



# Mechanisms for Promotional Diffusion of Agroforestry and Mainstreaming Women Participation in Agroforestry

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## Abbreviations and Acronyms

AF	Agroforestry
AFS	Agroforestry system
AMAF	ASEAN Ministries of Agriculture and Forestry
ASEAN	Association of South-East Asian Nations
ATWGARD	ASEAN Technical Working Group in Agricultural Research and Development
BFREE	Belize Foundation for Research, Environment and Education
BLPA	Belize Livestock Association
CATIE	Tropical Agricultural Research and Higher Education Center (acronym in Spanish)
CC	Climate change
CGIAR	Consultative Group on International Agricultural Research
COP	Conference of Parties
CTECC	Council for Climate Change
CTCN	Climate Technology Center and Network
FD	Forest Department
FAO	United Nations Food and Agriculture Organization
FTA	Forests, trees and agroforestry
GDP	Gross Domestic Product
GoB	Government of Belize
IUCN	International Union for Conservation
MAG	Ministry of Agriculture and Livestock
NAFP	National Agroforestry Policy
NDC	Nationally Determined Contributions
NGO	Non-Governmental Organization
NWC	National Women's Council
REDD+	Reducing Emissions from Deforestation and Degradation Plus
SDG	Sustainable Development Goal
SIRDI	Sugar Industry Research and Development Institute
TA	Technical Assistance
TCGA	Toledo Cacao Growers Association
TFCGA	Trio Farmers Cacao Growers Association
TIDE	Toledo Institute for Development and Environment
UB	University of Belize
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
YCT	Ya'axché Conservation Trust



## Introduction

### Output 4 in CATIE's technical assistance

The objective of CATIE's technical assistance (TA) is: "To develop an integrated and comprehensive agroforestry (AF) policy framework that will aid in mainstreaming this form of land use countrywide, providing practical knowledge and skills to the national team (National Climate Change Office, the Agriculture Department and the Forest Department) to understand and use a tested and successful process to develop a National AF Policy (NAFP) for Belize.

Based on the Terms of Reference of the "Development of an integrated and comprehensive AF policy for Belize Technical Assistance", CATIE is submitting Output 4, i.e. the identification of mechanisms for the promotion/diffusion of AF and to mainstream women participation in agroforestry. This entails 2 deliverables:

**Deliverable 4.1-** Gaps, constraints, issues and strengths that exists in the agroforestry sector in Belize and Gaps and constraints that hinder its adaptation countrywide.

**Deliverable 4.2-** At least two factsheets highlighting the benefits and services provided by AF incentives/schemes.

**Deliverable 4.3-** Technical report documenting the analysis of gender mainstreaming in AF policies.

These Output 4 deliverables correspond specifically to objective 5 of the TA which is, "Identifying mechanisms for promotional diffusion of agroforestry and mainstream women participation in agroforestry".

### Multi-functions and gender issues in agroforestry

An agroforestry system (AFS) is multi-functional in that it can provide a wide range of economic, socio-cultural and environmental benefits. AFS aims to increase or maintain production and farming system productivity by reducing agricultural inputs, reducing production costs and diversifying production through possible tree products such as food, fodder, timber, other building materials and fuelwood. AFSs may also create new opportunities for small-scale forest-based enterprises and employment, which in return assist in reducing rural poverty and improving health and nutrition.

AF promotes biodiversity and produces various ecosystem services and it is not a new practice; some farmers already have these systems in place and has been a common way to produce food, fodder, fibre and fuels. However, developing AF for food production can



also help in mitigating the impacts of climate change, environmental degradation and biodiversity loss (Vi Agroforestry, 2020).

Agroforestry systems are agroecosystems; thus, they provide and receive ecosystem services and disservices. These agroecosystems provide direct services and the management of their ecosystem determines the delivery of those services (Palacios, Bucheli & Bokelmann, 2017).

In addition to the above, AF also emphasizes the ecological function of soil-plant systems for the maintenance and/or improvement of soil fertility. Under the Kyoto Protocol, it is also recognized as an afforestation or reforestation activity for greenhouse gas (GHG) emissions mitigation (Gama-Rodriguez, 2011).

These ecosystem services are linked to the protection of biodiversity, and AF can ensure adequate biodiversity level for its ecological process and resilience (Palacios Bucheli & Bokelmann, 2017).

As mentioned in other reports, the conversion from forest to pasture has led to GHG emissions, soil degradation and biodiversity loss, which has remained an important socio-ecological challenge. For this reason, small-scale AF has brought attention and interest due to its potential in promoting sustainable agriculture along with biodiversity conservation and to maintain higher levels to biodiversity and greater biomass than those associated with monocrop or pasture systems (Sistla et al, 2016). It has been known that AF, if well designed, can be self-sustaining and can contribute to climate change mitigation and increase adaptation of smallholders/farmers (Haeggmann et al. 2020).

When it comes to gender in agroforestry, the system is not gender-neutral because women tend to prioritize family needs while men are more interested in the commercial components of the system (FAO, 2013). Women often have high knowledge of tree and forest in terms of species diversity, management and its diverse uses. As a result, their knowledge can enhance biodiversity in the AF landscapes and assist in producing a wide range of ecosystem services. Unfortunately, women's knowledge is rarely taken into consideration, especially in decision making.

Women are, if not most of the time, at a disadvantage compared to men in farming systems. The access that women have over agricultural products, as well as access to financial resources and information is almost little to none. For example, women are often less likely to own land and their access to tree and fruit products are often conditioned by their relationship to men. The products that women control is considered secondary and not as important (Bose, 2017). Most of the time women risk being ignored in decision-making and/or in value chains. In addition, women are often poorly supported by policy



makers and service providers. Unfortunately, the persistent lack of data on gender further exacerbates the problem (FAO, 2013; Diawuo et al, 2019; Haeggman, 2020).

According to the FAO (2013), empowering women in the forest sector can create opportunities for development, which in return can generate benefits for their households and communities. In some cases, provision of fuel wood from improved fallows is beneficial for women because in that way they don't need to travel far distances for wood. In their study women also received financial benefits from AF products such as indigenous fruits, vegetables, and the *shea* tree. These incomes are generated with no investment other than labour and it may be a small amount, but that is the income they can control. Thus, it is important to strengthen women's participation in forest-related institutions because they can help in maximizing synergies between the forest sector and food security which can benefit all.

AF covers between 200 and 357 million ha in Latin America, including 14 to 26 million ha in Central America (Somarriba et al, 2012). In the humid tropics, this system has been considered as an alternative sustainable land-use because they imitate the characteristics of natural ecosystems and they have generated beneficial effects on soil properties (Tornquist et al, 1998).

AF can play a major role in conserving and enhancing biodiversity from farms to the landscape level both in tropical and temperate regions of the world (Shibu, 2012). It is a form of land use that can increase productivity, diversify production and improve ecological sustainability. As a result, this has shed light on the importance and necessity of practicing the sustainable consumptive use approach, which combines production and conservation functions for biodiversity conservation that is important in human-dominated landscapes (Shibu, 2012). Such benefits are achieved when forest recommendations respond to the particular conditions of each farm, of each production system and of each farmer (Somarriba, 1998).

Somarriba et al (2012) mention that, in Latin America, this AF practice has caught the attention of multiple sectors at various international meetings as a tool to cope with climate change. As a result, AF has now been included in the agenda of the international community, in national policies, legislation, science and technology-driven institutions. In fact, AF is an ubiquitous practice of farmers, ranchers, and other land users all over the world.

The genesis of AF is the real world of farmers, not from the conventional sciences of agriculture or forestry (Bene et al, 1977). For this reason, AF continues to face challenges today. They include unfavourable policy incentives, inadequate knowledge dissemination, legal constraints, and poor coordination among the multiple sectors to which it can



contribute. As a result, its potential contribution to the economy and sustainable development goals has not been fully realized or capitalized upon. For that reason, various initiatives are needed to promote the many benefits of AF for society, and in this respect, Belize is not any different.

## **Gaps, Constraints, Issues and Strengths that exist in the agroforestry sector in Belize and Gas and Constraints that hinder its adoption countrywide**

### **Background**

This report is the result of a rapid participatory assessment carried out within the country among public institutions, non-governmental organizations, groups and farmers involved with agroforestry in Belize.

The objective is to learn about their activities and achievements in the field of agroforestry, to conduct a diagnosis of the main problems and constraints they are facing, and to solicit their ideas and recommendations based on their experiences and progress made on agroforestry development, including gender participation, that would be important to consider and include in the national agroforestry policy.

The report is a sub-product to be delivered as part of the Output 4 of CATIE's Technical Assistance which is to serve as a key input into the preparation of the National Agroforestry Policy (NAFP).

### **The Methodology**

The methodology comprised of three (3) phases:

- 1) The first was a literature review of reports on agroforestry or related to agroforestry.
- 2) A field tour was conducted to visit agroforestry project sites to interact with the managers and/or field staff of those projects. This was done during the week of March 2 to 6, 2020.
- 3) Interviews were conducted with farmer association and farmers, *in situ* or via Whatsapp or telephone calls. A semi-structured questionnaire was used to guide the interview or discussion. Thirteen (13) interviews were conducted on July 8 to 13, 2020.

The interviews, which lasted about 30-40 minutes each, were guided by the six questions below, which were considered of high importance for the policy development:

- 1) What are your achievements with agroforestry practices you are working with?



- 2) What constraints or challenges are you facing in your Agroforestry development work?
- 3) What can be done to accelerate the widespread adoption of your agroforestry (AF) recommendations?
- 4) Have you addressed gender issues in this work? How?
- 5) Any specific recommendations for engaging women and youth?
- 6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?

### Literature Review

Agroforestry aims to increase or maintain production and productivity of farming systems, reduce agricultural inputs and production costs and diversify production through a variety of possible tree products. It also creates new opportunities for small scale forest-based enterprises and employment, and to reduce rural poverty by increasing on-farm production, food security and household income. Increasing production, productivity and diversity of products through agroforestry can help advance health and nutrition for the rural poor. On-farm production of fuel, fodder and other tree products, can reduce the time and effort to obtain them, often lessening the burden on women and saving money if products would otherwise be purchased.

In addition to this, agroforestry systems (AFSs) can provide a range of environmental services, including improving soil fertility, protecting crops from wind (wind barriers), restoring degraded lands, improving water conservation, preventing soil erosion, contributing to biodiversity conservation and climate change adaptation and mitigation.

Agroforestry per se is not widely practiced in Belize. However, there are few organizations such as Ya'axché Conservation Trust (YCT), and Belize Foundation for Research and Environmental Education (BFREE), who work along with cacao farmers to produce cacao under shaded trees. This activity is used to explore agroforestry as a sustainable production option in order to bring sustainable economic development to buffer communities, reduce current biodiversity degradation, and habitat loss due to illegal and unsustainable agricultural development.

Upon the request of the Forest Department, Friends for Conservation and Development (FCD) has developed a Landscape Management Strategy with the objective to incorporate local community members to participate in the restoration, protection and sustainable production of the forest reserve. Therefore, Friends of the Vaca Forest Reserve was created in 2010, and since then 22 farmers have been operating near and inside the reserve whose interest is to embrace a stewardship role of the reserve. FCD teaches the farmers and cattle ranchers agro-ecological methods that can make better use of the



land. As of June 25, 2020, the FCD initiated an agroforestry project with three farmers in Arenal Village in the Cayo District. The farmers signed a conservation agreement which commits them to use 13 ha of land for more sustainable management using agroforestry methods. The FCD is committed to provide the project with the techniques, seeds and trees.

Belize is a signatory to the various International Conventions which recognizes the rights of women and they have enacted a series of laws, policies and institutional mechanisms that guide actions towards gender equality and equity.

In 1982 a National Women's Commission (NWC) was established as the GoB's national advisory body to address gender issues. The NWC monitors and reports on Belize's compliance with the Convention of Elimination of All Forms of Discrimination against Women (NWC, 2013).

In 2002, Belize developed the first National Gender Policy in which it outlined five priorities for the empowerment of women. However, the policy presented institutional weaknesses, cultural resistance, etc. As a result, in 2013, a new policy was published with its general objective as to "advance in achieving the *jure* and *de facto* gender equality and equity in Belize" which focuses on five priorities: health, education, wealth and job creation, violence, and power and decision making. At the same time, it has a set of transversal or cross-cutting strategies, which are key for the articulation of actions with other public institutions in charge of promoting the development of the country (NWC,2013).

Belize has a National Forest Policy published in 2015, which states that the GoB recognizes that the forest plays an important role in its social and economic development. Forests are a significant contributor to the livelihoods of rural, indigenous and immigrant populations. Additionally, in relation to the gender issue, the policy identifies some concerns that merit attention to guarantee the participation of women in the access, use and control of resources from the forest. It also mentions access to land and property influences, particularly how women access natural resources and play a role in determining how women may or may not adopt practices of sustainable use of resources on lands that are not their property. Conclusively, safe and independent access to land is limited by the social status of women, the patriarchal culture and the level of awareness about their rights (Forest Department, 2015).

The National Agricultural Food Policy (2015-2030) plans to increase sustainable livelihood options for food and nutrition by expanding the employment and income-generating opportunities for under-served communities. It also promotes home food production using backyard/potted gardening technology, increasing youth and women's participation in the development process through outreach programs. Alongside this, empowerment



of youth through the development and implementation of youth participation programs is evidently being given priority, as well as the development and implementation of specific programs for women, based on the debate on agricultural opportunities, supporting provision of resources (land and credit), basic infrastructure and support (Ministry of Agriculture, 2015).

### Diagnosis of Projects, Groups and Individuals involved in Agroforestry

Organizations and farmers in Belize are conducting various types of agroforestry such as cacao production under shaded trees, intercropping using lime and orange along with coconut, and homegardens.

In this sense, the strategic actions derived from the policy will facilitate the implementation of AF, increase the numbers of farmers participating in AF and articulate efforts within the governing institutions of the agricultural and forestry sector to provide technical support and training, and to receive information and cooperation from practicing beneficiaries. This will also be an excellent opportunity to include the gender approach in a sector where its issue is marginalized and invisible.

### Achievements with agroforestry projects and practices

Most groups and individuals are planting timber species (mahogany, teak, Spanish cedar and pine) and fruit trees (citrus, soursop etc.) with annual crops. However, they are not necessarily evaluating or testing any specific agroforestry practice or components, except for the Ministry of Agriculture and YCT. The latter is very advanced in developing the cacao-based agroforestry in the forest reserves and YCT hosted the first cacao AF forum in 2018. The Ministry is promoting mixed farming systems, intercropping, alley cropping, regenerative agriculture, protein and energy banks, silvopastoral and agrosilvopastoral systems, and beekeeping programs based on agroforestry practices. There are several nursery activities to produce seedlings of the species most in demand.

There is one high investment program of TKO Farm in Teakettle, Cayo District, planting over a hundred acres of valuable timber and fruit species for the export market. Although they expressed interest and plans for agroforestry, their program at present is basically forest plantation in pure stands. Meanwhile, there is another company that plants pine trees in both commercial plots for their own use and to supply their company's demands. In addition, they also have pine seedlings imported from Brazil on sale to the local and surrounding communities, as part of their reforestation program.

Farmers have seen the necessity of combining short term crops in long term crop plantation; for example, citrus and pineapple, or coconut and lime. These short-term crops were implemented to fill the income gap of the main crop planted in the field. Some large farmers appreciate the need to provide quality products, hence they have sought certification to ensure the quality of their production from entities like Global Gap, HACCP,



etc. Before these certificates are issued by the respective entities, the farmers must comply with the necessary good agricultural practices that can guarantee the quality of their product.

### Constraints or challenges being faced in their agroforestry projects

The main constraints cited are insufficient awareness and knowledge of agroforestry, low market prices for crops/cattle and tree products, inadequate technical assistance and support for agriculture and AF, the culture of the people (i.e. preference for slash & burn, reluctance to try new systems, and belief that incorporating trees will reduce yields), and lack of financing and financial incentives for AF.

There are also social and technical problems, i.e. flooding, wildfires, no short-term income, protection of small trees, burglaries and poaching. Other challenges include: low level of expertise in agroforestry and land use management, lack of awareness of the benefits and value for trees, low access to financing to develop AF, and low demand for nursery plants.

One of the major challenges farmers face is the fragmented coordination and collaboration between government entities and NGOs. There is also no sole framework or platform for information sharing among entities because entities customarily work in their own area of expertise. As a result, interaction with the farmers is minimal. Therefore, collaboration and coordination efforts need to be strengthened among GoB, the NGOs and farmers. Additionally, there are also no incentives for AF development and no incentives to encourage private landowners to conserve forests in their land. Unfortunately, the economy does not support the development of AF and for farmers AF attracts only long-term benefits and lastly, it does not provide the same income as mono-cropping.

### Actions to accelerate widespread adoption of agroforestry

The main actions, that were recommended, included better market prices for agricultural and tree products and developing product markets; reduction of royalties/taxes and other financial incentives for agroforestry; AF education and awareness by means of demonstrations,

*"It is valuable to reflect that in the late 1990s agroforestry was an ad-hoc initiative which was eventually discontinued by the Ministry, however, we are at an opportune time to restore the interest and seek support to develop AF and other land uses for the great contributions it can bring to the sector. Furthermore, the Ministry must prioritize agroforestry since it can effectively offer great benefits to the agricultural sector and the livelihood of all Belizeans. Once this is done, we can join the regional initiatives that have already built a commendable momentum so that we can achieve the SDGs."*

**Agricultural Sector  
Ministry of Food, and  
Agriculture**



school programs and extension or farmer field schools; consistent technical assistance, capacity building and financial support for ongoing AF projects, and making a strong link with food security, ecotourism, non-timber forest products, livestock production and sustainable development, including reduction of deforestation and biodiversity conservation; and organization and coordination of farmers interested in agroforestry.

In order to adapt AFS in Belize it is important to coordinate efforts between the GoB and NGOs to work as a team in order to encourage farmers who are interested in AFS and bridge the gaps that exist. Crucially, a structure must be created which can facilitate a process for them to work together, share information so that they can learn from each other through farm field schools (i.e farmers teaching each other, an approach promoted by FAO and adopted by the DA) and other educational programs. These programs can be used as a demonstration to the farmers in order to expose what are the long term and short-term benefits of implementing these AFS.

Education awareness and agricultural training is also necessary so as to expose farmers to these types of ideas, to teach the importance of AFS, such as intercropping and having a diversity of crops, to teach the use of long-term crops with short term crops so as to fill the income gaps of long-term crops.

It is also important to provide a market-led approach and establish fair prices for AF products such as livestock, small ruminants and poultry. Create an appropriate framework which can facilitate and reduce the burden (reduce taxes and royalties) on timber harvested for exportation allowing an easy process for exporting timber and in return this creates good foreign exchange for the country.

It is necessary to assess existing AFS in the country and provide good incentives to farmers who are interested in AFS; classify lands that are available; determine lands that can be allocated to production and recuperated, and provide these lands to those who are interested but don't have land to cultivate on (especially women), so that they can develop their own AFS. Finally, there is the need to implement other sustainable land use policies that can work hand in hand with the Agroforestry policy to facilitate the implementation of the AFS.

#### [Addressing gender issues in their agroforestry work](#)

Most agroforestry projects do not have a formal gender component in their programs. Since 40% of the cane farmers are women, SIRDI has been involved in a training program for women and youth, exposing them to managerial and financial skills development in the sugarcane industry. Most agroforestry projects acknowledge the very valuable contribution women can make in these systems; women are ready to engage and learn, women have to take over the farm when their husbands are employed off-farm, and they bring special abilities and interests. However, there are some women who play more



traditional roles, such as stay at home mom or housewife, which can hinder their full participation in field work.

### Specific recommendations for engaging the women and youth

Stakeholders made several recommendations for actively engaging women and youth, including: to add agriculture to the school curriculum with emphasis on the value of trees for the future and sustainability of agricultural systems, farmer field schools for women and youth, and special AF awareness and training programs for women; easy access to financing for women and youth, and use of practical ways to engage the women and youth in agroforestry programs; engage more women from the Government and other institutions to be involved in the agroforestry projects. It was noted that in many cases, men welcome the involvement of the women, including in management because they are key to proper financial management.

According to the interviewees, rural women participate mostly in activities related to agriculture and spend less time on forestry activities. They also have a preponderant role in domestic activities and care for the family. In agricultural activities, women, especially indigenous women, collect firewood, work in home garden/gardens, plant vegetables such as pepper, tomato, cucumber, cabbage, and aromatic herbs; they also raise pigs, chicken and turkeys for the family consumption and sometimes to trade with other families. Meanwhile, men are dedicated to planting citrus and corn (milpa). Women also sow, harvest, shed and toast peanuts, they also support washing vegetables that go to the market. *"Women and men commercialize and sell at the San Ignacio Market."* On the other hand, non-indigenous women are less involved in agricultural activities, however, they participate more in the marketing of products.

Some indigenous women participate mainly in the cacao activity, honey production and local and foreign tourism. Women are integrated in some ecotourism ventures, that is in the preparation of typical foods, and handicrafts made for cruise ship tourists. Women in southern Belize have ventured in these activities with the assistance of the YCT, who mentioned that there is a need for public institutions to support these ventures in order to train the human capital of women.

According to NGOs who have undertaken AF projects, it is recognized that women possess management skills, can make economic decisions for the benefit of the family and the business, organize as a group to better reach their economic activities, and can also be inserted in the links of the value chain and have negotiation skills.

Although it is known that women play an integral role in agroforestry and in the agricultural sector; cultural barriers persist that make women's contributions invisible and prevent progress towards empowerment and economic autonomy which impacts their



opportunities to access technical assistance, training and financing. Not all women have the same family support from their partners and there is evidence of resistance towards women's independence. In most indigenous families, men do not allow women to speak to strangers, especially if they are of the opposite sex.

Despite the fact that Belize has a Women's Commission attached to the Ministry of Human Development, Social Transformation and Poverty Alleviation and a gender policy at the national level, there are no coordination mechanisms or guidelines with the institution of the agricultural sector that focuses on the inclusion of gender within their activities.

Only some actions of gender topics are included in specific projects with external financing, this is due to the requirements that must be fulfilled as a request by the donor and not as an institutional policy.

Other relevant observations related to youth are the issues of generational replacement, agriculture and agroforestry are in the hands of older farmers because the modern world encourages the consumption of superfluous goods and younger men and women are employed in call centers or in the tourism sector, thus discouraging the practice of agriculture.

#### [Priorities that should be addressed in the National Agroforestry policy](#)

The focus should be on agroforestry products with effective demand and attractive market prices in the local market or in the export market; there is the need to combine as best as possible short term and long-term benefits for the producers so they do not have to wait too long to receive some benefits. The focus should also be on food security/processing industries (more food from less land) and income generation (e.g. a target of \$10 k per family per annum), reduction of milpa usage and deforestation, updated land use policies, agro-ecotourism attractions, restoration of degraded lands, and replacement of harvested with planted trees. There is need for education and capacity building on rotations, irrigation, seedling production techniques, management of components, and demonstration of agroforestry systems for best yields; and finally, but most importantly, available funding for agroforestry programs and financial incentives for farmers to invest in the agroforestry systems of their choice.

With respect to extension and communication, the policy should aim to raise awareness on the roles of trees at the national level, highlight the benefits of agroforestry systems for the SDGs, creation of a well-organized inter-sectoral advisory group to create synergies, development of a regulatory system for proper land use management, support of payment for environmental services to landowners and farmers, reform for a revision of existing forest laws that would hinder persons from adopting agroforestry systems.



## Conclusion

It is important for the public institutions to work together, as well as NGOs, the business sector, associations and farmers to work together transversally to guarantee a proper and successful implementation of the AFSs. This in return can comply with the country's NDCs under the Paris Agreement, an international commitment which highlights climate actions to reduce national greenhouse gas emissions and adapt to the impacts of climate change, which the NAFP can help to achieve.

Another point that needs to be taken into consideration and comprehended well is that several constraints to the AF sector exist, including access to financing and access to markets with fair prices so that the system can be implemented, be self-sustaining and generate sufficient income for farmers.

The most important findings are related to the low visibility and importance of work on addressing the gender issue in agriculture, albeit that there are more women today working in agricultural organization. This translates into the absence of gender indicators and programmatic actions that systematically integrate the issue into institutional strategic operational plans.

On one hand, there are policies that address gender issues such as the National Gender Policy, National Agricultural Food Policy and Forest Policy. However, the institutionalization of the gender approach is still a major challenge. Institutions in the agricultural sector do not have a gender unit that addresses human and financial resources to guide the mainstreaming of gender in institutions. As a result, staff do not feel compelled to include actions in operational plans nor do they receive technical training to effectively address gender issues in their work. Nonetheless, some NGOs like YCT and SIRDI, do partially fulfill the role that the state should play, offering training programs and support for women's ventures.

## Benefits and services from agroforestry

In Latin America and the Caribbean, millions of people depend on ecosystem services. These ecosystem services are important for the well-being of society. The services provided by these ecosystems help to reduce the vulnerability of the population and economic sectors; even those populations whom are distant from ecosystems (Martínez-Alonso, 2010).

As is well known, forests provide ecosystem services, but their presence and degree of degradation are factors that determine the quality of services provided, while their location and the presence of people who require the services determine their value. Two



ecosystem services, probably the most tangible at the moment, are regulation of water cycle and carbon sequestration and storage (Martínez-Alonso, 2010).

## Ecosystem services

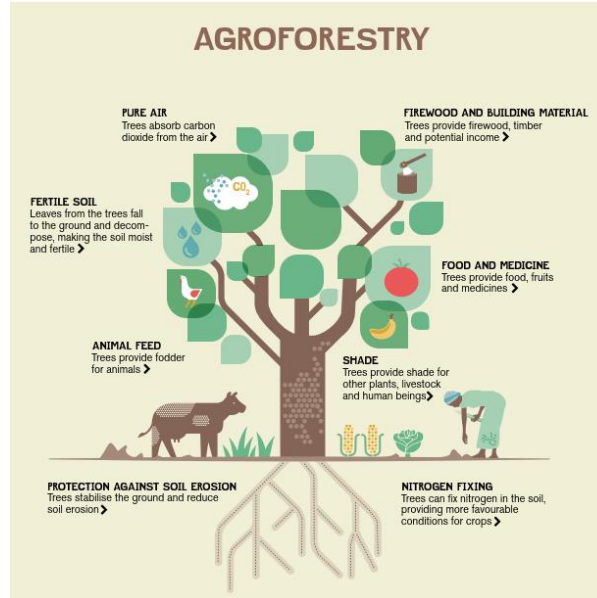
Ecosystem services are a product of the attributes and functions of the ecosystem that benefits humanity. The function of any ecosystem generates services but these can only be recognized as such when humanity acknowledges the benefit as a part of their social value (Campos et al, 2006).

Ecosystems provide services at different scales, from the local community to the world. The Millennium Ecosystem Assessment, proposed to distinguish between three types of services directly received by people: i) supply services, ii) the services of regulation, and iii) cultural services. These systems contribute to human well-being through security; they provide basic materials necessary for survival, health and social relations (Martínez-Alonso, 2010).

## Forest ecosystem services

Forest ecosystems, both natural and established by afforestation and reforestation, constitute one of the most important providers of ecosystem services which are fundamental to sustaining life on earth. These services (Figure 2) include the maintenance of air quality and a favourable climate, the protection of hydrological functions and the provision of quality water for consumption, the generation and maintenance of soils and their fertility, the protection of biological diversity, biological control of agricultural pests, the provision of wood and a wide range of non-timber products etc(Campos et al, 2006).

Figure 1. Ecosystem services provided by agroforestry



Source: Heaggman et al, (2020)

According to Moberg (2011), Mbow et al (2014), FAO (2017), Udawatta et al (2019), van Noordwijk et al (2019), Kuyah et al (2019), Haeggman et al, using AF practices can:

- Increase biodiversity in food production systems, including soil microbial diversity
- Provide habitat for multiple species by providing a “buffer zone” against deforestation and act as “green corridors” allowing species to migrate across landscapes.
- Significantly increase crop yields
- Provide food, fodder for animals, fuelwood, medicines and financial opportunities
- Increase several ecosystem services related to water including flood prevention and buffering of flow in streams
- Improve soil fertility and water use efficiency by integrating trees that can fix nitrogen and provide shade
- Reduce the risk and consequences of crop-failure by growing a diversity of crops and thus increase resilience to shocks and disturbances
- Improve near-by availability of firewood, reducing the pressure on forests as well as time spent collecting them
- Mitigate climate change by lowering emission of greenhouse gases and sequestering carbon in trees and soils
- Contribute to soil erosion control, flood control and pest control
- Improve the microclimate on farms as trees shade crops and cool the air
- Reduce vulnerability to torrential rains, heat waves, pest infestation and diseases



## Agroforestry Functions

Scientists, policy makers and development professionals are becoming increasingly aware and interested in AF because of what it offers. Some of the services provided by AF; are:

- Food and nutrition
- Carbon sequestration
- Soil enrichment
- Biodiversity conservation
- Improved air and water quality
- Services of pollinators

## Gender integration in agroforestry

Women play a significant role in the agricultural labour force, agricultural activities, in all stages of the food cycle and in all farm-related activities in all regions (FAO,2011 & Satyavathi et al, 2010). Their contribution is extremely significant and it is often claimed that women produce 60 to 80% of the food (Momsen, 1991; Mehra and Rojas, 2008; FAO, 2011).

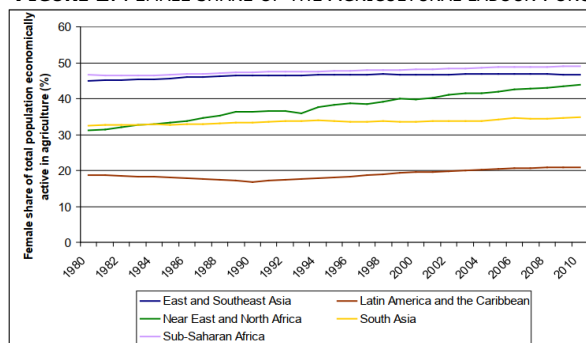
### Women and agriculture

According to FAO (2011), women contribute tremendously to agricultural and rural economies in all developing countries. In a rapidly changing world where economic and social forces are transforming the agricultural sector, women's roles vary considerably from country to country and sometimes even regions within a country. These activities include producing crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, participating in trade and marketing and caring for their family and maintaining their homes.

Data comparing agriculture to manufacturing and services have shown that the agricultural sector is the most important source of employment for women in countries in South Asia, East Asia, South-East Asia, Middle East, North Africa and Sub-Saharan Africa (Fig 4) However, women in Central and South Eastern Europe and Latin America are concentrated in the service sector as to the agricultural sector. This data also indicates that the level and distribution of employment varies across the region. It also states that there is always a significant gap between male and female employment, but service and/or agriculture are more important to them than the manufacturing sector (FAO, 2011).



**FIGURE 2. FEMALE SHARE OF THE AGRICULTURAL LABOUR FORCE**



Source: FAOSTAT. Note: The female share of the agricultural labour force is calculated as the total number of women economically active in agriculture divided by the total population economically active in agriculture. Regional averages are weighted by population.

The total population of Costa Rica comprises 269,602 households, and approximately 87.6% are older than 12 years. Of these, 1,285,446 work in the farm sectors, of which 71.4% are male and 28.6% are female. Women account for a large number of farm workers, and the cantons (like districts) with the highest participation are Orotina with 86.4%, Santa Cruz with 67.1%, followed by Puntarenas with 66.5%. Fifty-four percent (54%) of these women mainly devote themselves to agricultural work, and 72.9% do not receive payment. The average age of female farmers is 52.6 years and 5,758 young people between the ages of 12 and 17 do some farm work (INEC, 2014).

In the Central American countries, gender roles and dynamics shows that women's activities tend to occur near the home. Men engage in activities that require longer periods away from the household because of the traditional norm of men having to be responsible for income generation. Women carry out post-production activities, such as product management, that is hygiene, cleaning and handling of equipment and administration of family resources (Gallina, 2016). In Nicaragua, it is estimated that the level of women employment is 22% in the dairy sector.

### Women and agroforestry

Women are important participants in both the agricultural and forestry components of AF production. However, as mentioned previously (Bose, 2017; Gallina, 2016; Satyavathi et.al, 2013; Shiva & Aalock (2013); Zumbada 2013) women are often ignored in the design of AF projects. This is because of commonly held beliefs and traditions about their participation in these types of production activities and public life (status of women) that is: i) women are housewives and are not heavily involved in agricultural production, ii) women are not significantly involved in tree production and use, iii) every woman has a husband or is part of a male-headed household and iv) women are not influential or active in public affairs (Rocheleau & Fortmann, 1985).



However, Shiva & Aalock (2013) explain that “women’s labour and women’s decision-making are crucial to agriculture products and development. Women are more knowledgeable about what is needed; which trees are suitable, which are not and who will use the final product. According to the evidence, women have a great interest in defending and restoring the forest’s ecosystem. In non-timber forests (involving, for example, bamboo, brushwood, trees for honey production, medicinal plants and shrubby perennial crops), usually it is only women who are involved in AF chores and decisions. Women are passive members of those communities in which public actions are a sphere restricted to men.

Bose (2017) suggests that women’s role in forest and land tenure is vital for the management of resources. For example, in Nepal, 78% of fuel wood collected was done by women and 84% by women and girls combined. The purpose of forest product is perceived differently because a woman sees forest products for home purposes (fuel wood and food) resulting in women having more knowledge of trees and their uses; while male perceive forest products for commercial sale (Rocheleau & Fortmann, 1985; Shiva & Aalok, 2013).

Zumbada (2013), nonetheless states that most of the projects that were developed were more focused in addressing women’s practical needs than on promoting their strategic gender interest. There are some programs that discriminate against women in the workplace, in marketing communities and in smallholder farms (cases where men leave in search of wage labour opportunities) (Gallina, 2016). Chant (2009), explains that persistent structural problems related to this phenomenon are due to lack of recognition of women’s work, unfavourable conditions in the workforce, labour market segmentation, discrimination in education and scarcity of resources for women’s initiatives.

#### [Women and land tenure in Colombia and Bolivia](#)

The Colombian government introduced progressive laws that protect the right of women, that is mentioned in the Columbian constitution. The constitution states that all people are free and equal. The Rural Property Formalization Program(FPR), for its abbreviation in Spanish) allowed joint titling for land tenure; this is with the objective to promote gender equity, to promote greater legal security in land rights, and promote sustainable agricultural development so that there is stimulation for investments, markets and transparency (Bose, 2017).

Quechua women have traditionally been owners of a wide variety of *quinoa* and *kañawa* seeds. They have often been sowing seeds collectively in communal land to manage rotational crops. This helps women to support each other during drought or extreme frost. Women continue farming *quinoa* crops but the decision making and marketing has



been taken over by men because the men are owners of the lands. Therefore, men make all the decisions.

### Women's participation in communal forest in Nicaragua

In Nicaragua's indigenous territories, researchers analyse gender-differentiated uses, decision making and perception regarding communal forests in indigenous communities. Evidence suggests that while higher percentages of men than women participate in the harvest of eight forest products, women participate more in product sales and have some control over income (Evans et al., 2016). They also indicated that some (a low percentage) women participate in decision-making. However, women face significant obstacles to effective participation in forest decision-making in the community. Therefore, improving meaningful participation of women in decision-making requires addressing challenges and obstacles at multiple levels; including obstacles at the communal level, where the future of the forest will be decided and challenges cannot be overcome without attention to the household (Evans et al; Bose, 2017).

### Women Farmers in Belize

The roles and contributions of women in agriculture in Belize are well known, however few formal studies have been conducted for empirical analysis. One study in Belize (Franklin, 2017) found that the female farmers experience many barriers to producing food for their families and communities, such as seasonal hardships, incessant pests, lack of resources (i.e. finance, knowledge and/or fear of financial loans, education and other types of support), lack of access to lucrative markets, and high educational fees. While they are all critical, these constraints are not unique to women only.

Most agriculturally related policies and projects do consider that women are important and therefore are included as key stakeholders or beneficiaries. Accordingly, the NAF Policy should also do the same, and that is why gender mainstreaming in AF has been highlighted in the policy design phase, and specific approaches will be utilized to ensure that women's priorities, constraints and opportunities are well understood and factored into the development of the national policy.

## Gender mainstreaming in agroforestry policies

Because Belize has limited studies on gender issues, especially in agriculture and other areas like agroforestry, there is need to draw upon information and experience, from other countries in the region and the world, for gender mainstreaming in agriculture and agroforestry.



According to the United Nations, gender mainstreaming is defined as “the process of assessing the implications for women and men of any planned action including legislation, policies and programmes in all areas and at all levels. It is a strategy for making the concerns and experiences of women and men an integral part of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres, so that women and men benefit equally and inequality is not perpetuated” (UN economic and social council, 1997). Gender equality and equity are basic human rights and are also fundamental conditions in order to reach sustainable development.

There have been many inequalities between men and women in the AF sector, thus it is important to empower disadvantaged women in ways that will contribute to the sustainable landscape (CGIAR, 2020).

Zumbado 2013, states that rural development policies in Central American countries, such as Costa Rica, do not take women into consideration because it is believed that women do not contribute substantially to priority areas, including farming. This occurs in all other Central American countries, where failure to recognize women’s roles as producers in the national economy is common and gender inclusivity is a new phenomenon occurring in this region (Gallina, 2016).

Costa Rica’s sectoral Action Plan on Gender 1999-2002, extended until 2007, saw the need to mainstream gender in agricultural policies due to structural inequalities, and the need to assess, promote and value contribution made by rural women in the sector and in new agribusiness dynamics. The plan focused on mechanisms that will facilitate women’s access to equal opportunities through training, support services, finance and credit, productive project, sharing of information and communication (Gallina, 2016).

Gallina (2016) states that unfortunately, intervention and strategies have not been fully addressed to different resource constraints faced by Latin American women and as such can have adverse effects on men and women and inhibit sustainable development.

### [Gender equality and social inclusion in CGIAR program](#)

In the Forest, Trees and AF (FTA) Research Program of the CGIAR, the gender strategy for 2013 highlighted the critical roles that both women and men play in managing forests, AF and tree resources across the world. This strategy highlighted the missed opportunities which can guide the redressing of gender inequities in accessing resources.

The revised research agenda of the FTA complements its original gender strategy (2013), it reflects the evolution of the program including thematic and methodological



developments in gender research, its practical applications and increased focus on the nexus of gender and generation (CGIAR, 2020).

Based on the FTA's experience in gender research and its efforts to strengthen gender integration across program activities and processes; the FTA has broadened its research and action plan to focus on: adopting a more sophisticated and nuanced understanding of gender issues, placing greater emphasis on inter-sectionality, including the connection between gender and generation, also focusing on youth. The fact that the FTA prioritized transformative gender work it incorporated the latest thinking on gender and development in capacity-building effort, enhancing learning through the creation of knowledge-sharing, and enhancing gender integration in monitoring and evaluation framework and among others (CGIAR, 2020).

Therefore, the FTA gender strategy follows a multi-pronged approach, which is supported by two areas of work:

1. Knowledge generation and delivering quality gender, social inclusion and youth research
2. Strengthening gender integration along FTA's impact pathways, including how the program engages with a wide range of stakeholders

The transformative approach of the FTA aims to challenge the causes of gender inequality, such as norms, relations and institutional structures that allow discrimination and imbalances, in order to achieve more equitable involvement of women and girls in decision making, control of resources and control over their labour and destiny. The approach also seeks to move beyond individual self-improvement among women transforming the power dynamics and structures that affect men's and women's capacities to i) control assets and resources; ii) value and distribute unremunerated labour and iii) participate in decision making at the household and community levels and beyond. It also aims to develop innovation that will allow women to increase their voices and influence, foster gender equality and social inclusion and enable both women and men across scales to empower themselves (CGIAR, 2020).

The FTA gender research addresses the following key themes:

- **Participation in restoration and tree management:** identify and analyse institutional agreement that promotes the meaningful participation of men and women from different generational groups in decision making related to forest restoration and management.
- **Access to delivery systems- identify innovative gender responsive arrangements in delivery systems:** that are responsive to local gender knowledge and that can create opportunities that will foster women's



empowerment through improving uptake of forestry and agroforestry technologies and planting materials.

- **Value chains and inclusive business model:** to identify structural barriers to small holder participation and equitable distribution of benefits within global timber, tree crop, and select agricultural value chains. Finally, identify strategies to overcome these barriers. This in return, will generate empirical evidence on women's and men's differential access to, quality of participation within value chains and their specific challenges to upgrading and the gender-disaggregated effects of different types of business models on asset and livelihood portfolios. In return, this will contribute to the acquiring of new knowledge and tools to innovate on more inclusive, fair, and gender-responsive business and finance models which may ensure a sustainable supply of timber and global agro-commodities.
- **Tenure and local governance:** the FTA immerse gender perspective into its larger body of research on forest tenure and documents the range of rights that women and men access under different tenure systems, identifies actions for securing women's rights, implementing those actions and monitors their outcomes.
- **Migration and multi-local livelihoods:** identify and analyse the types of policies, institutional arrangements and interventions that foster enabling environments for women and men from different generational groups to benefit from migration, mobility and multi-local livelihoods in forested landscapes. The FTA assesses the availability and reliability of pre-existing data on forests and migration from a gender perspective and collects quantitative and qualitative data that links both forest and migration.
- **Climate change adaptation and mitigation** identify and analyse the structural causes of gender-differentiated impacts of climate change. It considers climate change impacts, strategies and interventions to mitigate and adapt to the impacts of climate change, comprises of challenges or opportunities to reduce gender gaps through accessing productive resources, redistributing labour burdens and levelling decision-making power. The FTA also focuses on social differentiation and on the intersecting effects of factors like ethnicity, age, and socioeconomic status.
- **Policies affecting access to and control over resources:** FTA analyses sectoral policies and institutional arrangements at different governance levels, and their effects in creating constraining or enabling environments. Identifying arrangements that promotes equitable mechanisms of resource access, which



favour women's access to and control over forests, trees and other productive resources. It also focuses on synergies or weakness among sectoral policies in target countries from a gender perspective. It recommends ways of harmonizing those policies and mitigating potential trade-offs and focuses on institutional arrangements that favour gender-equitable and socially inclusive implementation processes.

Gender research is embedded within each Flagship program. The second focus is strengthening gender integration along FTA's impact pathways, including how the program engages with a wide range of stakeholders, meaning researchers, practitioners, decision-makers, policymakers etc. The strengthening is achieved through:

- **Capacity development:** this is to equip scientists and partners with the latest approaches and good practices in gender and natural resource management. This is to identify how social differentiation influences opportunities, constraints and interests across the thematic research priorities which is achieved through training, peer-to-peer learning, targeted support to project teams, creation of framework, tools and methods for gender analysis and gender-responsive work.
- **Outreach and knowledge sharing:** this is achieved through knowledge-sharing platforms, communities of practice and various gender-specific communication products which are targeted to specific audiences and forums so as to enhance its influences in various policy processes. The FTA synthesizes gender research findings into targeted submissions to be featured in relevant global publications or to inform specific policy processes. The FTA also partners with Global Landscapes forum and targets various global environmental and feminist forums and other partners.
- **Strategic partnerships and targeted engagement strategies:** to advocate for evidence-based, gender-responsive innovation and to deepen the quality and implementation of FTA gender research. The FTA aims to increase uptake of evidence-based recommendations while better aligning its work with partners' needs and priorities. The FTA works with renowned academics to link gender and environment so as to incorporate cutting-edge feminist and gender theories and they also collaborate with various national and local partners to enhance building capacity to address gender issues in their work.
- **Adaptive learning and gender responsive monitoring, evaluation and learning:** to understand changes in the status and role of women and men, in norms, etc, to focus on monitoring and to identify which specific types of intervention



supports or fosters greater equality between men and women of different ages and socio-cultural backgrounds in forest and AF landscapes.

### Vi Agroforestry

Vi Agroforestry is a Swedish development organisation fighting poverty and climate change. The organization also focuses on human and environmental sustainability in 4 countries: Kenya, Rwanda, Uganda and Tanzania. Through AF the organization works to empower smallholder families to improve their livelihoods (Vi Agroforestry, 2020)

Vi AF's current strategy 2017-2021 focuses on women, children and youth. The commitment towards gender equality is done through the AF for Livelihood Empowerment program. For Vi Agroforestry, it is important to target gender equality because women in rural communities are key agents of change and giving women and men equal opportunities; this can aid in developing the rural economy at a faster rate. Thus, resulting in communities to gradually reduce poverty and improve the well-being of families. Women's capacity is being empowered through targeted efforts like use of the household roadmap that promotes joint decision making at the household level. Vi AF provides technical support towards advancing women's participation in leadership and decision making at all levels of society (Vi Agroforestry, 2020).

In addition, Vi AF mainstreams gender in all programmes, projects and organizational practices. They have also developed training material such as a Gender Manual: A practical guide to gender mainstreaming, which is to support partners towards advancing gender mainstreaming (Vi Agroforestry, 2020).

### AMAF approach to gender mainstreaming in agriculture and forestry

The ASEAN Ministers on Agriculture and Forestry (AMAF) approach was completed by The Association of Southeast Asian Nations (ASEAN) Technical Working Group on Agricultural Research and Development (ATWGARD). The governments of ASEAN countries have made efforts in integrating gender issues into development through legislative form and gender-specific policies and establishing specific governmental bureaus as the main mechanism in advancing women's status and gender equality (ATWGARD, 2018).

The AMAF's approach aims to set out recommendations that serve as reference guides for AMS (ASEAN Member States) in their efforts to promote gender equality and increase AMS awareness of the importance of gender policies in the food, agriculture and forestry sector with a view of stimulating the development of best practices and enhancing cooperation between ASEAN member states (ATWGARD, 2018).



In the “Projected Gender Impact of the ASEAN Economic Community”, the study suggests that: i) without targeted policy and programmatic interventions, it is expected that large sectors of women will be excluded from the direct benefits from the boost in trade, investment and skilled labour integration, and ii) liberalization measures will impact unevenly. This is because of existing inequalities that are based on income, gender, ethnicity etc, thus making access to resources and asset ownership challenging. Such inequalities will limit women’s potential gains from trade (ATWGARD, 2018).

Therefore, the overall gender mainstreaming strategic objective is to facilitate and promote resilient agricultural policies, structures and programs to promote gender equality towards sustainable development by 2025. This is done to assist in the process of building stronger gender cooperation and integration in the region (ATWGARD, 2018).

#### [Mainstreaming gender consideration into REDD+ process in Ghana](#)

According to the IUCN (2011) if REDD+ initiatives do not incorporate the gender dimension, the REDD+ project could present risks for women and men and therefore, jeopardize their livelihoods. If the REDD+ successfully incorporates gender, it can create some opportunities for positive outcomes such as improved and diversified livelihood due to increased income, improved nutrition, opportunity to plant trees and get payment for services, increased opportunity for transparency and accountability, meaning opportunity for women to demand accountability, improved health both for maternal and infant mortality, ability to use land title documents as collateral, and increased income will help girls to have an equal opportunity to have access to an education, among others.

A roadmap was created to mainstream gender participation in the REDD+ process in Ghana. The overall objective is to mainstream gender consideration in the forestry sector and in climate change initiatives as a way for both women and men to be recognized as important stakeholders. In this way it will improve men and women’s access to information, capacity building, use, control and management of forest resources, rights to land tenure, equal share of benefits for sustainable management, which can lead to improvement of people’s livelihoods and they can contribute and benefit from the REDD+ initiatives (IUCN 2011).

#### [Costa Rica launches financial program for women who protect natural resources](#)

In Central and Latin America, Costa Rica is one of the leading countries to implement a legal and social mechanism to empower women and girls in all areas. The country has made commitments such as:



- To support the participation of women in REDD+ policymaking and implementation along with The National Fund for Forest Finance.
- Develop a Gender and Inclusion Policy for the Agricultural sector along with the support of the Ministry of Agriculture and Livestock (MAG)
- Trained staff at the Ministry of Agriculture and Ministry of Public Works and Transport on the importance of gender equality in Climate Change and its integration in budget planning.

Although Costa Rica has attempted to tackle the gender issue and have created necessary policy and regulation to do so there have been some challenges. To address them, the country prioritized the development and dissemination of information disaggregated by sex for the implementation of the public policies on climate change with a gender perspective. Formal equality has not been able to reach real equality. Thus, for the country it is urgent to create greater legal and social affirmative actions and temporary measures that will aid in closing the gender gaps, particularly for the affected women in vulnerable and excluded situations in rural and peri-urban areas, e.g. women with disabilities.

Other barriers encountered in Costa Rica have been:

1. Inter-institutional disarticulation that the country presents on gender and climate change.
2. Difficulties experienced by women in participating actively in actions and decision-making.
3. Absence of knowledge and skills on gender and climate change from public institutions, the private sector and civil society.

Systems in place that have included gender issues in their agenda:

- The National Women's Institute (INAMU) representation in Inter-ministerial Committee for Climate Change (CTICC) and the national system of prevention and attention of emergencies and specific Technical Advisory Committee on Psychosocial Support.
- Included gender perspective as a transversal axis in the national policies on environmental issues, climate change and disaster risk management.
- Set gender focus in realities of greater and more tangible participation of women in the face of climate change through actions plan and strategic alliances such as the Gender Action Plan agreed during the COP-23.

Other gender topics in progress are the national policy for effective equality between women and men 2018-2030 which also included strategic goals on climate change.



## Conclusions

Women play a vital role both in the agricultural and AF sector but unfortunately, they face challenges which limits their capacity especially in decision-making in terms of land use and their work are often underestimated by men.

It is necessary to increase recognition of the importance of women's role, contribution, impact and uptake of training, credit facilities and sustainable technologies to fill the knowledge gaps existent within the agricultural and AF sector. It is also important for women and others to understand their roles and objectives in the AF sector. However, if women are not taken into consideration, women run the risk of being excluded and their labour in the household and communities will remain unrecognized. Therefore, for transformation to occur, it is essential to include gender focus in the agenda for development plans and all policies across the board especially in agriculture and agroforestry.

As per AF system it is also important to understand that these systems play an essential role within communities especially for food security, health care and ecosystem resilience. It is known that AF aids in preventing biodiversity degradation; it serves as pollination sinks for insect pollinators, habitat for birds and many other flora and fauna. Thus, it can create large quantities of flora and fauna within the system. Biodiversity, through ecosystem services supports and aids in climate change mitigation and adaptation, thus conserving and sustainably managing biodiversity can help address climate change and it can help achieve ecological balance at the farm level.

Forests provide ecosystem services that are important for the well-being of society. It is known that the services provided by these ecosystems are highly valued because there are large populations and various economic sectors which depend on the goods and services provided by these forests. Two examples of ecosystem services that are tangible are water cycles and carbon sequestration.

Additionally, the services provided by these ecosystems help to reduce the vulnerability of the human population and economic sectors. However, the extent and quality of such services provided by these forests are highly dependent on the state of degradation of the forests, which will determine the quality of the services that will be provided to the target people.



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## **Annex 1: Results of the interview with each group or individual presently working on agroforestry**

### **1. Name: Francis Reimer**

Organization: Spanish Lookout Community Centre

Post: N/A

Contact: +501 672 5172

- 1) What are your achievements with Agroforestry (AF) practices you are working with?**  
Planted almost 100 teak trees in the backyard. The first plot was damaged by Hurricane Richard. Planting of trees in my backyard is just a hobby.
- 2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**  
There is a constraint in the Timber Industry, royalties a higher on timber produced in commercial plot than those harvested from forest.  
Agroforestry is a long-term investment, meaning it takes a while before people can see the benefit from (return in income) and there is also competition with other crops.



**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

Limit royalties and taxes on trees that were harvested from commercial plots. Take away land taxes and other taxes to those who are going to export wood from commercial yard because Belize has a good potential to export timber and can create a good foreign exchange but the royalties that are paid to export products are too high.

The system should be self-sustaining, and should not scrutinize other productive systems.

**4) Have you addressed gender issues in this work? How?**

N/A

**5) Any specific recommendations for engaging the women and youth?**

Financial donation where somebody would have to invest for women and you to encourage their participation and will grow the investment initially made.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

Agroforestry should be voluntary participation, and implement the AF system without harming or constraining other productive sectors.

**2. Name: Melvin Navarro**

Organization: KT Enterprise

Post: Accountant

Contact: N/A

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

We do not practice agroforestry per se but we have a commercial plot that we plan to harvest for the business which is almost 24 acres of pine trees. We import most of our wood. We buy local (1%) harvested timber trees which are pine. These trees are bought from local farmers who harvest trees from forest. We also harvest trees in the Pine Ridge Area on a Salvage Permit to harvest pine trees that have been attacked by beetle.

We have a KT Reforestation Project, we plant imported pine seeds from Brazil and sell them.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

Open market in the country is not favorable for example: cattle prices are not the best, need to create a solid foundation in Belize.

No access to land, no assistance to increase sale of products that can encourage exportation.

**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

Organize an appropriate strategy with decent prices for exportation whether it is cattle or timber. The GoB needs to work hand in hand with the people so that farmers can see the assistance of the GoB. For example, assistance through funds that will start projects like Agroforestry as a long term investment such as 2-25 yrs span so that they can become motivated. Open doors for people to produce livestock, poultry etc.

**4) Have you addressed gender issues in this work? How?**

We need women in the sector yes.



**5) Any specific recommendations for engaging the women and youth?**

While agroforestry is a man's work, we need women to participate through organization and administrative responsibilities. Recommendation: through awareness to stabilize and inform what activity is being done within the agroforestry sector for women and youth to participate. Give room for women from the Government to participate and become more involved within the sector.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

Learn to reforest trees in the timber industry when they are harvesting from the forest so that trees that are being harvested can be replaced.

**3. Name: Luis Tzul**

Organization: Citrus Growers Association

Post: Coordinator of Extension Services

Contact: N/A

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

Lime + Coconut

Citrus + pineapple

Farmers have lime and pineapple as secondary crop to fill in the income gap (first 2 years) of the main crop that is planted in the farm.

Mostly small farmers (5%) practices agroforestry

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

Challenges are limited. Not all farmers know about the combination for these crops. Awareness of these kinds of system is not there.

**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

Education awareness- expose farmers to these types of idea, use long term crops with short term crop and create economic incentive.

**4) Have you addressed gender issues in this work? How?**

No, No issue with gender participation.

**5) Any specific recommendations for engaging the women and youth?**

We should encourage women and youth to participate so that we can ensure continuity within the farm and we can fill the generational relief gap. This is important for any country and to generate income.

Create the necessary market information, easy access to finance. Example Pineapple- show family that income is there and with the easy access to finance this will help them. This information needs to be promoted in a proper way especially for women so that they can be aware of these activities and they can be encouraged to participate.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

It needs to be demand driven so that it can reflect what are the things that people want and what are their needs. Example with the COVID- there was the need for mask, so the opportunity that was created was to sew. To sew mask and create an income.

In this case, have crops that are ready market, have crops that have high market value example: Pitahaya, passion fruit, sorrel fruit for the juice market which can be used for local sale and can also be used for exportation.

**4. Name: Robert Graham**



Organization: Texbel and Lime Co

Post: Supervisor for Maya Center compound

Contact: +501 615 4401

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

Main practice is inter cropping:

- Coconut + lime
- Coconut + Orange
- Coconut + Grapefruit
- Coconut + Cacao
- Coconut + Soursop

Main focus is to have production as our main goal but also, we would like to take advantage of soil spacing within the 25 x 25 area that is planted with coconut and we which of the intercrop system will give more production. This also helps with pest and disease control. We transition from synthetic to organic fertilizer, we have included drenching and mulching. We practice shredding of dried leaves and nuts are shreds are used for compost and as fibers from nuts are used for compost. We also plant arachis pinto as soil cover and for nitrogen fixation in the soil.

We also have try to protect riparian forest and keep the zone buffer to 100ft from the river. All the land perimeter is planted with mahogany tree to protect riparian forest. We have a reforestation program due to the mass cleaning that was done while establishing the company. We also look out for forest poachers and keep a close communication with the chairman to prevent poachers from harvesting from these forests. We provide the community with fuel wood from older trees that are taken out from the production area.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

Culture of people (maya)- they are use to slash and burn and milpa system.

Wild fire- fire enter the farm and reserves and causes great damage

Educational awareness- because they look at agriculture and they don't care about it because they are just consumers and they are just buying. They don't worry about how it is produced. They think that agriculture brings no income. So we need to educate them to let them see that agriculture is the backbone of any country and to lift any country's economy.

Sales and prices- are not stable, supply and demand fluctuate a lot and affect the business especially for pricing. For example, if there is too much lime in the market the prices get too low and when there is not lime prices get high.

Deforestation- deforestation from communities (poachers)

Biodiversity- near the border of the company there is a natural reserve The Cockscomb Basin, this reserve get affected by wildfire and damages the reserves and it biodiversity.

Flooding- in this area it gets flooded a lot and so we need to do cambering and lift the soil up to improve water flow.

Agriculture does not get the support from the GoB and it is needed in order to be successful.

**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**



Working with intercropping and having diversity of crops more economic and environmental impact. Better understanding of the market. The production must be sustainable and then there is always a crop to get income from.

Sustainable production is the way to go, it is a way to control supply and demand. There is always a cash back that is coming in and it will keep family floating.

**4) Have you addressed gender issues in this work? How?**

Female are more into agriculture production than male. Female are necessary in agriculture because they have the technical ability and they have the interest, they are more involved in the process and are willing to learn. Women empowerment in agriculture is needed because agriculture is the backbone of any country.

**5) Any specific recommendations for engaging the women and youth?**

Student program- we encourage student to come and work during the summer and giving them an opportunity to gain income that will help them with their school expenses.

The objective of this program was to teach them about agriculture production, what agriculture production entails and what is agriculture sustainability and to let them learn what are good agricultural practice through sustainable farming. In this way they learn a lot of what is natural resources and what can be used without depleting the resources.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

Have farmers focus on crops that are exploited the most, focus on industries that will strive for the next 10-20 years such as grains and livestock. Focus on social and economic impacts and how communities will benefit from agroforestry. How to reduce deforestation due to slash and burn. Educate on crop rotation, educate on drip irrigation to conserve water through utilizing water from river and from water catchment since we are in a subtropical zone and we have dry and rainy season. Create educational awareness for women and youth.

Provide resources that farmers need: example finance at least to start for land preparation, planting of crops and first fertilization application and minor hand equipment. Provide technical assistance through extension services. Lobby for quality seeds through importation of quality seeds.

**5. Name: Jeffery Reimer**

Organization: Livestock Marketing Association

Post: Member of the Association

Contact: +501 610 1438

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

Ranch with 600 head of cattle for meat production

Board member of BLPA

Member of the livestock marketing association

We do implement planting of trees with the main purpose for shading because the cattle need the shade (rain tree and tambran trees), it is highly common in Spanish Lookout.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

Cattle grazing of trees,

It is expensive to fence off small trees- cost is at 50\$ per tree.

**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**



I don't think agroforestry can work because and it is not recommended because they only produce half of what should be produced and the return of money is not quick and it is more expensive to implement agroforestry thus making the purchase/sale more expensive. It should be cattle only or trees only.

**4) Have you addressed gender issues in this work? How?**

Youth are finding a paycheck which farming does not give because return is not in a months' time. But because the money is quick to get in a month time they prefer to just find a job.

**5) Any specific recommendations for engaging the women and youth?**

If there is an opportunity to do this then there needs to be the opportunity to buy land with a reasonable price. Don't give them anything because we all now that giving someone something does not work out well and they don't make use of it. Let them buy it and let them make a small sacrifice so that they know that they work hard for it.

Due to my tradition women and men were created work together as a team.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

Give those who are interested in agroforestry a piece of land say 25 acres so that, that can give them an extra income like 10 000 per year along with a couple of animal which can fill the income gap if the long term investment. This can be a way to help farmers start their production.

Teach farmers to produce more food in smaller pieces of land. Find strategy where it can be fitted into this activity.

**6. Name: Indira Williams**

Organization: Humana: People to People

Post: Project Coordinator

Contact: +501 615 4492

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

In the communities we practice mostly home-gardens, there are farmers who practice citrus + home-gardens, small animals +citrus, Moringa+ citrus, horticulture + citrus.

We work with farmers through a farmer's club, we provide technical assistance, basic equipment and weather equipment to monitor the weather in areas that are prone to flooding.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

In some areas home-gardening cannot be done due to the landscape because the areas are easily flooded. Many farmers have reported burglarizing of crop and animals. There are times when Alcaldes and Chairman doesn't necessarily participate and promote agriculture strategies and/or programs especially if it has to do with women's education and empowerment, this is because these members are devoted to their traditions which is a gender base camp.

**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

Educational awareness and agricultural training- the community members respond very well to these training and they are always interested in learning and always want to get a certificate.

Provision of equipment- because they sometimes lack basic equipment

**4) Have you addressed gender issues in this work? How?**

In some communities the traditions are deeply rooted where men go to the farm and work while women stay home and takes care of the children and the house. While in other communities it is women who does the farming and builds their thatch houses because their husbands are out working as a police officer, BDF or Coast Guard. Their husbands are never at home, so the women fill in for the men who are out working.



It's a cultural situation and each community reacts and participate differently. There is even racism within the communities. Maya men doesn't like women to get involve in these activities.

**5) Any specific recommendations for engaging the women and youth?**

It is a challenge. Whenever we do any training or activity, we invite everyone, we try to make them feel equal, we include both men and women through interactive participation and when men see women doing the same thing, some men ease up and welcomes the idea of women to participate.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

It is necessary to note and it is recommended that whatever strategy that we want to implement in the NAP, we must speak to the communities first so that they can become part of the decision making within these activities so that when implementation of the policy comes they will accept the rules and regulations more easily because they know that they have some decision making and they participated in the development of these policies making.

**7. Name: Marlin Jacob**

Organization: BFREE

Post: Executive Director

Contact: +501 671 1299

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

Developed AF on 1 115 acres using mainly cacao under forest trees. BFREE worked on a BCARP initiative program during 2012-2015 with Trio Farmers focusing on restoration and conservation. The objective of this was to help farmers transition from monocropping practices to agroforestry practices using cacao production. Within the program they have developed nursery, provided equipment, seeds, training and they have planted over 50 000 seedlings.

Conduct experiment and research:

- planting cacao in degraded area with trees (permanent shade) and temporary shade with trees (local species)
- understand the economic, social and environmental benefit obtain from AF practices
- Planting new varieties with high market value
- conduct data productivity and wildlife data (bird data) and invertebrate to understand how they use AF for habitats, understand the variety biological benefits and how wildlife is utilizing and impacting these systems

They conducted the first AF-cacao forum in 2018

- Develop AF platform to collect data on the cacao industry in Belize
- Work with local and international stakeholder for a non-deforestation cacao policy w/key stakeholder in the cacao industry. That does not degrade or deforest area for cacao production.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

Major Challenges- people in the NGO & public GoB work in isolation. No framework for information sharing because they work in their own bubbles. There is no interaction.

Lack of platform and coordinated effort to work together

No financial mechanism for AF and lack of financing.

No incentive to practice AF

No incentive for private land owner to keep forest conservation in their land.

The economy does not support the development in AF

How can we link land owner to gain access to funding/financial support to keep forest or conduct AF in their land?

AF does not provide the same income as monocrop (fast income)



**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

Firstly, there needs to coordinate effort to bring farmers together who are interested in AF to create structure and facilitation process for them to work together and share information and learn from each other.

-Help support with pricing or some sort of way to get fair pricing to get income from their products produced in AF

-Create financial incentives like reduction in taxes and other taxes, this will not help much but it will be a gesture to promote AF. And get an adequate financial mechanism.

-Marketing work along with institution like BELTRAIDE to promote AF produce

**4) Have you addressed gender issues in this work? How?**

Yes, it is an opportunity for women. Historically, it has been a men’s work. Many of the cacao farmers are getting older and youth don’t want to get involved because they don’t see the value of forest and/or agriculture because there has been no finance. Therefore, there is a gender and age gaps within the AF and Agriculture sector.

**5) Any specific recommendations for engaging the women and youth?**

BFREE has created a Field School program for women and youth to develop a profession in AF, so that they can learn specific skills in AF and obtain specific skills within the field. Women can become manager and businessowner or workers. Unfortunately, there is not a lot of good examples of economic models of AF system in Belize.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

There is a need for restoration of degraded land with new productivity strategy.

No further deforestation for AF in protected areas

Land use policy

Creating platform for key stakeholders in AF

Bring people together to ensure that people are doing practices in AF

**8. Name interviewee: Edilberto Romero**

Organization: Program for Belize

Post: Executive Director

Contact: +501

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

No much lately, the last major effort was with Alan Herrera. After that there some projects with the San Lazaro group (honey production and protecting the natural forest) and also a Limal group. Community issues got in the way and projects ended.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

About 40% of their reserve is under sustainable forest management; this generates about \$1.2 m per year which is used to cover their operational costs. Has tried producing fruit and timber seedlings as a business, but there are always financial issues, group conflicts and poor business practices which in the end make them fail.

**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**



Their observations support that mahogany grows better in mixed stands, not open spaces (because of shoot-borer attack), and in fallow areas (with bush around). Price for a mahogany tree (50cm at breast height) is \$1000 to 2000 standing up.

Started a project in Hill Bank, never assigned a full-time person to the program. And it needed consistent technical support. Mixing trees and agriculture is another level of expertise.

**4) Have you addressed gender issues in this work? How?**

No gender projects really, but does use mainly women as hotel workers. PFB supports and promotes one women group, Ortheadas in Indian Church, with their restaurant business for tourists and visitors.

**5) Any specific recommendations for engaging the women and youth?**

None but it is important to get in touch with women and youth groups. PFB tried to do so in Belize River Valley with the Biological Corridor project but they had no land for agroforestry, and the groups were not there and not organized to go forward with the project.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

The ecosystems approach which mimics nature could be relevant, capacity building, tying AF to ecotourism, food security, fishing and processing of waste, are all important for the AF policy. Also, could include procedures for managing money, non-timber forest products (e.g. chicle, harvesting palm leaves for thatching, etc. Mennonites in Blue Creek are interested in silvopastoral systems.

**9. Name interviewee: Max Ortega**

Organization: Belize livestock Producers Association (BLPA)

Post: Project Officer, Climate smart pilots with cattle producers

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

One farmer (Mennonite) is experimenting with alley cropping to produce leucaena for high protein fodder for supplementing cattle feed.

The project is exploring ways of improving low-yields and poor-quality grazing areas. The pastures degrade rapidly due to the fact that farmers are at the basic level of knowledge on managing their pastures.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

None yet Cattle are an extra or side activity for most farmers so it is an uphill struggle to get them really involved in implementing changes and dedicating time and resources to new initiatives.

**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

The first step is to propose a relevant agrosilvopastoral system and establish some pilot AF systems to determine interest and response to adoption. I have observed that some cattle farmers are using their cattle to acquire more land, acquiring more land is an important motivation.

**4) Have you addressed gender issues in this work? How?**

No experience. However, there is a woman farmer in Indian Church, O.W., who wants to produce milk with her cattle. She could be interested in AF.



**5) Any specific recommendations for engaging the women and youth?**

None

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

We should look at land issues. In their climate smart pilots, they are focused in order of steps: 1) water and feed options, 2) electric fences, 3) forage banks, and 4) paddocks and rotations.

Note that Mennonites have about 80% of the cattle in Belize and thus control the BLPA Board.

**10. Name interviewee: Dr Luciano Chi**

Organization: Sugar Industry Research and Development Institute

Post: Director, Research and Extension

Contact:

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

None yet, but some farmers are interested in AF, but at this very moment, the situation is critical.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

None so far.

**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

We would need economic resources; we have the farm schools, a useful tool for training farmers. We need training. We could use land areas not suited to can growing or degraded areas. We would need incentives for the farmers or for farmer groups who have tree nurseries.

**4) Have you addressed gender issues in this work? How?**

In our industry, 40% of the farmers are women, so SIRDI has been engaging with them, even at leadership and decision-making levels. We have conducted courses for women, on the topics of business and enterprise management. However, we no longer have the IDB project which was supporting these activities.

**5) Any specific recommendations for engaging the women and youth?**

We have direct communication with women and youth. We also could use our FFSs for AF.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

You should include land policies and incentives because the sugar cane business is at its lowest price ever, and the farmers are suffering financially.

**11. Name interviewee: Wilber Sabido**

Organization: Forestry Department

Post: Chief Forest Officer



Contact:

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

No AF program. We do have a National Forestry Policy which seeks to promote AF. We work with forestry partners like YCT and VACA groups, close to Arenal in Cayo District, and with Friends of Development and Conservation (FCD) in integrated forestry systems.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

The main constraints are financing, technical capacity, nursery and seedling production. If we had these, much can be accomplished working in the field with farmers.

**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

The most important action is to promote AF options that are relevant to the various beneficiaries, focusing on a combination of short term and long-term benefits. For example, culturally home gardens should be attractive for food and nutrition security, health, etc.

**4) Have you addressed gender issues in this work? How?**

We are involved with roundtables on forestry on best land use management practices with IUCN using the restoration open assessment methodology (ROAM).

**5) Any specific recommendations for engaging the women and youth?**

Women are the backbone of the households in the rural areas and very important for cash flow, hence we should include a support structure for women in the AF work.

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

Priority functions should include food security, water security, and other important needs of the beneficiaries, the identification of suitable tree species (ideotypes), and well-planned pilot AF systems.

**12. Name interviewee: Cesar O. Majano**

Organization: TKO Farms

Post: Farm Manager and Assistant Farm Manager

Contact: 501 614 2292

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

TKO has been planting teak, mahogany and Spanish cedar, soursop, coconut and citrus, destined for the US markets. The trees are in pure stands, but are aware of AF and would be willing to try some combinations of these plants with short-season crops.

**2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

None so far, no AF yet.



**3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

Not relevant at this time, but they think training and supply of some inputs would help.

**4) Have you addressed gender issues in this work? How?**

Not relevant.

**5) Any specific recommendations for engaging the women and youth?**

None

**6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

They are willing and able to help in promoting farmers to participate in what TKO can export. TKO is keen to formalize such partnering arrangements for AF development in the that area of Teakettle, Cayo District.

**13. Name interviewee: Belarmino Esquivel**

Organization: Department of Agriculture

Post: Principal Agricultural Officer

Contact:

**1) What are your achievements with Agroforestry (AF) practices you are working with?**

Historically, agroforestry has always been practiced in Belize. While it has not been promoted using the exact term “agroforestry systems” and there is no specific program or strategy established by the Ministry, the Extension and Research Units to promote the related practices. In the south for example, Cacao and Coffee agroforestry systems, alley cropping & diverse home gardens can be found. In the Cayo and Northern districts, cattle rearing with linear arrangements, plantations, buffers and protein and energy banks are common.

Over the years, the ministry has promoted:

- **Mixed farming systems** (Integrated farming systems, Intercropping, Alley cropping, Organic production, Sustainable agriculture), each of these systems promote “diversity”. For example, the Farmer of the Year national competition puts considerable emphasis on farms that have tree/crop/livestock components.
- **(In the last 2 years) - regenerative agriculture** principles ([Back to Basics](#)): to improve and conserve soil quality (soil amendments, cover crops, bokashi, compost), water management (irrigation, draining, water harvesting), and more recently, educating and promoting principles and practices that increase biodiversity, carbon sequestration (above and below ground).
- **Protein and energy banks** (forage with high protein and energy content), to discourage the producers from making large expansions and teaching them to get more nutrition for animals by intensification.
- **Silvopastoral systems:** rotational grazing of animals, live fences with Madre cacao is common, improved pasture species, scattered trees in pasture, and riparian buffers.
- **Agrosilvopastoral systems:** crop production with livestock and tree components
- **Beekeeping** program to address forest preservation, create adequate microclimates for bee populations, and use trees to protect hives from extreme weather events, buffers for community safety and pollination.



- **Agroforestry nursery** - AF trees are made available to farmers, even though there is not any campaign or strategy to promote or encourage tree planting on farms at present.

So far, the most evident arrangements identified and supported by the ministry at the national level are: live fencing, dispersed shade trees in pasture, protein and energy banks, forest with coffee and cocoa, alley cropping, timber plantation, home gardens, apiculture with forest trees, and forest with medicinal plants.

## **2) What constraints or challenges are you facing in your Agroforestry (AF) development work?**

Currently there is no AF development work per se but as mentioned above, there are elements that the ministry is promoting which are in line with Agroforestry practices. Some of the challenges to advance formally into agroforestry development are:

- Low level of expertise in agroforestry and other land use management
- Lack of awareness of the benefits and value for trees both in and out of the ministry
- Insufficient persuasion to encourage farmers to incorporate trees into their farms
- Some producers believe that incorporating trees into their farming systems reduce productivity significantly and as a result are not interested
- Low access to funding to develop AF
- Low demand for nursery plants compared to earlier years (example, the nursery in Central Farm has reduced production).

## **3) What can be done to accelerate the widespread adoption of your Agroforestry (AF) recommendations?**

- Education and awareness
- Provide a market-led approach to agroforestry
- Assess what is existing with respect to agroforestry
- Classify the land available, what can be sectorized or recuperated. Incentives to farmers (environmental services)
- Investment in infrastructure (roads, buying centers in communities, social media, online marketing, etc), and
- Implement other sustainable land use of the policy, by phases or steps.

## **4) Have you addressed gender issues in this work? How?**

Traditionally the gender topic has not been discussed with respect to any type of agriculture system promoted by the Ministry; however, the Ministry strives to be non-discriminatory and all persons are able to access and benefit from its resources and technical support. It has been observed though, that women and young children play an important role in the selection of planting material and seeds, caring for young plants and establishing home gardens (perennial and annual crops usually with animals on the farm). An opportunity for greater involvement of women and youths clearly exist but for the moment, the Ministry does not have a gender expert to emphasize the importance of this critical area or provide training to its technical staff.

## **5) Any specific recommendations for engaging the women and youth?**

We must prioritize and expand the promotion of agroforestry systems in Belize for everyone by:

- Adding agriculture to school curriculum with emphasis on the value of trees for the future and sustainability of agricultural systems
- Offer young farmers a voice during the consultation process



- Combine innovation and technology with traditional knowledge and experience.

## **6) What are the priorities that should be addressed in a future National Agroforestry Policy (NAFP)?**

The policy should:

- Raise awareness on the roles of trees at the national level especially among agriculturalists in the sector (Research institutions, Extension and other Technical Officers) and producers (especially young people). Highlight the benefits of having agroforestry systems as it relates to achieving the sustainable development goals.
- Creation of a well-organized inter-sectoral advisory group to create a synergy in developing AF (Example: Agriculture, Forestry, Environment, Rural Development and Education ministries)
- Develop a regulatory system that would ensure proper land use management for sustainability of the sector
- Advocate and support payment for environmental services to landowners and farmers
- Advocate for the revision of existing forest laws that would hinder persons from wanting to develop agroforestry (unfavourable regulations and legal restrictions)
- Stimulate markets for tree products for income generation in rural communities
- Support agro-ecotourism as an option for rural communities to collectively improve livelihoods and at the same time create value for a balanced agro-ecosystem.

### **Other notes:**

It is valuable to reflect that in the late 1990s Agroforestry was an ad-hoc initiative which was eventually discontinued by the Ministry, however, we are at an opportune time to restore the interest and seek support to develop AF and other land uses for the great contributions it can bring to the sector.

Furthermore, the Ministry must prioritize Agroforestry since it can effectively offer great benefits to the agricultural sector and the livelihood of all Belizeans. Once this is done, we can join the regional initiatives that have already built a commendable momentum so that we can achieve the SDGs.