonzalo Río Arronte Foundation. Without this funding, it would not have been possible to apply and adapt the EFGHC in the area. In addition, the above-mentioned stakeholders formed a working team which met monthly to follow up on the elaboration of the EFGHC.

The **socio-environmental diagnosis** was conducted in 8 communities in Quintana Roo to gather information on the social, environmental, and economic context and to obtain appropriate performance indicators. This was developed based on desk and field

research through which first and second source information was obtained. First source information was collected using a general questionnaire, a semi-structured interview and a physical environment questionnaire applied to 154 people, 62 % of whom were women. The responses from the questionnaires were recorded in the digital platform [Kobo Toolbox](#) for subsequent analysis. The diagnosis covered topics such as social organization of the community, socio-environmental problems related to water use, access to technologies, knowledge of water management, hygiene and health, community needs and opportunities, and optimal distribution and implementation of technologies.

Based on the information provided, the **Community Water Governance Strengthening Strategy (EFGHC)** was developed to promote community participation in integrated water management and encourage the adoption of eco-technologies for sustainable operation. The EFGHC consists of three components:

- a. **Training Programme for Accompaniment (PCA):** This methodological guide aims to strengthen the capacities of the NGO ASK for the inclusive and effective implementation of the EFGHC in communities of Quintana Roo. Through this guide, the increase of technical knowledge of its staff is promoted and guidance is provided for the accompaniment of the communities that will be intervened. In particular, three stages are incorporated for the accompaniment of the communities: i) preparation of diagnosis, ii) accompaniment for the efficient use and management of water, and iii) analysis and presentation of results. Figure shows the proposed activities to be implemented in the aforementioned stages. To date (May 2023) EFGHC has been fully implemented in more than 8 communities in Quintana Roo and is being implemented in many more.



Figure 3: Possible activities to accompany communities in the implementation of EFGHC. Source: GIZ/CAPSUS/ASK

- b. **Community Management Proposal (PGC).** An organizational model for water governance in the community is proposed. To this end, the implementation of a Water Committee is suggested, composed of local representatives, through which decisions are made to improve water access and availability. In particular, this proposal promotes female's participation in water management decision-making. In addition, the proposal indicates procedures for conflict resolution in water management and the operation and maintenance of eco-technologies.
- c. **Capacity Building Programme (PFC).** This element transfers knowledge to the users of the eco-technologies for their proper operation, use and management of water resources. Therefore, two components were included: a) dissemination material, consisting of fact sheets on the relevance of good water management, and b) an operation and maintenance manual for eco-technologies.

Expected impact

EFGHC contributes to the development of 33 communities in the State of Quintana Roo. Thanks to the joint effort of the projects financed by Sac Tun and Fundación Gonzalo Río Arronte, the impact increases.

In particular, this strategy's main objective is to improve **equitable access to water and sanitation** through technological solutions and promoting user ownership. It aims to develop capacities to ensure the sustainability of the benefits obtained. The EFGHC strengthens resilience to climate change in vulnerable communities in the State of Quintana Roo by increasing water availability and promote biodiversity conservation through the sustainable use of natural resources. For the reasons described above, it contributes to SDGs 6, 10, 13 and 15.

Lessons learned

What should be promoted?

Encouraging the participation of women in the development of integrated water and sanitation solutions has the effect of reducing gender inequality and promoting the adoption of the installed eco-technologies.

According to the diagnosis conducted in 8 communities benefiting from the implementation of EFGHC, more than 85 % of the women interviewed are engaged in household work, while most of the men are engaged in agricultural activities (CAPSUS, 2021st). Therefore, women have limited access to land, resulting in less access to water sources compared to men. In this sense, strengthening their capacities in water management can contribute to closing the gender gap in water and sanitation services in the beneficiary communities.

On the other hand, it was identified that water is mainly used for domestic purposes (CAPSUS, 2021st), which highlights the importance of women's participation in EFGHC, as they are the ones who mostly perform household chores. In addition, they play a fundamental role as knowledge multipliers by disseminating good practices in water management in their families and communities. Likewise, the inclusion of women in decision-making for community water management was promoted, for example, through their participation in their community's Water Committee and in events associated with the implementation of EFGHC.

Collaboration with a local organization with experience in implementing water and sanitation solutions and which includes Maya-speaking personnel has facilitated engagement with rural communities in Quintana Roo. The Mayan language is of great relevance in the beneficiary communities for everyday use (CAPSUS, 2021st). In this sense, the development and implementation of the EFGHC was favoured thanks to the incorporation of Mayan-speaking personnel in the work team. This has made it possible to establish effective communication with a large percentage of the indigenous population of the intervened communities. Specifically, it allowed to collect data during the formulation stage, which has made it possible to propose customized solutions according to the needs and expectations of the communities involved, thus increasing the likelihood that they will take ownership of the eco-technologies installed in their homes or communities.

In addition, the collaboration with a local organization (ASK) has facilitated visits to beneficiary communities, which has helped to build trust and encourage them to participate in EFGHC. This aspect has been of vital importance, especially in the context of the COVID-19 pandemic, which has imposed restrictions on mobility and access to the intervened communities. Besides, the installation of the eco-technologies has strengthened community confidence by representing the fulfilment of a commitment through a tangible result.

The EFGHC contributes to **reducing gender disparities** in rural communities by promoting women's active participation in decision-making processes and integrating them in strategy formulation and implementation. The project is directly related to SDG 5, which seeks to achieve gender equality, and which empowers all women and girls.



“El hecho de que fuera un acompañamiento constante y nos vieran seguido en la comunidad hizo que la transición fuera más orgánica (...) La gente de las comunidades está entusiasmada, en muchas ocasiones nos agradecieron. La barrera del lenguaje fue un reto, pero afortunadamente en nuestro equipo contamos con

compañeros maya-hablantes, lo que facilitó mucho la participación.” – Estefanía Medina Bastarrachea, Coordinadora de Proyectos Especiales, Amigos de Sian Ka’an

“In fact, it was a constant accompaniment and our regular presence in the community made the transition more organic (...). The people in the communities are enthusiastic, they thanked us on many occasions. The language barrier was a challenge, but fortunately we have Mayan-speaking colleagues in our team. That made the communication much easier.” - Estefanía Medina Bastarrachea, Coordinator of Special Projects, Amigos de Sian Ka'an.

The integration of governance, infrastructure, and capacity development aspects, which are interrelated, promotes the generation of sustainable water and sanitation solutions. The joint approach of these three elements facilitates the development of solutions that fit in the context and are composed of coherent components. In this way, eco-technologies can be used effectively in water management over a long period of time, by providing an enabling environment that strengthens the institutional framework and capacities necessary for their proper management.

“Las grandes fortalezas de la estrategia [EFGHC] son, primero, el diagnóstico muy detallado que se realizó en las comunidades para identificar ¿qué problemas tienen? ¿Cuáles son sus desafíos? ¿Quiénes están interesados? – para saber cómo trabajar con ellas; y segundo, que la estrategia se desarrolló con una visión holística, en la que sus partes – del diagnóstico hasta las capacitaciones – están muy bien conectadas.” – Sophie Müller, Asesora, GIZ

“The great strengths of the [EFGHC] strategy are: First, the very detailed diagnosis which was carried out in the communities to identify the following questions: What are their problems? What are their challenges? Who are the stakeholders? – so that we know how to work with them; and second, that the strategy was developed with a holistic vision, in which its parts – from diagnostics to trainings – are very well connected. ” – Sophie Müller, Advisor, GIZ

The formulation of the EFGHC was carried out using a participatory and intersectoral approach, which fostered the development of a feasible solution aligned with the local context. During this process, representation from the community, the government sector, NGOs, international organizations, and the private sector was ensured. In this way, the strategy formulated was aligned with the needs of the beneficiary communities, the national strategies, it received international funding and advice, and it was expedited thanks to the technical contributions of the private sector and the NGO.

“El proyecto [Desarrollo de la EFGHC] fue bien conceptualizado (...), lo cual fue favorecido por la existencia de un programa en CONAGUA implementado en comunidades rurales en materia de captación de agua de lluvia. Por lo que replicamos esa política nacional en el Estado de Quintana Roo.” – Alejandro Peralta, Director de Financiamiento Internacional, Gerencia de Cooperación Internacional, CONAGUA

“The project [EFGHC Development] was well conceptualized (...), which was favoured by the existence of a CONAGUA programme implemented in rural communities regarding rainwater harvesting. So, we replicated this national policy in the State of Quintana Roo.” – Alejandro Peralta, Director of International Financing, International Cooperation Management, CONAGUA.

In addition, monthly inter-institutional meetings were held to follow up on the development of project activities. These meetings facilitated the exchange of expectations and needs among the key organizations involved and contributed to the successful completion

of the strategy. It is important to highlight the participation of the president of the Yucatan Peninsula Watershed Council, who played a key role and could drive the continuity of the EFGHC in the applied region.

The use of visual elements in the Capacity Building Programme contributes to a better understanding of its content by the beneficiaries. Given that a large proportion of the beneficiary communities consist of people who speak Mayan, a mainly oral language (CAPSUS, 2021st), it is essential to use visual resources to improve the understanding of good practices in water management and the use of the eco-technologies present in the PFC. This ensures that the information is accessible and understandable to all, overcoming language barriers and promoting effective appropriation of the proposed practices and technologies.

“Imprimimos ejemplares del manual [Manual de operación y mantenimiento de ecotecnologías], y esta herramienta resultó sumamente efectiva. Trabajamos junto con los beneficiarios de capacitación para que pudieran visualizar de manera esquemática la importancia y el mantenimiento de las ecotecnologías, y luego llevarlo a la práctica.” – Rosa María Loreto Viruel, Coordinadora del Programa Conservación Marina, Amigos de Sian Ka’an

“We printed copies of the manual [Manual de operación y mantenimiento de ecotecnologías], and this tool proved to be extremely effective. We worked together with the training beneficiaries so that they could visualize the importance and maintenance of the eco-technologies in a schematic way, and then put it into practice.” – Rosa María Loreto Viruel, Marine Conservation Programme Coordinator, Amigos de Sian Ka’an.

Conducting diagnostics in each community plays a crucial role in reducing the risk of abandonment of installed eco-technologies.

The information gathered during these diagnostics serve as a basis for the development of more appropriate eco-technologies, adapted to the context of each community, as well as for the implementation of more effective capacity building programs. By analysing aspects such as socio-cultural perceptions, current state of infrastructure and priority needs, a clearer understanding of the particularities of each community is achieved.

Additionally, through the diagnostics, a baseline is established to assess the impact generated by the intervention in the communities. This provides a frame of reference to measure progress and results over time and provides the opportunity for continuous adjustments and improvements in the strategies implemented. In summary, carrying out diagnostics strengthens the implementation of eco-technologies by ensuring better adaptation to local needs and contexts, and facilitates the evaluation of the impact of the interventions carried out in the beneficiary communities.

“¿Cuál es el aspecto innovativo? Fue la consulta a las comunidades. En Quintana Roo hay una comunidad maya importante, imagínate toda la riqueza que se puede obtener de su conocimiento ancestral (...). Por lo que es importante tomar en cuenta sus usos y costumbres y además aprovecharlos.” – Grisel Medina, Subgerente de Gestión y Evaluación de Proyectos con Crédito Externo, CONAGUA

“What is the innovative aspect? It was the consultation with the communities. In Quintana Roo lives an important Mayan community, imagine all the wealth that can be obtained from their ancestral knowledge (...). Therefore, it is important to consider their uses and customs and also take advantage of them.” – Grisel Medina, Deputy Manager of Management and Evaluation of Projects with External Credit, CONAGUA

What should be avoided?

Delays in the implementation of eco-technologies after generating expectations in communities leads to a loss of confidence and trust among the beneficiaries. Therefore, it is important to avoid implementing initial measures in communities without first ensuring that the necessary conditions for their implementation, as well as the appropriate funding, are in place.

The existence of long intervals between the estimation of the budget for the installation of eco-technologies and their actual implementation pose a significant risk of underfinancing the projects. Factors such as the increased costs of construction materials have substantially increased the investment required for the installation of eco-technologies, which has led to a reduction in the number of eco-technologies that can be financed through the project. This situation reduces the expected impact and generates distrust among the beneficiaries as they cannot observe the expected tangible results.

Therefore, it is essential to adopt mitigation measures to avoid delays in the construction of works within the project. This involves careful planning, availability of resources, early identification of potential obstacles, and implementation of strategies to minimize delays. Taking these measures helps to maintain the confidence of beneficiaries and to ensure that the projects are implemented in a timely and effective manner, thus maximizing their positive impact on the communities.

“Es importante tener claro la hoja de ruta desde la formulación hasta la ejecución de un proyecto, considerando los aspectos administrativos, operativos y de gestión que puedan estar involucrados”– Alejandro Peralta, Director de Financiamiento Internacional, Gerencia de Cooperación Internacional, CONAGUA

“It is important to have a clear roadmap from the formulation to the execution of a project, considering the administrative, operational and management aspects that may be involved”- Alejandro Peralta, Director of International Financing, International Cooperation Management, CONAGUA

To avoid wasted opportunities and to ensure productivity and coordination among team members, it is crucial to ensure an **effective and regular communication** between all project parties. This involves using appropriate communication formats and channels.

In addition, it is advisable to establish a clear governance scheme that specifies roles, responsibilities, and methods of communication among the team members. It is also important to adequately capture the needs and expectations of team members at different stages of the project. This will ensure that everyone is aligned.

It is recommended to include a Memorandum of Collaboration or a Memorandum of Understanding in the EFGHC to formalize the intervention agreements in each community. This will clarify the responsibilities of all parties involved and ensure a successful development. ASK has recognized this need and has implemented this approach in carrying out the strategy in the communities.

Possible Challenges for when implementing this model: Sustainability and Replicability

The EFGHC is a **dynamic** strategy that is constantly improved and adapted to different contexts. It has been replicated in over 20 communities in Quintana Roo and has also been successfully implemented in communities in other states of the Yucatan Peninsula.

In addition, the strategy has also been successfully scaled to various sectors and regions of Mexico. For example, it has been adapted to develop capacities and provide equipment to cocoa honey producers and in the transformation of cocoa into chocolate in Chiapas. Its potential for scaling up has also been observed in the accompaniment of firefighting in jungle areas for their conservation.

To replicate EFGHC effectively, it is essential to maintain its **comprehensiveness**. The Accompaniment Training Program, the Community Management Proposal, and the Capacity Building Program, along with their components, must be interrelated and form a coherent structure. In addition, it is important to preserve EFGHC's participatory approach to foster community ownership of the installed infrastructure. This implies the formation of partnerships and collaborative agreements.

On the other hand, **collaborative, and continuous governmental technical support** to communities to face new challenges in water resource management can favour the sustainability of EFGHC. This allows strengthening good practices and adapting them to a changing environment. In addition, it is important to **break down barriers that limit access to financing** for eco-technologies, so that adequate maintenance and the possibility of replacement, when necessary, can be guaranteed.

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