



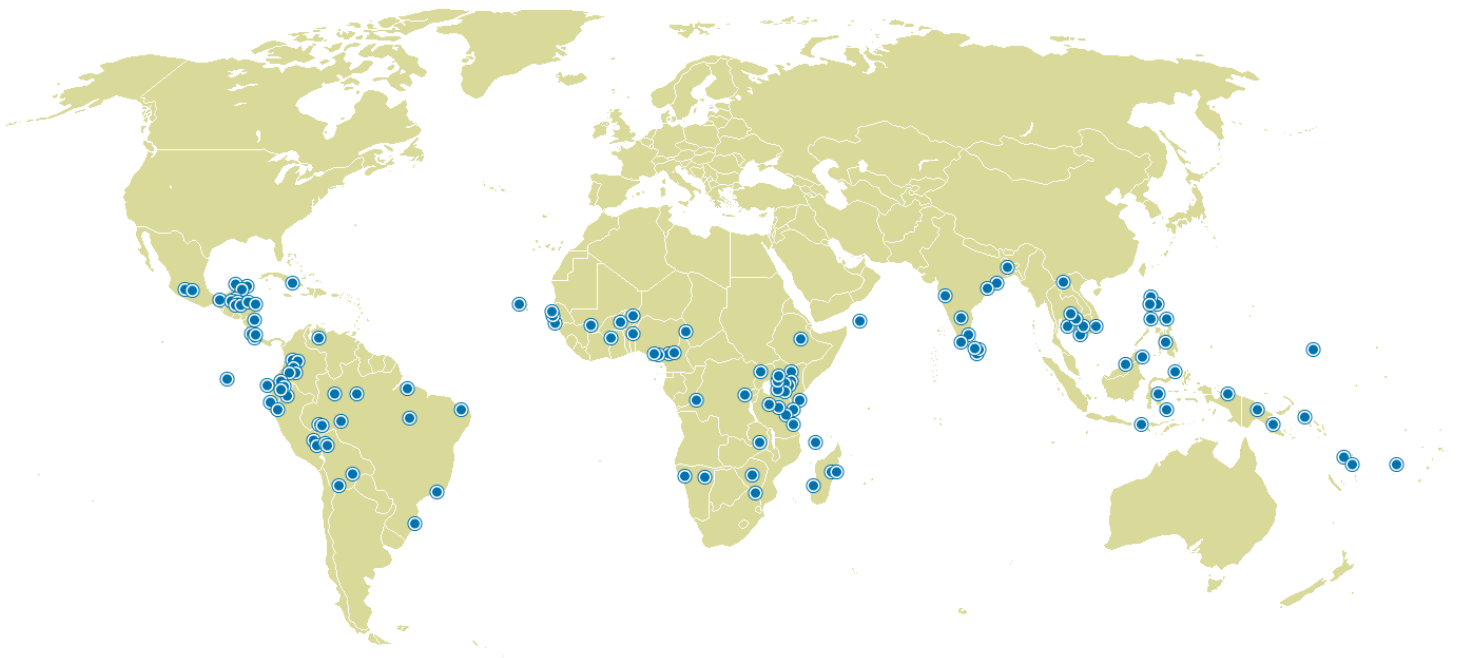
Equator Initiative Case Studies

Local sustainable development solutions for people, nature, and resilient communities

UNDP EQUATOR INITIATIVE CASE STUDY SERIES

Local and indigenous communities across the world are advancing innovative sustainable development solutions that work for people and for nature. Few publications or case studies tell the full story of how such initiatives evolve, the breadth of their impacts, or how they change over time. Fewer still have undertaken to tell these stories with community practitioners themselves guiding the narrative.

To mark its 10-year anniversary, the Equator Initiative aims to fill this gap. The following case study is one in a growing series that details the work of Equator Prize winners – vetted and peer-reviewed best practices in community-based environmental conservation and sustainable livelihoods. These cases are intended to inspire the policy dialogue needed to take local success to scale, to improve the global knowledge base on local environment and development solutions, and to serve as models for replication. Case studies are best viewed and understood with reference to *'The Power of Local Action: Lessons from 10 Years of the Equator Prize'*, a compendium of lessons learned and policy guidance that draws from the case material.



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SAN CRISANTO FOUNDATION

Mexico

PROJECT SUMMARY

The San Crisanto Foundation focuses on mangrove restoration and flood prevention in a region that consistently faces heavy rainfall and flooding. Since the Foundation's establishment, over 11,300 metres of canals have been restored, and 45 cenotes have been delisted and rehabilitated. As a result, flood risk is reduced and populations and diversity of endemic wildlife in the cenotes and mangrove forests have increased. Restoration efforts have generated 60 jobs and local household incomes have increased substantially.

To complement to its restoration efforts, the Foundation undertakes community education and awareness-raising, emphasising the value of wetland and mangrove conservation for local livelihoods and as a natural buffer against floods.

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KEY FACTS

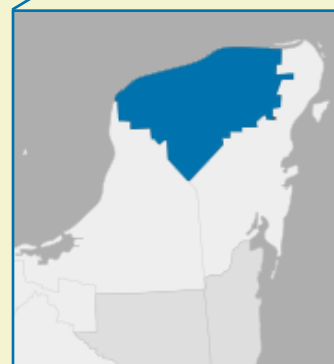
EQUATOR PRIZE WINNER: 2010

FOUNDED: 2001

LOCATION: Yucatán, Mexico

BENEFICIARIES: 150 families, 570 total residents

BIODIVERSITY: 850 hectares of mangroves, 167 bird species



Background and Context



San Crisanto is a small fishing community of approximately 150 Mayan families, located along the northern coast of Mexico in the state of Yucatán. The community has experienced rapid growth in recent decades, its population increasing from 150 in the 1970s to over 570 in 2011. The San Crisanto Foundation is a community-based organization that manages all conservation and restoration, capacity-building, and education projects in the San Crisanto Ejido.

Collective land management – the ejido system

The ‘ejido’ is a form of land tenure designation dating to pre-Columbian Mexico. The system fell out of use following colonization but re-emerged after the Mexican Revolution, allowing groups of between 20 and 200 landless people to communally take possession of tracts of land for collective management. It was not until the 1930s, however, that the government began to actively redistribute federal and private land, leading to revitalization of the ejido system and significant expansion of the practice across Mexico up until the 1970s.

The San Crisanto Ejido was created in response to the escalating exploitation of local natural resources by large farm owners. Incursions into community land were starting to threaten the viability of traditional livelihoods and the productivity of local ecosystems. The San Crisanto community made an official land claim under the ejido system, which received approval and designation by federal mandate (provisional in 1974, and final in 1980.) One of the stipulations of the ejido designation was the creation of a land use plan which functionally divides the community territory into a conservation area, land plots for productive activities (e.g. agriculture), and land for human settlements.

Land use planning in the San Crisanto Ejido

The conservation area in the San Crisanto Ejido is 1,020 hectares out of a 1,500-hectare territory. It includes 110 hectares of tropical deciduous forest, 850 hectares of mangrove forests (red, black, white, and

buttonwood), and 60 hectares of grassland and wetland. The area also contains 45 cenotes, natural sinkholes characteristic to Mexico that result from the collapse of limestone bedrock and which then expose the groundwater underneath. The area contains a number of important endemic species, including Morelet’s crocodile, the Hicotea tortoise and several species of tern. The San Crisanto Ejido is recognized as a community conserved area; the foundation’s stated objective is the restoration and conservation of the natural resources and biodiversity of this area.

Productive activities in the ejido have evolved and expanded over time, but remain unequivocally linked to the conservation and health of local ecosystems, both inside and outside of the formal conservation area. As a complement to the main activities of community members, fishing activities began in 1976, coconut plantations were introduced in 1978, and salt extraction – a traditional activity of the ancient Mayans – was started in 1983.

In 1995, two hurricanes struck the region within less than two weeks of each other. The hurricanes brought an unusual amount of rain which, due to a lack of drains leading out into the mangroves, led to widespread flooding. The community decided to construct a drainage system alongside a highway bordering the mangrove forest that would allow floodwaters to drain and flow naturally into the mangroves and out into the sea. In the course of this process, the community cleared the culverts of blockages. This resulted in a marked increase in the number of freshwater fish, prawns, and crocodiles in the cenotes after just a few months.

These successes motivated the community to create a sustainable development program for the restoration of mangroves and the recovery of local biodiversity. The San Crisanto Foundation was formally established in 2001 to support the conservation activities that the ejido began. The foundation and the ejido work closely together and are functionally interdependent.



Economic development and alternative livelihoods

While the foundation's focus on conservation was motivated by relatively recent events, the impetus for engaging in sustainable livelihoods and economic development activities dates back much farther and is more deeply rooted in San Crisanto's history. Beginning in the late nineteenth and early twentieth century, the production of henequen (a plant indigenous to the Yucatán), mangrove charcoal production, cattle raising, salt extraction, coconut cultivation, and the production of copra (the dried kernels of a coconut) were the most prominent economic activities and sources of revenue for the local population. This long history of relative economic prosperity – coupled with regular interactions with less affluent communities and local groups with fewer economic opportunities – created an expectation of financial opportunity, growth and steady improvements in community living conditions that were somewhat untenable. The respective economies for these products would wane, and new opportunities would need to be created. To address these needs, and to fill the gaps in public services that had developed due to consistent neglect by government authorities, the foundation has also evolved a focus on livelihoods diversification and the generation of alternative employment opportunities.

Foundation objectives and vision

When the foundation was first conceived, its objective was to recover aquatic fauna and restore the presence of migratory birds in the re-

gion. Its mission, however, has become more generalized to include the restoration and conservation of biodiversity more broadly. Related objectives, which receive equal emphasis from the foundation, are: promoting social development in San Crisanto and adjacent communities, involving youth in conservation activities, promoting the sustainable use of natural resources, generating employment through sustainable natural resource management, supporting low-impact ecotourism services, and operating a vocational school.

The foundation is based on three main principles that are integrated into all of its activities. First, the foundation is committed to remaining independent of any political party, government, or religious affiliation. Second, the foundation emphasizes ethical dealings in its work and prioritizes the sharing of benefits amongst all of its members. Lastly, the foundation strives to operate as a democratic organization, so that all decisions are based on consensus.

To create a framework and timeline for the achievement of its goals and objectives, the foundation, in collaboration with the San Crisanto Community Council, created a strategic plan for the period of 2009 to 2029 called 'San Crisanto Plan 929'. The plan is intended to serve as a visioning tool to guide local development activities over the next two decades. It contains guidelines that allow the community to consolidate its development through the sustainable use of natural resources and to prevent (wherever possible) damage and degradation of local ecosystems from human activities.

Initial challenges – enforcement and land tenure

The evolution of the San Crisanto Foundation has been marked by a number of barriers and challenges – getting to success has been a trial and error process requiring active learning. Among the earliest challenges was initial resistance to community ownership of the ejido, and more specifically the rules put in place by the community through the foundation to protect and conserve biodiversity. Visitors to the area did not comply with the ejido entrance fee requirements to access the mangroves and consistently violated regulations on hunting and timber extraction. Based on information generated by research conducted in the area, the foundation decided to invest a great deal of time, energy and effort into explaining the reasons for community protocols and regulations. In this way, the initiative was able to successfully change public behavior and obtain compliance that was more in alignment with conservation and sustainable livelihoods objectives.

A related challenge was the lack of recognition by the federal government of the community's land tenure. An attempt was made by the federal government – by way of the Ministry of Environment and Natural Resources – to classify the entire area of wetlands as a 'federal maritime zone'. Under such a classification, the community would have lost access to their lands and relinquished stewardship authority in the mangroves. Because this attempt by the government was in direct contravention of agrarian law governing municipal property, the ejido successfully filed a lawsuit which required the national government recognize the community's full ownership of the wetlands and mangroves within their territory.

Key Activities and Innovations



The foundation undertakes numerous activities to preserve biodiversity, sustainably manage natural resources, build community capacity and improve the delivery of healthcare and education services. The primary focus is cleaning and maintaining local canals and cenotes to prevent siltation, which has deleterious effects on the health of local ecosystems. Clear, open canals also enable the community to provide boat trips and wildlife observation excursions to tourists visiting the area, an important source of income. The foundation also undertakes annual evaluations of mangroves and assessments of changes in fish populations, to track the impacts of its conservation work.

An innovative model of community land management

While the ejido system is based on traditional land use practice, the establishment of a distinct organization within an ejido to meet the community's social, economic and environmental goals is unique to San Crisanto. The foundation was a response to biodiversity loss and environmental decline on the one hand, and, on the other, community members not understanding the environment's implications for local economic development. By involving community members directly in restoration and conservation work, the foundation has fostered social cohesion. By managing matters relating to conservation, restoration and environmental education within the ejido, the foundation has improved service delivery and generated employment.

Capacity building

An important dimension of the foundation's work is capacity building through training and environment education. Investment in these services has intensified over the last several years. Since 2005, the foundation has invested more than USD 100,000 in environmental education and workshops (in biodiversity conservation, environmental care and management of municipal solid waste, gender equity, and community development). Workshops are strategically

held at schools to target young members of the community. Between 2005 and 2007, the foundation fine-tuned an environmental education program with the support of experts in the fields of participatory planning, teaching techniques and social anthropology. In close cooperation with a number of community members, the team developed the long-term environmental education program which is operated and executed by the foundation. To further promote its environmental education and training activities, the foundation is in the process of creating a clearinghouse of information and documentation on their work. The foundation has stockpiled doctoral theses and analytical papers that focus on everything from their internal institutional dynamics to the impacts of their programming.



Awareness-raising festivals

To consolidate its relationship with the wider community, and improve public awareness of the issues at the heart of its mandate, the foundation initiated the San Crisanto Coconut Festival in 2002. The festival, created in response to the loss of coconut palms and downward trends in the coconut market, is held over three days and offers a wide variety of events and activities, including exhibitions; mangrove tours, arts and crafts, and concerts. The festival also serves as a 'shop window' for coconut based products. The Center for Scientific Research of Yucatán, the Research and Advanced Studies Center of the National Polytechnic Institute of Mexico, and the state government have supported in the festival.

The foundation also holds an annual Mangrove Festival to highlight the importance of mangrove ecosystems to the biodiversity in the region and the functioning of the local economy. The event includes

cleaning of access ways to mangroves, canals and cenotes; clearing and cleaning of roads and beaches; tours of the mangroves; presentations of 'Plan 929' (the foundation's long-term, strategic plan); and performances by Yucatán musicians.

Public health services

An additional focus for the foundation is improving community health, hygiene, nutrition and access to disability services. Activities in this area extend beyond San Crisanto to adjacent communities. After the 2002 hurricane, the foundation organized a concert to raise funds to restore various health services that had been destroyed. On a more regular basis, the foundation collects donations from businesses and other donors to support local health centers or provide needed medical provisions and supplies. Activities in the area of public health have been undertaken on an ad hoc, 'as needed' basis.



“Conservation can only be achieved through the recognition and revaluation of local natural resources and the possibility of rational use. Part of the development process must be inclusive, respecting the rights of the members of the community concerned...”

Jose Ines Loria Palma, San Crisanto Foundation

Impacts



BIODIVERSITY IMPACTS

One of the most significant biodiversity impacts from San Crisanto Foundation's work has been the registration of the ejido's conservation area (as delineated in its constitutional land use plan) as a 'wildlife conservation management unit'. In order to successfully register the area, the ejido needed to establish several regulations to promote the conservation of biodiversity and natural resources. Regulations included an absolute prohibition on hunting in the area and restrictions on fishing in cenotes and springs. While fishing from the sea was not restricted, each household in the community was permitted to fish from cenotes only twice a year (for either consumption or recreation). Similar restrictions were placed on timber extraction, which is only permitted for domestic use and pending receipt of a permit outlining the amount of timber that can be cut and from which area. In combination with foundation work to clean the cenotes and surrounding areas, these policies and regulations have collectively conserved natural resources in the area and ensured the health and functioning of local ecosystems. Improvements have been made in mangrove forest cover, fish stocks, and populations of other key species.

Mangroves

The foundation has developed a system to measure changes in mangrove forests and the surrounding ecosystems, in particular those changes that can be attributed to their programming and interventions. An area of mangrove swamp is selected at random and divided into transects. In each two-meter wide transect, researchers from the foundation count the number of plants, identifying species and measuring mangrove tree trunk diameters, height and basal cover. Assessments are carried out by staff trained in environmental monitoring as well as partners from local universities. The foundation has provided its entire staff with training on conducting environmental assessments; trainees attend four courses on different aspects of measurement activities and are supported to visit neighboring com-

munities and sites that have successfully applied monitoring and evaluation techniques. All information gathered from the mangrove assessments is recorded for statistical analysis and to evaluate progress and impacts. To date, the foundation has been able to restore 60 percent of the mangroves lost during the 2002 hurricanes.

Increases in the diversity and abundance of endemic species

Prior to the cleaning of the cenotes, numbers of endemic fish species were very low, with only fresh water catfish observed in some springs. After the foundation's hydrological restoration activities, the community observed dramatic increases both in the diversity of species and abundance of fish in the cenotes. The most noticeable changes have been in populations of Guatemalan Rhamdia and freshwater pike.

Such positive changes have extended to other species in the mangrove ecosystem. Following the hydrological restoration efforts of the foundation, staff reported a fourfold increase in populations of prawn species *Macrobrachium acanthurus* in the canals. Populations of marsh crocodiles (*Crocodylus moreletti*) have also grown substantially since 2004. Over a three year period, the number of crocodiles in the cenotes grew by 87 individual crocodiles, of which 70 per cent were female. During this same period there were 264 sightings of crocodiles and, in September 2010, two hatching nests were located.

Foundation activities have also had a positive effect on the 167 resident, migratory and endemic bird species in San Crisanto. Before the initiative began, the presence of migratory birds in the region was minimal and was limited to small flocks of blue-winged teal ducks (*Anas discors*). Flock sizes have since increased to between 200 and 300 birds, and populations of the American coot (*Fulica americana*) have returned. In addition, pink flamingos, which had not been present in the wetlands of San Crisanto for over 50 years, have reappeared – a flock of more than 250 birds was recorded in 2009.



SOCIOECONOMIC IMPACTS

San Crisanto Foundation has helped to improve the community's quality of life, strengthen local socio-economic conditions, and expand livelihood options for the local population. When the foundation was first established, 90 percent of the target population in San Crisanto was living below the national poverty line. By 2010, the entire population of San Crisanto had incomes twice that of the national per capita, on average USD 6,000 per year.

Importantly, improvements in income have not been limited to middle-aged men, but have also extended to women and youth. Project activities have also translated to the creation of much-needed employment opportunities for the community members. Activities in ecotourism specifically have resulted in twelve permanent and five seasonal jobs.

The secondary livelihood options resulting from developments in the ecotourism sector have increased too, with family businesses emerging to provide tourists with needed goods (foods and handicrafts) and hospitality services. These businesses have created more than 40 permanent jobs.

A percentage of ecotourism revenues are directed back to the foundation where they have most often been invested in community infrastructure projects, schools and educational materials. As a result, school enrollment in the community has increased substantially, and 30 percent of students are continuing on to pursue higher education and technical degrees.

Increased incomes and job creation have also more generally resulted in improvements to living conditions and to the provision of basic public services. All households within the ejido now have running water and functional toilets.

POLICY IMPACTS

The foundation has emerged regionally in the Yucatán as a de facto leader in community mobilization and grassroots-led development processes. With support from the Center for Research and Advanced Studies of the National Polytechnic Institute (Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional), the foundation has been able to develop and mainstream a local strategy for community-based natural resource management and conservation. The strategy was designed to increase local participation in both on-the-ground action and policymaking. These efforts culminated in the establishment of Plan 929, a twenty-year strategic plan to guide local development activities in the community.

At the state level, representatives from the foundation have participated in a number of policy forums and committees, notably including the Council of the Basin of the Yucatán Peninsula. In 2010, the foundation took part in a meeting of the Design Committee for the Management Program of the State Reserve of Mangroves of the North Coast of Yucatán. The meeting was held to discuss the regulatory architecture, policies and strategies that the committee would use going forward, and San Crisanto Foundation led a discussion on the function of knowledge sharing in landscape restoration work.

Sustainability and Replication



SUSTAINABILITY

There are a number of components and conditions that make the foundation sustainable over the long-term. Critical among them are: the community's official legal tenure status (as an ejido), the successful identification of opportunities for income generation and diversification, investments in staff training and capacity building, the support and contributions of research institutes and universities, and a commitment to peer-to-peer learning and exchange.

From an environmental perspective, the foundation intends to maintain and grow its emphasis on ecosystem restoration. The scaling up of these activities will be particularly important in reducing the risk of saline intrusion, which can have detrimental effects on biodiversity and certain endemic species and which will put additional tension on those members of the community who are dependent on natural resource management for their incomes. Another important aspect of environmental sustainability is to create an ongoing program to measure water quality to detect contaminants that may affect the fauna of the mangrove. To this end, the foundation is currently working on a four-year project with the National Forestry Commission of Mexico's Carbon Capture Program which is aimed at habitat conservation in the local mangroves.

REPLICATION

Peer-to-peer learning and knowledge exchange have been key programmatic features of the San Crisanto Foundation and have paid dividends in terms of the replication and up-take of best practice in mangrove restoration. The foundation model has been shared with other rural and coastal communities at knowledge-sharing meeting designed to position on-the-ground practitioners as instructors for other practitioners. These meetings are often professionally facilitated and allow community representatives to present on the successes and challenges of their respective work. Translators

are also often used to include Mayan speakers and participants. In December 2010, for instance, the foundation participated in a meeting to discuss community experiences coastal resource management in El Vizcaino Biosphere Reserve in Baja California Sur. The meeting included the participation of organizations from nine Mexican states. The following year, San Crisanto was elected to host the meeting.

The foundation has also arranged a number of field visits to facilitate knowledge exchange. On several occasions, coconut farmers from other states in Mexico have been supported to visit San Crisanto and learn about their experiences with coconut production.

PARTNERS

The following organizations have provided assistance to the Foundation's work on a project basis:

- The Mexico Secretariat of Environment and Natural Resources, through support of temporary employment;
- The National Forestry Commission, through studies and restoration of the area. In 2010 it authorized a five-year project for the conservation of biodiversity in an amount of USD 140,000;
- The Conservation Act of the North American Wetlands (2000, 2002, 2005);
- The UNDP implemented GEF Small Grants Programme (2002);
- The International Convention on Wetlands RAMSAR (2006); and
- La Ruta del Chocolate (2009).

Table 1 provides a list of those partners whose support has been fundamental to the San Crisanto Foundation since its inception. The table also describes their roles, and the degree to which the foundation has depended on their support.

Table 1. San Crisanto Foundation partners

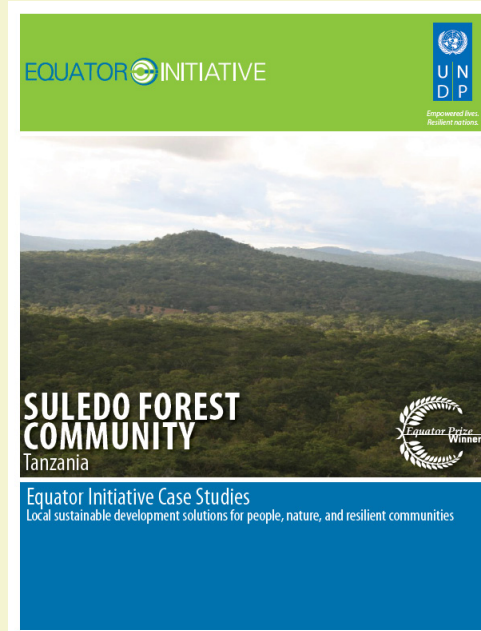
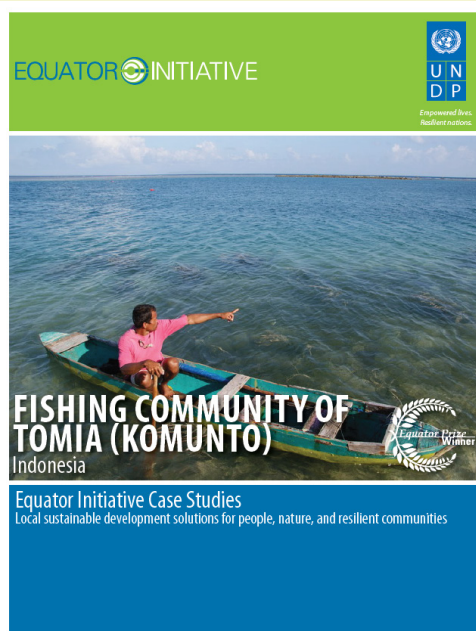
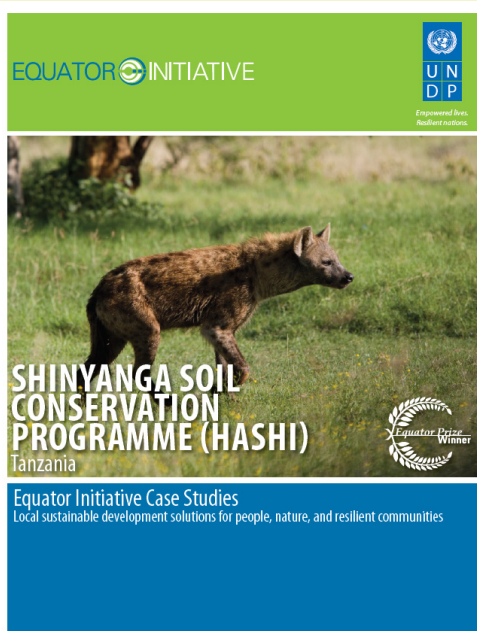
Partner	Role	Support Provided	Dependency of the project on the partner
Ejido of San Crisanto	Provides manpower, materials, and financial resources	Is legally responsible for the area in which the foundation works	100%
Cinvestav - Mérida	Performs participatory research and provides support through students who perform different tasks in environmental conservation	Provides methodology for environmental education and support with workshops and training courses	None
College of the Atlantic (Maine, USA)	Supports with student exchanges; students develop projects and teach English courses to children and adolescents	Provides labor and technical expertise	None
San Crisanto Community Council A.C.	Participate in workshops and courses, support community involvement in the project	Promotes community integration; strengthens social ties	Relative; a risk exists in the case of disappearance or retirement
Research Center for Scientific Research of Yucatán	Supports with research on plants, in particular coconut palm	Provides methodology and scientific knowledge	Relative; only regarding support and at the request of the group



FURTHER REFERENCE

- San Crisanto Foundation video (Vimeo) <http://vimeo.com/43198616>
- San Crisanto Foundation website: <http://www.sancrisanto.org/#>

Click the thumbnails below to read more case studies like this:



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