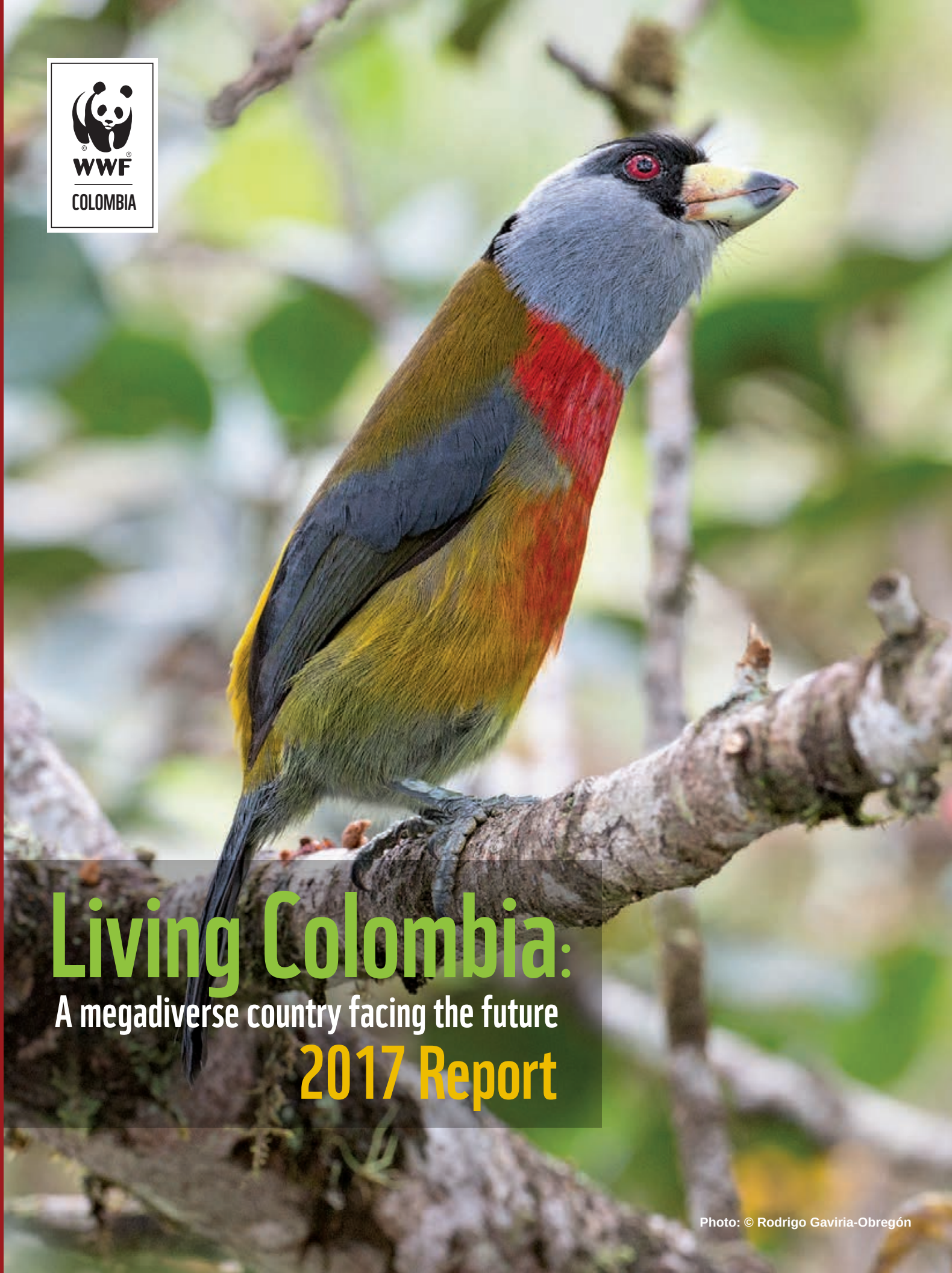
ABRIDGED VERSION

WWF COLOMBIA

# Living Colombia:

## A megadiverse country facing the future

## 2017 Report



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This document is the result of an analysis of the evolution of the national patrimony of Colombia, based on the compilation of the results of recent studies made by organizations and researchers both from the government and the civil society. During this effort, lasting almost three years, we reviewed numerous reports produced by IAVH, Ideam, Invemar, IGAC, Sinchi Institute, several universities and more than one hundred scientific sources.

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WWF, in collaboration with the London Zoological Society, and the Global Footprint Network, publishes ***The Living Planet Report*** every two years. This document is based on the best scientific information available and provides a periodical reading of the state of nature, the driving forces behind the loss of biodiversity, how the quality of life of human beings has been affected, and possible solutions to these problems. It is a fundamental tool for those in charge of making political and economic decisions to do so from the standpoint of sustainable development and the adequate management of local resources.

The Living Planet Report combines the Living Planet Index (LPI) and measurements of the Global Footprint. The LPI is a metric developed by the London Zoological Society to compare the behavior of terrestrial, marine and freshwater ecosystems within a given timeframe through the analysis of trends in 14,152 populations of 3,706 vertebrate species. The calculation of the footprint measures the amount of terrestrial and aquatic space used by humankind to satisfy its needs and absorb its waste.

This year, WWF wants to provide an additional tool for informing the citizens and decision makers. This is none other than the first ***Living Colombia Report*** where we analyze the historical evolution of our natural patrimony by synthesizing findings from more than a hundred scientific sources.

# COLOMBIA'S ENVIRONMENTAL CROSSROADS

The Living Colombia Report has revealed that the nation is at an environmental crossroads. Colombia has a growing population that demands ever more resources and an economy that is both compromising the future resilience of its ecosystems and placing the survival of a growing number of species at risk. If the country continues to walk down the path of development based on the transformation of ecosystems and uncontrolled extraction, the nation will have to face the loss of environmental attributes and will be increasingly vulnerable to the impacts of global change. More than 50% of the binding decisions that the Organization for Economic Cooperation and Development (OECD) formulates for Colombia are taken in accordance with criteria geared towards a more sustainable and socially equitable economic development.

The signing of a peace treaty between the Colombian government and FARC sets the stage for a myriad of challenges and opportunities to present themselves at this crossroads. Halting armed conflict will undoubtedly give rise to one of the biggest large-scale landscape transformation processes in the history of the country as displaced populations return to their land, as demobilized combatants are integrated into rural production systems, as the State, the private sector and foreign investments implement development plans in areas that were previously excluded

COLOMBIA HAS A GROWING POPULATION THAT DEMANDS EVER MORE RESOURCES AND AN ECONOMY THAT COMPROMISES THE FUTURE RESILIENCE OF ITS ECOSYSTEMS AND THE SURVIVAL OF A GROWING NUMBER OF SPECIES. IF THE COUNTRY CONTINUES TO WALK DOWN THE PATH OF DEVELOPMENT BASED ON THE TRANSFORMATION OF ECOSYSTEMS AND UNCONTROLLED EXTRACTION, THE NATION WILL HAVE TO FACE THE LOSS OF ENVIRONMENTAL ATTRIBUTES AND WILL BE INCREASINGLY VULNERABLE TO THE IMPACTS OF GLOBAL CHANGE.

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from economic production, and as the eradication and substitution of illicit crops continue in different regions.

To solve these challenges and sustainably manage the territorial and natural capital of the country it is necessary to put in place an economic growth strategy and to foment long-term competitiveness. The 2015-2018 National Development Plan specifically refers to this need for a transversal green growth strategy. Said strategy seeks to move towards sustainable and low carbon emission growth, protect and improve the sustainable use of natural capital, improve the quality of the environment and the establishment of resilient economic growth and reduce the level of vulnerability to natural disasters and climate change.

**THE 2015-2018 NATIONAL DEVELOPMENT PLAN SPECIFICALLY REFERS TO THIS NEED FOR A TRANSVERSAL GREEN GROWTH STRATEGY.**

To implement a new development model demands making decisions based on the best possible scientific information. It is in light of this that the Living Colombia Report provides a historical reassessment of the transformation of our ecosystems, a description of the current state of their biodiversity and ecosystem services, an appraisal of the major pressures they face and, finally, WWF's proposal for steering the nation towards the path of inclusive, equitable and low carbon emission socioeconomic development.

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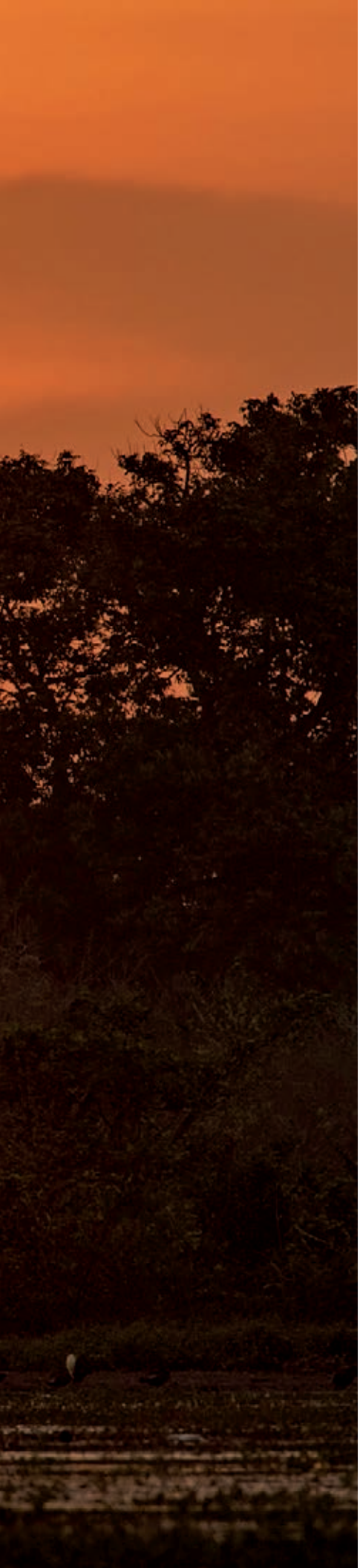
STATE





# THE STATE OF BIODIVERSITY

The Caribbean planes, the mid-level heights of the mountain ranges that face the inter-Andean valleys and these valleys themselves have been the most sought-after areas for human settlement in Colombia. A great deal of the large-scale modification of our original ecosystems has taken place in these regions, while the lowlands of the Amazon, Orinoco and the Pacific as well as the Andean slopes facing them have conserved significantly greater portions of their "original" vegetation.

The area transformed by anthropic intervention in Colombia grew from around 15 million hectares at the time of the Spanish Conquest to 42 million hectares in the year 2000. The impact of colonization, demographic alterations and the introduction of agricultural production systems were the main determining factors in this series of modifications although their impact varied significantly both in time and place.

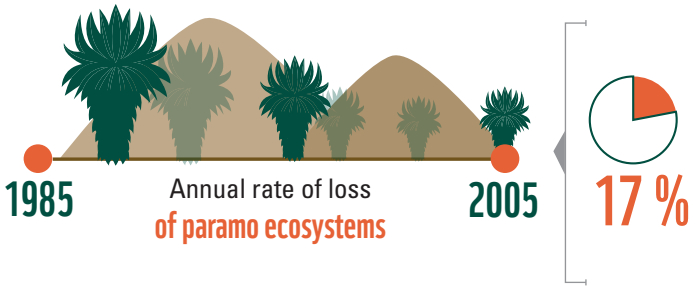
Although in recent years it has been pointed out that Colombia has a relatively low footprint, it is not possible to interpret this as indicative of our society being environmentally sustainable. It might be more accurate to consider that our low consumption levels are due to a relatively low population density and high levels of poverty. The country entered the anthropocene with a growing population, an increasing demand for resources and an economic development model that continues to push increasingly fragile and degraded ecosystems towards the limits of sustainability.

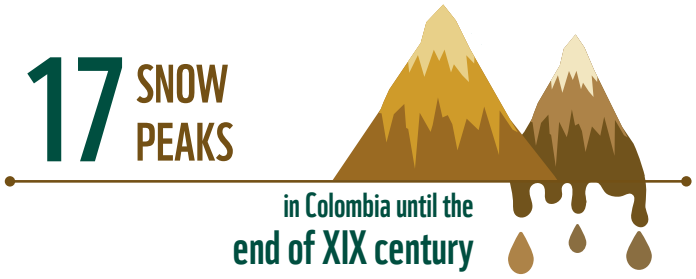


# LOSS AND DEGRADATION OF ECOSYSTEMS

Eighty-five main types of ecosystems have been identified in Colombia. It has been estimated that 31.3% of the total area of these ecosystems has undergone some sort of transformation. Due to the concentration of the Colombian population in the Andean region, high mountain ecosystems have suffered most of the consequences of these great changes. In the years spanning from 1985 to 2005 alone the annual rate of loss of highland ecosystems reached 17%.

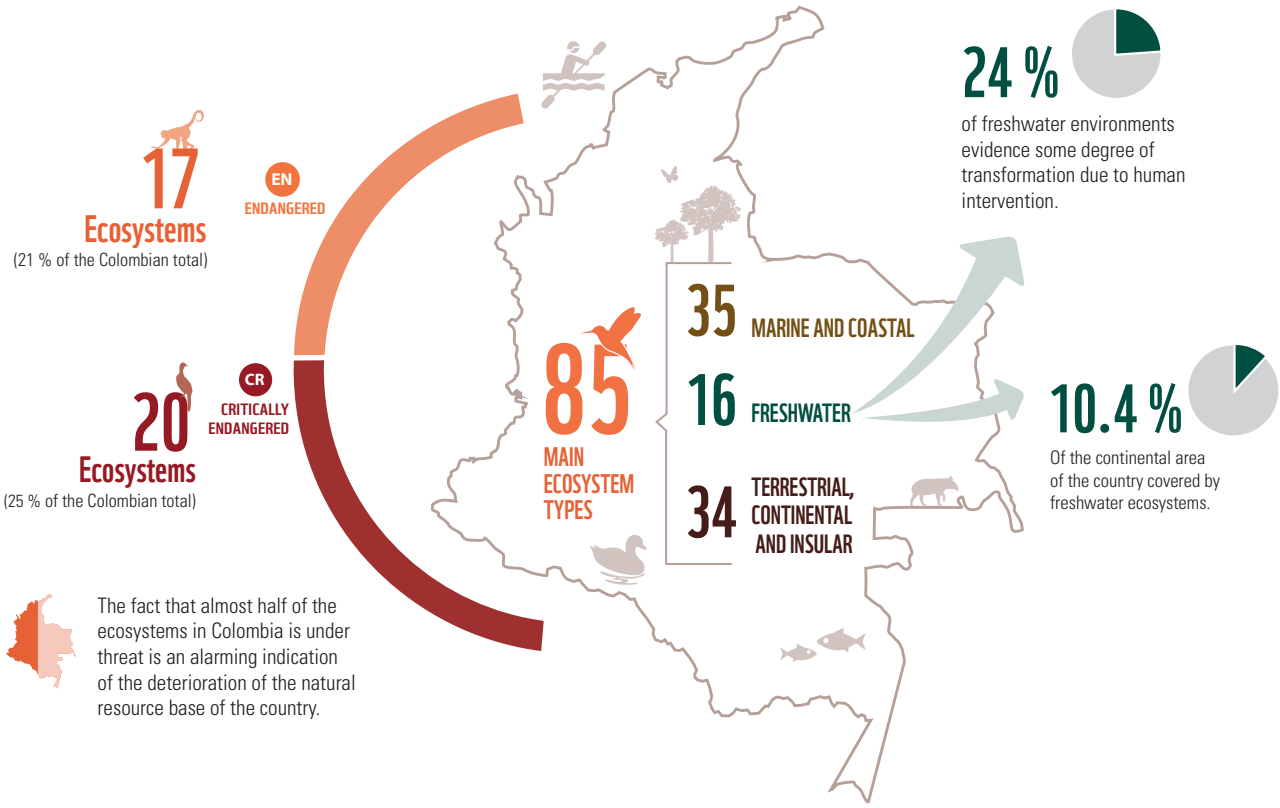
Climate change has begun to act as a catalyst for and a synergistic agent of the transformation of said ecosystems. Towards the end of the 19th century there were 17 snow peaks in the country, eight of which have completely thawed since then: Puracé, Galeras, Sotará, Chiles, Pan de Azúcar, Quindío, Cisne and Cumbal. It has been estimated that by 2032 these ecosystems will disappear.

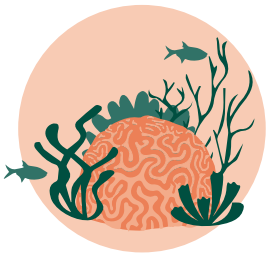



**8** THAWED ENTIRELY DURING THE LAST CENTURY

- Puracé
- Sotará
- Pan de Azúcar
- Cisne
- Galeras
- Chiles
- Quindío
- Cumbal



**IN 2005, 80% OF THE REEFS IN THE CORALES DEL ROSARIO AND SAN BERNARDO NATIONAL PARK SUFFERED CORAL BLEACHING.**

Approximately 10.4% of Colombia's continental surface is covered by freshwater ecosystems. Around 24% of these environments, and of those that were apparently covered by wetlands until a relatively short time ago, show evidence of some degree of transformation caused by human intervention. Among these are the Ciénaga Grande de Santa Marta on the Caribbean coast, the middle valley of the Magdalena River, the Sinú River valley, the Cauca River valley and the Bogota Plateau.

Although the integrity indicators for Colombian marine ecosystems are categorized as acceptable or in good condition, this generalization must be taken with caution. For instance, the seagrass beds of the Cartagena Bay are receding due to contamination caused by sewage and hydrocarbons as well as infrastructure development projects, all brought on by the negative impact of climate change. The same can be said of coral reefs. In 2005, 80% of the reefs in the Corales del Rosario and San Bernardo National Park suffered coral bleaching.

In conclusion, 20 Colombian ecosystems (25% of the total for the country) have been characterized as Critically Endangered CR and 17 ecosystems (21% of the total for the country) as Threatened EN. The fact that almost half of the ecosystems in Colombia is under threat is an alarming indication of the deterioration of the natural resource base of the country. The loss of ecological integrity of ecosystems seriously compromises the survival of a great number of species and limits the provision of services to society.

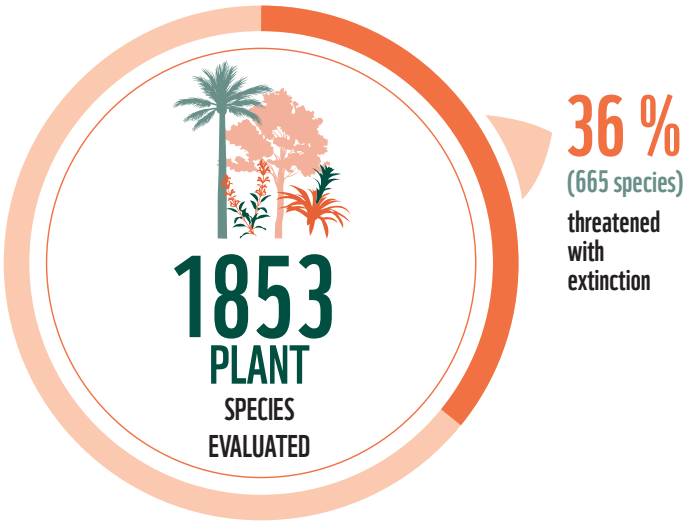
STATE

# THREATENED AND VULNERABLE SPECIES

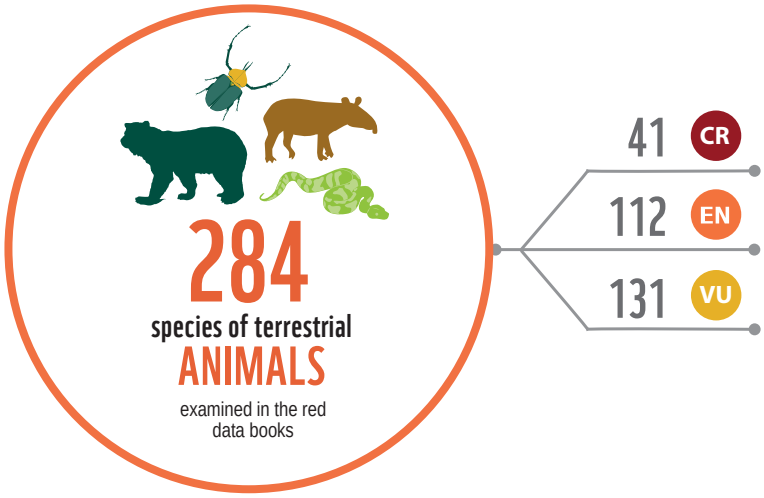
According to the information contained in the Red Data Books for Colombia, 2.22% of the country's species fit into one of the three threat categories defined by the International Union for Conservation of Nature (Critically Endangered, Endangered or Vulnerable). Thirty six percent of the plant species that were evaluated (665 of 1853) are threatened and the situation concerning Colombian terrestrial fauna is, apparently, even more alarming. Out of 284 terrestrial animal species 41 are Critically Endangered, 112 are Endangered and 131 are Vulnerable. The relatively low number of invertebrates included in the red lists should not be taken as an indication of a better state of conservation compared to that of vertebrates, but rather as a reflection of the limitations of the knowledge available regarding their natural history, distribution and ecology.

If these trends were to continue, Colombia would have to strike off the inventory of its biodiversity species of bees that play critical roles in its ecosystems, hummingbirds (Trochilidae), antpittas (Grallaridae), curassows (Cracidae), parrots (Psittacidae), and spider monkeys, among others.

The decline among river, swamp and marsh species is a less conspicuous phenomenon than the endangerment of terrestrial organisms. However, and as is to be expected in view of the




**The current situation of the terrestrial fauna in Colombia is, apparently, much more alarming:**




**If these trends were to continue, Colombia would have to strike off the inventory of its biodiversity:**

BEES
(that play critical ecosystem functions)

HUMMINGBIRDS
(*Trochilidae*)

GUANS AND CURRASOWS
(*Cracidae*)

PARROTS
(*Psittacidae*)

SPIDER MONKEYS

numerous forms of pressure on many of these environments in Colombia, the available information oncerning the endangerment of fauna and flora associated with them clearly indicates how much they have deteriorated.

Due to their social and economic importance, the largest number of endangered freshwater species are fish. Fisheries in the Magdalena, Orinoco and Amazon basins diminished by nearly 90% in the 1970s, fishing disembarking on the Orinoco basin declined by 85% between 1997 and 2009 and on the Putumayo river basin by 80% between 1992 and 2009. The Magdalena bocachico (*Prochilodus magdalenae*) and the tiger catfish (*Pseudoplatysoma fasciatum*) have practically disappeared from the Colombian menu.

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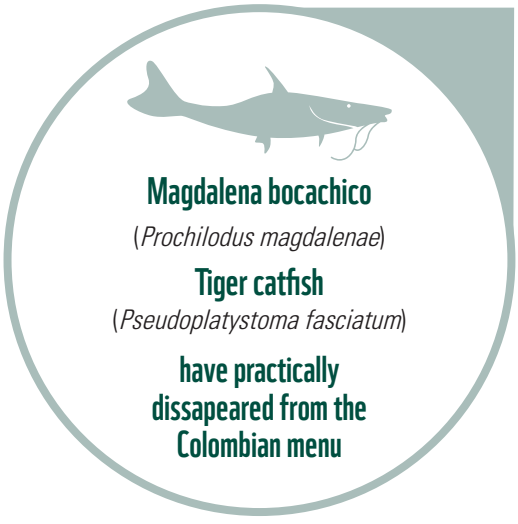
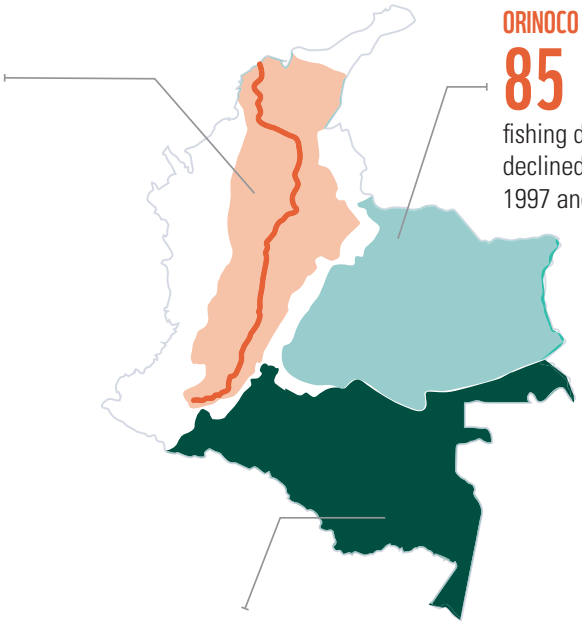
**The Magdalena, Orinoco and Amazon river basins have suffered an alarming decline of their commercial fisheries:**




MAGDALENA BASIN
**90 %**
of the fisheries declined since 1970



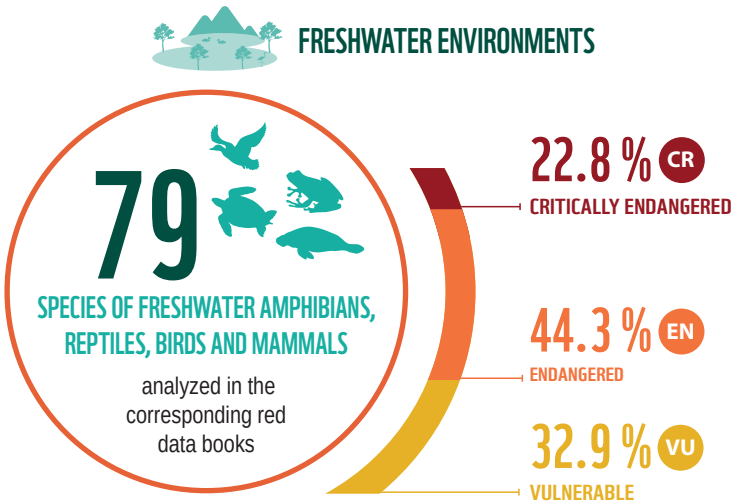
ORINOCO BASIN
**85 %**
fishing disembarks declined between 1997 and 2009

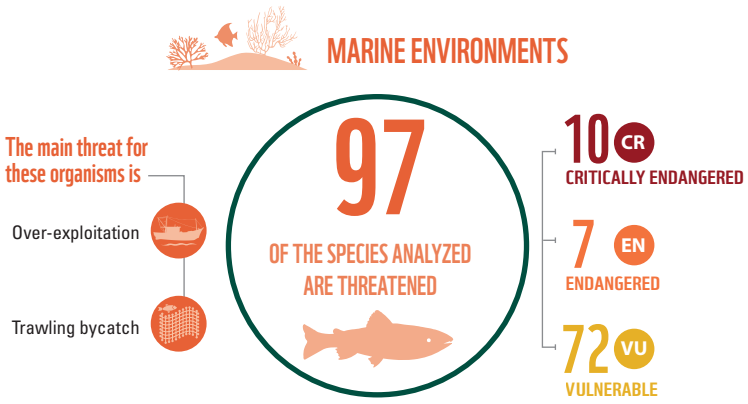
PUTUMAYO RIVER BASIN
**80 %**
**fishing disembarks** declined between 1992 and 2009

© Day's Edge Productions / WWF-US

Out of the 79-freshwater amphibian, reptile, bird and mammal species surveyed in the red data books, 22.8% are Critically Endangered, 44.3% are Endangered and 32.9% are considered Vulnerable. The persecution of manatees and river dolphins, as well as their accidental capture in fishing operations are serious threats to their already considerably small numbers.

Finally, concerning marine environments, 97 species are at risk. Ten of these are Critically Endangered, seven are Endangered and 72 are Vulnerable. The main threat to these organisms is their overharvesting combined with bycatch in trawling operations. The degradation of marine ecosystems could imply the disappearance of emblematic species such as the loggerhead (*Caretta caretta*) and hawksbill (*Eretmochelys imbricata*) turtles, birds such as the Pink Flamingo (*Phoenicopterus ruber*) and the Swallowtail Gull (*Creagrus furcatus*), or sea mammals such as the humpback whale (*Megaptera novaeangliae*).



# POPULATION TRENDS

The ability to identify threatened species constitutes a remarkable progress in the task of incorporating biodiversity information into environmental management processes. Unfortunately, the monitoring of populations in Colombia has not been carried out consistently or systematically. There are few trustworthy results that could aid us in protecting them.

Nevertheless, there are some significant efforts being carried out in Colombia such as the Christmas bird count led by the Colombian birding network, the river dolphin counts undertaken by the Omacha Foundation and the work carried out by Invemar in the Ciénaga Grande de Santa Marta and the coral reefs of the Caribbean.

In some areas, common bird populations are growing at an accelerated rate. This may seem contradictory, considering the trends of loss and degradation of natural ecosystems. An example of this is the apparent increase of the numbers of the Black Vulture (*Coragyps atratus*). Although not disproportionate, this trend could be a response to an increase in food sources linked to the enormous amounts of solid waste generated by the city of Bogota and neighboring towns.

The variability observed in the results yielded by the Bogota Plateau censuses means, however, that not all the species counted are growing in number. Many populations exhibit negative trends. Populations of birds with relatively restricted habitats such as the Band-tailed Seedeater (*Catamenia analis*) and the Pale-naped Brush-Finch (*Atlapetes pallidinucha*) have greatly diminished, suggesting the degradation of habitats corresponding to species linked to unperturbed environments.

**BIRDS WITH RELATIVELY RESTRICTED HABITATS SUCH AS THE BAND-TAILED SEEDEATER (*CATAMENIA ANALIS*) AND THE PALE-NAPED BRUSH-FINCH (*ATLAPETES PALLIDINUCHA*) HAVE IMPORTANT POPULATION DECLINES.**

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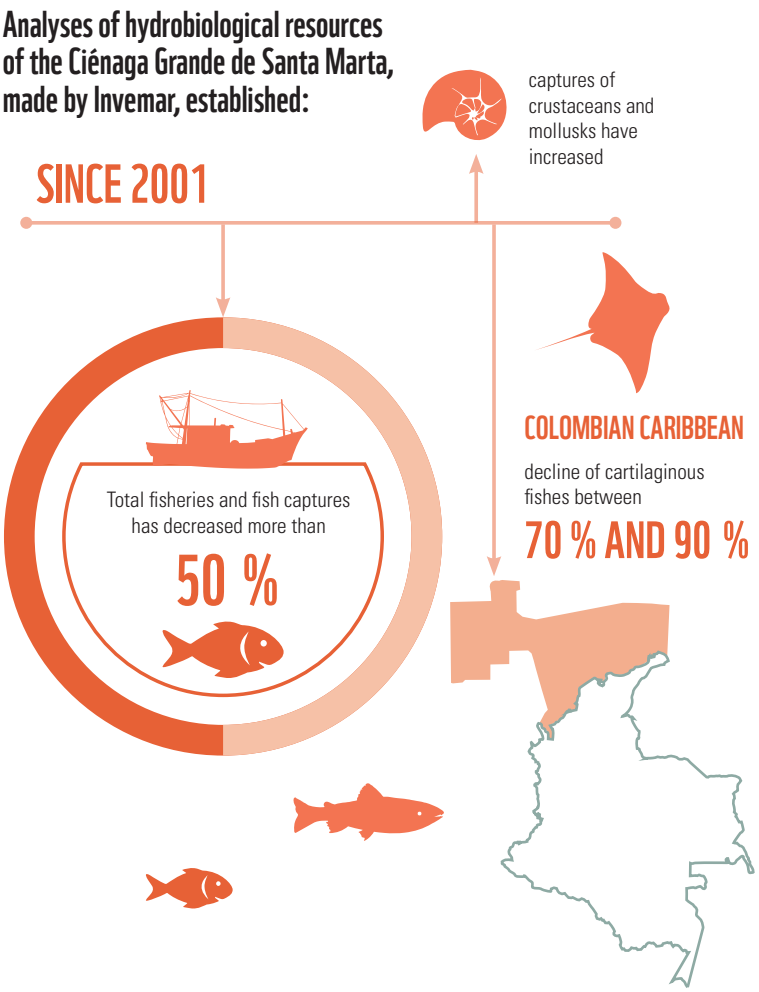


Between 2006 and 2012 three expeditions to the Meta river, on the Orinoco basin, between Puerto Gaitán and Puerto Carreño, were carried out with the purpose of estimating the density of its pink river dolphin (*Inia geoffrensis*) population. Comparative results suggest that it has diminished.

Thanks to the analyses carried out periodically by Invemar in the Ciénaga Grande Santa Marta since 2001, it has been proven that both the total amount of animals and the amount of fish caught has diminished by 50%. However, the number of mollusks and crustaceans has increased. In the case of cartilaginous fish, a good indicator of the quality of a region's fish populations, the historical information compiled by Invemar for the Colombian Caribbean shows that their numbers have decreased between 70% and 90%.

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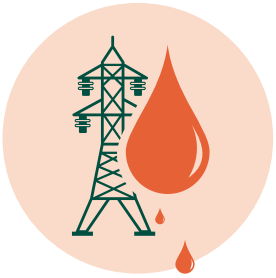
BETWEEN 2006 AND 2012 THREE EXPEDITIONS TO THE META RIVER, ON THE ORINOCO BASIN, BETWEEN PUERTO GAITÁN AND PUERTO CARREÑO, WERE CARRIED OUT WITH THE PURPOSE OF ESTIMATING THE DENSITY OF THE PINK RIVER DOLPHIN (*INIA GEOFFRENSIS*) POPULATION. COMPARATIVE RESULTS SUGGEST THAT IT HAS DIMINISHED.



ACCORDING TO THE MINING AND ENERGY PLANNING UNIT, 70% OF ELECTRICITY USED IN COLOMBIA IN 2015 CAME FROM HYDROELECTRIC PLANTS, WHICH DEMONSTRATES THE IMPORTANCE OF CONSERVING RIVER BASINS AND THE ECOSYSTEMS THAT REGULATE THE FLOW OF WATER THROUGH THEM.

# ECOSYSTEM SERVICES

Ecosystem services are defined in relation to the benefits ecosystems provide for humans. Their relationships are established from the perspective of specific social characteristics. The population of Colombia increased from 4,143,632 inhabitants in 1905, to 48,203,405 inhabitants in 2015. A 100-year growth such as this inevitably leads to a greater demand for and supply of natural services.

The simple acts of turning on the TV set or charging a cellphone are carried out without a thought for the existence of the hydrographical basins that regulate and sustain the supply of water for generating electricity. According to the Mining and Energy Planning Unit, 70% of the electric energy used in Colombia in 2015 came from hydroelectric plants, which demonstrates the importance of conserving hydrographical basins and the ecosystems that regulate the flow of water through them.

In 1985, it was estimated that there were 60,000 m³ of water available per person, whereas in 2014 a little under 45,000 m³ remained. If the general use and consumption of water remained at its current rate, in 40 years the country would face an annual water supply of 1000 m³ per capita, a critical level indicating the outbreak of a water crisis.

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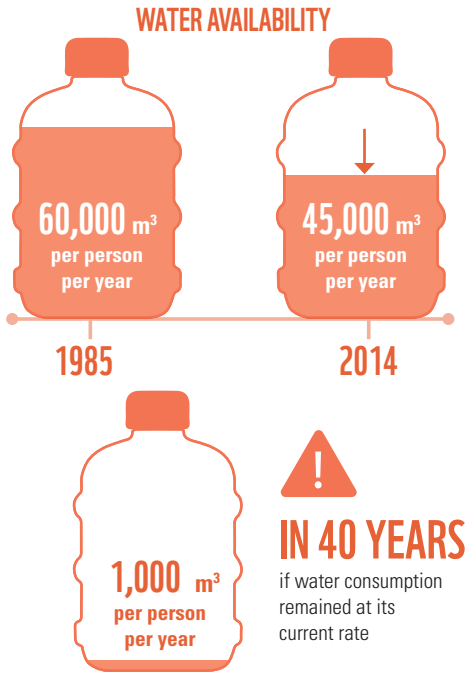
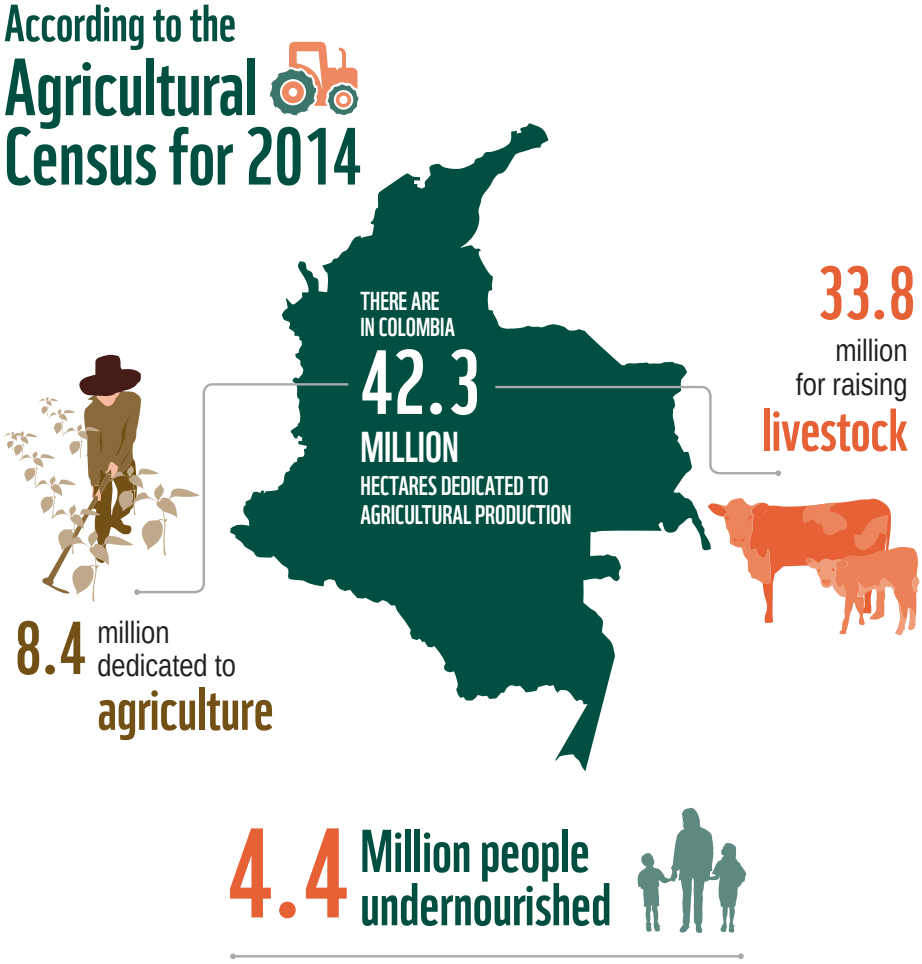


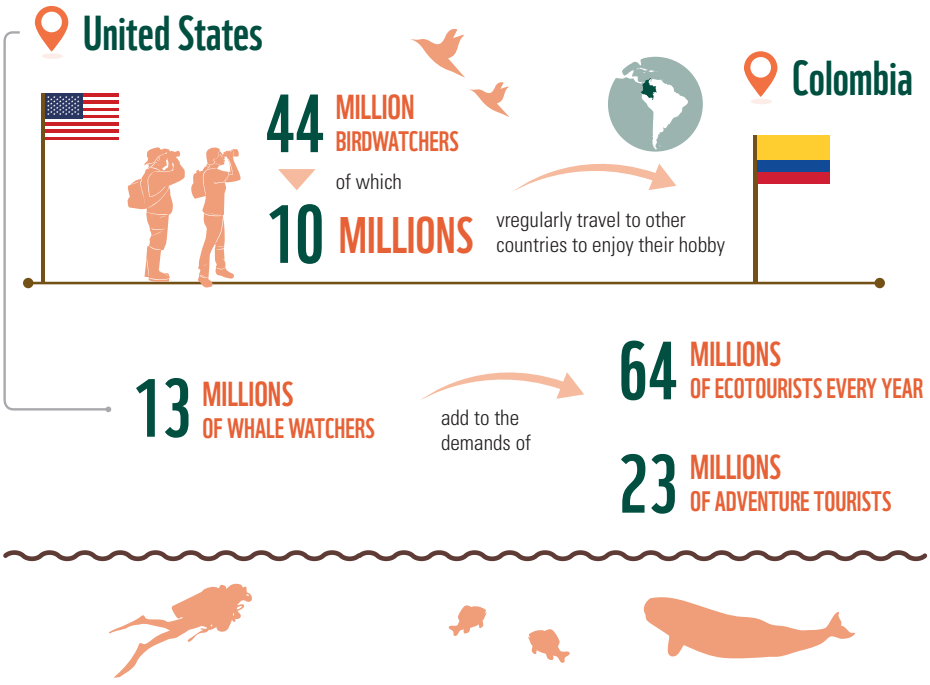
IN SPITE OF THE COUNTRY'S POTENTIAL AS A FOOD SUPPLIER, 4.4 MILLION COLOMBIANS, OR 9% OF THE POPULATION, ARE UNDERNOURISHED.

Food provisioning is a key ecosystem service. According to the Agricultural Census of 2014, 42.3 million hectares have been destined to agricultural uses in Colombia, out of which 8.4 million are being used for growing crops and 33.8 million for raising livestock. Nevertheless, and in spite of the country's potential as a food supplier, 4.4 million Colombians, or 8.8% of the population, are undernourished.

In 2014, the yield for inland fishing was estimated at about 17,644 t, for maritime fishing at about 90,294 t, and for aquaculture at 92,002 t. Even though this sector does not represent a large percentage of the Colombian GDP (0.17%), inland artisanal fishing is a means of subsistence and a guarantee of food security for over one million Colombians. The national fishing sector generates 101,000 direct jobs, as well as 45,000 additional jobs concerned with general operations, unloading, processing and marketing.

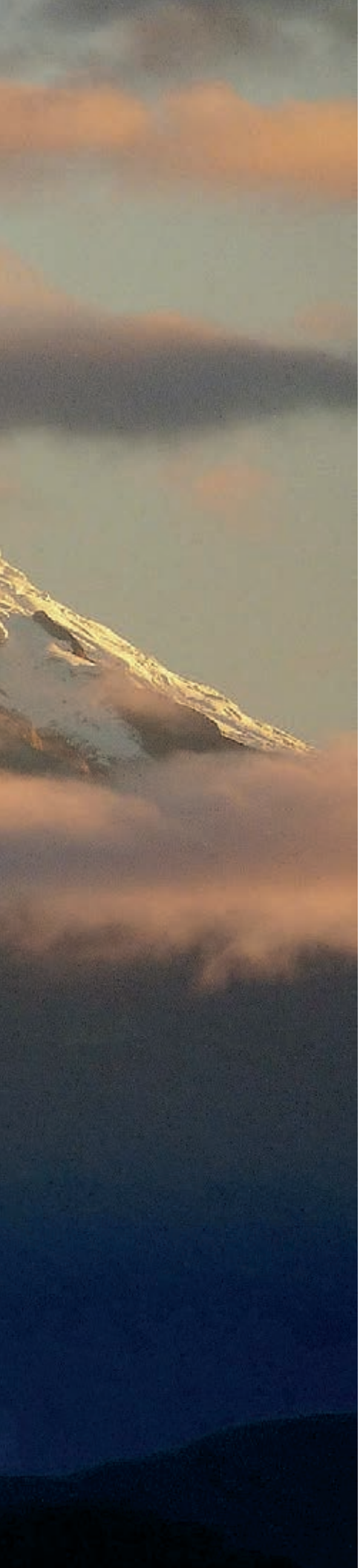


COLOMBIA ALSO HAS A GREAT POTENTIAL FOR ECOTOURISM. THIS ECOLOGICAL CAPITAL IS NOT ONLY ENJOYED BY COLOMBIANS, THERE IS AN EXTERNAL DEMAND BY SPECIALIZED COMMUNITIES SUCH AS BIRDING, SPORT FISHING, AND WHALE WATCHING GROUPS.




If this were not enough, Colombia also has a great potential for ecotourism. This ecological capital is not only enjoyed by Colombians, there is an external demand currently being exerted by specialized communities such as birding and whale watching groups. In the United States alone, there are around 44 million birdwatchers, of which 10 million travels abroad regularly to enjoy their hobby. There are also 13 million American whale watchers that can be added to 64 million ecotourists and 23 million adventure tourists every year.


PRESSURE



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The alarming deterioration of biodiversity in Colombia is deeply rooted in the economic development processes that have taken place in its history and which have been based, mainly, on two large dynamics: the extraction of renewable and non-renewable natural resources and the transformation of landscapes and ecosystems aimed to incorporate them to production.

When the Spaniards arrived on what is now Colombia, it is estimated that its native population was composed of between 1.5 and over 10 million people. Vast regions such as the Sierra Nevada de Santa Marta, the Sinú River Valley, the Bogota Savanna, the upper Cauca River Valley and the Colombian Massif were not only densely populated, but also 15 million hectares of this territory had been transformed for agricultural and other management purposes.

After the Conquest, and until well into the Republican Era, most of the country presented no considerable environmental alterations. A large portion of the population replicated the settlement patterns observed by previous inhabitants. The land was mainly used for the extensive livestock ranching that began in Colonial times. Mining was the main extraction process in Colombia during this lengthy period and it was done at a scale that did not entail any major transformations.

After the first half of the 19th century, the country attempted to join the international markets with other products (such as cinchona bark, ivory palm, hats, leather, tobacco, cotton and indigo), the harvesting and manufacture of which did not significantly change local ecosystems. The environmental impact of these extraction processes could be considered relatively low.

PRESSURE

## THE EXTENT OF THE COLOMBIAN LANDSCAPE TRANSFORMED UNTIL 1920 COMPRISED AROUND 24 MILLION HECTARES. FROM THIS MOMENT ON, THE VELOCITY WITH WHICH ALTERATIONS OCCUR INCREASED AT SUCH A RATE THAT, BY THE END OF THE 20TH CENTURY, MORE THAN 40% OF THE MAINLAND HAD BEEN CONSIDERABLY ALTERED.

The extent of the Colombian landscape transformed until 1920 comprised around 24 million hectares. From this moment on, the velocity with which alterations occur increased at such a rate that, by the end of the 20th century, more than 40% of the mainland had been considerably altered.

After 1930, the country began to adopt economic models created in other parts of the world rather quickly, mostly due to recommendations from foreign missions solicited by the Colombian government or as part of certain agreements with international organizations. These missions helped configure industrialization, import substitution and the analysis of the conditions and potential for Colombian economic development, among other processes.

Although the greatest rates of loss of mainland vegetation cover after 1950 were concentrated on the three mountain ranges and the inter-Andean valleys, some sectors of the Chocó-Darién ecoregional complex, the Orinoco region and the Andean-Amazon piedmont, excluded from these practices until then, began to suffer noteworthy modifications.

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The development of infrastructure, the mining industry, hydrocarbon extraction, livestock farming, the agricultural industry, and logging have progressed in Colombia without a proper assessment of their environmental impacts, resulting in the intensification of many pressures on our natural resource base. Parallel to this, the country's political instability, a consequence of its profound social and economic inequality, has manifested itself as complex forms of conflict over the access to land and natural resources, as well as waves of agricultural colonization linked, for the most part, to the expansion of illicit crops and the forced displacement of millions of people.

# THREATS, DRIVING FORCES AND CURRENT TRENDS
## AFFECTING THE LOSS OF BIODIVERSITY

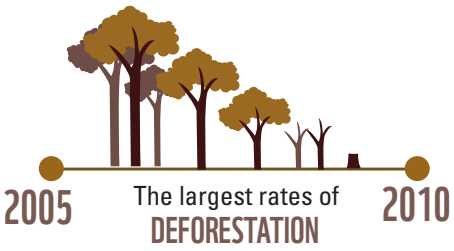
Deforestation has been responsible for most of the alterations of the terrestrial socio-ecological systems of the country during the last two decades. Between 2005 and 2010, the regions exhibiting the highest rate of deforestation were the Andes and the Amazon. This last area represents 41% of the loss of natural forests in the country.

Another driving force behind the loss of biodiversity is the expansion of the agricultural sector. Between the year 2000 and 2011, the total national harvest area reached 6,705,677 million hectares. Between 2005 and 2010, the percentage of plant cover transformation that could be attributed to these same forces reached 55.7%. Along with the loss of original vegetation cover, the use of commercial nitrogen and phosphate fertilizers has an effect on ecosystems.

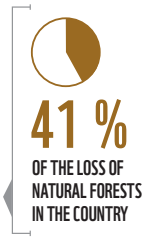
Colombia is currently one of the largest consumers of commercial fertilizers in Latin America.

A similar situation can be observed regarding livestock farming. Currently, nearly 35% of the Colombian territory is being used to raise livestock, even though only half of this area is adequate for herding. Extensive livestock farming is a key factor in land degradation and deforestation outside of natural savannas. It also contributes to greenhouse gas emissions and water pollution. Additionally, livestock farming represents the most important intervention on wetlands, given the fact that 54% of the affected plant cover in these ecosystems is associated to cattle ranching, affecting 1.18 million hectares of permanent and temporary wetlands.

DEFORESTATION HAS BEEN RESPONSIBLE FOR MOST OF THE ALTERATIONS OF THE TERRESTRIAL SOCIO-ECOLOGICAL SYSTEMS OF THE COUNTRY DURING THE LAST TWO DECADES.





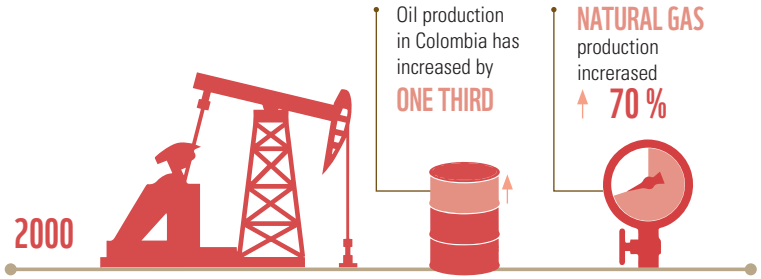



ANOTHER DRIVING FORCE BEHIND THE LOSS OF BIODIVERSITY IS THE EXPANSION OF THE AGRICULTURAL SECTOR. BETWEEN 2005 AND 2010, THE PERCENTAGE OF PLANT COVER TRANSFORMATION THAT COULD BE ATTRIBUTED TO THIS DRIVER REACHED 55.7%.

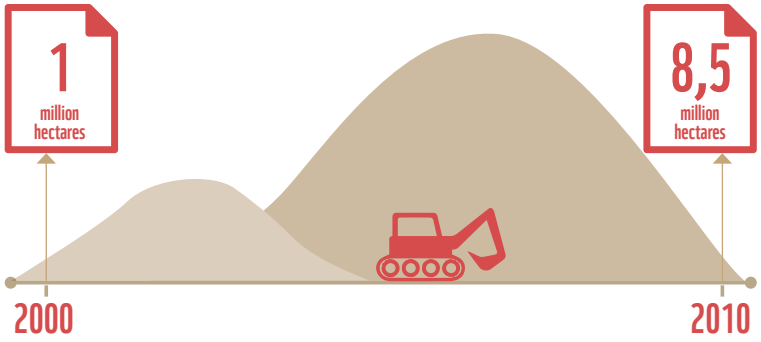
Mining and energy production also explain a portion of the loss of biodiversity. Since 2000, Colombian oil production has increased by a third and natural gas production by 70%. The surface occupied by mining titles increased from 1 million hectares, in 2000, to 8.5 million in 2010. Between 2000 and 2011, coal production doubled, turning Colombia into the eleventh largest coal producer in the world and the first largest producer in Latin America.

The illegal mining of precious metals is a growing issue in the country, especially in the Pacific region, where more than 90% of mining operations are illegal. Around 79,000 hectares in this area have been degraded by illegal mining. Tens of thousands of titles have been requested in protected areas. Considering this, it is a particular cause for concern that a great increase in titles made for upland

**Mining and energy production also explain a portion of the loss of biodiversity:**




**THE AREA COVERED BY MINING TITLES INCREASED**

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areas occurred between 2005 and 2009, with over 400 requests granted in 2010 and more than 800 requests submitted that same year.

Wood and charcoal are a significant component of the rural energy matrix. More than excessive extraction for family use, organized illegal activities are a constant threat to biodiversity. It is estimated that between 40% and 50% of the lumber in the country is logged illegally. Compared to this, legal logging operations contributed nearly 0.2% to the GDP, including exports, in 2014, out of 97.3 million dollars in furniture and accessories and 504.9 million dollars in paper, cardboard and pulp based products.

Wildlife trafficking is a major cause of the decrease in bird, mammal, reptile, amphibian, mollusk, fish, arachnid, crustacean and anthozoan populations in Colombia. Between 1996 and 2010, Colombia was the second largest live reptile (2.9 million) and reptile skins exporter (9.6 million) in the world.

The fishing industry is not a major part of the Colombian economy, given that it represents only 0.2% of the GDP, but it is a source of food and jobs for local communities, especially along the Pacific coast, where more than 95% of the country's marine catches are made. Despite all this, fisheries, ornamental fish catching and bycatch in unregulated fishing operations have a significant impact on many species of fish.

One of the greatest threats to biological diversity is linked to the accidental or deliberate introduction of exotic species (non-indigenous species). The presence of these species, which might become

**BETWEEN 1996 AND 2010, COLOMBIA WAS THE SECOND LARGEST LIVE REPTILE AND REPTILE SKINS EXPORTER IN THE WORLD.**

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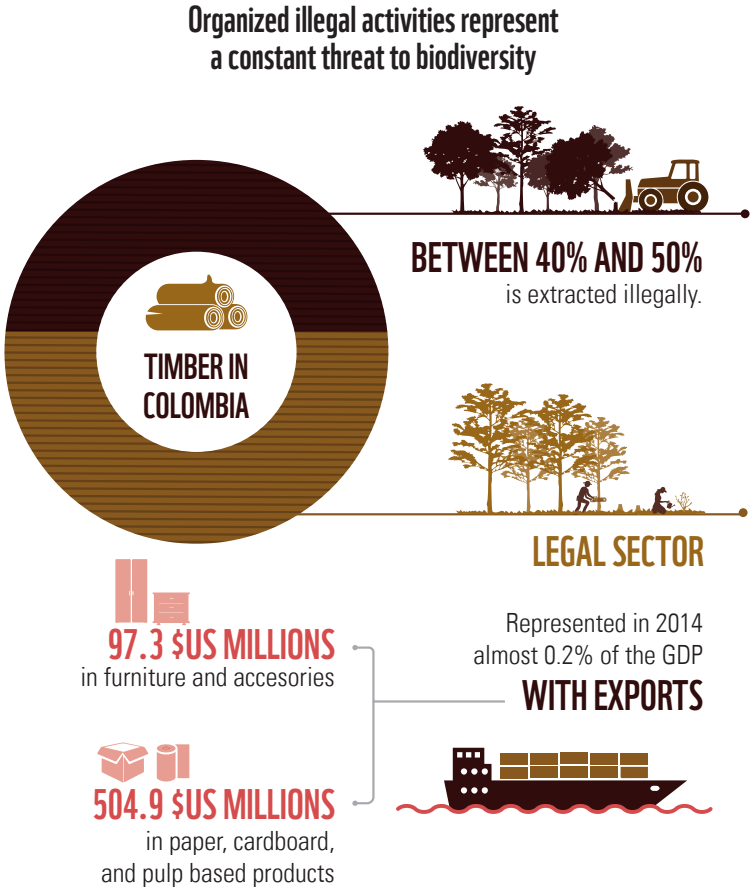
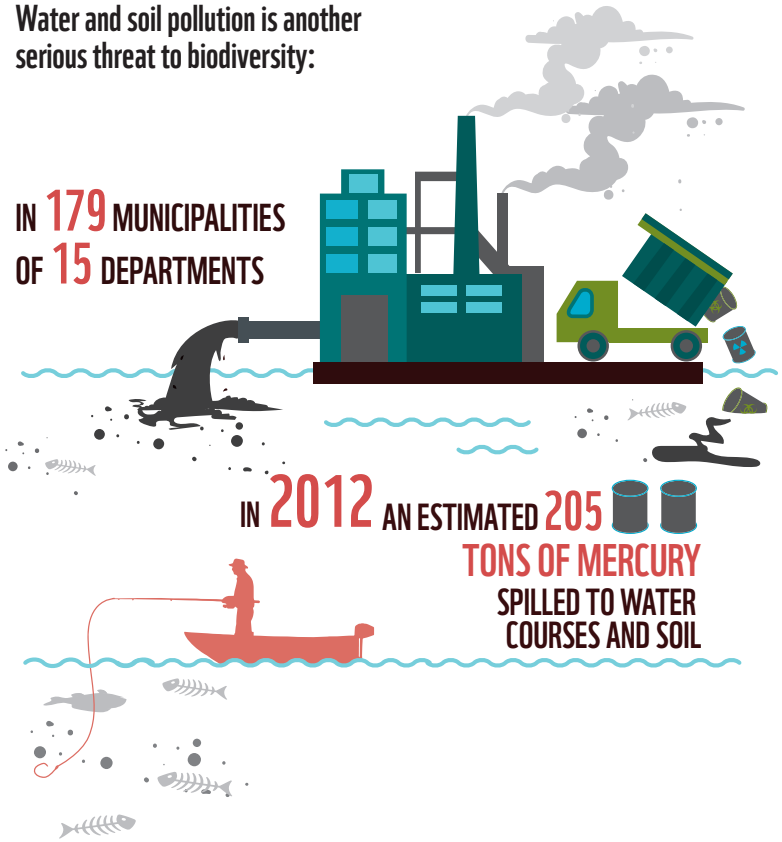


invasive, could cause changes to the structure and composition of natural species, ecological imbalances in certain communities, the degradation and loss of the ecological integrity of land and aquatic ecosystems, and the reduction of genetic diversity. Up until 2014, 877 introduced or exotic and 85 transplanted species had been detected in Colombia. Among them, considered by the IUCN as some of the worst invasive species in the world, are the common gorse (*Ulex europaeus*), the tilapia (*Tilapia* spp.), the rainbow trout (*Oncorhyncus mykiss*), the bullfrog (*Lithobates catesbeianus*) and the lion fish (*Pterois volitans*).

Water and soil pollution is another serious threat to biodiversity. In 179 municipalities from 15 states, a spilled pollutant load of 205 tons of mercury was estimated to have affected the soil and water in 2012, 27.5% of which correspond to the use of chemicals in silver mining and 72% to their use in gold mining. Colombia is considered to be the third country in the world in terms of pollution due to mercury emissions and the first country in the world in terms of mercury emission per capita.

The last threat that will be mentioned here is climate change. Greenhouse gas emissions have been relatively low in Colombia, constituting 0.4% of the world's total emissions. However, large-scale changes are expected to occur in the country, mainly in its Andean and Caribbean regions. In both of these regions, the weather would shift from semi humid to semiarid in the course of the century.




The possible impacts this might have on the Andes are worrying due to the fact that this region is home to 75% of the Colombian population and the runoff that comes from the mountains is an essential source of water for domestic and industrial uses, irrigation and hydroelectric energy plants.

UP UNTIL 2014, 877 INTRODUCED OR EXOTIC AND 85 TRANSPLANTED SPECIES HAD BEEN DETECTED IN COLOMBIA. AMONG THEM, SEVERAL SPECIES CONSIDERED BY THE IUCN AS SOME OF THE WORST INVASIVES IN THE WORLD, INCLUDING THE COMMON GORSE (*ULEX EUROPAEUS*), THE TILAPIA (*TILAPIA* SPP.), THE RAINBOW TROUT (*ONCORHYNCUS MYKISS*), THE BULLFROG (*LITHOBATES CATESBEIANUS*) AND THE LION FISH (*PTEROIS VOLITANS*).



# ECOLOGICAL FOOTPRINT AND BIOCAPACITY IN COLOMBIA

In order to understand the impact of our species on the biodiversity of the whole planet, the Living Planet Report has made use of the analysis of the supply of and demand for natural resources among human beings. In order to compare demands for resources, each country's ecological footprint is measured, that is to say, the biologically productive area required to provide the resources used by the population and to absorb their waste; this result is compared to national biocapacity, or the biologically productive area available per capita.

According to data obtained by the GFN, in 2016 (2012 measurement), Colombia ranked 92d among 150 countries regarding its ecological footprint, while occupying the 14th place in terms of its biocapacity. Colombia's total biocapacity amounted to 3.6 global hectares, or GHAs, which could be attributed to the considerable size of the nation's forest ecosystems.

However, this number has become smaller throughout the years. Between 1961 and 1985 it went from 10 to 6 GHA and between 1985 and 2012, dropped down to 2.1 GHA. Colombia's ecological footprint reached 1.9 GHA in 2016.

These indicators' behavior provides an important guideline for biodiversity management. As long as its biocapacity is larger than its footprint, a country may rely on a resource reserve for sustaining its population. Even though Colombia finds itself in this situation and in spite the fact that its footprint has remained virtually stable since 1961, the downward trend of its biocapacity suggests that our resource reserves are clearly diminishing. However, the country still possesses a rich and diverse resource base, which offer many opportunities of finding biodiversity friendly, socially just and economically viable development alternatives.

**COLOMBIA STILL POSSESSES A RICH AND DIVERSE RESOURCE BASE, WHICH OFFER MANY OPPORTUNITIES OF FINDING BIODIVERSITY FRIENDLY, SOCIALLLY JUST AND ECONOMICALLY VIABLE DEVELOPMENT ALTERNATIVES.**


RESPONSE

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# OUR RESPONSE: A MEGADIVERSE COUNTRY FACING THE FUTURE

Colombia's territories and biodiversity offer society a great variety of essential services, such as food security, energetic resources, clean water, climatic and nutrient cycle regulation, and both inland and coastal protection against extreme natural phenomena, among others. This supply of services, made possible by the ecological structure of the land is an integral part in the value chain of various economic activities that make use of them as raw materials in productive processes such as, for example, artisanal and industrial fishing, tourism, agriculture and mining and energy development, as well as in the pharmaceutical, cosmetics and hygiene, food and biofuel sectors.

However, and despite its importance, throughout the last four decades this natural capital has been increasingly degraded. Consequently, the quality of life of millions of people who are dependent on these goods and services is being directly or indirectly threatened.

The shift Colombia's development paradigm needs must consider the preservation and sustainable management of the ecological infrastructure – defined as the nation's terrestrial, freshwater and marine ecosystems and the services they provide – as a key factor for guaranteeing the sustainability of the development strategies formulated for the future. Adopting a development model such as this necessarily requires various systemic transformations at different scales that would, in conjunction with each other, stand for a new, responsible and effective integration of society to the country's ecological realities as well as its ecological richness.

RESPONSE

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This transition entails a new and historically distinct relationship between Colombian society and its territory. WWF hopes to contribute to making Colombia's socioeconomic development inclusive, equitable and low in carbon emissions by 2025 as well as basing it on a proper appraisal of its ecosystem services and adequate institutional, social and political governance on local, regional and international levels.

In order to move forward towards this ambitious goal, WWF has drafted a conservation plan based on three major strategies framed by thematic lines of work defined by the organization on a global scale.

**WWF HAS DRAFTED A CONSERVATION PLAN BASED ON THREE MAJOR STRATEGIES FRAMED WITHIN THE THEMATIC LINES OF WORK DEFINED BY THE ORGANIZATION ON A GLOBAL SCALE.**

## STRATEGY 1:
## A PLACE FOR NATURE

The future preservation of the country's complex environmental gradients, which are responsible for its enormous biodiversity and the supply of ecosystem services, is a challenge that requires a variety of approaches. On one hand, there is the unleashing of large scale landscape transformation processes and, on the other, new socioecological dynamics that create a growing demand for natural resources.

The WWF conservation plan has established five types of work that have been fitted to the different types and degrees of landscape

transformations, from relatively unchanged landscapes, where a conservational approach must be emphasized, to those that are in need of deep intervention with the purpose of recuperating their ecological functionality.

- Terrestrial, freshwater and marine landscape zoning according to each region's particularities and production and exploitation models that will reduce deforestation, the land use changes or the overexploitation of resources.
- Production chains that promote sustainable management systems for dealing with forest, agricultural or fishing resources based on low-carbon criteria.
- Climate management oriented and low-carbon urban landscape use planning.
- An increase in coverage and effective management of protected and conservation areas.
- An increase in the resilience, connectivity and functionality of degraded ecosystems through ecological restoration and remediation processes.

**WE PROPOSE RURAL LANDSCAPE ZONING MODELS THAT WILL REDUCE DEFORESTATION, LAND USE CHANGES AND THE OVEREXPLOITATION OF RESOURCES.**

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## STRATEGY 2:
## EFFECTIVE SOCIAL, POLITICAL AND LEGAL GOVERNANCE

The concept of governance includes interaction processes and the adoption of free and informed decisions among different agents with the purpose of creating social, legal, political and institutional agreements around the proper access to and conservation and use of natural resources, as well as low-carbon development. In order to attain effective governance, an equitable and inclusive acknowledgment of property and usage rights concerning natural resources and land tenure must be made.

The roles of each member of society must also be acknowledged in relation to his or her cultural background, to stimulate authentic territorial appropriation and, therefore, the exercise of the citizens' and elected officials' rights. In order to achieve a true state of governance that will help deter the main pressures and threats specified in our conceptual model, WWF Colombia has devised three encompassing lines of work:

- Strengthening institutional and legal frameworks regarding the adoption of a low-carbon strategy and the honoring of national and international agreements through the reinforcement of local government and organization capabilities.
- Strengthening governance of natural resources and territorial security and conflict resolution concerning land use and natural resources.
- Promoting social, environmental and political governance outside of the nation's boundaries.

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## STRATEGY 3:
## MARKETS AND FINANCIAL SYSTEMS

Sectoral planning and production and usage models must reduce deforestation, the adoption of changes in land use and the overexploitation of resources. Land use planning processes are cemented on scientific information and promote climate-smart conservation and production and are supported and backed by government and financial institutions.

In order to contribute to the creation of a low-carbon economy that can value ecosystem services and promote equitable and inclusive human development, WWF Colombia has adopted the following five courses of action:

- Promoting and incorporating the adoption of measures geared towards avoiding deforestation, environmental degradation and changes in the use of the soil within credit and investment policies developed by financial institutions.
- Strengthening markets and production and supply chains. This line of work also contemplates fomenting proper practices concerning food production, fishing and logging endeavors.
- Designing and implementing market mechanisms and instruments that will foment green growth.
- Playing a role in setting up the financing mechanisms behind multilateral organizations in order to support conservation.
- Fomenting environmentally-aware and legal and responsible consumption cultures. WWF seeks to help Colombia move towards a true green economy that will ensure economic, environmental and social sustainability, as well as peace and security. Now is the time for the nation to adopt a climate-smart land use plan, practices that will ensure the continuity of ecosystems and to put in place economic systems and financial institutions that will give rise to low-carbon development. We also have the unique opportunity to work with a private sector that will value ecosystem services and implement sustainable practices.

The reconciliation that this country is looking for needs a cultural transformation, a paradigm shift, a new horizon. This is the chance to collectively create a civil society and a nation that will be responsible for, aware of and committed to building a better present for everyone and a promising future for generations to come. If we remain together and in peace with each other, it will be possible for Colombia to reach a biodiverse future.

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THIS PUBLICATION PRESENTS A HISTORICAL OVERVIEW OF THE LOSS AND DEGRADATION OF COLOMBIAN ECOSYSTEMS AND BIODIVERSITY, AS WELL AS OF THE DEVELOPMENT MODELS AND MAJOR DRIVERS RESPONSIBLE FOR THESE TRANSFORMATIONS. THE REPORT ALSO SUGGESTS AN ALTERNATIVE PATHWAY TO BUILD A FUTURE BASED ON A MORE INCLUSIVE, EQUITABLE AND LOW CARBON SOCIO-ECONOMIC DEVELOPMENT SUPPORTED BY OUR MOST IMPORTANT TREASURE: COLOMBIAN MEGADIVERSITY.

WWF

**Why we are here**
To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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