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IMPACT OF CLIMATE CHANGE FROM A GENDER PERSPECTIVE

EXPLORATORY STUDY

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Introduction:

This paper contains the results of an exploratory study carried out in collaboration with CARE and the Pennsylvania State University (PSU), in order to know the perceptions of small producers, men and women, regarding climate change, perceived changes, effects on their livelihoods and the adaptation measures that they are applying or could apply in the future, with a special interest in identifying the position of rural women in the face of these changes and the opportunities to reduce the vulnerability of small farmers, businesswomen and their homes.

According to the United Nations, climate change is defined as «the change in climate induced directly or indirectly by human activities that alter the composition of the global atmosphere», regardless of the natural changes in climate that are observed throughout time (IPCC 2018). It includes the decrease or increase of phenomena such as droughts, floods, forest fires, landslides, among others (Alston and Whittenbury 2013). It has serious repercussions for the entire planet, but the magnitude of its impacts will be greater in the countries of the southern hemisphere, because their inhabitants tend to have lower incomes and less capacity to respond to disasters; they are also more dependent on natural resources and agricultural production (Parks and Roberts 2006).

Climate change is the greatest global threat to achieving the Sustainable Development Goals, because its impacts are widespread, unprecedented, and disproportionately affect the poorest and most vulnerable people. Honduras has been listed as one of the countries that is most susceptible to the effects of climate change, such as droughts and floods (Bouroncle et al. 2015).

On the other hand, in recent years it has been identified that gender can be a determining factor in the degree of vulnerability to climate change. (Lane and McNaught 2009). Women are often more vulnerable to such effects, especially when they depend primarily on local natural resources for their livelihoods. Therefore, it is important to identify gender-sensitive strategies to respond to environmental and humanitarian crises caused by climate change.

The present study was carried out in three communities in the department of Intibucá, located in the area known as the Dry Corridor. A total of 29 interviews were applied, 18 to women and 11 to men; The participants were selected with the support of CARE Honduras and Technoserve. The results confirm that in the area there are gender differences in the perception of the effects and the possible adaptation measures.

We hope that the dissemination of the results of the study will contribute to encourage reflection and the strengthening of strategies with a gender perspective aimed at reducing the impact of climate change, not only in the Dry Corridor, but in general in the country.



Context and methodology of the study:

In Latin America, Honduras has been listed as one of the most vulnerable countries to droughts and floods (Kreft, Eckstein, and Melchior 2017). The levels of poverty, malnutrition and food insecurity are alarming in rural areas and mainly affect the communities that are part of the Dry Corridor (FAO 2017; Honduras Government 2013). Agriculture continues to be the main economic activity; however, it is affected by low productivity, poor road conditions, and restricted access to resources.

Climate change is projected to worsen the vulnerability of rural households (Bouroncle et al. 2015). Vulnerability in this context refers to the factors that limit the ability to respond effectively to disasters or unexpected events, and is reflected in the loss of control over natural and productive resources, as well as the ability to inform and make decisions. In addition, it increases the chances of being food insecure and reduces the ability to participate in formal educational processes. In general, the most vulnerable populations are characterized by factors such as gender, low economic and educational level, as well as lack of access to services or stable sources of income (Alston and Whittenbury 2013).

In Honduras, the most notable effects are reflected in the decrease or loss of agricultural production, forcing rural households to diversify their livelihoods or migrate to urban areas (Honduras Government 2013). Due to traditional cultural patterns, women tend to find themselves in a more vulnerable position, because their access to productive and financial resources is limited, a situation that restricts their ability to seek remunerated options, and at the same time continue to meet the expectation of being responsible for household chores (FAO and CARE 2019).

Gender dynamics are also important because it has been proven that the distribution of power and bargaining power within households can affect the production, distribution, consumption of food and the adoption of strategies to withstand moments of crisis (Johnson et al. 2016).

In the Dry Corridor, initiatives are being promoted to reduce the vulnerability of rural households; Among them, PROLEMPA, a project implemented in association with the Government of Canada, and carried out by the CARE, SOCODEVI, SAJE MONTRÉAL CENTER, TECHNOSERVE and CESO SACO consortium in collaboration with other technical entities, aims to improve the economic well-being of small producers and entrepreneurs, especially women, youth and indigenous groups in the departments of La Paz, Intibucá and Lempira (CARE 2017).

Research Methodology

People involved in coffee production or who supported an immediate family member in productive activities, aged between 18 and 70 years, were interviewed. In total, 29 interviews were conducted, 18 with women and 11 with men.

The interview included descriptive questions about the agroecosystem; their current livelihoods (agricultural and other economic activities); perception of climate change, understanding causes, effects and possible adaptation measures; gender roles and distribution of work in the community; and, finally, the opinion of the people interviewed on the relationship between migration and climate change.



Context and Methodology of the Study:

Profile of Participants

Tables 1 and 2 show information on the people interviewed by sex and community, including age range, marital status, average number of children, current crops, and ownership of assets such as animals and land.

In general, the women interviewed were in the age range of 23 to 66 years, while the men were in the range of 27 to 67 years. Most of the men (seven) were married; As for the women, eight were married, seven were single or separated, and three were widows.

Regarding access to land for the men interviewed, 100% said they owned land with an average area of 2 mz. (1.4 ha approx.) Four of them inherited the land; three of them bought it; in two cases, the respondents inherited

and they also bought more land; and in two of the cases no information was collected on how the land was obtained.

With regard to access to land by women, 67% of the interviewees said they own land of an average of 1 mz (0.7 ha. approx.), seven received the land as an inheritance, four bought it and one received it as a donation. Only one of the interviewees who received inherited land has bought more land.

All of the men, and 15 of the women, expressed that coffee cultivation was the main economic activity of the household. Most of the people interviewed are also involved in planting corn, have access to a family or school garden, and reported having other crops, such as beans, cassava, citrus, or banana.

Table 1. Profile of the People Interviewed

Community	Sex	Interviews	Age ¹		Civil Status			# of Children ²	Land	Extension (m ²)
			Average	Range	Single	Married	Widos/ Widower	Average	Owner	Average
El Injerto	Women	4	32	23 - 50	3	0	1	3	4	1
	Men	6	40	27 - 65	1	5	0	4	6	2
Buena Vista	Women	7	40	24 - 66	2	4	1	5	3	0.7
	Men	3	42	40 - 46	2	1	0	1	3	2.5
El Campanario	Women	7	45	27 - 66	2	4	1	5	5	1.5
	Men	2	43	42 - 45	1	1	0	3	2	2
Total	Women	18	39	23 - 66	7	8	3	4	12	1
	Men	11	42	27 - 65	4	7	0	3	11	11

¹ In five cases, the age of the person interviewed was estimated

² In three cases the information was not obtained.



Table 2. Crops and Livestock of Interviewed People

Community	Sex	Interviews	Crops				Animals	
			Coffee	Corn	Garden	Other ³	Minor ⁴ Livestock	Cattle ⁵
El Injerto	Women	4	4	2	2	2	1	0
	Men	6	6	4	3	3	6	2
Buena Vista	Women	7	5	5	1	3	5	2
	Men	3	3	2	3	2	3	1
El Campanario	Women	7	6	7	7	3	5	1
	Men	2	2	2	0	1	1	0
Total	Women	18	15	14	10	8	11	3
	Men	11	11	8	9	6	10	3

³ Beans, citrics, plantain and yucca

⁴ Chicken, rabbits, goats, sheep

⁵ Cows, horses, mules.

Theme 1: CLimate Change

Perceived Change

The first topic explores the effects of climate change that the interviewees identified in their environment, establishing how they perceive the current agroecosystem, compared to that of their childhood. Of the people interviewed, 21 were originally from the community where they reside, and 8 migrated there when they got married. Of the latter, 6 were women. The people who were not native to the place came from neighboring municipalities and had resided there for ten years, on average.

All the participants expressed having perceived rises in temperature and greater irregularity in the annual rain patterns, compared to their childhood. In consensus, the participants related their childhood with positive feelings regarding natural resources and the climate.

«My parents complained because they had no options to work, they had no money, there was no access to the town, the street was always in bad shape. When I was 12 years old, I started harvesting wild blackberries and I went with other neighbors to sell them. I carried them in loads, normally I carried between 15 or 20 pounds, but I got to carry up to 30 pounds, and we walked six or seven hours until we reached Jesús de Otoro».

– Woman, 44 years

Perceived Causes

Most of the people interviewed identified deforestation caused by the current population and by the planting of coffee trees as the root of the changes in the climate, as well as the increase in the use of agrochemicals and the mismanagement of waste. They perceive these factors as the cause of the consequences suffered by climate change, and they expressed concern about the lack of efforts to conserve natural forest areas.

«[Climate change] happens because we cut down the forest too much. Where there are enough trees, there are no such problems, but we cut down the trees, and that has affected us because we do not take care of the environment.»

– Man, 41 years

Only one of the people interviewed linked the problem to the pollution generated in cities, such as San Pedro Sula and Tegucigalpa.

«Man is the one who has caused climate change. The problem is our actions at the national and international level, because everything is connected.»

– Man, 46 years

However, they recognized that in the past, mobilization from the communities to the commercial centers (Jesús de Otoro, Siguatepeque or La Esperanza) was restricted, due to the poor condition or absence of the roads. Their parents' economic opportunities were scarce, limited to subsistence farming or temporary work on other farms.

The people interviewed mentioned reaching these conclusions due to their life experience, what they hear or see on the radio or television, and to a lesser extent the information received during the trainings.

Impact

In general, the people interviewed said they perceive the effects of climate change in two categories: their agricultural activities at home. In the first category, they reported a higher incidence of pests, diseases and percentage of losses in coffee and corn. They attributed these effects to rising temperatures and water scarcity. They also mentioned the shortage of pasture to feed livestock and the loss of poultry, due to the spread of viruses.

“

«When coffee is in May bloom and needs water, it doesn't rain. So this heat does not end because it does not rain. And when it finally rains the coffee is already lost, because it is a plant with a cycle. This year in the lower parts the coffee has already been lost, there will be no coffee. Because the coffee managed to flower and form, but since it had no water, it dried up».

– Man, 42 years

«And right now, one thing that has occurred in this climate change is the coffee leaf rust, which is affecting coffee a lot. In my case, I have about 1.5 mz (1.05 ha) of coffee, and this year production dropped, due to rust and summer. You could see how the coffee rust dried it for good».

– Man, 27 years

With regard to the household, women reported that they rely heavily on water to carry out their tasks, such as cleaning, preparing food and washing clothes. At the time of the interview, they said they have relatively stable access to water through community projects. However, the availability and quantity of this resource is seriously reduced during periods of drought. Interviewees expressed concern about what might happen in the future if dry spells continue or become longer.

«When there is no water, you can't mop or wash anything. We can do almost nothing. Before we used to go to the streams, but now, when there is no water, you can't find water in the streams either. It is time to ration the water in the watershed so that there is enough».

– Woman, 66 years.

Regarding health problems, the interviewees (men and women) mentioned an increase in cases of heat stroke, flu, Zika, dengue and gastrointestinal diseases, and identified children and the elderly as the most likely to get sick.

« Climate change is affecting us, especially because of the mosquitoes that transmit dengue. Now that it is warmer, we have mosquitoes in the area ».

– Man, 40 years

Does climate change affect men differently than women?

Most of those interviewed do not consider that there are differences in the way that climate change affects men and women. They state that the effects are suffered equally, since the greatest consequences are the loss of crops for food or sale.

«I don't think there is a difference, because it affects agriculture as a whole; then it is a blow that in the end affects the household and everyone together».

– Man, 42 years

However, as mentioned before, some women mentioned having to ration the use of water during their work, especially in times of droughts, which they directly related to the changing weather and rain patterns. In some answers collected it was felt as if women are more affected by climate change:

«It affects women because they cook, and the houses are small and filled with smoke, and if to all of that you add the heat outside, it affects them. ».

– Man, 40 years

« I think that climate change affects all human beings and plants; however, since it is the man that goes to work in the fields, he is more exposed to the sun and is more affected ».

– Woman, 44 years

Adaptation Measures

Overall, men and women mentioned similar adaptation strategies. However, the adoption of these strategies can be compromised by people's ability to access the necessary information, resources and also due to time. Due to the traditional gender division of labor, these resources are often more limited for women.

The adaptation measures mentioned by men and women were almost the same. Regarding coffee, they reported the use of resistant varieties of seeds, shade and integrated pest management; Regarding the cultivation of corn, they mentioned irrigation; as general measures, they identified the creation of forest protection committees. The only difference was that only women reported diversification of income through the establishment of a small grocery store as a possible measure.

Most of the people interviewed stressed the importance of conservation and reforestation programs as a measure to counteract climate change. They mentioned committees organized at the community and municipal level to ensure the protection of the forest, the regulation of water use and the implementation of penalty mechanisms if necessary.

« What is starting right now [with the committees] are initiatives to reforest. As I said, we are going to take care of the environment, so that everything returns to normal ... it may not be too late ».

– Woman, 55 years.

Seven people mentioned the integration of shade trees in coffee plantations, and four pointed out the change to varieties more resistant to pests. In case the situation worsens, some are considering using irrigation systems; however, not all have accessible water sources for this purpose. On the other hand, the adoption of new technologies, such as irrigation systems, depends to a great extent on the ability to finance the installation of the systems, but also on the adequate knowledge to use it correctly.

«Irrigation is difficult, because a large investment would have to be made. For example, drip irrigation is very expensive. The hose for the drip irrigation system alone costs a thousand lempiras. It is very expensive ».

– Man, 65 years

« No, we do not water, we only have to wait for God's blessing. Watering is very expensive and also, between using the water for watering or for the house, it is better to use it for things around the house ».

– Woman, 66 years.



None of the people interviewed mentioned migration as a measure of adaptation to climate change; however, the majority agreed that, faced with a more difficult situation, migrating will become a necessity. They also recognized that migration has increased in recent decades. Current and potential destinations are the United States, Spain or national urban centers.

«People leave to do better, because seeing the poverty that exists in the country, as you know, we depend on coffee prices, and seeing that sometimes the prices fall, and one has debts to pay, that's why people migrate to other countries. They migrate to be able to improve themselves and help their family too».

– Man, 40 years.

Opportunities

Participants from a particular community, El Campanario II, consider that changes in the climate have benefited them with an increase in production, especially of coffee. Because the community of El Campanario II is higher above sea level, current weather conditions are ideal for coffee and other crops. However, the interviewees were not sure what will happen in the future if the climate continues to change.

«When I was little, the plants didn't like it here because it was very cold here; Now, as the climate is changing, they do like it. Plants like the area better because it is warmer»

– Woman, 30 years

«No, coffee has not been affected [by climate change]; In fact, it has helped us, because as coffee needs heat, now we have had more production. Because previously, as it rained a lot, the coffee did not want to bear fruit».

– Woman, 44 years



Expectations for the Future

Among their expectations for the future in the face of the threat of climate change, some interviewees predicted more severe losses in coffee and corn, which would lead to food insecurity and poverty. Only two interviewees, in the community of El Campanario, said they do not believe that climate change affects them significantly.

«If the changes continue, there will be more diseases. There is going to be more grain shortages, more pollution and disease. We are going to have less coffee production. Even the animals will suffer».

– Man, 41 years

Topic 2: Gender and Effects of Climate Change

Gender Roles

Gender roles are culturally determined and dictate what behaviors and attitudes are acceptable to people based on their biological or perceived sex. In Honduras, as in most countries in the region, there is pressure on women to adopt the role of caregiver of the home and family; at the same time, you women must «Support» in productive-agricultural activities. Meanwhile, the man is assigned the role of provider and decision maker (Staritz and Reis 2013). In the three communities where the study was carried out, this traditional division of labor and responsibilities persists, identifying women as housewives in most of the interviews, while men were always identified as producer-farmers.

« My wife is a housewife; She takes care of everything in the house, washing, cooking, the children and me. She also works planting things, prepares furrows and keeps an eye on radishes ».

– Man, 40 years.

« The women here only do housework, they are housewives. They only work for two or three months a year during the coffee harvest »

– Man, 41 years

When discussing the possible reasons for these differences, most mentioned that they are roles they learned from a young age and that it was "natural" for things to be that way, because "men are stronger", and that allows them to carry out agricultural work.

« The man works in the field and the woman in the house, that comes from creation ».

– Woman, 58 years.

« What happens is that very heavy work cannot be done by women,so, we have to do it. That's why it is so ».

– Man, 40 years.

It was also mentioned that women cannot become more involved in productive activities due to limited time availability, since they must take care of the home and their children, particularly the young ones. However, some women proudly mentioned being part of agricultural activities, and that the secret was in "knowing how to manage time to be able to do everything." The change in the distribution of labor was not mentioned as a possible answer to the problem.

« If you decide to do things early, you have time to do other things, because if you start in the morning and do things [at home], you have a little time left to help with the farm work. »

– Woman, 24 years.

«Sometimes it's not that we can't, but sometimes we don't want to. But if you get involved, it helps a lot, because now I already know how to fertilize farms and other things. And all that we have learned by working the field».

– Woman, 43 years.

One of the participants stated that, in the case of single mothers, they have to assume both roles, which brings challenges regarding the use of time and access to assets.

«The difference in jobs is based on the ideology that the man has to work, and the woman has to be at home. There are people who are surprised, but in my case, I am a single mother; So, I have had to do things that others do not. That has made it a bit different in terms of meeting participation and joining the groups. Normally the man is the one who does this and decides what to do, but there are factors that force the woman to do it too, especially if there are small children to care for. »

– Woman, 30 years.



Gender Roles and Coffee

Although the role of women is perceived as limited to housework, women expressed that they participate in agricultural activities. In the case of coffee, women mentioned participating in activities such as supervising day laborers in the field during pruning and harvesting, and supervising staff during coffee drying. Some also indicated that they are responsible for washing and drying, and that they also support during compost and harvest. One of the interviewees said that she is in charge of keeping the books of the coffee farm. The men also acknowledged receiving support from their partners in activities such as composting, harvesting, washing and drying, mentioning that these are activities that they (the women) "can" perform.

« My wife helps me with tasks she can perform, like composting and cutting. »
– Man, 40 years.

The men said they participated in all activities related to cultivation, with the exception of drying and washing, but did not explain why. They also mentioned supporting the activities of other family members, specifically when the person in charge of the plot was a woman.

Gender Roles and the Garden

Two thirds of the people interviewed mentioned having access to a family garden. The most mentioned crops were beans, radish and squash. Of the participants who owned a garden, half attributed responsibility and ownership to women. The other half expressed that the work and ownership of the garden are shared between the husband and the wife. Some mentioned that the children also collaborate with the maintenance of the garden. In the community of El Campanario II, the interviewees recounted their experience related to a project for the establishment of gardens, in order to improve the nutrition of the community's children. Thanks to this, they managed to establish themselves as a women's group, and later as a savings and credit cooperative, including both genders. Currently, they are part of a network of women at the municipal level, and offer coffee processing services.

Gender Roles and Animal Care

Most of the people interviewed owned small livestock, mainly chickens or other poultry. In general, women were identified as the owners and managers of the chickens; men only participated during vaccination of animals or supported sporadically with feeding.

On the other hand, the people interviewed who mentioned owning bovine or equine cattle (3 men and 3 women) affirmed that their ownership and responsibility corresponded to men.

Paid Work

The effects of climate change are a threat to the livelihoods of rural households, creating greater uncertainty about agricultural production as the main or only source of economic income. Livelihood diversification is a strategy frequently used by rural households to get out or reduce the risk of falling below the poverty line.

The search for paid work is one of the most common strategies; however, the chances of finding it can be affected by a number of factors, such as people's educational level, social capital, and gender.

During the interviews, the opportunities that men and women have in the area to access paid jobs were explored. In consensus, the participants expressed that the most economically active period is during the coffee harvest, an activity in which all people participate since childhood.

However, both men and women associated working for others with feelings of failure and as a resource they use when they cannot meet their needs with agricultural production. On the contrary, those who only work on their own plots expressed it with a connotation of pride.

« « When one already has something to work on, it is no longer necessary to leave. It is not fair that one has to sacrifice oneself [working outside] » ».
– Woman, 44 years.

« Thank God I don't have a job outside; I only dedicate myself to work on my plot. Well that's a blessing that we have ».
– Man, 33 years

Paid jobs mentioned by interviewees

4 
Carried out by both
men and women

1. Fertilize

2. Weeding

3. Harvest Coffee

4. Harvest Beans or Corn

4 
Carried out by
women

1. House Chores

2. Attend Stores

3. Prepare Food

4. Community Health Center

7 
Carried out by men

1. Security guard

2. Supervisor

3. Driver

4. Grass cutter

5. Sower

6. Carpenter

7. Construction

Total:

♀=8

♂=11

Regarding the frequency reported by activity, it was found that most of the women identify the coffee harvest as their source of economic income; 17 of the 18 interviewees reported working during the season.

In the male interviews, on the other hand, there was no predominant activity; however, about half of the interviewees (5) mentioned working as day laborers throughout the year.

On several occasions, men acknowledged having more options than women to get temporary jobs. Therefore, if climate change has the effect of reducing coffee production in the area in the long term, it will mean that there will be fewer opportunities for paid work, a change that will be significantly suffered by women.

Topic 3: Migration

Finally, the participants discussed their perceptions regarding migration in their communities. Most of the people interviewed stated that the frequency of migration has increased in recent decades, mentioning the lack of job opportunities to generate the income necessary to live as the main reason that pushes people to migrate. This is related to the high dependence of households on agriculture as the main economic source, either through the sale of their products or work as day laborers.

« People leave because they say there is a lack of work; They say that there [the United States] people earn more. Because 150 lempiras [payment for a day as agricultural wage] it is not enough to buy anything ».

– Woman, 58 years

«She [family member] only graduated as a teacher, she couldn't find a job; She got different little jobs here and there, submitted her CV, but she couldn't get a job; so she decided to travel, to go to Spain to work there».

– Woman, 66 years

«What I know is that most people leave because there is no steady job that is going to guarantee food for these difficult times. There is work, it is not said that there is not. The problem is [that] people have jobs, but they don't make enough money».

– Woman, 30 years

The participants described migration as an option used by people in their community to improve their economic situation. However, they affirmed that it is an extreme and high-risk measure, because in most cases it is done illegally and without any support. Pathways to migration are often built through contacts with prior experience and "coyotes" known for their services. Most of those interviewed mentioned that, in the months prior to the study, measures to regulate illegal migration had been strengthened, and that it was increasingly difficult to reach the destination successfully.

«Migrating is dangerous. I've had the opportunity to leave; they tell me: "we are going to help you". But I tell them that migrating is putting my life in danger on the way. Venturing, that is called venturing, is going to expose yourself to whatever comes your way, to any kind of sacrifice».

– Man, 41 years

«People say that it used to be possible; today, apparently crossing over to the United States is getting complicated. Because people now say that they are returning people and all of that, and that the border is also a problem. Can't be crossed».

– Man, 42 years

The level of information on the dangers related to migration, laws or legal mechanisms to migrate is diverse among the participants. However, in general they had the perception that migrating accompanied by a minor facilitated the process of entering the country of destination (United States). It is worth mentioning that the main sources of information on the subject are radio, television and other inhabitants of the community. In this sense, it is important to consider the effects that the lack of reliable and adequate information can bring to households, reflected in migration.

«Well today, seeing how things are in the past, people leave with minors to enter faster. So, the minors have also migrated because an adult decides to migrate and takes a child and it is easier, they do not suffer much at the border».

– Man, 40 years

«Yes, people commented that with children crossing is easy. It is like taking a child as a passport, to get to the United States, but without thinking and without imagining the consequences that are experienced or what those children will live».

– Woman, 44 years

Migration and Climate Change

The people interviewed pointed out their high vulnerability to agricultural losses as a triggering factor for migration, since they do not have adaptation mechanisms to droughts, pests or changes in the market, which leaves them in high-risk situations. The loss of a crop year can lead to extreme poverty and food insecurity. Considering this, the effects of climate change have the potential to drastically decrease the ability of rural households to meet their needs.

««This year several coffee growers have migrated to the United States. They have abandoned the farm because it is not profitable. And honestly, as a producer, I tell you, it is not profitable. One has to find another way how to get ahead».

– Man, 42 years

Effects of Migration on the Community

According to the people interviewed, the migration of other members of the community has had positive and negative effects. They noted that family breakdown is the most common negative effect; On the other hand, they also mentioned that the high risk of failure along the way can leave households in an even more vulnerable situation.

In order to pay the intermediary, or finance the trip, those who migrate usually sell land, animals, or take out loans in the hope of paying or recapitalizing themselves with the money generated with the new job abroad; However, by not being able to cross the border or adapt abroad, households are left in a more precarious situation when migrants return to the community.

«Some have left here who have coffee. They have left because they want to improve, but sometimes what they do is get worse, because if they leave, they use a “coyote” to get from here to there and sometimes they are sent back, and they lose that money they paid. So, what they do is get worse, life gets worse...»

– Woman, 27 years

Among the positive effects, the participants mentioned that, once adapted, migrants often send money to their relatives in the community. This money is used to finance crops and pay for wages, which creates job opportunities, even if it is unstable.

The money received is also used to improve infrastructure and services in the community. Most of the families use it to remodel houses; some open small stores (pulperías), and also use it to buy vehicles and motorcycles, which serve as a transport service between the community and the nearest urban centers.

One of the participants mentioned that, although these benefits can help the families of migrants, in the long term they can erode social capital and the capacity for community action. More research is needed to explore the long-term effects of migration and remittances for communities and social networks.

«[Remittances] generate individualism, because each one thinks only for themselves; if money is sent, it will benefit the family, but nobody thinks about their neighbor, nobody thinks about the group».

– Woman, 44 years



- The information collected was essential for a better understanding of the current state of the perceived effects of climate change, as well as the intersection of gender and vulnerability in the communities participating in the study.
- In general, the people interviewed related the concept of climate change to the effects on their livelihoods, especially agricultural productivity.
- Some of the strategies mentioned to face these effects were the diversification of income sources outside the farm, including work as day laborers; however, such work is linked to precarious situations of informality and instability, particularly for women.
- Most mentioned relying on income generated during the coffee harvest season. The variability of the international coffee market and climate change have increased the vulnerability of these households.

Vision of the Future

- Adaptation strategies must contemplate long-term sustainable actions. We find that current strategies focus on the short term, based on immediate actions, usually taken in times of stress, that are not sustainable in the long term.
- Moving from short-term to adaptation strategies largely depends on the degree of security and resilience perceived by households, the degree of risk of change, and the institutional support provided to people to move effectively through the uncertain change processes. Building resilience is not only essential for adaptation, it is also an integral part of the transformational change, a process

requires input from institutional structures, including government, with special attention to structural inequalities and oppressive customs that limit gender equity (Pelling 2011).

- Although the interviewees found no difference between the effects on men and women, women are often more vulnerable to the effects of climate change, especially when they are highly dependent on local natural resources for their livelihoods. This vulnerability is related to traditional gender roles, which restrict access to job opportunities outside the community.
- Rural women are disproportionately affected by climate change because they are responsible for reproductive responsibilities, while their access to resources and decision-making processes is uneven, as well as having limitations in their mobilization capacity. Therefore, it is important to identify gender-sensitive strategies to respond to environmental and humanitarian crises caused by climate change. (Alston and Whittenbury 2013).
- By strengthening local institutions and developing gender-sensitive initiatives, it is possible to create learning platforms, improve access to information for producers, and generate opportunities for collective critical reflection, which allows communities to anticipate more climate variability holistically, thus better preparing for the future (Koelle 2013). Therefore, the implementation of appropriate and participatory outreach programs can be a strategy to facilitate opportunities for adaptation to climate change.
- The role of collective action and women's groups can be spaces to confront and transform current forms of discrimination. Women's organizations can influence deeper structures, thus improving the distribution of resources and power in society (Manzanera-Ruiz and Lizarraga 2016).

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