

Gender Assessment

FP235: Mangroves for climate: Public, Private and Community Partnerships for Mitigation and Adaptation in Ecuador

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Mangroves for Climate: Public, Private and Community Partnerships for Mitigation and Adaptation in Ecuador

ANNEX 8: Gender Assessment Report

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Acronyms and abbreviations

AFD: French Development Agency

FFLA: Fundación Futuro Latinoamericano (Latin American Future Foundation)

GCF: Green Climate Fund

GGCA: Global Gender and Climate Alliance

GIZ: German Corporation for International Cooperation

INEC: National Institute of Statistics and Censuses

MAATE: Ministry of Environment, Water and Ecological Transition of Ecuador

NDC: Nationally determined contribution

NGO: Non-governmental organization

UNDP: United Nations Development Programme

UTPL: Universidad Técnica Particular de Loja

USFQ: Universidad San Francisco de Quito

UIDE: Universidad Internacional del Ecuador

UASB: Universidad Andina Simón Bolívar

IUCN: International Union for Conservation of Nature

WEDO: Women's Environment and Development Organization

Executive summary

The mangroves along Ecuador's coast provide important economic services to local communities including food, income sources, and protection from flooding and storms. Across all project sites, women and men depend on the natural resources they obtain from the mangroves.

A complex set of historical, social, cultural, and economic factors influence the project sites' current gender norms and inequalities: Firstly, there is a clear lack of political representation by women in decision-making fora. Secondly, women are overburdened with work, especially reproductive labor, and this limits their ability to engage in community, organizational, and project activities. And thirdly, gender-based violence is high and further highlights the inequalities at the household level and an important additional barrier that keep women from using their voice and agency. This situation is compounded by a number of structural problems associated with education, health, the provision of utilities and limited employment opportunities.

In these mangrove-dependent communities, women are more vulnerable and experience higher rates of poverty than men. Men tend to control the main economic activity in the communities: the harvesting and sale of seafood. Often it is men who hold formal positions of leadership within communities and fishing associations. As Trevino & Murillo-Sandoval (2021) highlight in a study of mangroves in Esmeraldas province, the gendered use of mangrove resources, and societal gender norms, influence the strategies that men and women use to respond to mangrove deforestation in the face of growing shrimp aquaculture, with women being disproportionately affected by the loss of mangrove forests.

There are distinct gender differences with respect to mangrove use and management in the northern project sites versus those in the south. In the north, women are able to walk (often collectively) to the mangroves together and are therefore more actively engaged in mangrove use and management. Mangrove associations in the north have, on average, 60% women members. Men have a dual role, they work in crab and black cockle extraction as well as in fisheries outside the mangrove area and in the estuary. Engagement in decision-making within the fishing associations in the southern project sites is more male dominated with women engaging much less. In the south, women's difficulty in participating in decision-making derives from the fact they are not familiar with the mangrove or legally recognized as part of the communities or productive organizations. This can be attributed to their access and use of the mangrove areas which are far from the community and must be accessed by boat. Usually, women's mangrove activities in the south are more individual (each person arranges their own access to the area). Mangrove associations in the south have, on average, 15% women members.

Women living in mangroves work long days, which include family caregiving responsibilities, harvesting or fishing activities, cooking for the family and looking after the children. The average working day for women is around 14 hours and little societal value is placed on their caregiving or reproductive tasks. By contrast, men have much shorter days, fishing or harvesting for between four and five hours. This means that once their day's fishing or harvesting is over, they are relieved from work.

Rates of gender-based violence are high (67% in project sites) and could be perpetuated/increased by climate change impacts that result in economic disruption.

As a result of gender norms, men and women are impacted differently by climate related events. Rising sea levels and flooding – the two major effects cited in justifying climate action in these project sites – can also have consequences like an increase in water salinity and water-borne diseases, which are likely to affect primarily women, who tend to be responsible for collecting water for the household and caring for sick family members. Likewise, men (in their primary role as fishers and farmers) experience climate impacts such as more unpredictable weather and changing fish populations, which require farther (more dangerous) travel). Furthermore, existing gender inequalities may be exacerbated by the dynamics of climate change in the project area.

Our analysis included extensive review of relevant secondary information related to gendered uses of mangroves, the policy environment that supports gender equality in Ecuador, and statistical information for the project sites. This research was complemented with primary information from project sites gathered through surveys (involving 80 men/19 women), community workshops (involving 223 men/40 women) and semi-structured key informant interviews (involving 5 men/2 women).

The analysis points to several key areas of intervention for the project, as laid out in the project's gender action plan. These include mangrove use agreements that integrate gender considerations, tailored and specific support to women in mangrove associations (including the two women's associations), setting targets (50/50) for women's and men's benefit from the adoption of diversified and climate resilient livelihoods options linked to mangroves, and ensuring that project staff and delivery partners are trained on gender equity principles and the importance of mitigating gender inequalities in the project, including gender-based violence.

1. Introduction

1.1 Project background

Climate change will result in significant impacts on local environmental conditions along the coast of Ecuador, including a rise in sea levels, El Niño events, and changes in the intensity and variability of rainfall, flooding, and atmospheric temperatures. Based on models generated by NASA, climate change could cause sea levels to rise by up to 27 cm by 2100 (NASA-GISS, n.d.). Considering that the 1997-1998 El Niño event led to a 42 cm increase in sea levels, periods of heavier rainfall are expected to worsen the rise in sea levels.

The risk of flooding is a major concern for the coast of Ecuador. The Dartmouth Flood Observatory has recorded 22 major floods since 1987, displacing over 506,000 people (Dartmouth Flood Observatory, n.d.). Based on current assessments, 39% of areas within 5 km of the Ecuadorian coast are already at high risk of annual flooding (Secretaria Nacional de Gestion de Riesgos, 2018).

Ninety-nine percent (99%) of mangroves are concentrated along the shores of the country's 4 main estuaries: Cayapas-Mataje, Muisne, Guayas, and Jambelí. These areas are home to 2.9 million people and have very high poverty rates. These people rely heavily on fishing and harvesting crabs and black clams.

There are 4,556 registered members of mangrove management associations devoted almost exclusively to these activities (Ministry of Environment of Ecuador, 2020). These management associations cover approximately 43% of Ecuador's mangrove forests, meaning that the true number of people who fish and gather seafood from the mangroves may be at least double the number of registered members of associations (Zambrano, N., personal communication). With 4.04 family members dependent on each fisher (INEC, 2010), the total population directly dependent on fishing in mangroves is likely to be around 43,000.

Despite their importance, almost 25% of Ecuador's mangroves have been deforested since 1969 (CLIRSEN, 1999, 2007; Ministry of Environment of Ecuador, 2019). In 2018, there were 156,633 ha of mangrove remaining in mainland Ecuador. While the introduction of new regulations requiring shrimp farms to restore mangrove areas in order to operate and export legally has contributed to an increase in net reforestation, there continues to be significant gross deforestation.

The ongoing mangrove deforestation in these areas is the result of a combination of (i) an increase in illegal mangrove logging, (ii) poor enforcement of environmental regulations that penalize causing damage to mangroves, (iii) pollution from liquid and solid waste, and (iv) poor spatial planning by local governments for mangrove conservation (Carvajal & Santillán, 2019).

Given their importance, and in the face of future impacts from climate change, the government of Ecuador has made it a priority to reduce the risks faced by coastal communities and promote the ecosystem services provided by mangroves in its National Climate Change Strategy 2012 – 2025, its National Climate Change Plan 2015-2018, and other national frameworks.

In this context, this project seeks to build resilience and a coordinated adaptive capacity along the entire coast and in the sectors most vulnerable to climate change, in particular coastal communities and the fishing/shrimp sectors. The project has 3 components:

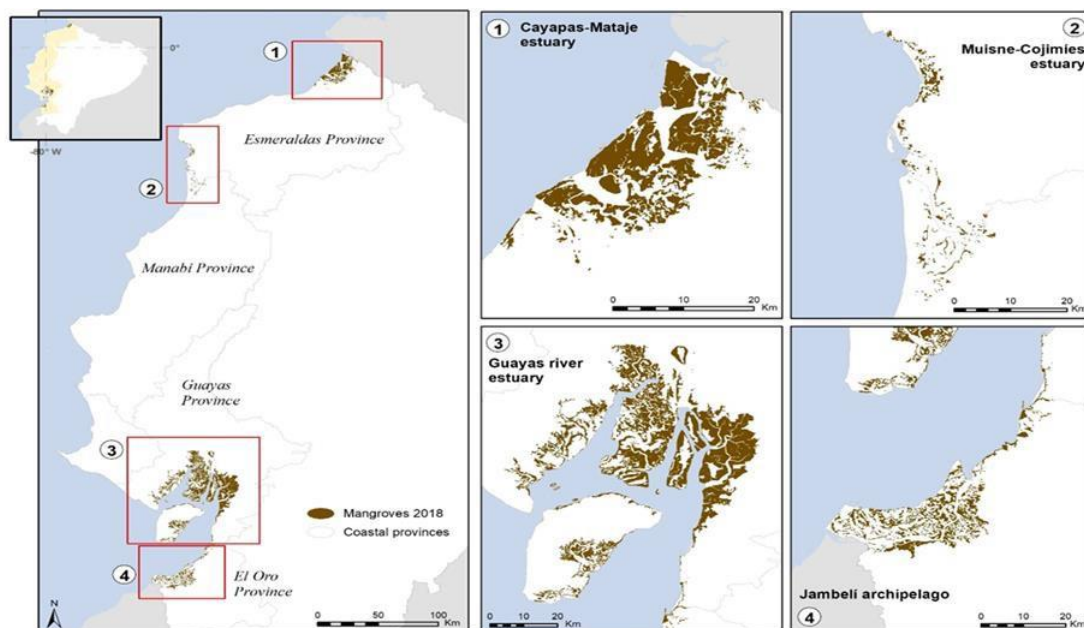
Component 1: Mangrove areas under effective and climate-adapted management increased, including through community-based management (AUSCEMs) and protected areas implementing climate adaptation plans.

Component 2: The private sector becomes a transformational agent for change by reducing GHG emissions and providing financial support to conserve and restore mangroves that increase climate resilience for other coastal populations.

Component 3: Create the enabling conditions for sustaining reductions in mangrove deforestation and increased mangrove restoration by strengthening governance, climate change adaptation strategies, coastal management policies, and legal enforcement.

Ecuador's mangroves provide important economic benefits to local communities who harvest white fish, black clams, crabs, fish, shrimp, oysters, mussels, blue crabs and sea snails for self-consumption and sale. The forest is also used for beekeeping and logging/charcoal production CIFEN/AE (2019).

Figure 1. Map showing the principal mangrove areas in Ecuador and the four estuaries/areas that make up the project area.



Mangrove dwellers are a heterogeneous group in terms of race. In the northern estuaries, the mangrove-dependent population is chiefly Afro-Ecuadorian, while in the southern provinces, mangrove populations are made up of *mestizos* (mixed-race population) and *cholo* fishermen (*cholos pescadores*; Latorre, 2012).

Occupational identities as crab or seafood harvesters, combined with situations of social vulnerability and poverty, play a more important role in self-identification than ethnicity. In general, mangrove dwellers experience low wages, informal employment and exploitation by intermediaries, malnutrition, low levels of education and inadequate infrastructure and public services (Latorre, 2012).

Despite the mangrove dwellers’ age-old occupation of the area and shared management practices, this ecosystem, like the entire intertidal zone, is considered a “National Asset for Public Use” (*bien nacional de uso público*). This means that the mangrove swamp is owned by the state and renders the intertidal zone inalienable, immovable, and imprescriptible.

Table 1. Location and name of project sites

Province	Name of estuary
Northern project areas	
Esmeraldas	(1) Muisne (2) Cayapas-Mataje
Southern project areas	
Guayas	(3) Guayas River
El Oro	(4) Jambelí

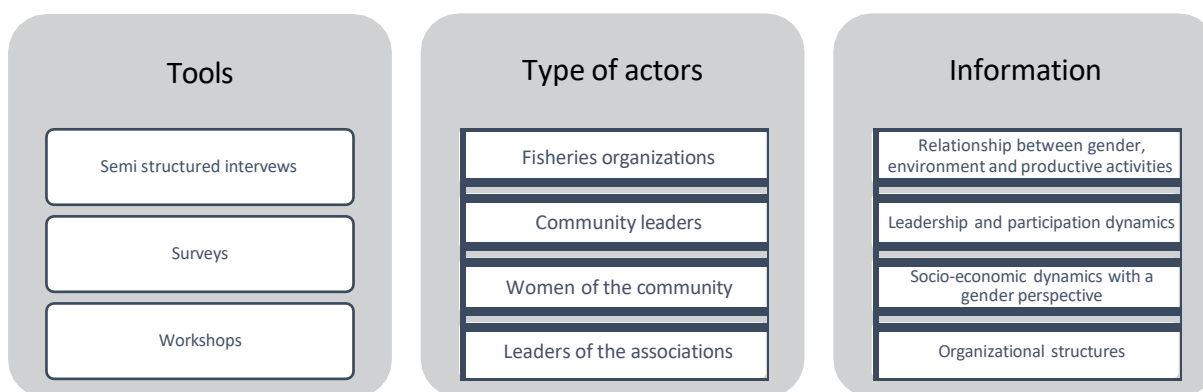
From a gender perspective, the two northern estuaries are generally similar to each other, with both men and women actively engaged in mangrove use and management, while the southern two estuaries are more male dominated with women engaging much less than in the north. With this in mind, we have organized this gender assessment and action plan to focus on these two specific areas (north and south).

1.2 Purpose and methodology

The purpose of this gender assessment and action plan is to identify key information on the roles, activities, needs, opportunities, interests and rights of men, women, boys and girls that live in the project area in order to understand how the project can support their resilience to climate change. In doing so, the gender assessment exposes the gaps and inequities that exist between males and females, particularly in relation to the environment and climate change. Finally, we also took an intersectional lens, recognizing that many other social characteristics (e.g., wealth, education, marriage status, age, etc.) also contribute to women’s and men’s climate vulnerability and resilience. Within this framework, the gender assessment took a phased approach to data collection and analysis:

Collection of secondary information. This process involved reviewing existing documentation from government, academics, and organizations that work in this area. This includes statistical information, background data, information on the area, and documents and bibliographic references to support the gender analysis. A list of the key documents can be found at the end of this document. The documents include information of previous consultancies carried out in mangrove areas, reports of the Fishing Authority, and press bulletins related to production and marketing activities. Statistical information from official sources, including the national census (2010) and living condition surveys (2014 & 2019), were used to determine the characteristics of the social and economic conditions of the people living in the estuaries.

Collection of primary information. Primary information was collected through various instruments determined based on the stakeholder group and as described in this image:



1.2.1 Workshops

In August and September 2019, we conducted 4 workshops¹ in 3 of the estuaries (Muisne, Guayas and Jambeli) with men and women from local associations that focus on crab and cockle harvest. The workshops included Afroecuadorian communities and Cholos Pescadores in Guayas and Jambelí. Following the observation above that woman are more engaged in mangrove use in the north, it is unsurprising to see (in Table 2) that women were much more present in the workshop in the north compared to those in the south.

The main objectives were:

- Obtain participants’ general information related to time of residence in the area, economic activity, organization and activities of women and men in mangrove areas.
- Obtain information of potential reforestation sites, types of mangroves to plant and their benefits.
- Identify the perceptions that men and women have of the impacts of current climate conditions (wind, rain, presence of water holes, temperature, etc.) and marine conditions, on their communities and mangrove area concessions.
- Identify what kind of mangrove products are currently used, who uses them, and how they could be used in the future.

Table 2. Participation in community stakeholder workshops

Workshop/Location	Stakeholders	Men	Women	TOTAL
Northern region				
Bunche – Muisne – Esmeralda	Members and leaders from the communities of Bunche – Muisne, Chamanga, Pedro Carbo, Salinas and Bellavista. Representatives of the German Corporation for International Cooperation GmbH (GIZ), Ministry of	13	25	38

¹ Workshop reports can be found in the Stakeholder Engagement section

	Environment (MAE) and the Tourism Association.			
Southern region				
Guayas estuary (Puerto Roma)	Members and leaders from the communities of Puerto Roma, Cerritos de los Morreños, Santa Rosa, Bellavista, Puerto Salinas, Puerto Libertad and Guayaquil.	134	1	135
Guayas estuary (Balao)	Leaders from the Asociación de Cangrejeros Balao, Nuevo Porvenir, Puerto El Morro Marines, Puerto El Morro Apamupen, Puerto El Morro Porteño and Puerto El Morro Forjadores de Futuro.	59	6	65
Jambeli (Puerto Bolívar)	Members and leaders from the communities of Costa Rica, Mar de Galilea, Isla Pongalilla, Amor y Esperanza, Puerto Bolívar Union, 17 de Enero, 24 de Octubre.	17	8	25

Some gender-related information was also generated during the project's stakeholder engagement workshops, facilitated by the MAE and CI. The main objective of the workshops was to develop an analysis of the conservation policies and use of the mangrove ecosystem, and their contribution in the generation of ecosystem services and the wellbeing of the population. While gender as a theme was included as one topic, it was not extensive. Two workshops were held in the Guayas estuary (southern) in 2016:

Table 3. Participation in policy stakeholder workshops

Location	Stakeholders	Men	Women	TOTAL
Playas del Villamil, Provincia del Guayas	Representatives from the Secretary of Aquaculture, Association of Shellfish and Artisanal Fisherman Las Huacas, Ministry of Environment (MAE), Ministry of Tourism, National Institute of Statistics and Census, German Corporation for International Cooperation GmbH (GIZ), Secretariat of Water, Provincial Directorate of Guayas Environment, CONDESAN, National Institute of Fishery, Catholic University of Guayaquil, Association of Users of the Manglar Cerrito de Los Morreños, SENPLADES, Litoral Polytechnic University, Municipality of Guayaquil, Conservation International (CI-Ecuador), Association of Crabbers and Artisanal Fisherman 21 de Mayo – Puerto Roma, National Institute of Biodiversity, Association of Crabbers 6 de Julio and National Secretariat of Planning and Developing.	21	11	32

Ciudad de Guayaquil	Representatives from the Ministry of Environment (MAE), National Institute of Biodiversity, CIIFEN, SENAGUA, Ministry of Tourism, National Institute of Fishery, ESPOL, Conservation International (CI-Ecuador), TNC and CONDESAN.	8	9	17
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1.2.2 Semi structured interviews

To supplement the workshops and desk review, targeted interviews were conducted with 7 representatives from Muisne, Guayas and Jambeli estuaries. The aim of the interviews was to increase stakeholder input into the identification of social and environmental risks of the planned project. Interview questions therefore included the following risk-related topics:

- Discrimination against women on the basis of their gender, especially with regard to participation in the design and implementation and access to opportunities and benefits.
- Limitations in women's ability to use, develop and protect natural resources, taking into account the different roles and positions of men and women in accessing environmental goods and services.
- Threats to women in the context of occupational health and safety.
- Other gender equality concerns related to the project.
- Indirect impacts on biodiversity or the ecosystem services on which the livelihoods of affected communities depend.
- Adverse effects in terms of inequality or discrimination for affected populations.
- Possible restrictions in the availability, quality and access to basic resources or services.
- Adverse impacts on “indigenous peoples” (i.e., here Afro-Ecuadorians and Cholos Pescadores).
- Negative effects on the development priorities of “indigenous peoples” as defined by themselves.
- Adverse impacts on the enjoyment of human rights by the affected population and particularly by marginalized groups.
- Aggravation of conflict or generation of violence between affected communities and individuals.

The interviews confirmed the risks that had been identified during the workshops and provided further detail on the situation in different places and the unique perspectives of women and men. The following table provides an overview of the interviewees².

² Interviewees were asked whether the information they provided could be recorded and did not request to remain anonymous.

Table 4. Individual interviews (2 men, 5 women)

Male president of a Fishing Cooperative with 150 members (30 women) in the south. Members are crab collectors, fishers and women linked to activities such as gastronomy and crab pulp.
Male, former president of an Association in the south that has 105 members who are fishers and collect shells and crabs. At the moment, all members are men, but the plan is to involve women at some point in crab pulping.
Afro-Ecuadorian female member of a Women’s Forum in the north.
Female president of a fishers association in the south (40 men + 20 women)
Afro-Ecuadorian female president of a Women’s Forum in the north with 35 members.
Female former President of an Association in the south. 67 men + 200 women.
Female president of an association of fishers (1 men + 19 women) in the north.

1.2.3 Surveys

Another important source of primary information was surveys conducted with 99 local leaders and association members (80 males/19 females) during the same time as the workshops. The surveys gathered information about: (i) mangrove benefits like landscape, recreation, air purification, capture of commercial species and for self-consumption, bird habitat, obtaining honey and wood for house construction. (ii) the perception of changes in the weather (iii) drivers of impacts on mangrove ecosystem (iv) mangrove restoration, and (v) ecosystem services.

Table 5. Surveys conducted with community associations

Area	Association	Local leaders	Members
Northern	Balao		27
	Puerto El Morro		7
	Naranjal		2
	Miraflores		1
	Puerto Baquerizo		1
	Recinto Nuevo Porvenir		1
	Puerto Roma	6	9
	Machala		9
	Puerto Bolivar	7	4
	Isla Pongalillo		2
	Isla Costa Rica		1
Sauces II		1	
Southern	Naranjal	1	1
	Puerto El Morro	1	1
	Bunche	1	2
	Bunche	1	1
	Pedro Carbo	1	1
	Salina-Muisne	1	1
	Chamanga	1	1

	Pedro Carbo	1	1
	Muise	1	3
Total		22	77

The gender assessment and subsequent gender action plan follow the Guidelines outlined in the Green Climate Fund (GFC) Mainstreaming Gender in Green Climate Fund Projects and the Updated Gender Policy and Action Plan 2018–2020, as well as Conservation International-GCF's Gender Policy in their latest (November 2020) Environmental and Social Management Framework. The purpose of the assessment is to ensure that the proposed project is gender responsive, meaning it will substantially help to overcome historical gender biases. Measures have been put in place by this project to ensure that both women and men benefit and that the burden on women in particular, as a result of their gender roles, is not increased but reduced by the project activities.

2. Situation of men and women in coastal Ecuador

2.1 Legal status of women across Ecuador

This section describes the national legal framework in terms of gender and the international legal framework for gender and the environment that the country has been following and with which it has been bringing itself into line.

2.1.1 National legal framework

Ecuador has made significant progress in terms of national regulations to support women's rights. For over 10 years, in the Constitution of the Republic of Ecuador, the principle of non-discrimination contained in Paragraph 4 of Article 66 has been further underpinned by Paragraph 2 of Article 11, which prohibits discrimination based on certain suspect classifications including sex.

Article 11 of the Constitution includes the concepts of direct and indirect discrimination. It makes reference to direct discrimination with the phrase "that has the purpose of impairing or nullifying the recognition, enjoyment or exercise of rights" and indirect discrimination with the phrase "that has the effect of impairing or nullifying the recognition, enjoyment or exercise of rights."

Also included are a series of obligations incumbent upon the state to achieve effective gender equality. These are a series of affirmative actions promoting true equality for rights holders in a situation of inequality. They include developing and implementing policies to achieve equality between men and women; including a gender perspective in plans and programs; promoting equal representation of men and women in leadership and decision-making positions; bringing about conditions that guarantee the rights and principles recognized in the Constitution, in particular equality in diversity and non-discrimination, with an obligation to prioritize actions for groups needing special attention due to ongoing inequalities, exclusion, discrimination or violence; and adopting the necessary measures to guarantee equality for women in access to employment, professional and career training and advancement, fair pay, and self-employment initiatives.

Also enshrined in the Constitution of the Republic are the principles of parity, equity and rotation of power as cornerstones of the electoral system. Therefore, consideration must be given to alternating men and women in electoral lists. Similarly, the Constitution establishes the principle of parity between men and women in appointing judicial officers.

2.1.2 Agenda for Women

As of 2018, the National Council for Gender Equality, a national authority with powers aimed at mainstreaming gender equality in the country, has a key instrument to implement policy: the National Agenda for the Equality of Women and LGBTI People 2018-2021, which includes lines of action, policies and actions to be undertaken by institutions and civil society based on the

principle of fair treatment.

The guide is divided into several lines of action that include autonomy and a culture of peace, and addresses issues relating to a life free of violence, actions in education and public policies in health, sexual and reproductive rights, or in fields such as sport. Another line of action is centered on sustainability of life and combines issues such as reproduction and sustainability, while also establishing an environmental policy that sets forth the need to generate statistics and promote conservation and reforestation programs and initiatives with the goal of improving ecosystem services and water sources.

The agenda also includes a section on leadership and the transformation of sociocultural patterns and discusses the monitoring and assessment of actions undertaken to promote equality.

2.1.3 Gender policy of the Ministry of Environment, Water and Ecological Transition of Ecuador (MAATE)

The Ministry of Environment, Water and Ecological Transition of Ecuador (MAATE) is responsible for complying with international instruments signed by Ecuador in matters relating to environmental management and sustainable development. However, the country has made some important advances in gender.

The MAATE must therefore actively define policies, mechanisms, and strategies conducive to introducing interculturality and gender perspectives in programs, projects, and actions that come under its area of authority.

In this context, the General Coordinating Office for Environmental Planning defined the “Strategy for the Institutionalization of Interculturality and Gender Perspectives” as a methodological approach and a mechanism for advocacy within the National Environmental Policy (PAN). This initiative aims to comply with Constituent Assembly legislative decrees and urgently address issues that have been put off or rendered invisible. The goal is to recognize spaces to exercise citizen rights and consolidate democratic processes, strengthening the institutional framework of the National Councils for Equality (Peoples and Nationalities, Women; Afro-Ecuadorians, the Montubio people, among others), proposals linked to the democratizing role of the state with a decentralized and territorial approach, and the application of the cross-cutting themes of gender equity, interculturality and the environment.

The MAATE has proposed this strategy as a policy proposal to include social perspectives in environmental management. It is also consistent with major strategic lines proposed by central government and reflected in various public management instruments.

Furthermore, the constitution clearly shows the state’s obligation to ensure fair treatment of men and women and of different peoples and ethnic groups, and respect universal human rights inherent to every human being, including the right to a safe environment.

On January 30th, 2019, the environment minister, Tarsicio Granizo, and the deputy resident representative of the United Nations Development Programme (UNDP), Nuno Queiros, signed the Project Appraisal Committee, an enabling document with which it will be possible to begin a broad process to include a gender approach in developing Ecuador’s nationally-determined contributions (NDCs). This project was undertaken within the framework of the NDC-SP (NDC Support Programme).

Also in 2019, the MAATE and the National Council for Gender Equality signed an interinstitutional cooperation framework agreement, through which the two institutions committed to leading and ensuring the inclusion of gender equality policies to create and strengthen effective, efficient interventions in climate change-related projects. This agreement is the starting point for the joint development of the Gender and Climate Change Action Plan, which will serve to define national priorities and goals that respond to the specific needs of, and differential impacts faced by, women, men, and diverse peoples in the face of climate change, taking into consideration age, ethnicity, disability and/or human mobility.

2.1.4 An NDC with a gender perspective

Ecuador is defining its NDC through a participatory process led by the MAE, with support from a number of aid agencies: the United Nations Development Programme (UNDP), the Food and Agriculture Organization of the United Nations (FAO), the French Development Agency (AFD), the NDC-Partnership, the German Corporation for International Cooperation (GIZ), Euroclima Plus, the Consortium for the Sustainable Development of the Andean Ecoregion (CONDESAN), and Cooperación Española (FIIAPP).

The NDC Support Program is being implemented through, among other groups, the Technical Roundtable on Gender and Climate Change, which is led by the MAE with support from the UNDP. This group also includes representatives from Fundación Futuro Latinoamericano (FFLA), which provides facilitation support, the National Council for Gender Equality, the German Corporation for International Cooperation (GIZ), Grupo Faro, CARE, Universidad Técnica Particular de Loja (UTPL), Universidad San Francisco de Quito (USFQ), the Rosa Luxemburg Foundation, Heifer International, the International Union for Conservation of Nature (IUCN), and Fundación Altrópico. The Technical Roundtable on Gender and Climate Change was founded in response to a need to establish links between academia, non-governmental organizations and international aid, and create a space for interaction between different agents that contribute to the study, incorporation and strengthening of a gender approach in climate action in Ecuador.

In addition, with the support of Corporación Grupo Randi Randi (CGRR), a participatory methodology was developed to include a gender approach.

a) National Climate Change Adaptation Plan (PLANACC) and gender mainstreaming.

The PLANACC establishes a need to identify and create programs and activities based on areas of work or sectors that evidence has shown, in theory and practice, to be most vulnerable to climate change and to cause the most economic, social and environmental harm to the country as a result of the impacts of climate change. In this respect, one of the implementation criteria mentioned by the plan is the relationship with the social, economic or environmental system. Equally, the sectors prioritized for climate change adaptation in Ecuador can be grouped according to their relationship with the social, economic and environmental systems (MAE, 2012, 87).

In this sense, and taking into account the scope of adaptation initiatives, there are more opportunities to include women and sectors considered at risk or vulnerable.

2.2 Political participation at national, provincial, and local levels

Female voting in Ecuador increased from 76% to 84% between 2009 and 2018. However, since the National Assembly was established in 2009, it has not included an equal number of men and women: in 2009, only 40 (32.3%) of the 124 elected assembly members were women. (National Electoral Council, 2019)

In the project areas, there is low female representation at the parish and mayoral level. It is interesting to note the differences of gender parity in parish candidates verses election: it is clear that women candidates are not as successful in being elected. It is also interesting to note there is not much difference in northern vs. southern project sites. Women are highly underrepresented at the mayoral level in both candidates and elected positions, with particular starkness in the northern sites where there are no female mayors.

Table 6. Parish board members in the project areas

Province	Estuary	Candidates		Elected	
		Female	Male	Female	Male
Northern sites					
Esmeraldas	Muisne Cayapas	705 (44%)	900	81 (28%)	204
Southern sites					
El Oro	Jambelí	485 (44%)	610	69 (28%)	176
Guayas	Guayas	446 (45%)	539	50 (34%)	95

Source: National Electoral Council, 2019

Table 7. Mayors in the project areas

Province	Estuary	Candidates		Elected	
		Female	Male	Female	Male
Northern sites					
Esmeraldas	Muisne Cayapas	7 (15%)	40	0 (0%)	7
Southern sites					
El Oro	Jambelí	11 (16%)	58	1 (7%)	13
Guayas	Guayas	35 (17%)	166	5 (20%)	20

Source: National Electoral Council, 2019

Looking at the gender gap in politics can be a useful indication of women's perceived standing in society, as well as highlight some of the historical inequalities that continue to persist. In this instance, it is clear that the project areas have larger gender gaps than the rest of the country, especially when it comes to actually being elected to a position of power and influence. The reasons are likely multifaceted, including long-held societal/gender norms that privilege men in elected positions, fewer women who have achieved the level of education needed to

successfully compete, and unequal burden of household chores that often keep women from pursuing leadership outside of the home.

2.3 Socio-economic information

At a national level, the statistics and gender diagnosis presented in the Agenda for Women 2018-2021 (National Council for Gender Equality, CNIG) have shown that relations between men and women have been asymmetrical and have gone unchallenged throughout history. This has been a root cause of inequalities. At a macro level, and especially in rural settings, women have found themselves relegated to the private sphere, with little chance to undertake productive labor, while men have greater opportunities to engage in the public sphere, in making decisions that affect the community and their families, and in business dealings with external stakeholders.

Overburdening caused by the roles played by women in the home is another issue identified by community members. “In general women are responsible for the home, children, husbands, and family members, both in terms of providing general care and financially. Women have the most important role in society because they play a part in all the different spheres of activity: the home, productive labor, and the community,” (data collection workshop, comment by one female participant). Likewise, men (in their roles as fishers) also face increasing socio-economic challenges such as reduced fish populations, drug trafficking, and illegal fishing. This is forcing fishers to travel even farther out to sea where open waters are dangerous. Men’s fishery-based livelihoods are changing as Beitel & Gaibor (2018) explain, the lack of employment in recent years has driven more men to enter the cockle fishery.

The national unemployment levels have shown a clear decline over the last five years and stood at 4.4% in March 2017. The unemployment rate was higher for women than for men – in 2019 5.7% of women in the economically active population were unemployed, while for men this figure was 3.8%. Overall, female labor force participation is limited, at 49% compared to 79% of men. In the artisanal fishing sector, the conditions of poverty and extreme poverty are high in all the cases analyzed.

Table 8. Demographics in project site areas

Municipality	Estuary	Pop-ulation ¹	% men	% women	Ethnic Groups (% of total)					% Poverty ¹
					Mestizos	Afro descendents	Montubio	Other	White	
El Guabo	Jambelí	59.536	50,7	49,3	91,2	3,9	1,7	0,7	2,3	74%
Machala	Jambelí	306.309	49,2	50,8	86,8	6,8	1,7	0,9	3,8	56%
Santa Rosa	Jambelí	80.299	49,2	50,8	94	2,6	0,8	0,7	1,9	56%
Eloy Alfaro	Cayapas Mataje	46.305	49,2	50,8	11,3	67,9	2,2	18,1	0,6	94%
Muisne	Muisne Cojimíes	36.426	50,6	49,4	53,4	38,8	3,2	2,7	1,8	98%
San Lorenzo	Cayapas Mataje	48.391	47,7	52,3	9,9	83,9	0,6	5,1	0,4	84%
Guayaquil	Guayas	2.746.403	48,9	51,1	85,2	6,9	2,3	1,5	4,1	47%

Naranjal	Guayas	83.691	50,1	49,9	86	4,5	5,8	0,8	2,9	74%
	Total	3.407.360								

Source: 1 INEC 2022; 2 INEC 2010

Communities in the northern Cayapas-Mataje and Muisne-Cojimies estuaries (and the northern area more broadly) are generally small: 74% have between 4 and 28 households, only 13% have more than 130 households, and the largest (Pampanal) has only 225 households. The average number of household members is 4.46. Houses are usually small and 88.7% are built from wood, 55% of which are made from mangrove wood. Others are made from a combination of wood and other materials, like brick and concrete. Almost all roofs are made of corrugated iron (Ocampo-Thomason, 2006)

Communities in the southern Guayas and Jambeli estuaries, are bigger than those in the north. The average number of members (and families) in each association is 128. The largest association based on the number of members is Hualtaco at Jambeli estuary with 369 households. The average number of people per household is 4.05. Another characteristic is that in the south there is a larger number of families that are female as head of the family (33% in the north vs. 36% in the south) as Table 9 shows. This situation is important to highlight as only 19% of the associations has more than 30% women as members.

Widespread machismo is one hurdle to achieving equity in the productive, reproductive and community spheres in these areas. “The fact that men are considered masters of the home amounts to a lack of education because it’s machismo; we are equal with different ways of thinking, but the woman’s main role is in the home. But when women are left on their own, they take on both roles,” (data collection workshop, comment by one female participant) (MAE, 2018).

Table 9. Household size and demographics in project sites

Estuaries	Homes		Economically active population and occupation	
	Average Size	Index of average female head in the municipality	EAP (% of total)	Occupation (% of EAP)
Northern				
Cayapas-Mataje	4,3	39,0	38,03	91,78
Muisne-Cojimies	4,31	26,85	33,75	90,23
Southern				
Guayas	3,9	34,6	43,11	91,81
Jambelí	3,7	37,5	43,26	94,56
Total	4,05	34,50	39,54	92,10

Source: INEC 2010

Across all project sites, women and men depend on the natural resources they obtain from the mangroves, namely crab, black clam, and resources from fishing in general. In exceptional circumstances, such as during the closed season, men find they need to earn an income outside the home. In all project areas, men and women depend on the outside market as they do not have basic commodities. In most cases, family money is used to cover these expenses. Income specifically obtained from small businesses and selling essentials can be used by women for expenses considered luxuries. To support the family, basic foodstuffs, clothing, and other consumables need purchasing. The specific gendered uses and management of mangroves is detailed in a section below.

2.4 Education

Since 1990, the education gap in Ecuador between females and males has narrowed. On average, males and women attend school for 7 years with difference of 2 years between the estuaries at north and south. Illiteracy rates nationally are 6,7 males, 9,6 females with a difference in gender that we didn't find in the estuaries.

In the project sites:

Table 10. Education in project sites

Estuaries	Illiteracy			Years of schooling		
	% total	% men	% women	Total	Men	Women
Northern						
Cayapas-Mataje	13,29	13,55	13,02	6,92	6,78	7,07
Muisne-Cojimies	14,19	14,50	13,85	6,67	6,63	6,51
Southern						
Guayas	3,90	3,80	3,99	8,36	8,36	8,36
Jambelí	4,38	4,31	4,45	8,24	8,17	8,23
Average	8,94	9,04	8,83	7,55	7,49	7,54

Source: INEC 2010

Inequality in education and literacy can be a product of gender inequality in society and can directly influence women's ability to participate, engage, and influence climate activities. In this situation, however, it is encouraging to see that literacy and schooling is relatively equal between males and females in the project sites.

Education is limited to the primary level. Secondary education can only be pursued in the larger towns of the cantons, which are several kilometers away. This is a hindrance for women because it limits their access to education – “leaving” their communities requires money for transport. In addition, as victims of violence and sexual harassment, they feel vulnerable at having to travel long distances on paths with little infrastructure before reaching a means of river or land

transport. Lastly, women's responsibility toward caregiving makes this their priority within their communities, leading them to give up the chance to pursue education.

The rural population does not have access and full coverage to attend primary, secondary and higher education. Formal education presents limitations, especially at high school, whose percentages of attendance are lower in comparison to elementary school, in most rural parishes (Rengel 2020). In the case of islands in the Guayas estuary this situation is even worse, where parents prefer not to send their kids to the school on another island because of security issues with piracy (personal communication).

2.5 Time use/division of labor

In all project areas, caregiving dynamics are similar and, for the most part, are the responsibility of women. Described below is an example of a daily routine encompassing the different experiences in the project areas during field data collection.

Women living in mangrove swamps work long days, which begin with family caregiving responsibilities and then harvesting or fishing activities. They return to cook for the family and look after the children, and then cook dinner and finally rest. The average working day for women is around 14 hours, and little societal value is placed on caregiving or reproductive tasks, rarely seeing them as a social investment.

By contrast, men have much shorter days, fishing or harvesting for between four and five hours. This means that once their day's fishing or harvesting is over, they are relieved from work. This situation changes when they work externally and find themselves compelled to work as day laborers in shrimp farms or on a country estate or ranch (*finca*), in which case they leave home at around 7 a.m. and return around 4 or 5 p.m. They take a packed lunch and return home at different times depending on how far away their place of work is.

In this context, spare time is virtually unheard of for women. They rarely leave home, while men get together on the playing areas in the afternoon or have time to rest after lunch. Problems with alcohol were mentioned, but not ubiquitous. Some interviews made mention of the fact that when decisions on how use financial resources are left entirely to men, a good share is spent on alcohol.

These observations and surveys are validated by a gendered time use survey conducted earlier (INEC 2010) in the northern province of Esmeraldas. The study highlights a similar unequal division of labor, with women performing – on average – 2 hours of labor more than men. The difference in male and female time use is especially notable in unpaid labor, particularly housework, which is primarily undertaken by women, for an average of four hours a day compared to just one hour a day for men.

Together, this data reveals the excessive burden faced by women in work both inside and outside the home. In sum, they spend their time tending to household members, obtaining resources to support their families, and engaging in community activities. The situation becomes yet more complex when women are the head of a household where resources need to be obtained on a daily basis in order to subsist.

2.6 Health and gender-based violence

Life expectancy in Ecuador is approximately 76.4 years (73.7 for men and 79.1 for women). The maternal mortality rate across Ecuador is 59/100,000 live births; infant mortality is approximately 17 deaths/1,000 births. Healthcare is available in the main towns of each canton, but accessing it requires having the financial means to leave the area. Pregnant women, for instance, leave the communities one or two months before they are due and stay with relatives so they can receive care in nearby hospitals in the cities of Machala, Guayaquil or Esmeraldas.

Table 11. Incidence of gender-based violence

Location	Percentage
National	64.9
Urban	65.7
Rural	62.8
Esmeraldas (north)	68.2
Guayas (south)	63.1
El Oro (south)	70.2
Afroecuatorians	71.8
Mestizas	65.1
Indigenous	64.0
Montuvias	58.4
Global*	35
Perú	70

Source: INEC, 2020, ENCUESTA NACIONAL SOBRE RELACIONES FAMILIARES Y VIOLENCIA DE GÉNERO CONTRA LAS MUJERES – ENVIGMU 2019 Retrieved in January 2020

*WHO.2013. Estimaciones globales y regionales de la violencia contra la mujer.

Rates of gender-based violence are very high and are linked to the socioeconomic dynamics of exclusion and poverty. The table above presents the magnitude of the issue and manifestations of violence most common. Further, it reveals that incidents are relatively similar in both urban and rural areas. Rates of violence in the project sites are similar to those at the national rate, which is nearly twice as high as the global average of 35%.

The importance of gender-based violence was underscored during our field data gathering: one female leader reported that almost all women had endured this kind of violence at some point in their life. Many women attending the workshop nodded in agreement, their body language confirming that they had experienced or witnessed this type of violence.

The increase in gender-based violence in disaster situations and places experiencing economic tension has been well documented. Both of these factors are closely linked to climate change on the coast of Ecuador. When communities and families are unable or unprepared to deal with the effects of climate change and climate-related disasters, this gives rise to heightened social and financial tensions that may cause gender violence to escalate. Disasters increase existing gender inequality and given that Ecuador already has a high rate of gender violence at over 60%, the phenomenon is likely to worsen as the effects of climate change become more severe. At

the same time, as Ecuador remains stuck in the grip of the COVID-19 pandemic, the effects of which will be felt for many years to come, it is also important to stress that gender-based violence has increased drastically throughout the country as a result of the shutdowns and economic tension. A 2017 report by the Red Cross on gender violence on the Ecuadorian coast (the Manabí and Esmeraldas provinces) following the 2016 earthquake found a lack of gender sensitivity in the disaster response mechanisms and called for better prevention and an improved response to gender-based violence in disasters.

If gender-based violence is rooted in, and triggered by, economic stress, then relieving that stress can help to mitigate and reduce the incidents of GBV. Proactively working with men and women to adapt and buffer their livelihoods to climate change impacts, which can then hopefully reduce economic stress, can be an important mitigation tactic.

2.7 Assets and infrastructure

Local dynamics in regard to economic and financial matters and other assets are similar across the project areas. Women have scarce opportunities to access resources because they are unable to access credit, with the exception of savings plans and small loans for household consumption. Women have no capital to post as collateral to access credit (information from interviews, August 2019). “There are many resources here, in tourism, in fishing, there are belief systems, there are many other options possible. Sadly, there is no way to put them into effect because we cannot access credit,” (data collection workshop, comment by one female participant) (MAE, 2018).

Men, on the other hand, have higher earning potential and greater opportunities to access formal loans. Additionally, benefits were recorded from the rural social security program for small-scale agricultural workers, *Seguro Social Campesino*, in one area in the north (Muisne).

As far as infrastructure is concerned, the field visits showed there was electricity in all sites, while Muisne and Jambeli had running, non-potable water, and in Puerto Roma in Guayas Estuary water has to be managed on the islands, generally by collecting rainwater. Some women sell fresh water they have collected or purified water that is brought in from the mainland.

In the areas close to cities, they do have access to cellular phone and Internet services, which has helped connectivity, especially in Muisne and Guayas Estuaries. The service is weak and at times non-existent, but it does at least enable communication with neighboring areas.

The roads to the main towns of the cantons are usually paved, with gravel roads serving to connect communities. Transport services are limited both in number and frequency. This creates a sense of vulnerability for women, as they have to walk long days, often without public lighting.

Speedboats are available to travel by river between Jambelí and Machala, and between Guayaquil and Puerto Roma and other islands. In Muisne, transport is available from the back road to the town center. River transport is safer because boarding takes place in the town center and the place of arrival has better infrastructure.

3. Access, use, and management of mangroves.

3.1 Importance of mangroves to local populations

The mangroves provide a livelihood for fishing communities, mestizos, settlers, and Afro-Ecuadorians, who all live in the project areas. The information on ecosystem services that was generated in participatory workshops with the community showed that it was the provisioning services that the population most valued, for the consumption and sale of products derived from mangroves. The community reported that the effects of climate change are impacting the provision of these ecosystem services. The regulating service was identified in coastal protection in both the northern and southern project sites, and in the provision of clean air, with reforestation efforts undertaken by both men and women, in the case of southern Guayas. The cultural services, meanwhile, are geared toward the development of ecotourism and the use of ancestral knowledge to cure diseases with the bark and roots of mangroves. These activities are performed both by men (extraction) and women (preparation), while in the case of ecotourism, it is women who feature most prominently, through the cuisine they offer tourists.

While outdated, an excellent account of gendered use of natural resources comes from the northern Esmeraldas province (Veach 1996). In this example, ocean fishing is done exclusively by men with highly specialized knowledge and from motorized canoes, often being their main source of income. Women generally do the bulk of the fish processing, with men usually marketing the fish. Other livelihood activities performed primarily by men include carpentry, agriculture, logging, charcoal production, and hunting. In contrast, resource use done primarily by women includes collecting concha (mollusks) which, while the income potential is less than fishing, is considered to be more reliable.

More recent research with mangrove communities in Esmeraldas highlighted the impacts that expanding shrimp aquaculture is having on gendered use of mangrove resources, with collapsing fishing livelihoods leading more men into mangrove exploitation and displacing women's traditional mangrove-dependent resources and livelihoods (Trevino & Murillo-Sandoval 2021). This overuse of the mangrove resources is leading to depletion of mangrove cockle populations and putting the community in a vulnerable position as everyone is increasingly dependent on this fishery to subsist (ibid).

3.2 Participation and decision-making in mangrove management

Women are largely inactive in discussions and decision-making in their communities, while men are usually more vocal in meetings and better represented in the boards. It is at these meetings that decisions about things like monthly payments of the members, defining the rules for crab extraction (amounts extracted by each member, defining the extraction areas, or number of hours in the areas). Some organizations, particularly those associated with their activities (e.g., mollusk collection), include female members, and this can be an important place to build their capacities. Certain roles within mixed organizations are more feminized, such as secretary and treasurer which tend to have less clout in decision-making. Within community processes for mangrove management, women's specific interests are rendered invisible, which can deepen divides in terms of access, use, and control. Women's limited participation can be attributed to several reasons:

1. One recurring problem in women's participation is their lack of leadership. In the words of one community leader, "women know everything, the only thing they lack is leadership, they already know the rest." The fact that women do not feel they have that capacity makes them uneasy. Certain restrictions faced by women have to do with the issue of leadership, as many women still fear coming into confrontation in assemblies and standing up for their rights as women.
2. Women are held back by their families/spouse and the household responsibilities they largely shoulder. "you can't go because you have to cook for me."
3. Transportation and accessibility to meeting spaces is also limited. Interviews revealed that only men hold knowledge about fishing and how to operate motorboats, and this knowledge allows them to move around the area with ease and facilitates their participation in various decision-making fora. Women do not own the canoes or outboard motors, only their labor power.

It is important to mention that women engage to a greater extent when it comes to attending meetings involving securing one or more basic services for coastal communities. In other words, women are overrepresented in activities that support community services and works but are lacking in community decision-making regarding natural resource management in the mangrove ecosystem.

The mangrove management organizations in project sites were established with the aim of promoting the use of mangroves and accessing communal benefits. The mangrove use agreements are drawn up by the associations, which have a specific objective. While there are no formal limitation in terms of access rights, as mentioned above, due to customary practices, women have limited decision-making power even though they may be association members. In one community, access to discussions and decision-making regarding the mangrove is particularly challenging as women's responsibilities are geared toward caregiving; there is no interest or receptiveness toward identifying spaces to provide or promote activities associated with women's use or exploitation of mangrove resources.

One other organizational aspect that should be mentioned is that there are community boards (organizations directly associated with the mangroves) with boards of directors in associations generally made up of 5 people, who were selected by all members of the Association. Leadership positions are generally held by men. The women who participate do so as secretaries or board members with no additional specific decision-making tasks.

There are also organizations of fishermen, crabbers and black clam harvesters. They also have boards of directors that handle and address sporadic needs to achieve and improve on their objectives. Depending on the area, women play a minimal role on the board, but this depends on the particular nature of each organization.

Below is a table that describes the number and gender make-up of the mangrove associations in the four project estuaries. There is a remarkable difference in gender make-up between the northern and southern estuaries. In the south, women's difficulty in participating in decision-making derives from the fact they are not familiar with the mangrove or legally recognized as part of the communities or productive organizations. This can be attributed to their access and use of the mangrove areas. In the north, women can walk to the mangroves in groups, but in the south the mangrove areas are far from the community, so they have to take a boat. Usually, women's mangrove activities in the south are more individual (each person arranges their own

access to the area). This is why women are less involved in mangrove-related activities in the south.

Table 12. Association membership in project sites

Project site	Women's representation in mangrove associations	
	Total # of associations	Average % of women in associations
Northern		
Muisne	6	60%
Cayapas-Mataje	14	62% 1 association entirely female
Southern		
Guayas River	23	11%
Jambelí	24	20% 1 association entirely female

Source: MAAE 2020

3.2.1 Northern estuaries (Cayapas-Mataje + Muisne)

Cayapas-Mataje estuary

The population in the northern Cayapas-Mataje estuary is chiefly Afro-Esmeraldian and in sociocultural and local development terms is dependent on exploiting natural resources from the mangroves, particularly black clams and blue crabs, and fishing in general.

In Cayapas-Mataje, men and women work harvesting black clams and other resources. In terms of natural resource management, women are especially remarkable as they have great knowledge of how to carry out this arduous task. Lastly, it is women who control the sale of black clams and use the earnings to purchase certain products to feed their families.

Typically, each community in the northern Cayapas-Mataje estuary has specific areas for black clam harvesting, which are usually respected by other communities. Traditionally, black clam harvesters use small wooden canoes with oars, which limits the distances they travel to harvest. In addition, women prefer to harvest in areas close to their communities. Fishermen tend to alternate areas, leaving some areas undisturbed for a few weeks so that the black clams are able to recover. Traditionally, harvesters return the "mother" (with young) so she may reproduce, and they also return small clams (under 4.5 cm long) to allow them to grow.

Black clam harvesting has traditionally been performed by women. One reason for this is the fact that black clams are gathered individually by hand, so no investment of capital is required. The harvesting areas are close to communities, which allows women to take their children with them and makes it easier for them to combine black clam harvesting with housekeeping chores. Black clam harvesting is the most popular form of work undertaken by women in the area. In the 99 households that reported black clam harvesting as their main livelihood, 82.4% of harvesters are women (Ocampo-Thomason, 2006). In addition to the women who harvest, a further 2.4% of women purchase black clams to sell them on to external intermediaries. One of

the most significant findings is that 20% of female-headed households depend almost exclusively on black clam harvesting, and in 10% of mixed households, both spouses harvest black clams as their main, and in some cases only, livelihood.

Black clam harvesting is the livelihood of 16% households. Other shellfish are also gathered at the same time as black clams, but they have little market value and are used to provide protein for household members (Ocampo-Thomason, 2006).

Interestingly, today 17.6% of black clam harvesters are men. The interviews revealed that men have taken up black clam harvesting as they have no other source of income, having been driven out of farming after selling their land to the shrimp industry (Ocampo-Thomason, 2006).

In Cayapas-Mataje, day-to-day livelihoods revolve around productive labor and livelihoods. They derive their income primarily from black clam harvesting (known as “concheo”), crab harvesting, and fishing. To a lesser extent, they perform agricultural work like sowing and picking coconuts or other plants, or gathering smaller mangrove shellfish, but these activities are more for self-consumption, subsistence, or barter for other foods.

The work carried out by Cayapas-Mataje associations is traditional in nature. For example, no processing technologies are used after the resources are harvested. Some expenditure is incurred by men for the purposes of aquaculture, but women face gender discrimination due to the scant value placed on their work, which is evident in the restrictions they face in accessing credit and other financial services. Women encounter structural challenges in accessing credit and the financial system itself. For example, only 9% of the loans for female heads of household did not require any type of guarantee, compared to 29% of male heads of household. Women have, on average, 10% less access than men to an account at a financial institution. In addition, the average labor income of a man with a job is 1.27 times higher than the income earned by a woman with a job in Ecuador (BCE 2018), 31% of female heads of household access credit from informal sources, while this happens to 25% of men. This situation occurs at different levels and in urban and rural areas.

Muisne

Muisne Cojimías is notable for the high level of participation by women as members and leaders of these associations.

Table 13. Gender roles reported in Muisne-Cojimías

Activity	Women	Men
Caregiving tasks	Feeding, childcare, help with homework, among others.	Help at times
Black clam harvesting (<i>concheo</i>)	Cooking, fishing, and selling	Fishing and selling

Crabs, including blue crabs and mangrove ghost crabs	Fishing, selling, and cooking	Fishing, sorting, and selling
Catching, selling and sorting	Cooking, fishing, and selling	Fishing, sorting, and selling
Tourism	Culinary activities, running tourism businesses, trail guides	Operating small boats guiding tours, providing tourist presentations, culinary activities
Seedbeds for species	Group cleaning work, management workshops	Group cleaning work, management workshops
On the mangroves	Reforestation activities	
Use of mangroves (medicine)	Strip the bark off to make infusions	
Coastal protection	Refuse collection	

Source: Survey on Perception of Environmental Standards in Mangroves, CIFEN / AAE, August 2019

Most land in the mangrove area is communally owned. However, women are only minimally included in decision-making because they do not feature explicitly in the regulatory framework. Furthermore, cultural practices maintain the sexual division of labor and continue to exclude women from mangrove conservation activities.

Often, it is men who hold formal positions of leadership within communities and fishermen's associations. Women, on the other hand, are responsible for homemaking, caring for family members, and cooking; very few are able to generate their own income through sales in small businesses like retail stores.

In Muisne, women engage in housework and caregiving activities but are also involved in collecting black clams. Crab and black clam harvesting is the main economic activity, performed on a daily basis in the morning. Men work harvesting crabs in the mangrove and also engage in small-scale fishing. Women as young as 13 get involved in harvesting the black clams. In this area it is also common to find women who are the heads of their households and who, for various reasons, take charge of productive labor.

Those being the two main economic activities associated with the mangrove swamp, men and women have developed adequate know-how to improve harvesting in tough conditions: mud, brackish water, mosquitoes and poor mobility.

It was reported that a hundred clams fetch \$2.50 USD and a string of 20 crabs \$3.00 USD. The women do not get involved in selling what they harvest – that is the responsibility of the men. However, situations arise in which intermediaries come into the communities to purchase the seafood gathered.

In these communities, men have a greater chance of engaging in productive labor in the surrounding areas. Both black clams and crabs are sold on the local market to intermediaries who transport the products to large cities in the north of the country.

There is a month-long closed season between February and March, with a permanent ban on harvesting black clams below a certain size. The aim of these bans is to ensure the reproduction, growth and conservation of the species. The local population is aware of the dates and regulations of the closed season as the Ministry of Environment (the controlling agency) works to disseminate the dates and specifics of the closed seasons.

“The women are well aware that they must only collect black clams greater than 4.5 cm, as provided by law, and the rest must be returned to the mangrove. Similarly, they know the dates of the closed seasons for crabs by heart (even though they may not know why it is forbidden to harvest them). As for fishing, they know they can engage in artisanal fishing without using chemicals, and they use traditional methods of fishing, with a casting net or “wide-meshed” fishing net. Other than that, they know little or nothing about environmental conservation, resource management, recycling, proper waste disposal, and being kind to animal and forest species,” (interview with female community leader).

During the closed seasons, men and women from the local populations struggle to access economic resources as there are limited job opportunities, especially for women, who have less training or formal education and have caregiving responsibilities. It was reported in the interviews that very few women are able to leave the home to engage in paid work, as women bear full responsibility for reproductive activities. Furthermore, the existing work opportunities can be summarized as follows:

- Shrimp farms, where shrimp are bred and harvested. This work is carried out in the water, by day and in full-day shifts; this is also due to the use of pollution-causing chemicals. The nature of the work means that it is mostly considered a man’s job.
- Farm work, which includes sowing, reaping, cleaning, and harvesting crops. Working hours are from 7 a.m. to 4 p.m., which a short lunch break. These tasks are considered a man’s job and very few women access this type of work on private land.
- State institutions generally look to employ people with at least a high school diploma. Given the requirements and difficulties women experience in accessing formal education, a very low percentage of women are able to access this kind of work.

Meanwhile, men work as day laborers on the crops of nearby farms and in stocking and tending shrimp. Men are able to travel to nearby towns to offer their labor as construction workers or any other type of service. However, this is more difficult for women as it is not culturally accepted.

This analysis clearly shows gender inequalities in the use of, access to and control of mangrove resources in the project’s three regions. With the goal of guaranteeing gender equity and sustainability in mangrove conservation, substantial efforts will be deployed to ensure that both men and women participate and reap the full benefits of this project. This analysis includes a detailed gender plan and will contain specific recommendations, activities, staffing details, and the budget.

3.3 Southern estuaries (Guayas + Jambeli)

Guayas

The mangrove forest in Guayas is notable for being very near the city of Guayaquil. The mangroves can be reached by land and water, and this has shaped the socio-productive landscape among the population. The Guayas River estuary contains 80% of the country's shrimp farms.

In the Guayas River archipelago, the local population possesses ancestral community property under land legislation that ensures ownership of community land and the recognition, allocation and titling of the lands and territories of indigenous communes, communities, peoples and nationalities, the Afro-Ecuadorian people and Montubio people, under the Constitution and international agreements and other instruments regarding collective rights (Organic Law on Rural Lands and Ancestral Territories, 2016). However, the land is located in protected areas over which the Ministry of Environment has influence, and therefore they are required to draw up an Agreement on the Sustainable Use and Stewardship of the Mangrove Ecosystem (AUSCEM).

Due to socio-cultural dynamics, women and men have different experiences in terms of access to and use and control of natural resources, as summarized in the following table.

Women	Men
They do not know the mangrove forest and it does not appeal to them as a place to visit or get to know. They operate in populated areas. Women do not take part in decision-making processes and take primary responsibility for care giving activities.	Men know the mangrove forest, use it and decide which areas will be harvested for mangrove ghost crabs. They sign the mangrove use agreements.

The area is subject to a ban on crab and black clam harvesting for one month between February and March to enable the species to reproduce and grow. During this period, the population is able to support itself financially through other activities, particularly tourism. A significant number of men work in the community as service providers for the construction, agro-exports and shrimp farms. In comparison, this is more common in the south because in the north these economic options do not exist.

On the other hand, due to the geographical position of the Puerto Roma and Balao area (an estuary with remnants of mangroves), the population devotes itself fully to harvesting crabs and black clams. This work is the responsibility of men, who go out to the surrounding areas on a daily basis to harvest. This work takes up about 4 hours of their day. They also fish for their own consumption.

Women, on the other hand, are responsible for caregiving duties. Some attempt to earn an income from removing and selling crab pulp. They also work selling clothes or cosmetics or invest in small stores that serve the basic needs of the local population. Single women generally live

with their parents or family and rejoin the family nucleus. The following table further clarifies the different roles of women and men in the Guayas estuary.

Table 14. Gender roles reported in the Guayas estuary area

Activity	Women	Men
Caregiving tasks	Feeding, childcare, help with homework, among others.	Help at times.
Black clam harvesting (<i>concheo</i>)	Sale of clams.	Harvesting.
Crabs	Removal and sale of crab pulp.	Harvesting and sale.
Oysters	Shucking.	Harvesting and sale.
Tourism		Tour guides, boatmen, provide demonstrations, take tourists fishing.
Beekeeping	No involvement.	Cleaning and inspection, performed by the over-60s.
Use of mangrove bark	Strip the bark off the mangrove and make infusions to control sugar levels.	
White fishing	Prepare products to sell to tourists, door-to-door sales, the scales are used to make handicrafts.	Fishing and sale.
Exploratory activities	Guides.	Work as guides.
Seedbeds	Collect seeds for reforestation.	Reforestation, refuse collection.
Trading	Clothing, cosmetics, stores.	

Source: Survey on Perception of Environmental Standards in Mangroves, CIFEN / AAE, August 2019.

In terms of vulnerabilities or impacts, a lack of water for human consumption and difficulties securing healthy food that meets the population's nutritional requirements are plain to see. Lastly, it is worth pointing out that the population is highly dependent on larger towns to obtain food, reducing opportunities to fulfill dietary needs. The inhabitants see themselves as cut off from the economic system as they live in an island environment that can lead to difficulties accessing services, workspaces, and life options (interview with a female leader from Guayas).

One other important subsistence activity is gathering honey for sale. For women, this remains difficult and they do not get involved in the sales process.

The problems cited in terms of vulnerability to climate change include flooding and a loss of livelihoods caused by environmental pollution.

Jambeli

The mangrove forests of the province of El Oro are located in the Jambelí estuary, a special management zone on the outskirts of Puerto Bolívar, an area accessed by boat and inhabited by a number of communities. Socioeconomically it is challenging for those living in the area, as services are limited and they are unable to produce food, and so they are plainly dependent on the mainland. This situation directly affects gender dynamics.

The characteristics of the management zone complicate land ownership as there is no land titling. Populations or communities living in the areas are not formal owners but have houses and buildings that have been maintained for over 50 years, since the first settlers arrived. In addition to the local population, men and women from the city of Machala come to the mangrove to fish for a living.

In this particular context, women have limited opportunities to engage in fishing; many work shucking crabs. Those living in the areas surrounding Jambelí may fish and sell what they catch.

In the Puerto Bolívar area, black clam and crab harvesting takes place in the Guayas River estuary, where there are remnants of mangrove forests. Over the last 20 years, the local population has come under intense pressure from shrimp farming companies that have sought to cut down mangrove forests for their own benefit.

In this area, the productive labor carried out by men and women can be characterized as follows.

Table 15. Gender roles reported in the Jambeli project area

Activity	Women	Men
Caregiving	Mostly the responsibility of women.	Help out, without taking full responsibility.
Tourism	Food preparation.	Boat rides, transportation within and outside the islands, guiding and leisure activities around the islands.
Mangrove ghost crab and lobster harvesting	Pulp removal, some sell to small restaurants locally.	Use traps to catch crabs. Dive in rocky coastal areas to catch lobster.
Black clam harvesting	Collect clams from the mangrove swamp and sell them.	Harvesting.
Fishing	Some women fish with their husbands. This is not their explicit responsibility, but rather they “help out”.	Fishing in the estuary. Net or rod fishing by day; they only work a few hours in the morning.
Oyster	Collection and sale.	
Group cleaning		Collect waste, sort it and sell whatever can be recycled.
Source: Survey on Perception of Environmental Standards in Mangroves, CIFEN / AAE, August 2019.		

Women engage in artisanal fishing more frequently here than in other areas and, in fact, some are members of artisanal fishing organizations. As mentioned in the table, the type of fishing equipment used in the area allows women to access and take part in fishing activities. In this sense, women experience some difficulties in accessing, using, and controlling natural resources. Women do not own the canoes or outboard motors, only their labor. This means that in community mangrove management processes, their own specific interests become invisible, which may exacerbate divides in terms of access, use, and control.

Lastly, the Jambelí River estuary has one association made up exclusively of women and some other associations have female leaders.

4. Vulnerability and adaptation to climate change

It is clear that, as a result of gender norms, men and women are impacted differently by climate related events. Global evidence has shown that in places with high gender inequality, women and children are much more likely to die because of natural disasters. Rising sea levels and flooding – the two major effects cited in justifying climate action in these project sites – can also have consequences like an increase in water salinity and water-borne diseases. Both are more likely to directly affect women, who tend to be responsible for collecting water for the household and who have the responsibility of caring for sick family members. Likewise, men, who are primarily responsible for sea fishing and agriculture are negatively impacted by increasingly unpredictable weather.

4.1 Impacts and response to past climate-related events.

The project’s areas of influence are places of high climate risk and vulnerability. As islands, they run the risk of flooding and pests that would affect the human population, together with pollution from waste brought over by currents from the mainland.

In order to understand how previous climate-related events have impacted women and men in the project sites, we asked workshop respondents to describe their past experiences. The data collection process included identifying perceptions of climate change vulnerability. This exercise was devised based on the last 20 years and the characteristics identified.

Table 16. Historical climate impacts on women and men

Project site	Year	Event	Differentiated impacts	
			Women	Men
Northern (Muisne)	1970	El Niño phenomenon	The fish left and they were unable to work. They emigrated elsewhere and worked the land (cacao, rubber, banana); economic impact, loss of life and disease.	Less black clam harvesting, they moved to other areas to collect black clams (an hour and a half away). They emigrated to work in Atacames (in restaurants and cafeterias) and “ditched their children.”
			Many emigrated to other countries (Spain, USA, and Chile) and were left jobless. They were no longer able to sell larvae to shrimp farmers.	Economic impacts; they had no work or income; migration, many men left the country; loss of life. They were no longer able to sell larvae to shrimp farmers.
	2000 - 2001	La Niña phenomenon	Good quality and quantity of clams, but prices on the local market fell.	When fish were abundant, prices on the local market fell.
Southern (Guayas)	1980	El Niño phenomenon	Epidemics and diseases. Children were underweight and malnourished.	Loss of livelihoods. Areas of mangrove flooded. Lack of job opportunities. Shrimp farms had no production so were not hiring.

	2005	La Niña phenomenon	Impact on families' financial situation; they were unable to sell seeds to the shrimp farms,	Fish left due to the red tide. There were no crabs because the ground "went hard".
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			the economic impact led to difficulties providing for families.	Difficulty fishing due to the death of species, higher water temperature. Very heavy rainfall preventing fishing.
	2009	Ocean current	Often they had to help push the boats.	Rivers filled with silt and boats were unable to move, so they had to push the boats or wait for high tide.
Southern (Jambeli)	1998	El Niño phenomenon	They were left with no sources of work due to the loss of crabs; overburdened with household cleaning.	They sought work outside the mangrove, such as on banana plantations and in the construction industry.
	2004	Swell	Impact on families' financial situation.	Loss of crabs and black clams in the area, loss of source of work.
	2017 and 2019	Red tide	Women who fished for these species were left without work.	Direct impact on people working with shellfish.

Source: Field data collection through interviews and participatory workshops, August 2019.

4.2 Climate projections in project sites and implications for women and men

Climate change will result in significant impacts on local environmental conditions along the coast of Ecuador, including a rise in sea levels, El Niño events, and changes in the intensity and variability of rainfall, flooding, and atmospheric temperatures.

Based on models generated by NASA, climate change could cause sea levels to rise by up to 27 cm by 2100 (NASA-GISS, n.d.). Considering that the 1997-1998 El Niño event led to a 42 cm increase in sea levels, periods of heavier rainfall are expected to worsen the rise in sea levels.

The risk of flooding is a major concern for the coast of Ecuador. The Dartmouth Flood Observatory has recorded 22 major floods since 1987, displacing over 506,000 people (Dartmouth Flood Observatory, n.d.). Flooding was particularly severe during the El Niño events of 1972/73, 1982/83, 1997/98, and in 2008 and 2012, affecting between 184,000 and 222,000 ha (Ocles Padilla, 2018). Flooding of coastal areas will increase as a result of the sea level rise (SLR), particularly due to extreme sea level (ESL) events in which periodic storm surges and wave setup (an increase in the mean water level due to the presence of breaking waves) are worsened by projected increases in the relative sea level (Kirezci et al., 2020). Higher sea levels will lead directly to an increase in coastal flooding in Ecuador (Reguero et al., 2015).

Given their regular contribution to sea level rise, the El Niño events are of particular concern. The mean projected increase in sea levels due to climate change is only comparable to sea level changes experienced during El Niño events. The increase in sea levels, together with exceptionally high rainfall associated with El Niño on the coast of Ecuador, limits the discharge of river systems into the ocean, causing flooding inland. This will lead to impacts on drainage along the entire coastal region, which are not fully captured in existing models of coastal and river flooding. Based on current assessments, 39% of areas within 5 km of the Ecuadorian coast are already at high risk of annual flooding (Secretaría Nacional de Gestión de Riesgos, 2018).

Existing gender inequalities may be exacerbated by the dynamics of climate change in the project area. That said, the impacts and challenges are expected to be greater in the following areas:

- Having access to water fit for human consumption. At present they only have rainwater or tap water, pointing to substantial difficulty in adequately securing this resource, especially if droughts become longer or unpredictable. The water problem affects the general population because they lack adequate water, both in terms of quantity and quality, however it is women who are responsible for collecting water and therefore directly impacts on their time burden.
- Depending on the market for food of adequate quantity and quality. This may be a challenge and could widen gaps in access for men and women because all the basics need to be purchased with money, and the money is usually controlled by men.
- Women and men in four estuaries live in uncertain socioeconomic contexts and situations of extreme poverty, and lack access to general resources: land, tools, and formal education for gainful employment. This situation hinders their access to options to improve their living conditions and the dynamics of violence. While this situation is true of both, as explained in previous sections, women do tend to be at higher risk and with fewer assets.
- Men during non-take season are usually forced to search for work in other municipalities and provinces they live, leaving their families behind. Main sources of work are banana plantation, construction and commerce.
- The most vulnerable groups are elder men, divorced, widowed or single women, who do not have the financial support of members of a community organization or of a family with male income earners. They find themselves compelled to adopt extremely insecure livelihoods. The problem of single, widowed and divorced women is complex and in this respect the interviews did not provide sufficient information. The elderly related to artisanal activities usually can't generate incomes during their last years and don't have social networks to relay on.
- The gap in access to employment may be worsened by a lack of access to formal education and natural resources. For example, the women in the communities visited have no formal education, making it difficult for them to access key information to make appropriate, timely decisions and manage risks, and they are excluded from formal education settings. This occurs as a result of the lack of education available and because their relationship with the market is different.
- Artisanal fisheries in general and mangrove fisheries in particular, perpetuate conceptions of masculinity that, prevent fishermen from taking initiatives to break the cycle of poverty and environmental degradation. The pressure that derives from the social obligation to comply with the role of suppliers, pushes fishermen to irresponsible fishing behavior, justifying the non-observance of environmental regulations. Attitudes of negligence and conformism emanate from the need to prove to be a man and not fall into attitudes that show weakness or any trait considered feminine, repressing feelings to reaffirm their masculine position, defining themselves as someone without fear or pain, with a heroic attitude, giving little importance to the consequences.

Furthermore, it should be borne in mind that women will continue to spend a substantial amount of time on caregiving, lessening their chances of being able to truly participate in decision-making and in managing the use and exploitation of mangrove resources.

Conclusion and implications for project

This gender assessment highlights the complex set of historical, social, cultural, and economic factors that influence the project site's current gender norms and inequalities. Firstly, men and women are vulnerable and susceptible to the impacts of climate change in differentiated ways; they also have different coping mechanisms. Secondly, there is a clear lack of political participation by women in community-based mangrove/fishery decision-making fora. Thirdly, the data presented suggest that women are overburdened with work, especially reproductive labor, and this limits their ability to engage in community, organizational, and project activities. And finally, gender-based violence is quite high and further highlights the inequalities at the household level and an important additional barrier that keep women from using their voice and agency. This situation is compounded by a number of structural problems associated with education, health, the provision of utilities and limited employment opportunities. All these factors come together to shed light on a violation of rights, with gender inequities affecting women of all ages.

In these mangrove-dependent communities, while both men and women are vulnerable to climate change impacts, women often have higher vulnerability due to higher rates of poverty, fewer livelihood alternatives, and less access to decision-making/information spaces compared to men. Men tend to control the main economic activity in the communities: the harvesting and sale of seafood. Often it is men who hold formal positions of leadership within communities and fishing associations. Women, on the other hand, take care of housekeeping, caregiving for family members and cooking; very few are able to generate their own income.

Taking a holistic and proactive approach, the project's gender action plan will ensure that the projects' goals and activities take into account the complex realities that women and men face and help to improve the resilience of the mangrove-dependent communities.

Gender evaluation for the project					
Root causes	Sociocultural norms regarding land access do not recognize women as organization members or landowners.	Limited work opportunities for women and men in mangrove areas, becoming more difficult with climate change.	Lack of formal education for both sexes.	Structural and sociocultural dynamics are maintained through control over income.	Culturally, caregiving is seen as a woman's job.
Implications /causes	Difficulties participating in decision-making.	Women & men find it more difficult to generate income; turn to changes in livelihoods (e.g., migration, men enter traditionally female fisheries – black clam, cockle)	Difficulty making informed, knowledgeable decisions on conservation and work-related issues.	Gender-based violence.	Women devote long hours to caregiving duties, limiting their ability to access other environments and activities.
Immediate effects	Women do not participate in decisions on the mangrove.	Families do not have sufficient food to meet their nutritional requirements. Additional pressure on resources.	Women are left out of discussions on the environment and biodiversity conservation.	Women do not participate in community life.	Women are confined to the home and are highly dependent on a partner or male family members.

Effects	Women of all ages fail to access conservation benefits (including increased CC resilience)	Total dependence on the market for subsistence. Reduced efficiency of women's harvest.	Women of all ages fail to access conservation benefits (including increased CC resilience)	Policies and decision-making does not necessarily take into account women's needs.	Women do not gain access to socio-productive activities.
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