

# Experience in Gender Inclusion in the Implementation of the Batzchocolá Community Micro Hydroelectric Plant in Nebaj, Quiché, Guatemala



Case Study  
Guatemala, 2015



**ENERGIA**  
INTERNATIONAL NETWORK ON  
GENDER AND SUSTAINABLE ENERGY





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## Preface

The International Network on Gender and Sustainable Energy (ENERGIA) and the International Union for the Conservation of Nature (IUCN) signed a collaboration agreement in 2008 to integrate the complex linkages between energy, gender, and the environment. Implementation of the initiative entitled "Women as Leaders and Change Agents in the Energy Sector" began in 2013 in four countries of Central America, coordinated by the IUCN Global Gender Office, with support from ENERGIA. This initiative was made possible thanks to financial support from Hivos, the Humanist Institute for Development Cooperation.

The objectives included producing written and visual materials to capture and express the way in which gender can be mainstreamed within energy projects. This way, the initiative seeks to document and share experiences, lessons learned, best practices, and recommendations as a way to support and build the capacity of decision-makers, project implementing organisations, grassroots groups, energy and sustainable development experts, and government representatives, increasing the number of energy projects with gender equality.

This document is the third in a series of four case studies that will be conducted in Central America under this initiative. "Experience in Gender Inclusion in the Implementation of the Batzchocolá Community Micro Hydroelectric Plant in Nebaj, Quiché, Guatemala" highlights the results in terms of gender equality obtained by Semilla de Sol and the Hydroelectric Association for the Integral Development of Northern Quiché (ASHDINQUI), a non-profit social and community venture that began with the construction of the micro hydroelectric plant and oversees the operations and management of the plant, and its energy generation and distribution. This study describes the process of a program that began in 2009, to build and operate a micro hydroelectric plant to provide electric energy to three communities in the Department of Quiché, Guatemala, that did not have this service before. The study also details the main challenges encountered and presents the greatest impacts and outcomes obtained, along with lessons learned. This systematic study looks particularly at efforts to promote inclusion and women's participation in all aspects of the project, including decision-making and administration.

# 1. Introduction

*“Guatemala has levels of inequality that exceed its Central American neighbours, and women and ethnic groups suffer the greatest social exclusion, according to the Human Development Index (HDI) produced annually by the United Nations Development Program (UNDP).”*

(Diario Siglo XXI 25/07/2014)

Even though the gender inequality gap shrank in 2014, Guatemala continues to be the country with the least gender equity in Latin America, according to the World Economic Forum and as published in the Prensa Libre newspaper on October 29, 2014.

Semilla de Sol, aware of this adverse context for equitable economic and democratic development for rural communities in the geographic region in which it implements its programs and projects, has made initial efforts to recognise and highlight the difficult situation in which rural women find themselves as they bear an overwhelming burden due to the intersectionality of discrimination based on their gender, ethnicity, class, and rural status. These conditions translate to low technical, economic, and productive capacities for women, thus limiting their opportunities to participate under equal conditions in the transformation of the predominant agrarian model. Women have not participated effectively in traditional and formal community decision-making spaces.

As part of its work, Semilla de Sol has built participatory management models to develop community-level renewable energy projects. These models include a strategy to foster gender equity in the implementation of their projects in the Ixil and Zona Reina regions in the Department of Quiché, in Guatemala.

The Batzchocolá Community Micro Hydroelectric Plant, located in the community of Batzchocolá, is part of the community renewable energy micro-enterprise model that Semilla de Sol promotes and advises in poor, rural, and indigenous communities in Guatemala. The objective of the project is to provide electric energy service to the population in the villages of Batzchocolá and Laguna Batzchocolá in the Municipality of Santa María Nebaj, and Visiquichum, in the Municipality of San Gaspar Chajul, Department of Quiché, taking advantage of the local availability and potential of the water resources, to help improve living conditions, create job opportunities, and increase household income.

This Micro Hydroelectric Plant (MHP) began operations in July, 2014 with a generation capacity of 90 kW, and it supplies services through a 34.5 kV distribution grid. Administration, operation, and maintenance of the plant is the responsibility of the Hydroelectric Association for the Integral Development of Northern Quiché (ASHDINQUI), which functions as a small community company for electric energy generation and distribution. This project currently supplies energy for 141 families, 19 small businesses, and other services in the three communities, though 170 connections.

ASHDINQUI is made up of an equal number of men and women members who participate actively in the costs and benefits of the project implementation process and in new productive business ventures. Over the short initial experience, early outcomes and impacts in social, cultural, and economic aspects can already be shared, emphasizing participation and organisational strengthening to increase women's participation in community-level decision-making. Women's organisational empowerment is a fundamental step in promoting new ventures.

In general, the project is an example of how men and women build social resilience, and capacity to rebuild and recover after having been profoundly affected by the internal armed conflict in Guatemala.

## 2. Background and Geographic Context

The Batzchocolá Community Micro Hydroelectric Plant is located in the Republic of Guatemala, Department of Quiché, Municipality of Nebaj, and the village of Batzchocolá. The project includes the communities of Batzchocolá, La Laguna Batzchocolá, and Visiquichum; the first two are located in the Municipality of Nebaj, and the latter in the Municipality of Chajul, Department of Quiché.

The community lies 301 kilometres away from Guatemala City: 237 kilometres of paved road, 25 kilometres of graded dirt road, and 3.5 kilometres that must be traversed in a four wheel drive vehicle.

The majority of the inhabitants of the area are Maya Ixil peoples, and 75% speak Ixil as their native language, although a portion of the population also speaks Spanish as a second language. Most of the women speak their native language only.



Aside from forms of women's organising around the energy project, other groups of women have formed around the *Mi Familia Progresá* government program, for sale of food and as volunteers in schools. The Asuan Ixil Association, with an office in Chajul, manages small group loans for textile production. The Ixil Foundation works on topics of coffee production. At a school level, the children have the opportunity to participate in student government. "That is where they begin to get a sense of themselves, to participate, and recognise that we are all equal." While some women participate alongside the men in ancestral authorities, very few women have participated in official bodies as auxiliary community mayors or in the Community Development Councils.

The communities in the project, much like the rest of the Ixil people, have suffered isolation imposed upon them not only by the difficult topography of the region, but as a result of the historic abandonment by the state of the rural areas and indigenous communities of the country. Structural inequalities are reflected in several aspects, including the lack of comprehensive rural development policies to enable sustainable processes. In the area there is a high dependence on monoculture production models of products such as coffee and cardamom. When these products are affected by pests, disease, climate change, or drops in international market prices, the result can be extreme poverty, unemployment, food shortage, labour migration, and food and nutrition insecurity in the area.

This disadvantageous situation is also reported in the National Survey on Living Conditions (ENCOVI, 2011), which reports the total national poverty index for Guatemala at 53.71%; total poverty for the Department of Quiché is 71.85%, while Nebaj in particular reports 85.5%, well above the national and departmental figures.

According to Ministry of Education data from 2001, 85.98% of women graduate from primary school; in the Department of Quiché this number falls to 78.91%, putting women at a disadvantage in this department. In 2014, the National Literacy Commission (CONALFA) reported a national illiteracy rate in the population age 15 or over of 14.45%. In the Municipality of Nebaj, Quiché, this rises to 25%.



Due to the lack of secondary school education in the project communities, the great majority of children, especially girls, only reach sixth year. After that point, girls mainly perform domestic work. Given the lack of economic resources to study in faraway urban centres or other opportunities to support themselves, many girls get married at a young age. In addition to this, the lack of hospital infrastructure, medicine, and healthcare personnel means that this population is affected by higher maternal and infant mortality rates.

The conditions, positions, and situations for women in these poor and indigenous communities are determined by the intersectionality of exclusion on the basis of class, gender, ethnicity, and rural location. The lived experience of these women is different, and even more difficult, than many women in other conditions. While the situation in this region deeply affects both men and women, the latter suffer the greatest impacts.

In addition to this context, the communities participating in the project come from a history of community organisation, dismantling, and reorganisation in the context of the internal armed conflict in the country in decades past. Women and men still suffer as widows, orphans, and victims of the destruction of the social fabric as a consequence of the persecution, massacres, and forced displacement during the conflict. As well, many women suffered sexual violence during the conflict and have not received adequate support and accompaniment.

Despite these difficulties, and thanks to their own efforts and struggles, the inhabitants have been able to maintain a harmonious relationship with their ecosystem, and their cultural conservationism continues to regulate a way of life rooted in this intense past. The ancestral world view, organising, knowledge, values, and practices of the Maya Ixil People has also given rise to local initiatives to take advantage of the potential for eco-tourism, renewable energy, and forestry in their territories.

Under these circumstances, in addition to generating opportunities for community development, this project seeks to contribute to the process of social resilience-building among men and women in these communities.

**With respect to the national energy situation**, the Ministry of Energy and Mines of the Government of Guatemala reports that 2,879,738 homes were connected in 2014, which represents a coverage level of 90.2%. In this regard, for that same year in the project implementation area in the Municipality of Nebaj, Quiché, 13,072 home connections were reported, for a coverage level of 80.29%.

The nearest residential electric grid to the communities of the Batzchocolá Community Micro Hydroelectric Plant is 28 kilometres away in the municipal centre of Chajul, Quiché. Moreover, the service provided by this grid is deficient, and the substation nearest to the region is in the municipal centre of Sacapulas (96 kilometres). As a result, electricity services are expensive, low quality, and do not extend far beyond the municipal centres.

In this context, on May 10, 2010, the Terra group opened the 94 MW Xacal hydroelectric plant, whose area of influence and operation covers the communities served by this project. The energy generated is transported by a high-tension 240 kV transmission line over 130 kilometres to connect to the National Electric System of Guatemala. This company's transmission grid runs above the properties of the communities. Ironically, by Guatemalan law this company cannot provide electric energy services to these communities.

Originally, the light sources from the communities had been *ocote* pine pitch torches, wax candles, kerosene gas lamps, and in some cases photovoltaic cells. For this reason, the communities faced limitations to improve their living conditions, as they lacked an energy source to enable them to develop productive and social projects.



## The institutions and national policies that influence the project include:

The Ministry of Energy and Mines, the supervisory body charged with applying the General Energy Law, which governs the Micro Hydroelectric Plant project.

The Ministry of the Environment and Natural Resources (MARN), which oversees Environmental Impact Assessments and environmental management plans for projects to install electric energy generation plants.

The National Forest Institute, as a regulatory body for national forest management, except for protected areas. Much of the land in the watershed is not owned by ASHDINQUI or its members. As a result, the authorization of forest exploitation licenses for the area would be a threat for the project; some of such licenses have been issued in the region, which could affect the water levels for electricity generation.

## Implementing organisation and its partners:

ASHDINQUI is legally registered with the Tax Administration Superintendence (SAT), with the necessary accounting and tax documentation. Additionally, the organisation is legally registered with the Personal Digital Information Record (SIRPEJU) at the Ministry of the Interior, giving it the legal standing to operate as a non-governmental organisation, classified as a community association.

The project was initially proposed by the ECA Batzchocolá Rural Business Association in 2006, with technical support from Fundación Solar. The organisation represented only the community of Batzchocolá, with whom the project began initially. Nonetheless, given the size and capacity of the MHP that would be built, the communities of Laguna Batzchocolá and Visiquichum were also included.



Women's participation in a community consultation to elect the board of directors in 2009 through secret ballot.

Guatemalan law does not permit electricity generators to sell electric energy directly to consumers, but it does designate a classification of "self-producers", making it necessary to build consensus to establish a new organisation made up of members of the three communities as potential users of the electricity services.

For this reason, on March 2, 2009, the Hydroelectric Association for the Integral Development of Northern Quiché (ASHDINQUI) was founded by men and women from the three communities, working together to meet their needs for electricity, education,

healthcare, infrastructure, and environmental mitigation. Since then, the Batzchocolá MHP has been implemented by ASHDINQUI with support from the Rijatz'ul Q'ij Development Association (Semilla de Sol). Both groups have worked together in the project management and implementation process.

## Projects or experiences prior to the project:

This project was preceded by the experience of an MHP managed by the Chelense Hydroelectric Association (ASOCHEL), made up initially of three communities with accompaniment first from Fundación Solar, and later from Semilla de Sol. This project located in the community of Chel, Chajul, Department of Quiché, was launched in 2007. Eleven communities from the area currently are members of ASOCHEL. These 11 communities represent 1,600 families that use the services.

A long process of consultation, planning, experience exchange, training, negotiation, dialogue, and decision-making by the men and women of these communities contributed to the eventual success of the Batzchocolá project.

In particular, the experience of creating the Women's Unit in ASHDINQUI has helped to position women as the key users and beneficiaries for electric energy, promoting their participation in community projects and equality between men and women in the benefits generated.

## 3. Project Description

Interest in the implementation of the Micro Hydroelectric Plant began in 2006; construction finally began in 2009. On July 17, 2014, the plant was inaugurated and began operations. The results thus far include:

- 90 kW of electric potential installed, and 183.6 mWh of energy per year available, as well as 6,693 tCO<sup>2</sup> avoided over 25 years.
- 140 homes with electric connections, 141 families improving their income and living conditions thanks to improved access to services. 127 female members and 127 male members participating actively in the costs and benefits of the project implementation process.
- 251,324 hectares of land have an integrated management plan for the natural resources of the watershed, which will stimulate active, effective, and responsible citizen action.

**The overall objective of the project** is to provide electric energy service to the population in the villages of: Batzchocolá and Laguna Batzchocolá in the Municipality of Santa María Nebaj, and Visiquichum, in the Municipality of San Gaspar Chajul, Department of Quiché, taking advantage of the local availability and potential of the water resources in the region to help improve living conditions, create job opportunities, and increase household income.

The **specific objectives** include:

- a) Provide electric energy to 141 families in the three communities
- b) Contribute to reducing CO<sup>2</sup> emissions
- c) Implement and fortify an appropriate micro-enterprise organisational model for project administration and promoting productive uses of electricity
- d) Diversify job opportunities to provide greater income for the population, intensifying and/or incorporating the production of goods and services from secondary and tertiary services to reduce the primary load of the existing agrarian model.
- e) Build community organising capacity for governance and management of the natural resources of the Viamacvitz river watershed.

The **gender objective** is to build the organising, technical, and administrative capacities of women to promote their social and business development. The project seeks to contribute to the empowerment, leadership, and advocacy of rural women in sustainable management of the territory along the Northern vertex of the Ixil region, enhancing their effective participation in decision-making spaces

and creating the conditions for joint and equitable participation in the different areas of community development.

**The type of project** is a community hydroelectric plant, implemented by a grassroots community organisation (ASHDINQUI), advised by an organisation with an integral social development approach (Semilla de Sol) that has public and private funding.

The project is technically considered a micro hydroelectric plant, as it does not exceed 5 MW and it operates with water current.

Table 1: Source and Financing Use

PHASE	CONCEPT	FINANCING
GENERATION	Civil works and hydraulics	HIVOS
	Machine room and electro-mechanical equipment	HIVOS
	Electric substation	HIVOS
	Enabling and protection for the hydraulic circuit	CLEAN ENERGY
	Pipe protection	CLEAN ENERGY
	Improved security and protection for the machine room	CLEAN ENERGY
DISTRIBUTION	Design, construction, and supply to distribution networks in the communities of Batzchocolá and Laguna de Batzchocolá in Nebaj, and Visiquichum, in Chajul	INDE
TESTING AND COMMISSIONING	Construction of three transversal drains on the access road	CLEAN ENERGY
	Protection of the access road with gabions	CLEAN ENERGY
	Commissioning testing for the micro plant	CLEAN ENERGY
	Equipment for line workers	CLEAN ENERGY
	Technical assistance for administrative commissioning	MEM/OLADE
POST-INVESTMENT	Protection works (rebuilding the hillside in the intake pipe area, reforestation with native plants, and construction of the path and natural orchid site)	ASHDINQUI
	Installation of Bilingual and Intercultural Education Technology Centre IXOJ CETEBI, as part of energy use	TELUS
	Expansion and improvement of the access road to the community	MUNI NEBAJ
	Revolving fund for productive uses, managed by women	MEM/OLADE

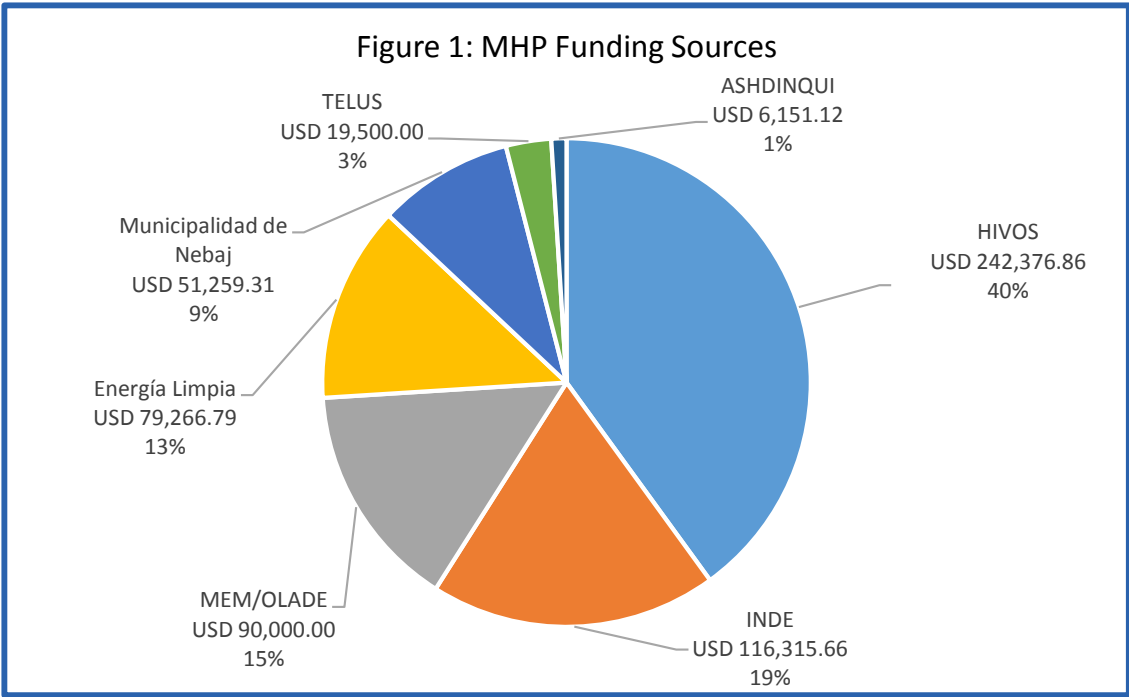
The sustainability of the Batzchocolá MHP is based on the establishment of a community energy company that operates initially as an isolated site according to the specific framework of the General Electricity Law. This plant begins as a self-producer, but as the interconnection grid grows it may become a Renewable Energy Distributor (RGD) operator, or a self-producer with a surplus.

**Financing type or investment source:**

The total investment reaches USD 604,869.74. By order of importance, this financing came from: HIVOS, National Electrification Institute (INDE), the Ministry of Energy and Mines (MEM)/OLADE, Clean Energy Guatemala (ELGUA), the Municipal Government of Nebaj, TELUS INTERNATIONAL, RED-DES, and ASHDINQUI.

The graph does not include the contributions of unskilled labour made by all of the members, as these contributions are in the final stage of accounting. Women's contributions over the course of the project have been particularly relevant; many widows or single mothers complied with the same beneficiary requirements as everyone else, directly contributing their labour to collect stones and sand, while others hired helpers to contribute the required work days. The great majority of women also supported their husbands' contributions by providing food. Women also recognised their own contributions, indicating that to allow the men to dedicate time to the project, the women took on agricultural production tasks.

The implementation of a multi-stakeholder model was key in gaining the needed financing. These stakeholders included INDE, ELGUA, MEM/OLADE, HIVOS, the Municipal Government of Nebaj, and ASHDINQUI, who signed an agreement distributing the activities and financing in order to fulfil all of the necessary commitments. This model incorporated contributions from the government, international cooperation, private initiatives, NGOs, and organised communities, making technical and financial management possible for the development of the Batzchocolá MHP project to provide energy to these communities. TELUS INTERNATIONAL, the RED-DES Program, and the FOCAE/BUN-CA Energy and Poverty Program then joined this alliance.



## 4. Project Implementation

The members of the community organisation played an important role in this phase of project development. In 2010, ASHDINQUI took control of the project leadership and resources; Rijatz'ul Q'ij (Semilla de Sol) was hired by ASHDINQUI to provide accompaniment and technical assistance in the construction process of the Batzchocolá MHP. With a specific calendar in mind, the main stages, components, and actions implemented in the project were implemented, as described below.

Project development was divided into three stages: **Pre-investment, Investment, and Post-investment**. Each stage was conducted with a holistic approach for four components: social (organising-administrative), economic (production-finance), technology (construction and equipment), and environment (impact assessment and mitigation).

### First stage: Pre-investment

In general terms, this stage included feasibility studies and profiles for the final design. The activities by component in this stage include:

As part of the **social component**, actions for social research were conducted to identify the needs and options in the communities. The activities included:

- A community exchange visit to see the experiences at the community hydroelectric plant located in the community of Chel, Chajul, Quiché
- A community power and energy demand study
- Organisational arrangements, including the establishment of ASHDINQUI
- A baseline study with data disaggregated by sex

In the **economic and financial component**, initial funding was obtained and negotiations began to legalise rights of way.

The **technology component** included technical prospecting, identifying water resources and flow measurements, preliminary estimates of generation capacity, designing the proposal with an initial estimated power of 30 Kw and a final proposal of 90 Kw, and building blueprints and a first business plan. An exchange course between Practical Action in Peru and three organisations in Central America was useful to improve the design and construction of the MHP.

As part of the **environment component**, the watershed was studied and mapped, and an operations plan was developed for comprehensive watershed management, to be implemented by the watershed committee. A study was performed on the potential displacement of CO<sup>2</sup> emissions from the use of renewable energy generated by an MHP at the Viamacvitz River.

### Second stage: Investment

This stage refers particularly to the construction of civil, electromechanical, and electrical works, including testing and construction to improve operations at the facilities prior to final commissioning.

In the **social component (organising and administration)**, Semilla de Sol was hired to provide technical and social advice and accompaniment for project implementation. Equipment was inventoried and transferred, staff was hired, and a control system was developed to track contributions of unskilled labour, materials, and equipment. Members were organised by residential sector, to balance the efforts of all of the participants.



Administrative procedures were conducted for **testing** and commissioning, and ASHDINQUI hired professional and technical staff for these tasks.

In the **economic and financial component**, ASHDINQUI and Semilla de Sol renegotiated funding with HIVOS and established a multi-stakeholder agreement to access funds to finish the implementation of the MHP.

The **technology component** included design and manufacturing of the Pelton 90 Kw turbine; the final plans were designed and redesigned, along with the civil works: intake pipe, load chamber and conveyance and pressure pipe, installation of coanda screens as a sand trap, machine room and electric substation, substation equipment and electric controls, protection of the hydraulic circuit, pipe protectors, security and protection improvements for the machine room, construction of distribution networks in the three communities, implementation of residential and household connections, building the roadway to the machine room, and improving the access road to the community. During the project, an exchange tour was conducted with the Chel micro hydroelectric plant in Chajul, Quiché, to learn about its operations.

In technical terms, **testing** included technical administration investments such as: construction of three transversal drains at the access point, protection of gabions at the access point, creation of an operations and maintenance manual and hiring technical staff, supervision and monitoring of system operation, creation of a protocol for review and start-up, training in service, mechanics, and basic electricity to candidates for technical operator positions, and testing for commissioning of the MHP. This stage lasted nearly five years, beginning in February, 2009. Delays of nearly 50% persisted over the course of that period for reasons outside the scope of the organisation of the process. Lastly, to the joy and satisfaction of the men and women members of the organisation, the Batzchocolá Micro Hydroelectric Plant was opened on July 14, 2014.



### Third Stage: Post-Investment

This stage mainly includes the operation and maintenance of the MHP, and implementation of projects with productive uses of the energy.

The **social and administrative** component included the following actions:

- Training for and reorganisation of MHP business management
- Implementation of the administration, collections, and electric services
- Building the technical, administrative, and organising capacity of members to produce and approve regulations for the electric energy services provided by ASHDINQUI

In this stage, the project sought to reposition women by involving them directly in decision-making bodies and different working commissions to oversee the ASHDINQUI programs.

In **economic or financial** terms, trainings and consultations were conducted to draft the regulations for the micro-credit fund administered jointly by men and women, to serve as an affirmative action to promote gender equity, with an emphasis on capacity-building for women. With participation from local teams and ASHDINQUI members, production investments are currently being selected and prioritised, including:

- Implementation of an Intercultural Technology Centre in the three project communities, with use of Information and Communications Technologies (ICTs) as part of the productive uses of energy
- Design and installation of a timber transformation centre
- Design and installation of a cardamom dryer with engine and heating powered by electricity
- Building the technical, administrative, and organising capacity of members to produce and approve the regulations and manual to manage the micro-credit fund for production activities, jointly administered and managed by women ASHDINQUI members

Under the **technological component**, an electricity grid quality assessment was performed, and an addenda was created to the operations and maintenance manual for the micro hydroelectric plant.

- Participatory drafting of technical and administrative manuals for project operations.

In the **environmental component**, a plan for environmental mitigation and monitoring for the MHP is currently underway, along with training and adoption of mechanisms for environmental monitoring for the project, with participation from men and women.

- A forest management plan and accompanying documentation is being prepared to obtain forest inventory.
- The environmental impact assessment has been performed for the generation and production projects implemented and planned.

### Methodologies and tools used to address gender issues in the project:

Semilla de Sol has designed a strategy for women's economic empowerment through productive use of renewable energy in the Ixil and Zona Reina regions of the Department of Quiché. The objective of the strategy is to allow women to emerge as leaders and key stakeholders in promoting sustainable development in these regions, promoting a democratic and participatory society in which women play a leadership role by building their technical, economic/productive, and organising and leadership capacities. To gain free, prior, and informed consent from both men and women, consultations were held at several times over the course of the project, in accordance with ILO Convention 169 and common ancestral practice in these communities. In keeping with this practice, all of the community projects are consulted and approved according to community needs, respecting community



authorities and considering community values and world view, including the sustainability of natural resources. This practice has helped to promote women's participation and advocacy in project actions.

The consultation process has required tools and methodologies for working with women involved in the project and raising awareness in the three communities on gender issues. As a starting point, in this case, a diagnostic study in 2008 produced data disaggregated by sex to establish a baseline for the three communities.



Women and men in the community exercising their right to free, prior, and informed consent.

Elements from popular education methodology have been used in training workshops, administrative meetings, assemblies, and other activities. Trainings have also been conducted for women on topics of gender, organising, planning, management and administration. Adult education mediation linked these trainings to an analogy of daily community practices to discuss categories and concepts that can be used as tools to administer and operate the programs and projects currently underway.

The leader in charge of this component is a woman from the local area and an Ixil Maya speaker, who is culturally knowledgeable and possesses training and skills on energy issues. Her leadership helps to improve participation and communication among women and foster greater ownership of the actions implemented by Semilla de Sol with the communities, and with women in particular.

**Participants and members representation:**

Men and women participate and are represented in equal proportions in the establishment of the Hydroelectric Association for the Integral Development of Northern Quiche (ASHDINQUI). Planning was conducted by consensus among community leaders, with the objective of ensuring equal opportunity and say in decision-making on the course of the project, so that both receive equal

benefits. Several women members are married to male members, but other women members are single mothers or widows.

ASHDINQUI is currently made up of members along the following breakdown:

Number	COMMUNITIES	MEN	WOMEN	TOTAL
1	Laguna Batzchocolá	20	19	39
2	Visiquichum	41	41	82
3	Batzchocolá	66	67	133
<b>SUBTOTAL</b>		<b>127</b>	<b>127</b>	<b>254</b>
<b>DISTRIBUTION BY PERCENTAGE</b>		<b>50%</b>	<b>50%</b>	<b>100%</b>

Each of the members has equal rights to vote in decisions assigned to be made by the general assembly. The total population covered by the project is 804 people in 141 families, distributed as follows:

Community	Number of families	Total	Men	Women
Batzchocolá	65	364	189	175
Laguna Batzchocolá	38	201	111	90
Visiquichum	38	239	119	120
<b>Total</b>	<b>141</b>	<b>804</b>	<b>419</b>	<b>385</b>
<b>POPULATION DISTRIBUTION BY PERCENTAGE</b>		<b>100,00%</b>	<b>52,11%</b>	<b>47,89%</b>

Electricity is also supplied for some small businesses, services, churches, schools, meeting centres, computer centres, and others. In all, there are over 170 connections to the electricity service.

Nonetheless, due to the cultural prevalence of the social role of men as heads of the household, most of the energy service contracts are registered in men's names. Some single mothers or widows who serve as heads of households have the service contracts registered in their own names.

### Participation of women and/or marginalised groups:

To promote women's participation in general terms, the following actions were implemented:

- Organisation and legalization of women's committees
- Organisational trainings for men and women to participate on boards of directors or specific working commissions, and for women to serve on the Women's Unit
- Trainings in entrepreneurship for all interested women members
- Implementation of community banks
- Managing financing for community banks
- Organising workshops on gender and diversity with participants of both sexes, but in separate events to ensure their involvement
- Providing incentives for women's participation as members in the project management and administration body
- Stimulating women's participation within boards of directors for decision-making

Women have participated since the start of the process. They did so in community assemblies, speaking out on the need for energy management. Later, women participated in fundraising and finding resources for the project, attending meetings with donors and cooperation agencies. Women participated in several ways in construction works, as well, working directly in digging trenches for the intake pipe and machine room, carrying gravel and sand, or paying for day labour.

It is important to note that women have taken ownership of the value of their participation in project construction. To allow men to perform some of the required tasks in MHP construction, many women undertook work that had been the responsibility of the men, such as planting and harvesting crops. They say "we made an effort, too". There is an awareness and recognition for this work among the women and many of the men.



Gender and leadership workshop given by OLADE and the MEM Gender Unit of the Government of Guatemala.

At the same time, both men and women identify women's traditional roles as important forms of participation as well, including taking lunch to their husbands working at the hydroelectric plant construction site, or making food for ASHDINQUI Board of Directors meetings or assemblies. In their words:

*"If the husband is participating in the electricity work, they participate by bringing lunch."*

*"When there is a men's activity, the women make the food for them."*

While men may collaborate by providing firewood or lifting heavy pots, this role has predominantly fallen upon women. Although the traditional role is maintained, women are recognised socially for their efforts in the project.

To promote and enhance women's political involvement and decision-making in community organisations, as well as to generate spaces for women's participation in community organising and businesses, the Women's Unit was established two years ago. The seven women who make up the unit were elected in a general assembly in which men and women from the three communities participated. This unit is part of the ASHDINQUI organisational structure.

As an affirmative action to promote gender equity, the functional organisational structure of ASHDINQUI was reformed in 2015 to mainstream women's participation through representatives in all of the commissions and programs created.

In these spaces, women have participated in community consultation, electing representatives, and in creating, sharing, and approving the associations' strategic plans.

For women's empowerment and capacity-building for administration, operation, and maintenance of new ventures for goods and services (intensification and/or introduction of secondary and tertiary activities), a process began to prioritise and draft proposals from women. Some women participated in fundraising and initial training, while others were organised and positioned as eventual beneficiaries from the productive goods and services mentioned.

In the context of the project, two equal teams of men and women were created to oversee topics of social communications and computers. This action helps to capitalise upon existing knowledge and energy, as well as build new technical capacities to support new local leaders.

## In terms of training:

Trainings have been provided to build organising, administrative, and technical capacities for men and women. Men and women representatives from ASHDINQUI also participated in workshops held on a country level on topics of energy and gender. Recently, young community reporters also received training on these topics. Nonetheless, trainings have not been constant, and since fewer women participate on the commissions, fewer women end up receiving training. Some of the concrete activities include: a) creation of a training and technical, administrative, and organisational capacity-building plan for women members of ASHDINQUI, covering topics of leadership, participation, and gender awareness; b) training youth community reporters (young men and women) with the objective of generating news pieces on the Batzchocolá micro hydroelectric plant<sup>1</sup>; c) workshops with women through the Ministry of Energy and Mines Project on Gender Equity, implemented by the Latin American Energy Organisation (OLADE), with the objective of using energy produced in the communities to develop productive projects for community benefits; d) exchange of experiences among women from five local organisations working on community projects, with support from the Gender and Energy Network in Guatemala, IUCN/HIVOS, and OLADE, and; e) design of a training plan and establishing a revolving fund for productive energy uses that will be administered by the ASHDINQUI Women's Unit, in process of implementation.



Men and women trained for management and administration of the micro-credit fund.



Participation by the leader from Batzchocolá, Catarina Sánchez, celebrating Women's Day 2015 in the municipal centre, Nebaj Quiché.

## With respect to data collection:

During project implementation, a monitoring system was used to record evidence on the different processes for later use.

Some efforts have been made for collection of relevant data during the project, such as the baseline study with data disaggregated by sex. The information disaggregated by sex includes data on the beneficiaries and members (see page 11), and women and men running individual or collective businesses.

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<sup>1</sup> One of the outputs generated is the video entitled: "BATZCHOCOLA TESTIMONIO ENERGIA Y GENERO CATARINA CHAVEZ", available at: <https://www.youtube.com/watch?v=U1GgHWq8KPc>.



In all of the project activities, an attempt was made to gather participants' lists disaggregated by sex in order to see the number of men and women participating in each of the events. For this study, the only lists available were event participant lists, the ASHDINQUI member record, and reports of election of the boards of directors and Women's Unit.

Among the improvements for collecting data disaggregated by sex, the project recognised in its design phase that gender inclusion is an important pillar for project sustainability, and that indicators must be developed and implemented to measure this work and collect all of the information necessary to verify timely compliance with this goal.



## 5. Main Challenges Encountered

- Due to the low flow rate in the dry season, service deficiencies appeared and affected women. It is important to integrate women into the sustainable watershed management commission, so that this group can hear and respond to women's demands through watershed management plans to protect the water resources that power the hydroelectric plant. The Board of Directors of ASHDINQUI has begun to take technical and forest management steps to overcome this problem in the next period.
- The energy project opens a window of opportunities, but the economic limitation for the population whose traditional income sources are affected by climate change is a barrier to take advantage of these opportunities, making it difficult to acquire new appliances or start new production projects. Widowed women face the greatest difficulties. They have trouble gathering enough money to cover the cost of their residential electric service. Nonetheless, this situation may be remedied by the availability of the micro-credit fund.
- In the three communities there is a high number of men and women who cannot read or write, and who only speak their native language; the majority of these individuals are women. In seeking to avoid marginalisation or exclusion in consultations, it is a challenge to ensure sensitivity for and understanding of the cultural context to conduct processes with sociocultural relevance. For

example, since local staff and professionals are not always Ixil Maya speakers, restricting communication to a language that people do not understand or speak fluently can limit their full and effective participation. This is especially true for, but not limited to, women. In part, these limitations in interventions can be resolved with local staff, but there is a risk of losing wisdom and proposals in either solution.

- Despite the advances in women's participation, there are several objective and subjective conditions that limit many women from daring and being able to participate. These limitations include the percentage of illiteracy among the female population, the lack of technical skills, lack of engagement in their mother tongue in externally-facilitated activities, the economic situation, long and night-time hours, and the long distances to travel to participate in certain activities.
- Limitations for women include insecurity, fear, underestimating their own knowledge and potential (internalised in women or expressed by certain men), and lack of time as women are left with traditional roles such as caring for children and the house. As a result of the control that many husbands exercise over their wives, women do not participate as they have not been given permission to attend meetings or gatherings. In other cases the husbands do not accept women going on their own; there is also nobody willing to take up the slack in women's habitual activities.

*"We are always going to miss some meetings, because who will take care of our husbands?"*

*"It is not a rejection, it's just that this position is hard, and we have to come when they call. They (women) feel limited by work at home. In the Women's Unit where some women participate, the responsibilities do not have the same time demands, and meetings or travel are not as frequent as with the Board of Directors. Sometimes we have to go into the capital city."*



Use of blenders for rapid and hygienic food preparation, and production of local fruit juices.

- Situations such as the ones expressed above explain why women thus far have not participated in the ASHDINQUI Board of Directors. Modifying mentalities and practices is a fundamental step to breaking down these barriers.

- It is a challenge to build capacity and mainstream advocacy not only on social and organising components, but on technical, economic, and environmental issues in the project as well. The challenge is to set the project apart from other spaces in which training is provided only to facilitate or comply with traditional roles such as caring for children, diversifying the family diet, or improving hygiene at home.

- As was mentioned before, work has been done to implement gender-sensitive and long-term activities; nonetheless support has not been available for these activities thus far. There is a willingness and interest to further the process, but concrete support has been limited to simply holding some workshops in the community.

## 6. Impacts and Outcomes

### 6.1. Energy services and quality of life benefits

#### In economic terms:

Prior to the project, the participating communities used candles, *ocote* pitch pine, and makeshift kerosene gas lamps. With the hydroelectric plant on line, use of these devices was greatly reduced or eliminated, producing economic and time savings for the population. Some women said that they used approximately five quetzales per night in candles and *ocote* wood, money that was often difficult to obtain. The current base rates for electricity service are 40 quetzales, and 1.25 quetzales per kWh in family consumption. Users say that they prefer a single payment method, or at least they are able to manage this monthly expense, although it continues to be an important load on the household budget.

Part of the time and resources saved are now used to make textiles or perform personal tasks. Additionally, if weavers decide to work at night to make more money, electricity has given them improved availability and quality of illumination.

Some families now have blenders that help women prepare food more quickly and cleanly, and diversify their diet. There are three nixtamal (processed maize) grinders that now run on electricity and are administered by the women's committee. These grinders have provided substantial savings by substituting the fossil fuels needed for their operation.

In the three communities, 19 stores use electricity, and six of them have refrigerators or freezers. Some stores with freezers or refrigerators provide other products that are then frozen and sold, and one of the stores sells meat products. Only one of the stores is collectively-owned, while the rest are individual property.

It is worth noting that given the economic crisis and the relatively short span of the project, few families have purchased electric appliances, and few stores have refrigerators or freezers.



A convenience store run by an ASHDINQUI member.



Electricity has also benefited a hairdresser, a tyre repair and car parts shop, an electric grinder, and six manual corn grinders that use electricity to light their locations. Some of these businesses also operate at night.

There are some individual projects that make use of electric energy such as a business to hatch, raise, and sell chickens.

Families that have created or improved their small businesses using electricity have been able to improve their income. While the administrators of these businesses are not exclusively women, the businesses help to improve the subsistence of the entire family.

The technical operation of the project, and other initiatives such as the corn grinders and the intercultural technology centre, have generated job opportunities for the community. Most of the employees are men, although women are receiving training to be able to hold these positions as well.

### Healthcare:

With the use of corn grinders, women who before had to get up very early to grind the corn are now able to sleep for more hours and exert less physical effort.

With the change from candles, firewood, and ocote pitch pine to electricity for lighting, users inhale less smoke; this contributes to the health of individuals and the environment and reduces the risk of fire.

There is more and better visibility, especially for women who work at home from early morning until night as weavers. The light from a 20 watt fluorescent lamp has greater luminous efficacy (1,030 lumens) than several candles (10 lumens) or lit pitch pine sticks, which helps people to conserve their eyesight.

The electric light now available in the communities has also helped to illuminate the health clinic to be able to serve patients at any time, chill vaccines that need refrigeration, and preserve food.

### Education:

The majority of children attend primary school. With electricity, children have more opportunities to do their schoolwork in the evenings.

The Technological Intercultural Centre for the communities of Batzchocolá, Laguna Batzchocolá, and Visiquichum includes the installation of 10 computers with an internet connection. This resource bears social, educational, and communications importance and opens new learning opportunities for children as well as for women. The facilitators at the centre, one man and one woman who have had more access to education, are being trained to use the centre's equipment.

The computer centre and access to the internet has opened the opportunity to use these resources for students to do homework and school research. The teachers from the primary schools will also be benefited by having this educational resource available to communicate, research, and inform, among other uses. Some of the teachers have expressed their willingness to collaborate with the community Board of Directors so that this computer centre can continue to train young men and women that were not able to attend secondary school outside the community.

The community plans to propose the construction of a basic secondary school. The arrival of energy, computers, and internet also presents an opportunity to reduce illiteracy through tele-secondary education programs or through the Guatemalan Institute for Radio Education, with broad experience in the country. There is even a possibility to propose a distance learning secondary school centre, which could even provide better educational quality than the other secondary schools in other rural communities. A proposal such as this type would reduce the costs associated with families sending

their children to school in the municipal centres in Nebaj or Chajul. The idea is for children to have access to education recognised by the academic authorities.

The training methods for leaders and members have also improved with the use of electric energy. For example, trainings can now use projectors, recorders, computers, and video cameras to help improve understanding of the topics with more dynamic and interactive audio-visual aids.

#### Social and cultural life:

Residential and public energy allows men, women, and children to participate in evening and daytime activities such as assemblies, meetings, civic activities, religious gatherings, and educational or recreational activities that were limited prior to the arrival of this service. One benefit of this type of action has been public lighting and the use of sound systems.

Nocturnal lighting has provided greater security for girls and women.

*“ Before we couldn't go out because we were afraid of what we would find along the way. Now with the lights, we can go out without much concern. ”*



Public lighting in the project communities.

The opportunity to have mobile phone chargers, computers, and televisions in some homes facilitates communication and information. The internet has begun to facilitate communication between the Board of Directors and other institutions; as more men and women are trained in using this technology, these benefits will increase.

With the availability of photocopy services, some procedures have been streamlined. For example, to be a beneficiary of the Bolsa Segura government program (food aid), women must present a photocopy of their ID cards. Before, women had to travel 40 kilometres to obtain a copy, or they would not be able to receive the aid.

### 6.2. Economic empowerment and non-traditional roles

*“It is our own electricity, light for the community, not for big business.”*



Women participate in the MHP inauguration.

ASHDINQUI is legally registered as a community micro-enterprise to operate the electricity supply for the communities participating in the project. This represents a level of economic empowerment for men and women who are members of the association, and in general for the beneficiary households and communities.

Business has not been a traditional field for poor, indigenous, and rural men and women. The fact that women are now participating in boards of directors, rather than as users only, is a modification of the traditional roles in this field.

Women's economic empowerment through the productive use of renewable energy is one of the project objectives. Nonetheless, advances in this field have been sparse. The main reason is that the

hydroelectric plant began one year ago, leaving a relatively short period to see the results of the work undertaken in this field. Moreover, for larger scale uses it is necessary to guarantee the current generation capacity of the plant; the last dry season greatly affected flow levels, and work must be done to ensure that this fluctuation does not impact the project capacity.

Among the early outcomes, three grinders (including one electric grinder) were obtained and are administered by a women's committee that has a Board of Directors made up of five women. Operating costs were reduced by using electricity, and the income for this committee has improved, giving it leeway to increase its assets and equity. For example, thanks to the success of the manual grinders, the group decided to acquire an electric model. Women lead the project, although in the initial period two men were hired as grinder operators, and once per month they require support from a man to balance the income and expenditure accounting. Given this situation, it is necessary to build the technical-administrative and leadership capacity of women so that they can do these activities themselves. The evident changes are that women now feel that they have capacity to start to generate their own income, and they are interested in participating and getting training to do so.

Women feel that they have a vision and are thinking and planning for the future, prioritizing their needs. In this sense, steps have been made in organisation, administration, and training to manage a credit for business ventures in coffee, cardamom, and other secondary and tertiary sector activities with women from the three communities. To the extent that technical capacities are built in these aspects, women may develop economic activities and modify their roles, as well as diversify their income sources.

It is important to highlight that ASHDINQUI holds significant organisational legitimacy, which gives it functional strength as well as the recognition to work as an intermediary for the needs of the population, with the capacity to have a positive impact in the government of the micro-region where it works.

### 6.3. Women's empowerment and participation in decision-making

This project is conducted in communities with a long organising tradition, ranging from ancestral forms of organisation to grassroots work done to defend the lives of men and women during the armed conflict that raged in the country until 1996. These communities have continued to organise in peacetime. In this fertile ground, ASHDINQUI and the Women's Unit, established as a product of the hydroelectric project, are mechanisms for women's participation in decision-making.

The project also promotes other forms of organising, both mixed gender as well as women-only groups such as a grinder committee, a store committee, the team responsible for the computer centre, a credit management committee, and others.

Enabling spaces have helped communication and reflection among women to lead to advocacy in mixed spaces. All of the spaces have helped to interact with more groups of women and men, and they have enabled women to exercise their right to represent themselves, to speak up and express in the first person their own needs, demands, and proposals.

To improve this participation, one of the main demands of the women themselves is to have more training in diverse fields, to have more knowledge and tools that can provide them the confidence and capacity to participate and advocate for better conditions. As well, introducing gender issues into community organising has helped build recognition that both men and women have the same right to participate and benefit, and that priority should be given to generating opportunities for women. In the community and in many households, men expressly support and encourage women to attend meetings and trainings, and to take on new roles.

Strategies and concrete actions have been prioritised for the empowerment of women and youth through their organising efforts, capacity-building, and productive and social uses of energy.

#### 6.4. Institutional ownership of gender methodology

In the Semilla de Sol Association, one of the pillars of sustainability for renewable energy projects is the gender pillar, although it is still not fully developed. To achieve full implementation of this gender approach, the association proposes to draft and implement the institutional gender policy.

Currently, development indicators in projects have considered gender, and gender issues are implicit in planning operations. Nonetheless, these are topics that must be addressed in more careful discussion. Support has been requested for capacity-building, and some tools have been developed through trainings and exchanges. OLADE has provided minimal support to promote work on certain issues with women. Participating in the Gender and Energy network with support from IUCN/HIVOS has contributed tools to build the inter-institutional policy for gender equity.

This policy seeks to overcome the deeply-rooted view that implementing a gender approach requires only integrating women in the organisation and its work. Women's participation is just one step toward overcoming the situation of subordination, discrimination, and mistreatment of women, and gaining co-participation among men and women under conditions of equity and equality in decisions, actions, and benefits of projects in different scopes: personal, family, community, municipal, regional, and national.

#### 6.5. Institutional efforts in support of men and women

The structural differences in the context of these communities make it unreasonable to expect that a single project can make significant advancement toward meeting the Sustainable Development Objectives. Nonetheless, the results of the project in terms of organising, equitable participation of men and women, cultural relevance, and already visible benefits in healthcare, education, and environmental sustainability all converge in the terms outlined in the project goals, and make up a good foundation to guide these ongoing processes.

The environmental benefit that the micro hydroelectric plant can report is that its generation of energy from a renewable source will contribute to the reduction of approximately 6,693 tCO<sup>2</sup> over 25 years. The project is also generating awareness among members of the value of their natural resources, and the need to protect and conserve the Viamacvitz river watershed.

The perceptible changes in terms of the social situation for women in the project communities have been mentioned here before. Based on these changes, some resources are being generated for women to begin or improve their production efforts, to have a more comfortable life in the future.

These include:

The Batzchocolá MHP is covering three communities and 804 users that did not have access to electric energy before, enabling access to other kinds of services and production infrastructure.

Among the efforts to include the topic of productive use of energy, steps have been taken for training on entrepreneurship directly, technical capacity-building to generate new economic activities, and support to finance these economic activities.

Participatory workshops have been held with men and women, with a methodology to prioritise these projects. The projects emerge directly from the ideas, experience, and potential of the participants

themselves. Another criteria for prioritising is for the projects to involve and benefit a greater swath of the population, particularly women and youth.

At this time there is substantial timber extraction from the area, sold illegally and with no value added. One option is to purchase timber in compliance with legal and environmental standards, and link these purchases to forest management, carpentry, and marketing in order to generate employment and income for men and women. The scope of production options includes drying cardamom with a power sources and electrical heating.

Another project underway is the micro-credit fund that will be administered by women, oriented directly for small productive activities, especially for women. Women have received some training on managing micro-credits, and they have established groups to benefit from these loans.

Some changes have been mentioned in the level of women's participation in community decision-making. Nonetheless, these changes do not always go hand in hand with the level of participation and decision-making at home.

Improvements in education and healthcare for girls, boys, women, and men, have not been extended to cover older adults.

## 7. Relevance of the Experience and Lessons Learned

### 7.1. Project relevance

The Batzchocolá MHP is a project that emerged from an explicit demand from the participating communities. It is a community-managed micro-enterprise that uses its own renewable resources. This constitutes social, political, and economic empowerment for the entire community.

The infrastructure and residential public energy service has allowed for greater training, capacity-building, religious, and political activities. Changes have been promoted in social, cultural, environmental, health, and education spheres for the inhabitants of the three project communities.

Access to electricity is important, but above all energy access opens the potential to develop productive and social projects in function of rural development with community empowerment.

The community enterprise does not generate the social conflict that energy developers trigger with large scale "mega-projects" that exploit community resources for their own gain, leaving behind the social, environmental, and political costs of the programs but not their direct benefits and potential for development.

Horizontal alliances have been established and led by the communities, along with several technical and financial cooperation groups to channel support without paternalism or a charity-based model.

This project helps to sync modern technologies with the particular values and cultural practices of the communities, using the social and natural resources that they possess, congruent with the world vision of the communities that understands that humans belong to nature, not that nature belongs to humanity.



## 7.2. Lessons learned

Energy opens possibilities and opportunities in the fields of health, education, and production projects. Resources are needed, but given the early stage of the process, these resources cannot be generated only internally at this time. For better use of energy, it is necessary to leverage resources for the communities, which can be done to the extent that the micro-credit fund mechanism is established and consolidated.

Making equal teams of men and women, for example in the case of communications and computer skills, can break down some of the deeply held gender stereotypes that are transmitted publicly between adult men and women.

Women's participation has helped to channel certain gender-related demands and needs, as well as increase understanding and acceptance of the different capacities that men and women have.

### Identification and importance of best practices in gender for an energy project

The relevance of the strategy for engagement and organisation with the population implemented from the start in order to undertake a project of this magnitude was a true exercise in free, prior, and informed consent. This exercise generated approval and support from the population in general, and women in particular.

Establishing a horizontal partnership between Semilla de Sol and ASHDINQUI helped to promote different relations of accompaniment, co-management, and mutual capacity-building. This partnership has enabled the project to promote on-the-job training under a "learning by doing" method, breaking out of the traditional formats of paternalism and authoritarianism that are often reproduced in community development processes.

One of the best practices has been the creation of the Women's Unit to promote equality and participation by men and women in enjoying the benefits of energy in the community. This space to talk among women can help to achieve better advocacy and engagement in mixed-gender spaces.



Visit from HIVOS to the project and the community

The members of the Board of Directors of ASHDINQUI have built an understanding that gender equity implies changing situations not only in the community, but at home as well, and that these two spheres impact one another. Precisely for that reason, as an affirmative action, women were included in each of the commissions. To break through barriers and achieve effective participation, it is important to build the capacity of women, and in part this is achieved through a "learning by doing" method.



Generating economic independence through economic empowerment, women can overcome the limitations that have been imposed upon them.

Reflection on the ways in which activities can be improved to pay greater attention to the different roles, needs, and socioeconomic situations for men and women

Participatory formulation of a gender equity policy to fortify ASHDINQUI's strategic plan, built together with the members and leadership.

With the exacerbation of the economic crisis due to pests and diseases in coffee and cardamom crops, the great challenge is to find ways to use energy for productive purposes in addition to residential uses; for families and women, paying for this service is already a burden on their budgets.

It is important to overcome the plant's generation capacity limitations in the dry season for the project to be able to ensure satisfactory services and sufficient income to improve administrative management and support community development. The Batzchocolá MHP does not need to be a lucrative community enterprise, rather one that generates development and is self-sustainable.

One of women's most frequent demands is to have training and capacity-building (for example, in designing and writing projects, computer skills, managing loans, watershed conservation, and other topics). In relation to this demand, it is important to provide more and better guidance for training youth and adults in different fields. This, together with promoting productive uses of energy and the use of improved stove and electric appliances and tools, will facilitate reproductive and productive activities as it increases quality of life and reduces the time spent on these tasks. These advances should also allow women to take on non-traditional roles.

It is necessary to continue to raise awareness among men and women, separately and together, about the mentalities and practices that limit women's participation in the home and the community, as well as to establish concrete actions to begin to modify them.

More and better women's participation is needed in meetings, commissions, committees, and work tours and exchanges. In the community, it is important to conduct activities (particularly consultations) in places and at times that allow for a greater presence of women, without putting these activities at odds with other important life tasks.

It is necessary to inform and design gender and energy indicators on a community and institutional level.

Lastly, but no less important, it is necessary to continually improve communications and interaction with the local population using socially and culturally relevant methods. In work with poor, rural, and indigenous men and women, it is important to use language and examples that are appropriate for their academic level and mother tongue, so that both men and women, and especially the latter, feel confident and can fully develop their ideas and capacities within their communities.

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## 9. Interviews Conducted

Number Interview	Name	Position	Academic level	Community
1	Francisco Raymundo	Ex-President, ASDHINQUI	Third year	Batzchocolá
2	Catalina Raymundo Ceto	Coordinator, Women's Unit	Sixth year Primary school	Batzchocolá
	Nicolasa Cobo Matón	Secretary, Women's Unit	Sixth year Primary school	Laguna Batzchocolá
	María Matón Brito	Member, Women's Unit	Sixth year Primary school	Laguna Batzchocolá
3	Miguel Brito Ramírez	President, ASDHINQUI	None	Batzchocolá
	Domingo González Carrillo	Vice-President, ASDHINQUI	Second (B)	Batzchocolá
	Pedro Chávez Sánchez	Secretary, ASDHINQUI	Third year	Batzchocolá
	Vicente Ramírez Cruz	Treasurer, ASDHINQUI	Third year	Batzchocolá
	Sebastián Rivera Brito	Member, ASDHINQUI	Third year	Batzchocolá
	Pedro Melendrez Brito	Supervisory Committee President, ASDHINQUI	Cannot read	Batzchocolá
4	Miguel Cruz Cobo	Project Coordinator, ASDHINQUI	Sixth year, primary school	Batzchocolá
	María Gonzales Cruz	Grinder, Women's Committee	---	Batzchocolá
	Magdalena Chávez Terraza	Grinder, Women's Committee	Third year	Batzchocolá
5	Juana Cobo Terraza	Grinder, Women's Committee	---	Batzchocolá
	Cecilia Terraza	Batzchocolá Technological Centre Team	Diversified	Batzchocolá
6	Josefa López Chávez	Headmaster, EORM Batzchocolá	Teacher School headmaster	Nebaj
	Diego Solís Cuchil	Teacher, EORM Batzchocolá	PEM. Teacher, fifth and sixth year	Nebaj
7	Manuel Soto	Ancestral Authorities	First year	Visiquichum, Chajul
8	Rosa Escobar	Member, Women's Unit	--	Visiquichum
	Rosa Sánchez Gallego	Member, Women's Unit	---	Visiquichum
	Anabely Soto	(Translator)	Expert in business administration	Visiquichum
9	Matilia Cedillo Cedillo	Community facilitator and Vice-President of the Board of Directors of Semilla de Sol	University student	Nebaj
10	Mario Hernández	Executive Director, Semilla de Sol	University	Guatemala City

## 10. Acronyms and Abbreviations

ASHDINQUI	Hydroelectric Association for the Integral Development of Northern Quiche (Asociación Hidroeléctrica de Desarrollo Integral del Norte de Quiche)
ASOCHEL	Chelense Hydroelectric Association (Asociación Hidroeléctrica Chelense)
COCODES	Community Development Councils (Consejos Comunitarios de Desarrollo)
CNEE	National Electric Energy Commission (Comisión Nacional de Energía Eléctrica)
CETEBI	Centre for Bilingual and Intercultural Education Technology, IXOJ (Centro de Tecnología Educativa Bilingüe Intercultural IXOJ)
CONALFA	National Literacy Commission (Comisión Nacional de Alfabetización)
DEOCSA	Western Electric Distributor (Distribuidora de Electricidad de Occidente)
ECA	Rural Agriculture Business (Empresa Campesina Agropecuaria)
ELGUA	Clean Energy Guatemala, S.A. (Energía Limpia de Guatemala, S.A.)
ENCOVI	National Survey on Living Conditions (Encuesta Nacional de Condiciones de Vida)
RGD	Renewable Generation Distributor
HIVOS	Humanist Institute for Development Cooperation
IGER	Guatemalan Institute for Radio Education (Instituto Guatemalteco de Educación Radiofónica)
INDE	National Electric Institute (Instituto Nacional de Electrificación)
LGE	General Electricity Law (Ley General de Electricidad)
MARN	Ministry of the Environment and Natural Resources (Ministerio de Ambiente y Recursos Naturales)
MCHP	Mini Community Hydroelectric Plant
MEM	Ministry of Energy and Mines (Ministerio de Energía y Minas)
ILO	International Labor Organisation
OLADE	Latin American Energy Organisation
RED-DES	Digital Resource Program for Sustainable Economic Development
CSR	Corporate Social Responsibility
SAT	Tax Administration Superintendence (Superintendencia de Administración Tributaria)
NIS	National Interconnected System
ICT	Information and Communications Technologies





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