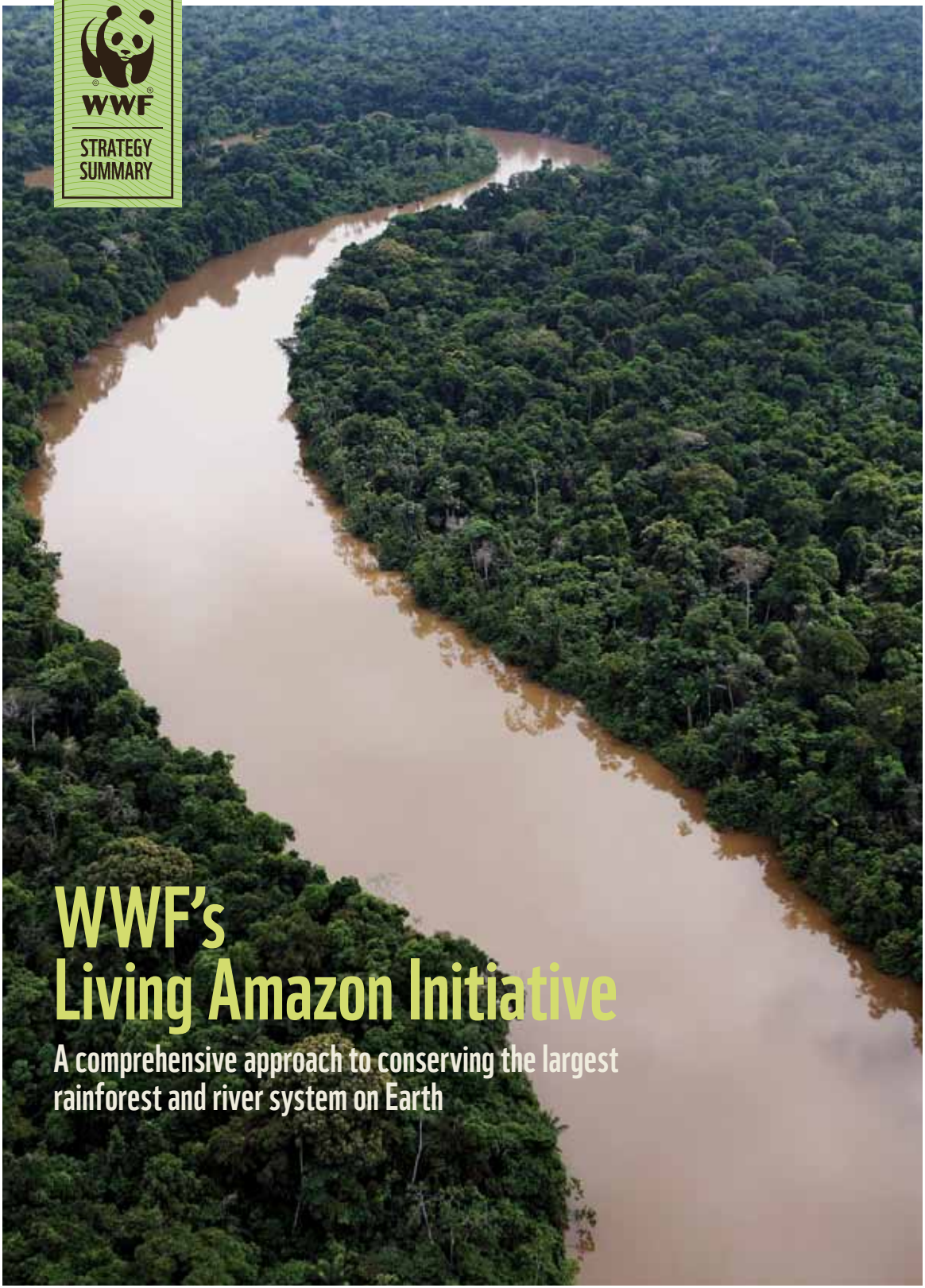
WWF

STRATEGY SUMMARY



WWF's Living Amazon Initiative

A comprehensive approach to conserving the largest rainforest and river system on Earth

CREDITS

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FRONT COVER PHOTO: © BRENT STIRTON / GETTY IMAGES / WWF

PRINTED BY GRAMBS CORPORACIÓN GRÁFICA, LIMA - PERU

Published in October 2010 by WWF

ISBN 978-2-940443-25-3

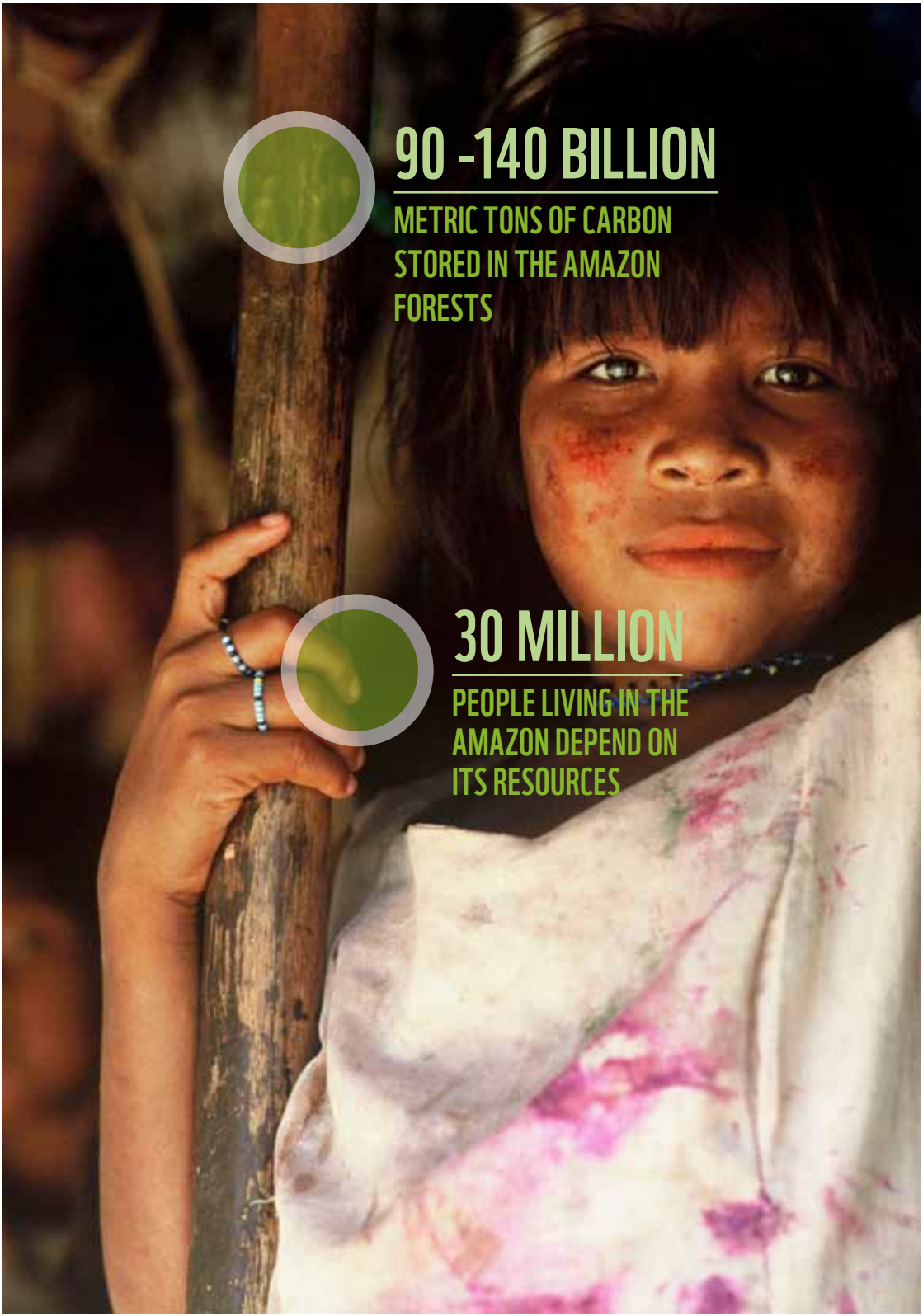
WWF is one of the world's largest and most experienced independent conservation organizations, with over 5 million supporters and a global Network active in more than 100 countries.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by: conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

Today, we use 25 % more resources than our planet can provide sustainably.

This endangers thousands of species, ecosystems, and humanity itself. To address this critical problem, under its Global Program Framework, WWF has defined two global goals: the conservation of priority areas and species and the reduction of humanity's ecological footprint (our impact on nature), and organized its endeavors into global initiatives that strategically articulate these priorities.

Built upon 40 years of experience in the region, the Living Amazon Initiative is one of such global initiatives concentrating some of WWF´s most promising and challenging efforts. This strategy summary is designed to share this innovative conservation approach with partners, authorities, and other stakeholders throughout the Amazon and beyond, and thus contribute to building a common conservation vision for the largest rainforest and river system on Earth.



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The big-leaf mahogany *(Swietenia macrophylla)*, a highly valuable timber species, has been driven to extinction in several regions in the Amazon. Today it is considered a conservation priority by WWF.

WHY A LIVING AMAZON INITIATIVE?

A pillar of life as we know it

One in ten known species on Earth lives in the Amazon. Its forests contain 90-140 billion metric tons of carbon, the release of even a portion of which would accelerate global warming significantly. 30 million people living in the Amazon depend on its resources and services – not to mention many millions more living as far away as North America and Europe, but still within the Amazon's far-reaching climatic influence.

Our generation could witness the extinction of the Amazon
Rapidly expanding global markets for meat, soy and biofuels and the imminent realization of large-scale transportation and energy infrastructure projects coupled with poor planning, weak governance and lack of an integrated vision of sustainable development for the Amazon are contributing to accelerated rates of deforestation and increased pressure on the natural resources and environmental services upon which millions of people depend. Increased temperatures and decreased precipitation caused by global warming will exacerbate these trends and could lead to a "tipping point" where the tropical moist forest ecosystem collapses and is replaced over large areas by a mixture of savannah and semi-arid ecosystems. The implications of this massive ecosystem shift for biodiversity, global climate and human livelihoods would be profound.

10%
OF THE WORLD'S SPECIES LIVE IN THE AMAZON

WWF's integrated conservation approach
Urgent and immediate action is needed if we are to avoid this frightening scenario. Over the next ten years WWF will develop far-reaching and powerful partnerships with governments, civil society, and the private sector to promote the transformational processes needed to bring about an alternative scenario for the Amazon, in which:

- Governments, local peoples, and civil society in the region share an integrated vision of conservation and development that is environmentally, economically, and socially sustainable;
- Natural ecosystems are valued appropriately for the environmental goods and services they provide and the livelihoods they sustain;
- Tenure and rights to land and resources are planned, defined and enforced to help achieve this conservation and development vision;
- Agriculture and ranching are carried out following best management practices on lands that are appropriate and legal; and
- Transportation and energy infrastructure development is planned, designed and implemented to minimize impact on natural ecosystems, hydrological disruption and impoverishment of biological and cultural diversity.

WWF'S LIVING AMAZON INITIATIVE PURPOSE STATEMENT

Undoubtedly, the past four decades have been of utmost importance to WWF both in terms of laying the groundwork for where we are today, as well as in informing our global organization on how we should most effectively embark on this next phase of work in the Amazon.

Given that the forces shaping the Amazon Biome extend far beyond a local context and know no political boundaries, we can no longer work on pieces of the puzzle in isolation from one another. Rather, we must address the biome as a whole in order to secure the viability of the entire system. Therefore, although our presence in the region has been key to many conservation results over the years, it is with the articulation of the Living Amazon Initiative in 2008 that WWF has been able to bring together 40 years of experience as part of a unified blueprint to address the challenges to the Amazon Biome as a whole.

The primary objective of developing the WWF Living Amazon Initiative is thus to redouble our efforts as an organization on a scale equivalent and relevant to the scope of the problem at hand. Our vision is:

40+YEARS

OF CONSERVATION EXPERIENCE IN THE AMAZON

An ecologically healthy Amazon Biome that maintains its environmental and cultural contribution to local peoples, the countries of the region, and the world, within a framework of social equity, inclusive economic development and global responsibility.

In order to achieve this vision WWF will maximize its impact by focusing on the most urgent biome-wide threats and most far-reaching opportunities that will afford the greatest leverage for Amazon-wide conservation results. Implementation is of course a joint effort between a variety of stakeholders and partners who not only share our vision and approach, but bring the knowledge, resources, and leadership needed to achieve great conservation and sustainable development results. The WWF Living Amazon Initiative was developed with technical and programmatic input from many of the stakeholders and partners upon which successful implementation of the strategy will depend.

As a conservation organization, WWF's focus on conservation targets does not diminish the importance of the wellbeing of humankind or our commitment to supporting socio-economic development that is equitable and sustainable. Rather, it puts us in the constructive position of being able to address socio-economic considerations posed by those who do not deal with environmental issues on a daily basis. In addition, it allows WWF to provide concrete guidance to those who want to promote responsible development that builds upon –rather than destroys– the Amazon's attributes and functions for the good of all.

A Kandozi girl holds a woolly monkey *(Lagothrix lagotricha)*. Approximately 350 ethnic groups make the Amazon their home.

THE AMAZON

A meandering tributary of the Amazon in central Peru.

WHICH AMAZON?

6.7 MILLION KM²

IS THE AREA OF THE AMAZON BIOME

The geographic scope of the WWF Living Amazon Initiative is the **Amazon Biome**[2] (Figure 1), defined as the area covered predominantly by dense moist tropical forest, with relatively small inclusions of several other types of vegetation such as savannas, floodplain forests, grasslands, swamps, bamboos, and palm forests. The biome encompasses 6.7 million km² and is shared by eight countries (Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana and Suriname), as well as the overseas territory of French Guiana. For the characterization of the Amazon's freshwater biodiversity and hydrological processes, however, the study area was expanded beyond the biome to include complete watersheds which sometimes include adjacent biomes (dry forest, cerrado and puna).

Figure 1. The Amazon can be characterized in different ways depending on the lens from which it is viewed. For purposes of this document, the Amazon refers to the Amazon Biome delineated in yellow.[3]

THE IMPORTANCE OF THE AMAZON BIOME

Spanning 6.7 million km² (twice the size of India) the Amazon Biome is virtually unrivalled in scale, complexity and opportunity, and truly is a region distinguished by superlatives. Not only does the Amazon encompass the single largest remaining tropical rainforest in the world, it also houses at least 10% of the world's known biodiversity, including endemic and endangered flora and fauna, and its river accounts for 15-16% of the world's total river discharge into the oceans. The Amazon River flows for more than 6,600 km, and with its hundreds of tributaries and streams contains the largest number of freshwater fish species in the world. Equally impressive are the unfathomable numbers of mammals, birds, amphibians, and reptiles[4] found across the biome.

THE SIZE OF INDIA

The Amazon is home to more than 30 million people living across a vast region subdivided into nine different national political systems. According to the Coordinator of Indigenous Organizations of the Amazon Basin (COICA), about 9% (2.7 million) of the Amazon's population is still made up of indigenous people – 350 different ethnic groups, more than 60 of which still remain largely isolated.

OVER 6,600 KM

THE LENGTH OF THE AMAZON RIVER

And yet, for all of its magnitude and apparent remoteness, the Amazon Biome is surprisingly fragile and close to each one of us. During the last half century, the seemingly endless Amazon has lost at least 17% of its forest cover, its connectivity has been increasingly disrupted, and numerous endemic species have been subjected to waves of resource exploitation. The economic transformation of the Amazon based on the conversion and degradation of its natural habitat is gaining momentum. Yet, as those forces grow in strength, we are also finding that the Amazon plays a critical role in maintaining climate function regionally and globally, a contribution which everyone–rich or poor–depends on. The Amazon's canopy cover helps regulate temperature and humidity, and is intricately linked to regional climate patterns through hydrological cycles that depend on the forests. Given the enormous amount of carbon stored in the forests of the Amazon, there is tremendous potential to alter global climate if not properly stewarded. The Amazon contains 90-140 billion metric tons of carbon, the release of even a portion of which would accelerate global warming significantly. Currently, land conversion and deforestation in the Amazon release up to 0.5 billion metric tons of carbon per year, not including emissions from forest fires, thus rendering the Amazon an important factor in regulating global climate (Nepstad et al 2008).

350

ETHNIC GROUPS

17%

OF THE FOREST HAS BEEN LOST IN THE LAST 50 YEARS

Brazil nut trees *(Bertholletia excelsa)* grow naturally in the rainforest and provide a sustainable alternative for local livelihoods in some regions of the Amazon.

AN UNCERTAIN FUTURE: INCREASING THREATS

While the socio-economic transformation of the Amazon generates both positive and negative impacts, it is key to address the negative implications of the current changes to the Amazon for both the people living in the Amazon and outside. It is imperative to understand what is driving these processes, and what opportunities for change are within reach.

Given the many dynamics at play in a region as enormous as the Amazon, an effort has been made to identify the human-induced processes which have the greatest impact on the biome as a whole. These we refer to as direct threats.

This section does not pretend to be an exhaustive account of everything that is happening in the Amazon. Rather, it seeks to reveal the major issues and their interactions to enable strategic decisions to be made on how to maximize sustainable use and conservation in the Amazon Biome.

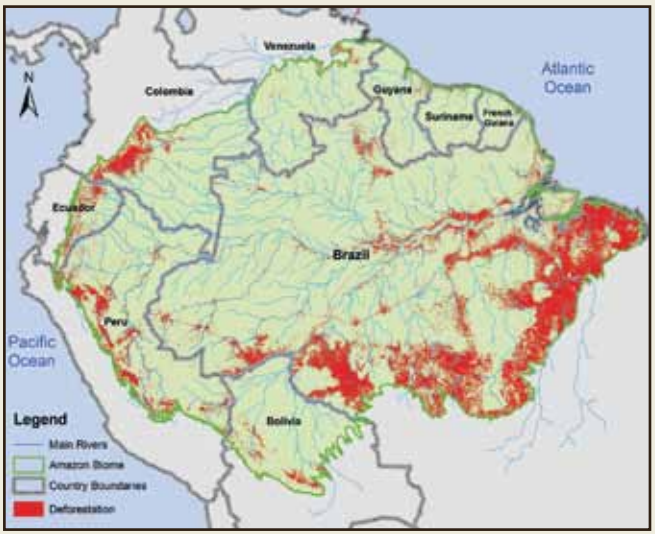


Figure 2. Deforestation in the Amazon Biome based on data from 2009 for Brazil and 2007-2008 for the other countries.

Vanishing forests
Extensive cattle ranching accounts for 80% of current deforestation, while agriculture is largely responsible for the rest (Nepstad et al. 2008).

The vast majority of the deforestation can be found in the eastern and southeastern part of the Amazon (Brazil) in the so-called Arc of Deforestation, and the Northwestern brim of the Basin's headwaters, primarily in Colombia and Ecuador.

Deforestation for agriculture and cattle ranching is an increasing threat throughout the Amazon Biome.

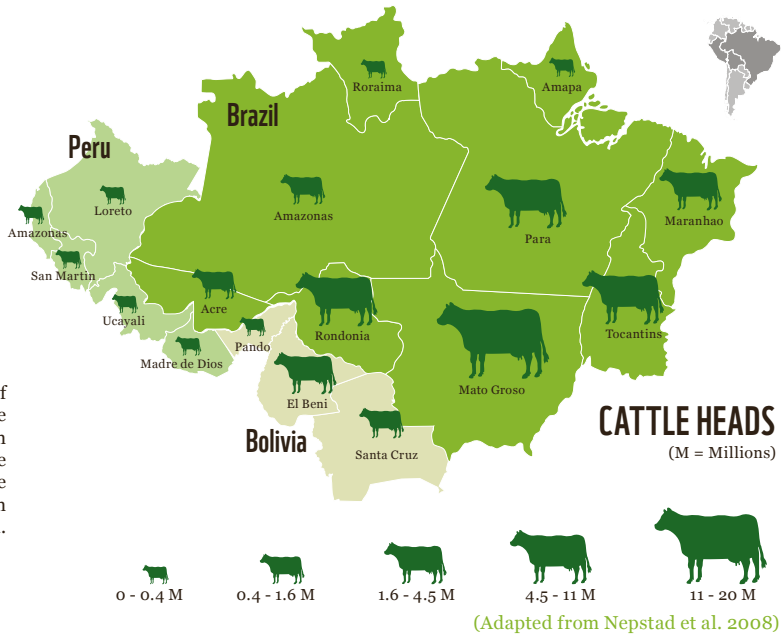
MAIN THREATS

UNSUSTAINABLE CATTLE RANCHING

80%

OF DEFORESTED AREAS OF THE AMAZON ARE OCCUPIED BY CATTLE PASTURES

Habitat conversion, commonly referred to as deforestation,[5] lies at the crux of what is shaping the future of the Amazon Biome. Extensive cattle ranching is the number one culprit of deforestation in virtually every Amazon country, and it accounts for 80% of current deforestation (Nepstad et al. 2008). Alone, the deforestation caused by cattle ranching is responsible for the release of 340 million tons of carbon to the atmosphere every year, equivalent to 3.4% of current global emissions. Beyond forest conversion, cattle pastures increase the risk of fire and are a significant degrader of riparian and aquatic ecosystems, causing soil erosion, river siltation and contamination with organic matter. Trends indicate that livestock production is expanding in the Amazon.



(Adapted from Nepstad et al. 2008)

Figure 3. Number of heads of cattle in the states of the Brazilian Amazon and the departments of the Bolivian and Peruvian Amazon.

Brazil has 88% of the Amazon herd, followed by Peru and Bolivia. While grazing densities vary among livestock production systems and countries, extensive, low productivity, systems with less than one animal unit per hectare of pasture are the dominant form of cattle ranching in the Amazon.

Burning forests to create grasslands for cattle is one of the most widespread threats to the Amazon.

MAIN THREATS

MECHANIZED AGRICULTURE EXPANSION

Agriculture is the second main cause of forest conversion in the Amazon. In addition to deforestation, agricultural practices tend to cause significant soil erosion and river siltation, as well as aquatic contamination with agrochemicals. Agriculture in the Amazon is extremely diverse. While small-scale agriculture can have significant cumulative impact in some Amazonian ecosystems, it is the large-scale agro-industrial sectors, with trends of rapid expansion in the Amazon, that are of most concern.

Brazil has 67% of the crop area of the Amazon, followed by Peru (14%) and Bolivia (9%) (Nepstad et al. 2008). Soy production in the Brazilian Amazon tripled from 1990 to 2006. Other crops such as sugar cane and palm oil for biofuels, as well as cotton and rice, are expanding as well.

The livestock and agriculture sectors do not exist in isolation from each other. Rather, they are linked in two primary ways: they act as mutual enablers to access land within the Amazon, and they support each other through integrated value chains.

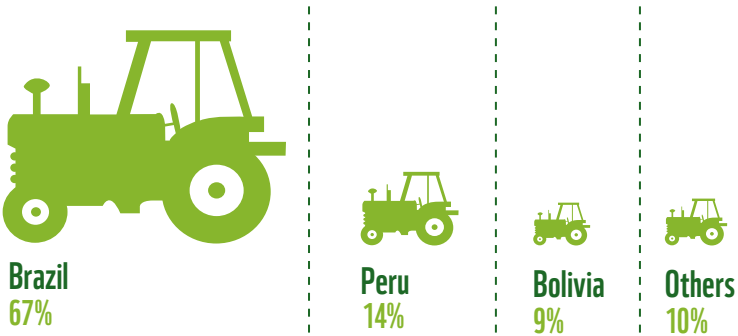


Figure 4. Brazil has most of the crop area of the Amazon, followed by Peru and Bolivia

(Adapted from Nepstad et al. 2008)

In several regions in the Amazon large extensions of rainforest have already been replaced by agriculture.

MAIN THREATS

POORLY PLANNED INFRASTRUCTURE

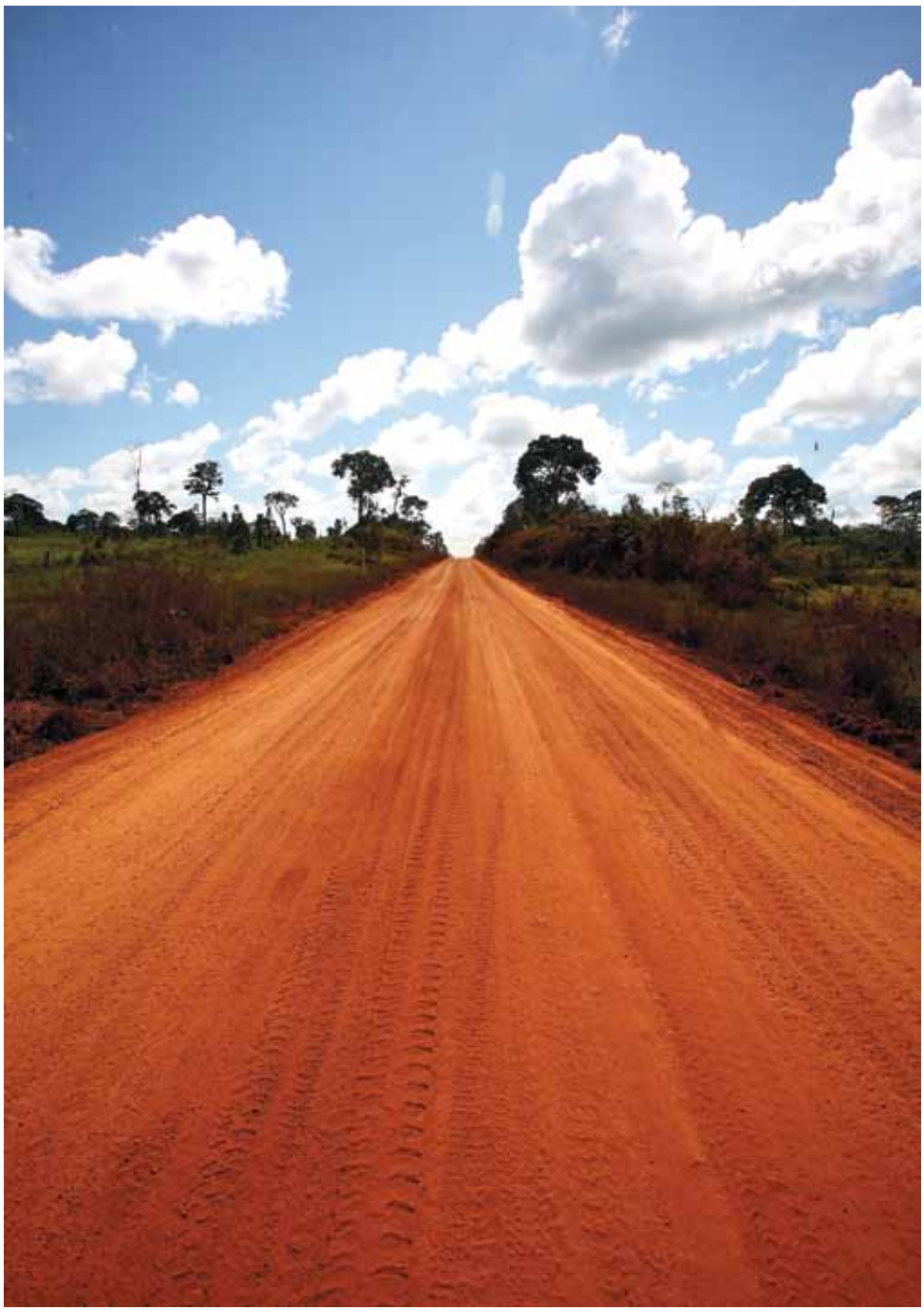
NEW PLANS ARE PROPOSED FOR LARGE DAMS ON THE MAIN TRIBUTARIES OF THE AMAZON RIVER

Transportation and energy infrastructure are essential for national and regional development, but when poorly planned, the negative impacts can exceed the short-term benefits.

In the Amazon, the building of new roads or improvement of existing roads has facilitated uncontrolled migration to otherwise inaccessible areas with the result of increased land-grabbing, deforestation, and expansion of unsustainable extractive activities.

Dam construction entails a major disruption to river connectivity through fragmentation and altering the natural flow patterns of water, sediments and nutrients. It also interferes with the ranges of aquatic species, including subsistence and commercial fisheries. Dams often require the creation of large reservoirs which cause flooding - sometimes of areas of natural, cultural and economic importance - and displacement of original inhabitants. The disruption caused to flooding patterns downstream of dams affects the natural productivity of floodplains.

Both IIRSA (Initiative for the Regional Integration of Infrastructure in South America) and the Brazilian Growth Acceleration Plan envision the construction of numerous large dams, including in some of the main tributaries of the Amazon River that, until recently, have never been dammed.



New roads are built and paved in the Amazon every day, providing access to previously remote fragile ecosystems.

MAIN THREATS

OTHER EXTRACTIVE ACTIVITIES

In addition to the larger threats described previously there are a series of additional extractive activities that, when improperly planned, can cause significant damage at local or landscape scales and/or magnify the other larger threats.

- **Gold mining.** The most common form of gold mining in the Amazon is conducted by small-scale miners with rudimentary technology and important cumulative impacts in specific areas of the Amazon, together with serious effects on human health. In addition to the devastation of landscape removal and water contamination, the enormous energy needs of the industrial mining and ore processing industries create a demand which drives deforestation for charcoal fuel and damming of rivers for hydropower.
- **Oil.** The most severe direct environmental impacts of hydrocarbon exploration and exploitation include oil or gas spills and the improper discharge of the salt-laden waters used to process the crude oil, all of which can cause devastating long-term impacts on the health of local inhabitants and ecosystems.
- **Illegal logging.** People living in or around forests have been using timber for centuries to satisfy basic needs (fuel, construction) and to generate income to sustain their livelihoods. Done properly, logging can be a sustainable form of using the goods and services provided by forest ecosystems, by letting them recover after our interventions. Sadly, around the world, high demand for timber products, weak rule of law, and poorly implemented trade rules are leading to logging that destroys nature and wildlife, damages communities, and distorts trade. A number of agreements, fora, and conventions have attempted to deal with the problem – yet illegal logging[6] still persists.

  This threat in the Amazon is degrading large areas of natural forest leading to loss of habitat and species (biodiversity). These losses decrease livelihood opportunities for forest-dwelling communities, promote forest fires, increase carbon emissions and induce harmful changes in hydrological patterns.
- **Overexploitation of aquatic resources.** Paiche or pirarucu *(Arapaima gigas)*, caimans *(Paleosuchus and Melanosuchus sp.),* and river turtles *(Podocnemis expansa)* are some of the aquatic species historically affected by over-harvesting for food, leather, eggs and shells. Some other beautiful or rare species are target of the aquarium trade.

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From top to bottom; (1) informal gold mining destroys forests, erodes river banks and seriously contaminates freshwater sources; (2) oil pollution; (3) illegal logging degrades the rainforest and provides access for other extractive activities; (4) commercially valuable fish species have already disappeared in some regions due to over-exploitation.

MAIN THREATS

CLIMATE CHANGE

As habitat destruction trends interact with climate change, the concern is that the Amazon will be caught up in a set of "negative feedback loops" that could dramatically speed up the pace of forest lost and degradation and bring the Amazon Biome to a point of no return. This threshold, also referred to as a *tipping point,* may occur when Amazonian forests die and are progressively replaced by fire-prone brush and savanna *(ecological tipping point),* and rainfall is inhibited on a regional scale *(climatic tipping point).*

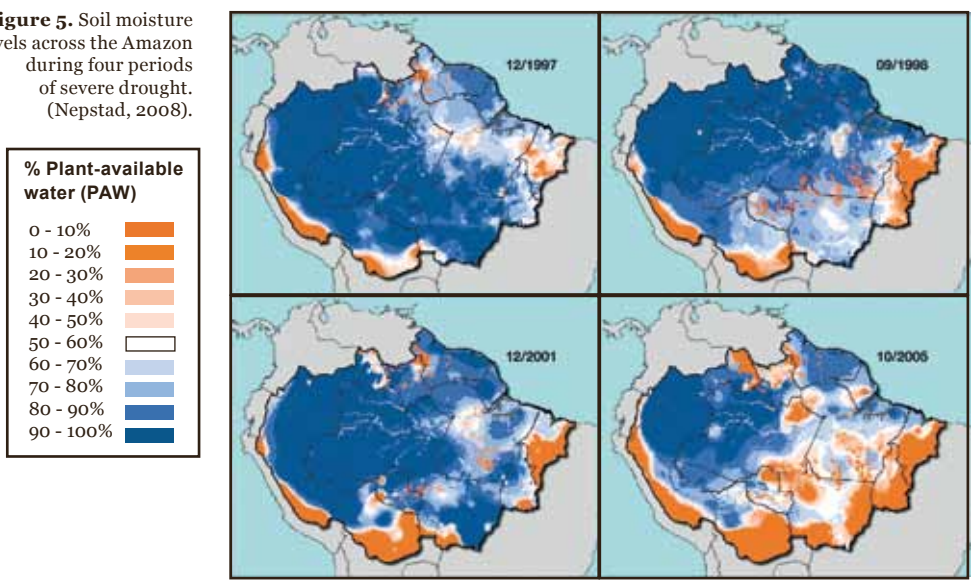


Figure 5. Soil moisture levels across the Amazon during four periods of severe drought. (Nepstad, 2008).

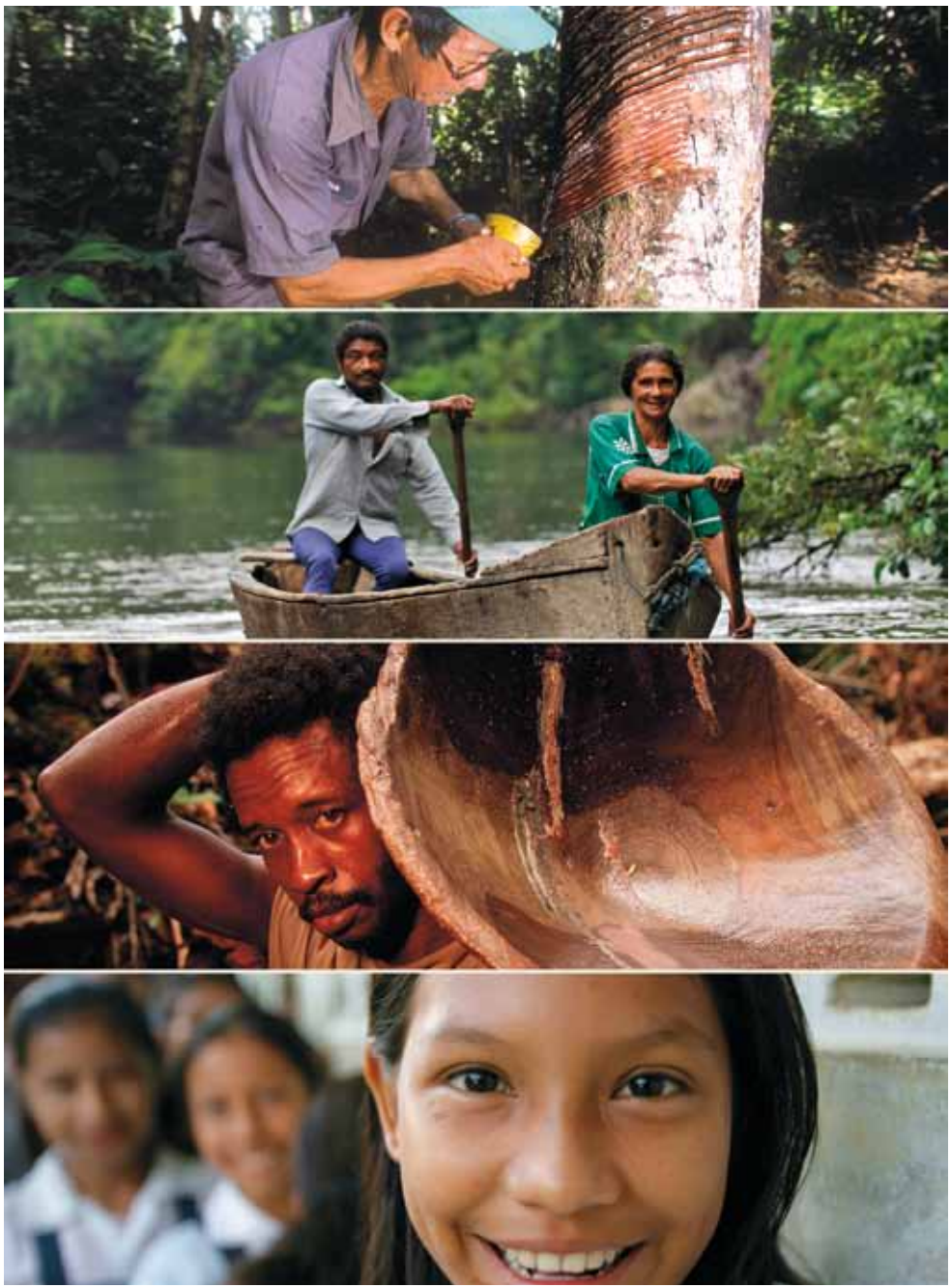
The climate and deforestation-driven substitution of forests to savanna-like and semiarid vegetation has been dubbed the Amazon forests' "die back" (Cox et al. 2000, Cox et al. 2004; Nobre et al. 1991; Oyama and Nobre 2003). While there is still debate among scientists about this concept, some climate-simulation vegetation models predict that such a die-back could occur by the end of this century. For some scientists (Nepstad, 2008), however, this timeframe may be optimistic as these models do not include land-use change or the synergistic effects of deforestation and regional climate change. If these factors were taken into account, we could face a dire scenario in which current trends in livestock, agriculture, logging expansion, fire and drought could destroy or severely damage 55% of the Amazon rainforest by the year 2030 (Nepstad 2008).

Forest fires, fueled by climate change, represent an increasing threat to the Amazon.

STAKEHOLDERS

Given the global scope of the Amazon's environmental contributions, there is a shared responsibility by all humankind for its conservation, a responsibility that must be attended while respecting the sovereignty of the people of the Amazonian countries who have the ultimate responsibility for leading the efforts to conserve and sustainably use the Amazon. The range of stakeholders that need to be involved in a strategy to conserve and sustainably use the Amazon include:

- Governments (at all levels)
- Indigenous organizations (from regional to community level)
- Grass roots and other civil society organizations
- Regional organizations
- Bilateral and multilateral agencies
- Banks and investors
- Local and global corporate sector
- Businesses and productive sector associations
- Private donors
- Academic and scientific organizations
- Non- governmental organizations



From top to bottom, whether it is; (1) a local dweller harvesting rubber in Bolivia; (2) a couple of villagers in the Tumucumaque National Park in Brazil; (3) an informal gold miner in Venezuela; (4) children in Lima, Peru and hundreds of cities throughout the region; or peoples and authorities in Europe or North America, the global reach of the Amazon contributions to humankind makes it necessary to work on equally globally-oriented solutions to its threats.

FOR A LIVING AMAZON

Green winged macaws *(Ara chloroptera)* at a clay lick in Eastern Peru.

WWF'S WORK IN THE AMAZON TO DATE

WWF has a long and rich history of involvement in the Amazon, beginning over 40 years ago. From its initial site-based and research projects in the 1960s, WWF has, over the years, expanded its work to include species research and scientific analyses, local institutional capacity building, policy development and reform, support for the designation and improved management of protected areas, certified forestry and forest management, environmental education, promotion of better management practices for productive activities (forestry, fisheries, etc.), and creation of alternative sources of income for local communities.

WWF WORK INCLUDES PARTICIPATION IN THE CREATION OF KEY PROTECTED AREAS

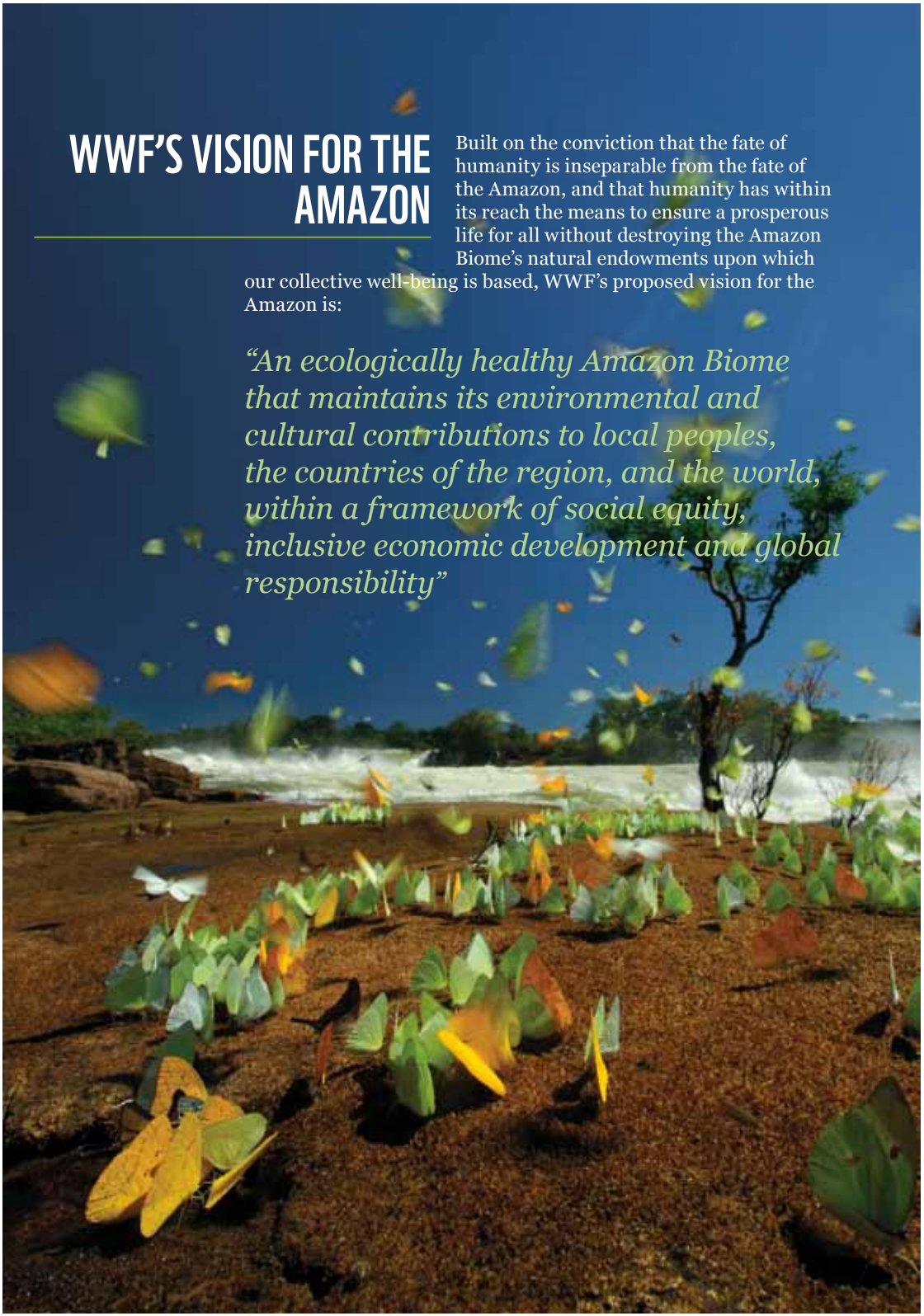
WWF work in the Amazon includes participation in the creation of a number of important protected areas including Peru's Manu National Park in 1973, Bolivia's Pilon Lajas National Park in 1976, French Guiana's Amazonian Park in 2007, and Colombia's Yaigoje-Apaporis National Park in 2009. In Brazil, WWF was instrumental in the conception and subsequent implementation of the Government's primary mechanism for creation and consolidation of protected areas in the Brazilian Amazon: the Amazon Region Protected Areas program (ARPA)[7] launched in 2002.

WWF has a strong institutional presence in 8 of the 9 Amazonian countries, and a review of the organization's experience to date underscores the scope and breadth of the relationships that we have developed with numerous partners over the years. WWF has strived to develop relationships with local, state and national governments in every country where we work, and has also invested resources, time and energy into lasting partnerships with local NGOs, civil society groups and the private sector. Going forward, we see these partnerships and relationships as one of the most critical factors in determining our success and ability to implement the broad and ambitious objectives of the WWF Living Amazon Initiative.

WWF'S VISION FOR THE AMAZON

Built on the conviction that the fate of humanity is inseparable from the fate of the Amazon, and that humanity has within its reach the means to ensure a prosperous life for all without destroying the Amazon Biome's natural endowments upon which our collective well-being is based, WWF's proposed vision for the Amazon is:

"An ecologically healthy Amazon Biome that maintains its environmental and cultural contributions to local peoples, the countries of the region, and the world, within a framework of social equity, inclusive economic development and global responsibility"



WHAT WE NEED TO ACHIEVE: CONSERVATION TARGETS AND GOALS

Over the past 50 years, 17 % of the Amazon habitat has been lost due to human-induced processes. Given this rate of habitat loss and degradation, the question of what needs to be conserved in the Amazon Biome is more critical than ever if this ecological system is to continue to provide its bountiful goods and services to the multitude of species that make the Amazon their home, its local residents, the region's, countries and the world.

WWF has defined a set of conservation targets that embody the ecological attributes and functions that are most critical to maintaining the functionality of the Amazon Biome, together with corresponding conservation goals that lay out our desired status for the Biome by 2030.

CONSERVATION TARGETS	2030 CONSERVATION GOALS
The diversity of terrestrial and aquatic ecological systems found in the Amazon Biome	The diversity of terrestrial and freshwater ecosystems[8] of the Amazon Biome is conserved[9] to ensure the survival of the species that live there and the continued provision of environmental goods and services to local peoples, the countries of the region, and the world.
The natural flow regimes that maintain aquatic connectivity and dictate the pulse of the largest river basin on the planet	The quality, quantity, and timing of flow regimes in priority[10] rivers and their headwaters are maintained at levels that ensure the integrity of aquatic ecosystems and the continued provision of ecological services that sustain local livelihoods and regional economies.
Global and regional climate regulation role of the Amazon Biome	The region's political and institutional framework supports the implementation of a climate-adaptive conservation and development agenda that increases the resilience of the Amazon Biome's key ecological process and services.

A NEW WAY OF DOING BUSINESS

To advance the vision of the WWF Living Amazon Initiative, and to achieve the transformational results at the scale that is required to fulfill the vision, no single organization can do it alone or act in isolation from others. It is clear that a critical mass of stakeholders – including governments, the private sector, NGOs, and civil society – is needed to realize a sustainable future for the Amazon.

With this in mind, WWF proposes a set of Principles of Action to guide conservation efforts in the Amazon:

- Long-term and holistic vision
- Scientific knowledge
- Participation and collaboration
- Integration
- Cultural respect
- Local leadership
- Sustainable investments
- Sharing lessons
- Monitoring and evaluation of actions

The application of these Principles in our work is what WWF is calling a *new way of doing business*. We believe that these Principles, together with the proposed strategy, will allow WWF and partners to make the great leap forward to achieve our ambitious goals.

AN INNOVATIVE APPROACH: WWF'S TRANSFORMATIONAL STRATEGIES

After analyzing the human-induced processes (threats) with the most significant implications for the conservation targets identified, WWF assessed a multitude of sector-specific drivers that are fueling these threats, identifying the top 5.

1. the **predominant development paradigm** driving the rapid conversion and exploitation for short-term gains of the few, and that does not take into account ecological attributes and functions of the Amazon Biome,

2. international and domestic **demand**, in particular for agro-commodities and energy,

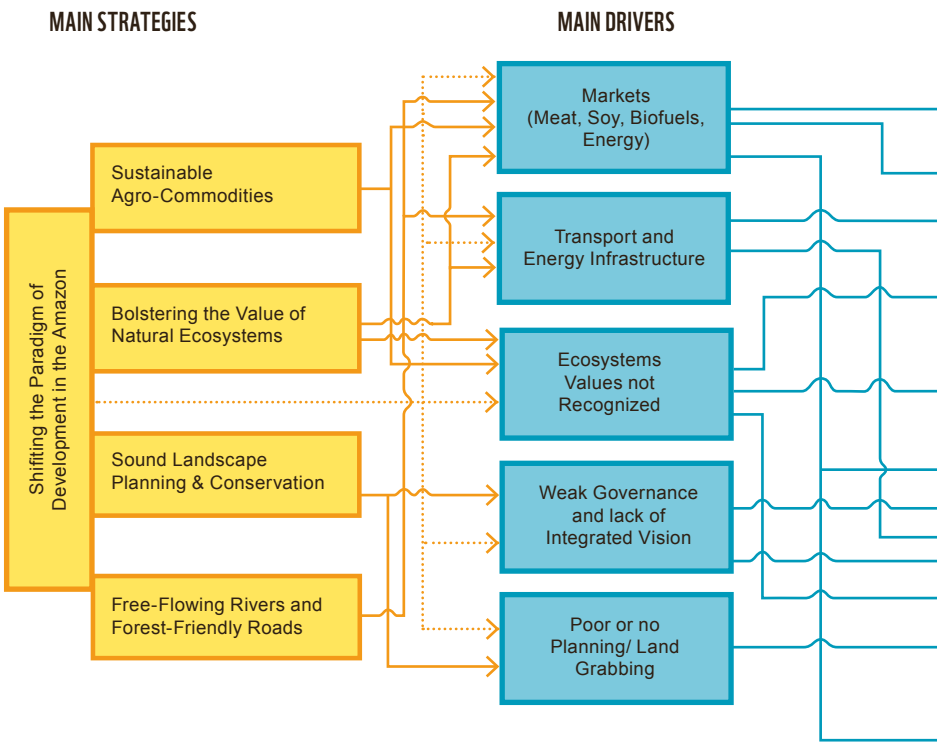


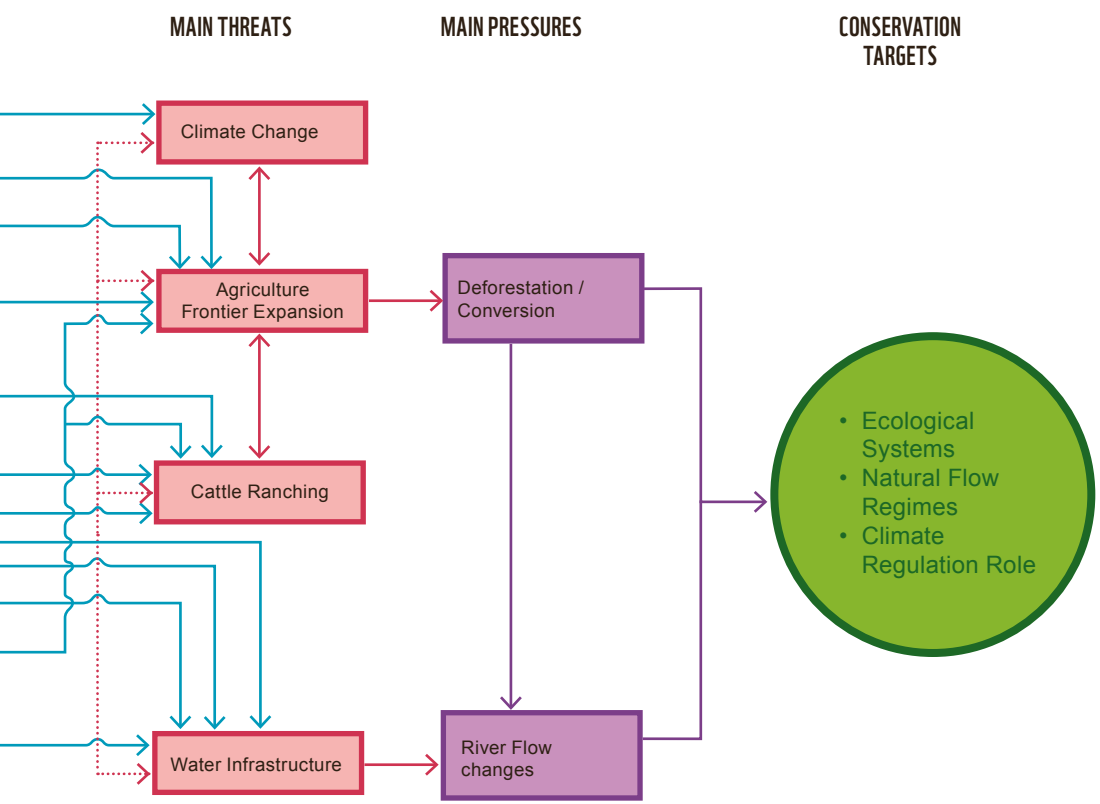
Figure 6. Simplified conceptual model demonstrating relationships between strategies, drivers, threats, pressures and conservation targets.

3. **transportation infrastructure,** both as an indirect driver of deforestation and a critical enabler for unsustainable activities to expand in the Amazon,

4. **perceived low economic value of ecosystem goods and services** compared to other uses of the natural systems,

5. **opportunistic land use**, characterized by land grabbing, speculation and a tenure system fraught with inefficiencies and lack of enforcement.

These drivers are not only potent forces of change on their own, but are also mutually-reinforcing as enablers for a chaotic and unsustainable transformation of the region. In response, the WWF Living Amazon Initiative proposes five Transformational Strategies that aim to address the most critical threats and drivers that are compromising the future of the Amazon.



SHIFTING THE PARADIGM OF DEVELOPMENT IN THE AMAZON

The major threats impacting the Amazon are all ultimately linked to major drivers that pervade, influence, and inform the policy frameworks of the Amazon countries.

If each country is looking for solutions within its borders (the business as usual scenario), this results in fragmented policy-making and drivers of global or regional nature will not be addressed at the scale and magnitude needed to achieve lasting solutions that benefit all the Amazon countries and the rest of the world.

A new paradigm, above all else, must herald an informed understanding of the biome as one functional unit and must foster a desire to actively safeguard the biome's functionality for the common good of all.

Considered to be the foundation for the overall initiative, this Transformational Strategy is aimed at building the high-level enabling conditions to allow the stakeholders of the Amazon to address development in the region in an integrated and sustainable manner, at the scale suited to maintain the main ecological attributes and functions of the Amazon Biome.

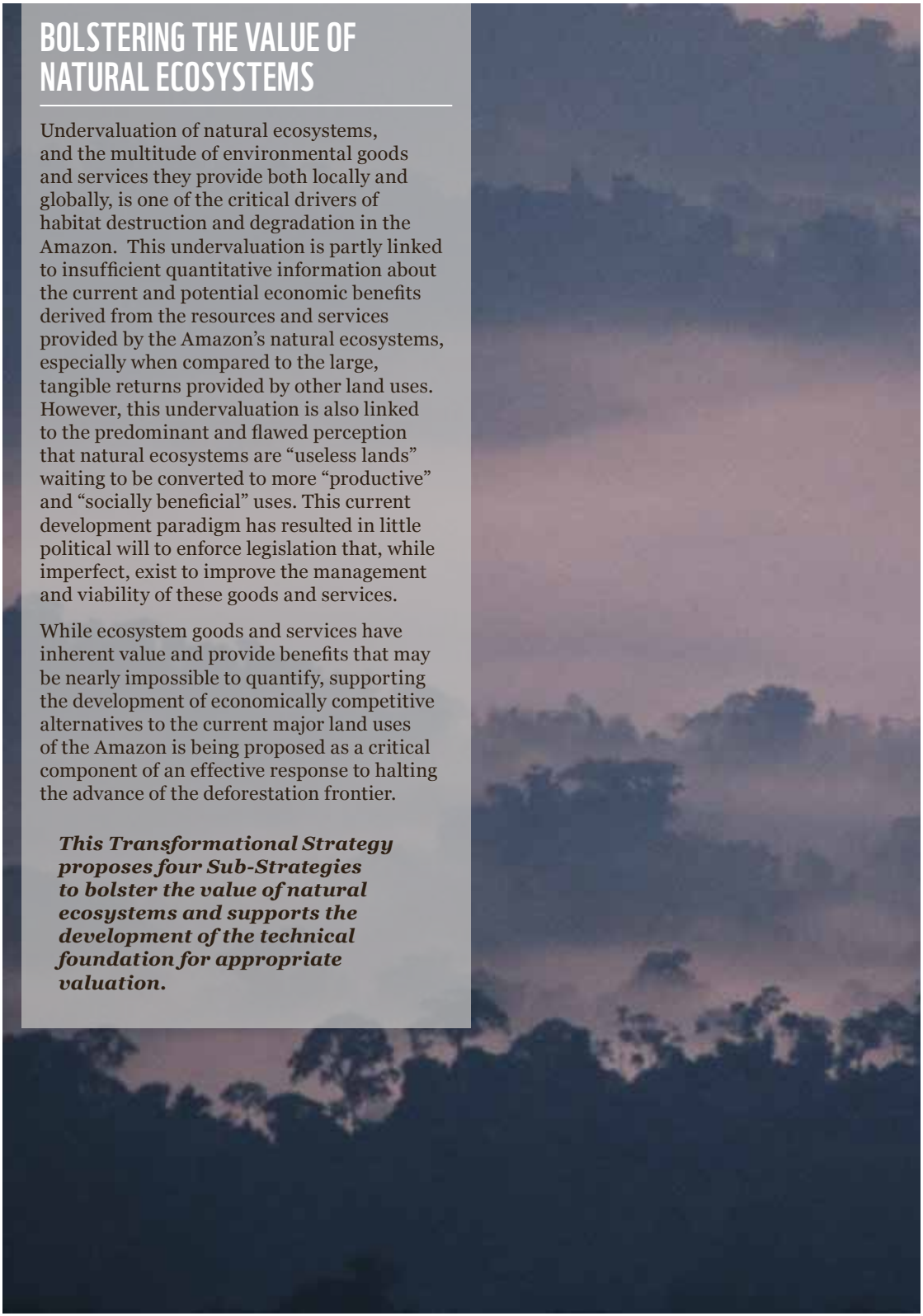
	Objectives
1. Building the technical grounds for a biome-scale vision	• The data, tools, and methodologies needed for biome-scale planning are developed and broadly disseminated among stakeholders.
2. Promoting policies that shift the paradigm of development in the Amazon Biome	• Governments demonstrate their commitment to a common vision of the Amazon Biome by incorporating the biome's ecological considerations into specific language within the programs of work of international conventions and treaties (e.g. Convention on Biological Diversity). • National governments and key national or regional civil society organizations in the region establish agreed upon principles for a biome-scale approach to policy and development in the Amazon. • National-level policies and primary strategies of regional civil society organizations in Amazon countries are upgraded to reflect a biome-scale approach on critical issues such as climate change, protected areas, land and resource use planning, etc.

BOLSTERING THE VALUE OF NATURAL ECOSYSTEMS

Undervaluation of natural ecosystems, and the multitude of environmental goods and services they provide both locally and globally, is one of the critical drivers of habitat destruction and degradation in the Amazon. This undervaluation is partly linked to insufficient quantitative information about the current and potential economic benefits derived from the resources and services provided by the Amazon's natural ecosystems, especially when compared to the large, tangible returns provided by other land uses. However, this undervaluation is also linked to the predominant and flawed perception that natural ecosystems are "useless lands" waiting to be converted to more "productive" and "socially beneficial" uses. This current development paradigm has resulted in little political will to enforce legislation that, while imperfect, exist to improve the management and viability of these goods and services.

While ecosystem goods and services have inherent value and provide benefits that may be nearly impossible to quantify, supporting the development of economically competitive alternatives to the current major land uses of the Amazon is being proposed as a critical component of an effective response to halting the advance of the deforestation frontier.

This Transformational Strategy proposes four Sub-Strategies to bolster the value of natural ecosystems and supports the development of the technical foundation for appropriate valuation.



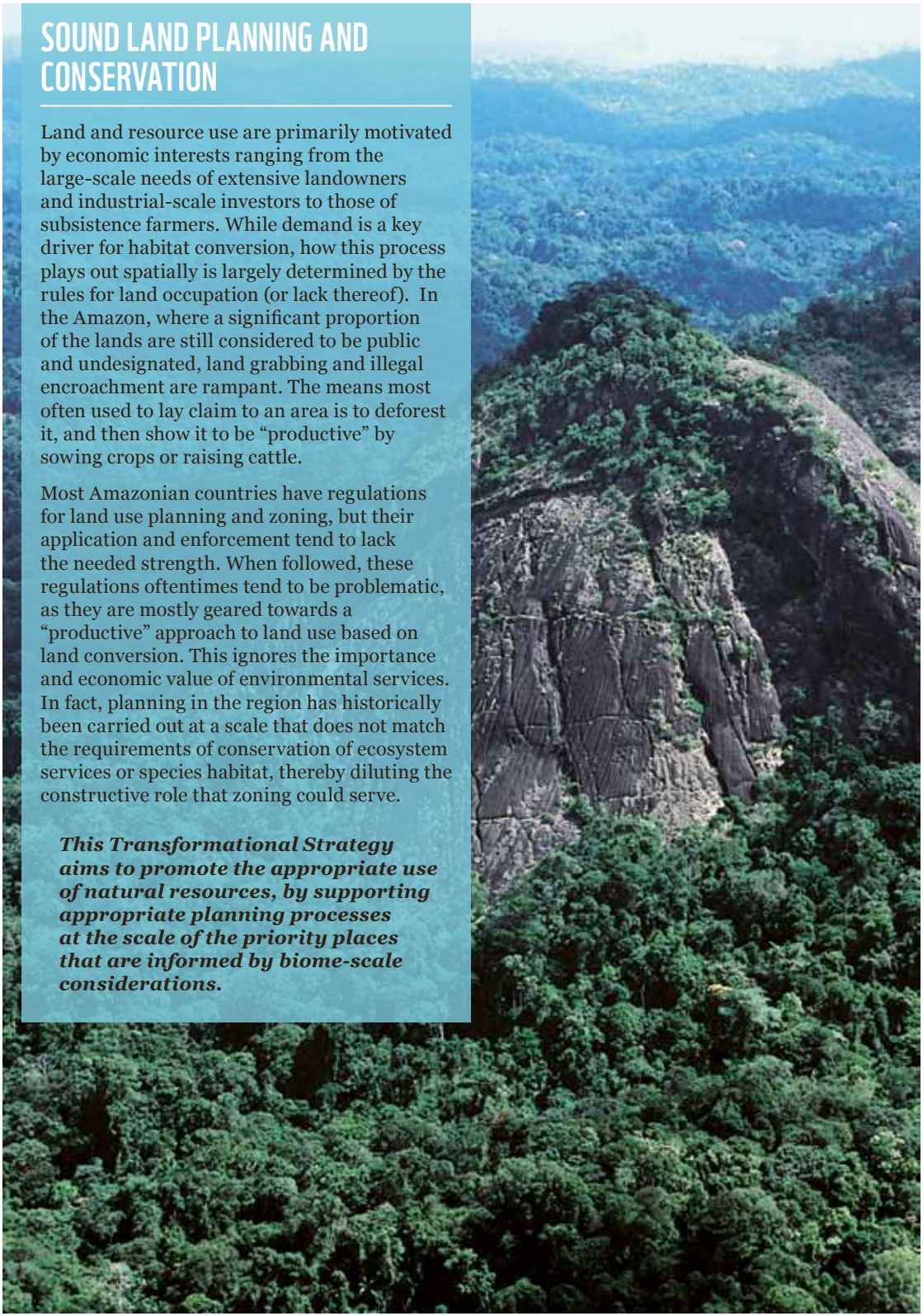
	Objectives
1. Generating the applied research and pilot experiences to promote forest carbon markets/financial incentives as credible mechanisms to generate income, maintain forest cover, and reduce carbon-forest emissions	• Early experiences in Reducing Emissions from Deforestation and Forest Degradation (REDD+) inform the development of functional models of Payment for Environmental Services (PES) and benefit sharing, enabling tangible benefits to flow to local communities and indigenous peoples for conserving forests in the Amazon. • Amazonian nations address their capacity, opportunities, and plans to conserve forests using REDD+ and other PES opportunities linked to national development plans and with operational and self sustaining Measuring Reporting and Verification systems.
2. Providing the technical foundation for the economic valuation of environmental services other than carbon in the Amazon	• Lucrative and viable environmental services in priority places[11] are identified, and business plans have been developed, including an analysis of current and potential supply and demand for each environmental service.
3. Advocating for comprehensive forest and forest related policies	• Amazon countries have developed and/or strengthened their legal frameworks for the sustainable use of and the equitable distribution of returns from environmental services. • Amazon countries develop and successfully implement measures to reduce and minimize deforestation and forest degradation. • Amazon countries develop, strengthen or harmonize their legal framework related to the use and trade of forest products, providing conditions for their sustainable use.
4. Promoting demand for sustainable forest products	• Key buyers[12] (national/regional governments and key private sector players) adopt responsible purchasing policies[13] related to timber procurements. • The volume of forest products and the number of key retailers[14] engaged with global sustainable value chains, in domestic and global markets, increases significantly. • Income alternatives developed based on economic returns from the maintenance of goods and services are comparable to those of the current land uses that cause habitat conversion.

SOUND LAND PLANNING AND CONSERVATION

Land and resource use are primarily motivated by economic interests ranging from the large-scale needs of extensive landowners and industrial-scale investors to those of subsistence farmers. While demand is a key driver for habitat conversion, how this process plays out spatially is largely determined by the rules for land occupation (or lack thereof). In the Amazon, where a significant proportion of the lands are still considered to be public and undesignated, land grabbing and illegal encroachment are rampant. The means most often used to lay claim to an area is to deforest it, and then show it to be "productive" by sowing crops or raising cattle.

Most Amazonian countries have regulations for land use planning and zoning, but their application and enforcement tend to lack the needed strength. When followed, these regulations oftentimes tend to be problematic, as they are mostly geared towards a "productive" approach to land use based on land conversion. This ignores the importance and economic value of environmental services. In fact, planning in the region has historically been carried out at a scale that does not match the requirements of conservation of ecosystem services or species habitat, thereby diluting the constructive role that zoning could serve.

This Transformational Strategy aims to promote the appropriate use of natural resources, by supporting appropriate planning processes at the scale of the priority places that are informed by biome-scale considerations.



1.	**Building the technical grounds for place-scale decision making with a biome perspective**	**Objectives** • The data, tools and methodologies needed for place-scale planning are developed and broadly disseminated among partners looking to incorporate biome-scale considerations[15] into their planning.
2.	**Developing and/or improving of land-use planning that impacts priority places**	• Relevant stakeholders agree on clearly defined Principles and Criteria for sustainable land-use planning, using best available tools to implement and enforce these Principles.
3.	**Clarifying legal land tenure within and around priority places**	• Land tenure in priority places is clarified and enforced, with active engagement of relevant government agencies and civil society.
4.	**Influencing protected area systems for creation and management of protected areas of biome importance**	• National and state governments incorporate protected areas of biome-scale importance into their national protected areas systems according to their commitments laid out under the Convention on Biological Diversity Protected Areas Program of Work for each country.
5.	**Strengthening areas of critical conservation/climate importance**	• Critical sites (protected areas, indigenous territories, and ecologically important areas lacking protection status such as floodplains), located in or influencing priority places, show significantly improved management.

SUSTAINABLE AGRO-COMMODITIES

The unsustainable growth of the cattle ranching and agricultural sectors is driven by numerous factors. Chief among these driving forces is the growing global demand for meat, animal feed, and biofuels. Expansion into the Amazon is ultimately made possible by access to remote lands, by investments in transportation infrastructure and by unclear land tenure and use rights. The perceived lower value of natural forests compared to "productive" lands, and limited knowledge about better practices further exacerbate the dynamics of these sectors.

This Transformational Strategy aims to address the threats posed by extensive cattle ranching and mechanized agriculture by promoting improved production of critical agro-commodities through the adoption of improved standards and better management practices.

In addition, this strategy seeks to guide the siting of these activities by defining zones for extensive cattle ranching and mechanized agriculture production and expansion as well as zones where these activities should not expand due to ecological importance.

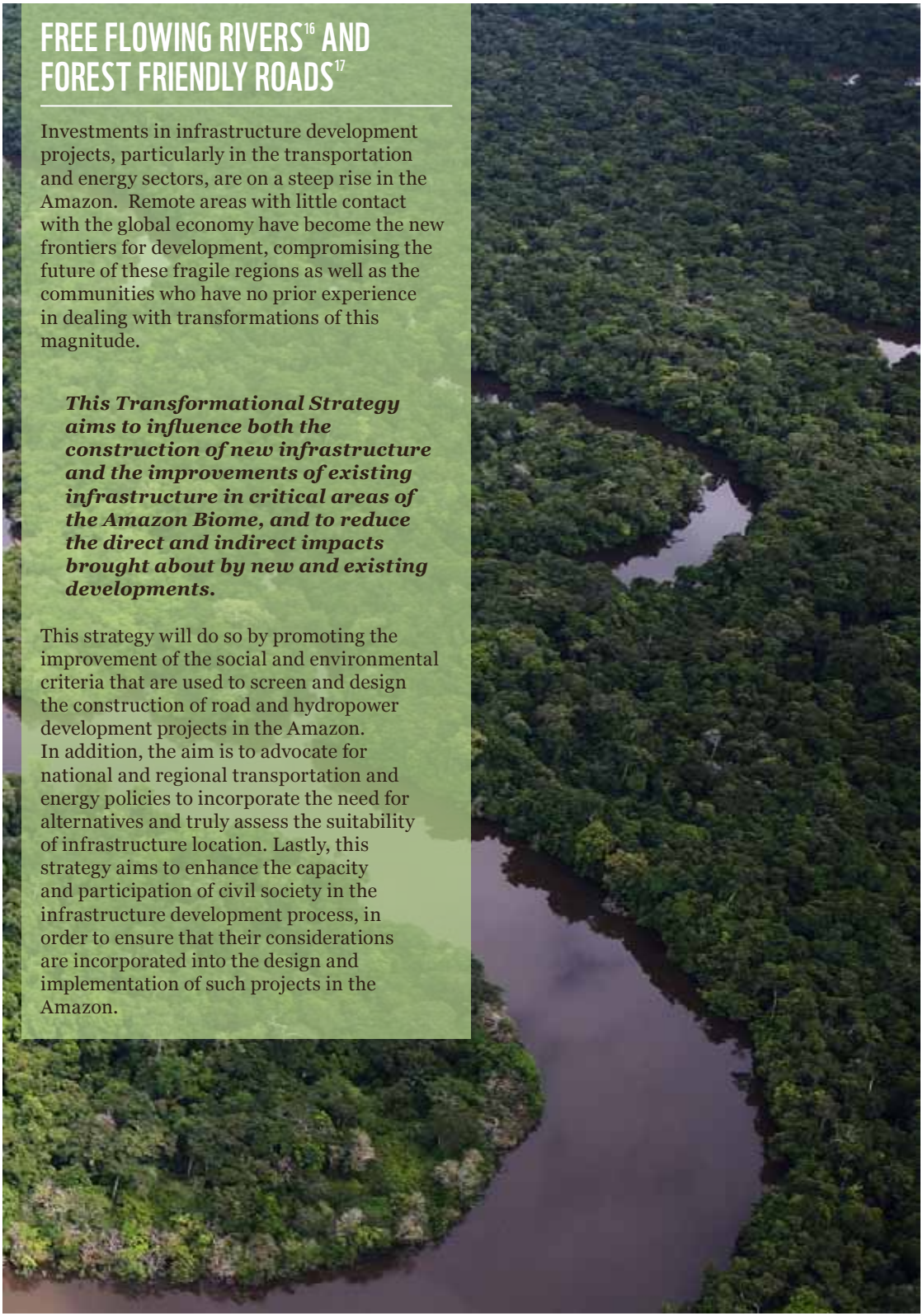
1.	**Adopting better management practices**	**Objectives** • Key players in the supply chains for beef (meat), soy (animal feed/biofuel), sugar (food/biofuel), and palm oil (diesel) have adopted socio-environmental standards for the production and procurement of these commodities in Amazon countries. • A significant percentage of the total *demand* for Amazon beef (meat), soy (animal feed/biofuel), sugar (food/biofuel), and palm oil (diesel) requires that these are produced according to globally recognized socio-environmental standards. • A significant percentage of the total *supply* of Amazon beef (meat), soy (animal feed/biofuel), sugar (food/biofuel), and palm oil (diesel) is produced according to globally recognized socio-economic standards.
2.	**Delineating areas where extensive cattle ranching and mechanized agriculture production and expansion should not occur**	• Key players in the value chain for soy (animal feed/biofuel), sugar (food/biofuel), and palm oil (diesel) have agreed not to convert high conservation value habitat and to use degraded lands (to the greatest extent possible) for their production. • A significant percentage of the production of beef (meat), soy (animal feed/biofuel), sugar (food/biofuel), and palm oil (diesel) in the Amazon does not convert high conservation value habitat and occurs in already degraded lands and other underutilized lands.

FREE FLOWING RIVERS[16] AND FOREST FRIENDLY ROADS[17]

Investments in infrastructure development projects, particularly in the transportation and energy sectors, are on a steep rise in the Amazon. Remote areas with little contact with the global economy have become the new frontiers for development, compromising the future of these fragile regions as well as the communities who have no prior experience in dealing with transformations of this magnitude.

This Transformational Strategy aims to influence both the construction of new infrastructure and the improvements of existing infrastructure in critical areas of the Amazon Biome, and to reduce the direct and indirect impacts brought about by new and existing developments.

This strategy will do so by promoting the improvement of the social and environmental criteria that are used to screen and design the construction of road and hydropower development projects in the Amazon. In addition, the aim is to advocate for national and regional transportation and energy policies to incorporate the need for alternatives and truly assess the suitability of infrastructure location. Lastly, this strategy aims to enhance the capacity and participation of civil society in the infrastructure development process, in order to ensure that their considerations are incorporated into the design and implementation of such projects in the Amazon.



	Objectives
1. Improving social and environmental criteria for road and hydropower development in the Amazon	• Key stakeholders adopt and use decision support systems and the models derived from them to make decisions regarding major infrastructure development projects, thus addressing both induced and cumulative impacts, as well as monitoring compliance with social and environmental criteria. • Application of decision support systems for key infrastructure projects is demonstrated by completing key biome-wide, basin or sub-basin assessments.
2. Incorporating socio-environmental criteria into national and regional transportation and energy policies	• Stakeholders agree to improving environmental and social criteria for roads and hydropower development, and such criteria are applied to decisions regarding major projects in the Amazon. • More complete and qualified participation of stakeholders, including civil society and technical governmental institutions, in the licensing processes for infrastructure. • Main private and public investors adopt improved standards for road and hydropower development. • Road projects of biome-relevance have been re-designed to incorporate sustainable road transportation criteria, and large hydropower projects comply with sustainable hydropower criteria. • Operators, government and other stakeholders agree on and put in operation reliable/proper and independent monitoring mechanisms to assess potential impacts and to safeguard efficiency of infrastructure projects of biome or priority places relevance.
3. Enhancing civil society capacity and active participation during the infrastructure development process	• Improved regulations and protocols are adopted that ensure stakeholder groups are adequately represented in road transportation and hydropower policy development processes.

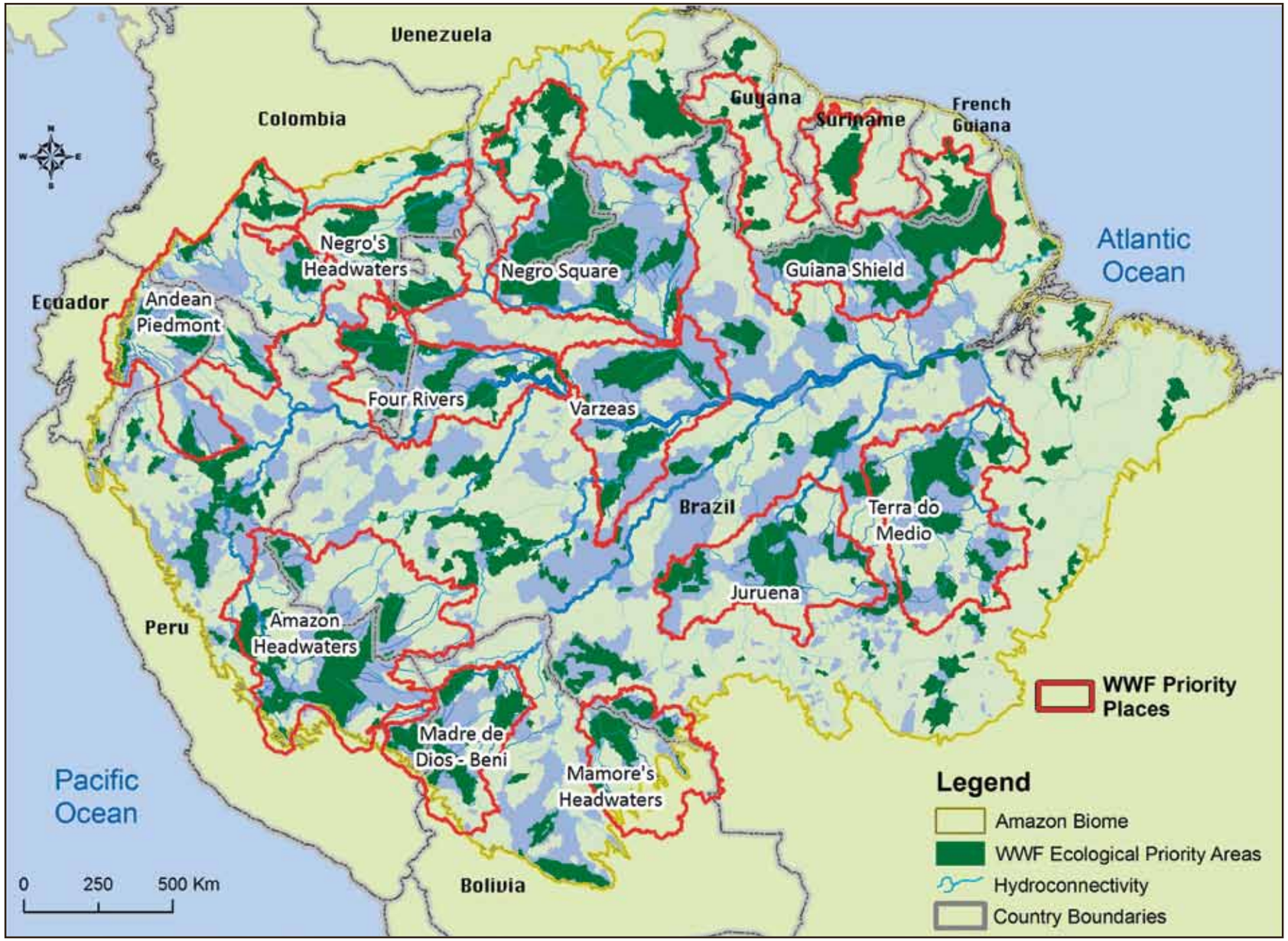
A COMPREHENSIVE VIEW OF THE AMAZON

Given the massive scale of the Amazon, the global nature of the threats to it, and the rate of habitat loss and degradation, it is critical that actions be taken to design and implement development and conservation agendas at the Pan-Amazonian level. These strategies should be the result of large scale assessments that take into account both present and future biodiversity, climatological and anthropogenic patterns and processes.

To assist in these assessment needs, WWF, with the input of multiple partners, has devised an information system to support decisions on the development and conservation of the Amazon Biome. This Decision Support System (DSS) is a spatially-explicit tool for acquisition, storage and analysis of information relevant to the WWF Living Amazon Initiative conservation targets, their threats and indicators. To date, the DSS has two main applications; an ecological vision for the identification of WWF's priority places, and the hydrological information system for Amazon River assessments (HIS/ARA).

These are just two examples of the capabilities of the DSS and other analytical tools that can help the many stakeholders of the Amazon evaluate, plan, implement, and monitor true sustainable development of the region. The addition of a variety of technical, economic, political, and social data, in combination with the ecological components, creates enormous opportunities for further comprehensive assessments at multiple scales.

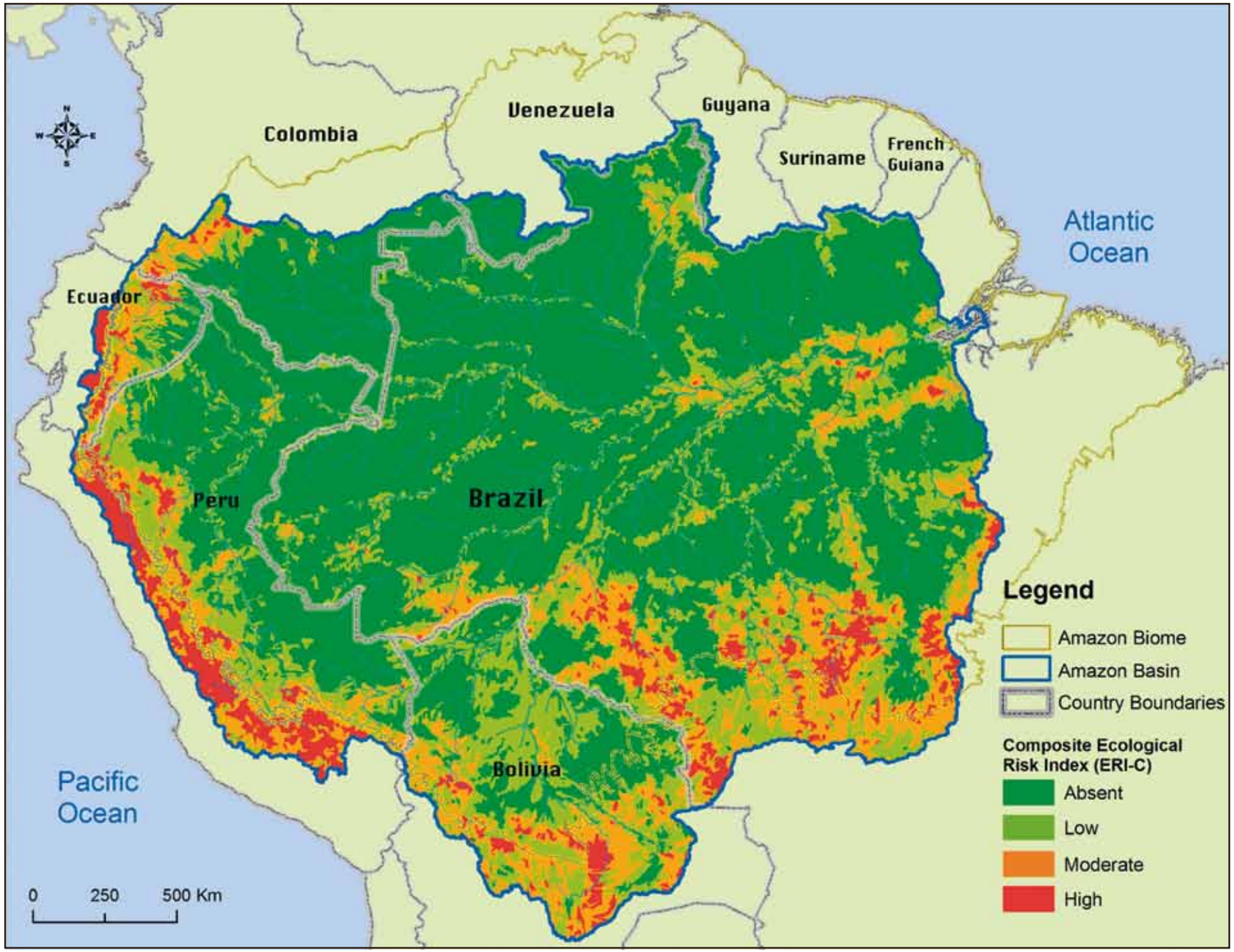
Figure 7.
Ecological Vision of the Amazon Biome & WWF's Conservation Priority Places



ECOLOGICAL VISION OF THE AMAZON BIOME & WWF'S CONSERVATION PRIORITY PLACES

The DSS has been used for the identification of WWF's Conservation Priorities and Ecological Vision for the Amazon Biome based on the principles of representation, irreplaceability, functionality, flexibility, vulnerability, and connectivity (Margules and Sarkar 2007), for freshwater and terrestrial biodiversity. It has helped to define priority places within the Amazon Biome, identifying the best set (or combination) of micro-basins (planning units) that guarantee the achievement of all conservation goals at the lowest cost.

Figure 8.
Ecological Risk Index (ERI) of the Amazon Basin; an application of the HIS/ARA



ECOLOGICAL RISK INDEX (ERI) OF THE AMAZON BASIN; AN APPLICATION OF THE HIS/ARA

The HIS/ARA is an application of the DSS that emphasizes the identification of freshwater conservation priorities in the form of streams needed to maintain habitat representation and hydro-connectivity. It generates a basin-wide analysis of conservation status considering the biome's main threats. This information has been consolidated through the calculation of the Ecological Risk Index (ERI) (Mattson and Angermeier 2006) for each micro-basin. At the same time this tool integrates hydrological and biodiversity information that allows for the assessment of the potential impacts of alternative development scenarios.

KEEPING TRACK: MONITORING, EVALUATING AND LEARNING

A conservation initiative designed to focus only on results will, with luck, result in a product equal to the sum of its parts. On the other hand, a conservation initiative geared towards results and learning, will result in a product that is greater than the sum of its parts (Salafsky & Margoluis, 2000). The WWF Living Amazon Initiative has taken this important observation to heart and, as a result, has whole-heartedly embraced the adaptive management process, focusing on both monitoring and learning to improve our conservation actions in the Amazon Biome.

Monitoring within the WWF Living Amazon Initiative is structured around three main needs: (1) the need to assess progress; (2) the need to analyze and adapt; and (3) the need to learn and share lessons.

A variety of indicators (biological, ecological, economic, and social) have been selected. They reflect the complex nature of the results that this program is trying to achieve:

- Area of terrestrial and freshwater ecosystems under some level of protection or conservation-friendly use
- Forest integrity
- Variations on river flows and flooding patterns
- Major tributaries and rivers critical for hydro-connectivity that remain free flowing rivers
- Anomalies in regional climate patterns
- Conservation status of indicator species
- Forest “die-back” in early warning sites

As is the case with implementation of strategies, the monitoring of the Amazon Biome is an endeavor that requires the technical capacity, dedication and multi-sectoral knowledge of various governmental, academic, civil society and private sector institutions working in a collaborative and transparent manner.

WORKING TOGETHER

The goals of the WWF Living Amazon Initiative can only be achieved with the buy-in and committed participation of the people of the Amazonian countries represented by government agencies, civil society organizations, the financial and corporate sector, and multiple regional, multilateral institutions, and more importantly; the local population.

With a history of decades of collaboration with local partners, WWF strives to further strengthen existing partnerships as well as establish new and productive relationships.

"As we move towards implementation, we remain committed to openness and transparency and wide stakeholder input and involvement"

Bharrat Jagdeo, President of Guyana, announcing the commencement of the implementation phase of the nation's landmark Low Carbon Development Strategy (May, 2010)[18]

"The new political vision of the Bolivian government regarding protected areas has generated a new way of working with Foundations and NGOs, proof of this is the relationship with WWF, which has been an outstanding relationship"

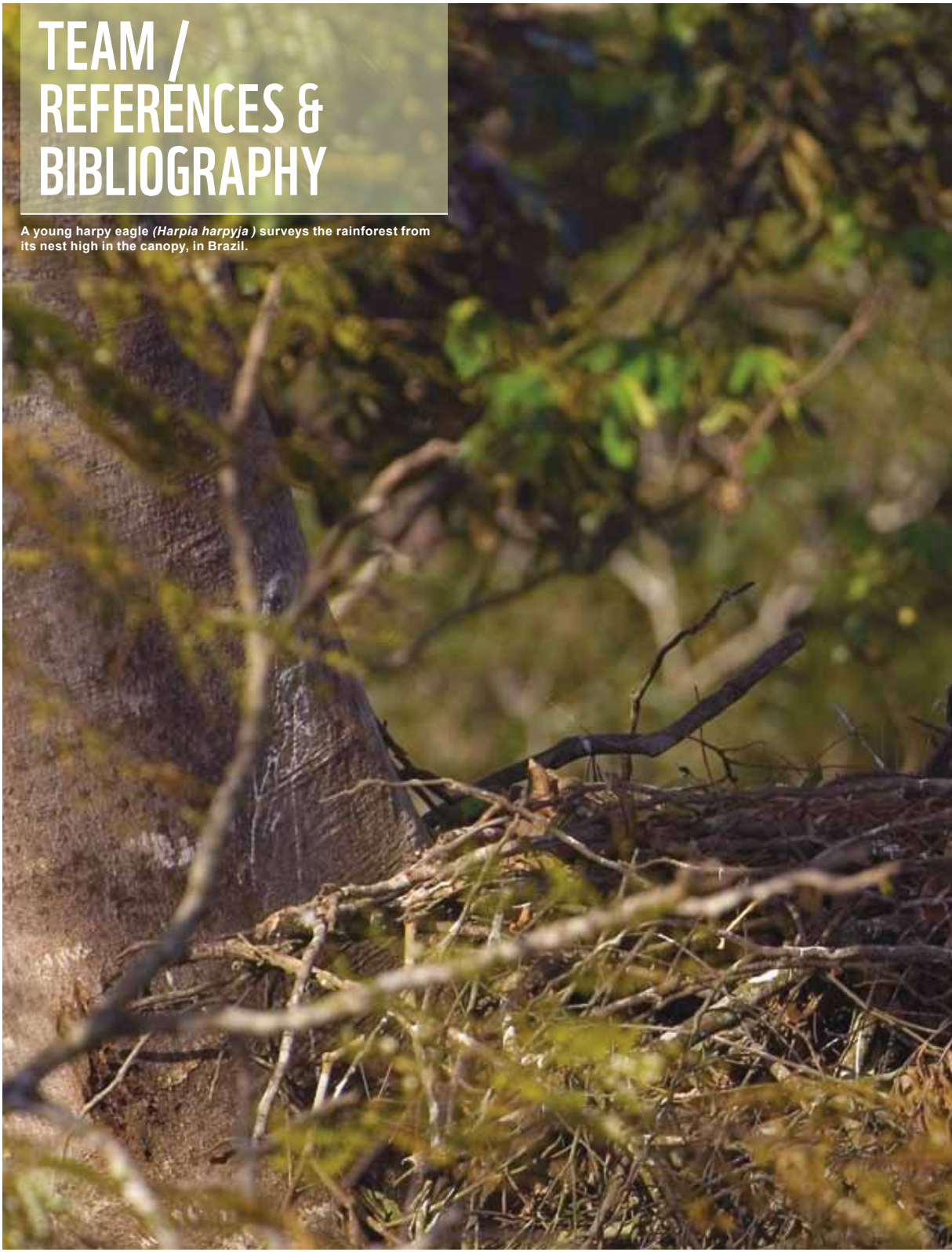
Crisanto Melgar, General Counsel of the Bolivian National Protected Areas Service (June 2010)

"Protected areas are important to stop the advance of deforestation in the Amazon and in other Brazilian biomes. This only elevates the importance of ARPA, which is recognized worldwide for the innovation it has brought to protected area management."

Maria Cecília Wey de Brito, Secretary of Biodiversity and Forests, Brazil's Ministry of the Environment (September, 2009)

From top to bottom; (1) Goverment protected areas officials and WWF representatives with indigenous Wajãpi people on management of the Tumucumaque National Park in Brazil; (2) From left to right: Jaime Del Aguila, President of the Indigenous Federation of Purus; Kathryn Fuller, President of WWF-US; Dr. Alejandro Toledo, President of Peru, Dr. Eliane Carp, First Lady of Peru; and Guillermo Castilleja, WWF's Director for Latin America and the Carribbean, during a ceremony acknowledging the Peruvian Government's commitment with the establishment of the Purus National Park and the Purus Communal Reserve (March, 2005); (3) WWF Director General Claude Martin congratulates President Luis Inacio Lula da Silva and Minister of the Environment Marina Silva on Brazil's commitment to protect the Amazon through the Amazon Region Protected Areas Program (ARPA) (Sept 2003).

TEAM / REFERENCES & BIBLIOGRAPHY



A young harpy eagle *(Harpia harpyja)* surveys the rainforest from its nest high in the canopy, in Brazil.

TEAM

All WWF work in the Amazon involves the participation of dozens of enthusiastic and professional staff members from our global network. The following are the Core Team members of this initiative:

- Francisco Ruiz
  Initiative Leader
- Marco Flores
  Initiative Deputy Leader
- Daniel Arancibia
  Leader for Bolstering the Value of Natural Ecosystems Strategy
- María Ximena Barrera
  Leader for Sound Land Planning and Conservation Strategy
- Cassio Moreira
  Leader for Sustainable Commodities Strategy
- Pedro Bara-Neto
  Leader for Free-flowing Rivers and Forest-friendly Roads Strategy
- Juan Carlos Riveros
  Leader for Science, Monitoring and Evaluation
- Kjeld Nielsen
  Communications Coordinator
- Claudia Saavedra
  Financial Manager

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2. For the Living Amazon Initiative, the Amazon region primarily refers to the Amazon Biome; nevertheless for several analyses and actions, the Amazon basin is a better limit. The limits of the Amazon can also be defined politically at and the national level (e.g., the Brazilian Legal Amazon) and at the regional level (the Amazon Cooperation Treaty limits).

3. The geographical designations given here do not imply the expression of any opinion whatsoever on the part of WWF concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries.

4. The Amazon Biome hosts 430 mammal species, 1,300 species of birds, 427 species of amphibians and 378 species of reptiles.

5. While the predominant vegetation type in the Amazon is dense moist tropical forest, there are several other types of vegetation such as savannas, floodplain forests, grasslands, swamps, bamboos, and palm forests. The correct terminology that would thus encompass the destruction of any and all of those types of vegetation is habitat conversion. However, for the sake of communicating the message in lay terms, this document will use the terms *habitat conversion* and *deforestation* interchangeably.

6. Illegal logging is the harvesting, transporting, processing, buying

or selling of timber in violation of national laws. This definition also applies to harvesting wood from protected areas, exporting threatened plant/tree species, and falsifying official documents.

7. The Amazon Region Protected Areas (ARPA) Program is a major conservation initiative of the Brazilian Government and is supported by the World Bank, the Global Environment Facility (GEF), the German Development Bank (KfW), the German Technical Cooperation Agency (GTZ), the Brazilian Biodiversity Fund (FUNBIO), and WWF. ARPA's goal is to protect an ecologically representative sample of the biological diversity of the Brazilian Amazon in a securely managed protected area system encompassing 60 million ha over a three phase period. Phase I ended in December 2009, with nearly 24 million ha of new protected areas created and 8.5 million ha of protected areas in the process of consolidation. Phase II will last from 2010 – 2013 and has the goal of creating 13.5 million ha of new protected areas and consolidating 32 million ha of protected areas, focusing principally on consolidating the new areas created in Phase I.

8. This goal derives from the definitions, methodological approach and results generated by WWF's GIS-based Decision Support System (see section "A Comprehensive view of the Amazon").

9. "Conserved" is defined here as the actual preservation of forest cover or habitat integrity *sensu lato* into an array of different conservation-friendly land uses.

10. Priority rivers constitute the main tributaries of the Amazon that are most important for the conservation of aquatic biodiversity and natural river flows within the overall system.

11. Priority places identified by using systematic conservation planning tools as described in section "A Comprehensive view of the Amazon".

12. Defined as those representing a significant segment of the national demand.

13. Responsible purchasing policies, as defined by the Global Forest & Trade Network (GFTN) (gftn@panda.org) or by similar independent certification mechanisms, should actively encourage the use of better practices to reduce degradation resulting directly and indirectly from timber extraction.

14. As defined by the Global Forest & Trade Network (GFTN) and the WWF Market Transformation Network Initiative.

15. Baseline information on social, environmental and economic issues gathered and systematized for priority places.

16. WWF defines a “free-flowing river” as any river that flows undisturbed from its source to its mouth, at either the coast, an inland sea or at the confluence with a larger river, without encountering any dams, weirs, or barrages and without being hemmed in by dykes or levees. [http://assets.panda.org/downloads/freeflowingriversreport.pdf]

17. A “forest friendly road” is a road that does not induce an unacceptable level of damage to a forest, particularly in the form of deforestation.

18. Guyana’s Low Carbon Development Strategy (LCDS) is an innovative approach to combating climate change while simultaneously promoting economic growth and development. The LCDS sets out how, under the appropriate economic incentives, Guyana can avoid emissions of 1.5 Gigatonnes of carbon dioxide equivalent (CO_2e) by 2020, which would otherwise have been produced following an economically rational development path.

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WWF

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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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