GLOBAL INITIATIVE
AGAINST TRANSNATIONAL ORGANIZED CRIME

IMPACT OF BIODIVERSITY LOSS AND ENVIRONMENTAL CRIME ON WOMEN FROM RURAL AND INDIGENOUS COMMUNITIES

EVIDENCE FROM ECUADOR, MEXICO, CAMEROON AND INDONESIA

RESILIENCE FUND
Supporting community responses to organized crime

Faith Ngum | Radha Barooah

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GLOBAL INITIATIVE
AGAINST TRANSNATIONAL ORGANIZED CRIME

FROM VISION TO ACTION: A DECADE OF ANALYSIS, DISRUPTION AND RESILIENCE

The Global Initiative Against Transnational Organized Crime was founded in 2013. Its vision was to mobilize a global strategic approach to tackling organized crime by strengthening political commitment to address the challenge, building the analytical evidence base on organized crime, disrupting criminal economies and developing networks of resilience in affected communities. Ten years on, the threat of organized crime is greater than ever before and it is critical that we continue to take action by building a coordinated global response to meet the challenge.

EXECUTIVE SUMMARY

What constitutes an environmental crime has long been subject to debate. However, human-induced environmental degradation and biodiversity loss are both pertinent. Local communities, largely indigenous groups, living around biodiverse areas comprising forests, mountains and marine ecosystems stand to be among the first affected. The presence of illegal extractive activities, whether mining or logging, attracts men from outside these areas and effectively 'masculinizes' these territories. This disrupts regular life and threatens the safety of women, who often have to venture into forests to carry out domestic activities. The impact varies from community to community and is linked to gender roles and patriarchy, and sometimes includes physical violence.

This policy brief presents case studies from four forest ecosystems: the Arajuno forests of the Ecuadorian Amazon, the Sierra Tarahumara forests in Mexico, the Yabassi forests in Cameroon and the rainforests of North Sumatra in Indonesia. The findings show that while local indigenous communities rally to defend their territories against extractive operations and perceived environmental crimes, gender norms and patriarchy limit women's voices and participation. However, women's participation in resistance movements has gradually increased, especially against large-scale state concessions, and many have become leading environmental defenders in their communities. Their motivation to voice their perspectives and challenge dominant narratives against indigenous communities through various acts of solidarity is firmly rooted in their desire to protect their livelihoods. Their resilience strategies are similar but context-specific and nuanced across the communities in the four forest ecosystems analyzed in this brief.

In Indonesia, multinational companies are reportedly flouting laws on land clearing, which contributes to the outbreak of devastating forest fires. © *Anton Raharjo/Anadolu Agency via Getty Images*

Methodology

This brief uses a qualitative research methodology with content analysis of documents and semi-structured questionnaires/interviews with people from communities in the Ecuadorian Amazon, Mexico's Sierra Tarahumara region, the Yabassi Key Biodiversity Area in Cameroon and the Tropical Rainforest Heritage of Sumatra in Indonesia. The communities in these study sites are diverse indigenous ethnic and mixed groups, united by their historical ties to a specific forest ecosystem.

These four cases were selected as part of a larger programme examining community resilience and focusing on women in forest ecosystems. The lack of gender-disaggregated data, even on binary distinctions between men and women, restricts our brief to focusing on the perspectives of women, as opposed to other gender identities.

Primary data was collected in June 2023 from 36 women and 36 men in the four case study locations. The questionnaires and interviews were conducted in Spanish (in Ecuador and Mexico), Bahasa (in Indonesia) and French (in Cameroon) by national research assistants based in each of the case study countries. The responses were analyzed alongside secondary data obtained from the Global Organized Crime Index and a literature review of international policy documents, books and journal articles, national government policy documents, reports, and other published and unpublished texts on gender, environmental crime, biodiversity loss, climate change and forest laws/governance.

Key recommendations

- Collect gender-disaggregated data on environmental crimes, biodiversity loss and environmental degradation, and intergrate it into programming.
- Decolonize concepts of environmental justice and equitable distribution of resources when designing policies for environmental protection and the resilience of indigenous communities.
- Support socio-economic empowerment activities for women to increase their financial independence through sustainable development. Promote the creation of income-generating activities around various forest resources, including plant conservation and indigenous permaculture methods. These should be core activities of gender mainstreaming.
- Create safe spaces for women to share their experiences, and encourage collaboration among women's groups. Provide support networks to bridge the gap between local communities and corrupt municipal/regional state officials.
- Broaden the definition of 'environmental crimes' to include all activities that result in the continuous destruction of the environment (including waste dumping and land clearing) and for which the prior informed consent of indigenous and local populations has not been obtained. Strengthen accountability measures and independent, secure oversight mechanisms.

INTRODUCTION

Organized crime is driving environmental degradation and biodiversity loss in forest ecosystems around the world.[1] The impact of environmental degradation on indigenous forest-dependent communities is widely reported and acknowledged in international development and environment protection discourses. However, the gendered impact of environmental crime, while part of the broader conversation on environmental justice and biodiversity loss, is limited to international conservation and climate change frameworks.

As a part of the Resilience Fund's broader work on women's resilience to organized crime, this exploratory policy brief will unpack the ways in which women are struggling, adapting and responding to the impacts of environmental degradation and biodiversity loss caused by the illegal exploitation of forest regions and their surrounds, especially in rural and indigenous habitats.[2] Women living within indigenous communities that have socio-cultural and economic ties to their natural environment are increasingly affected by the growing presence of illegal extractive economies. Forest resources mean different things to men and women, depending on their roles, priorities and interests in meeting household needs and social expectations. How women perceive, cope with and respond to environmental crimes and biodiversity loss is shaped by the disruption of traditional gender roles and family dynamics. Gender roles tend to shape power structures that also determine access to rights and agency, including women's political participation.[3]

A qualitative analysis of the above will be presented in four case studies of forests and indigenous communities living in and around:

- Ecuadorian Amazon, Ecuador
- Sierra Tarahumara, Mexico
- Yabassi Key Biodiversity Area, Cameroon
- Tropical Rainforest Heritage of Sumatra, Indonesia

Recent studies on rethinking resilience to organized crime show that women around the world are reclaiming their voices and agency, by participating in various community responses to organized crime, despite the risks to their lives.[4] However, as with human trafficking, the gender dimensions of environmental crime are not very clear.[5] There is therefore a need to understand the resilience strategies of women who are emerging as environmental defenders against criminal groups, land grabbing, deforestation, biodiversity loss, and soil and water contamination as a result of extractive industries and agribusiness.

Global perspectives on environment protection, biodiversity loss and gender equality

In December 2022, at the 15th Conference of the Parties (CoP15) to the UN Convention on Biological Diversity, representatives of 188 countries adopted the Kunming-Montreal Global Biodiversity Framework (GBF) for action, setting four goals to be reached by 2050 and 23 targets to be achieved by 2030.[6] The post-2020 biodiversity framework, as it is also known, addresses the alarming loss of biodiversity caused by human exploitation of natural resources.[7] The framework is recognized as a significant step in protecting biodiversity, using a human rights approach to tackle human-induced biodiversity loss and climate change.[8] One of the main goals of the GBF, known as 30x30, is to conserve and expand the world's natural ecosystems on land and water by 30% by 2030. A major point of contention has been whether indigenous territories can be a separate category of conservation from protected areas. Indigenous territories were not included as a separate category of conservation, but indigenous rights will be respected in conservation efforts.[9]

The Kunming-Montreal Global Biodiversity Framework, adopted at CoP15 in 2022, emphasizes respect for indigenous rights in conservation efforts. *© Yu Ruidong/China News Service via Getty Images*

Target 23 of the GBF focuses on gender equality, which is a step forward from the previous Aichi targets set by the UN Convention on Biological Diversity for 2011–2020. The post-2020 GBF framework includes a gender action plan to increase gender-disaggregated baseline data on conservation, use and ownership of land resources, and participation in decision-making processes.[10]

At its core, the global discourse on environmental protection and conservation promotes 'gender mainstreaming' of environmental policies and frameworks at national, regional and international levels, such as the GBF, the Sustainable Development Goals and the UN Framework Convention on Climate Change. This thematic approach extends to regional agreements such as the African Union Gender Policy, the Regional Action Plan on Women's Access to Land and Forest Resources in Latin America and the Caribbean, and the Asia-Pacific Forestry Sector Outlook Study, all of which promote the integration of gender considerations into programmes and policies, including decisions related to the environment.

International and regional instruments recognize that biodiversity loss and the effects of climate change have different impacts on women and men due to their distinct roles, responsibilities and relationships with natural resources.[11] A reported 80% of people displaced by climate change are women, and women make up more than 40% of the agricultural labour force and are responsible for 60%–80% of global food production.[12] This makes them especially vulnerable to environmental disasters, as their livelihoods and social expectations are directly affected. Emergency shelters and camps become fertile ground for trafficking and exploitation of women and children.[13] In many regions, forced child marriages have been reported, as family incomes from agriculture are depleted following an environmental crisis.[14]

Transnational organized environmental crimes and crimes against the environment

Transnational organized environmental crime is a major driver of deforestation, soil and water contamination, violence, biodiversity loss and overall environmental degradation around the world.[15] Organized criminal syndicates have capitalized on the global scarcity of natural resources to diversify their operations from other criminal economies such as trafficking of drugs, humans and arms.[16] Transnational environmental crimes require extensive resources and complex logistical systems to extract and transport natural goods such as timber, minerals, oil, wildlife and plants. They use existing illegal infrastructure such as smuggling routes, money laundering and corruption of local officials to commit transnational environmental crimes.[17]

On the other hand, environmental crimes perpetrated by state or private actors often use corruption, politics and powerful lobbies to obtain licences and flout legal environmental protection frameworks and indigenous rights, such as impact assessments and prior informed consent of indigenous communities. It should be noted that environmental justice frameworks developed on the basis of colonial notions, such as equitable distribution of resources, procedural justice, political participation and environmental management, exclude the knowledge, values and cultures of indigenous (and socially marginalized) people.[18]

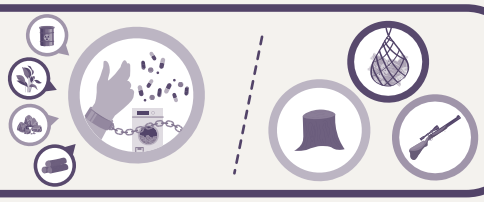
Indigenous communities are the first to expose and challenge the transgressions of private and state-owned companies that harm the environment, its people and natural ecosystems. In doing so, they are challenging not only legal transgressions, but also concepts of global capitalism that drive economic growth where ecology serves the economy. At the outset, land concessions for extractive industries, including agribusiness and monoculture, have facilitated a range of human rights violations, illegal and illicit extractive operations, wildlife trafficking, and illegal, unreported and unregulated (IUU) fishing in surrounding ecosystems.[19] A positive development, however, is the growing number of environmental courts and tribunals around the world, indicating the prevalence of environmental issues and the changing discourse around them.[20]

Illegal activities that harm the environment are broad and complex, with state involvement at various levels and to different degrees.[21] Such activities may be committed at small scale by private entities for domestic consumption. They may not always amount to transnational environmental crimes involving illicit transnational supply chains. Definitions and legal frameworks of environmental crimes shift according to the nature of what is harmful, and what is and is not considered illegal internationally, nationally and regionally.[22]

DEFINING ENVIRONMENTAL ORGANIZED CRIME

Not all environmental crime is organized environmental crime. The involvement of organized criminal groups in the supply chains of natural resources such as timber, oil and minerals, and flora and fauna, as well as the dumping of waste and trade in banned chemicals, underpins most conceptual frameworks on environmental crime.

Organized environmental crime tends to converge with the illicit economies of human trafficking, drug trafficking and money laundering, and may be distinct from illegal logging, fishing or hunting.



Local or indigenous communities are often forcibly recruited to work as miners, hunters and transporters, and may be direct victims of violence, characteristic of territories with criminal governance.

However, deforestation, biodiversity loss, land grabbing, land and water contamination, overfishing and waste dumping are not only committed by criminal organizations, but also by private actors – individuals, the state, corporations – which have an equal or greater cumulative impact.

Environmental protection frameworks and regulations for extractive industries vary around the world. They are based on modern anthropocentric views of victimhood and harms against the environment that overlook harms to non-human life forms. The lack of consensus on the concept of environmental crime across disciplines and stakeholders has been a major challenge in responding to this problem. Although the conceptual challenges posed by current terminology are beyond the scope of this brief, the perspectives of indigenous communities, and women in particular, are highlighted.

This brief refers to environmental crime from the perspective of local communities, especially women, where the lines between large criminal syndicates and 'legal' extractive operations are blurred in terms of their impact on the environment and the socio-cultural and economic fabric of indigenous societies. The communities interviewed identified illegal logging, mining, waste dumping, wildlife trafficking and IUU fishing as environmental crimes occurring in their forest ecosystems. The presence of criminal groups heightens competition for arable land, further marginalizing these communities, who are forcefully displaced from their ancestral lands or recruited as low-level actors into the burgeoning industries of licit and illicit operations.

Global climate change discourse has long determined that marginalized people, especially from indigenous communities, are disproportionately vulnerable.[23] This is also important for understanding the gendered impacts and responses to environmental crimes and biodiversity loss experienced by indigenous communities living near biodiverse areas.

Case study overview: Gendered impact of environmental crimes and biodiversity loss

The pressures of climate change caused by environmental crimes and extractive industries are pushing women to the fringes of environmental management, where they are expected to fulfil their designated 'nurturing' roles of caring for the household and family members. Gender, in the normative binary sense of men and women, has long determined socio-economic roles and responsibilities across societies. Gender relations are underpinned by gender roles, the behavioural expectations of men and women in institutional settings such as the family and the workplace.[24] These are 'the socio-cultural expectations that apply to individuals on the basis of their assignment to a sex category (male or female)'.[25]

Members of a delegation of indigenous community leaders from Latin America and Indonesia, the Guardians of the Forest campaign, demonstrate against deforestation. *© Tolga Akmen/AFP via Getty Images*

Gender roles in the binary sense are systemic, embedded in the collective behaviours of the two sexes and culturally differentiated as masculine and feminine.[26] Gender roles vary according to factors such as ethnicity, location, income and status, race and kinship. These intersections distinguish and create specific vulnerabilities and resilience capacities for both men and women, especially in indigenous and rural settings, to respond to human-induced environmental degradation, conflict and crime.

Indigenous communities around the world are widely recognized for their role in the conservation of indigenous plants. The role of women in plant conservation can be traced back to the origins of agriculture itself.[27] Gender relations within indigenous communities have involved women in cleaning, caring for children and the elderly, water and firewood collection, small animal husbandry, and plant management through subsistence agriculture and home gardens, which also contain endangered indigenous culinary and medicinal plants. Over 90% of women in the communities interviewed for this study are involved in plant management through gardens and small farms, such as *chacras* in Ecuador and farms in Cameroon.[28] They also collect, process and sell non-timber forest products (NTFP) such as nuts, leaves, honey and resins.

Men, on the other hand, have disproportionate agency with rights to resources, economic/financial power, income-earning activities, and political and economic participation. The main economic activities in forest areas in these communities include commercial agriculture in remote forest areas, hunting, fishing, construction work, carpentry, petty trade, sale of timber products, and paid labour in mining, logging or agribusiness concessions. These activities, which are the main sources of livelihood, are entirely male-dominated, following traditional patriarchal structures.

Men are also typically the decision-makers within the household. They organize, participate in and represent the household at community meetings (*mingas* in Chilly Urku, Ecuador) and other public spheres related to forest resource management. Despite their role in plant conservation practices, masked as everyday tasks, women are invisible when it comes to the impact of environmental degradation on their health, agency, household management and overall survival.[29] In the Ecuadorian Amazon, the Sierra Tarahumara region, and the tropical forests of Sumatra and Yabassi, the effects of illegal mining and inadequate waste management on soil and water contamination have been associated with deteriorating human health, increasing the domestic care demands on women, who themselves are not immune.

Logging and mining concessions have brought numerous non-indigenous men into indigenous territories in Ecuador, Mexico, Indonesia and Cameroon. Forest activities are then increasingly masculinized, as manifest in the sexual harassment and assault of local women in the forest, often while they are carrying out expected household activities, such as collecting firewood or water.[30] Reinforcing gender roles, the men of the community are not spared, but rather exploited for their labour and muscle power. Meanwhile, women and girls are subjected to forced prostitution around illegal, medium and large-scale mining and logging operations.

Food insecurity is a major concern for women. Depletion of agricultural land, deforestation and contamination of rivers have led to a shortage of fish and bushmeat, which are traditional sources of protein. Failure to fulfil their roles has led to domestic violence, as reported by indigenous Ecuadorian women.[31] Moreover, political participation by women, let alone indigenous women, remains low, regardless of movements. Women from the regions studied are largely excluded from land compensation schemes, as they only own land through their male relatives.[32]

RESILIENCE OF WOMEN TO ENVIRONMENTAL CRIMES, CLIMATE CHANGE AND BIODIVERSITY LOSS

Community resilience, as defined by the Resilience Fund, is a community's capacity to adapt and respond to the threats and shocks of organized crime. The resilience of women in the context of specific environmental crimes is determined by their collective efforts to respond to the disproportionate impact of environmental degradation they experience as a consequence of traditional patriarchal structures that perpetuated gender norms.

Women's resilience in the face of environmental crimes and biodiversity loss will be presented through four case studies. Each case study will provide the context of environmental crime, how it affects indigenous women and how communities have responded. In addition to a literature review, these case studies are based on interviews with the Kichwa and Shuar indigenous communities of the Ecuadorian Amazon (nine women and 12 men); the Rarámuri and Ódame of the Sierra Tarahumara region (10 women and five men); the Bassa, Betis, Bandem and Bona Ba'a of the Yabassi forest region (nine women and 13 men); and the Batak Toba indigenous community of Sumatra (eight women and six men).[33]

Ecuadorian Amazon

Located in the province of Pastaza, Ecuador, the Arajuno canton consists of rugged mountains that are rich in biodiversity and a source of livelihood for seven indigenous Ecuadorian Amazonian communities, including the Kichwa and Shuar.[34] These communities have long depended on the forests for food, construction materials, clean water, firewood, handicraft materials, natural medicines and arable land for farming (*ajas* and *chacras*).[35] The community members interviewed for this study were primarily from the Chilly Urku community, a Kichwa group.

FIGURE 1 Location of the Arajuno forests in the Ecuadorian Amazon.

The relationship between Ecuadorian indigenous communities and their land, which has long underpinned their ethnic and gender identities, has been shaped by development and extraction, as the national governments focused on the Amazon and its oil potential from the 1980s through the first decade of the 2000s.[36] In 2009, factions of the Sapara community, mostly located near the Peruvian border, united to form Nación Sapara del Ecuador (NASE) to address indigenous territorial disputes arising from petroleum concessions on their ancestral lands. Once formed, the NASE was effectively split into pro-oil and anti-oil factions.[37]

Ecuador's Amazon forest is being exploited by illegal hunting, poaching of exotic wildlife, IUU fishing in its river systems, illegal logging of protected species such as mahogany, and illegal mining. These activities make up the majority of environmental crimes in the forest.

As forest territories have become increasingly politicized, interviewees accused *mestizos* (non-indigenous Europeans or people of mixed descent), transnational companies and other neighbouring communities of colluding with corrupt government and military officials to carry out illegal extractive operations for domestic and international consumption.[38] Interviewees also acknowledged the involvement of many community members in the exploitation and trafficking of endangered species and the illegal logging and timber trade, which involve a range of actors, from intermediaries to international traffickers. Figure 2 highlights the environmental crimes perceived by interviewees.

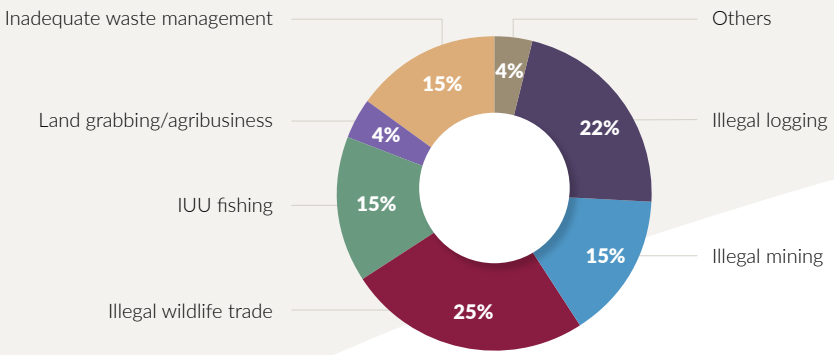


FIGURE 2 Perceived environmental crimes in the Chilly Urku community.

Impact of environmental crimes on women

Among the many and varied impacts of biodiversity loss and extractive industries, illegal hunting and IUU fishing have had a direct effect on the food security of Ecuador's indigenous communities. Large mammals such as tapirs, which were hunted for bushmeat, and certain fish species are now endangered, while deforestation has significantly reduced the availability of previously abundant medicinal plants and timber trees, such as the endangered big-leaf mahogany.

Sacred ancestral sites used for cultural festivals have been replaced by logging and mining concessions. In addition, as in other parts of the world, illegal mining has led to mercury contamination of the region's soil and rivers such as the Puyo River.

Women in Ecuadorian Amazonian societies are responsible for the food security of their household, which requires them to engage in subsistence agriculture and livestock rearing.[39] Environmental degradation has affected their daily work, forcing women to spend more time searching for clean water.

As medicinal plants disappear, women are forced to travel deeper into forests, which are effectively male-dominated, and face the risk of sexual assault and violence.

The reduced availability of bushmeat has also pushed women to search for alternative sources of dietary protein. Women frequently seek domestic work around logging and mining camps, where they are vulnerable to assault, sexual exploitation and forced labour. Illegal mining activities largely occur in criminal territories, which are scenes of sexual exploitation and human trafficking for forced labour.

Community resilience

Ecuador has a number of institutional mechanisms for addressing conservation and environmental crimes.[40] Biodiversity conservation is enshrined in the country's constitution, as well as numerous central and sectoral laws, norms and procedures to protect and promote the sustainable use of forest resources, which also sanction any inappropriate use.[41] However, limited capacity, weak institutional governance and endemic corruption undermine public trust in state institutions, affecting policy implementation.[42] A major issue highlighted in the interviews was the inherent limitation of Ecuador's judicial system, where judges are required to oversee a range of conflicts – from divorce cases to environmental crimes – regardless of their expertise, diluting the vigour with which perpetrators of environmental crime are prosecuted.

Communities organize local social watch groups to strengthen internal community governance, consolidate community-monitoring processes and develop advocacy materials with support from national organizations such as Conservación Internacional and Naturaleza y Cultura Internacional. Indigenous Shaur organizations such as the Federación Interprovincial de Centros Shuar (Interprovincial Federation of Shuar Centres), Nacionalidad Shuar del Ecuador (Shuar Nationality of Ecuador) and Pueblo Shuar Arutam (Shuar Arutam People) are leading the confrontation with extractive activities and environmental crimes, especially mining that degrades the environment and pollutes water sources. International organizations such as the World Wide Fund for Nature and the Forest Stewardship Council support community efforts through development projects that enable sustainable use of forest resources while protecting indigenous territories. For instance, the Forest Stewardship Council is coordinating with the Grupo de Trabajo sobre Certificación Forestal Voluntaria (Working Group on Voluntary Forest Certification) and the Organización de la Nacionalidad Waorani de la Amazonia Ecuatoriana (Organisation of the Waorani Nationality of the Ecuadorian Amazon) to strengthen the capacities of indigenous communities so they can establish a mechanism for the sustainable management and use of forest resources.[43]

The community is also raising awareness about respecting territorial boundaries and resources with neighbouring communities, declaring protected and conservation areas within the forests, and petitioning the sectional government to declare ancestral territories mining-free. For example, indigenous leaders and collectives in particular territories have secured rights of nature, such as in the case of Sarayaku (litigation won against a state oil company) and with the Pueblo Shuar Arutam (litigation won against a state mining company). These cases have been taken to international courts to demand that the Ecuadorian state recognize the rights of indigenous peoples to defend their resources.[44]

A Kichwa woman prepares a natural medicinal remedy at her home in Sarayaku, Ecuador. As medicinal plants disappear, women are forced to travel deeper into forests, where they face the risk of sexual assault and violence. *© Franklin Jacome via Getty Images*

Women's resilience strategies

Amazonian women, such as the Sapara, self-organize for collective resistance against extractive activities on their ancestral lands. Amazonian Kichwa women, for example, have led talks on the impact of biodiversity loss, the importance of environmental protection and the need to preserve forest resources for future generations.

The women-led Sapara movement is well documented, and challenges development narratives that characterize indigenous communities as 'poor' and 'anti-development'. Other collective movements engage in social protests against environmental degradation, concessions and all extractive operations in their territories. They file official complaints with municipal and regional state institutions to denounce environmental crimes committed in their territories. Amazonian Kichwa women defend their environment, not to challenge traditional gender roles, but rather to reclaim their voice, especially in *mingas* (community meetings), where their role has traditionally been to prepare and serve food (an extension of domestic roles).

Some Shuar women have gained visibility within the community as representatives on local municipal councils and in state institutions. These women use their positions to denounce environmental crimes by filing complaints and raising related issues in meetings on behalf of other women and their communities. Other Shuar women's collectives are working together to identify alternative livelihoods outside of subsistence agriculture to reduce their dependence on natural resources.

Ecuador's indigenous communities, particularly their women, have long resisted the environmental and socio-economic damage being done to their lands. They have also taken a stand against land acquisition and the licensing of extractive industries in their territories. Despite their determined resistance, these communities face mounting dangers from armed non-state actors, and their vulnerability is compounded by reports of their activities being criminalized. This situation allows aggressors to effectively impede or deter communities' efforts to resist.[45]

Sierra Tarahumara region, Mexico

The Sierra Tarahumara region (Sierra) is located in Mexico's northern Sierra Madre Occidental in the border state of Chihuahua. These forests are characterized by an enormous diversity of tropical, subtropical and temperate flora and fauna species. Much of Mexico's natural resources are part of *ejidos*, a complex land tenure system that governs the use of land outside human settlements, including forests, lakes, mountains and natural reserves that combine public and private ownership. During the 1980s and 1990s, *ejidatarios* (people granted access to *ejido* land by the government) and farmers secured most of the land for private ownership.[46] Over 90% of the Sierra's natural resources and biological diversity are found on *ejido* land, where the Rarámuri (Tarahumara) and Ódame are the dominant indigenous communities.[47]

FIGURE 3 Location of the Sierra Tarahumara in Mexico's Chihuahua state.

The presence of highly organized criminal groups, licensed extractive industries, the Sierra's proximity to the US border and climate change have intensified competition for arable land. The illegal logging of pine trees is orchestrated by a network of corrupt government officials (from local to municipal), *ejidatarios*, *caciques* (chiefs) and many indigenous families who depend on the logging industry for their livelihoods, primarily working as manual labourers.

In addition to the environmental damage caused by licensed extractive industries, interviewees hold organized criminal groups responsible for cultivating poppy and marijuana on deforested land. They say that criminal organizations are working with *mestizos* to expand their control over *ejidos* and forcing Rarámuri and Ódame *ejidatarios*, *caciques* and indigenous families to cultivate poppy and marijuana on their land, or pressuring them to sell or give up their land rights if they refuse.

Mexico has institutional mechanisms in place to deal with environmental crimes, including a state reporting mechanism called PROFEPA (Procuraduría Federal de Protección al Ambiente). However, the marginalized land rights of indigenous communities, corruption, a lack of resources and the protection of reporting parties all affect its actual implementation. In addition, indigenous communities have to resist various economic interests when fighting for their territorial rights and the protection of forest areas. Figure 4 shows the environmental crimes perceived by interviewees.

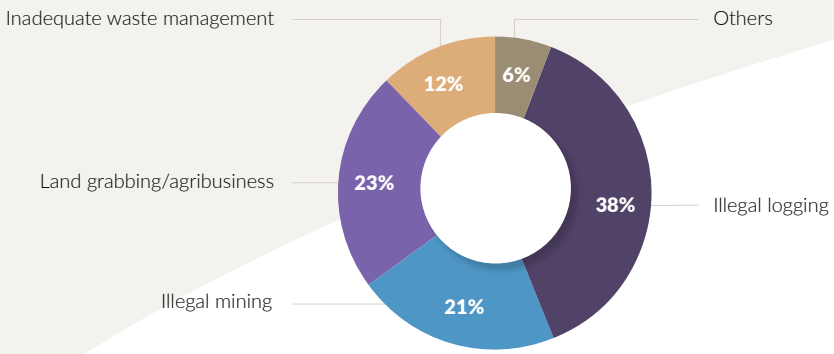


FIGURE 4 Perceived environmental crimes in the Sierra Tarahumara region.

Impact of environmental crimes on women

The Sierra is an area stigmatized throughout Latin America as the land of drug traffickers. This stigmatization has normalized violence, organized crime (including environmental crime) and the impunity of perpetrators. Traditionally, indigenous communities in the region have engaged in subsistence farming.[48] However, the rapid loss of land has affected their health and livelihoods, disrupted their socio-cultural identities and facilitated their involvement into criminal economies.

Malnutrition as a result of extensive logging and mining, and the resulting contamination of soil and water, is a health crisis among community members.[49] Health care services are far off from indigenous settlements, increasing the burden on mothers, who have to travel long distances to access care for sick family members, often infants and children.

Extensive and abrupt socio-cultural and economic losses have led to deep frictions among Rarámuri and Ódame households, manifested in rising rates of alcohol addiction and domestic violence against

women. As in Ecuador, forest territories are male-dominated and rife with criminal activity. Collecting firewood and clean water has become a daunting task as women are increasingly vulnerable to violence and sexual assault by men working in the legal and illegal extractive industries. Women are also sexually exploited and trafficked by criminal groups operating in the area.

Displaced Rarámuri people flee to the cities in search of shelter or work. They are reportedly discriminated against and their children often drop out of school. Many young people in the community lose their lives to drug and alcohol addiction or find their identity in the extensive operations of criminal groups. The mothers of these youths are stigmatized by their communities.

Community resilience

Mexico has a legal framework consisting of various state laws, a law enforcement unit and a judicial unit specifically mandated to counter organized crime, including environmental crime. However, municipal state institutions and local governments are corrupt and complicit with organized crime.[50] Law enforcement has been ineffective due to a host of factors, from lack of witness protection to corruption and the marginalization of indigenous land rights. Communities compete with criminal groups for territorial rights, leading to a culture of impunity for drug cartels and a loss of confidence in the state's ability to protect its citizens against environmental crimes.

Coloradas de la Virgen, a remote indigenous Tarahumara village in the Sierra Tarahumara. The indigenous populations of northern Mexico are threatened by government corruption, military repression, narco trafficking violence and communal land loss from illegal logging. *© Andrew Lichtenstein/ Corbis via Getty Images*

Rarámuri and Ódame leaders have organized peace movements to confront biodiversity loss through restoration projects such as communal water catchments and reforestation in line with the state's Sembrando Vida tree-planting programme. To denounce environmental crimes, they rely on organizations such as the Consultoría Técnica Comunitaria, Alianza Sierra Madre and Centro de Capacitación y Defensa de los Derechos Humanos e Indígenas for legal assistance in documenting cases, filing lawsuits and engaging with the authorities. They also work with organizations that provide temporary employment opportunities in projects specifically aimed at empowering indigenous communities. Furthermore, they create embroidered maps as a means of preserving their cultural heritage. They organize community meetings to share experiences and discuss challenges, best practices and resilience strategies within communities.

Women's resilience strategies

The Rarámuri and Ódame women have collaborated with Catholic Church groups, accompanied by female religious leaders and Jesuit priests in Chihuahua, to amplify their voices. They use religious and cultural festivals and gatherings to foster unity in the defence of their territorial rights and cultural heritage. Rarámuri women across Sierra have organized themselves into formal organizations and informal collectives to support and participate in protest marches and meetings where they share experiences and discuss challenges, best practices and resilience strategies. They also engage in dialogue with state officials and organize training to equip displaced women with income-generating skills, such as sewing, embroidery, handicraft, weaving and poultry farming, to replace the men who have fled their homes as a result of the violence of organized crime. These resilience strategies have gradually facilitated the presence of Rarámuri and Ódame women in political movements and decision-making processes.

Despite these strategies, drug trafficking organizations continue to intimidate, threaten and murder indigenous activists and members of these collectives, including women. Women are also victimized by corrupt state officials who collude with criminal groups.

Yabassi Key Biodiversity Area, Cameroon

The Yabassi forests of Cameroon are part of the Congo Basin forest ecosystem. Situated in western Cameroon, the Yabassi Key Biodiversity Area covers 3 000 square kilometres of forest and thriving biodiversity close to the coastal city of Douala. This forest ecosystem has shaped indigenous identities, providing food and medicinal plants, raw materials and construction materials, and arable land for subsistence and commercial farming for the multi-ethnic Bantu-speaking Bassa, Bandem, Botia, Bona Ba'a and Beti people.

The Yabassi forests, like other forests in the region, are plagued by widespread illegal logging, illegal mining and wildlife trafficking. The perpetrators range from local administrative officials, licensed operators and exporters to villagers or local community members. Cameroon's porous border, regional conflicts, widespread poverty and entrenched corruption facilitate the illegal extraction and transportation of forest products.[51]

The illegal trade in wildlife and timber involves complex criminal networks that form a transnational supply chain involving actors within forest ecosystems and external markets.[52] Increased domestic and international demand for timber has led to a rise in informal logging. This has contributed significantly to the rapid and extensive deforestation of Cameroon's forests.[53] Much of Cameroon's illegally sourced timber and wildlife is trafficked to Asian countries, particularly China and Vietnam, with Doula the centre of illicit financial transactions involving Chinese companies.

Despite Cameroon's many environment protection laws and community forest management systems, much of the country's illegal wildlife and timber products come from protected areas, transboundary areas, concession areas and sites of major infrastructure construction.[54] The unfettered exploitation of Yabassi's forests, land and water has polluted its rivers, reducing the quantity and variety of fish and marine species. Indigenous communities face numerous challenges, including the loss of territorial land and traditional protein sources, as well as criminalization and violence, and the growing presence of illicit economies and criminal networks. Figure 6 illustrates the different environmental crimes perceived by the interviewees.[55]

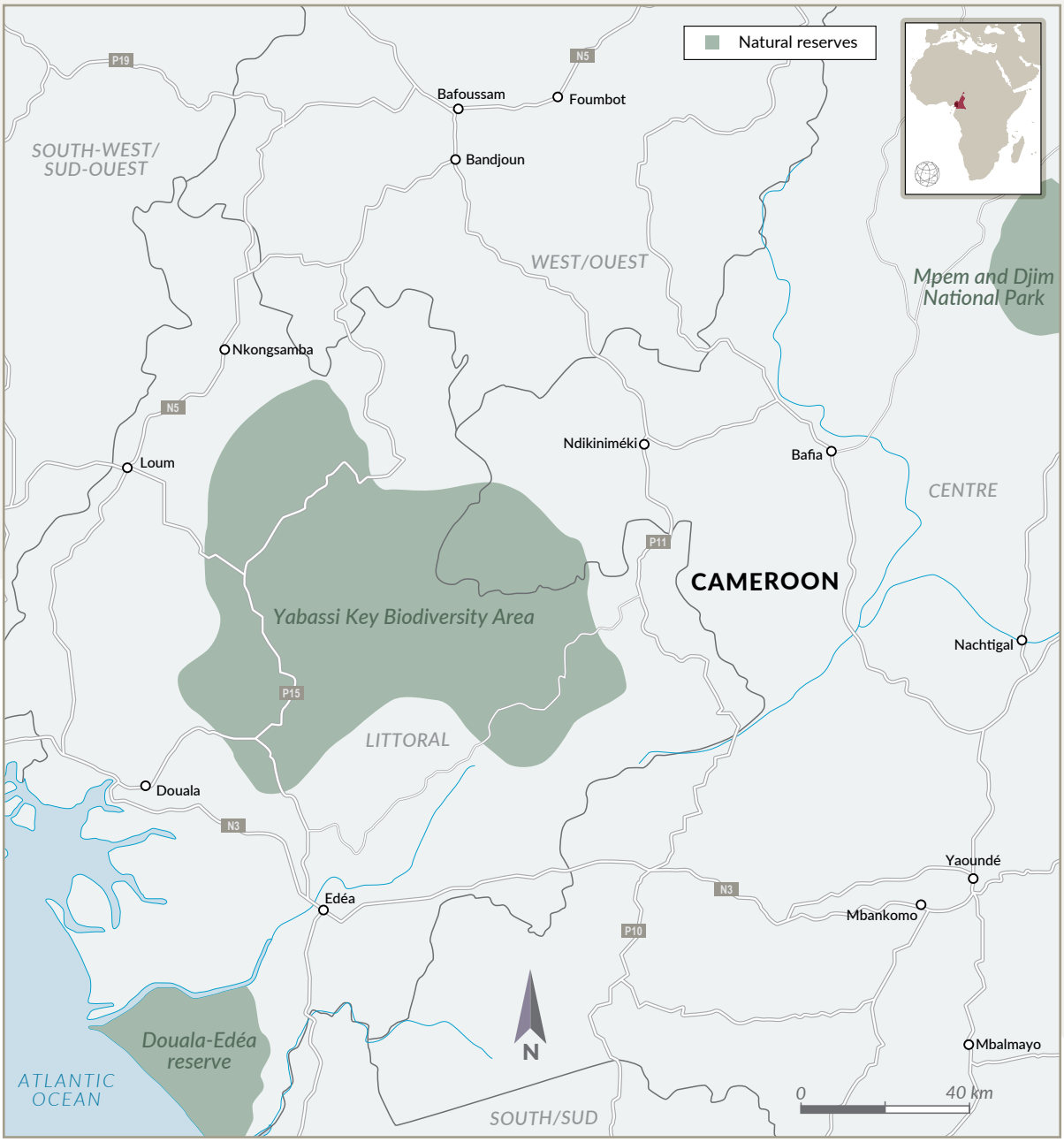


FIGURE 5 Location of the Yabassi Key Biodiversity Area in Cameroon's Littoral region.

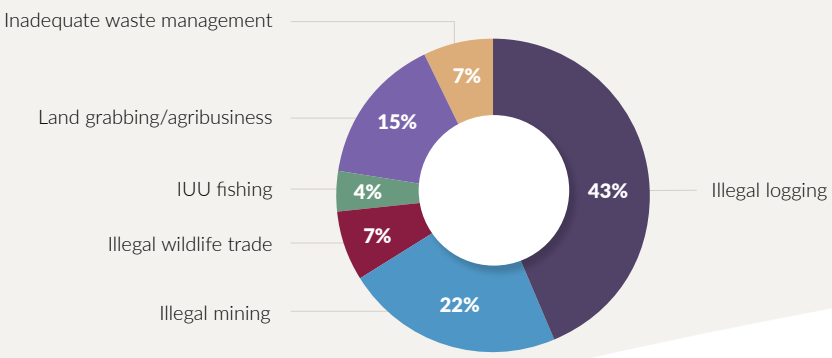


FIGURE 6 Perceived environmental crimes in the Yabassi forest region.

Impact of environmental crime on women

Deforestation in the Yabassi forest ecosystem is severe and affects the survival of indigenous communities. Bushmeat, for example, has long been a main source of protein for indigenous cultures in the region. Yet illegal wildlife trade and deforestation, compounded by the needs of Cameroon's growing population, have reduced the availability and increased the cost of bushmeat for indigenous communities. Many informal or illegal loggers bring bushmeat from the forest for their wives to sell in urban markets, while others have relationships with women who run bushmeat restaurants in Douala.[56]

Furthermore, the interviews highlighted that women have minimal agency in Cameroonian society, much less in indigenous communities shaped by extractive industries. This marginalized status is manifested in a lack of political representation in government positions and even in community meetings, as some interviewees explained. Women have no access to land rights and are increasingly dependent on men. Reflecting the pattern of large-scale land acquisitions and degradation of arable land in previous case studies, the pressure on indigenous women resulting from food insecurities pushes them into the throes of violence and sexual exploitation, especially in mining and logging camps.

Community resilience

Cameroon has a number of laws relating to the sustainable management of land and forest resources, but the national capacity to address environmental crimes remains limited. Public institutions are rife with corruption, which impedes their ability to enforce law and order, compounded by the lack of an independent judiciary.[57] This has weakened national efforts to deal with environmental crime, resulting in a lack of trust in municipal state institutions and judicial authorities.

A few local initiatives have emerged, although with limited impact, especially as the local people lack the financial resources, technical and legal capacity to effectively manage community forest resources and seek justice for environmental crimes. These local resilient initiatives mainly include reforestation of devastated areas, awareness raising campaigns against environmental destruction, planting of perennial crops and whistle-blowing. These initiatives also rely on local organizations for guidance and support. For instance, Ajemalebu Self Help supports forest monitoring and control within community forest units, and the Action pour la Protection en Afrique des Déplacés Internes et des Migrants Environnementaux (Action for Protection of Internally Displaced Persons and Environmental Migrants in Africa), provides legal guidance to affected communities through its secretariat.

Much of Cameroon's illegal timber products come from protected areas. Deforestation in the Yabassi forest ecosystem is particularly severe and affects the survival of indigenous communities. *© Brent Stirton via Getty Images*

Women's resilience strategies

Although gender norms and patriarchy limit women's voice and participation in issues related to land and forest management, Yabassi women are regrouping into women's associations and joint initiative groups to make their collective voices heard. In addition to the community resilience actions, they are leading protests that include barricading logging and mining machinery, working with men to raise awareness of environmental crimes, filing complaints with state officials and campaigning for participatory sustainable forest management. These acts of resilience are often met with threats, violence and intimidation from corrupt municipal and state officials, including forest guards and military personnel, forcing women to resort to non-confrontational strategies. For example, in some localities, some women adapt their agricultural cycle to the rhythm of logging operations by cultivating seasonal crops and vegetables in home gardens to avoid the repeated destruction of agricultural fields by passing logging and mining machinery. Most others have resorted to collecting and selling NTFPs such as black pepper, hazelnut, eru (*Gnetum africanum*) and ndjansang (*Ricinodendron heudelotii*) to generate household income. Although small, these acts of resilience are gradually making Yabassi women autonomous and allowing them to assert their rights within households and community associations.

Tropical Rainforest Heritage of Sumatra, Indonesia

The Batak Toba community is indigenous to the forest regions of North Sumatra, Indonesia. Traditionally, the Batak Toba people have relied on the forest ecosystem for water, food, medicines, benzoin (gum resin), construction timber, handicraft materials (bamboo and rattan), local palm wine and spices. The forests of North Sumatra are within the customary territory of the Batak Toba community, but the community does not manage these forests. Regulated by government institutions, palm oil corporations are acquiring licences overriding regulations to occupy 7.7 million acres for plantations in Indonesia, of which 3.2 million hectares are in Sumatra.[58]

FIGURE 7 Location of the Tropical Rainforest Heritage of Sumatra in Indonesia.

For decades, the Batak Toba people have been threatened by large-scale land grabbing enabled by logging and plantation concessions. Large swathes of indigenous territories, peatland and forests have been effectively converted into monocultures of export-oriented agricultural products, including palm oil, timber and eucalyptus. Multinational companies are reportedly flouting laws, for instance on land clearing, which contributes to the region's annual forest fires and haze during the dry season.[59]

Extractive activities in disputed indigenous territories severely affect food security and the cultivation and extraction of indigenous economic resources such as *Styrax benzoin*. The excessive use of pesticides and chemicals in monoculture plantations has led to severe water contamination and the extinction of endemic fish species such as *Ikan batak* (or *ihan*). Deforestation and noise pollution have displaced mammals such as wild pigs, elephants and monkeys into agricultural areas near forests, contributing to the growing problem of human–animal conflict.

Indonesia is home to the largest illicit logging markets in South East Asia, with widespread illegal logging carried out by powerful businesspeople and foreign actors (including Chinese, Vietnamese and Filipinos) in collusions with corrupt local officials.[60] Illegal mining and poor waste management are other environmental crimes of limited scale within this community, as shown in Figure 8.

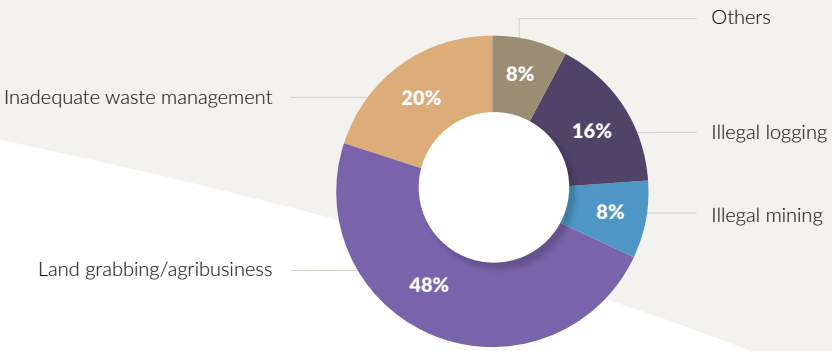


FIGURE 8 Perceived environmental crimes in the Batak Toba community..

Impacts of environmental crimes on women

Gender norms designate Batak Toba women as breadwinners and the main producers of household food crops. However, women have limited rights and control over agricultural land due to patriarchal kinship property rights systems, whereby women are granted permissive use rights to family or community land for the cultivation of food crops (mainly rice) through male relatives. Consequently, the loss of community land to agribusiness corporations and mining projects negatively affects women's subsistence roles, as they are excluded from any compensation schemes that target landowners.

In addition, the replacement of *Styrax benzoin* trees (the main economic resource for men) with palm oil and eucalyptus plantations is leading Batak Toba men to seek alternative income as freelance daily labourers for logging, mining and agribusiness companies. This unpredictable and new influx of money tends to influence gender relations, increasing women's economic dependence on men and sometimes pushing women further into marginalization.

Community resilience

Indonesia has an adequate legal framework,[61] but lacks the infrastructure necessary to effectively combat environmental crime. Although the government publicly condems environmental crimes, corruption is rampant at state and regional levels, undermining the resilience efforts of Indonesia's public institutions.[62] In the face of this, the Batak Toba community is using various strategies to protect their ancestral territories and reclaim their land rights. They are collectively seeking recognition of their customary land rights through the Tano Batak branch of the Alliance of Indigenous Peoples of the Archipelago (Aliansi Masyarakat Adat Nusantara) and demanding the return of customary land from agribusiness corporations.

They are also rehabilitating damaged areas through reforestation (using fruit trees and benzoin), participatory mapping and spatial planning of indigenous territories. They also organize rallies and peaceful protest walks to denounce environmental crimes. A prominent example is the 2021 peaceful walk from the town of Balige to the Presidential Palace in Jakarta.

In addition to these local resilience strategies, Batak Toba community members are also enlisting the support of national organizations such as the Indonesian Batak Association, the Community Initiative Development Study Group and the Hutan Rakyat Institute to raise awareness and defend and protect indigenous land rights. They are also raising awareness of the corporate social responsibility of concessions to surrounding communities.

In North Sumatra, large swathes of indigenous territories, peatland and forests have been converted into monocultures of export-oriented agricultural products, including palm oil. *© Sutanta Aditya/NurPhoto via Getty Images*

Women's resilience strategies

Although environmental crimes negatively affect Batak Toba women, Indonesia is a Muslim-dominated nation with gender norms shaped by a combination of cultural and Islamic principles that impose conservative behaviour and restrict women's rights and freedom to participate in public activities. This has resulted in most women feeling powerlessness, even though the Batak Toba community is predominantly Christian. As a result, most women only participate in community resilience activities within acceptable gender and cultural norms, such as planting trees on the banks of Lake Toba.

However, a few Batak Toba women are daring to exercise their agency and use their voices within the community to advocate for justice against perpetrators of environmental crime by participating in sit-ins, sometimes naked as a symbolic connection between women's body and nature. For instance, in December 2021, some women staged a naked protest against an agribusiness corporation to stop trucks from entering their ancestral forest land, either for logging or for clearing for monoculture plantation agriculture on land that had been grabbed from the community.[63] On the one hand, these women environmental defenders are labelled as uncivilized and rebellious within the community, alienating them from other women in the community. On the other hand, they are intimidated and assaulted by thugs and corrupt military personnel hired by the perpetrators of environmental crimes. Women defenders have also reportedly been criminalized, with the state invoking anti-pornography laws against naked protestors. These threats increase the risks to women's lives and discourage other women from becoming environmental defenders.

CONCLUSIONS AND RECOMMENDATIONS

The impacts of environmental crime, climate change and biodiversity loss affect indigenous women and men differently in the Ecuadorian Amazon, Mexico's Sierra Tarahumara region, the Yabassi forest in Cameroon and the tropical forests of Sumatra in Indonesia. Gender roles and expectations limit women's agency to household activities, which in turn depend on the health of their environment. Most women interviewed in these communities were not involved in environmental crimes, but suffered from the masculinization of forest-related economic activities, loss of culture and land, deteriorating health, domestic violence, sexual exploitation and forced labour.

Indigenous women from the study regions in Mexico and Ecuador appear to play a more active role in collective indigenous movements for land rights, reparations and environmental protection than those in Cameroon and Indonesia. Protections for environmental crimes and human rights tend to classify indigenous communities together, overlooking the unique vulnerabilities of women due to their financial dependence on men, reinforced by socio-cultural norms and religious practices that dictate women's roles in communities and their relationship to forest resources. Women's voices generally remain muted and marginalized in decision-making processes, whether in community level meetings or on national agendas.

Environmental activists and forest rangers commemorate Earth Day in Indonesia. © *Sigit Prasetya/NurPhoto via Getty Images*

However, as indigenous communities rally to defend their ancestral territories against environmental crimes, our findings show that women, supported by civil society organizations and collectives of other ethnic groups, are gradually raising their voices and collectivizing efforts to protect the environment. Their resistance narratives also reflect the gendered roles of protecting their families, culture and livelihoods. Their motivations are based on direct experience.

Environmental defenders, whether women or men, face many risks. Almost all community members were aware of the threats, assaults and violence experienced by environmental defenders in their communities. Reporting mechanisms are not effective as there is no protection for complainants and in some cases reports are systematically suppressed.

While there is an urgent need to strengthen community resilience and empower women environmental defenders in all four case study areas, there is no one-size-fits-all solution. A contextualized approach that takes into account local gender norms, roles and patriarchal rules is needed. Nevertheless, the following recommendations highlight entry points for strengthening community resilience efforts, and women's resilience in particular, to environmental crimes.

For development practitioners, civil society organizations and environmental justice activists

- **Integrate gendered considerations into planned interventions and advocacy on environmental issues.** Increase women's participation through consultation and women-only dialogue spaces on environmental management. Expand women's networks, including in the legal field, which may involve institutions willing to work pro bono. As extractive operations have brought more non-local men into indigenous and rural territories, women's risk of physical violence has increased, making local networks a key support structure. The aim is to support women's individual and collective action to protect the environment and denounce environmental crimes.
- **Expand women's economic agency.** Women play a critical role in agricultural economic activities but are marginalized in decision-making processes. Their agency can be increased through educational workshops and economic empowerment programmes such as microfinance, vocational training and skills development. In addition, support women's access to larger markets for their products, such as NTFPs, in urban areas. Provide access to individual bank accounts and financial planning. Encourage women to self-organize for collective action to enforce their rights.
- **Facilitate women's rights campaigns at community, regional and national levels.** Build solidarity among grassroots, women-led movements. Interventions should involve capacity building and awareness-raising on relevant issues, such as the impact on women's health from environmental crimes and degradation, domestic violence and trafficking traps disguised, for instance, as false promises from lovers and fake job offers. Promote women-led or women-focused civil society organizations and conduct workshops to facilitate a deeper understanding of their rights and access to services. Success stories and best practices should be documented and disseminated.
- **Build coalitions with other social movements and organizations.** Civil society organizations often work in silos when the issues that they address converge, such as the intersection between environmental and women's rights. Initiate coalitions and convergence of social issues of different front line civil society organizations to build solidarity on the gendered impacts of environmental issues, including differential impacts on health, reporting of environmental crimes and access to external support. Sensitize and involve journalists in advocacy campaigns.

- **Raise youth awareness of women's rights and environmental issues.** Children and young people need to take the message of the empowering role of women in maintaining their households back to their communities. This may be done through curriculum changes in formal educational institutions and through multimedia campaigns using social media, television and radio. In addition, children and young people need to understand how human activity affects the environment.
- **Create or strengthen civil society observatories and monitoring groups.** Such efforts can be directed at preventing the illegal exploitation of natural resources in indigenous territories, the incursion of criminal groups and upholding the integrity of communities and their women. This would also help to strengthen oversight of policy implementation at the community level.

For governments, state institutions and policymakers

- **Improve the safety and protection of women environmental defenders.** Women environmental defenders face different challenges than their male counterparts. Patriarchal structures facilitate the perception that women are easy targets and can frequently be intimidated or threatened. Strengthen the capacity of local and regional governments to monitor and prosecute environmental crimes, and protect women environmental defenders who denounce such crimes from the threats and violence they face.
- **Broaden the definition of 'environmental crimes'.** National legislation should expand the definition of 'environmental crimes' to include all activities that result in ongoing environmental destruction, including waste dumping and land clearing, and to include the informed consent of indigenous and local populations. Strengthen accountability measures and independent oversight mechanisms.
- **Use an intersectional approach to understand the hidden realities embedded in gender roles and relations.** Environmental issues are most notably raised at the grassroots level, and it is important for legislators and policymakers to understand and integrate the intersectionality of multiple conditions that create deeper vulnerabilities for women and their communities. Environmental issues need to be approached from a gender perspective for effective implementation. Public programmes and subsidies related to environmental management must consciously involve women leaders or women's collectives.
- **Avoid militarized responses to environmental crimes and conflict.** Militarized responses exponentially increase women's vulnerability. Not only would these approaches increase the number of men in their territories, but when internally displaced, women are subjected to forced labour, sexual violence and lack of access to health care.
- **Tackle environmental crime through law enforcement and effective governance.** Build the capacity of law enforcement and the judiciary to prosecute environmental crimes. Facilitate access to justice for indigenous communities and environmental defenders through the creation of judicial units and capacity building for state officials dedicated to environmental protection. This could also help communities regain trust in state institutions and empower them to seek justice.
- **Promote the creation and autonomous management of diverse income-generating activities.** Using a gender-sensitive approach, governments and policymakers should identify and promote alternative sources of income and train indigenous communities in sustainable practices related to the trade in forest products.

For researchers and scholars

- **Collect gender-disaggregated data on environmental crimes, impacts and responses.** This data is essential for civil society and governmental organizations to design and implement effective policies, especially against environmental crimes. The lack of gender-disaggregated statistics on environmental crimes, including women's involvement and how they are affected, became apparent during the research carried out for this paper.
- **Highlight the importance of intersectionality.** The importance of intersectionality cannot be overstated. While global discourse emphasizes the importance of intersectionality in promoting gender mainstreaming in environmental frameworks and policies, its application has yet to reflect the realities of local women who are inextricably linked to their environment.

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61 Law No. 41 of 1999 on Forestry, Law No. 18/2013 on the Prevention and Eradication of Forest Destruction, Law on Conservation of Natural Resource and Ecosystem No. 5 of 1990.

62 Indonesia has a low resilience score of 4.25 to organized crime, including environmental crime, down from 4.33 in 2021. Scores for resilience are out of 10, with 10 being the highest resilience. See GI-TOC, Criminality in Indonesia, Global Organized Crime Index 2023, https://ocindex.net/country/indonesia.

63 SE Jarnalis, *Viral, aksi ibu-ibu demo tanpa busana di Toba Samosir, protes masalah lahan*, Wajah Bangsa News, 3 December 2021, https://wajahbangsanews.com/2021/12/03/viral-aksi-ibu-ibu-demo-tanpa-busana-di-toba-samosir-protes-masalah-lahan/amp.

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