SOCIOENVIRONMENTAL COHESION

in Central America and the Dominican Republic

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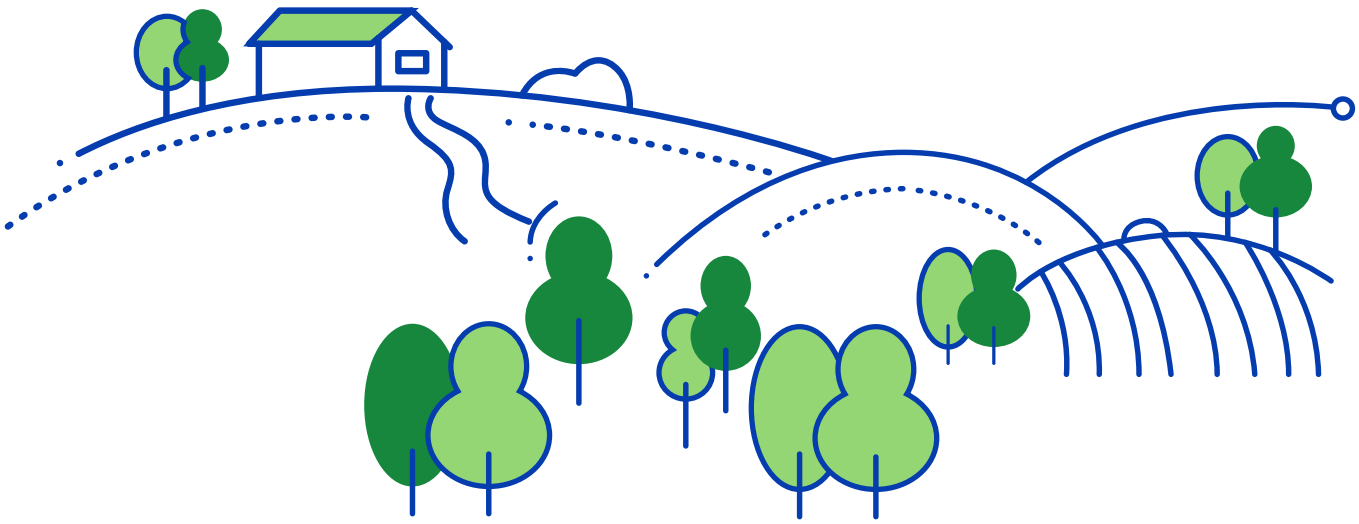
Content



FOREWORD

The social fabric in societies of Latin America and the Caribbean has deteriorated in the last decade, placing social cohesion at the center of the public policy debate. Setting agreements between political, social, and economic actors to prepare and implement response plans and inclusive strategies is essential to go further the achievement of the Sustainable Development Goals within the framework of the 2030 Agenda.

The COVID-19 pandemic has deepened social inequalities in the region. Although the virus affects everyone equally, its economic and social consequences are not equal, they are more severe for the most vulnerable. This represents a challenge for States, having to rebuild social and economic structures in an equitable and efficient courts of action to map the path towards recovery.

This work is part of a compendium of three reports on social cohesion which explore the concept in depth from different and complementary perspectives in the subregion of Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Panama) and in the Dominican Republic. The series analyses social cohesion in relation to some of the most relevant issues identified to deserve promotion in the current context: (i) economic inclusion, (ii) socio-environmental conflict and (iii) the SDG 16+ approach on peace, justice, and strong institutions.

This report on socio-environmental cohesion is particularly relevant due to the importance of tensions and conflicts around natural resources. Nature is the material foundation upon which the economy and social structure rest. Nowadays, the predominant development model, based on extractive activities and unsustainable management of natural resources, far from reducing tensions and inequalities, on many occasions intensifies them. These tensions and inequalities in the management of natural resources lead to social and economic vulnerabilities that affect present and future generations.

This report on socio-environmental cohesion is structured around four thematic areas: (1) Land; (2) Biodiversity; (3) Water Resources; and (4) Climate Change. Within these thematic areas, the main drivers that influence their management and affect the different dimensions of social cohesion are analyzed. Examples of drivers, illustrated with case studies from various countries in the subregion, include mining activities, the evolution of agricultural production patterns based on large-scale mono-agricultural practices, the macro-infrastructures for hydroelectric production, or the occurrence and impacts of extreme weather events.

Faced with the multiple challenges of recovery, it is crucial to intervene with coherent, comprehensive, and holistic policies. Social cohesion, given its multidimensional nature, becomes a guiding element of public policies, not only as an end, but also as a means, to promote inclusive, peaceful, and sustainable development.

Among the final reflections of this report stands the significance of sustainable, inclusive, and participatory management of natural resources. This management must consider the present and long-term social and environmental impacts the voices of the communities, as well as the reduction of risks and vulnerabilities. Greater integration and dialogue within countries and between countries in the subregion has the potential to significantly improve socio-environmental cohesion. Finally, this report proposes a dashboard of indicators to monitor the evolution of socio-environmental cohesion.

We hope this compendium will be useful to consider the dynamics of social cohesion in the public agenda of Central America and the Dominican Republic as well as its interrelation with the economic, environmental and citizen security dimensions.

Jose Cruz-Osorio
Manager, UNDP Regional Hub for Latin America and the Caribbean

INTRODUCTION

Levels of social cohesion in Central America can be improved and are the result of the "scars" of a complex history of colonization, asymmetrical power, civil wars and dictatorships whereby inequalities have been exacerbated and deepened.

Latin American and the Caribbean societies practiced social distancing long before the COVID-19 pandemic.[1] Such separation is the result of decades of different inequalities as evidenced, for example, by ethnic, gender or educational access gaps.[2] Inequalities are also present in access to decent employment, equitable access to water and sanitation, adequate housing, health and a healthy and safe environment. Inequalities have multiple negative effects on a society, and one of these is a decline in social cohesion.

Social inclusion, governance and belonging all shape social cohesion.[3] Their absence, or scarcity, can erode the links between individuals, collectives and institutions, resulting in a detachment of citizens from the State and democracy, and generating risks for governance, often in the form of conflicts and violence. A conflictive environment clearly does not facilitate social cohesion and, in turn, social cohesion deteriorates in a hostile environment. On the other hand, in a cohesive society, members show social and political commitment, solidarity with others and greater care for the environment, which is fundamental to progressing towards sustainable development.

Levels of social cohesion in Central America can be improved and are the result of the "scars" of a complex history of colonization, asymmetrical power, civil wars and dictatorships whereby inequalities have been exacerbated and deepened. Neither the current development models in many of these countries nor their climate vulnerability to extreme natural events are reducing these inequalities; on the contrary, they are often intensifying them. These vulnerabilities have social, economic and environmental costs, affecting current and future generations cyclically. When social cohesion is linked to and affected by natural resource-related conflicts, such as in the context of mining, the construction of hydroelectric power plants or large areas of monoculture, we call this socio-environmental cohesion. Socio-environmental cohesion is eroded when, for example, the above production models are not agreed with

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the affected communities, when the benefits are not distributed equally or when the negative externalities of environmental impacts are not adequately managed and disproportionately affect neighboring communities. When such situations arise, spaces for dialogue are limited and socio-environmental conflicts arise.

There are a large number of socio-environmental conflicts in Central America and the Dominican Republic that tend to occur in those areas where hydroelectric projects, mining or large-scale agro-industrial activities are located. These sectors are gradually increasing their environmental and social commitments and implementing actions to align their activities and management practices with principles of social responsibility. These initiatives and productive models are likewise creating jobs and wealth for the countries. And yet many of them still evidence significant deficiencies in important aspects of socio-environmental cohesion, such as environmental governance, participation or social and environmental justice.

There are a large number of socio-environmental conflicts in Central America and the Dominican Republic that tend to occur in those areas where hydroelectric projects, mining or large-scale agro-industrial activities are located.

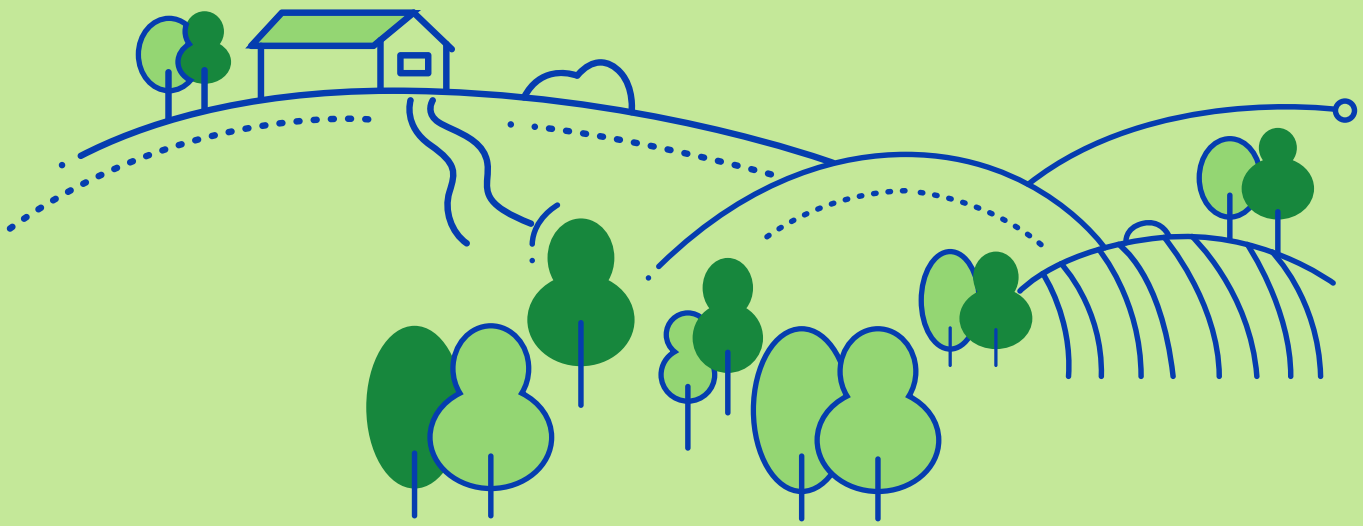
Conflicts, often related to production models, arise for different reasons such as problems related to access to land, human rights violations, lack of free, prior and informed consultation, contamination of soil and water resources, inequitable access to water, etc.

In order to understand the importance of socio-environmental cohesion, this paper presents the relationship between social cohesion and a number of environmental issues of relevance to the study area, which includes Belize, Costa Rica, El Salvador, Guatemala, Honduras, Panama and the Dominican Republic. To this end, we have analyzed the main environmental determinants that are considered to have the greatest impact on social cohesion and conflict in Central America and the Dominican Republic. Following a review of the literature and discussions with UNDP country offices in the study

countries, the four thematic environmental areas with most influence over socio-environmental cohesion were identified: (1) Land; (2) Biodiversity; (3) Water Resources; and (4) Climate Change. We also selected those variables or drivers which, due to their magnitude and scale, play a more decisive role in socio-environmental cohesion and conflict in the region. In this regard, the extractive mining sector (large-scale mining, artisanal and small-scale mining); agro-industrial monoculture, particularly African palm and pineapple; the hydroelectric sector; and extreme weather events have all been considered. There are many other variables that are also of great relevance when analyzing socio-environmental cohesion in the study area, such as tourism megaprojects, the shrimp industry and logging, to name but a few, but they have not been included in this study due to its thematic prioritization criteria.

In terms of methodology, we analyzed academic sources, secondary literature (especially documents produced by the United Nations and international NGOs) and official information from various government agencies in the countries involved. We have also included information and suggestions provided by UNDP country office colleagues and peer reviewers who generously shared their time, knowledge and experience. For the analysis of the Sustainable Development Goal (SDG) indicators, only official data from UN Stats has been used. Other data in the report has been obtained from various United Nations agencies or other official bodies. Having analyzed the situation with respect to the four thematic areas, some lessons learned and policy recommendations for the different actors (public and private) are presented and, finally, we offer a proposal for a methodological tool with which socio-environmental cohesion could, for the first time, be measured and which could guide policy in this regard.

This study was prepared at the request of the UNDP Regional Bureau for Latin America and the Caribbean, within the context of the Infosegura project. This project specializes in managing evidence-based information with the objective of strengthening the formulation and monitoring of public policies on citizen security in seven countries: Belize, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, and Panama. This study aims to demonstrate the direct links and interdependence between social cohesion and the environment. It also seeks to raise awareness, draw attention to and generate a sense of urgency around the need to strengthen socio-environmental cohesion and promote the building of fairer and more sustainable societies in Central America and the Dominican Republic.



Executive Summary

SOCIOENVIRONMENTAL COHESION
in Central America and the Dominican Republic

Social inclusion, governance and belonging make up social cohesion.[i] The absence or scarcity of these can erode the links between individuals, groups and institutions, resulting in citizens becoming detached from the State and democracy and generating risks to governance, often taking the form of conflict and violence. The levels of social cohesion in Central America and the Dominican Republic are the result of the "scars" of a complex history of colonization, asymmetries of political and economic power, civil wars or dictatorships in which inequalities have been aggravated and deepened. Today, the development models of many of these countries and their vulnerability to extreme natural climate events are not reducing inequalities but are, rather, intensifying them. These vulnerabilities have social, economic and environmental costs affecting current and future generations in a cyclical manner. When social cohesion is linked to and affected by conflicts related to natural resources, we speak of socio-environmental cohesion.

In Central America and the Dominican Republic, there are many socio-environmental conflicts, usually occurring in territories with large-scale hydroelectric projects, mining or agro-industrial developments. Increasingly, these sectors have stepped up their environmental and social commitments and implemented actions to align their activities and management practices with the principles of social and environmental responsibility. Equally, these initiatives and production models create jobs and wealth for countries. Even so, many of them still evidence significant deficiencies in important aspects of socio-environmental cohesion, such as environmental governance, participation or social and environmental justice. Conflicts, often related to production models, break out for different reasons, such as access to land; human-rights violations; absence of prior, free and informed consultation; contamination of land and water resources; and unequal access to water; among others.

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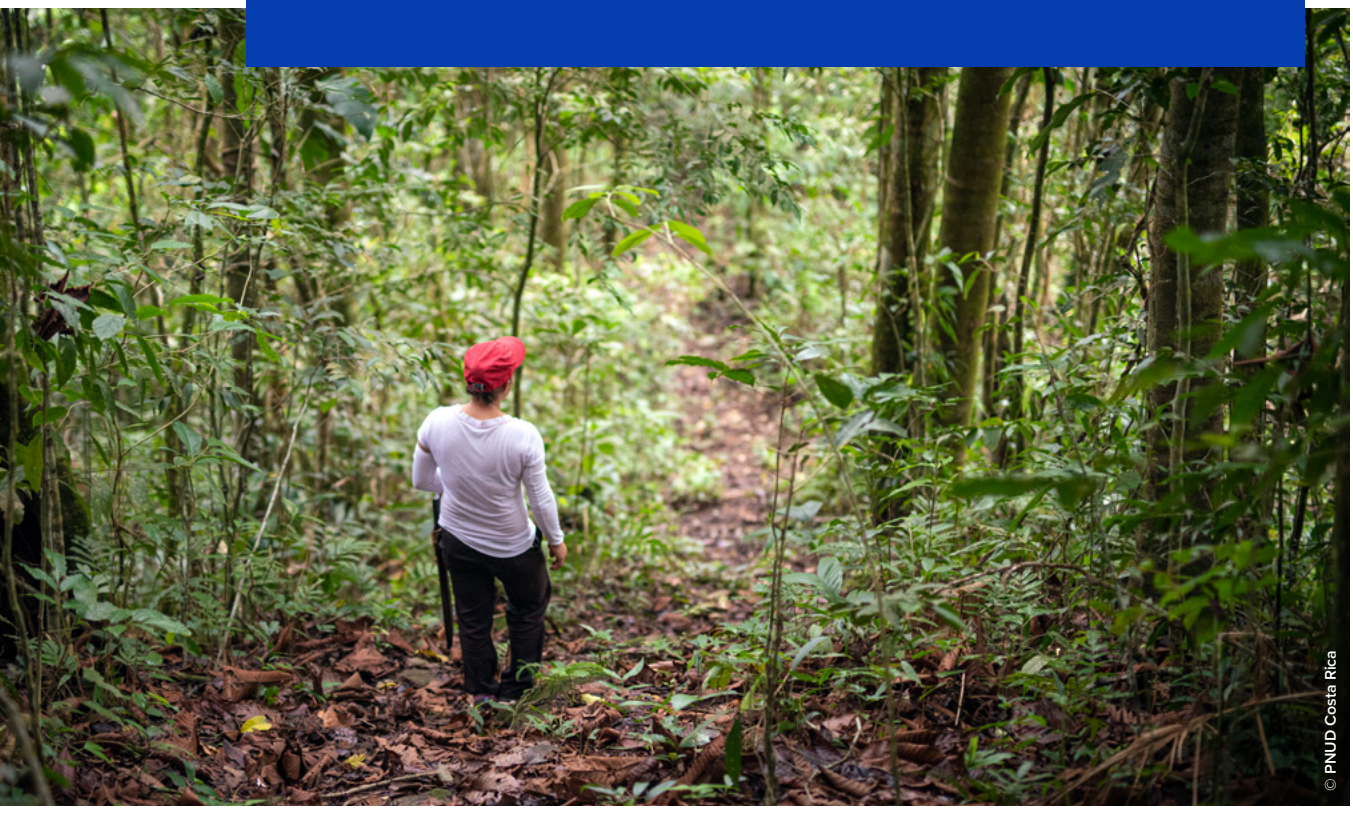
i PNUD y AECID. (2021a). *Cohesión social en América Latina. Una propuesta de medición y sus resultados.*

SOCIO-ENVIRONMENTAL COHESION

We take socio-environmental cohesion to mean the respectful, inclusive, transparent, equitable, dialogue-rich and democratic relationship between all human beings and between human beings with nature in a determined space.

A high degree of socio-environmental cohesion exists in a society in which the processes of decision making in environmental matters are conducted in a democratic, participatory and transparent manner with the purpose of contributing to the well-being of its members. Environmental public policies and productive initiatives are carried out under a legal framework aligned to international environmental and social standards.

By way of contrast, a context of deficient socio-environmental cohesion is marked by exclusion, a low sense of belonging and high levels of socio-environmental inequalities. Public policies are unsatisfactory for a large part of society and environmental injustices take place. Societies with fragile socio-environmental cohesion present a greater number of socio-environmental conflicts.



This study seeks to demonstrate the direct links between and the interdependence of social cohesion and the environment. It is also intended to help to raise awareness, generate attention and a sense of urgency about the need to strengthen socio-environmental cohesion and foster the construction of fairer and more-sustainable societies in Central America and the Dominican Republic.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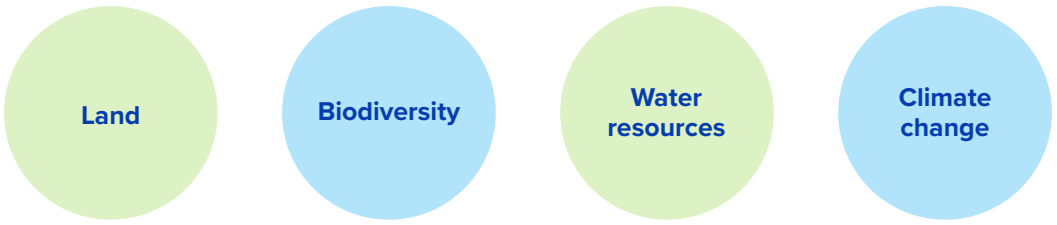
THEMATIC AREAS AND DRIVERS

In order to understand the importance of socio-environmental cohesion, this document presents the relationship between social cohesion and various environmental issues of relevance to the area of study. To this end, an analysis was conducted of the main determining environmental factors considered to have the greatest impact on social cohesion and conflict in Central America and the Dominican Republic. The four thematic areas with the most influence on socio-environmental cohesion were identified as:



These four areas are closely interrelated and affect many of the Sustainable Development Goals (SDGs), with economic, social and environmental effects and with implications for current and future generations.

Likewise, those variables, or drivers, were also selected that, due to their magnitude and scale, play a more determinant role in socio-environmental cohesion and conflict in the region. In this respect, the sectors chosen were the mining extractive sector (large-scale, artisanal and small-scale mining); agro-industrial monoculture activities, especially African palm and pineapple; the hydroelectric sector and extreme weather events.

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SOCIO-ENVIRONMENTAL CONFLICTS

These socio-environmental conflicts arise as a consequence of pollution, a lack of consultation with and participation of the communities that inhabit the exploited areas and/or a lack of redistribution of the profits generated by the various productive projects.

Environmental conflicts are social conflicts over the environment that manifest themselves through mobilizations by individuals or groups in response to perceived environmental threats with harmful social impacts.[ii] These socio-environmental conflicts arise as a consequence of pollution, a lack of consultation with and participation of the communities that inhabit the exploited areas and/or a lack of redistribution of the profits generated by the various productive projects. This conflict comes in addition to a history of political instability, violence, racism and exclusion that negatively affects socio-environmental cohesion. The subregion's geopolitical agenda and free-trade agreements continue to be perceived as threats by the communities.

In environments where socio-environmental conflicts take place, environmental defenders protect the environment and protest against unfair or unsustainable uses of (natural) resources for social or environmental reasons.[iii] Environmental defenders are often members of vulnerable groups; they frequently act in groups and, in most cases, use non-violent forms of protest. However, on many occasions, environmental defenders are victims of violent acts and even murder, many of which occur in the Latin American and Caribbean region. Between 40% and 50% of victims are from indigenous and local communities and women environmental defenders are especially vulnerable.

ii Scheidel, A., D. Del Bene, J. Liu, G. Navas, S. Mingorría, F. Demaria, S. Avila, B. Roy, I. Ertör, L. Temper, J. Martínez-Alier. (2020). Environmental conflicts and defenders: A global overview, Global Environmental Change, 63:1-12.

iii Scheidel, A., D. Del Bene, J. Liu, G. Navas, S. Mingorría, F. Demaria, S. Avila, B. Roy, I. Ertör, L. Temper, J. Martínez-Alier. (2020). Op cit.

Land and mining

The influence exerted by the mining sector in a territory can be positive and negative. We find a positive influence when mining generates jobs and incomes, improvements to local infrastructure through the construction of roads, hospitals, schools, access to drinking-water systems, sanitation and waste treatment. Nonetheless, in countries with greater mining activity, many socio-environmental conflicts arise that affect socio-environmental cohesion.

Socio-environmental risks*

Large-scale mining

Environmental

- Modification of water bodies
- Contamination of water bodies
- Solid waste production (e.g. tailings dams)
- Soil contamination
- Atmospheric pollution (e.g. airborne dust)
- High-impact environmental risks (e.g. tailings dam breaches)

Social

- Lack of or dissatisfaction with prior and informed consultation processes
- Little or no distribution of benefits to communities
- Land disputes, expropriations and community resettlements
- Human rights violations
- Health problems due to pollution
- Loss of livelihoods due to pollution
- Protests, criminalization of protests and violence
- Violence against communities and environmental defenders

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* This table shows the potential socio-environmental risks identified based on bibliographic research. Not all risks apply to each country in the same way or to the same extent.

Artisanal and small-scale mining (ASM) for gold is a subsistence activity for many families and is present to a greater or lesser degree in most of the countries under study. In addition to the social, economic, environmental and health impacts of informal ASM, this generates no income for the coffers of the State. It is essential to regularize it in order to be able to minimize its negative impacts and protect the artisanal miners, supporting them to adopt more-sustainable practices that bring greater benefits.

Socio-environmental risks*

Informal artisanal and small-scale gold mining

Environmental

- Deforestation and soil erosion
- Impact on water bodies (e.g. turbidity)
- Irreparable contamination of ecosystems with mercury (mostly water, but also land and air)
- Presence of methylmercury in fish and the food chain
- Atmospheric pollution (e.g. airborne dust)
- Cyanide contamination
- Irreparable damage to the floodplains

Social

- Loss of livelihoods and food sovereignty in the surrounding communities due to contamination of water bodies
- Health problems caused by mercury[iv]
- Additional risks to expectant mothers and their fetuses due to mercury use
- Immigration of undocumented workers
- Rise of mafias and criminal groups
- Invasion of the communities' collective territories: physical, cultural and spiritual
- Increased violence and insecurity
- Prostitution and trafficking of women
- Lack of taxation and foreign currency evasion
- Child labor
- Associated drug trafficking[v]
- Occupational hazards due to lack of appropriate equipment

* This table shows the potential socio-environmental risks identified based on bibliographic research. Not all risks apply to each country in the same way or to the same extent.

iv OMS. (2017). Documento Técnico Nº 1: *Riesgos para la salud relacionados con el trabajo y el medioambiente asociados a la extracción de oro artesanal o a pequeña escala.* https://apps.who.int/iris/bitstream/handle/10665/259452/9789243510279-spa.pdf;jsessionid=133F3C6F2588C56E4E936A0CE6EBC62C?sequence=1

v The Global Initiative Against Transnational Organized Crime. (2017). *El Crimen Organizado y la Minería Ilegal de Oro en América Latina.* https://globalinitiative.net/wp-content/uploads/2016/03/El-Crimen-Organizado-y-la-Miner%C3%ADa-Ilegal-de-Oro-en-América-Latina.pdf

Biodiversity

Both Central America and the Dominican Republic are highly biodiverse places, due to their geological histories and, in the case of Dominican Republic, being an island. However, the great biodiversity of Central America is increasingly threatened and this, by threatening and harming traditional ways of life related to specific habitats, weakens socio-environmental cohesion.

In Central America and the Dominican Republic, the greatest threats identified to biodiversity and socio-environmental cohesion are the giant tourist developments that damage the coastline and generate large amounts of waste, the indiscriminate felling of forests, the advance of agriculture in protected areas, monocultures and the use of agrochemicals, genetically-modified seeds and the poaching of wild species.

The alarming, and in many cases irreversible, degradation of ecosystems and their ecosystem services, affects all living beings as well as the ways of life and subsistence of millions of people in the world. Land grabbing, motivated by the expansion of export-oriented monocultures in Central America (e.g., oil palm and pineapple) has exacerbated historical conflicts over access to land.

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Socio-environmental risks* [vi,vii]

Environmental

- Logging
- Loss of native trees and biodiversity
- Decrease in carbon absorption and storage, and in the mitigating effect of climate change
- Loss of genetic plant varieties and associated biodiversity
- Impoverishment of soil quality
- Increased sedimentation of rivers, lakes and wetlands as a result of erosion
- Contamination of water resources with pesticides and fertilizers
- Emergence of new pests affecting livestock such as the hematophagous fly in pineapple monocultures

Social

- Elimination of traditional agricultural practices
- Substitution of traditional crops with export-oriented crops
- Loss of food sovereignty, resilience and food insecurity
- Concentration of land in the hands of large corporations or landowners
- Health problems due to constant spraying and the use of pesticides and fertilizers
- Violation of labor and union rights, such as the ban on unionization in pineapple monoculture plantations[viii]
- Unstable jobs
- Gender pay gap
- Sexual harassment and abuse of women
- Violence against communities and environmental defenders
- Inequitable redistribution of profits from monocultures in affected areas
- Communities' distrust of government and political disaffection

* This table shows the potential socio-environmental risks identified based on bibliographic research. Not all risks apply to each country in the same way or to the same extent.

Water resources

The commitment to hydroelectric energy in Central America is determined by several factors, at their forefront the scarcity of fossil hydrocarbons, the abundance of rivers and favourable orography. Hydroelectric energy is an essential renewable energy source that generates electricity in Central America, and dams are also a source of water for irrigation or human water supply. While, on the one hand, hydroelectric projects play an important role in economic and social development, they are also related to numerous negative environmental and social impacts that affect socio-environmental cohesion.

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vi Picado Cerdas, H. (2016). *Expansión de las plantaciones de palma aceitera como política de Estado en Centroamérica, Movimiento Mundial por los Bosques Tropicales*. Boletín 226. https://wrm.org. uy/es/articulos-del-boletin-wrm/expansion-de-lasplantaciones- de-palma-aceitera-como-politica-deestado- en-centroamerica/

vii Llaguno, J.J., S. Mora Solano, A.L. Gutiérrez Espeleta, P. Barrios Alfaro, F. Mora Moraga (2014). *Políticas y conflictos socio ambientales: el caso de la tenencia de la tierra y los monocultivos en el Caribe de Costa Rica* (2006-2012). Revista Ciencias Sociales, 145:81-98 / 2014 (III).

viii Llaguno, J.J., S. Mora Solano, A.L. Gutiérrez Espeleta, P. Barrios Alfaro, F. Mora Moraga (2014). Op cit.

Socio-environmental risks*

Environmental

- Logging and deforestation[ix]
- Modification of the natural courses of rivers and streams and impact on river flows[x]
- Alteration of ecosystems and biodiversity
- Impacts on aquatic organisms (e.g. fish)
- Transformations in land cover and productive land
- Change in natural and cultural landscapes
- Impacts on the level of the water table
- Methane gas emissions from dams in tropical environments contributing to global warming

Social

- Economic impacts and deterioration of livelihoods (e.g. of communities who rely on river fishing)
- Displacement and resettlement of communities
- Health impacts due to lack of access to water (e.g. resulting from loss of springs)
- Disappearance of livelihoods for those communities relying on agricultural activities in areas flooded by dams
- Food safety implications
- Lack of participation and marginalization of affected communities
- Impact on the transportation system of some communities that depend on natural river courses
- Differential impact on women and girls, who have to fetch water from more distant places, as women are often responsible for providing water for domestic consumption[xi]
- Cultural and social harm to indigenous and ancestral populations, who have a cultural and social bond with water and their territories[xii]
- Environmental injustice and disaffection with government when communities affected by hydroelectric projects do not receive electrification

* This table shows the potential socio-environmental risks identified based on bibliographic research. Not all risks apply to each country in the same way or to the same extent.

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ix Anderson, E. P. (2013). *Desarrollo hidroeléctrico y servicios ecosistémicos en Centroamérica.* Washington (USA): Banco Interamericano de Desarrollo. IDB TN, 518. https://publications.iadb.org/es/publicacion/15332/desarrollo-hidroelectrico-y-servicios-ecosistemicosen-centroamerica

x Anderson, E. P. (2013). Op cit. Pág. 7

xi Oviedo-Ocaña, E. R. (2018). *Las Hidroeléctricas: efectos en los ecosistemas y en la salud ambiental.* Salud UIS, 50(3), 191-192.

xii Castro, M., Mayén, G., Ospina, J. (2019). I*mpactos ambientales, sociales y culturales de hidroeléctricas en Bolivia, Guatemala y Panamá.* Konrad-Adenauer Stiftung, Programa Regional Participación Política. Indígena. ttps://www.kas.de / documents/277427/8016182/19.12+Impactos+ambientales+sociales+y+culturales+web.pdf/1def877e-770c-982c-9b70-fee621c5ff4c?version=1.0&t=1578665523027

Climate change

Natural disasters arising from climate change are increasing in frequency and severity in Central America and the Dominican Republic, with consequent lower resilience for recovery between events and a greater probability of a deterioration of the social cohesion of the most-affected populations.

Socio-environmental risks*

Environmental

- Rising temperatures and changes in weather patterns
- Loss of terrestrial biodiversity
- More frequent and severe droughts, fires and loss of crops and livestock
- More frequent and severe flooding and loss of productive systems
- Landslides
- Loss of forest mass due to hurricanes
- Ocean acidification and coral bleaching causing ecosystemic damage to marine flora and fauna
- Sea level rise
- Salinization of aquifers due to sea level rise
- Changes in ocean currents affecting fish stocks

Social

- Famine and food insecurity
- Increased difficulty in accessing water for women and girls (traditionally responsible for fetching water)
- Loss of livelihoods: agriculture, livestock, fishing, etc.
- Loss of territories and natural, cultural and spiritual heritage
- Loss of school days due to disasters
- Death, diarrheal disease and vector-borne diseases due to flooding
- Loss and damage to infrastructure, housing and property due to tropical storms and hurricanes
- Displacement and migration of people
- Increased inequalities
- Increase in citizen insecurity and violence during the crisis, especially against women.

* This table shows the potential socio-environmental risks identified based on bibliographic research. Not all risks apply to each country in the same way or to the same extent.

LESSONS LEARNED AND POLICY RECOMMENDATIONS

Some lessons learned and policy recommendations include the conduct, through participatory and multi-stakeholder processes, of **social and environmental impact studies** that allow for the better incorporation of the short- and long-term impacts of productive projects. Likewise, there is a need in many cases for **socio-environmental remediation and ecosystem restoration** initiatives that include environmental remediation, justice and reparation for the people and families affected by water, land and air pollution. In addition, **research and the establishment of baselines, with continuous monitoring** are essential in order to be able to take actions that limit the environmental and social risks of productive activities.

Compliance with the rule of law must ensure the **protection of community organizations and environmental defenders.** The **strengthening of regulatory frameworks and enforcement of the law** help to improve socio-environmental cohesion. Similarly, it is essential that each project hold **prior, free and informed consultation** in accordance with ILO Convention 169 and the United Nations Declaration on the Rights of Indigenous Peoples. The establishment of **spaces for dialogue** should also be fostered at the national level, as well as units and offices specializing in conflict management and dialogue. There should also be local delegations of the Ombudsman's Office.

In order to maximize the positive impacts and economic benefits in regions with extractive projects, **companies' corporate social responsibility actions should be aligned with municipal and regional development plans.** These, together with the affected communities, should be the beneficiaries of an **equitable distribution of these projects' direct and indirect benefits.** These actions must be carried out through participatory and transparent processes.

Of course, all these measures require the **raising of citizens' and political awareness.** This could be done through outreach campaigns and teaching about the real benefits and harms of the various productive activities, targeted at public authorities, the private sector and citizens. Likewise, alternatives to mining or monocultures could be promoted, such as family agriculture, **agroecology** or **sustainable tourism.** Similarly, given the socio-environmental hazards associated with major hydroelectric projects, new approaches to hydroelectric energy generation should be considered that entail lower social and environmental impacts, such as, **small-scale hydroelectric projects.**

Regarding climate change, there are experiences of **surveillance and early warning systems,** the goal of which is to increase farmers' resilience to predicted weather events so that they can adapt their harvests in advance. In addition, **climate-change adaptation initiatives based on nature and mitigation** should be promoted, through the promotion of a more-circular economy that reduces the consumption of resources, generation of waste and emissions, and energy losses.

METHODOLOGICAL PROPOSAL

To establish the degree of socio-environmental cohesion, this report proposes a measurement tool consisting of a dashboard of indicators for local, regional and national governments to measure and monitor progress towards greater socio-environmental cohesion.

In order to use the proposed dashboard, a start must be made on monitoring and measuring socio-environmental issues that are often not prioritized. Likewise, the regular, localized collection of disaggregated data, especially by sex, age and ethnic group, is fundamental; this remains one of the great challenges, in order to measure and progress towards sustainable development and consequent greater socio-environmental cohesion.

Proposal for a dashboard of indicators to measure socio-environmental cohesion

Socio-economic inclusion	Type of measurement
Proportion of population living in households with access to basic services: water, sanitation and electricity	**% number**
Proportion of total public expenditure devoted to essential services, health and social protection	**% number**
Proportion of the population in severe food insecurity	**% number**
Incorporation of socio-environmental education into national education policies	**Yes/No**
Formal employment rate and average income in the extractive industries and agricultural sector	**% number**
Number of victims (sex and age) of human trafficking linked to extractive and agro-industrial projects	**Number**
Socio-environmental governance	
Environmental legislation in force and in line with international standards	**Yes/No**
Detailed environmental and social inspections of extractive, agro-industrial and hydroelectric projects	**Dates and projects**
Payment of taxes and percentage of royalties in extractive projects	**U.S. dollars** **%**
Institutional transparency and accountability	**Citizen perception surveys** **EITI (for extractive projects)**
Rights and security of environmental defenders guaranteed	**Number of complaints and charges**
Number of successful citizen appeals related to socio-environmental issues	**Number**
Participation and ownership	
Public access to socio-environmental impact assessments	**Yes/No**
Citizen participation in environmental legislation and production models	**Yes/No**
Number of free, prior and informed consultations conducted	**Number**
Community participation and training in monitoring extractive, agro-industrial and hydroelectric projects	**Number of committees and members**
Percentage participation of women and vulnerable groups in all processes	**% number**
Proportion of new land titles and hectares cultivated by small farmers	**%** **Ha**
Natural resources and ecosystems	
Proportion of mining and agricultural wastewater streams adequately treated locally	**% Hm^3**
Local water stress level: freshwater extraction as a proportion of available freshwater resources	**%**
Loss, degradation and fragmentation of habitats	**Biodiversity Habitat Index (BHI)**
Proportion of significant terrestrial, freshwater and marine biodiversity sites included in protected areas	**% number**
Proportion of local governments adopting and implementing local strategies for disaster risk reduction	**% number**
Proportion of local governments adopting climate change adaptation plans	**% number**

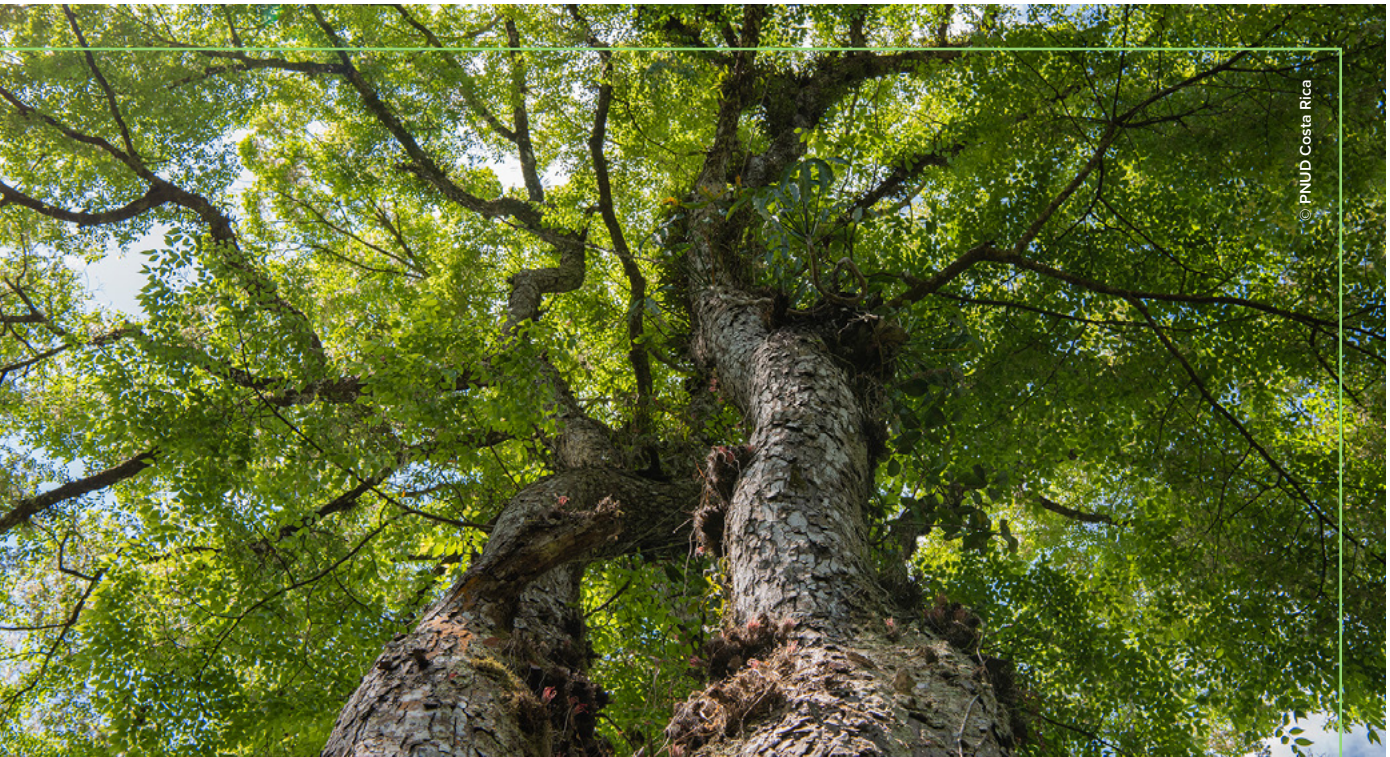
CONCLUSIONS

Central America and the Dominican Republic have the opportunity to, and challenge of, re-thinking their productive models and making them more participatory, equitable and sustainable. This is no easy task. The Covid-19 pandemic is putting much more pressure on governments and the need to lift millions out of poverty in these countries and improve their quality of life requires strong, swift action. What is more, the subregion is especially vulnerable to extreme weather events derived from climate change; these continue and are expected to increase, affecting ways of life, economic development and the well-being of millions of people.

Greater industrialization and digitalization of the Central American countries and the Dominican Republic will contribute to job creation and higher value-added production. This will allow them to depend less on the world market that keeps their economies anchored to the primary sector and oriented towards the exploitation and export of natural resources, making them more vulnerable to the changing climate and price volatility of commodities. Similarly, greater resilience to climate change, which include social, environmental and economic adaptation, requires new strategies to be devised, such as those based on nature itself and greater institutional coordination.

Greater industrialization and digitalization of the Central American countries and the Dominican Republic will contribute to job creation and higher value-added production.

The challenge is great, but so is the will and solidarity among the countries of the subregion. The inter-country coordination and regional initiatives already under way must continue and be strengthened since, when acting as one, the negotiating power of the Central American countries and the Dominican Republic is multiplied and allows the implementation of public policies more favourable to the subregion. The involvement and participation of stakeholders, including women, Afrodescendants, rural communities and indigenous groups, the private sector, academia and local and national governments, adds to and consolidates the pathway towards more-sustainable development and greater socio-environmental cohesion.



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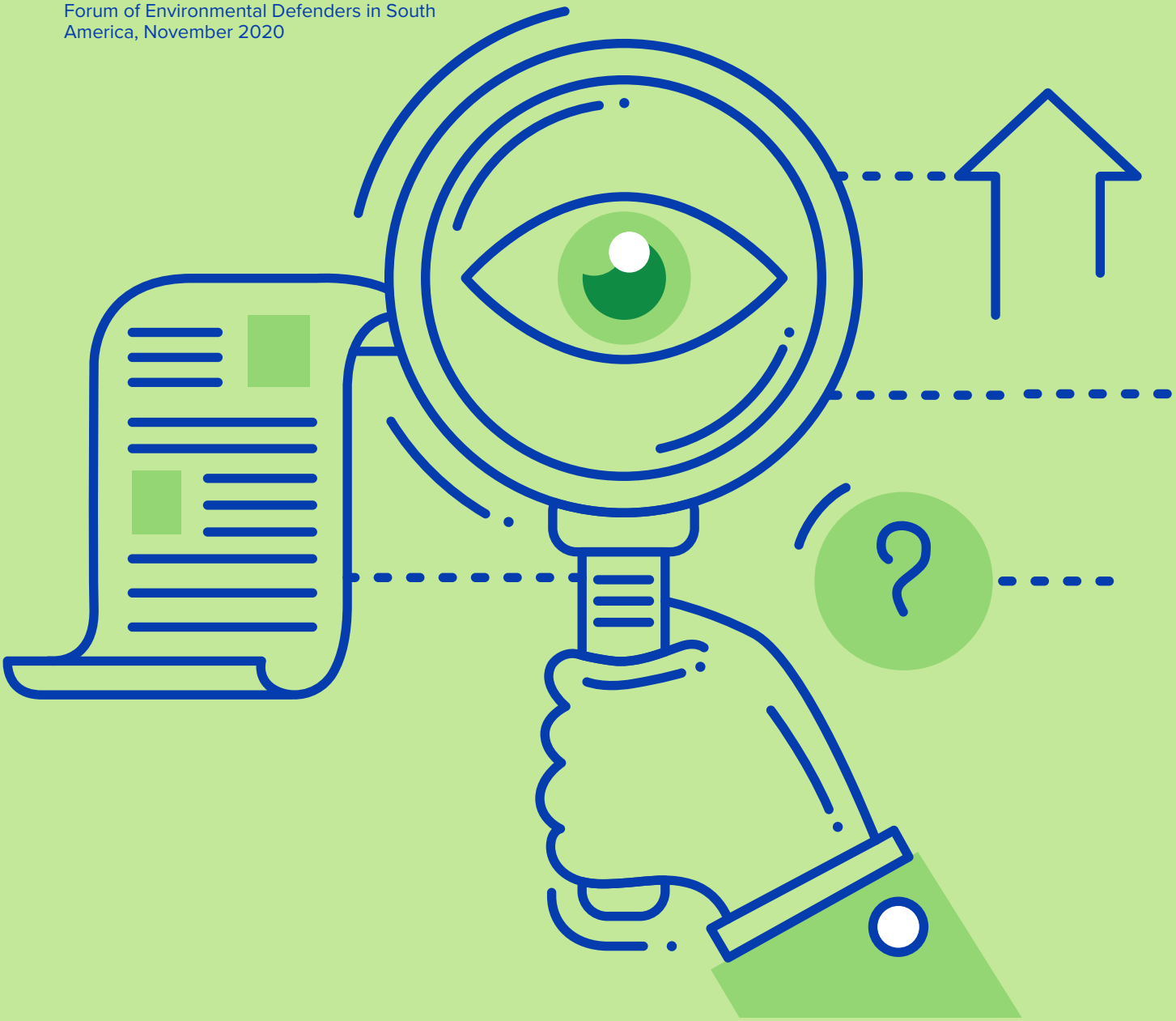
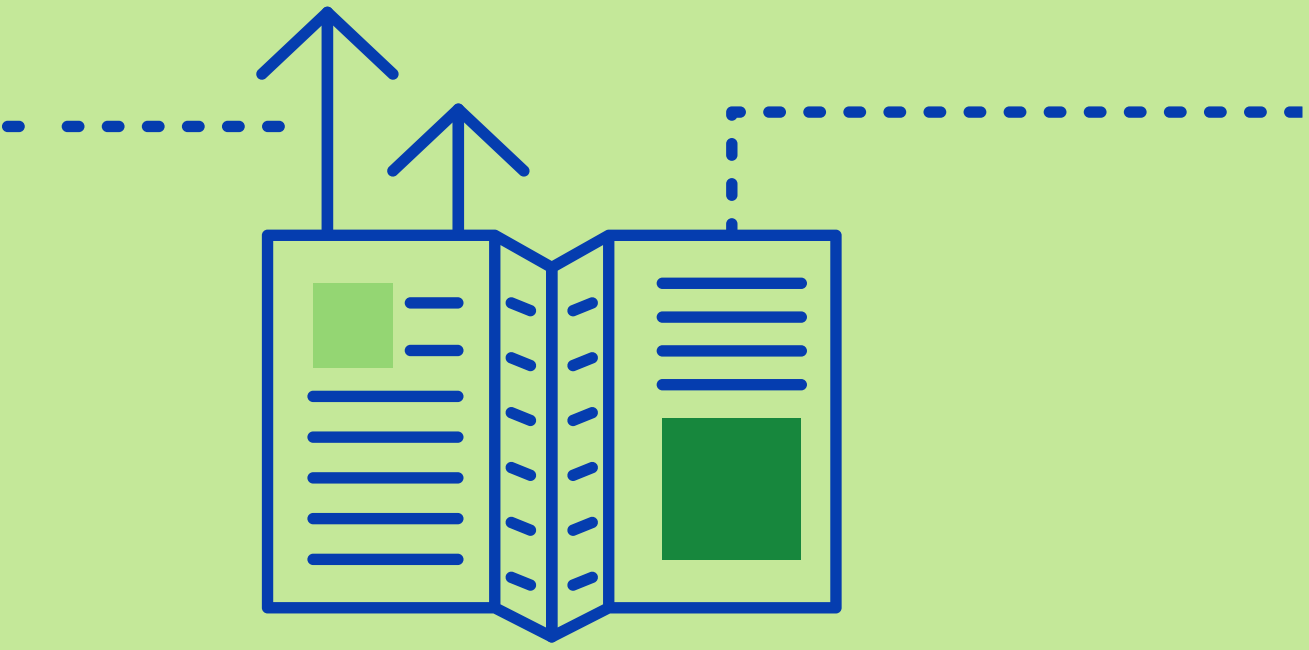
“The role of [environmental] defenders in our societies is fundamental. Their commitment and work powerfully contribute to the protection and promotion of rights, development, peace and security”.

Michelle Bachelet,
UN High Commissioner for Human Rights
Forum of Environmental Defenders in South America, November 2020



I

THEORETICAL AND ANALYTICAL FRAMEWORKS



1. THEORETICAL FRAMEWORK

1.1 WHAT IS SOCIO-ENVIRONMENTAL COHESION?

1.1.a Background: social cohesion

Through its three dimensions: social inclusion, governance, and belonging, social cohesion offers a fundamental means for the harmonious coexistence of societies. There are multiple and complementary definitions of social cohesion. Social cohesion relates to the interdependence between members of a society,[4] contributes to strengthening a moral community that allows citizens to trust each other,[5] and functions as a "glue" that holds a society together.[6] Other authors understand social cohesion as an absence of conflict in all its forms: socio-economic inequalities, ethnic/racial tensions, disparities in political participation or other forms of polarization.[7]

Social cohesion contributes to the well-being of a society's members by creating a sense of belonging and overcoming marginalization and exclusion within and between different groups.

Social cohesion contributes to the well-being of a society's members by creating a sense of belonging and overcoming marginalization and exclusion within and between different groups.[9] In contrast, poor social cohesion generates a disjointed society without social or political commitment, making it difficult for individuals to feel responsible or committed to resolving social problems. By promoting cohesive societies, conflicts and inequalities[10] are thus reduced and people feel empowered to combine their efforts for sustainable development.[11,12] In this sense, inequalities are an indicator of a lack or deficit of social cohesion.[13] A socially incohesive society is marked by inequalities, exclusion, asymmetrical power and distrust, and this can erode the links between individuals, groups and institutions.[14] In addition, it can result in a detachment of citizens from the State and democracy and create a risk for governance.[15,16]

N.B.: For more information on the proposal for measuring social cohesion and its most relevant variables, see the document "*Cohesión social en América Latina. Una propuesta de medición y sus resultados*" [Social Cohesion in Latin America. A measurement proposal and its results][8]

Latin America and the Caribbean is the most unequal region in the world.[17,18,19] There are great inequalities in terms of the distribution of income, assets and services, including education and access to credit.[20] These inequalities have persisted into the 21st century and, according to ECLAC, much of the progress made on social issues had already stagnated or slowed down even before the arrival of the COVID-19 pandemic.[21] This is jeopardizing the region's development prospects. Inequalities are aggravated by the exclusion of certain population groups that are discriminated on the basis of ethnicity or race, gender, social class, disability, age, or geographic isolation.[22,23] In order to achieve the social cohesion necessary for sustainable development, the region needs to overcome major challenges related to inequality.[24] In countries such as Honduras or Guatemala, the informal (and therefore more unprotected and vulnerable) economy accounts for around 80% of the total workforce.[25] Extreme poverty has increased in Latin America, in a context already marked by growing challenges.

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1.1.b The link between social cohesion and the environment

According to UNDP, "*democratic social cohesion is considered fundamental in progressing towards sustainable and inclusive development in all its dimensions: economic, social and environmental, and an essential tool for enhancing the Sustainable Development Goals*".[26] There is a direct link between social cohesion and environmental sustainability, and between social cohesion and equitable access to natural resources as well as an equitable distribution of their environmental benefits and costs.[27,28,29]

Social cohesion not only contributes to economic growth[30,31] but can also promote environmental management and protection.[32] In other words, strengthened social cohesion is linked to greater care for the environment, and this provides more sustainable development in greater harmony with nature. Environmental sustainability must therefore be seriously considered when developing policies for social welfare, social inclusion and when strengthening social cohesion. For example, the effects of climate change or pollution do and will generally disproportionately affect people living in poverty and those whose livelihoods depend most directly on the environment.[33,34,35] These people are more vulnerable to environmental degradation or extreme weather events. The effects of climate change, such as the increased incidence of hurricanes in Central America,[36] also deepen inequalities.[37,38,39,40]

Making progress on environmental sustainability tests the capacity of individuals and States to collaborate around solving local problems that have global impacts. This requires enormous effort and coordination, and includes reinforcing and strengthening interinstitutional collaboration and working to increase confidence in institutions.[41] Social cohesion must also include "socio-ecological" cohesion, since issues related to social cohesion are, in many cases, of a socio-environmental nature.[42] In this regard, taking the natural environment and the definitions of social cohesion discussed above and their respective dimensions (social inclusion, governance, and belonging) into account, a concept of socio-environmental cohesion is proposed for the purposes of this article.

We understand **socio-environmental cohesion** to be the respectful, inclusive, transparent, equitable, negotiated and democratic relationship between all human beings and between human beings and nature in a given space.

A high degree of socio-environmental cohesion exists in a society in which environmental decision-making processes have been developed in a democratic, participatory and transparent manner with the purpose of contributing to the well-being of its members. Environmental public policies and productive initiatives are taking place within a legal framework in accordance with international environmental and social standards. In contrast, a context of poor socio-environmental cohesion is marked by exclusion, citizen insecurity, little sense of belonging and high levels of socio-environmental inequalities. Public policies are unsatisfactory for a large part of society and environmental injustices are occurring. Societies with fragile socio-environmental cohesion suffer from a higher number of socio-environmental conflicts.

1.2 SOCIO-ENVIRONMENTAL CONTEXT IN CENTRAL AMERICA AND THE DOMINICAN REPUBLIC

1.2.a Geographic, environmental, economic and social description

Central América possesses

7%

of global biodiversity.

22%

of its marine areas are protected.

Central America and the Dominican Republic possess a wealth of cultural and biological diversity. Central America forms part of the biological corridor between North and South America and, with only 0.1% of the world's surface area, it possesses 7% of global biodiversity.[43] Twenty-two percent of its marine areas are protected and the coasts bordering Belize, Guatemala and Honduras constitute the Great Mayan Reef, the second largest coral reef in the world. In 2014, the countries of the Central American Integration System (SICA) had forest cover of 39%.[44] Both Central America and the Dominican Republic have good freshwater availability. The distribution varies in Central America, however, depending on the season and geography. Seventy percent of the water resources are thus found on the Atlantic side, where only 30% of the population lives, while 70% of the population lives on the Pacific side with only 30% of available water resources. The subregion is highly vulnerable to the effects of climate change, such as droughts and tropical storms. In addition, water pollution rates are very high, especially in metropolitan areas.[45]

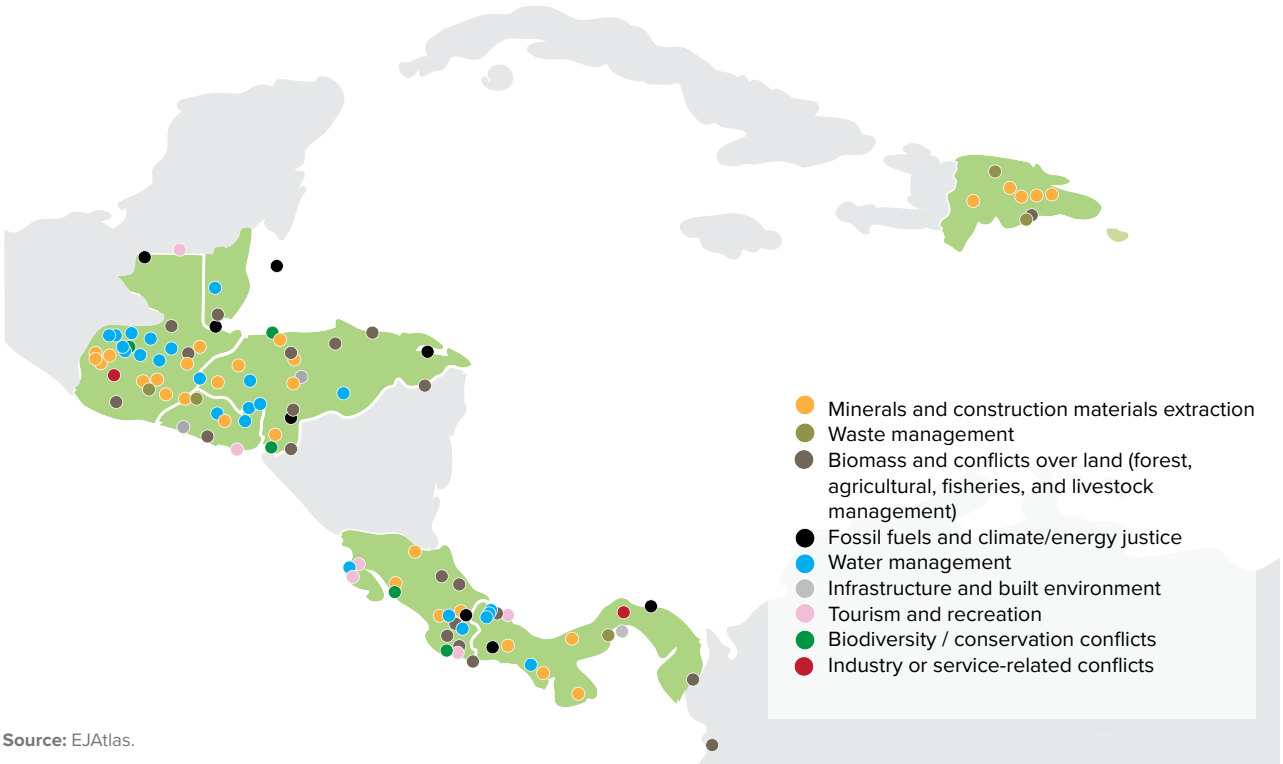
Central America's economy is based mainly on the primary sector, on exports of raw materials and on foreign investment, with the exception of Panama and Costa Rica, whose economies are more oriented towards the service sector.[46] Foreign investment in the primary export sector began more than a century ago with the establishment of the United Fruit Company (UFCo) in 1899. Through International Railways of Central America (IRCA), the company controlled trade routes and productive land in Guatemala, Costa Rica, Honduras and Nicaragua. For decades, UFCo not only organized the banana sector but also had an influence over sub-regional policy.[47]

Socio-environmental conflicts arise as a consequence of contamination, a lack of consultation and participation of the communities living in the territories being exploited, or a failure to redistribute the profits generated by the different extractive projects. This conflict comes on top of a history of political instability, violence, racism and exclusion, all of which negatively affects socio-environmental cohesion. The subregion's geopolitical agenda and free trade agreements continue to be perceived as a threat to communities.[48] The Mesoamerican Electricity Interconnection System for Central America, for example, aimed at exporting energy, has resulted in an increase in hydroelectric projects and dams, a sector that is subject to growing socio-environmental conflict.[49,50] Since the signing of diplomatic relations with Costa Rica in 2007, China (the world's second largest economic power by GDP) has increased its interests in Central America, attracted by the possibility of accessing both oceans and thus expanding its trade routes, and has significantly increased its presence in the hydroelectric sector.[51] Lastly, Central America is heavily affected by drugs, arms and human trafficking. Drug cultivation leads to what is known as "narco-deforestation" and, on occasion, income from drug trafficking flows into the formal economy through money laundering operations and investment in productive activities.[52]

1.2.b Conflict and environmental justice

Environmental conflicts are social conflicts over the environment that are manifested through individual or group protests in response to perceived environmental threats with harmful social impacts.[53] Ecological-distributive conflicts are characterized by an unequal distribution of the impacts and benefits of environmental externalities, a phenomenon more commonly referred to as environmental injustice.[54,55] The environmental justice movement was originally born in the 1980s in the United States out of the research of Robert D. Bullard, who is considered the father of environmental justice and who highlighted the disproportionate accumulation of negative externalities suffered by populations of color.[56,57] Today, these environmental injustices are manifest all over the planet. The Global Atlas of Environmental Justice (EJAtlas), commenced in 2012 and coordinated by an international team of experts and the Autonomous University of Barcelona, EJAtlas is an interactive platform that records ecological conflicts and cases of resistance worldwide.[58] The atlas links conflicts to commodities and economic sectors.[59] With around 3,100 cases recorded as of April 2020, the EJAtlas has become the largest global inventory of environmental conflicts, documenting the claims and actions of the environmental defenders involved. There are also similar platforms with a more regional and/or sectoral focus, such as OCMAL (Observatory of Mining Conflicts in Latin America), for example.[60]

Figure 1 | Map of socio-environmental conflicts in the study area as identified by the Atlas of Environmental Justice (year 2020).



Source: EJAtlas.

1.2.c Environmental defenders and the rule of law

Environmental defenders are individuals and groups that protect the environment and protest against unfair and unsustainable uses of (natural) resources for social and environmental reasons.[61] According to the UN Environment Programme (UNEP), an environmental defender is "*anyone who is defending environmental rights, including constitutional rights to a clean and healthy environment, when the exercise of those rights is being threatened*".[62] Environmental defenders are often members of vulnerable groups, frequently act in groups and, in most cases, employ non-violent forms of protest. Protests have helped stop environmentally destructive and socially conflictive projects in 11% of cases worldwide. A combination of preventive mobilization strategies, diversification of protest, and litigation increases this percentage to 27%.[63]

Very often, however, environmental defenders are victims of violence and even murder. The international environmental NGO Global Witness investigates the murders of environmental defenders and began publishing data on killings in 2012.[64] According to their research, more than half the murders that occurred in 2018 were concentrated in the Latin America and the Caribbean region. Between 40% and 50% of the victims were from indigenous and local communities, and women environmental defenders are particularly vulnerable.[65] In 2018, specifically, Guatemala became the country where the most murders were committed per head of population. The opening up of the country to private and foreign investment in 1996 following the civil war was accompanied by land transfers and the forced expulsion of many indigenous communities from their lands.[66] According to Global Witness, mining activities reported the highest number of murders in 2018 globally, while murders of water resource defenders have increased significantly.[67]

Global Witness identifies several factors in the framework of the rule of law that explain the perpetuity and worsening of the situation on a global scale. Investments are often made in projects and economic sectors in which the communities that inhabit the territories are not consulted in accordance with the principle of free, prior and informed consultation as established in ILO Convention 169. Likewise, widespread impunity makes it difficult to

identify aggressors. Global Witness has identified hitmen, criminal gangs, landowners and, in some cases, State security forces as alleged aggressors in half of the 164 murders that were committed worldwide in 2018.[68] The situation is serious and the United Nations has formulated a policy framework with the aim of promoting greater protection for environmental defenders, such as the Escazú Agreement. Similarly, States and companies are responsible for ensuring respect for human rights.[69]

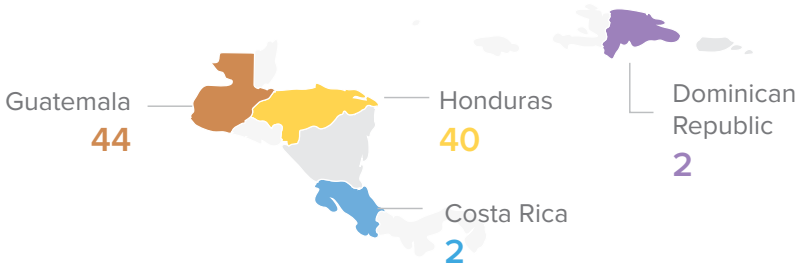
Global Witness has counted the numbers of killings of land and environmental defenders in the countries covered by the study:*

2017[70]
Honduras: 5
Guatemala: 3
Dominican Republic: 2

2018[71]
Guatemala: 16
Honduras: 4

2019[72]
Honduras: 14
Guatemala: 12
Costa Rica: 1

2020[73]
Honduras: 17
Guatemala: 13
Costa Rica: 1



* Global Witness recognizes that there is "almost certainly" under-reporting in its data. Collecting data of this type is a great challenge, frequently due to restrictions on freedom of the press and the absence of independent records, and to Global Witness's commitment to "verify cases according to a strict set of criteria".[74]

Forum of Environmental Defenders in South America

Held on 4 and 5 November 2020 by the Office of the United Nations High Commissioner for Human Rights in South America (OHCHR), The Economic Commission for Latin America and the Caribbean (ECLAC) and the United Nations Environment Programme (UNEP), the Forum of Environmental Defenders in South America, held on line, brought together more than 60 human-rights and environmental defenders with the aim of analysing and debating the situation of environmental defenders in the region.

The forum was supported by the Center for Justice and International Law (CEJIL), Protection International (PI), International Land Coalition (ILC) and Global Witness.[75]

"States' international human rights law obligations require that they respect, protect and fulfil the human rights of individuals within their territory and/or jurisdiction. This includes the duty to protect against human rights abuse by third parties, including business enterprises".[76]

Guiding Principles on Business and Human Rights: Putting the United Nations 'Protect, Respect and Remedy' Framework into Practice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1.2.d Institutional analysis

Development plans and measures to prevent socio-environmental conflicts and to move towards greater and more robust socio-environmental cohesion are essential.

In response to the challenges and risks arising from environmental conflict, the European Union (EU) and the UN laid the groundwork in 2008 for partnerships related to land, natural resources and conflict prevention. The objective of this partnership was to develop and implement a strategic interinstitutional project focused on building the capacity of national actors, the UN system and the EU to prevent land and natural resource disputes from escalating into violent conflict. This partnership aims to help countries improve their natural resource management in order to prevent conflict and build peace. It has therefore developed a series of guidance documents and training materials on land and conflict, extractive industries and conflict, renewable resources and conflict, capacity building and natural resource management, and conflict prevention in resource-rich economies.

More specifically, UNEP is promoting improved protection for environmental defenders and urging the reporting of individual cases and the provision of solutions in the form of technical and legal support for States and other stakeholders, such as the judiciary and the forces of law and order, so that they can improve environmental governance and the rule of law, aimed at mitigating environmental and human rights abuses. The role of UNEP's regional offices is fundamental in evaluating specific cases, given their proximity and knowledge of local sensitivities.[77] At the Central American level, SICA's Strategic Vision 2017-2021 promotes sustainable development as a safeguard for the planet within its Vision's strategic lines and objectives[78].

Development plans and measures to prevent socio-environmental conflicts and to move towards greater and more robust socio-environmental cohesion are essential. However, other issues, ranging from the region's historical relationship with the rule of law and predominant production models, need to be analyzed in greater depth. Free trade agreements play a key role in the environment and communities in the region in this regard. For example, the European Union's trade agreements with Central America (EU-CAAA) in 2012[79] or with Belize and the Dominican Republic (CARIFORUM-EU) in 2008,[80] with initially higher environmental and social standards than previous free trade agreements, include raw materials as the main products to be exported to the EU: plant (bananas, tobacco, sugar, rum) and animal products, minerals (gold, aluminum oxides), oil, iron. Most of the products imported from the European Union are machinery, transport, chemical or telephony products, dairy products or alcoholic beverages, which have a higher added value.

Regardless of the substantial economic benefits that trade may have generated for countries or specific sectors, of a country's compliance or non-compliance with international environmental and labor regulations or its asymmetries (customs, tariffs, balance of trade) in free trade agreements, all of which are fundamental issues, a development model based on the continued and increasing export of raw materials, whose exploitation disproportionately affects vulnerable communities, has implications that cannot be overlooked and must be analyzed in detail.

1.2.e International Environmental Treaties

A first step in the right direction in aligning national policies and complying with international standards for greater socio-environmental cohesion is the ratification of international environmental treaties. Countries must then incorporate these international guidelines into their own legal system and ensure compliance with them.

A number of standards have been selected for reference. For example, ratification of the 2015 Paris Agreement to combat climate change was unanimous and early in all countries studied. As countries with a high climate risk, compliance with the Paris Agreement is paramount to their development. However, ILO (International Labour Organization) Convention 169 on indigenous and tribal peoples, which establishes free, prior and informed consultation when developing extractive or hydroelectric projects on their territories, for example, has not been ratified by all countries. In some cases, even after having been ratified, national legal mechanisms are insufficient as they have not been incorporated into national legislation or do not include, for example, a gender analysis.[81]

Table 1 | Alignment of the seven countries being studied with international environmental agreements.

Agreement	Belize	Costa Rica	El Salvador	Guatemala	Honduras	Panama	Dominican Republic
Escazú Agreement[82]	S 24/09/2020	S 27/09/2018	N/A	S 27/09/2018	N/A	S 10/03/2020	S 27/09/2018
Paris Agreement[83]	R 22/04/2016	R 13/10/2016	R 27/03/2017	R 25/01/2017	R 21/09/2016	R 21/09/2016	R 21/09/2017
CITES[84]	A 19/08/1986	R 30/06/1975	A 30/04/1987	R 07/11/1979	A 15/03/1985	R 17/08/1978	A 17/08/1986
Water Agreement[85]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Convention on Biological Diversity[86]	R 30/12/1993	R 26/08/1994	R 08/09/1994	R 10/07/1995	R 31/07/1995	R 17/01/1995	R 25/11/1996
Minamata Convention[87]	N/A	R 19/01/2017	A 20/06/2017	S 10/10/2013	R 22/03/2017	R 29/09/2015	R 20/03/2018
ILO Convention 169[88]	N/A	R 02/04/1993	N/A	R 05/06/1996	R 28/03/1995	N/A	N/A
1997 Convention[89]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nagoya Protocol[90]	N/A	S 06/07/2011	S 01/02/2012	Member State 12/10/2014	Member State 12/10/2014	Member State 12/10/2014	Member State 11/02/2015
RAMSAR[91]	A 22/08/1998	R 27/04/1992	R 22/05/1999	A 26/10/1990	A 23/10/1993	A 26/11/1990	A 15/09/2002

S: Signature
R: Ratification
A: Accession

Escazú Agreement

The Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean was adopted in Escazú, Costa Rica, on 4 March 2018 having been previously negotiated by the States with the significant participation of civil society and the general public.

The Escazú Agreement is the first in the world to include provisions on human-rights defenders in environmental matters. It entered into force on 22 April 2021, coinciding with International Mother Earth Day.[92,93]


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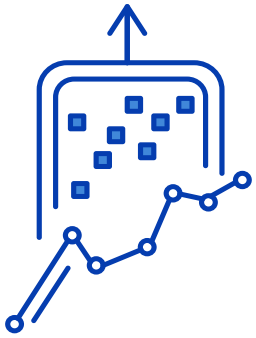
1.2.f Impact of COVID-19 on socio-environmental cohesion

The COVID-19 pandemic can be considered one of the greatest challenges to face the United Nations since its inception.[94] According to the World Bank, the COVID-19 pandemic may have plunged some 100 million people into extreme poverty, the most significant downturn in a generation.[95] Countries could experience a setback equivalent to nine years of progress in the Multidimensional Poverty Index, with a highly negative impact on human development.[96] The estimated setbacks in employment, wages, health, infant mortality, education, social protection, security, gender equality[97] and violence against women are concerning,[98] although there will also be rollbacks in many other areas of development. The pandemic is exacerbating inequalities and poverty worldwide and, in an already highly unequal region such as Central America and the Dominican Republic, the effects could be devastating.

Social cohesion is also being affected by the pandemic since, for example, the debt that many of these countries are running up is preventing them from promoting and increasing social policies.[99] When we emerge from the crisis post-pandemic there may once again be a boom in extractivism or in new free trade agreements that prioritize economic benefits while ignoring socio-environmental issues, thus affecting socio-environmental cohesion. The economic growth expected for many of the OECD countries and several of the emerging economies in the post-pandemic period will increase demand for natural resources. Commodity prices have already begun to rise, with an estimated 8.1% increase in oil prices and 2.4% in non-energy commodity prices for 2021.[100] In addition, there is growing concern in some countries that the necessary post-pandemic economic recovery may result in a relaxation of social and environmental standards, meaning that environmental protection and impact assessment agencies may make decisions and issue licenses and permits that do not fully comply with consultation processes with affected communities or do not carry out a proper environmental impact assessment. [101,102]

To break out of the vicious circle of extractivism, dependence and long-term impoverishment, policies now need to be aimed at a more social, equitable and ecologically sustainable way out of the crisis based on investment in public spending, education, digitization and innovation. Extractivism must be re-thought in terms of participation, inclusion, equity and social and environmental responsibility, and more sustainable economic development alternatives must also be sought in order to diversify the productive matrix and achieve greater socio-environmental cohesion.



2. ANALYTICAL FRAMEWORK

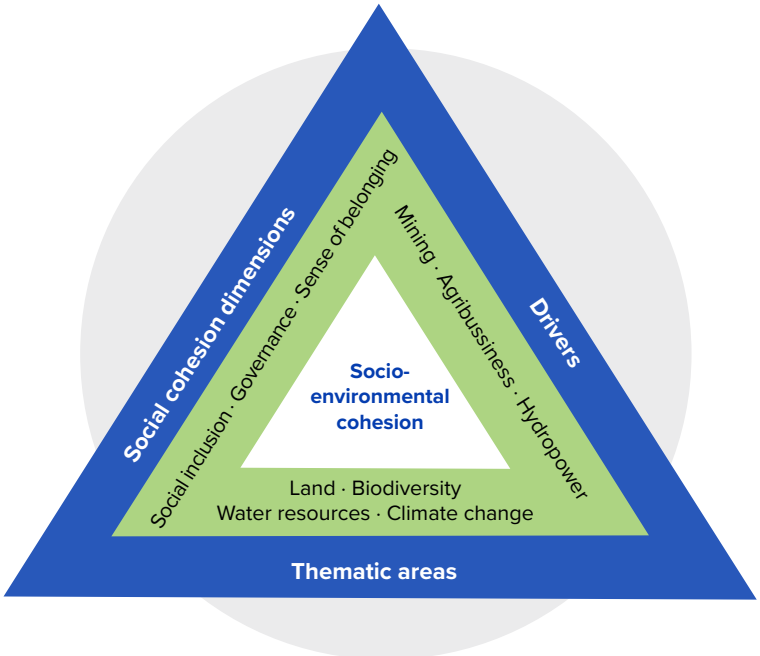
The objective of this study is to analyze the main environment-related factors affecting socio-environmental cohesion and conflict in Central America and the Dominican Republic. To this end, an analytical framework has been developed that includes four thematic areas of great relevance in land-use and environmental planning in the area being studied (see EJAtlas). These are (1) Land; (2) Biodiversity; (3) Water Resources; and (4) Climate Change.

Territorial planning, management and occupation are understood as the decisions, rules and policies governing how a territory is administered, as well as the decision-making and planning processes for its occupation. Land-use planning is determined by decisions related to the current and future use of the territory, taking into account the rights of citizens, including current native and indigenous populations, and those of future generations. It includes management and access to land and water resources related to the type of economic activities being prioritized, as well as management categories for areas of great value in terms of biodiversity or heritage. It is determined by historical processes, economic interests and development plans. Climate change also plays a fundamental role in the study area due to its high geographic, economic and socio-environmental vulnerability to the effects of global warming.

Climate change also plays a fundamental role in the study area due to its high geographic, economic and socio-environmental vulnerability to the effects of global warming.

The four thematic areas are closely interrelated and affect many of the SDGs, with economic, social and environmental impacts that have implications for current and future generations.

Figure 2 | Analytical framework for socioenvironmental cohesion.



Within each thematic area, numerous activities can be identified that positively or negatively affect socio-environmental cohesion, such as logging, mining (large- and small-scale), hydrocarbon extraction, agribusiness, tourism megaprojects, the shrimp industry or the construction of dams and hydroelectric dams. The magnitude and scale of these activities, as well as the decision-making processes or the sharing of benefits and negative externalities, make many of them triggers for social and environmental problems. This may jeopardize socio-environmental cohesion by threatening governance processes, limiting the sense of belonging or increasing social exclusion. More democratic and participatory processes, more equitable benefit-sharing, stricter compliance with national and international social and environmental regulations, promotion of more sustainable and small-scale economic and productive alternatives, and more resilient adaptation in the case of climate change can minimize socio-environmental conflicts and strengthen socio-environmental cohesion.

This document has selected and analyzed four key variables (drivers) that are considered to have the greatest impact on socio-environmental cohesion within each of the thematic areas in the study area: large- and small-scale mining; hydroelectric projects; oil palm and pineapple monoculture; and extreme weather events. It also presents initiatives and lessons learned and proposes policy recommendations by which to achieve greater socio-environmental cohesion in Central America and the Dominican Republic. Finally, a methodological tool is proposed to measure socio-environmental cohesion and to guide public policies in this direction.

“Humanity is waging war on nature. And we need to rebuild our relationship with it.”

António Guterres,
United Nations Secretary-General
First UN Summit on Biodiversity.
September 2020

II

SOCIOENVIRONMENTAL COHESION

3. SOCIOENVIRONMENTAL COHESION IN THE CENTRAL AMERICAN AND DOMINICAN REPUBLIC SUBREGION

3.1 LAND AND MINING

3.1.a Context

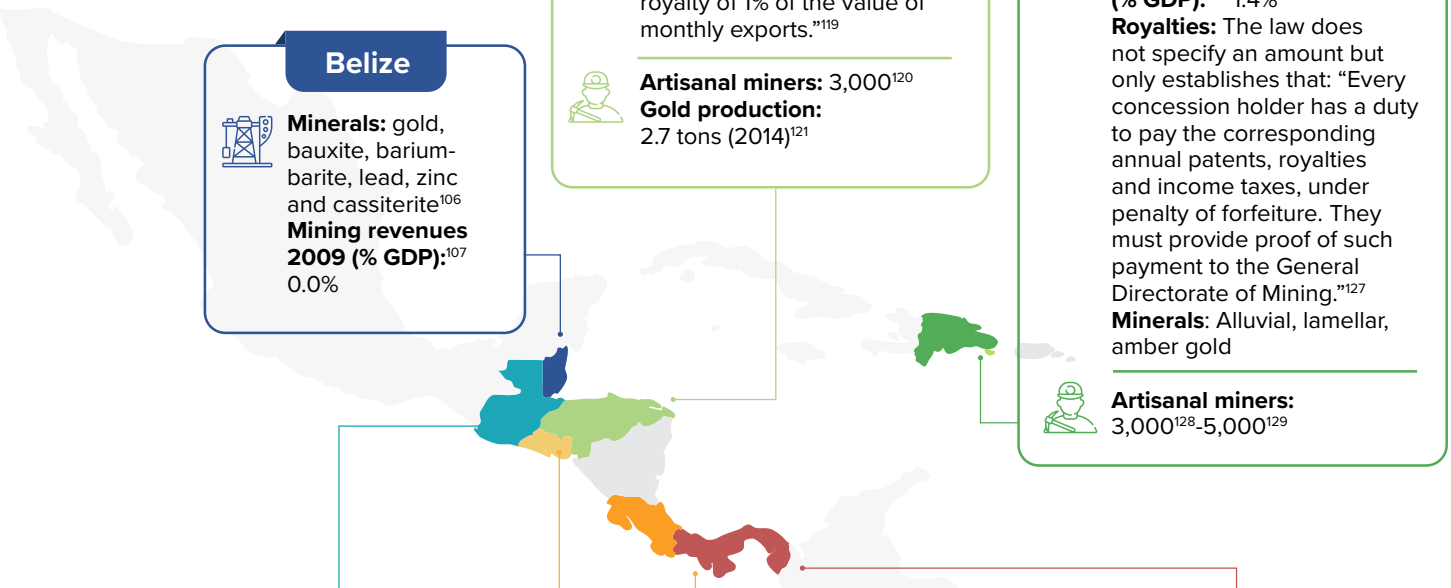
In countries with greater mining activity, there are numerous socio-environmental conflicts, thus affecting socio-environmental cohesion.

The influence exerted over an area by the mining sector can be positive and negative. On the one hand, there can be a positive influence when there is employment and income generation, improvements in local infrastructure through the construction of roads, hospitals, schools, access to drinking water systems, sanitation and waste treatment. On the other, negative impacts on the territory arise when there is sudden population growth due to the presence of workers, local inflation, pressure on public health and sanitation systems, changes in social dynamics such as labor or sexual exploitation, increased traffic and heavy vehicles, changes in the landscape, noise, dust, environmental pollution (water, soil and air) and resulting food insecurity, negatively affecting the surrounding communities and their livelihoods. In addition, projects are often not previously agreed with the communities, and the distribution of economic and social benefits to communities affected by the projects is often perceived as insufficient. All this results in frequent conflicts that affect socio-environmental cohesion.

Open-pit mining is banned in Costa Rica and El Salvador.

In Central America, mineral extraction dates back to the pre-Columbian period. Compared to other countries with high mining activity in the Latin American and Caribbean region, such as Colombia, Peru, Bolivia or Chile, the impact of mining on the economy and geological potential of the Central American countries and the Dominican Republic is average (Guatemala, Panama and the Dominican Republic) to low (Belize, El Salvador, Honduras, Costa Rica).[103] Mining's contribution to GDP varies depending on the country and the costs created in the tax regime for mining activities, which include taxes and royalties. In countries with greater mining activity, there are numerous socio-environmental conflicts, thus affecting socio-environmental cohesion.[104] While open-pit mining is banned in Costa Rica and El Salvador, exploration and exploitation activities are increasing in several of the other countries included in this study and are even being presented as a way out of the economic crisis generated by the pandemic.[105]

Figure 3 | Mining profile by country.



Honduras

oxides
Jobs (2013): 6,107 jobs.[116]
There have been no new metal mining concessions since 2012[117]
Mining revenues 2018 (% GDP):[118] 0.5%
Royalties: "A municipal tax that operates as a mining royalty of 1% of the value of monthly exports."[119]

Artisanal miners: 3,000[120]
Gold production: 2.7 tons (2014)[121]

Dominican Republic

Minerals: gold, silver, copper, and bauxite, silica sand, clays, feldspar, limestone, coral limestone, recrystallized limestone, marble, pozzolan rock, travertine, volcanic rocks, gypsum and mine salt.
Mining revenues 2018 (% GDP):[126] 1.4%
Royalties: The law does not specify an amount but only establishes that: "Every concession holder has a duty to pay the corresponding annual patents, royalties and income taxes, under penalty of forfeiture. They must provide proof of such payment to the General Directorate of Mining."[127]
Minerals: Alluvial, lamellar, amber gold

Artisanal miners: 3,000[128]-5,000[129]

Belize

Minerals: gold, bauxite, barium-barite, lead, zinc and cassiterite[106]
Mining revenues 2009 (% GDP):[107] 0.0%

Guatemala

Minerals: gold, silver, lead, zinc, iron oxides, nickel, jade, marble, construction materials
Jobs (2019)**:** 1,857 [111]
Mining revenues 2018 (% GDP):[112] 0.7%
Royalties: 1% (50% for municipalities and 50% for the State)[113,114]
Minerals: Jade, gold
Gold production: 5.9 tons (2014)[115]
Minerals: gold and iron

Costa Rica

Ban on open-pit metal mining in 2010.[108]
Mining revenues 2018 (% GDP):[109] 0.0%

Artisanal miners: 700-5.000[xiii]
Gold production (March 2017-April 2018): 149,243 ounces

El Salvador

Ban on metal mining in 2017
Mining revenues 1984 (% GDP):[110] 0.0%

Panama

Minerals: gold, copper and silver
Jobs (2008): 3,265
Mining revenues 2018 (% GDP):[122] 0.0%
Royalties: Between 4-8% depending on the mineral, and it is established that "When the rate of royalty is 5% or more, the State will transfer 2% of the amounts received via this concept for the construction of infrastructure works and social development programs in the communities surrounding the concessions, and 1% will be transferred directly to the Social Security Fund to strengthen the financing of the Disability, Old Age and Death Cover."[123]
Minerals: gold

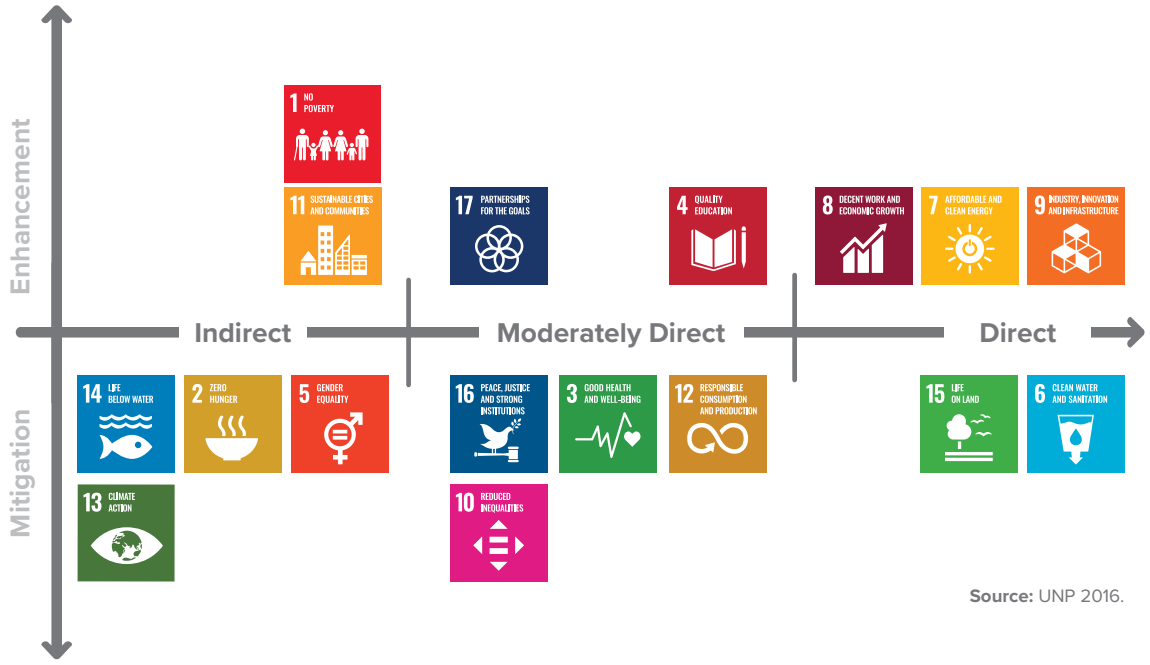
Artisanal miners: From a few hundred up to 5,000[124,125]

xiii Precise data not available

3.1.b. Intersection with SDGs

Mining has direct and indirect implications for the SDGs. In 2016, recognizing the importance of the sector to many economies and its potential positive and negative impacts, and through a process of extensive consultation with and participation of the private sector and civil society, UNDP and other institutions published an atlas mapping the relationship between mining and the SDGs.[130, 131]

Figure 4 | Indirect, moderately direct and direct impacts of mining on the SDGs.



Source: UNP 2016.

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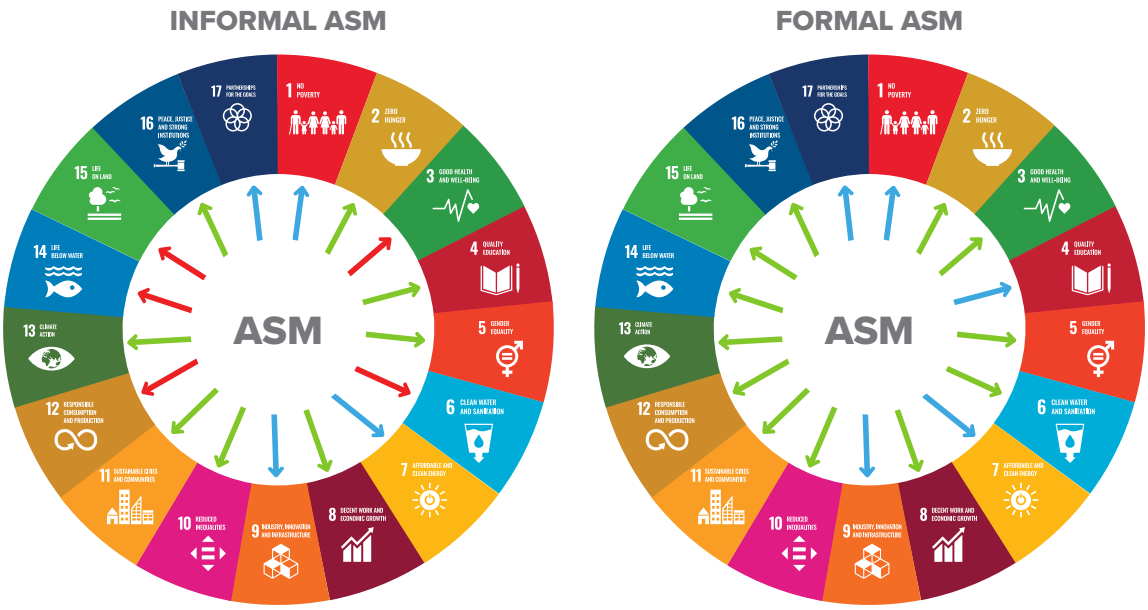
There are several SDG indicators related (albeit not exclusively) to mining activity; however, their values do not provide a direct causal relationship and, in many cases, data are not available, making detailed analysis difficult. Indicators need to be measured at the local level to determine the real impact of mining on development goals and objectives.

With respect to artisanal and small-scale mining, the NGO PACT and Delaware University conducted a similar exercise aimed at mapping the SDGs by identifying the negative and positive impacts of artisanal and small-scale mining (ASM), both formal and informal, on the SDGs.[132]

Figure 5 and 6 | Positive and negative implications of informal (left) and formal (right) ASM.



Source: Hann et. al., 2020.

positive and negative impact
positive impact
negative impact

In all of these countries (with the exception of Belize), there are a significant number of socio-environmental conflicts connected to mining activities. The Observatory of Mining Conflicts in Latin America [*Observatorio de Conflictos Mineros de América Latina* / OCMAL] notes that there are environmental conflicts in 6 of the 7 countries studied: 2 in Costa Rica, 3 in El Salvador, 10 in Guatemala, 6 in Honduras, 7 in Panama and 3 in the Dominican Republic. The identified conflicts are often due to opposition to mining projects in the territories. On other occasions, the causes are related to the risk of contamination of water sources and ecosystems, the lack or ineffectiveness of community consultation procedures, the criminalization of protest, or violence against opponents of mining projects.[133]

Table 2 | Socio-environmental risks of large-scale mining and ASM that have effects on socio-environmental cohesion.*

Large-scale mining

Environmental

- Modification of water bodies
- Contamination of water bodies
- Solid waste production (e.g. tailings dams)
- Soil contamination
- Atmospheric pollution (e.g. airborne dust)
- High-impact environmental risks (e.g. tailings dam breaches)

Social

- Lack of or dissatisfaction with prior and informed consultation processes
- Little or no distribution of benefits to communities
- Land disputes, expropriations and community resettlements
- Human rights violations
- Health problems due to pollution
- Loss of livelihoods due to pollution
- Protests, criminalization of protests and violence
- Violence against communities and environmental defenders

Informal artisanal and small-scale gold mining

Environmental

- Deforestation and soil erosion
- Impact on water bodies (e.g. turbidity)
- Irreparable contamination of ecosystems with mercury (mostly water, but also land and air)
- Presence of methylmercury in fish and the food chain
- Atmospheric pollution (e.g. airborne dust)
- Cyanide contamination
- Irreparable damage to the floodplains

Social

- Loss of livelihoods and food sovereignty in the surrounding communities due to contamination of water bodies
- Health problems caused by mercury[134]
- Additional risks to expectant mothers and their fetuses due to mercury use
- Immigration of undocumented workers
- Rise of mafias and criminal groups
- Invasion of the communities' collective territories: physical, cultural and spiritual
- Increased violence and insecurity
- Prostitution and trafficking of women
- Lack of taxation and foreign currency evasion
- Child labor
- Associated drug trafficking[135]
- Occupational hazards due to lack of appropriate equipment

* This table shows the potential socio-environmental risks identified based on bibliographic research. Not all risks apply to each country in the same way or to the same extent.

3.1.c Case studies

Large-scale mining

The growth in mineral exploitation in the countries largely depends on global demand and, therefore, on mineral prices.

Figure 7 | Change in gold price from 2000 to 2021, showing a 500% increase.

Source: Cotización Real Oro[136]

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Mining activities are still incipient in Belize and can be considered almost insignificant compared to other economic activities. Extractive activities in Belize have been largely concentrated in drilling for oil, which began in 2005 and at one point represented some 7% of GDP. With decreasing reserves in the existing wells and the instability of the oil market, however, that figure now represents only around 1% of GDP, and the country has redirected its economic model towards other sectors, such as tourism. [137,138]

Extractive activities in Belize have been largely concentrated in drilling for oil.

In Costa Rica, there was strong public opposition to Las Crucitas gold project, and this was finally suspended following a court decision in 2010. The case is now in international arbitration, with the company seeking financial compensation from the Costa Rican government. The country has had a law[139] prohibiting open-pit metal mining since 2010. As a result of enforcement of this law, the area of the Las Crucitas mining project, on the border with Nicaragua, has become a zone of informal artisanal gold mining.[140]

Mining still accounts for a small share of Guatemala's national GDP, contributing less than **1%** to the country's economy.

In El Salvador, open-pit and sub-surface exploration, extraction, exploitation and processing activities are prohibited by law. In March 2017, El Salvador banned metal mining in the country (Decree No. 639).[141] The use of toxic chemicals as used in metal mining processes is also illegal.[142] Civil society was essential in pushing for the Law Prohibiting Metal Mining. Social, environmental, educational and religious organizations had been opposing mining for more than a decade.[143] The country still has environmental liabilities caused by mining operations where satisfactory environmental remediation processes (removal of pollutants from the environment) have not been conducted, as in the case of the San Sebastián River, affected by acid drainage from mining.[144]

While mining still accounts for a small share of Guatemala's national GDP, contributing less than 1% to the country's economy,[145] there is growing interest in the mining industry. The socio-environmental issue has not, however, been resolved. Complaints have been reported related to mining activities and criticisms about the limited space for dialogue as well as human rights violations. For example, the operations of the Escobal mine were interrupted in 2017 by a court decision which, after complaints and protests from the community, ruled that there had been no proper consultation with the Xinka indigenous population affected by the mining. In 2018, the country's Supreme Court of Justice ratified the decision and established that the Guatemalan Ministry of Energy and Mines should conduct a consultation process with the Xinka people. In January 2021, a letter signed by 195 international organizations sent to the Guatemalan Public Prosecutor's Office denounced threats against and an attack on the life of Julio David González Arango, a community leader opposed to the project.[146]

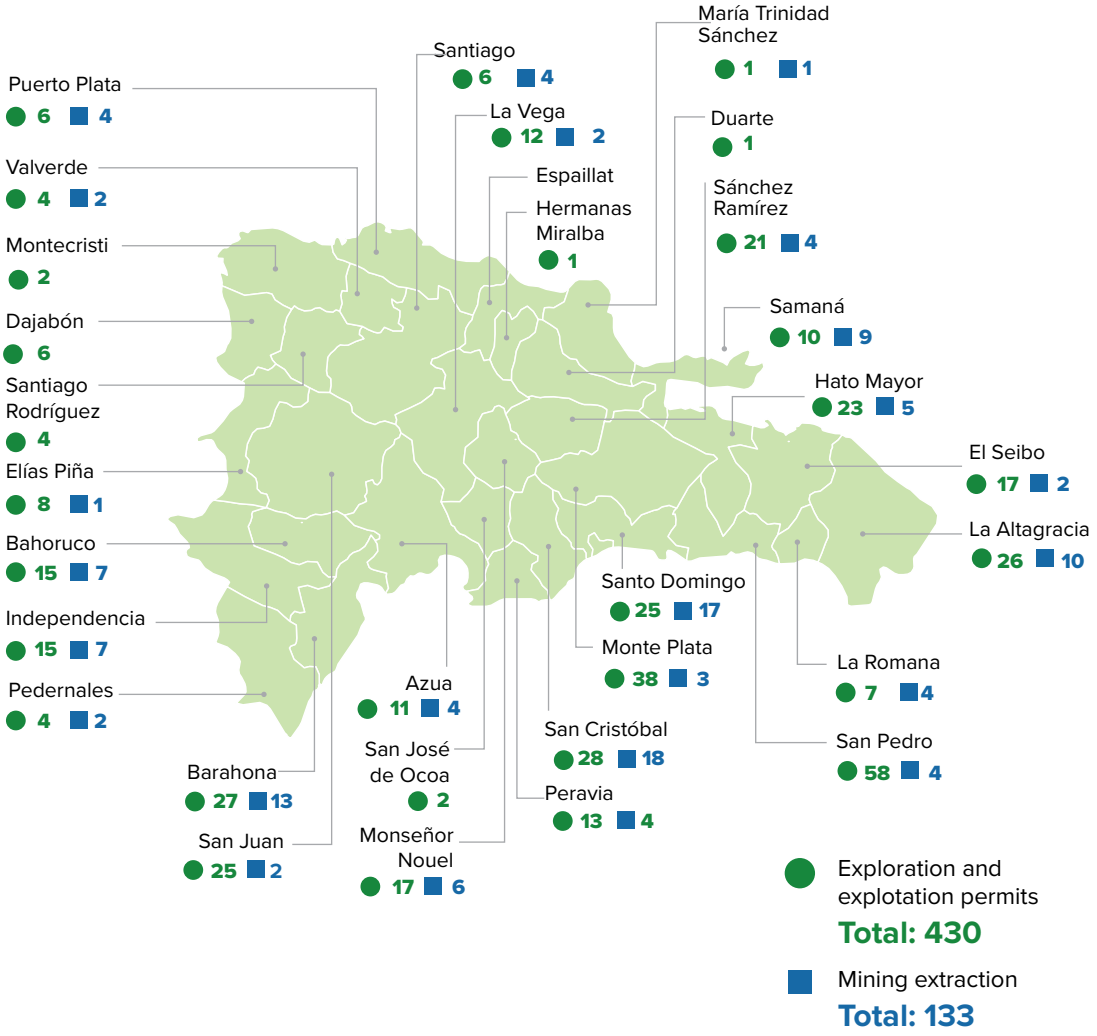
In Honduras the mining sector contributed **0.5%** of GDP (2018).

In Honduras, the extractive mining sector is small and no metal mining concessions have been granted since 2012.[147] The country is, however, showing an interest in expanding it and even in developing the hydrocarbon sector.[148] In 2018, the mining sector contributed 0.5% of GDP, generating 4,090 jobs.[149]

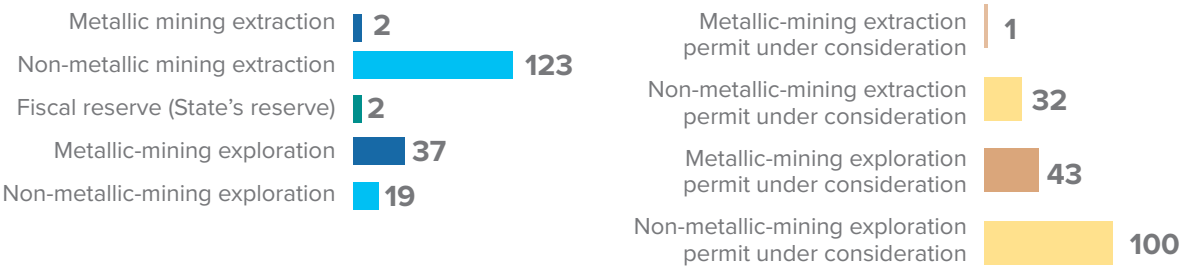
In the case of Panama, despite 2018 data from the World Bank noting that mining revenues contributed nothing to GDP,[150] it was estimated that this would increase to 6% in 2019.[151] While Panama's GDP contracted 17.9% in 2020 compared to 2019 due to the pandemic, mining and quarrying grew by 34.1% over the same period.[152] Despite the economic benefits, mining activity in Panama is also resulting in social and environmental conflicts. There have been complaints from environmental groups about the impacts of mining on deforestation.[153,154] A recent report in December 2020 found that, despite several amendments to the Mineral Resources Code, in effect since 1963, it has become outdated and does not reflect current knowledge or best practice in the sector.[155] In order to optimize the Panamanian mining sector, the study identified several areas where improvement is needed: community relations, the adoption of mechanisms that allow for ongoing consultation with local populations, and the implementation of better environmental practices with regard to water, waste and biodiversity management. There is no legal requirement in national legislation that demands public consultation at any stage of the life cycle of a mining project.[156] In 2019, a UNDP study recorded community engagement initiatives in participatory environmental monitoring programs. These programs include community members, the government and the mining company who jointly carry out environmental visits and monitoring in concession areas and in the project's areas of influence.[157] The government and mining companies have also been making efforts to promote alliances that favor local companies and cooperatives (agricultural and fishing) for the provision of goods and services.[158]

According to the Ministry of Energy of the Dominican Republic, there were 133 mines in operation in 23 of the country's 32 provinces in 2016.[159,160 161]

Figure 8 | Exploration and exploitation permits and number of mines in operation, by province.



Exploration and exploitation permits granted by the Ministry of Energy and Mines, as of 21 October 2016 (Total:359)



Source: Ministry of Energy and Mines. Chamber of Oil Mining of the Dominican Republic, http://camiperd.org/republica-dominicana-tiene-mineria-en-24-provincias/

The country has maintained steady economic growth since 2012, with the mining sector making a modest contribution.[162] The sector contributed 7,989 direct jobs in 2017.[163] The country's mining sector contributes to job creation, tax payments, royalties and community actions. For example, in 2020, the country's largest gold company announced a contribution of US$185 million in direct taxes and pledged to contribute US$1 million to initiatives to alleviate the impact of COVID-19 in the country.[164] Like other Central American countries, however, there are numerous complaints, protests and demonstrations against mining activities in the Dominican Republic. In 2012, the municipality of Bayaguana filed a lawsuit against the mining company for the usufruct of land (municipal property) for the installation of 66 electrical towers that were to cross the municipality.[165] At the Global Conference on Gender, Oil, Gas and Mining organized in March 2021 by the World Bank and the IDB, a community leader stated that, in the area of influence of the gold mine, the inhabitants were experiencing high levels of heavy metals in their blood.[166] Similar allegations were made in 2013[167] and 2014.[168]

Artisanal and small-scale gold mining

Artisanal and small-scale mining is a subsistence activity for many families and is present to a greater or lesser degree in most of the countries under study, albeit not on the same scale as in Africa, Asia or South America. ASM is often carried out in a rudimentary fashion and is frequently inadequately regulated and supervised, representing a challenge for several governments. It is not atypical that in areas where this type of mining is practised, a massive influx of artisanal miners is reported, many of them in irregular situations, as well as criminal activities that affect the social dynamics and security of neighbouring communities. Informal ASM also has a serious impact on the environment due to deforestation and the use of mercury, which ends up in the water bodies. Its use in gold mining causes irreversible health problems as the metal bioaccumulates in the food chain, taking on toxic forms that cause neurological and lethal harm to miners and their families, as well as to the surrounding populations.

ASM is often carried out in a rudimentary fashion and is frequently inadequately regulated and supervised, representing a challenge for several governments.

Women in ASM

In ASM, women miners are more exposed to harmful toxic substances.[169] In many regions where ASM is practised, women and sometimes children can be found working in mining waste dumps, hand-selecting rocks with some mercury residue. Women commonly work on burning the mercury-gold amalgam.[170,171] In the case of Honduras, for example, while women make up only 5% of the artisanal-mining labour force, it has been identified that up to 89% of those participating in the burning of amalgam are women.[172]

With the exception of Belize, the other countries in the study have all signed the Minamata Convention, which establishes a responsibility to protect health and the environment from adverse uses of mercury; only four have ratified it, however (Costa Rica, Honduras, Panama and the Dominican Republic; see Figure 2).[173] The agreement, ratified in 2017, requires the regulation and reduction in use of mercury in ASM, the activity in which it is mostly used. In fact, the Global Mercury Assessment identified that, in 2015, global ASM emitted 838 tons of mercury into the air, accounting for approximately 40% of global mercury emissions. In Central America and the Caribbean, the same report indicates that 14.3 tons were released into the air that year.[174]

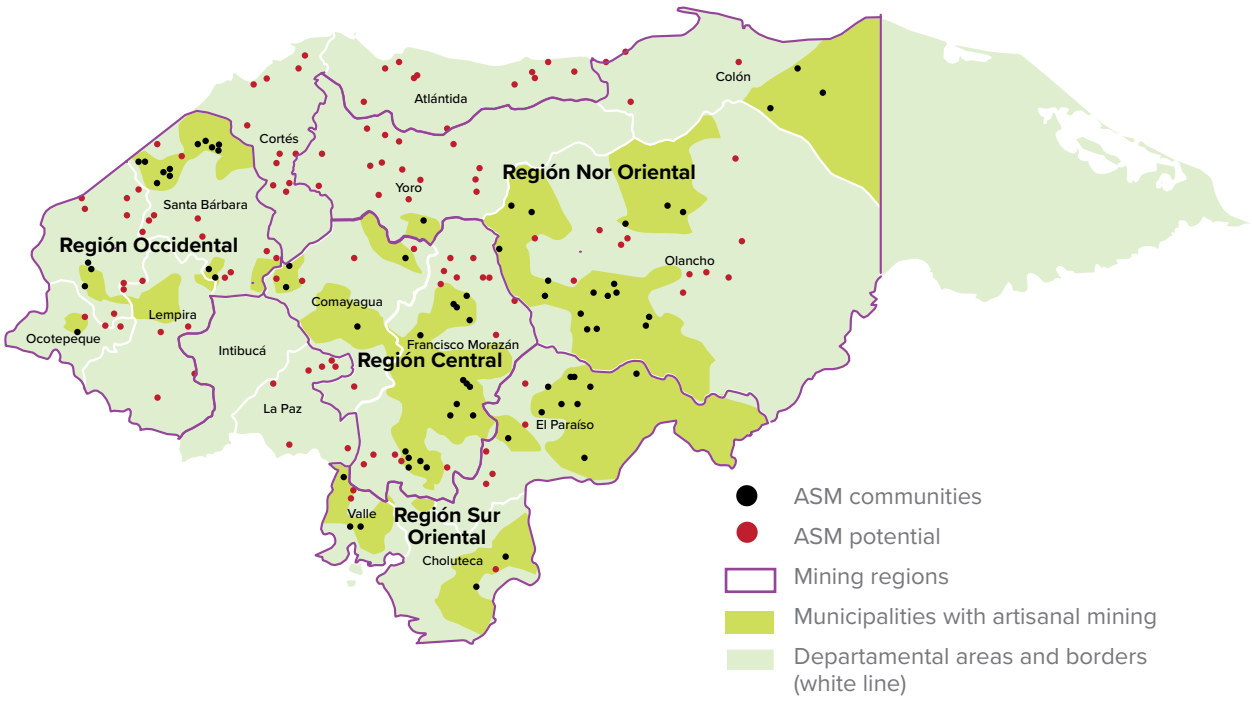
In Costa Rica, a study conducted by the School of Health Technology between 2015 and 2016 concluded that artisanal and small-scale gold mining was an important source of income and also a way of life for many in specific regions of the country, such as Guanacaste.[175] However, the study also found an atmospheric mercury concentration 2.5 times higher than permitted in that province, the region in which ASM is concentrated, and which has approximately 700 miners *(coligalleros)*[176,177] producing around 800 kg of gold per year.[178,179] With the suspension of large-scale mining activities, an increase in informal artisanal mining activities has been reported at the Las Crucitas mine. Since 2016, the number of artisanal miners has grown in the area of the Las Crucitas mine and it is now estimated that there are between 2,000 and 5,000 *coligalleros*.[180] According to data from the Directorate of Geology and Mines, between March 2017 and April 2018, 149,243 ounces of gold were mined at Las Crucitas.[181] Over the same period, the Ministry of Security reported that 1,061 people had been found extracting gold in Las Crucitas, of which 11 were minors and 963 were adults in an irregular situation and who were referred to immigration.[182] In 2019, there were reports

of environmental damage, increased insecurity, health problems and irregular immigration of workers from neighboring countries.[183] That same year, another police operation arrested more than 200 miners.[184]

There is no exact figure on the number of artisanal miners in Panama. While some studies suggest that there are only a few hundred,[185] others estimate that there may be as many as 5,000.[186] The dense Panamanian forest of the Darién region forms the backdrop for informal ASM, and it is therefore difficult to determine and monitor the exact number of people engaged in this activity. There is evidence that in Panama it is plagued by illegal activities such as child labor, pollution, misuse of waterways, irregular immigration and dredging with high environmental impacts. In this context, it is not a subsistence activity but is closely related to criminal groups, drug trafficking and money laundering.[187]

The Honduran Institute of Geology and Mines (INHGEOMIN) recorded approximately 3,000 artisanal gold miners in 2017.[188] In 2015, it was estimated that 5,000 kg of mercury were being consumed every year in the El Corpus mining community, where 1,300 people work in ASM. Subsequently, in 2018, with the implementation of Presidential Decree 018-2016 and thanks to efforts aimed at complying with the Minamata Convention, a reduction of 4,340 kg of mercury per year was reported. [189]

Figure 9 | Location of ASM in Honduras, grouped by municipality and mining region.



Source: MIA NAP Project, 2019; with data from the 2017 Municipal Panoramic Survey, SINIT and INHGEOMIN.

In addition to the social, economic, environmental and health impacts of informal ASM, it does not generate revenues for the State coffers. Its regularization is essential in order to minimize its negative impacts and protect artisanal miners by supporting them to adopt more sustainable practices that will bring greater benefits.

3.1.d. Lessons Learned and Policy Recommendations

Large-scale mining

Free, prior and informed consultation: implement clear policies on free, prior and informed consultation, enabling real compliance with the provisions of ILO Convention 169 and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

In-depth studies of social and environmental impacts: conduct social and environmental impact assessments to ensure that mining projects incorporate a human rights approach and take into account, through participatory and multi-stakeholder processes, the socio-environmental impacts of their work in the short and long term. Such studies must be public, within a fully-fledged rule of law.

Spaces for dialogue: establish units and offices specialized in conflict management and dialogue at the national level, as well as local delegations of the Ombudsman's Office.

Participatory environmental monitoring: support and institutionalize spaces for civil society participation in multi-stakeholder environmental management and monitoring.

In Panama, in response to local communities' concerns about the environmental impacts of the main non-metal mining company in the country, a program of participatory environmental monitoring committees has been implemented. The program involves community members who have previously been selected through an assembly, and these representatives take responsibility to report back to community meetings. Their terms of office last between 6 and 12 months, which encourages internal democratic processes and transparency while allowing other members to participate in the committees. Technical representatives from the Chiriquí Autonomous University collaborate in the monitoring by collecting and analyzing the samples. Committee members receive training and participate in the entire monitoring chain, assisting in the collection, sealing, labelling and filling in of the analysis request form. They also take part in maintaining the field logbook and ensuring the movements of samples under optimal conditions, including their reception, storage and transfer for shipment to the laboratory. Finally, committee members participate in analyzing the values recorded in the reports and in the dissemination of information.[190,191] Although not perfect, these experiences contribute to better communication between the various stakeholders, more transparent accountability and greater community participation in the monitoring of mining activities and their environmental implications.

Mine closure (environmental and socioeconomic): establish clear policies and rules for all phases of a mining project's life cycle, including environmental and socio-economic mine closure. Such policies should consider adequate and realistic financial guarantees that take into account not only the environmental costs of closure but also the socio-economic costs associated with the end of the activity.

Corporate social responsibility aligned with local regional development plans: in order to maximize positive impacts and economic benefits in regions with extractive projects, corporate social responsibility actions should be aligned with municipal and regional development plans which, in turn, should benefit from an equitable distribution of mining revenues. These actions should be implemented through participatory and transparent processes with clear and specific performance indicators.

Artisanal and Small-Scale Mining (ASM)

Research and establish baselines: when taking action to limit the environmental and social risks of informal artisanal gold mining, a detailed initial data collection at the country level and constant monitoring of these activities is necessary. Collaboration between public administrations and universities, NGOs and international institutions for producing diagnostic studies can be very beneficial.

Integrated Mining Policy Assessment: the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development's (IGF) Mining Policy Framework Assessment is a tool that allows countries to make a comprehensive assessment of the strengths and weaknesses of both large-scale mining and ASM activities.

For example, the Dominican Republic and Panama, led by the IGF and with the cooperation of the governments and responsible agencies, produced an assessment that has served as a guide for the countries when prioritizing actions aimed at strengthening and improving the sector. The program also included workshops, training programs and assistance for the development of the ASM strategy, whose objective was to consolidate a road map that would contribute to formalizing the sector.

Strengthening the regulatory framework: continue strengthening the regulatory framework for artisanal mining and the regularization of artisanal miners, and promote policies aimed at eliminating the use of mercury in Central American countries. There are tools that can serve as a guide, such as the IGF's Mining Policy Framework Assessment.

An example of adaptation of the regulatory framework can be seen in the collaboration between large-scale mining and ASM. Following the closure of the Vueltas del Río mine in Honduras, and with the support of the Lundin Foundation, UNDP, INHGEOMIN, the municipal mayor's office and the Alliance for Responsible Mining, a process of transfer and assignment of the mining right to a community company of artisanal miners was initiated in Macuelizao Santa Bárbara municipality in 2015. During the legalization process, artisanal miners were trained to adopt the Fairmined Standard, an international certification that ensures responsible practices in artisanal and small-scale gold mining.[192] The project benefited 307 artisanal miners from 7 communities.[193]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- **Training of artisanal miners:** train ASM miners on the health and environmental risks of using mercury. Promote training programs and provide incentives for the adoption of gold mining techniques that do not use mercury and other chemicals such as cyanide.

- **National Adaptation Plans for the elimination of mercury use:** develop National Adaptation Plans (NAPs) that allow each country to establish a strategy and plan for the management and future elimination of mercury use in ASM gold activities, in line with the Minamata Convention. The Global Environmental Facility's (GEF) projects to eliminate mercury, led by UNDP and UNEP, provide technical and financial resources aimed at implementing the objectives of the Minamata Convention.[194] Ratification of the Minamata Convention on mercury is a prior and necessary step to bring these national plans into line.

- **Regional collaboration on ASM:** establish joint regional regulatory frameworks and strategies to combat the challenges presented by artisanal and small-scale gold mining.

3.2 BIODIVERSITY

3.2.a Context

After more than a year of pandemic, scientists have established that the main cause of the SARS-CoV-2 virus jumping to humans was a loss of habitat for animal species, and they warn of further possible pandemics in the near future. UNEP was already warning of an increase in zoonotic epidemics globally in 2016, noting that 75% of all new infectious diseases in humans are of animal origin and that such diseases are closely linked to ecosystemic health. To prevent, halt and reverse the degradation of ecosystems around the world, the United Nations has declared the Decade on Ecosystem Restoration (2021-2030) with the aim of restoring the relationship between people and nature.[195,196] This initiative was presented by the Government of El Salvador and is led by UNEP and FAO.[197] Habitat / biodiversity loss and ecosystem degradation not only trigger pandemics; the alarming degradation of ecosystems and their ecosystem services, in many cases irreversible, affects all living beings, as well as the livelihoods and subsistence of millions of people around the world. It is also the cause of local tensions and conflicts.

The alarming degradation of ecosystems and their ecosystem services, in many cases irreversible, affects all living beings, as well as the livelihoods and subsistence of millions of people around the world.

Central America's geological history includes numerous episodes of seismic and volcanic activity which, together with its location between two major oceanic climate systems, has led to great altitudinal, climatic and ecosystemic variation, with 15 major ecosystems.[198] The Dominican Republic likewise has a high biological diversity due to its geotechnical complexity and its island status, with very high levels of endemism (amphibians, reptiles, birds, vascular plants) and ecosystems unique in the world, such as Lake Enriquillo, the largest in the Caribbean islands, and its high mountain ecosystems, more than 2,000 meters above sea level, unique in the Caribbean islands. The Caribbean islands are considered to be one of the five most important areas for biodiversity globally, especially the islands of Hispaniola and Cuba.[199,200]

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The great biodiversity of Central America is increasingly threatened and, by threatening and harming traditional ways of life related to specific habitats, this weakens socio-environmental cohesion.[201,202] The greatest threats to biodiversity and socio-environmental cohesion identified in Central America and the Dominican Republic are tourism megaprojects, which damage the coastline and result in huge amounts of waste; indiscriminate logging; the advance of agriculture into protected areas; monocultures and the use of agrochemicals and genetically modified seeds; as well as the poaching of wild species. [203]

3.2.b Intersection with SDGs

The SDGs that specifically address biodiversity are:

The SDGs that specifically address biodiversity are SDG 14 (marine biodiversity), SDG 15 (terrestrial biodiversity), and SDG 2 (genetic diversity of plants and animals for food and agriculture). SDGs 14 and 15 include targets related to marine, terrestrial and freshwater ecosystems and ecosystem services (oceans, seas, forests, wetlands, mountains and drylands), such as reducing marine pollution (target 14.1); sustainably managing and protecting marine and coastal ecosystems (target 14.2); promoting sustainable forest management and halting deforestation (target 15.2); combatting desertification and restoring degraded land and soil (target 15.3); and reducing the degradation of natural habitats and halting biodiversity loss (target 15.5), among others.[204] Nevertheless, due to the interrelationships between the different SDGs, negative impacts on biodiversity also affect other SDGs, such as water sources or food security, and are in turn affected by other SDGs related to economic development, the expansion of the agricultural frontier and urbanization.

Monocultures and SDGs

Land grabbing for export-oriented monocultures in Central America (e.g. oil palm and pineapple) has exacerbated historical conflicts over access to land.[205] In addition to the negative impacts on biodiversity, soil quality, water and human health of certain monocultures due to the use of pesticides, cases of violence against communities and environmental defenders, forced displacements and dispossession of indigenous communities and peoples are also frequent in regions where these monocultures are present.[206,207,208]

Table 3 | Socio-environmental risks related to oil palm and pineapple monocultures that have an effect on socio-environmental cohesion.* [209,210]

Environmental

- Logging
- Loss of native trees and biodiversity
- Decrease in carbon absorption and storage, and in the mitigating effect of climate change
- Loss of genetic plant varieties and associated biodiversity
- Impoverishment of soil quality
- Increased sedimentation of rivers, lakes and wetlands as a result of erosion
- Contamination of water resources with pesticides and fertilizers
- Emergence of new pests affecting livestock such as the hematophagous fly in pineapple monocultures

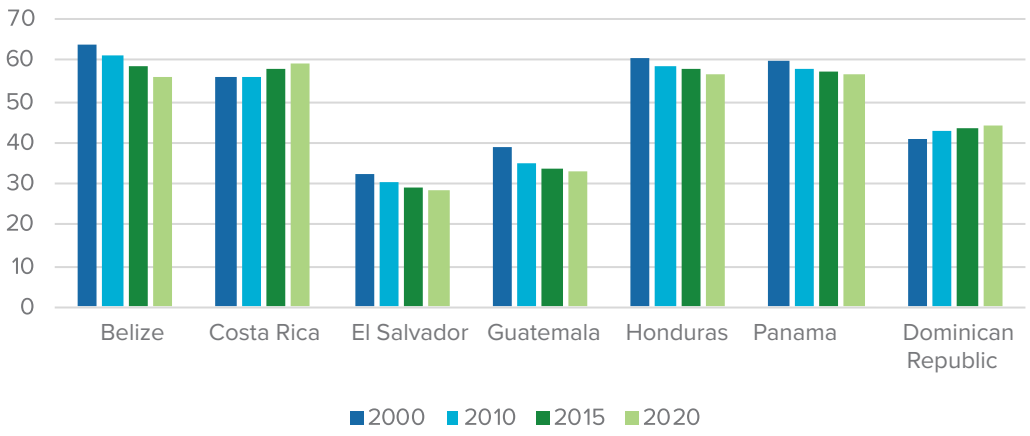
Social

- Elimination of traditional agricultural practices
- Substitution of traditional crops with export-oriented crops
- Loss of food sovereignty, resilience and food insecurity
- Concentration of land in the hands of large corporations or landowners
- Health problems due to constant spraying and the use of pesticides and fertilizers
- Violation of labor and union rights, such as the ban on unionization in pineapple monoculture plantations[211]
- Unstable jobs
- Gender pay gap
- Sexual harassment and abuse of women
- Violence against communities and environmental defenders
- Inequitable redistribution of profits from monocultures in affected areas
- Communities' distrust of government and political disaffection

* This table shows the potential socio-environmental risks identified based on bibliographic research. Not all risks apply to each country in the same way or to the same extent.

By way of example, and for the purposes of comparison between the seven study countries, some SDG indicators related to the effects of this type of large-scale monocultures have been selected where the data are available. These include deforestation (SDG indicator 15.1.1), which provides a rough idea of land-use changes in the region; protected areas with high biodiversity (SDG indicator 15.1.2); and food insecurity (SDG indicator 2.1.2).

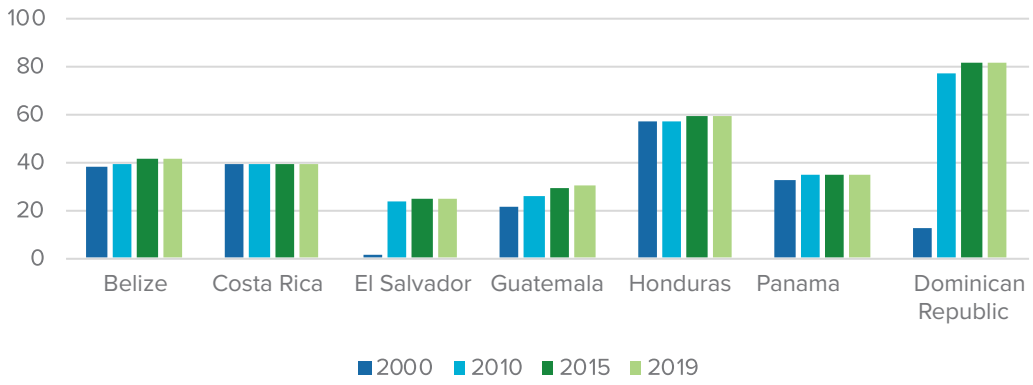
Figure 10 | SDG Indicator 15.1.1 Forest area as a proportion of total land area.



N.B.: With the exception of Costa Rica and the Dominican Republic, forest area decreased in the countries over the period 2000-2020.

Source: UN Stats.

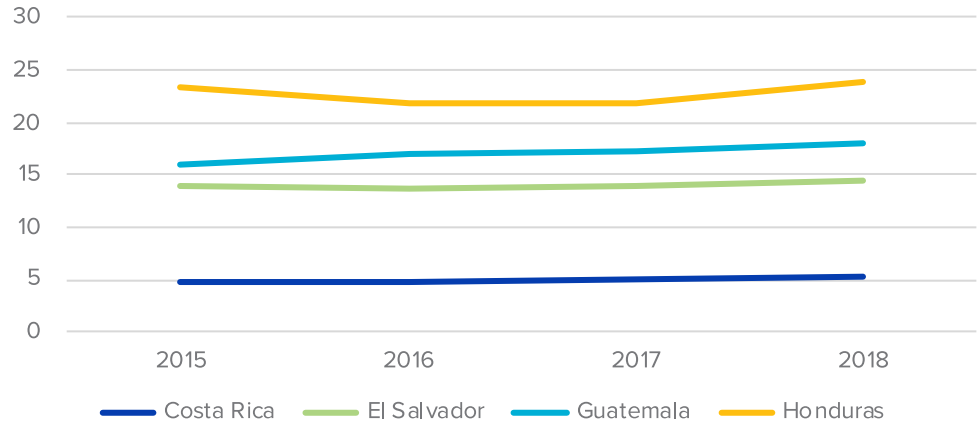
Figure 11 | SDG Indicator 15.1.2 Proportion of important sites for terrestrial biodiversity covered by protected areas.



N.B.: Varying degrees of increase can be observed in all countries.

Source: UN Stats.

Figure 12 | **SDG Indicator 2.1.2** Prevalence of severe food insecurity over the period 2015-2018, as a percentage and including both sexes.



N.B.: There are no data for Belize, Panama or the Dominican Republic, nor for the years prior to or subsequent to those presented. Severe food insecurity has increased in Guatemala and Honduras, and also slightly in El Salvador.

Source: UN Stats.

These indicators alone are not enough to measure the problems created by some large-scale monocultures in the long term. In addition, the data is incomplete for many indicators, making a detailed analysis impossible either because there is no data (e.g. SDG indicator 2.4.1 on sustainable agriculture or SDG indicators 5.a.1 and 5.a.2 on women's rights and access to property / land or natural resources), because data is missing for some countries (e.g. for SDG indicator 1.4.2 on land tenure rights, there is only data available for Costa Rica for 2011, with a value of 97.8%[212]), or because there is no data on a time scale that would permit the observation of trends (e.g. SDG indicator 15.3.1 on degraded land).

Official data obtained through UN Stats, which collects and verifies data at the national level, were also not found at the subnational level, preventing a better analysis of socio-environmental cohesion. Finally, some of the impacts of monocultures are not covered by any SDG target or indicator, such as, for example, the dispossession of peasant farmers' land by more powerful economic and social actors, a phenomenon that is difficult to reflect under SDG indicator 1.4.2 on access to land ownership and registration.

3.2.c Case studies

Oil palm in Costa Rica, Guatemala and Honduras

Oil from the oil palm (*Elaeis guineensis*) has become one of the most sought-after vegetable oils globally due to its low cost and easy processing. Fifty-one percent (51%) of the vegetable oil consumed worldwide is palm oil, and it is present in one out of every two products used in food and industry.[213] The boom in agrofuels in recent years has led to a greater expansion of this crop into hot and humid regions, displacing bananas, pineapples and coconuts.[214] In Central America, oil palm plantations are continuing to increase, and any study of them requires a regional perspective. Central American exports are destined for Mexico, the United States and the EU.[215]

Table 4 | Oil palm cultivation by country.[xiv]

GUATEMALA
(2019 data)[216,217]

- **4%** of the country's surface area
- **2.7 %** of the oil exported globally
- **1.2 %** of GDP
- **28,575** direct jobs
- **143,000** jobs and indirect beneficiaries
- **93%** of oil production exported internationally

HONDURAS
(2018 data)[218]

- **190,000** hectares
- **300,000** direct and indirect jobs
- The third largest producer and exporter of palm oil in Latin America, surpassed only by Ecuador and Colombia, and the eighth largest in the world.

COSTA RICA
(2019 data)[219]

- **77,000** hectares
- **50%** of the area planted with oil palm is owned by 3% of the producers

Sources: Gremial de Palmicultores de Guatemala, Oficina Económica y Comercial de España, Secretaría de Agricultura y Ganadería, Gobierno de la República de Honduras y CANAPALMA

Despite the effects on the economy and employment, the impacts on socio-environmental cohesion are numerous. One of the most worrying consequences of the continued expansion of large-scale palm monoculture is the loss of food security that comes by replacing traditional crops with palm cultivation. For example, wheat production in Guatemala has fallen by 80% in recent decades, and bean, rice and corn production by 22-27%.[220] In 2006, Guatemala thus produced 2,976 tons of wheat (2005 data); in 2010 it produced 1,438 tons and, in 2019, 330 tons.[221] These formerly food self-sufficient countries are now dependent on imports, sometimes highly subsidized, from third countries, which compete with local products, putting even more pressure on farmers in the region.[222]

In Honduras, large-scale palm monoculture is also the main cause of deforestation and loss of territory for Garífuna and Miskito communities.[223] Since 2009, palm monoculture expansion has been consolidated and, in the process, episodes of violence against peasant communities have been reported. This situation is especially evident in the Agúan Valley, where there has been a large number of disappearances and assassinations of peasants, trade unionists and human rights defenders.[224]

In Costa Rica, palm production is linked to the food and cosmetics industry and, more recently, to biodiesel production. Oil palm was introduced intensively in Costa Rica in the 1980s. Previously, the plantations were mainly banana. In 1985, the Banana Development Plan, which provided for tax and royalty exemptions for banana companies, led to new land becoming available through purchase and pressure placed on small producers to sell their land.[225] Soil depletion and heavy metal contamination caused by excessive use of copper sulphate fungicides caused thousands of hectares of land to become toxic to *musaceae* (banana family) and other crops. This led to decreased banana production in the area and its substitution by palm cultivation, which tolerates high concentrations of heavy metals such as copper in the soil. This change has also had an effect on the workforce. Whereas banana plantations used to employ an average of one laborer per hectare, now one laborer can work 10 hectares of palm. Some authors consider this to be one of the main causes of unemployment since the 1980s in a large part of Costa Rica's South Pacific region.[226]

xiv No official data has been found on the contribution of palm oil to national GDP in these countries.

Costa Rica, Guatemala and Honduras currently have biofuel policies that have scaled up and stimulated the expansion of palm cultivation.

Costa Rica, Guatemala and Honduras currently have biofuel policies that have scaled up and stimulated the expansion of palm cultivation.[227]

Oil palm in Panama

Oil palm monoculture is extending its agricultural frontier in Panama and threatening the Matusagaratí Lagoon in the Darién Gap, the country's largest freshwater reservoir and of great ecological value with numerous species of fish, birds and crustaceans. Since 2007, channeling activities have been undertaken to divert water to African palm and rice monocultures. Since then, the lagoon has shrunk by 30,000 hectares (from an initial 49,429 hectares). Environmentalists and artisanal fishers in the area have denounced this situation, as well as the contamination of the water with agrochemicals, which is affecting the biodiversity of Darién department. Some farmers are alleging bribes from businessmen and denouncing the appearance of supposed landowners who are not originally from the area.[228] Panamanian environmentalist and journalist, and coordinator of the Alliance for a Better Darién, Ligia Arreaga, who was defending the environmental conservation of the Matusagaratí Lagoon and denouncing illegal privatization practices in the area, was forced to leave the country due to death threats.[229]

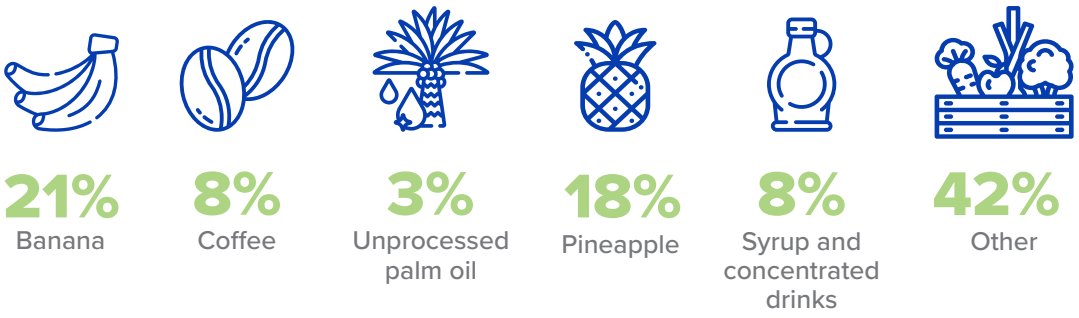
Situations such as those mentioned above make it necessary to reconsider land planning processes, environmental and social risks, and ascertain the level of local community acceptance in order to avoid similar conflicts in the future and a breakdown in social cohesion.

Pineapple monoculture in Costa Rica

Another important monoculture in the subregion, particularly in Costa Rica, and one that is threatening socio-environmental cohesion, is pineapple production. Pineapple has become the fastest growing crop in the country in recent years. The area turned over to pineapple has multiplied in recent decades, increasing from 1,000 hectares in 1984 to 37,660 hectares in 2014, and reaching over 40,000 hectares in the years 2009-2013. Pineapple production has grown from a production volume of 24,200 tons in 1984 to 2,915,628 tons in 2014.[230]

The substitution of traditional crops with pineapple cultivation has led to an increased dependence on imports of basic commodities. Imports of food products increased between 2019 and 2020: by 23.9% for yellow corn, 14.3% for soybean, 8.9% for rice, and 4.1% for wheat. Thirty-five percent of the value of imports for the same period came from the United States, followed by Mexico with 6%, Nicaragua (4.9%) and Guatemala (4.5%).[231]

Figure 13 | Share of the main products in the value of agricultural exports (January-September 2020) in Costa Rica.

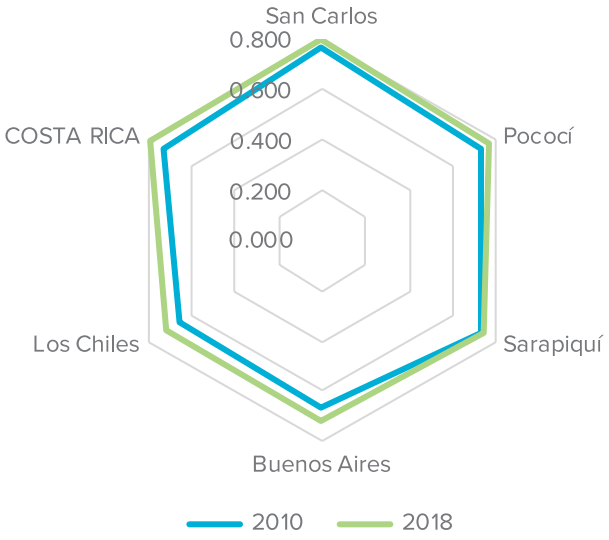


Source: Prepared by the author on the basis of SEPSA and with information from BCCR.

The cantons with the largest areas of pineapple cultivation are San Carlos, Buenos Aires and Sarapiquí, followed by Los Chiles and Pococí, mostly in the north and north-east of the country (with the exception of Buenos Aires, in the south).[232] In the Costa Rican Caribbean, pineapple planting has increased considerably, triggering numerous socio-environmental problems, mainly due to the use of pesticides, which have affected the health of the population and their livelihoods, as well as water sources and ecosystems, with massive deaths of fish, crustaceans and reptiles in the period between 1990 and 2017.[233]

The existence of canton-level data in the Human Development Index (HDI) makes it possible to observe the evolution of the HDI in those regions and cantons that are more oriented towards pineapple monoculture. The 2018 HDI data for these cantons are mostly below the national average.[234] The HDI for the period 2010 to 2018 in several of these cantons has not increased significantly, although it has at the national level.[235]

Figure 14 | Change in HDI from 2010 to 2018 in the cantons with the largest areas of pineapple production, and nationally.



Source: UCR & UNDP.

The cantons with a high surface area of banana, oil palm and pineapple production, such as Siquirres, Matina, Sarapiquí or Pococí, had some of the lowest HDI indices in the country in 2018. To understand how monoculture plantations affect human development and social cohesion, other historical, economic and social factors, such as inequality and gender gaps, must also be considered.

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3.2.d Lessons Learned and Policy Recommendations

In the short term

Environmental controls: elimination of toxic pesticides and increased environmental controls on their use and on compliance with water treatment by producer companies, accompanied by awareness raising of the harmful effects of pesticides and the promotion of alternatives.

Socio-environmental remediation and ecosystem restoration: environmental remediation, justice and reparation for families affected by water, land and air pollution.

Socio-environmental commitment: promote compliance with international socio-environmental standards regarding social, labor, union and environmental protection rights.

For example, the Socio-environmental Commission for Pineapple [*Comisión Socio Ambiental de la Piña* / COSAP] and the National Chamber of Pineapple Producers and Exporters [*Cámara Nacional de Productores y Exportadores de Piña* / CANAPEP] in Costa Rica have both publicly committed to comply with current environmental and social legislation.[236]

In addition, within the framework of its Green Commodities Programme, UNDP is supporting National Commodity Platforms, the aim of which is to bring together and coordinate the public and private sector in promoting sustainable production at the country level and to define sustainability priorities and policies for selected commodities as a first step towards creating a National Action Plan.[237,238]

Food security and curbing the expansion of monocultures: reintroduce vegetable crops in countries to ensure food security. This requires rethinking large-scale export-oriented monoculture production as an agricultural basis and returning part of the area under cultivation to staple crops such as rice, corn, wheat or beans. Indigenous peoples in their territories have, over the centuries, developed seed exchanges, implemented ancestral farming practices and techniques and more resilient cropping systems.[239] Traditional corn, bean or coffee crops are not only more environmentally sustainable but are also of enormous social and cultural value.[240,241]

Costa Rica successfully introduced the legal concept of moratoria to prevent new pineapple plantations, slowing and decreasing pineapple monoculture from 2013 to 2017. Recently, however, these moratoria have in many cases been removed. This legal recourse is not available in the struggle for land tenure and against banana expansion.[242]

Protection of community organizations and environmental defenders: increase social and economic support to social, community, peasant, women's, and indigenous organizations that have been affected by monocultures. Decriminalize protests and provide *de facto* and *de jure* protection for small producers and environmental defenders.

Civic and political awareness: awareness raising and educational campaigns targeting public administrations, the private and public sector on the real benefits and harms of the current system of large-scale oil palm and pineapple monoculture.

Roundtables: there are numerous initiatives at international level aimed at promoting more socially and environmentally sustainable agricultural production in compliance with international standards.

The UNDP Green Commodities Programme, the mission of which is to improve the national economic, social and environmental performance of agricultural products,[243] supports the Roundtable on Sustainable Palm Oil (RSPO) initiative, established in 2004, which promotes sustainable palm oil production through cooperation in the supply chain and the promotion of dialogue between different stakeholders. The RSPO has developed a set of principles and criteria to guide sustainable palm oil production and has developed a set of performance indicators, a compliance assessment guide and assessment tools for use by palm oil-producing countries.[244]

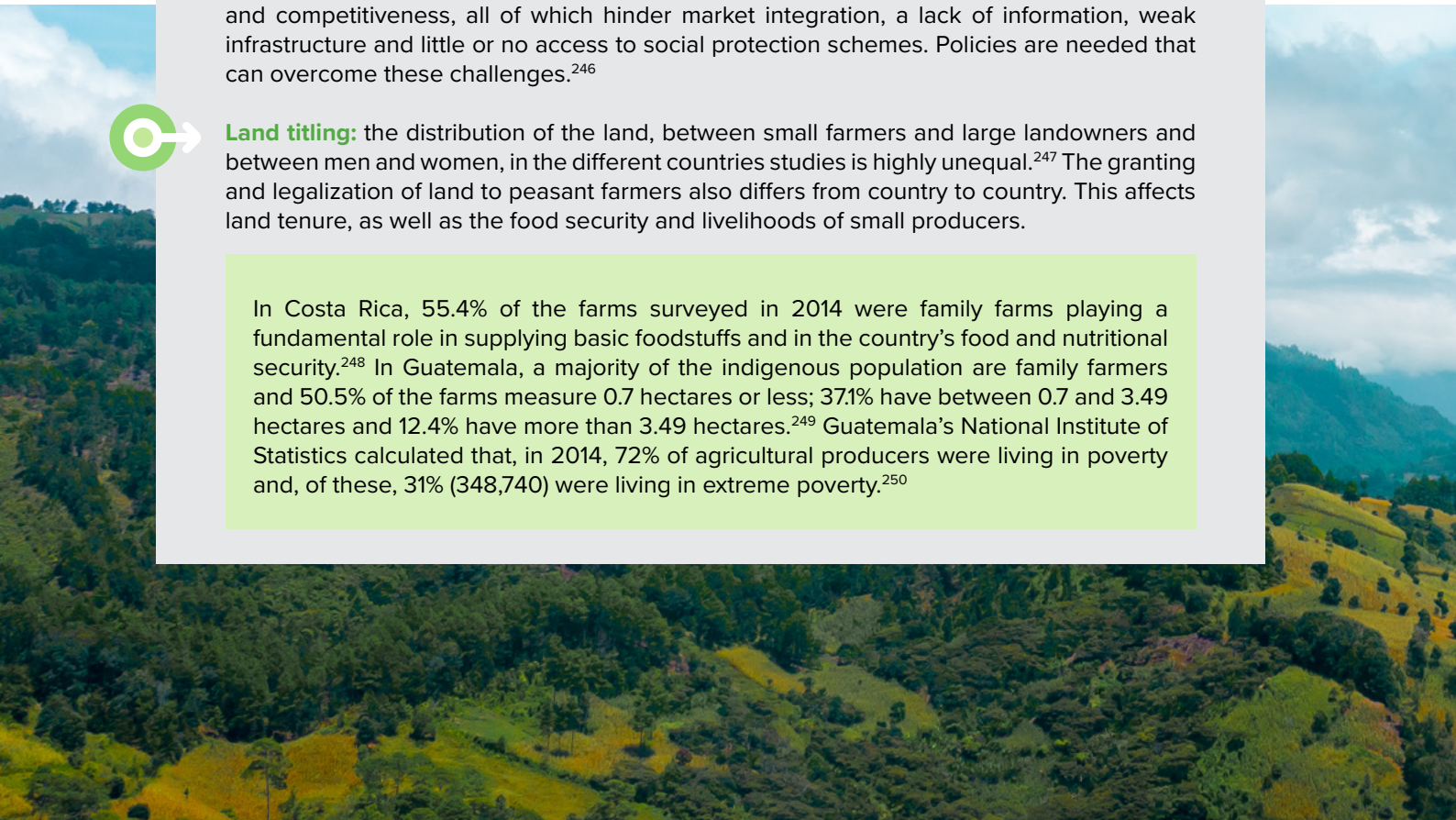
Within the context of the GEF program, Honduras is developing a process aimed at certifying small-scale palm growers in order to incorporate them into the palm oil value chain.[245] RSPO needs to be accompanied by additional commitments to ensure the sustainability of production.

In the medium to long term

Family farming: the UN General Assembly adopted the Decade of Family Farming 2019-2028, highlighting the important role played by small family farmers in ensuring food and nutrition security, improving livelihoods, better managing natural resources, protecting the environment and achieving sustainable and inclusive development. Family farming is essential for sustainable development. It faces multiple challenges, however, such as limited access to factors of production, credit and support services, low production volumes and competitiveness, all of which hinder market integration, a lack of information, weak infrastructure and little or no access to social protection schemes. Policies are needed that can overcome these challenges.[246]

Land titling: the distribution of the land, between small farmers and large landowners and between men and women, in the different countries studies is highly unequal.[247] The granting and legalization of land to peasant farmers also differs from country to country. This affects land tenure, as well as the food security and livelihoods of small producers.

In Costa Rica, 55.4% of the farms surveyed in 2014 were family farms playing a fundamental role in supplying basic foodstuffs and in the country's food and nutritional security.[248] In Guatemala, a majority of the indigenous population are family farmers and 50.5% of the farms measure 0.7 hectares or less; 37.1% have between 0.7 and 3.49 hectares and 12.4% have more than 3.49 hectares.[249] Guatemala's National Institute of Statistics calculated that, in 2014, 72% of agricultural producers were living in poverty and, of these, 31% (348,740) were living in extreme poverty.[250]



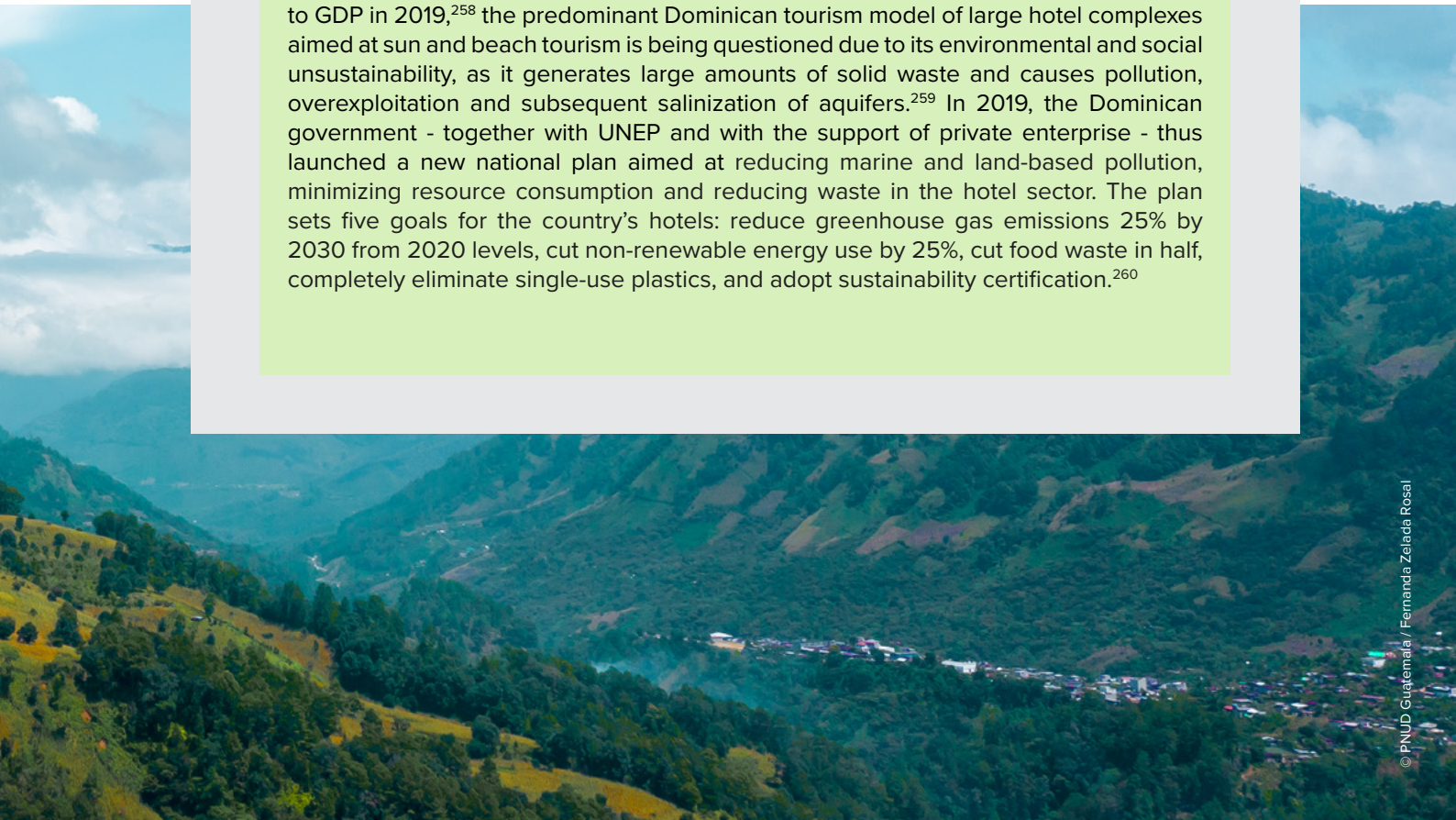
Agroecology: implementation of the 2030 Agenda requires a transition to a more inclusive and sustainable agriculture, one that strengthens rural livelihoods and ensures food security for all while requiring fewer inputs and increasing resilience to climate change. Through their Green Commodities Programme, FAO and UNDP are proposing agroecology as a paradigm shift in agriculture and an alternative to the large-scale monoculture model.[251] This sustainable agriculture is based on a better understanding of the agricultural context, which requires studying the relationships between agricultural, environmental and social systems. In addition, agroecology takes into account many aspects of traditional knowledge systems, popular biological taxonomic systems, and the use of low-input technologies. This agricultural model can be adapted to an agricultural strategy appropriate to the needs, preferences and resources of specific groups of farmers and regional agro-ecosystems.[252]

Promoting biodiversity through sustainable tourism: in 2015, the UN General Assembly approved the designation of 2017 as the International Year of Sustainable Tourism for Development in order to foster a better understanding among peoples and raise awareness of the rich heritage of different civilizations and the inherent values of their diverse cultures. SICA is promoting sustainable tourism in Central America and working on regional tourism through the Secretariat for Central American Tourism Integration [*Secretaría de Integración Turística Centroamericana* / SITCA] under the regional slogan "Central America, so small, so big" which, through the Central American Tourism Agency, is promoting the development of a multi-destination tourism product.[253]

Belize is committed to this development model.[254] Tourism's contribution to Gross Domestic Product increased from 12.6% in 1995 to 26% in 2018.[255] Sustainable tourism in Belize demands exceptional care of its natural and cultural heritage, such as its coral reefs, pristine beaches and tropical rainforests. The country recently approved a National Sustainable Tourism Master Plan 2012-2030.[256]

Costa Rica is also promoting sustainable tourism, which contributes 6.3% to its national GDP, rising to 8.2% when direct and indirect contributions are included (2016 data).[257]

On the other hand, despite the fact that tourism revenues in the Dominican Republic are the highest in the entire Central American and Caribbean region and contributed 8.4% to GDP in 2019,[258] the predominant Dominican tourism model of large hotel complexes aimed at sun and beach tourism is being questioned due to its environmental and social unsustainability, as it generates large amounts of solid waste and causes pollution, overexploitation and subsequent salinization of aquifers.[259] In 2019, the Dominican government - together with UNEP and with the support of private enterprise - thus launched a new national plan aimed at reducing marine and land-based pollution, minimizing resource consumption and reducing waste in the hotel sector. The plan sets five goals for the country's hotels: reduce greenhouse gas emissions 25% by 2030 from 2020 levels, cut non-renewable energy use by 25%, cut food waste in half, completely eliminate single-use plastics, and adopt sustainability certification.[260]

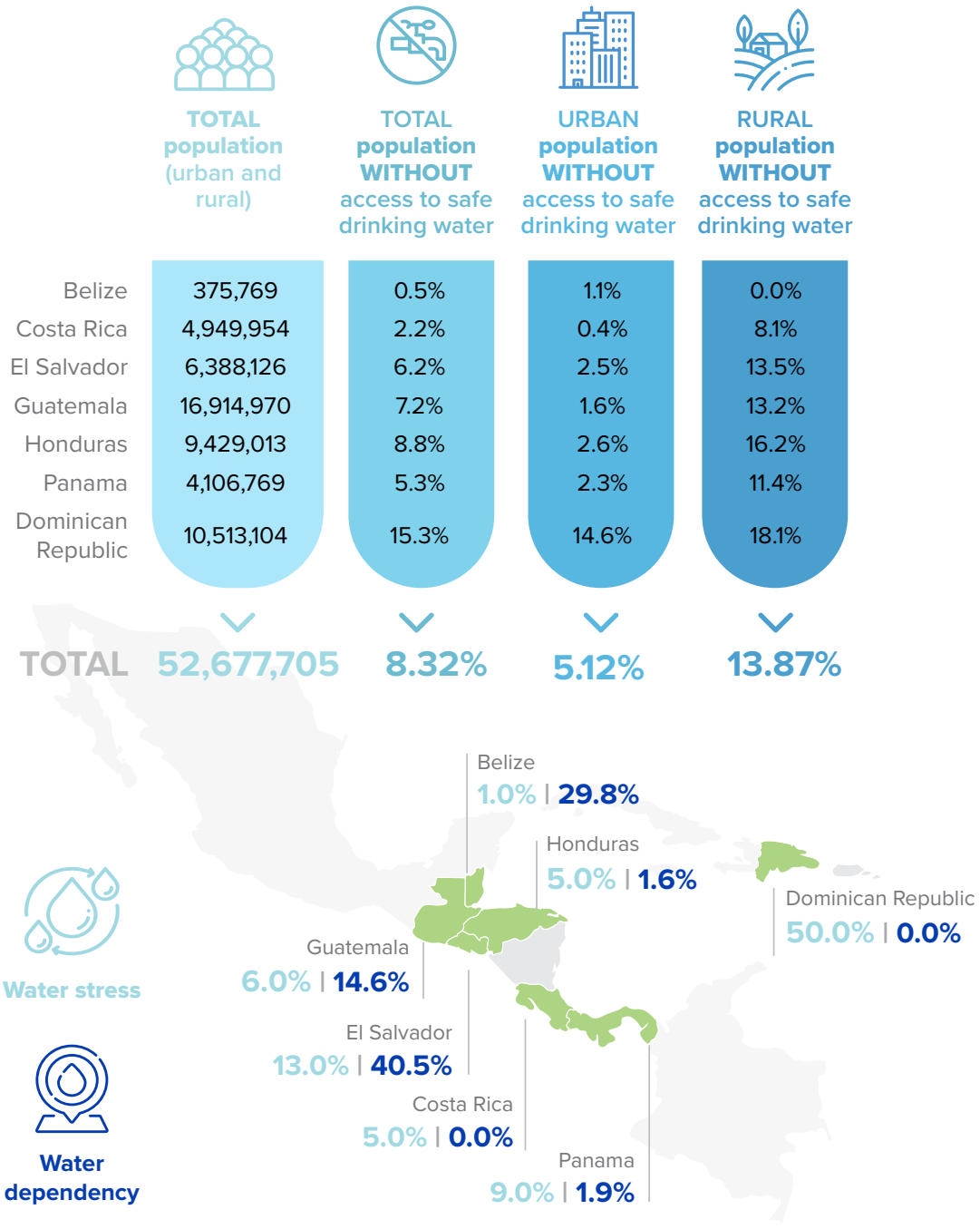


3.3 MANAGEMENT OF WATER RESOURCES

3.3.a Context

The sustainable management of water resources benefits nature, economic and social development and the well-being of society, ultimately strengthening its socio-environmental cohesion.

Figure 14 | Percentage of population without safe drinking water.



Source: Prepared by the author on the basis of FAO AQUASTAT data

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Central America and the Dominican Republic are characterized by an abundance of water resources. However, these resources are unevenly distributed across their territories. According to the latest data from 2017, more than 4.3 million people - 8.32% of the population - do not have access to safe drinking water in the seven study countries.[261] The greatest water deficit can be seen in rural areas, where more than 13% of the population does not have access to safe drinking water, and it is precisely in these rural areas where mining, hydroelectric and agro-industrial projects are located.

Water stress, defined as the water extracted by all sectors as a proportion of available water resources, compromises sustainability and socio-environmental cohesion and limits economic and social development. Globally, water stress is 13%. While Central American countries have a value similar to or lower than the world average, the Dominican Republic has a water stress level of 50%.[262] Another important water indicator is the water dependency ratio, which expresses the percentage of total renewable water resources that originate from outside the country.[263] Water stress and water dependency can have negative consequences for economic development, food security and health, and can increase local and international competition, tensions, disputes and conflicts.[264]

In recent decades, the decline in water resources has been accelerating. In the last decade alone, available freshwater resources have decreased by more than 20% worldwide.[265] Several factors are contributing to this situation, such as disjointed land-use planning that prioritizes short-term profits, as well as many economic activities that result in environmental degradation and pollution, loss of ecosystems and biodiversity. Climate variations affect the quantity (e.g. droughts) and quality (e.g. floods and sewage overflows) of water resources and this, in turn, threatens the "*effective enjoyment of the human right to water and sanitation of potentially billions of people*".[266]

The scientific and academic community, together with international organizations, have been promoting efficient water management for several decades. There is a broad consensus around integrated water resources management that takes into account both current and future users, as demonstrated by the 193 countries that have signed up to the commitments of the 2030 Agenda.

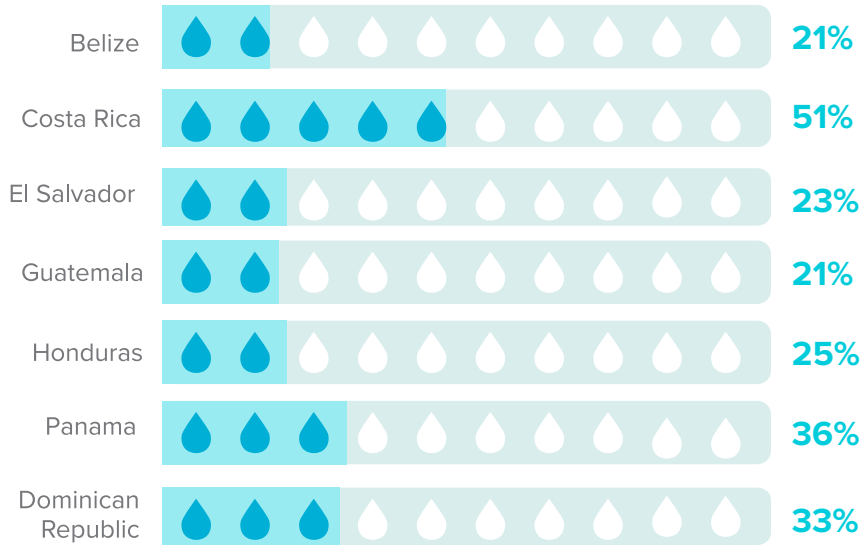
In the last decade alone, available freshwater resources have decreased by more than 20% worldwide.

3.3.b Intersection with SDGs

SDG 6 focuses exclusively on water resources and sanitation. Indicator 6.5.1, which measures the degree of integrated water resources management (IWRM), comprises four dimensions, which include: (1) IWRM policies, strategies, and legislation; (2) institutional participation and coordination capacity at the local, regional, and international levels; (3) management instruments for monitoring and managing water resources and ecosystems; and (4) revenue collection systems and budgets for water resources infrastructure and management.[267]

The Latin American and the Caribbean region has the lowest IWRM implementation rates compared to other regions of the world.[268] With regard to the study area specifically, Costa Rica and the Dominican Republic are notable as the countries with the highest degree of IWRM implementation.

Figure 15 | SDG Indicator 6.5.1 Degree of IWRM in 2018.

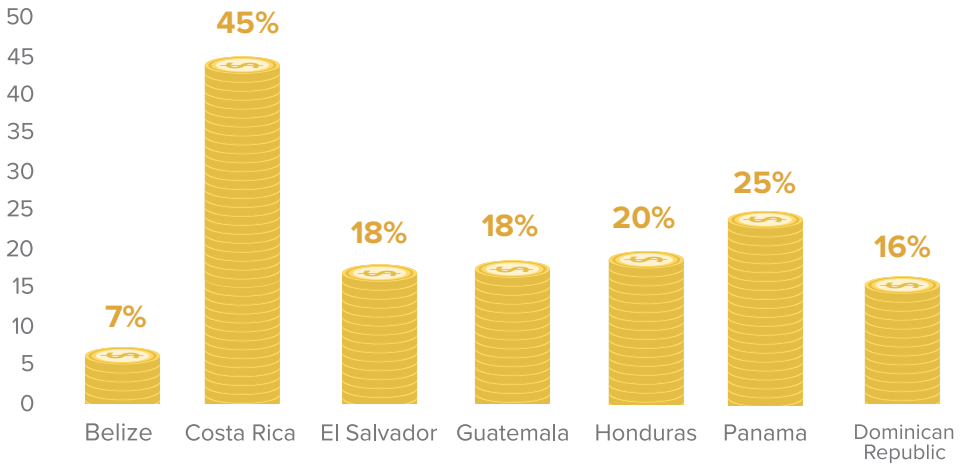


Source: UN Stats.

Financing is a critical component of efficient water resources management since it enables, for example, the construction and maintenance of infrastructure as well as the training of professionals in the sector. All seven countries have very low percentage values for financing. The exception is Costa Rica, with a value of 45%, while Belize stood at 7% in 2018.

Financing is not the only challenge; there is also the legal and institutional framework. While many (although not all) countries have specific legislation and some structures for watershed management (not Guatemala[269] or El Salvador[270]), there are gaps in technical and institutional capacities.[271] In terms of civil society and private sector participation, although

Figure 16 | SDG Indicator 6.5.1 Degree of financing in 2020.



Source: UN Stats.

the countries' water legislation is creating space for this participation, there is evidence that, due to the need for private financing, civil society participation in the management of water resources is insufficient.[272]

Hydroelectric power

Energy generation is strongly linked to water resources. Hydroelectric power is an essential renewable energy source and generator of electricity in Central America, and dams also provide a reservoir of water for irrigation or human supply. Hydroelectric power in Central America accounts for 50% of net electricity generation and 42% of installed generation capacity, with different values depending on the country.[273,274]

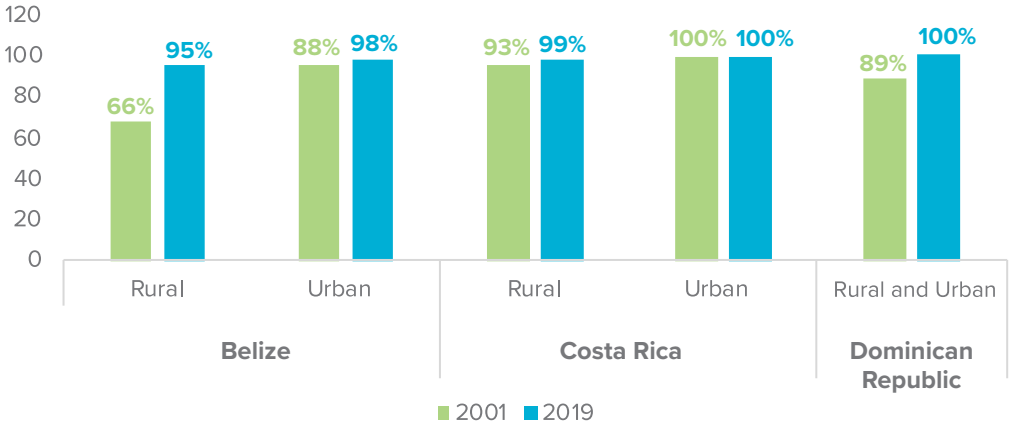
The commitment to hydroelectric energy in Central America is determined by several factors, primarily the scarce availability of fossil fuel sources, the abundance of rivers and favorable orography. Energy demand is on the rise in the subregion due to population growth, increased electricity consumption, and greater rural electrification.[275,276] In Costa Rica, some 30 hydroelectric plants were built in the 1990s.[277] In 2020, hydropower accounted for 73% of net electricity generation and 62% of installed capacity.[278] A year earlier, the country managed to supply electricity based on renewable energy (mainly hydroelectric) for 271 days and the goal is that, by 2030, 100% of the energy matrix will come from renewable sources. Other Central American countries have also invested in the construction of hydroelectric plants. In 2019, Guatemala and Honduras added 58 MW and 7.6 MW of power capacity, respectively.[279] In the case of Guatemala, the share of energy from renewable resources represented 58% of total electricity generation in 2016,[280] and hydroelectric plants in 2019 contributed 41% of the total renewable energy

Hydroelectric power in Central America accounts for **50%** of net electricity generation and **42%** of installed generation capacity.

produced in the country.[281] In the Dominican Republic, 15% of the energy is of renewable origin, of which 9% comes from hydroelectric plants. The country has plans to add 5 MW of power from hydroelectric plants and wind and solar power generation plants by 2030.[282] In the case of El Salvador, a recent strategic plan identified that the country has the potential to add 682 MW of renewable energy by 2026.[283]

These investments in hydropower are expected to contribute to reducing the energy access gaps in these countries while increasing the renewable energy matrix and thus advancing towards achieving the 2030 Agenda.

Figure 17 | SDG Indicator 7.1.1 Proportion of population with access to electricity.



N.B.: There are no data for El Salvador, Guatemala, Honduras or Panama.

Source: UN Stats.

Figure 18 | SDG Indicator 7.2.1 Renewable energy share in the total final energy consumption (%) from 2000 to 2017.

N.B.: Estimated data. These data need to be correlated with population growth and economic growth over the same period.

Source: UN Stats.

Hydroelectric megaprojects and transboundary waters

Large-scale hydropower generation requires the artificial manipulation of watercourses, and this has major environmental and social impacts that often transcend national borders. The management of transboundary water bodies is another important indicator of integrated water resources management. More specifically, SDG indicator 6.5.2 measures the proportion of transboundary basin area within a country covered by an operational arrangement for water cooperation. Only Costa Rica and Panama have some arrangement with other countries for coordinated management of transboundary water resources.[284]

Proper management of transboundary waters is particularly important in Central America as this region has 23 transboundary watercourses draining approximately 40% of the territory, plus 18 transboundary aquifers.[285] The Dominican Republic shares 4 watersheds and 4 aquifers with neighboring Haiti. None of the seven countries has signed the international treaties on transboundary waters: the Convention on the Protection and Use of Transboundary Watercourses and International Lakes and the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses (see Figure 2). There are, however, local cooperation initiatives in the Lempa River basin, where 26 municipalities from El Salvador, Guatemala and Honduras are cooperating for the management of transboundary water resources.[286] Coordinated and sustainable management of transboundary waters is essential for national and regional development and facilitates peaceful coexistence among members of the same country and among neighboring countries.

Central America has **23** transboundary watercourses draining approximately **40%** of the territory, plus **18** transboundary aquifers.

While hydroelectric projects play an important role in economic and social development, they have been linked to numerous negative environmental and social impacts that affect socio-environmental cohesion.[287] Several authors note that the social, cultural, economic and political impacts of large hydropower projects are often underestimated.[288,289,290,291]

Table 5 | Socio-environmental risks related to hydroelectric projects that have impacts on socio-environmental cohesion.*

Environmental

- Logging and deforestation[292]
- Modification of the natural courses of rivers and streams and impact on river flows[293]
- Alteration of ecosystems and biodiversity
- Impacts on aquatic organisms (e.g. fish)
- Transformations in land cover and productive land
- Change in natural and cultural landscapes
- Impacts on the level of the water table
- Methane gas emissions from dams in tropical environments contributing to global warming

Social

- Economic impacts and deterioration of livelihoods (e.g. of communities who rely on river fishing)
- Displacement and resettlement of communities
- Health impacts due to lack of access to water (e.g. resulting from loss of springs)
- Disappearance of livelihoods for those communities relying on agricultural activities in areas flooded by dams
- Food safety implications
- Lack of participation and marginalization of affected communities
- Impact on the transportation system of some communities that depend on natural river courses
- Differential impact on women and girls, who have to fetch water from more distant places, as women are often responsible for providing water for domestic consumption[294]
- Cultural and social harm to indigenous and ancestral populations, who have a cultural and social bond with water and their territories[295]
- Environmental injustice and disaffection with government when communities affected by hydroelectric projects do not receive electrification

* This table shows the potential socio-environmental risks identified based on bibliographic research. Not all risks apply to each country in the same way or to the same extent.

3.3.c Case studies

Guatemala

Numerous negative social and environmental effects have generated a great deal of opposition to the construction of large hydroelectric projects. In the last twenty years, 16 projects in Guatemala have been halted, primarily due to conflict.[296] Opposition often leads to conflict, violence and, on occasion, the murder of community leaders and environmental defenders, resulting in a serious deterioration in socio-environmental cohesion. The construction of megaprojects for energy transmission and generation which, over the last four decades, has focused on large hydroelectric projects, results in a vision of water resources as a strategic and economic factor in which private interests can come into play that displace the common interest,[297,298] further excluding socially and economically vulnerable groups. Disputes over and allegations of inadequate free, prior and informed consultation processes and human rights violations have been identified, which have resulted in numerous conflicts.[299,300]

El Salvador

The El Chaparral hydroelectric project, located in the Torola River basin in San Miguel department, originally planned to generate 232 GW by flooding 860 hectares of land. The project was fiercely opposed by the affected communities. Representatives of NGOs and the Catholic Church alleged that there had not been due consultation of the communities, who were growing multiple crops on the land to be flooded. In addition to community opposition, the project has been the subject of several legal proceedings. The Salvadoran government estimates that the delay will result in a tripling of the estimated project cost and expects the project to be completed in the next few years, more than a decade behind schedule.[301] According to local communities, some of the impacts suffered to date include areas being deforested, roads damaged by the passage of heavy machinery, pressure placed on and the deception of neighbors to accept the imposed conditions, families abandoning their land without any compensation, and the threat of the river's flow continuing to decrease if construction of the plant proceeds.[302]

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Honduras

There have also been conflicts related to several hydroelectric initiatives in Honduras. A little more than five years ago, on 2 March 2016, Berta Cáceres, indigenous environmentalist and feminist leader, was murdered for protesting against the construction of a hydroelectric dam in Río Blanco, in the north of the country.[303] In 2019, seven men were sentenced for their physical involvement in murdering Berta Cáceres. Lastly, on 5 July 2021, the Sentencing Court of Honduras unanimously found against the former executive president of the hydroelectric company DESA *(Empresa Desarrollos Energéticos SA)* hydroelectric company as the intellectual co-perpetrator of the murder of Berta Cáceres.[304] Despite this historic guilty verdict, the level of impunity for crimes against environmental defenders remains alarmingly high and, on a practical level, far from deterring potential crimes against environmental defenders, it deters environmental defenders themselves and their communities, who consider defense of the environment and human rights to be a high-risk activity.[305]

Figure 19 | **Berta Cáceres.** *In memoriam.*

Source: BBC Mundo.[306]

N.B.: The extent to which large hydropower projects in these countries have increased access to electricity for rural and urban populations over the last 20 years remains to be seen (see Figure 18). According to official UN data (UN Stats) available to 2019, there is no information reported on access to electricity in Guatemala, El Salvador, Honduras or Panama (see Figure 17).

3.3.d Lessons Learned and Policy Recommendations

In the short term

Free, prior and informed consultation: implement clear policies on free, prior and informed consultation, enabling real compliance with the provisions of the ILO Convention 169 and the UNDRIP.

Spaces for dialogue: establish units and offices specialized in conflict management and dialogue at the national level, as well as local delegations of the Ombudsman's Office.

In-depth studies of social and environmental impacts: conduct social and environmental impact assessments to ensure that hydropower projects incorporate a human rights approach and take into account, through participatory and multi-stakeholder processes, the socio-environmental impacts of hydropower projects. Environmental and social impact assessments should be public and shared with the communities affected by the projects.

Good practice guidelines: aware of the challenges and social pressures, the global hydropower sector recognizes the need to implement more socially responsible and transparent processes. In this regard, the International Hydropower Association developed several guides and good practice documents for the sector in 2020, including good practices on resettlement. There are also technical guides on flow management, erosion and sedimentation, sustainability assessment protocols and recommendations for post-pandemic economic recovery.[307]

As part of the 2013 environmental licensing process, Honduras published a good environmental practices guide geared towards small hydropower projects. The guide covers mostly environmental and socio-economic issues and maintains a "social approach" understood as a "*continuous relationship between the developer, the population and local authorities in the project's area of influence*".[308] Previously, in 2010, the country published a methodological guide aimed at developing a social strategy for energy generation projects using hydroelectric sources.

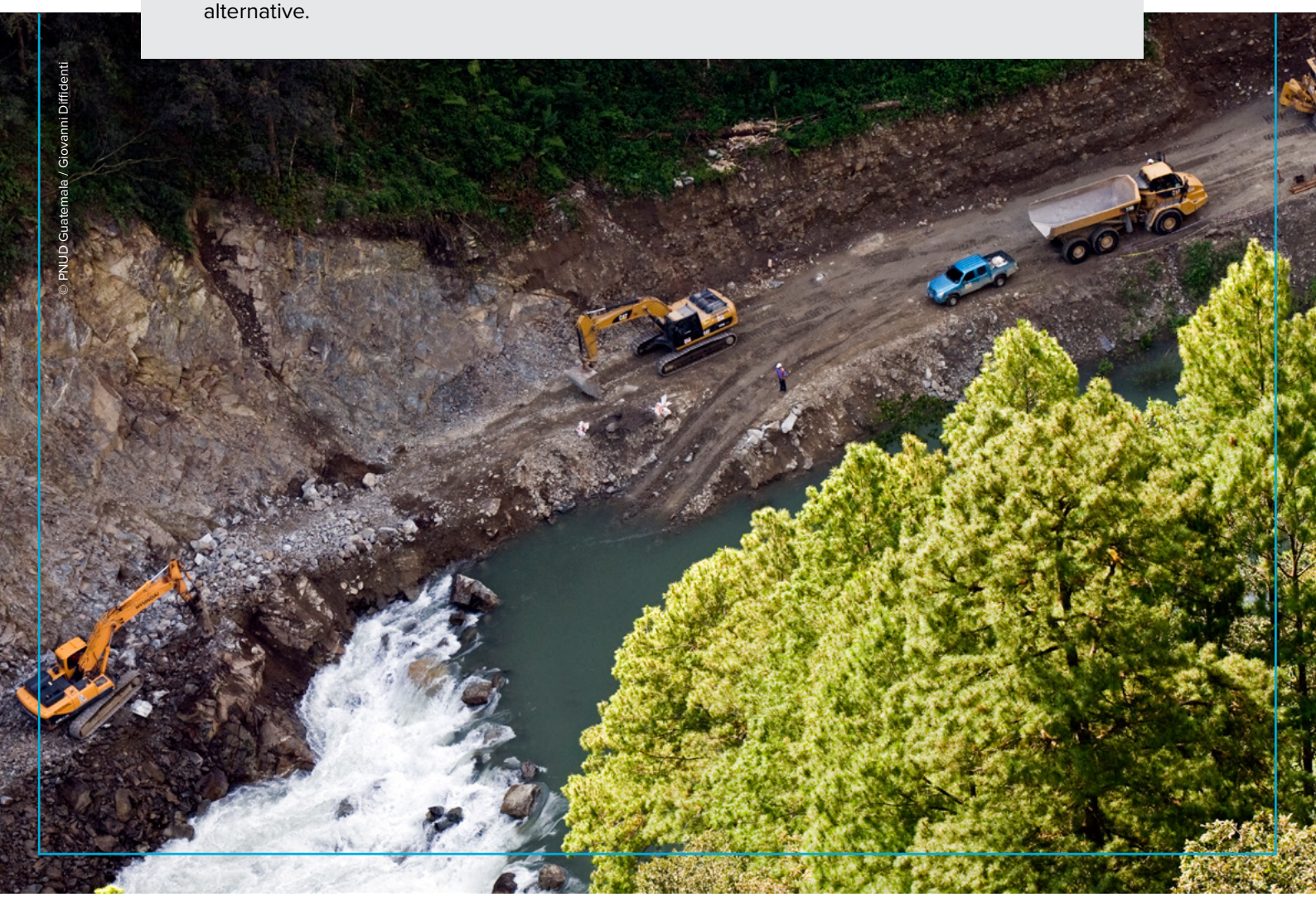
In Guatemala, the hydroelectric sector, through the Association of Renewable Energy Generators [*Asociación de Generadores con Energía Renovable*], published a report in 2018 detailing cases of good practice and social responsibility among hydroelectric companies with regard to issues of education, health, reforestation and forest conservation, food security and local economic development.[309]

Equitable distribution of direct and indirect benefits: the generation of electrical energy, as well as the benefits obtained from its exploitation and/or export, should first and foremost benefit the communities most affected by hydropower projects. Electrification of the rural communities involved should therefore be included in hydroelectric development plans.

In the medium to long term

Regional vision for the management of transboundary water resources: develop and implement a vision for generating hydroelectric power in the subregion that considers the socio-environmental impacts and benefits of the activity regionally, taking into account aspects related to biodiversity, the livelihoods of affected populations, and the long-term management of transboundary water resources.

Small-scale hydropower: In 2000, the World Commission on Dams, an independent, international body composed of multilateral agencies, addressed a number of controversial aspects of large dams and concluded that the negative effects of large dams far outweigh the positive.[310] Many dams built in the early 20th century in the United States are now being dismantled.[311] The construction of small dams for power generation and water storage for agricultural, industrial or domestic use is a more environmentally and socially sustainable alternative.



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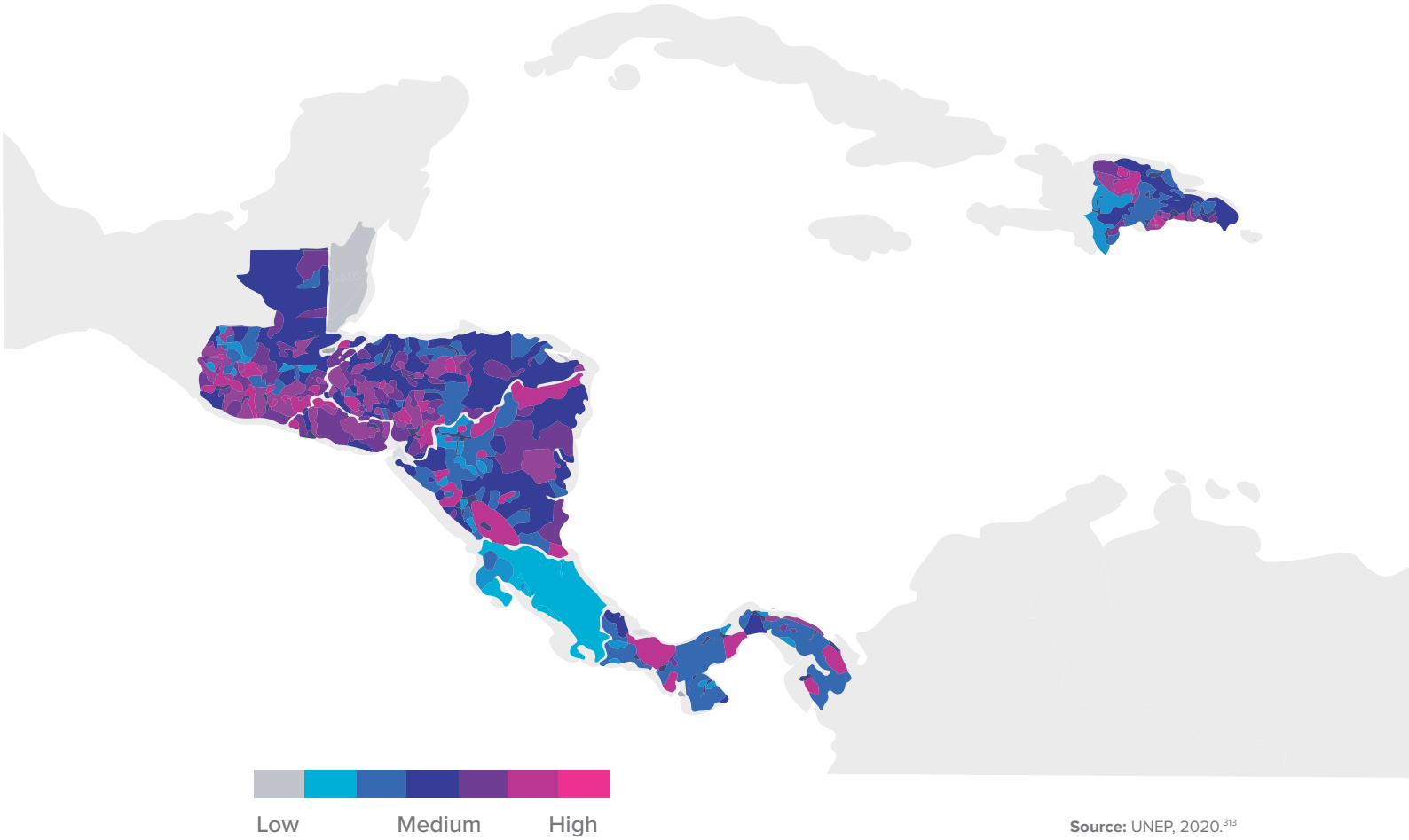
3.4 CLIMATE CHANGE

3.4.a. Context

Central America and the Dominican Republic are particularly vulnerable to climate change, suffering from droughts, tropical storms and hurricanes. The Germanwatch Global Climate Risk Index presents the impacts of extreme weather events and associated socio-economic effects with an analysis of data compilations, and frequently includes several Central American countries and the Dominican Republic among those countries most affected.[312] Natural disasters resulting from climate change are becoming more frequent and more severe in these countries, which means there is less resilience for recovery between events and a greater likelihood of a decline in the social cohesion of the most affected populations. Climatic events differ greatly from the Pacific to the Caribbean coasts, being drier on the Pacific side and wetter on the Caribbean.

Figure 20 | Climate vulnerability in the watersheds of six Central American countries and the Dominican Republic (the map does not show data for Belize).



Source: UNEP, 2020.[313]

Central America's Dry Corridor

The term Dry Corridor refers to an ecologically-based dry climatic phenomenon defined by a combination of ecosystems in the tropical dry forest ecoregion of Central America. This begins in Chiapas, Mexico, and encompasses the lowland areas of the Pacific side and a large part of the central premontane region (0 to 800 meters above sea level) of Guatemala, El Salvador, Honduras, Nicaragua and part of Costa Rica (up to Guanacaste). In Honduras, this includes areas near the Caribbean coast.[314] The Pacific side is home to the most populated cities in Central America, with 70% of the population; they use, however, only 30% of the available water.[315]

Drought has a great impact on agriculture / livestock and on water resources, especially mountain aquifers, which have a lower storage volume.

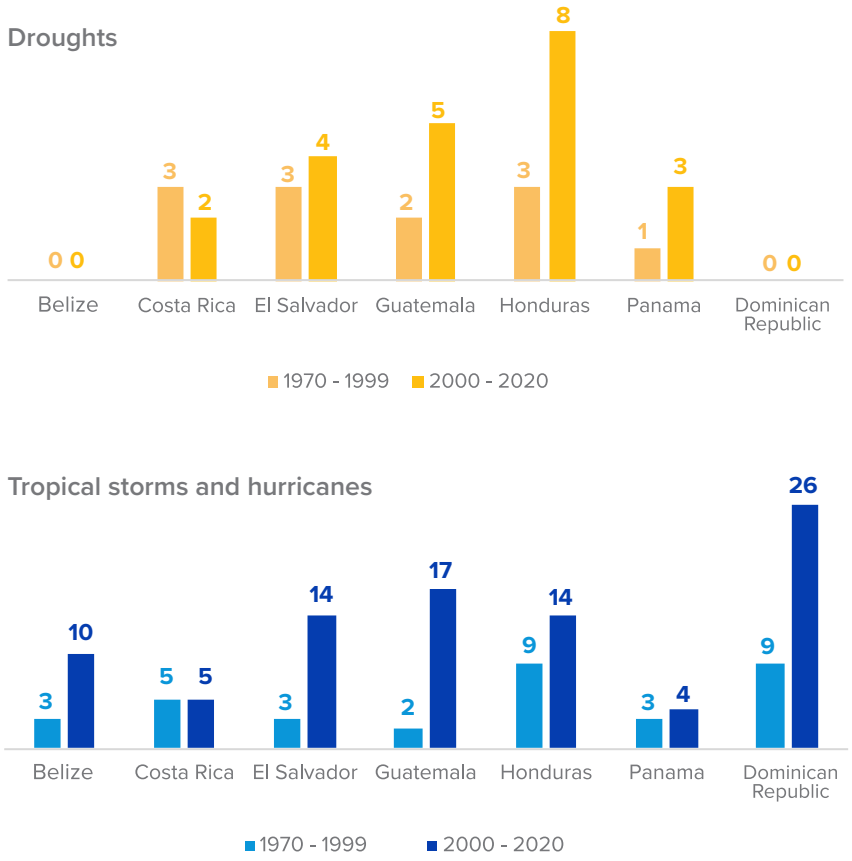
Generally, drought in Central America is cyclical and closely related to the El Niño - Southern Oscillation (ENSO) period. According to the Central American Commission on Environment and Development [*Comisión Centroamericana de Ambiente y Desarrollo*], there have been some 10 El Niño events in the last 60 years.[316] Drought has a great impact on agriculture / livestock and on water resources, especially mountain aquifers, which have a lower storage volume. Many of the hydrological effects have been caused by inadequate watershed management.[317] Dry Corridor areas severely affected, i.e., with low rainfall (800-1,200 mm/year), account for 11.8% of the area of Guatemala (54 municipalities), 4% of El Salvador (25 municipalities), 3.9% of Honduras (33 municipalities), and 11.5% of Nicaragua (28 municipalities).[318] Of the estimated 1.9 million small-scale basic grain producers in Central America, half are located in the Dry Corridor. These are subsistence farmers who harvest and consume the food they grow, mainly corn and beans, and barely have the resources to cope with extreme weather events. If a crop fails, they do not have enough reserves to eat or sell to survive until the next harvest. Once their food reserves are depleted, families have to resort to selling their tools or animals to buy food and, in the most severe cases, they are left with no alternative but starvation or migration.[319]

Caribbean slope in Central America

More than **80%** of the Central American territory is exposed to landslides caused by rainfall.

In contrast to the Dry Corridor, the Caribbean Slope is characterized by high rainfall and a propensity to tropical storms. Like the Dry Corridor, the effects of climate change are being felt in this Caribbean area with catastrophic consequences, both human and material. Torrential rains, floods, overflowing rivers and landslides caused by tropical storms and hurricanes are leaving rural communities, many of them indigenous, isolated for days, and making humanitarian assistance difficult. More than 80% of the Central American territory is exposed to landslides caused by rainfall.[320] Floods are considered one of the costliest disasters due to the extent of the damage, ranging from loss of life, health impacts (e.g., due to stagnant water that enables the spread of diseases), direct losses of material assets, including housing and belongings, as well as the damage to ecological and productive systems in all economic sectors.[321]

Figure 21 & 22 | Number of tropical storms, hurricanes and droughts over the periods 1970-1999 and 2000-2020 in the seven study countries.



Source: Author's own elaboration based on EM-DAT data.[327]

Dominican Republic

Depending on the area, both dry and wet phenomena occur in the Dominican Republic. Along with neighboring Haiti, the country lies on the hurricane path and both are the most hurricane-prone islands in the Caribbean.[322] According to analyses by the National Meteorological Office [*Oficina Nacional de Meteorología*] and experts from the Water and Humid Tropics Centre for Latin America and the Caribbean [*Centro del Agua y Trópico Húmedo para América Latina y el Caribe*], there has been a 20-30% increase in the frequency of extreme intense rainfall events between May and October over the last two decades. Total annual precipitation is expected to decrease by 15% by 2050 to reach 17% by 2070, compared to historical values from the 1961-1990 period.[323] It is predicted that the dry season (December-April) could intensify yet more by 2050 and then 2070.[324] According to climate projections, temperatures will rise by 3-3.5°C by the end of the century with an intermediate scenario of emissions reductions, and by 6-7°C if the current trajectory is maintained.[325] The sectors identified as most vulnerable are water for human consumption, energy generation (hydroelectric), protected natural areas, human settlements, and tourism. The most vulnerable people in the country are those living in precarious dwellings made of wood, palm board, palm fiber, wooden slats, zinc and other materials.[326]

International agreements, regional and national policies

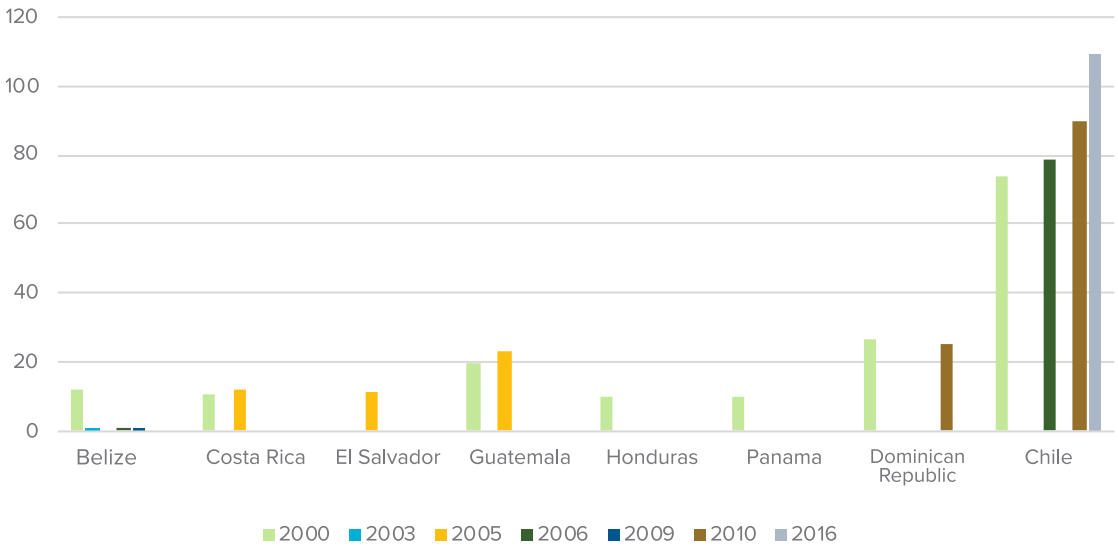
Nationally-Determined Contributions (NDCs) are a key part of the Paris Agreement for the long-term fight against climate change. NDCs set out each country's efforts to reduce national emissions and adapt to the effects of climate change.[328,329]

Table 6 | NDC by country.

Belize	First NDC	4/20/2020	Update	09/01/2021
Costa Rica	First NDC	10/13/2016	Update	12/11/2020
El Salvador	First NDC	3/27/2017		
Guatemala	First NDC	1/25/2017		
Honduras	First NDC	9/21/2016	Update	05/19/2021
Panama	First NDC	4/18/2016	Update	12/28/2020
Dominican Republic	First NDC	9/21/2017	Update	12/29/2020

Source: NDC Registry.

Figure 23 | **SDG Indicator 13.2.2** Total greenhouse gas emissions in the 7 study countries. Chile, an OECD member country in the Latin America and Caribbean Region with a population similar to that of Guatemala, has been given for comparative purposes.



N.B.: Central America and the Dominican Republic have very low levels of greenhouse gas emissions compared to OECD countries. However, they suffer the effects of climate change to a much higher degree.

Source: UN Stats.

At regional level, SICA and the World Bank have developed catastrophic risk insurance called the Caribbean Catastrophic Risk Insurance Facility (CCRIF). The purpose of this instrument is to strengthen the capacity of the region's ministries of finance to promote disaster insurance and risk financing strategies.[330] In addition, SICA's Coordination Centre for the Prevention of Natural Disasters in Central America [*Centro de Coordinación para la Prevención de los Desastres Naturales en América Central*] is heading up the implementation of a Regional Mechanism for Humanitarian Disaster Assistance and the Central American Procedure for Facilitating the Overland Transit of Relief Consignments.[331]

3.4.b. Intersection with SDGs

Climate change has a greater impact on the most vulnerable populations, whose livelihoods are more dependent on nature, exacerbating pre-existing socio-economic inequalities. The climatic effects of global warming are thus more devastating for small farmers, single mothers, children under five years of age, indigenous and Afro-descendant populations, migrants, people with disabilities and people with fewer resources. For example, it is estimated that women and children are 14 times more likely than men to die in a disaster.[332]

Table 7 | Socio-environmental risks resulting from climate change that have effects on socio-environmental cohesion.

Environmental

- Rising temperatures and changes in weather patterns
- Loss of terrestrial biodiversity
- More frequent and severe droughts, fires and loss of crops and livestock
- More frequent and severe flooding and loss of productive systems
- Landslides
- Loss of forest mass due to hurricanes
- Ocean acidification and coral bleaching causing ecosystemic damage to marine flora and fauna
- Sea level rise
- Salinization of aquifers due to sea level rise
- Changes in ocean currents affecting fish stocks

Social

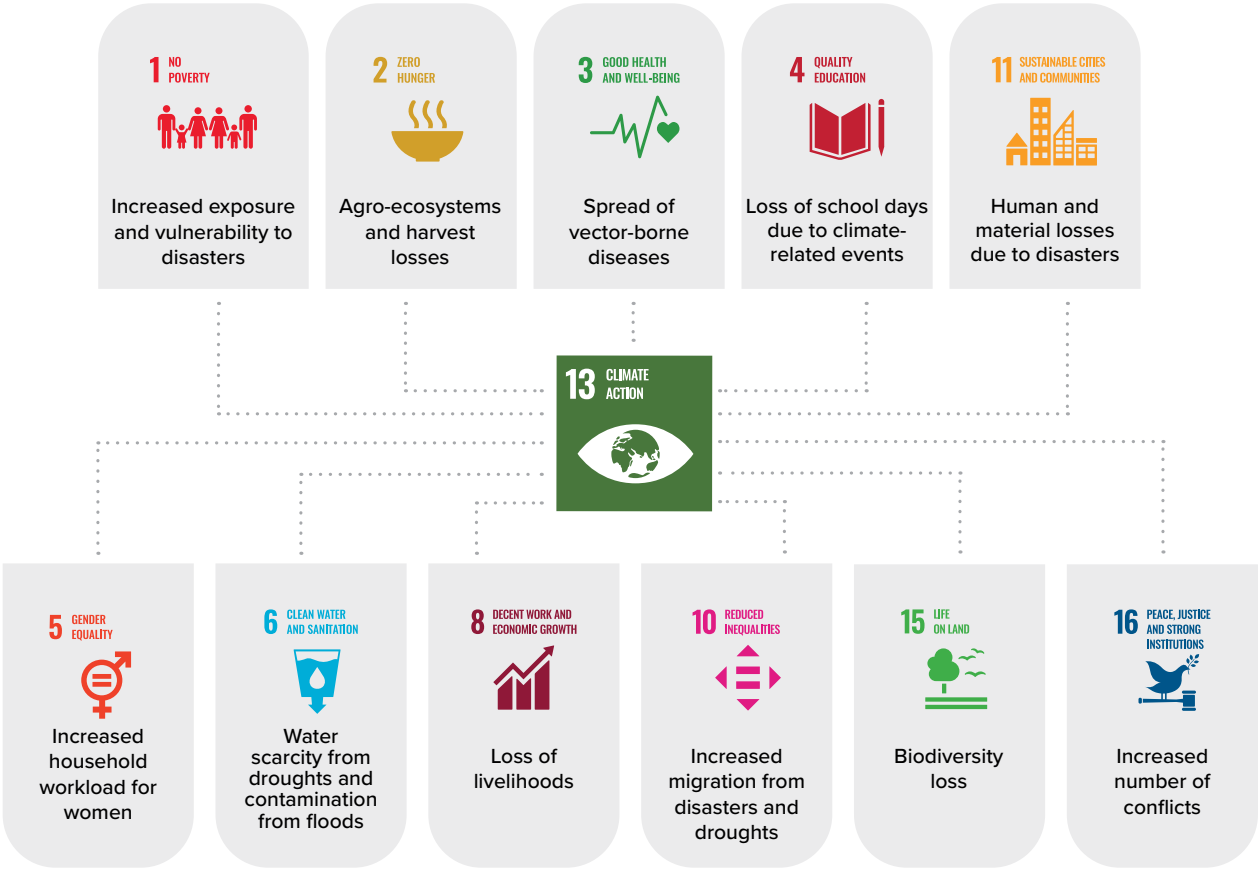
- Famine and food insecurity
- Increased difficulty in accessing water for women and girls (traditionally responsible for fetching water)
- Loss of livelihoods: agriculture, livestock, fishing, etc.
- Loss of territories and natural, cultural and spiritual heritage
- Loss of school days due to disasters
- Death, diarrheal disease and vector-borne diseases due to flooding
- Loss and damage to infrastructure, housing and property due to tropical storms and hurricanes
- Displacement and migration of people
- Increased inequalities
- Increase in citizen insecurity and violence during the crisis, especially against women.

* This table shows the potential socio-environmental risks identified based on bibliographic research. Not all risks apply to each country in the same way or to the same extent.

The specific SDG that addresses climate change is SDG 13. There is insufficient data available in UN Stats for target 13.1 indicators on resilience and adaptive capacity to climate-related hazards and natural disasters. There are no data for indicator 13.1.1 on the number of deaths, missing persons or persons directly affected attributed to disasters, nor for indicator 13.1.3 on the proportion of local governments adopting local disaster risk reduction strategies. Only Costa Rica and Guatemala have reported strategies in line with indicator 13.1.2 on countries adopting national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030.[333]

Climate change in the study area affects most of the SDGs, and particularly the following:

Figure 24 | Relationship between SDG 13 Climate Action and other SDGs.

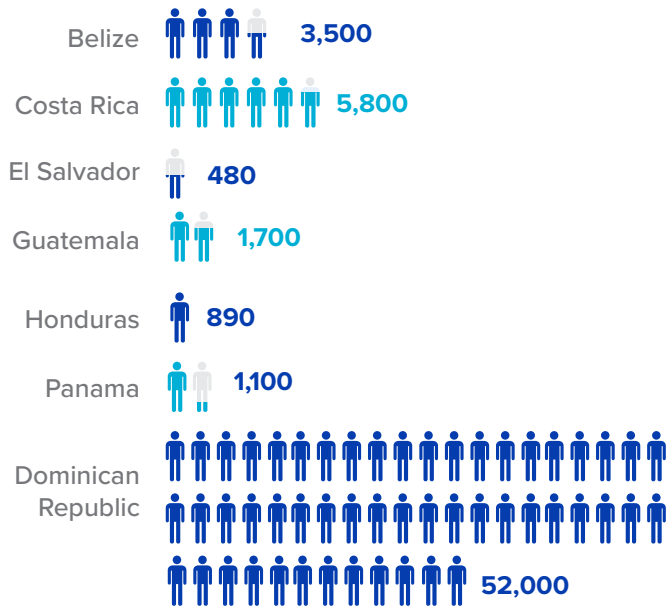


Source: Prepared by the author.

Human mobility caused by climate change

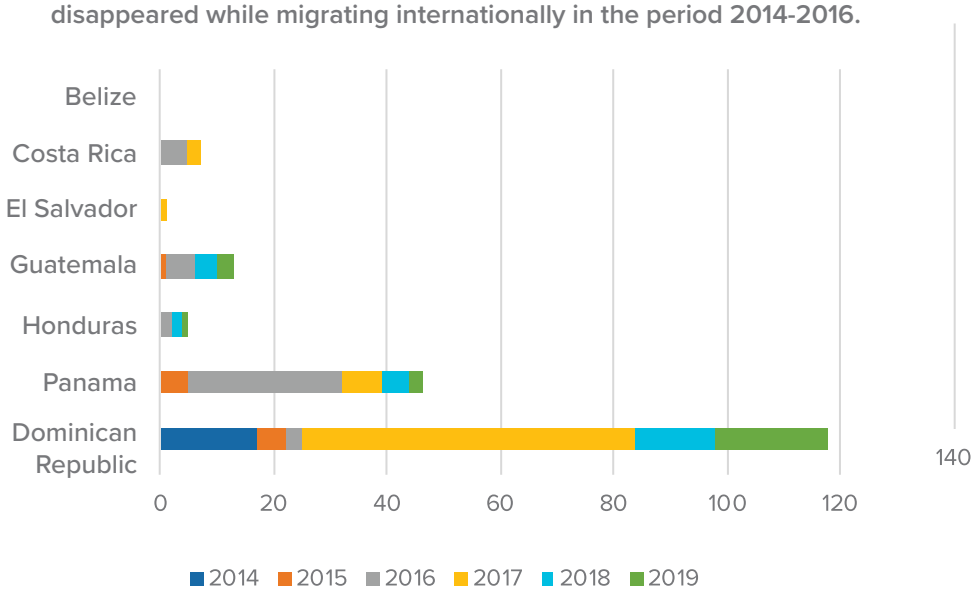
Human mobility caused by the effects of climate change is included in SDG 10.7. on orderly, safe, regular and responsible migration and mobility of people. Migrants and people displaced in the context of disasters include those displaced by disasters exacerbated by climate change, as well as other disasters caused by non-climatic effects such as earthquakes or volcanic eruptions, which are also frequent in the study area.

Figure 25 | Number of people displaced (internally and externally) by disasters in 2016.



Source: IOM, 2018 with data from 2017 Regional Conference on Migration.

Figure 26 | SDG Indicator 10.7.3. Estimate of the number of people who died or disappeared while migrating internationally in the period 2014-2016.



N.B.: The high number in the Dominican Republic is related to Hurricane Matthew in 2016.

Source: UN Stats.

Most displacements due to disaster in Central (and North) America occur within national borders, although there are numerous examples where disaster-affected people have migrated across their borders. For example, in 1998, Hurricane Mitch caused 300 Guatemalans to cross the border into Mexico and thousands of Salvadorans and Hondurans to migrate, mainly to Mexico, the United States and Canada.[334] International movements of disaster-displaced persons often follow established regular and irregular migration routes and can create tensions with neighboring countries, as was the case with the migrant caravans in 2020.[335]

Security and climate change

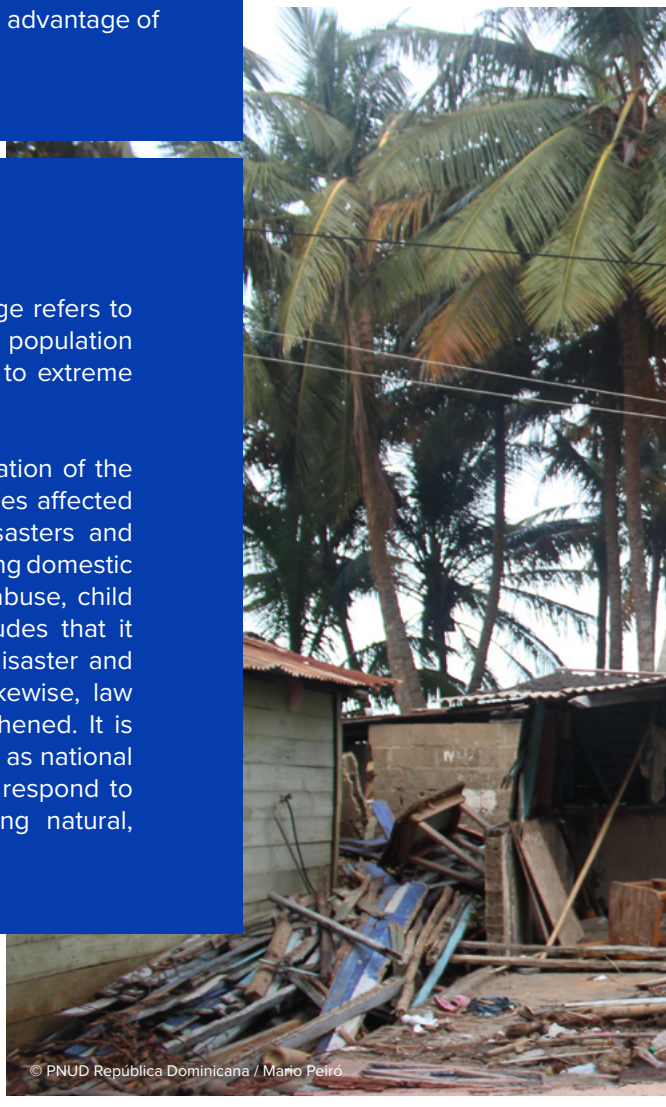
Climate change multiplies risks, exacerbates poverty and compromises human rights. It also causes increased insecurity and crime, especially when State support networks are absent. The relationship between inequality, radicalization and climate change is a fact in many parts of the world.[336]

Human mobility caused by climate events may drive crime and violence and the proliferation of criminal gangs that take advantage of the vulnerability of migrants.[337]

Differentiated victimization

Differentiated victimization in contexts of climate change refers to the condition of extreme vulnerability in which certain population groups find themselves in the face of violence linked to extreme climate events.[338]

A study conducted in 2015 by the International Federation of the Red Cross and the Red Crescent (IFRC) in nine countries affected by disasters found a direct relationship between disasters and increased violence against women in all its forms, including domestic violence, sexual violence, sexual exploitation, sexual abuse, child marriage and trafficking in women. The study concludes that it is essential that this hitherto invisible relationship in disaster and post-disaster contexts continue to be researched. Likewise, law enforcement during natural disasters must be strengthened. It is important that actors in the humanitarian sector, as well as national and local public authorities anticipate and prepare to respond to possible situations of violence against women during natural, climate-related and other types of disaster.[339]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3.4.c Recent cases

2016

Hurricane Matthew in October 2016 is considered to have been the most powerful storm in the Caribbean region since 2007. In the Dominican Republic, floods and landslides caused 41,500 people to be displaced,[340,341] although neighboring Haiti was hardest hit, with 175,000 people displaced from their homes in the wake of the hurricane, and close to 1,000 deaths.

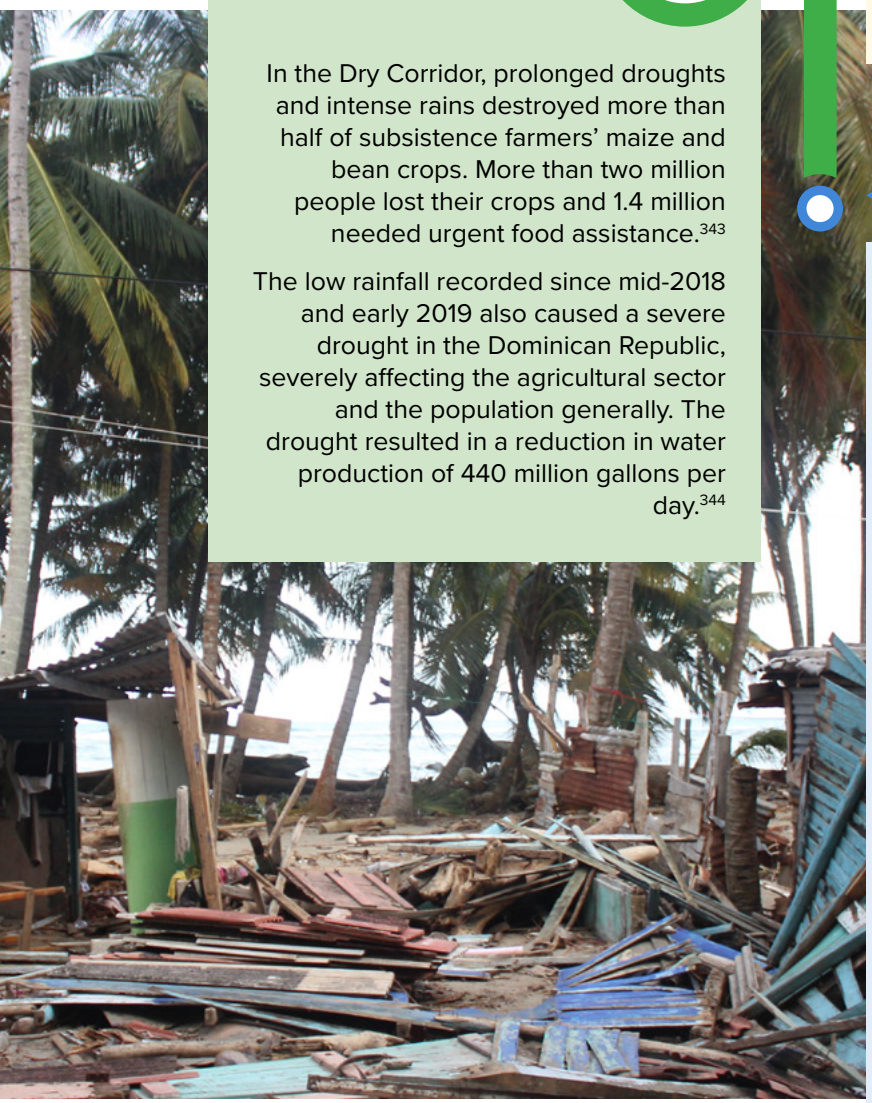
2018

Severe droughts caused by a delay in rainfall led to reduced agricultural production in the Dry Corridor, ruining up to 70% of subsistence farmers' *primera* (first season) crop, causing food and nutritional insecurity, hunger, and a need for assistance. Subsequent excessive rainfall damaged up to 50% of the *postrera* (second season) harvest.[342]

2019

In the Dry Corridor, prolonged droughts and intense rains destroyed more than half of subsistence farmers' maize and bean crops. More than two million people lost their crops and 1.4 million needed urgent food assistance.[343]

The low rainfall recorded since mid-2018 and early 2019 also caused a severe drought in the Dominican Republic, severely affecting the agricultural sector and the population generally. The drought resulted in a reduction in water production of 440 million gallons per day.[344]



2020

In November 2020, hurricanes ETA and later IOTA hit Central America within a period of less than two weeks, severely affecting the same area in Nicaragua and Honduras and other areas of Central America. Floods, overflowing rivers and landslides occurred. ETA affected almost 5 million people. Floods in Guatemala, Honduras and Nicaragua affected crops, putting even more pressure on subsistence farmers. In Guatemala, hurricane ETA affected 900,000 people and, in southern Belize, between 50,000 and 60,000 people were reported as being affected.[345] The situation in the shelters set up for people displaced by disasters in Guatemala and Honduras led to an increase in the number of COVID-19 cases. There were also reports of the presence of criminal groups, physical and gender violence, and separation of families in shelters in Honduras in the days and weeks following the hurricanes.[346,347]

3.4.d Lessons Learned and Policy Recommendations

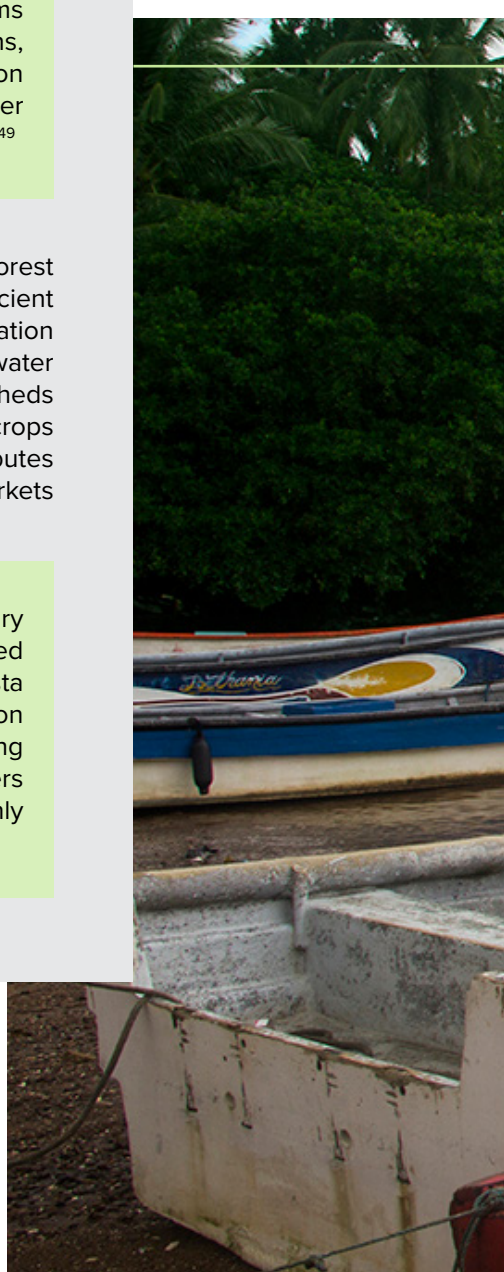
Climate change adaptation

Monitoring and early warning to increase livelihood resilience: strengthening monitoring and early warning systems increases the resilience of producers in the Dry Corridor. It is important to inform farmers in advance of predicted weather events so that they can adjust their crops to the delayed rainy season. In this way, they will be able to take steps in advance such as replacing water-intensive crops with others that are less water-hungry, such as sorghum, maize and tubers, or planting short-cycle early varieties with the first rains in the driest areas. Good agricultural practices also increase household resilience and adaptation, strengthen livelihoods and prevent climate events from compromising food security and forcing families to migrate.[348]

FAO is working on the implementation of a regional program to strengthen disaster risk resilience in the Dry Corridor. The program includes institutional strengthening and the formulation of risk management policies, the development of risk monitoring systems aimed at issuing early warnings through watershed management plans, and the promotion of good practices and technologies for risk prevention and mitigation, such as short-cycle and drought-resistant crops, water harvesting systems, community contingency funds, and agroforestry.[349]

Nature-based adaptation: some nature-based solutions include forest conservation and restoration, agroforestry and silvopastoral systems, efficient irrigation, live fences, rainwater harvesting systems, forest and plantation firebreaks, mixed forest nurseries, and solar photovoltaic-powered water pumps. The conservation and restoration of forests in the upper watersheds helps to reduce erosion and regulate flows. Drip irrigation in vegetable crops can reduce water consumption by up to 70%. Shade-grown coffee contributes to increasing soil fertility while expanding farmers' access to other markets such as fruit or firewood.

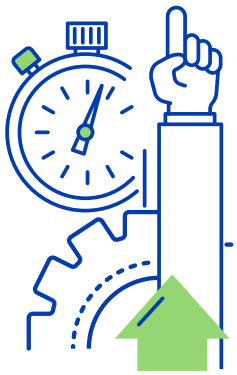
Through an assessment of the local vulnerability of communities in the Dry Corridor and arid zones of the Dominican Republic, UNEP has developed detailed hydrological analyses for three watersheds in Honduras, Costa Rica and the Dominican Republic with the aim of designing adaptation actions that can be replicated in other watersheds. UNEP is emphasizing the need to expand access to finance for local governments and farmers in order to implement nature-based solutions. In the Dry Corridor, only 10% of small producers have access to financing.[350]



Climate change mitigation

Circular economy: the circular economy is key to enabling Member States to meet the objectives of the Paris Agreement. A circular economy implies a regenerative system in which resource consumption, waste generation, and energy emissions and leakage are minimized by slowing, closing and tightening energy and material circuits in urban areas. Only 9% of the world's economy is circular, however.[351]

Several countries in the Latin American and the Caribbean region: Colombia, Costa Rica, Peru and the Dominican Republic, have recently announced the establishment of the first steering committee for circular economy. This seeks to move towards a more sustainable economy in which pollution is reduced and natural systems are allowed to regenerate, protecting biodiversity and contributing to combatting climate change.[352]



4. PROPOSED METHODOLOGICAL TOOL

In order to establish the degree of socio-environmental cohesion, a measurement tool is needed together with a set of indicators. A dashboard has therefore been developed for use by local, regional and national governments with which to measure and improve socio-environmental cohesion. This dashboard is based on the UN SDG indicators and the social cohesion indicators developed by UNDP[353], the latter designed to measure the different dimensions of social cohesion: social inclusion, governance, and belonging. In addition, the proposed dashboard takes as its reference some previously designed indicators on the environment, environmental governance, and the rule of law. These include the UNDP and Folke Bernadotte Academy's Guidance Note for Assessing Rule of Law in Public Administration (ROLPA), Yale University's Environmental Performance[354] Index (EPI), which measures the state of sustainability globally[355], and the 2020 Environmental Governance Indicators for Latin America and the Caribbean developed by the Inter-American Development Bank and the World Justice Project.[356]

Good environmental governance requires full compliance with the rule of law.

Good environmental governance requires full compliance with the rule of law. The six fundamental principles of the rule of law identified by UNDP and FBA (legality, accessibility, accountability, the right to be heard, the right to appeal and transparency) have been adapted for measuring environmental governance.[357] The SDG environmental indicators most oriented towards the four thematic areas analyzed have been selected from among the environmental indicators: land, biodiversity, water resources and climate change, as well as the EPI Biodiversity Habitat Index.

In order to complete the proposed dashboard, the regular collection of disaggregated data, especially by sex, age, ethnic group and in a localized manner is essential. As has been seen in analyses of the SDGs, this continues to be one of the great challenges to measure and progress towards sustainable development and, therefore, socio-environmental cohesion.

Table 8 | Dashboard of socio-environmental cohesion indicators.

Socio-economic inclusion	Type of measurement
Proportion of population living in households with access to basic services: water, sanitation and electricity	**% number**
Proportion of total public expenditure devoted to essential services, health and social protection	**% number**
Proportion of the population in severe food insecurity	**% number**
Incorporation of socio-environmental education into national education policies	**Yes/No**
Formal employment rate and average income in the extractive industries and agricultural sector	**% number**
Number of victims (sex and age) of human trafficking linked to extractive and agro-industrial projects	**Number**
Socio-environmental governance	
Environmental legislation in force and in line with international standards	**Yes/No**
Detailed environmental and social inspections of extractive, agro-industrial and hydroelectric projects	**Dates and projects**
Payment of taxes and percentage of royalties in extractive projects	**U.S. dollars** **%**
Institutional transparency and accountability	**Citizen perception surveys** **EITI (for extractive projects)**
Rights and security of environmental defenders guaranteed	**Number of complaints and charges**
Number of successful citizen appeals related to socio-environmental issues	**Number**
Participation and ownership	
Public access to socio-environmental impact assessments	**Yes/No**
Citizen participation in environmental legislation and production models	**Yes/No**
Number of free, prior and informed consultations conducted	**Number**
Community participation and training in monitoring extractive, agro-industrial and hydroelectric projects	**Number of committees and members**
Percentage participation of women and vulnerable groups in all processes	**% number**
Proportion of new land titles and hectares cultivated by small farmers	**%** **Ha**
Natural resources and ecosystems	
Proportion of mining and agricultural wastewater streams adequately treated locally	**% Hm^3**
Local water stress level: freshwater extraction as a proportion of available freshwater resources	**%**
Loss, degradation and fragmentation of habitats	**Biodiversity Habitat Index (BHI)**
Proportion of significant terrestrial, freshwater and marine biodiversity sites included in protected areas	**% number**
Proportion of local governments adopting and implementing local strategies for disaster risk reduction	**% number**
Proportion of local governments adopting climate change adaptation plans	**% number**

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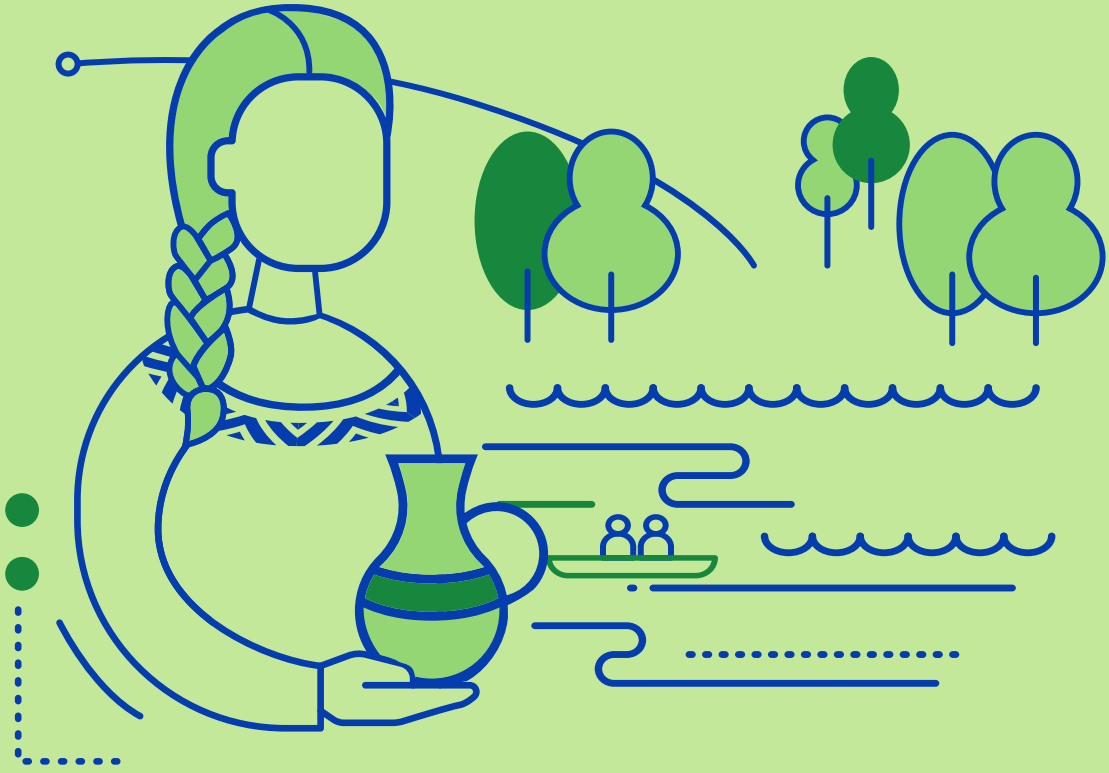
FINAL REMARKS



FINAL REMARKS

The aim of this study was to show the importance of the environmental dimension of social cohesion. We therefore felt it necessary to speak of socio-environmental cohesion, given that nature is an intrinsic component of human life. In line with the latest UNDP Human Development Report 2020, and as established in the 2030 Agenda, sustainable development cannot be conceived without greater respect and care for the environment. This is where two seemingly conflicting visions often collide: economic growth and care for nature. Human beings must find a middle way to navigate in the Anthropocene, and we are working on it: rethinking the classic models of development aimed at exploitation of raw materials.

Central America and the Dominican Republic have the opportunity and challenge to rethink their production models and make them more participatory, equitable and sustainable. This is not an easy task. The COVID-19 pandemic is putting much more pressure on governments, and the need to lift millions of people in these countries out of poverty and improve their quality of life requires strong, swift action. This study tried to show how some of the economic strategies in place are undermining social cohesion, increasing socio-environmental conflict in these countries, and even threatening to exacerbate it. Large-scale mining, ASM, oil palm and pineapple monocultures, and large hydroelectric projects can all be implemented in a way that generates fewer negative social and environmental impacts. Respect for and inclusion of the most vulnerable sectors in these processes is a moral imperative and a requirement of the 2030 Agenda to “leave no one behind”. More sustainable development alternatives with high economic benefits should also be considered, such as sustainable tourism, which has high added value, as in the successful examples of Belize and Costa Rica. The ecological and cultural wealth of the subregion must be enhanced.

Central America and the Dominican Republic’s dependency on North America, the EU and new players on the geopolitical agenda for trade only perpetuates the unsustainable extraction of their natural resources, with disastrous social and environmental consequences. Policies aimed at industrialization, digitization and the development of higher value-added goods are of paramount importance in this regard. Greater industrialization and digitalization of the Central American countries and the Dominican Republic will contribute to job creation and higher value-added production. This will make them less dependent on the global market, which keeps their economies anchored in the primary sector and oriented towards natural resource exploitation, making them more vulnerable to the changing climate and the volatility of commodity prices.

In addition, the subregion is particularly vulnerable to extreme weather events. These are continuing and are expected to increase, affecting the livelihoods, economic development and well-being of millions. Greater socio-environmental cohesion also contributes to a greater resilience to climate change, and social, environmental and economic adaptation to climate change requires thinking about new strategies such as those based on nature itself. Preserving forests or mangroves has far more long-term ecological, social and economic value than any immediate benefits of cutting them down.

The challenge is great, but so is the will and solidarity among the countries of the subregion. Coordination among the countries and regional initiatives already underway must therefore continue and be strengthened, given that, from a basis of unity, the negotiating power of the Central American countries and the Dominican Republic can be strengthened, allowing for the implementation of policies that will be more favorable to the subregion as a whole. The involvement and participation of each and every actor: women, Afro-descendants, rural and indigenous communities, the private sector, academia and local and national governments, will add up and consolidate the path towards sustainable development and socio-environmental cohesion.

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LIST OF ACRONYMS

BBC	British Broadcasting Corporation
BHI	Biodiversity Habitat Index
IDB	Inter-American Development Bank
CANAPEP	*Cámara Nacional de Productores y Exportadores de Piña* [National Chamber of Pineapple Producers and Exporters]
CARIFORUM-EU	Caribbean Forum for Economic Dialogue with the European Union
CCRIF	Caribbean Catastrophic Risk Insurance Facility
NDC	Nationally-Determined Contributions
ECLAC	Economic Commission for Latin America and the Caribbean
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COSAP	*Comisión Socio Ambiental de la Piña* [Socio-environmental Commission on Pineapple]
COVID-19	Coronavirus Disease 2019
EJAtlas	Environmental Justice Atlas
EM-DAT	Emergency Events Database
EPI	Environmental Performance Index
EU-CAAA	European Union - Central American Association Agreement
FAO	United Nations Food and Agriculture Organization
FBA	Folke Bernadotte Academy
GEF	Global Environment Facility
IWRM	Integrated Water Resources Management
GW	Gigawatt
Hm^3	Cubic hectometers
HDI	Human Development Index
IGF	Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development
INHGEOMIN	*Instituto Hondureño de Geología y Minas* [Honduran Institute of Geology and Mines]
IRCA	International Railways of Central America
ASM	Artisanal and Small-scale Mining
MW	Megawatt
NAP	National Action Plans
OECD	Organization for Economic Cooperation and Development
OCMAL	*Observatorio de Conflictos Mineros de América Latina* [Latin American Mining Conflict Observatory]
SDG	Sustainable Development Goals

IOM	International Organization for Migration
NGO	Non-governmental Organization
ONU	United Nations Organization
GDP	Gross Domestic Product
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
RAMSAR	Convention on Wetlands of International Importance Especially as Waterfowl Habitat
ROLPA	Rule of Law in Public Administration
RSPO	Roundtable on Sustainable Palm Oil
SARS	Severe Acute Respiratory Syndrome
SICA	*Sistema de la Integración Centroamericana* [Central American Integration System]
SITCA	*Secretaría de Integración Turística Centroamericana* [Central American Tourism Integration Secretariat]
EU	European Union
UFCo	United Fruit Company
UN	United Nations
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
USAID	United States Agency for International Development

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