THE AMAZON WE WANT
Science Panel for the Amazon

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

BIODIVERSITY STATEMENT
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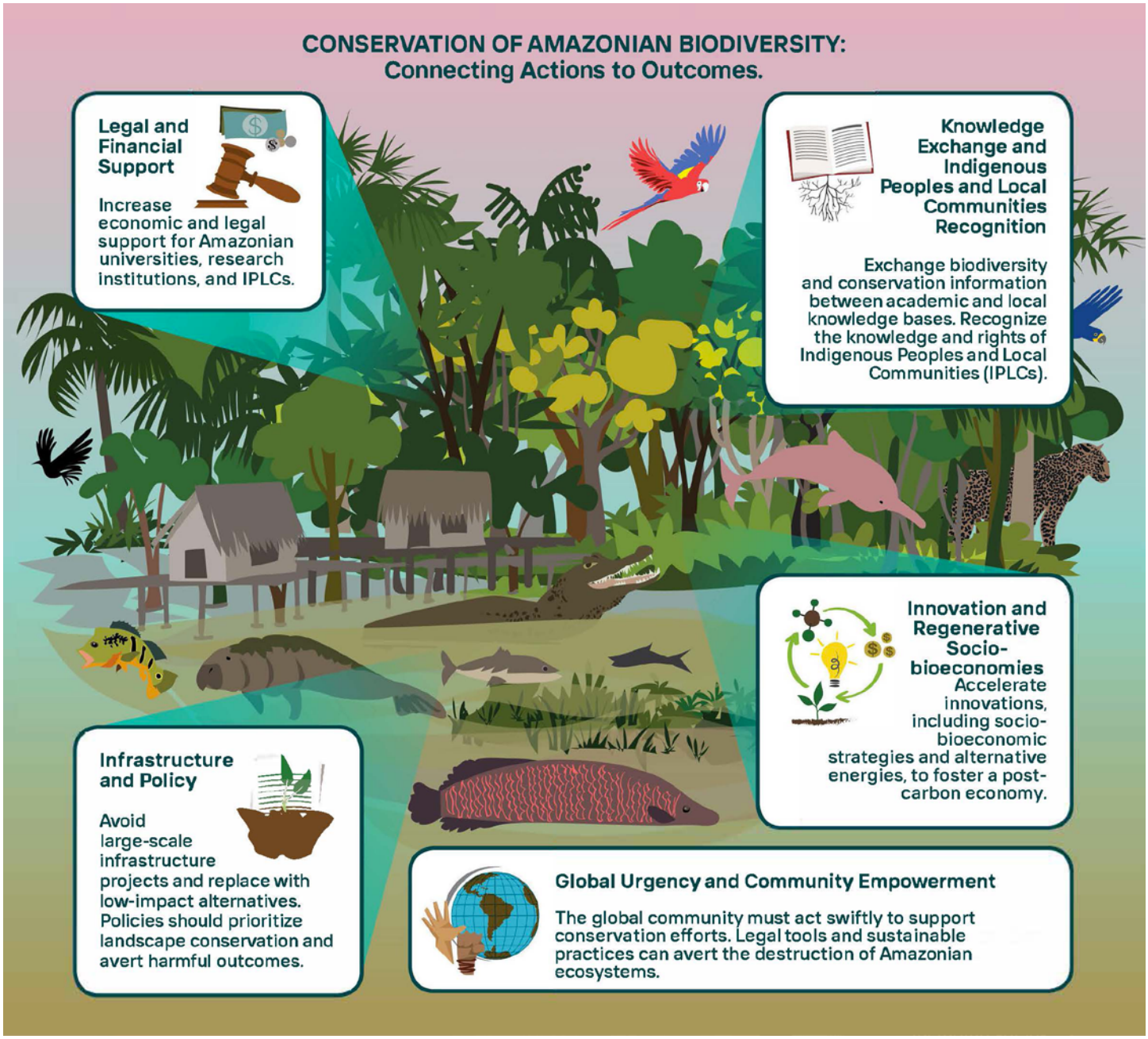

Brief Overview of Amazonian Biodiversity

The Amazon is a vast and environmentally heterogeneous region extending over 7 million km^2 of equatorial South America, including about 600,000 km^2 of seasonally-flooded wetlands. Amazonian ecosystems range from high elevation cloud forests in the Andes and table-top mountains (t*epuis*) of the Guianas to seasonally-flooded wetlands and naturally-burned tropical savannahs, vast areas of dense tropical rainforests, deep river channels, and coastal estuaries. Each of these ecosystems hosts a unique and highly endemic biota found nowhere else on Earth. Ecosystem heterogeneity is a core feature of megadiverse tropical ecosystems that is central to maintaining resilience against ecological regime shifts under the effects of global climate change[1].

The Amazon is a critical component of the Earth climate system whose fate is embedded within that of the larger planetary emergency[2,3]. The Amazon rainforest is by far the most diverse ecosystem of our planet, home to more than 10% of all named plant and animal species, all concentrated into a tiny fraction (0.5%) of the Earth's total surface area[4,5]. The Amazon is the global center of biodiversity for most groups of continental organisms, including terrestrial plants[6], aquatic plants[7], soil fungi[8], terrestrial arthropods[9], freshwater arthropods[10], terrestrial vertebrates[11], and freshwater fishes[12,13]. The Amazon rainforest also provides essential ecosystem services at the continental and global scales, producing about 16% of all the photosynthesis in the biosphere, and strongly regulating global carbon and water cycles[4,14].

Yet, despite decades of intensive research and exploration, Amazonian biodiversity remains incompletely documented[15,16]. Taxonomists estimate that several millions of species inhabit this region, many of which remain undescribed and unknown to science[17]. This "dark biota" includes many ecologically important species of insects, plants, and fungi, the ***ecosystem engineers*** that drive biogeochemical cycles and regulate the chemistry of soils, rivers, and wetlands[18]. Currently, the highest rates of new Amazonian species discoveries are among those with small body sizes, small and isolated geographic ranges, and poorly-known taxonomic groups, especially invertebrates, plants, and fungi[19].

Major Threats and Current Trends

Natural Amazonian ecosystems are being destroyed and degraded rapidly by a wide range of human activities. The interactions of regional deforestation and forest degradation (hereafter referred to as "deforestation"), combined with global climate change, are increasing the frequency and severity of climate fluctuations, driving larger and more extreme droughts, floods, and wildfires[20,21]. About 18% of original Amazonian forest cover has already been removed and replaced with ecologically degraded agricultural and rural landscapes. Another 38% has been replaced with secondary and old-growth forests at various stages of degradation due to the effects of fire, timber extraction, edge effects, and extreme droughts[22]. Most deforestation comes from industrial agriculture, with lesser damage from smallholder farmers and local communities[4]. The most destructive practices replace primary rainforest with soy plantations and cattle ranches in both the "Arc of Deforestation" of Brazil and Bolivia, and the Colombian Amazon[23,24].

The indiscriminate use of fire to expand the agricultural frontier also represents a massive threat to Amazonian biodiversity and people. As global climate change continues driving the aridification (drying) of the southern and eastern Amazon, the dry season is now 4-5 weeks longer than it was only a few decades ago. More than 2 million km^2 in the region are thus experiencing greater and more frequent climate extremes characterized by accelerating wildfires, droughts, and catastrophic flooding events. In fact, the Brazilian Amazon alone experienced a significant increase in fires in 2024, burning 1,775,017 hectares of forests, a 268% increase compared to the same period in 2023[25].

After millions of years of storing carbon in the biomass of plants and soils, large portions of the Amazon rainforest are now at risk of becoming a net source of carbon to the atmosphere. Portions of southeastern Amazonia have already made this historical transition, releasing more carbon from burning trees and soil erosion than sequestering carbon by photosynthesis and soil formation[14]. Large-scale biodiversity losses, including local extirpations and population declines, also arise from the legal (state-supported) damming of large rivers, legal

commercial-scale oil and gas exploration and extraction, and illegal hydraulic gold mining across the region[26]. The ecological destruction of Amazonian ecosystems is also linked to violence; Global Witness reports that at least 296 environmental defenders were killed in the Amazon between 2014–2022, driven by land disputes, armed conflict and extractive industries.

The escalating Amazonian biodiversity crisis has gained international media attention, for example, from the catastrophic deaths of pink river dolphins (*Inia geoffrensis*) during the 2023-2024 drought and the millions of animals in this year's record-breaking wildfires[27].

Impacts on Livelihoods, Economy, and Society

Biodiversity is the foundation of the well-being and livelihoods of the peoples of the Amazon. The Amazon is home to approximately 47 million people, including more than 30 million people living in urban areas, and about 2.2 million Indigenous people belonging to 410 ethnic groups whose territories cover about 29% of the basin[28]. Terrestrial and aquatic Amazonian ecosystems support local and traditional lifeways, regional food systems, as well as global markets of several economically important plant species, like the açai palm (*Euterpe oleracea*), cacao (*Theobroma cacao*), and quinoa (*Chenopodium quinoa*). However, the expansion of illegal activities, including wildlife trafficking of ornamental fishes, poison dart and glass frogs, snakes, bird feathers, and other animal parts, continues to threaten both the biodiversity and the communities who depend on it[29].

The direct economic and socio-ecological consequences of Amazonian deforestation are well documented. Rapid expansion of industrial agriculture is altering regional rainfall patterns, increasing the likelihood and volatility of both floods and droughts[22]. Large areas around the perimeter of the Amazon are experiencing increasingly severe seasonal droughts, degrading and fragmenting rainforests, and accelerating the region's landscape transformation from a humid rainforest to dry and degraded agricultural landscape habitats. Amazonian deforestation is reducing the amount and reliability of rainfall delivered by the Amazon's "flying rivers" to the large economic centers in the Andes and southern South America[30]. Deforestation and aridification are also increasing the frequency and intensity of catastrophic wildfires, further degrading and fragmenting rainforest habitats. While healthy natural rainforests do not burn, the rapid expansion of human-caused fires for agricultural expansion continues to extend into the lands of Indigenous peoples and local communities across the region.

Industrial agriculture also generates massive soil erosion and results in the habitat degradation of both terrestrial and aquatic ecosystems, changing regional water chemistry through excess sedimentation and eutrophication[31]. River damming interrupts natural flows of sediments, nutrients, and movements of ecologically and commercially important fish species[32]. Petroleum exploration results in frequent and locally devastating toxic chemical spills[33,34]. Hydraulic-mining of streambed minerals (especially gold) using water cannons severely erodes stream beds, and mercury released into aquatic ecosystems is bioamplified through the food web, posing serious public health threats to the more than 10 million people in the Amazon whose primary protein supply is derived from aquatic ecosystems[35–38].

Recommendations

The Science Panel for the Amazon, composed of a community of more than 280 scientists who conduct research in the Amazon, calls on the international biodiversity and conservation communities to enact the following action items:

1. Strengthen existing international commitments

- Act quickly on the commitments of the 2022 Kunming-Montreal Global Biodiversity Framework (GBF) and the 2023 regional agenda for the Amazon Basin (Belém Declaration).
- Advance the 23 GBF biodiversity targets designed to maintain healthy, standing forests and flowing rivers, and prevent reaching the Amazon's tipping point to degraded alternate states.
- Work as a coordinated, diverse, inclusive team of Indigenous peoples, local communities, scientists, NGOs, regional networks and governmental agencies.

2. Maintain connectivity of ecological, evolutionary, and cultural systems

- Conserve and sustainably manage biodiversity to ensure the integrity and connectivity of ecological, evolutionary and cultural processes, and protect the wellbeing and lifeways of the more than 47 million people who live in the Basin.
- Create and implement area-specific plans to stop deforestation and restore habitats in critical areas, such as the eastern and southern Amazon and the Andean piedmont of Colombia, Ecuador, Peru and Bolivia.
- Design national and regional infrastructure plans that are compatible with the ecology of the Amazon and prioritize the fluvial and aerial transportation of waters.
- Establish an absolute moratorium on all new primary road (expressway, national highway) and large dam (height >15 m, reservoir >3 million m^3) construction projects, pending independent and regional-scale environmental review[39].
- Shift national and regional policies towards renewable energy sources, including wind and solar power.
- Create climate mitigation strategies for hydrological power development that maintains ecological flows and makes the best possible decisions for human well-being, with minimal relocation or migration impacts on local communities.
- Designate new protected areas, formally recognize Indigenous territories, strengthen the governance of already established Indigenous lands and protected areas, and promote other mechanisms of effective conservation (OMEC) to maintain 80% of the Amazon basin in conservation lands or lands that are conservation compatible (e.g., undesignated public forests, agroforestry systems).
- Unite multi-country law enforcement efforts to combat criminal actors and activities in the Basin, including illegal trafficking of drugs, gold, timber, wildlife, and humans.
- Establish a stronger and more consistent State presence of social, educational, environmental and cultural government agencies to Amazonian borderlands and municipalities.
- Foster regional collaboration to design effective biodiversity and cultural conservation corridors, building on existing efforts, such as the Alliance for the Northern Amazon, Jaguar Corridor Initiative, and Putumayo-Içá Biocultural Corridor.

3. Promote policies that enhance Amazonian socio-bioeconomies

- Design and foster science-based policies based on the immense biodiversity and deep cultural knowledge of the Amazon.
- Increase financing for the conservation and sustainable development of the Amazon, including investment in science, technology and innovation.
- Advance a transformative, sustainable development pathway in the Amazon by promoting new socio-bioeconomies that value healthy, standing forests and flowing rivers.
- Conserve nature and the livelihoods of Indigenous peoples and local communities; and increase prosperity by building diversified economies.
- Ensure that the new socio-bioeconomies respond to the pace and worldviews of Indigenous and local peoples. This includes ensuring that new markets are a positive force in communities' lives and are coherent with their community life plans, that income covers communal and individual economic gaps, and that connections to markets are built carefully and communally.
- Integrate scientific and Indigenous and local knowledge to strengthen the value chains of biodiversity products.
- Develop a well-supported regional program for advancing biodiversity science and monitoring that generates new actionable knowledge, including information for decision-makers.
- Engage Indigenous and local communities, scientists, and other relevant stakeholders to conduct targeted research on critical species, endemic species, threatened or endangered species, species with key ecological roles, and species with commercial and/or cultural value.
- Bring new biodiversity data to official fora for regional decision-making.
- Promote companies' accountability by means of legislation to require due diligence on biodiversity, human rights, and climate risks throughout their operations (including supply chains). This will promote accountability for deforestation and violence in the Amazon basin.

4. Design action plans and chart progress towards goals

- Produce a highly visible, regularly updated, publicly available website and associated online resources to share third-party assessments of countries' advances towards the 23 Global Biodiversity Framework targets.
- Create an ***action plan*** for implementing the Belém Declaration, including the sections on biodiversity, conservation and sustainable development.
- Collaborate with Indigenous and community organizations, universities and research institutes, NGOs, regional collaborative networks, and government agencies.
- Increase financing for the conservation and sustainable development of the Amazon, including for investment in science, technology, and innovation.

Conclusions

The Amazon is rapidly approaching an irreversible ***tipping point*** in which the forest will be swiftly replaced into a patchwork of degraded agricultural landscapes over the next few decades[21,40]. If business as usual continues, this transformation will cause the extinction of tens of thousands of plant and animal species, erasing millions of years of genetic patrimony and destroying the ecosystem goods and services that the millions of people living in the Amazon and the entire world depend on.

Time is running short. Ecological changes in the Amazon are already destabilizing the regional climate regime, producing historically unprecedented droughts and floods across much of South America. An ***ecological regime shift*** will drive the migration of millions of people and strongly contribute to warming the Earth climate system.

Policies need to be improved and implemented immediately to punish illegal economic activities in areas under public, private, and Indigenous management, and to reward companies, agencies, and communities committed to sustainable economic practices. The global community must act swiftly to avert the worst outcomes.

These policies are well known, the technologies are readily available, and their implementation is a matter of leadership and political will.

To fail the Amazon is to fail the biosphere. We fail to act at our own peril.

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