



CRY OF THE LAND

*“I dream of an Amazon region
that can jealously preserve its
overwhelming natural beauty
and the superabundant life
teeming in its rivers and forests”.*

Pope Francis



MES DOMINICANO POR LA PAZ
Comprometidos con la Amazonía
2023

THE CRY OF THE LAND: ECOLOGY

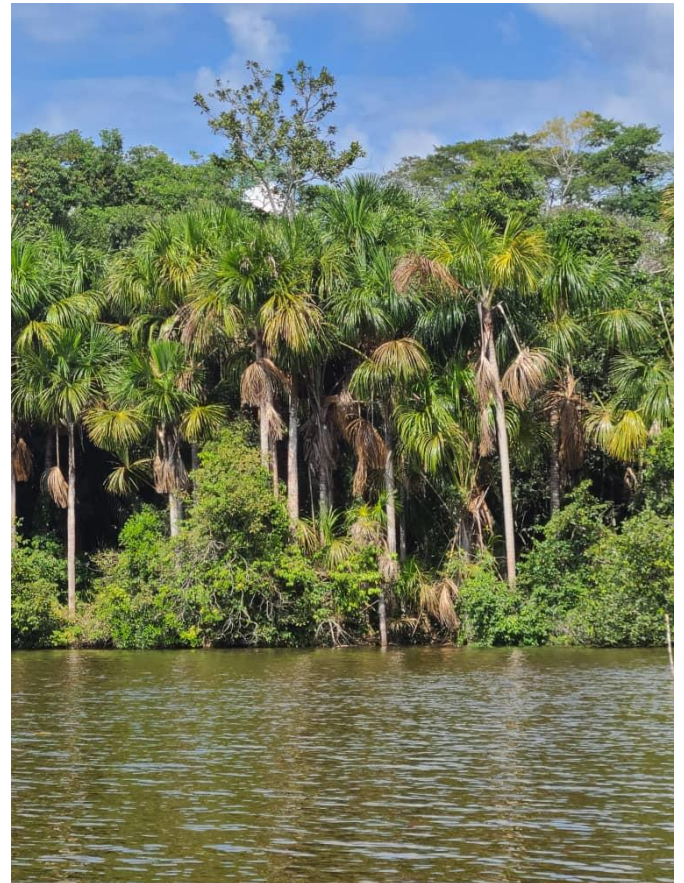




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CRIES FROM OUR DEAR AMAZONIA - THE AMAZONIAN ECOSYSTEM

*"I dream of an Amazonia that guards the overwhelming natural beauty that adorns it, the overflowing life that fills its rivers and jungles" -
Pope Francis*

1.1. THE REALITY ABOUT THE AMAZONIAN ECOSYSTEM IN PERU

1. The Amazon Basin

The concept of BASIN or Amazon region is mainly a hydrological or fluvial concept: all regions with river basins that flow into the Amazon River belong to the Amazon basin.

However, the territorial extension of this basin is still variable, due to the use of two different criteria in its determination:

- The criterion of "Divortium aquarum" or Drainage divide,
- And the ecological criterion, which refers to the level where forests begin to grow (approx. around 3,800 meters above sea level).

2. The Amazon River

The Amazon River is the most important river in the world, we could say that it is the river of "excesses". Let's take a look at some information and curious facts:

- It is debated whether it is the longest river in the world: the latest measurements estimate its length at 6,850 km (just 40 km longer than the Nile River).
- But it is undoubtedly **the largest by volume: with an annual average of 230,000 m³/s** (it contains much more water than the Nile, the Yangtze and the Mississippi combined).
- It is also the widest: in the wet season it reaches 190 km in its regular course. In addition, its estuary or mouth reaches 240 km from one bank to the other.



- Fun fact: it discharges so much water into the Atlantic Ocean that, more than 100 miles into the open sea in front of the mouth of the river, you can drink fresh water from the ocean.
- **The world's largest river basin: 7.05 million square kilometers** (one-fifth of the world's total river flows).
- The Amazon River has more than 1,000 tributaries, more than 25 of which exceed 1,000 km in length.
- In its channel is located the largest fluvial-maritime island: Marajó Island, located at the mouth of the river, with an area of about 50,000 km². It also has the largest fluvial archipelago in the world, the Anavilhanas Ecological Station in the State of Amazonas (Brazil): with some 400 islands.

Toponymy: apart from the names it has received throughout history, at present and given its long course, it receives different names along its course from its source in Arequipa (Peru) to its mouth: Lloqueta, Apurímac, Ene, Tambo, Ucayali, Marañón, Solimoes and Amazonas.

3. Geo-ecological reality

Amazonian ecology refers to the study of the ecosystems present in the Amazonia region, which covers most of the Amazon River basin in South America. This region is known to be one of the most biodiverse and species-rich areas in the world, with a great variety of plants, animals, microorganisms and habitats.

Any study concerning the Amazonian ecology should include the following elements:

- A. Biodiversity:** The Amazonia is home to an incredible diversity of species, many of which are endemic, meaning that they are not found anywhere else in the world. This rich biodiversity includes:
 - a. **Plants:** it is estimated that there are tens of thousands of tree species in the Amazon rainforest, making it one of the richest places in the world in terms of tree species.
 - b. **Animals:** this region is home to a quarter of all freshwater fish species in the world. It is also home to a wide variety of mammals, birds, reptiles, amphibians and insects.



- c. **Endemic species:** species found only in this region and nowhere else in the world.
 - d. **Aquatic biodiversity:** the aquatic systems in the Amazon are also extremely diverse.
 - e. **Insects and microorganisms:** The Amazonian biodiversity also extends to insects and microorganisms. It is believed that most of the insects in the Amazonia have not yet been discovered or studied, highlighting the vast amount of life yet to be explored in this region.
 - f. **Threats:** Despite its rich biodiversity, the Amazon faces significant threats, such as deforestation due to agricultural expansion, mining, natural resource extraction and infrastructures. These human activities endanger many unique species and ecosystems.
- B. Tropical forest:** The Amazonia is characterized by its vast extension of tropical forests, which play a fundamental role in the regulation of the global climate and carbon sequestration. These forests store large amounts of carbon and play a crucial role in climate change mitigation. This dense tropical rainforest has several different types of vegetation: savannas, floodplain forests, grasslands, swamps, bamboo and palm forests.
- C. Rivers and aquatic systems:** The Amazon River network is one of the largest in the world and plays a vital role in the transport of nutrients, aquatic biodiversity and the lives of the human communities that depend on these rivers for their sustenance.
- D. Flagship species:** The Amazonian region is home to flagship species such as the jaguar, ocelot, tapir, pink dolphin, several species of parrots and macaws, and a wide variety of primates, including the iconic howler monkey.
- E. Ecological interactions:** Species interactions in the Amazonia are complex and varied, including predation, symbiosis and competition. Predators, such as jaguars and anacondas, maintain the balance in prey populations, while many plants depend on animals for pollination and seed dispersal.



Some basic geo-ecological information about the Amazonia:

- It is part of the world's tropical forests, which develop in the belt between the equatorial line, the Tropic of Cancer to the north, and the Tropic of Capricorn to the south. In the Americas, this tropical belt extends from southern Mexico to southern Brazil and Bolivia (or northern Paraguay and Argentina).
- On our planet, tropical forests are the most diverse, but not necessarily the most extensive: they make up 55% of existing forests, but they are not the only ones. In fact, the country with the greatest extension of forests is neither an Amazonian nor an Asian country, since boreal forests are of great importance (almost 12 million kms²) in their extension, although their biodiversity is notoriously lower.
- Ecosystems
- Within this region, where tropical forests develop, the Amazonia stands out for being the largest tropical forest in the world, with an approximate extension of 7.4 million km², which represents 5% of the world's continental area and 45% of South America.
- The largest Amazonian extension corresponds to Brazil, which represents 66% of the Amazonia, followed by Peru with 13%. To a lesser extent, the Amazon basin extends into 7 other countries: Ecuador, Colombia, Bolivia, Guyana, French Guyana, Suriname and Venezuela.
- In the case of Peru, the Amazon basin accounts for almost 60% of its national territory, with more than 750,000 km². The Peruvian Amazonia region is distributed in three macrosystems:
 - “Ceja de selva”: 3500 to 1000 meters above sea level
 - High Jungle: 1000 to 400 meters above sea level
 - Low Jungle: Less than 400 meters above sea level

4. Resources

Historically, the main attraction of this tropical region has not been its environmental importance but its natural resources, whose exploitation has greatly influenced the future of the Amazonian peoples.

In our specific case, these resources are:

- **Agricultural suitability:** we must consider that the Amazonian ecosystem is very fragile and precarious, extremely sensitive to erosion. The exuberance and diversity of its vegetation contrasts with the poverty of its soil. In fact, **only 7% of Amazonian lands are suitable for crops and another 7% for livestock activities. The remaining land is**



protected land and forestry resources. Amazonian cultures have been able to adapt to this fact, first by developing a rotational cropping system, but also by implementing complementary economic activities (hunting, fishing and gathering), thus their agricultural activities have always been very limited.

- The **fauna and flora** resources are undoubtedly the most abundant. The biological diversity is extraordinary, being considered the most biologically diverse region in the world. Curiously, there are no large species (only 5% are larger fauna), but the figures are estimated to be spectacular. Just two examples: there are more than 30 million species of insects; in the Tambopata region (Madre de Dios) 42,000 species of insects have been found on a single hectare.
- **Water** resources: the Amazon contains 20% of the planet's freshwater, which implies a great potential for generating electric power sources and other economic activities such as fish farming, transportation, tourism, etc.
- **Timber, minerals and hydrocarbons:** these have great potential, with the enormous challenges that their extraction implies in an ecosystem as fragile and biodiverse as the Amazonia. Commercially valuable timber species (cedar, mahogany, etc.) have been greatly reduced and are no longer in demand, which has led to the development of large-scale timber extraction activities for the production of plywood. In terms of minerals, iron, gold, copper and diamonds. And in terms of hydrocarbons, gas and crude oil.
- **Environmental** Resources. They are perhaps the major focus of attention today, largely because the Amazon rainforest plays a very important role in regulating regional and global climate through its ability to absorb CO₂ and produce oxygen.

5. Importance and vulnerability

Perhaps it is not entirely correct to say that the Amazonia is the "lung" of the planet, or at least this "lung" is more blue (because of the oceans) than green (because of the forests). However, this in no way detracts from the enormous environmental importance of the Amazonian ecosystem for a number of reasons:

- For its biological and cultural diversity.
- Because it plays a very important role as a climate regulator. For two reasons:



1. First, because it is an enormous reservoir of carbon and a generator of humidity that produces cooling.
2. and second, because the Amazon biomass is so enormous that burning releases a large amount of carbon into the atmosphere.

Arguably, the most decisive environmental importance of the Amazonia does not lie so much in what comes from nature, but in what the destruction of its nature can generate: no other natural environment in the world has as much polluting capacity as the burning of Amazonian biomass. Potentially, the Amazonia may be the world's largest natural carbon emitter, or in other words, the Amazonia could potentially be the largest polluting agent on the planet.

For all these reasons, the analysis of existing threats to the conservation of the Amazon ecosystem is of great relevance at the regional and global level. Despite its great ecological importance, the Amazonia faces numerous threats, such as deforestation due to agricultural expansion, illegal mining, dam construction and natural resource extraction. These human activities threaten both biodiversity and the ecosystem benefits that the region provides. Conservation efforts include the creation of natural reserves, the implementation of sustainable management policies and the collaboration between governments, non-governmental organizations and local communities.





1.2. THE REALITY ABOUT THE AMAZONIAN ECOSYSTEM IN BOLIVIA

Shadows:

Encroachment and deforestation, polluted rivers, droughts and management of protected areas.

- Bolivia has a very challenging environmental agenda for 2023. Deforestation is advancing at a rapid pace, leaving forests devoid of trees.
- There are complaints about the use of mercury in gold mining and the indigenous peoples of the Bolivian Amazonia are currently trying to halt the damage within their territories.
- Droughts severely impacted many Bolivian municipalities in 2022, while the Government has announced a plan to attack the problem this year.

Stopping deforestation remains Bolivia's greatest environmental challenge. In 2021 and 2022, forest loss per year was over 250,000 hectares, according to Marlene Quintanilla, an expert from Bolivia's Friends of Nature Foundation (Fundación Amigos de la Naturaleza, FAN).

The main causes are the same as always: the advance of the agricultural frontier and livestock production, two activities that have been blamed for the fact that trees continue to fall like dominoes. In addition, there is now an urgent need to stop encroachment in national, regional and private protected areas, which some experts believe is a very difficult goal to achieve.

Bolivia's environmental challenges are many and become more complicated to solve with each passing year.

To this year's environmental agenda must be added the lack of strategies to reduce alluvial mining and prevent contamination of Amazonian rivers. The search for gold in natural reserves is affecting the indigenous peoples living in the Bolivian Amazonia, but also generates the presence of other crimes in several areas, such as drug trafficking and human trafficking.



In the department of Santa Cruz, the Mennonite colonies and the incursion of cattle ranching are increasing the deforestation process. Photo: Edwin Caballero

But it is not only mining that poses a problem for reserves, but also the hydrocarbon exploration projects promoted by the government. For this reason, the experts have identified the challenge of improving the management plan for Bolivia's protected areas. These have been harshly affected by extractive activities, but also by the fires and droughts that occur at the end of each year, and to this day there is no adequate response to these disasters that affect diverse ecosystems and indigenous territories. (Tamayo, 2023).

LIGHTS:

In the educational component of the Bolivian Episcopal Conference in 2021, it was mentioned that one of the main objectives to be promoted would be **Ecological Education** because it is precisely there where there is a focus to be addressed. Working with teachers and educators, who are in charge of driving those efforts. What is the lesson to be learned? To generate that conversion, that metanoia, that change from the throwaway culture to a culture of citizenship, as stated in Laudato Si. (Rocha, 2021)

1.3. THE REALITY ABOUT THE AMAZONIAN ECOSYSTEM IN VENEZUELA

The Venezuelan Amazonian populations have developed their cultures in a process of joint evolution with nature in which human groups and nature have been linked and mutually modified, creating sustainable cultures that promote a very high diversity and resilience, which includes cosmogonies and



spiritualities that allow them to have harmony and respect for everything created by God, this spirituality is part of their culture, their being, their life, from this experience they can help others to live with a sense of protection to mother earth and understand that everything that exists in it deserves respect.

History has taught us that the origin of most indigenous peoples is directly linked to access to water sources, which can be from rivers or springs. Water, being the great blessing of most of the Amazonian territories and peoples, has been converted by public and private entities into an instrument of destruction, isolation, contamination, and proliferation of diseases, as it is not considered as a means of life, but rather as a means to extract wealth, representing a source of progress and development that has actually turned into poverty and backwardness for these communities.

The same thing happens with the land that is subjected to irresponsible, uncontrolled and unpunished deforestation, in addition to the multiple fires that destroy or endanger the habitats of the native fauna and flora, many of them endemic to the Amazon, which are a source of ancestral and useful medicines for the nourishment of the different native peoples.



Picture taken from the Political Ecology Observatory.

<https://ecopoliticavenezuela.org/2022/02/24/arco-minero-del-orinoco-seis-anos-deimpactos-socioambientales/>

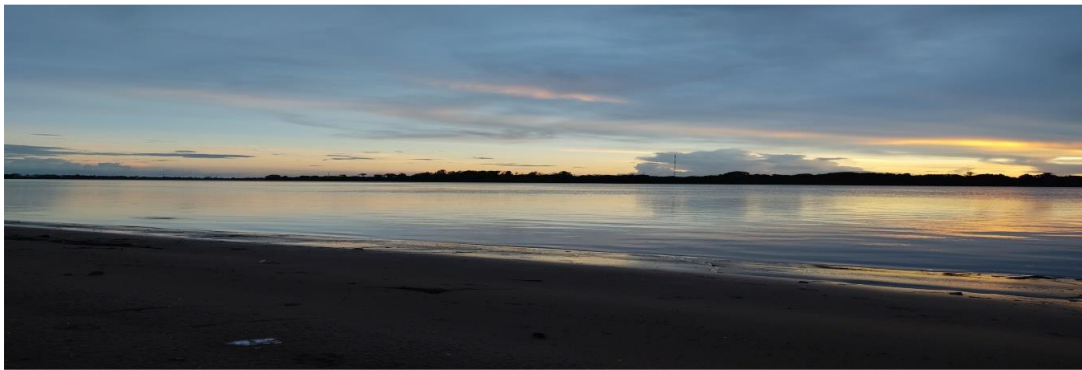
**SHADOWS:**

- Indiscriminate, aggressive and illegal mining is clearly the main cause of all the problems existing in the territory.
- Contamination due to the illegal use of mercury in gold mining, which generates serious damage to human and environmental health.
- The decline of the ancestral ways of living of the original peoples and traditional communities.

LIGHTS:

- There are national and international civil society organizations in the territory that work on Amazonian issues, which carry out monitoring and documentation processes on the various issues occurring in the Amazonian territory. They also carry out denunciations, awareness-raising, and training activities based on current realities.
- The Pan-Amazonian Ecclesial Network (REPAM) Venezuela was created to accompany and promote awareness from the Catholic Church about the care of the common home and Integral Ecology and the commitment to Laudato Si'.
- Alliances between the Venezuelan Association of Catholic Education (AVEC), the Association for the Promotion of Popular Education (APEP), the Pan-Amazonian Ecclesial Network (REPAM), the Venezuelan Conference of Religious Men and Women (CONVER) and the Pontifical Missionary Works (PMO) promote human and Christian education in Human Rights and the accompaniment of communities in the territories.
- Venezuela has a great biodiversity, beautiful and unique landscapes that in spite of their destruction, many inhabitants defend and take care of and that can become means of livelihood with good living practices for many Venezuelans.





Original pictures from REPAM VENEZUELA

DREAMS:

- We dream of an Ecological Church, in harmony with nature, where we learn to listen to silence and admire the landscape, to be in contact with creation in order to understand the greatness of God in every element that surrounds us.
- We dream of a committed, attentive and prophetic Church that proclaims the Word of God in the Amazon and denounces the injustices that threaten the life and dignity of the people.