

Chapter 25

A Pan-Amazonian sustainable development vision



Vida cotidiana no lado Atroari da Vila de Balbina (Foto: Bruno Kelly/Amazônia Real)

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Graphical Abstract

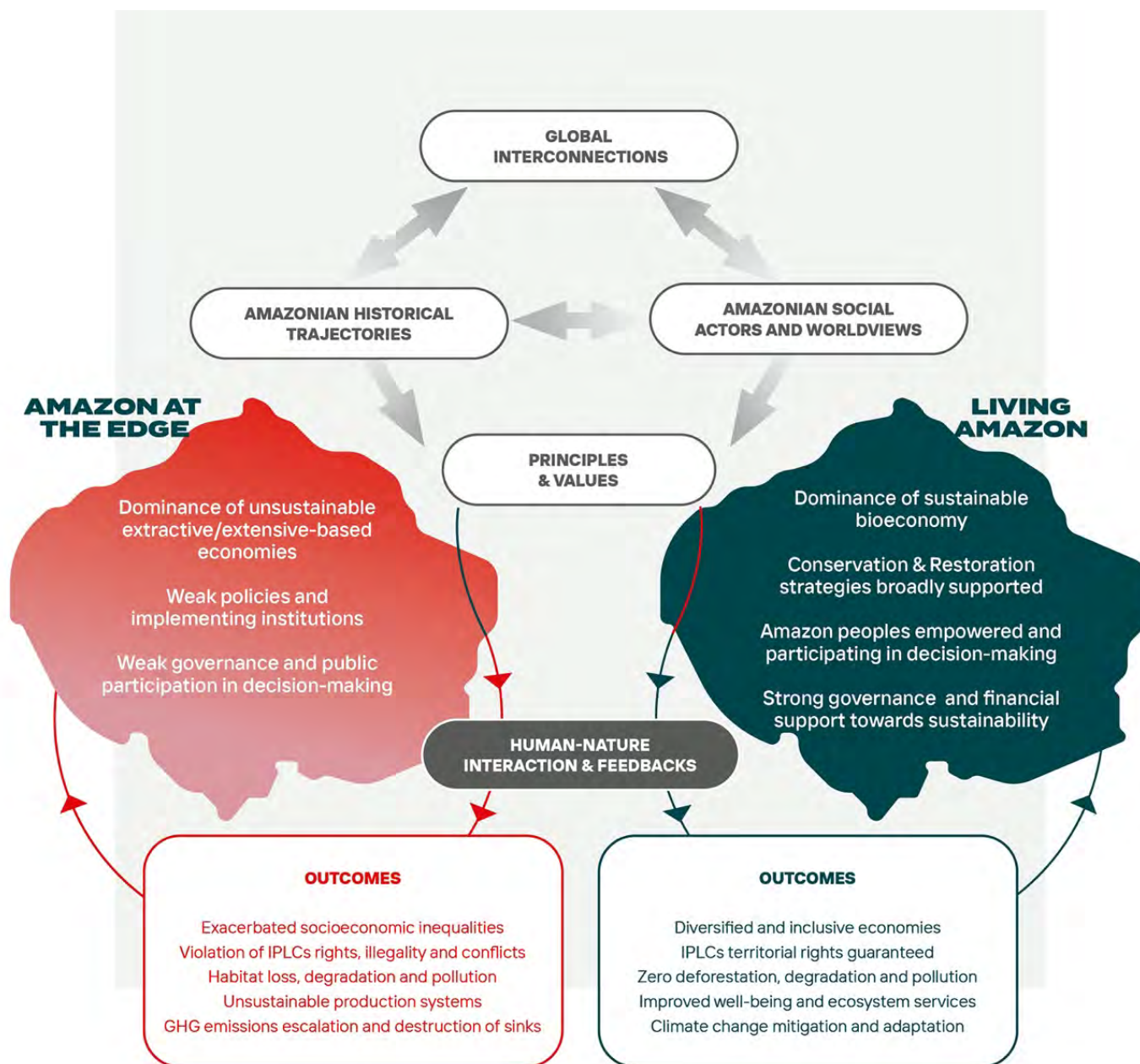


Figure 25.A The global interconnections and the interaction among distinct Amazon worldviews held by the social actors living, governing, and interacting in the Amazon, are based on principles and values that drive human–nature relationships. In the current situation (Amazon at the edge) there are a series of elements in terms of how extensive land use is promoted, governed and how lack of societal participation in decision-making results in outcomes that includes inequalities, violation of human rights, habitat loss, and lack of incentives for sustainable activities. In a Living Amazon, the principles and values that sustain healthy forests, rivers, and peoples are based on a sustainable and circular bioeconomy, conservation strategies, improved governance, and strong public policies. The outcomes of this vision include diversified economies, guaranteed territorial rights to Indigenous peoples and local communities, healthy forests and rivers, and well-being.

A Pan-Amazonian Sustainable Development Vision

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Key Messages

- Amazonian societies hold multiple and often opposing worldviews about the region's development, making it challenging for them to agree on a shared vision for its future.
- Historic power imbalances have led to the dominance of monetary-centric visions, which have reinforced the false rhetoric that standing forests do not produce socio-economic development and have resulted in socio-economic, race, and gender inequalities, violence, and destruction of the Amazon's ecosystems.
- The Living Amazon Vision presented in this chapter has resulted from consultations with scientists and authors of the Science Panel for the Amazon and is based on a set of guiding principles and values. Building on existing sustainable development policies and approaches, this vision proposes a development model that is socially just and inclusive, as well as ecologically and economically flourishing. It recognizes the role of the Amazon in the 21st Century, and the need for economies that can sustain ecological integrity and diversity, protect human rights and the rights of nature, and promote human-nature well-being.

Abstract

The Amazon holds the highest biodiversity on the planet and is the home to a multitude of peoples, cultures, languages, and lifeways. Its ecosystem services provide fundamental benefits to humans and biodiversity at the local, regional, national, and global scales. As a consequence of this diversity, innumerable worldviews, interests, perspectives, values, and connections exist between Amazonian peoples and ecosystems, biodiversity, and natural resources in the region. However, historical imbalances of power among distinct Amazonian actors and the invisibility of processes at different scales have led to the dominance of certain interests and values over others, and to public policies and institutions that prioritize economic returns from land use, without fully considering the associated environmental, social, and historical costs nor the ecosystems and cultural services benefits. These monetary-centric visions have reinforced the false rhetoric that standing forests do not produce socio-economic development. To break this false paradigm of development *versus* conservation, it is imperative to recognize and integrate these antagonistic visions, address conflicts, and promote recognition of the multiple values of healthy standing forests and free-flowing rivers, as well as cultural interactions with nature and the Amazon as a whole. This chapter proposes a life-centric vision that supports a sustainable Amazon, in which the use of its

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resources and biodiversity in the present will not compromise the existence of future generations of human and non-human beings. The Living Amazon Vision results from consultations with scientists and authors of the Science Panel for the Amazon, and their multiple interactions with stakeholders in the region, as well as a dialogue between Indigenous knowledge and science. This vision is based on a set of values, principles, and knowledge systems described throughout the chapter. The strategies to reach a Living Amazon Vision of the future, based on a development model that is inclusive, just, and socially, environmentally, and economically healthy, includes (i) the conservation, sustainable management, restoration, and remediation of ecosystems; (ii) the incentive for developing an inclusive and just bioeconomy; and (iii) the strengthening of governance and people's empowerment, and aligning policies at multiple scales, including transboundary coordination.

Keywords: Sustainability, Amazonian worldviews, bioeconomy, social justice, ecological integrity, environmental protection, Pan-Amazon governance.

25.1 Introduction

Developing a clear vision is a central starting point from which any action plan emanates, creating the foundations to provide meaning, direction, substance, and boundaries. Having a vision is necessary to change course; an action plan could be successfully put into practice if all stakeholders involved agree on a shared vision and participate in its construction. This is a complex task for the Amazon, in which an intricate and diverse network of stakeholders from different countries have interests—often opposing—in the land and its resources.

Assessing these multiple visions and agreeing on a common one is not a simple undertaking. As discussed in this chapter, multiple visions can be embedded in distinct worldviews, which are deeply rooted in sociocultural identities and contexts. They may depend on where you come from (e.g., major capitals, local cities, towns, communities in rural areas); and who you are, what you do, and how you do it (e.g., Indigenous peoples speaking different languages, non-Indigenous local communities, migrants, traditional loggers, ranchers and farmers, modern producers and large mining, oil, agribusiness, or timber enterprises; municipalities, provinces, states and national governments; the military; civil servants and contractors managing infrastructure that serves distant populations; urban populations; and even drug traffickers, smugglers and illegal miners and loggers). The distinct scales and dimensions at which the Amazon is be-

ing explored will offer different perspectives: global, national, provincial, local; private, public, civil society; sector or activity; economic, political, social, and natural.

When thinking about a vision, it is of utmost importance to consider the Amazon's diverse populations and remember that this is not an empty space (see Chapters 8–14). This biodiverse, naturally bountiful biome contains the largest rainforest in the world and more than 40 million people (RAISG 2020). If we consider the remote but steadfast economic and political interests that have a significant influence on the Amazon's fate (see Chapters 14 and 17), it would be fair to say that even more people occupy the "space". The Amazon is a central stage in the interconnected world of globalization.

The current path of exploitation that the Amazon is on is leading to its destruction and putting in peril the living world that depends on it, both locally and globally. In order to change course, we must compromise on a vision rooted in values, principles, cultural assumptions, and metrics that drive human institutions and sustain life in all forms. We need to foster a new ethic, a mutually enhancing human–nature relationship at all scales: individuals, communities, watersheds, ecosystems, biomes, and ultimately on a planetary scale. The emerging Living Amazon Vision aims to transform the "life-blind" economic system to one that is "life-centric" and based on values and principles of mutual benefit, in which both people and the Ama-

zon rainforest, including its monumental rivers, can flourish. This framework would recognize the well-being of people and the web of life as inextricably linked. The Living Amazon Vision represents a moonshot goal; an ambitious vision to achieve what may seem inconceivable today. Averting a potential tipping point (see Chapter 24) of the collapse of the Amazon biome's hydro-climatic system will require nothing less. This chapter represents, in many ways, the first steps into the future.

The most important indubitable fact that we must take from this chapter and this work is that an environmentally and socially sustainable, inclusive, and just Amazon, where people and nature thrive, requires that we abandon the unsustainable short-term extractive-based economy vision and model that have dominated the region until now, and that have brought us this far. Stakeholders will need to be willing to compromise and agree on an encompassing vision that accommodates their own. If we collectively accept that, in will and commitment, in thought and on paper, we may be able to overcome our biggest obstacle. The age of COVID-19, with its dire consequences, provides a transparent example of how lifestyle changes are possible when will and commitment accompany thought and proclamation. Similar to what happened during the COVID-19 pandemic, fundamental change can usher in improvements and opportunities in the quality and possibility of life. That is the purpose of the transformational vision proposed below: the vision of a Living Amazon that is ecologically healthy, socially fair, culturally inclusive, and economically viable.

25.2 Context for the Living Amazon Vision

25.2.1 The Amazon today

The Amazon is a vital entity for the planet. The largest tropical forest in the world has evolved over the past millions to billions of years into complex, dynamic, and heterogeneous landscapes that are essential for life on Earth (see Chapters 1–7). Its geodiversity is represented by specific geomorphologies and unique habitats with a high degree of en-

demism (Sombroek 2000; Alvez-Valles *et al.* 2018; see also Chapters 2 and 3). The result is a diverse mosaic of dominant forests, with encrusted savannas and grasslands, forming one of the most biodiverse and functionally diverse terrestrial and aquatic ecosystems on Earth (see Chapters 1–4; Wittmann *et al.* 2006; Sakschewski *et al.* 2016). Estimated to host 22% of the tropical vascular plant species, the Amazon is home to approximately 14%, 9%, and 8% of tropical birds, mammals, and amphibians, respectively, and to approximately 15% of the world's freshwater fishes (Chapters 2–4; ter Steege *et al.* 2020).

Holding 10% of the planet's biomass and representing 16–20% of freshwater discharge on the planet (Baccini *et al.* 2012; Chapter 4), the Amazon Basin provides fundamental ecosystem services to the region and the Globe. The almost 400 billion trees in the Amazon (13% of world trees) are responsible for pumping and recycling water to the atmosphere and holding carbon, contributing to cloud formation, cooling the earth system, sending heat back to the atmosphere, and supporting primary productivity (see Chapters 4–7) (Hilker *et al.* 2014; ter Steege *et al.* 2016; Ahlström *et al.* 2017). Agricultural production in the South American continent—and beyond—is dependent on the maintenance of the essential water cycle functions that these forests provide. The rainforest regulates local and regional temperatures by intense evapotranspiration, maintaining air temperatures below 30°C (see Chapter 7). This regulatory capacity, associated with the year-round level of solar radiance, keeps the rainforest operating at a near optimum for photosynthesis (approximately 16% of global terrestrial GPP), resulting in a significant annual carbon sink of 0.38 (0.28–0.49 95% C.I.) Pg C year⁻¹ (Beer *et al.* 2010; Brienen *et al.* 2015; see also Chapter 6).

The Amazon is also home to a great diversity of human cultures, worldviews, languages, and lifeways, including hundreds of Indigenous peoples, local communities (i.e., Afro-descendant groups, riverine communities, forest extractivist communities, family farmers), and many other human popula-

tions, who have developed interconnection with its fundamental ecosystem functions and biodiversity (see Chapters 10, 12, and 13). The region inhabitants have diversified, multi-sited livelihood strategies between urban and rural areas of Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, Venezuela, and the French Guiana territory (see Chapter 14). Diverse Indigenous peoples and local communities (IPLCs), living in both urban and rural areas, depend on the ecosystem services and functions provided by the forest and rivers for food, shelter, income, and well-being, and their livelihoods, culture, and languages or dialects are closely connected to Amazonian ecosystems and biodiversity (Lima *et al.* 2016; Iriarte *et al.* 2020; RAISG 2020) (see Chapters 10, 12 and 13).

Despite the importance of the Amazon, its forests have been lost and degraded at accelerated rates compared with other tropical forests (Turubanova *et al.* 2018), and many of its rivers have been polluted, dammed, or fragmented over the past four decades (Castello *et al.* 2013; Latrubesse *et al.* 2017; see also Chapters 14 and 19–21). 17% of forest loss (MapBiomas 2020) and the 17% of associated forest degradation from logging and forest fires affecting the region (most of it in Brazil—85% of deforestation and 69% of the forest degradation; see MapBiomas 2020; Bullock *et al.* 2020; Chapter 19) have been the products of regional, national, and transnational political decisions, environmental processes, market-oriented forces, and social conflicts resulting from development models that helped to establish the landscape as we know it today (Curtis *et al.* 2018). Unfortunately, the development models that have been dominant across Amazonian countries are based on free-market forces, commodity production or extraction, often for export, accompanied by social inequality, poverty, and criminality (see Chapters 14–18).

Under the current paradigm, the compass heading for our economic and political systems is growth and wealth accumulation at the cost of the environment and general human well-being. Governments aim for 3% per year gross domestic product (GDP) growth, which means that the size of the global

economy doubles every 20 years (Jones 2016). This growth accompanies a corresponding growth in materials throughput, including commodities that contribute to increased deforestation of the Amazon Basin (Lin *et al.* 2018). Currently, at 80 billion tons per year, the total materials throughput of the global economy is 60% more than the Earth's carrying capacity (Hickel 2018). By 2050, despite the efficiencies from the movement towards “Green Growth”, our total materials throughput is projected to reach between 95 billion and 132 billion tons per year—an overshoot far above safe planetary limits (Global Footprint Network 2018).

Achieving the Sustainable Development Goals (SDGs) by 2030 within the present economic model would require a 12-fold increase in the size of the global economy (Woodward 2015). This would likely further accelerate forest and biodiversity loss and push the Amazon past a tipping point (see Chapter 24), impacting rainfall, increasing droughts, and leading to a potentially irreversible change in the remaining forest structure and rivers. This scenario could not only have regional but also global consequences, impacting global carbon stocks and increasing CO₂ emissions from a more prone-to-burn impoverished forest (Aragão *et al.* 2018). It would also affect biodiversity and the people that live and depend on the Amazon forest and rivers, in both urban and rural areas, including other regions that indirectly depend on Amazon-based rainfall (see also Chapter 23).

The window of opportunity for action is rapidly closing, with possibly catastrophic consequences for future generations and the livability of our shared Earth. Donella Meadows, in her seminal work “Leverage Points: Places to Intervene in a System”, describes how in complex systems, the most effective points of intervention are: 1) changing the mindset/paradigm that gave rise to the system, and 2) changing the goals of the system. Although these two points of intervention are often the hardest to implement, they produce the most profound system change, whereby, through self-organization, the system can potentially transform itself towards the new goals while keeping the re-

silience of structures and processes that are vital for the system's viability and functioning in the long term (Folke 2006).

Within the Living Amazon Vision, well-being, fairness, integrity, and resilience (human and non-human) could become the goals around which all of our economic-political governance systems would be organized. From this shift in the system goal, infinite solutions would emerge to align economic prosperity with ecological vitality. In measuring progress, the GDP would be improved by holistic well-being indicators, including projections of quality-of-life indicators for future generations (Biedenweg *et al.* 2016). Well-being indicators that measure happiness, mental and physical health, sense of belonging, democratic participation, as well as ecosystem and biosphere health could then guide our economic, financial, and public policies. New Zealand, Sweden, Scotland, Costa Rica, and Bhutan have begun making this shift. A variety of indices and methodologies exist that could be analyzed for their suitability, tested, built upon, and adapted¹.

25.2.2 Historical worldviews and emerging alternative frameworks for a Living Amazon

Historically, dominant worldviews, philosophies, and narrative frames, mostly from European outsiders, have shaped the internal and external views of the Amazon region over time, bringing perspectives out of which societal norms, economic and political systems, public policies, and ecological and social outcomes have emerged (Figure 25.1). The premise here is that distinct worldviews are a reflex of the dominant paradigms shaping societal beliefs and values and ultimately influencing politics and history (see Chapter 14). The view of the Amazon as empty lands for imperial ambition (as framed in the 1494 doctrine of discovery), a place containing hidden riches (Myth of El Dorado), or the 18th-century movement that proclaimed that man can improve or tame nature through engi-

neering and technical feats, are examples of religious, cultural, or scientific views that were widely held (Bacci 2010). These framings informed the colonial practices of native and African enslavement, the patterns of the rubber period, the modernization enterprises of the 20th century authoritarian period, the rise of highly globalized extractive economies under conditions of extreme inequality, and the expansion of infrastructure (see Chapters 9–17). Such worldviews could be deeply ingrained, could be contested, could gradually shift or be replaced, or diminish in their influence as humanity's collective understanding of the cosmos and our place in it evolves.

The Historic Frameworks section of Figure 25.1 is an attempt to outline worldviews and cultural assumptions of different time periods about such concepts as “human-nature relationships”, “economy”, “wealth”, and “progress”, norms about the treatment of people and nature itself. The Emerging Alternatives section represents more holistic worldviews that are emerging today and that can guide our future actions. Historical views of the Amazon as an infinite storehouse of “resources” to be exploited in pursuit of the goals of “progress” and “economic growth” must be replaced with an Earth Systems Science view, whereby the Amazon is recognized as a key ecological entity of the biosphere's life support system. This emerging Earth systems science perspective aligns with the Indigenous kin-centric worldview in which the landscape and all therein are seen as kin, part of a larger interdependent community, and kinship is essential for mutual survival (Salmón 2000).

It is important to understand that paradigm shifts can happen, and relatively quickly, so what seems unimaginable or immune to transformation can radically shift. For instance, slavery is now viewed with a profound distaste and as a largely inappropriate, private, incorrect, and unacceptable form of human interaction as norms have shifted. Thus, very profound changes have happened in the past,

¹ Examples of such methodologies are: Gross National Happiness Bhutan; the Genuine Progress Indicator; OECD's Better Life Index; The Thriving Places Index.

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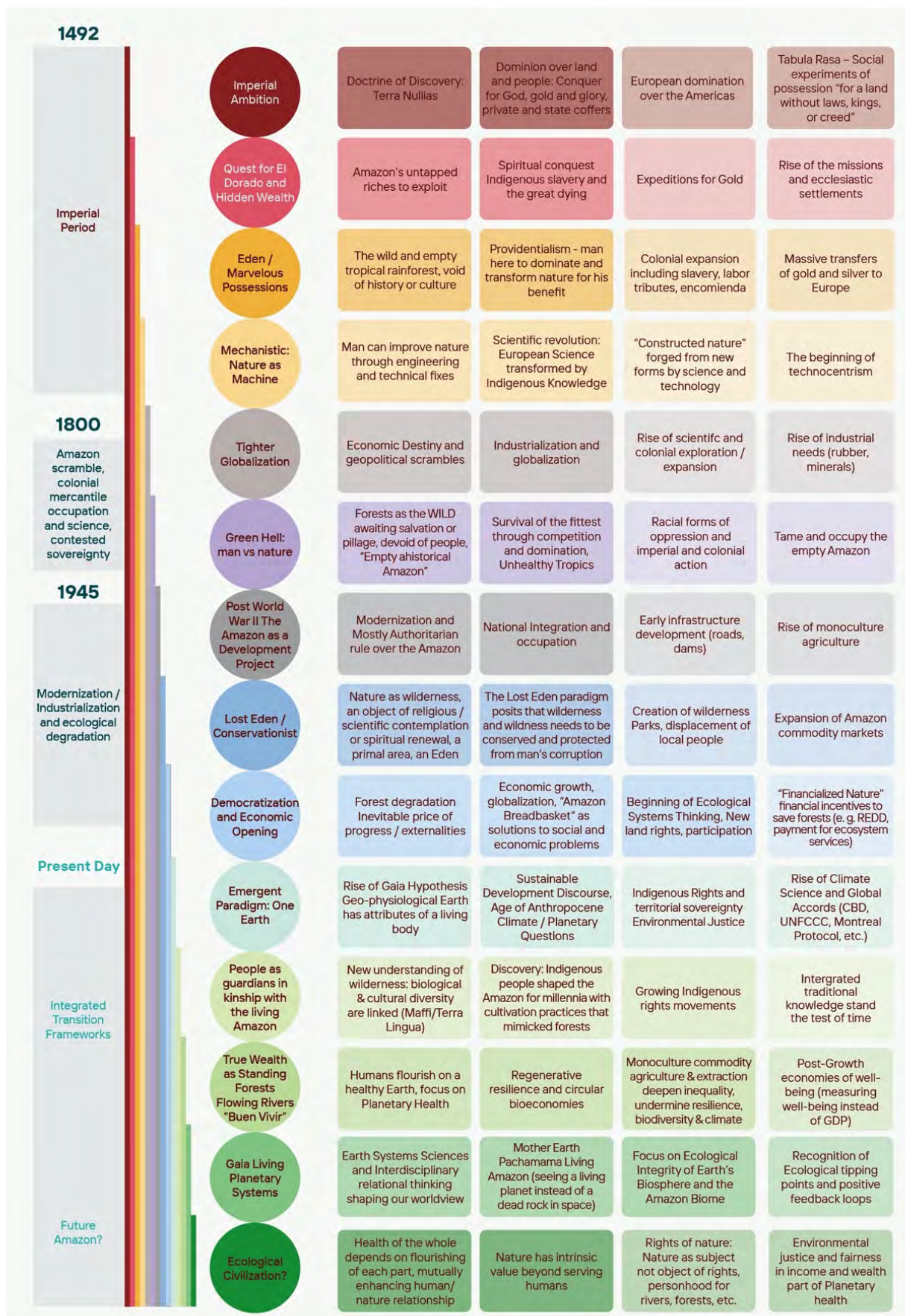


Figure 25.1 Amazon worldviews over time; emerging alternatives to historical frameworks

and new ones can happen again. This possibility is important because of the precarious global and local dynamics in which we find ourselves.

Framing the historical Amazon worldviews is an important step in the process of shaping the Living Amazon Vision and defining systemic problems, as well as designing and advancing effective solutions to the social-ecological crisis facing the region and our planet.

25.2.3 The plurality of social actors, interests, and perspectives in the Amazon

Intrinsic to the worldviews that affect the Amazon, there is a plurality of social actors, interests, and perspectives that interact and compete for territory, natural resources, and ecological co-benefits. Today, approximately 60% of the Amazon population is based in main urban centers (RAISG 2020). As previously documented throughout this report, at least 2.2 million Pan-Amazonian residents are Indigenous peoples from some 410 groups—approximately 80 of which live in voluntary isolation (IWGIA 2020)—speaking more than 300 distinct languages (see Chapter 12). Some Amazonian countries have an expressive or majoritarian Indigenous population, including Peru, Bolivia, Suriname, Guyana, and the French Guiana territory. The Pan Amazonian population is, to a greater or lesser extent, a socio-cultural product of the miscegenation and ethnogenesis between Indigenous, Afro-descendant peoples, settlers, and migrants from different countries (see Chapters 8–13; Chambouleyron and Ibáñez-Bonillo 2019). This mix of identities, cultures, languages, and histories is expressed in diverse worldviews, perspectives, and connections with the Amazon's ecosystems, natural resources, and biodiversity (Figure 25.1, see also Chapter 10).

The multiple worldviews and economic activities that co-exist in the Amazon are also dynamically shaped by historical and political processes, and at times violent conflicts, in a struggle for land, natural resources, ways of thinking and being, and hu-

man and territorial rights, which have characterized most of the development trajectory in several Amazonian countries (Hecht and Cockburn 1990; Schmink and Wood 1992; Becker 2004; Ioris 2020; see also Chapters 14–20).

The diverse actors that use, govern, manage, and share the Amazon biome can be grouped in distinct ways according to different purposes. Here, we distinguish actors that: a) live in, use, and manage Amazonian resources; b) public, private, and civil society organizations that manage or govern Amazonian socio-ecological systems; and c) actors who interact with the Amazon, including private companies, multilateral organizations, and investors (Figure 25.2). The state residents include various peoples and sectors, such as IPLCs, forest producers, urban residents, agribusiness producers, and family farmers (Buschbacher *et al.* 2016). These actors are dependent, directly and indirectly, and to a greater or lesser extent, on Amazonian ecosystems and the goods and services they produce. This includes water, energy, minerals, food, fuel, fiber and medicinal products as well as more impactful activities such as deforestation for agribusiness commodities and exports such as soy, cattle and timber.

The diversity of social actors, economic activities, and social-ecological interactions across Amazonian temporal and spatial scales is underpinned by several, and often contrasting, worldviews, interests, and values connected to rivers, forests, soil, and the rich biodiversity shared across the region's geopolitical borders (Biery-Hamilton 2002; Buschbacher *et al.* 2016; Lea 2017; Huambachano and Cooper 2020). Amazonian actors have different views of the value of forested areas or rivers: one might associate it to the market value of the goods and services (instrumental or market value) provided by the forest and rivers, whereas another may express a relational value with the forest/waterbodies by seeing it as kin, a sentient being where powerful ancestral spirits live, and who should be recognized as a subject of rights (Kawsak Sacha Declaration 2018). Others might think about their

subsistence or cash livelihoods based on their engagement with forests and waters. Another person may want to conserve the forest for the intrinsic value of animal and plant species, which are products of thousands of years of genetic evolution and have inherent existence rights (Himes and Muraca 2018). Others might view it through the lens of geopolitics, where government power relations define the fate and decision-making over the territories (Becker 2004).

These values can overlap and co-exist in the same individual or across social groups and can be expressed under different contexts and practical situations. However, a historical imbalance of power and socio-economic inequality among different actors has led to the dominance of certain stakeholders' interests and values over others, and to the articulation of dominant monetary values in public policies and organizations within and outside Amazonian borders (Bebbington 2013; Ioris 2015). Over time, these visions have created a set of views based exclusively on monetary value, reinforcing the false rhetoric that standing forests do not produce development. To break this paradigm of trade-offs between development and conservation, it is imperative to recognize, negotiate, and articulate these opposing visions, addressing conflicts and promoting the recognition of the multiple values of standing forests, free-flowing rivers, and of the Amazon socio-biome at large. Circular economies and bioeconomies need to create nature-based opportunities and solutions so that people that do not see the value in the standing forest start to see it, and the ones that already do can in fact improve their quality of life with it (see Chapter 30).

The SPA Living Amazon Vision emphasizes the need to reconcile economic and ecological security and prosperity with social justice and ecological integrity and diversity, entailing a more inclusive, democratic, and participatory process of knowledge production and decision-making, plural valuation, and innovative multi-level governance arrangements amongst Amazonian social actors (see also Chapters 31–33). These arrangements will be critical to the success of an Amazon-

based bioeconomy and other nature-based economic arrangements for the region (see Chapter 30).

Experiences of governance and management of Indigenous territories and collectively managed areas, in various co-management arrangements with collective, public or private actors, provide important contributions to a post-COVID-19 Living Amazon Vision. Amazon–Andes-based Indigenous philosophies and concepts have inspired local, national, and international policies and social movements, including the Rights of Nature movement, the *Buen Vivir* (Living Well), and *Pachamama* concepts and values, which have been incorporated in National Constitutions (Bolivia and Ecuador), and in national, regional, and local development policies and practices (although with recognized inherent constraints and pitfalls), with special provisions for Indigenous peoples and Afro-descendant communities (Fleuri and Fleuri 2018; Williford 2018). These philosophies are based on principles and values of collective human-nature well-being, reciprocity, respect for the past, commitment to maintaining the collective human-nature well-being into the future, and fair compromise between past and future. These principles and values can be engaged with economic instruments and global policies, including agreements on Climate Change, Environment Social and Governance arrangements (ESGs), and ideas and normative positions such as SDG indicators (van Norren 2020).

Promoting a wide Pan-Amazonian dialogue on the main principles and values proposed by this report would be an important step to jointly address this emergency in an attempt to stop and revert the trajectory of destruction and degradation that humans are inflicting on the Amazon, which is within the timeframe of this generation (Lovejoy and Nobre 2018).

25.2.4 The regional and global vision for the Amazon

The protection, sustainable management, and res

toration of tropical forests, rivers, and associated ecosystems (see Chapters 27–29) is key to meeting global climate, biodiversity, and Sustainable Development Goals. Sustaining a Living Amazon Vision would mean realigning strategies and relationships between stakeholders interacting with the Amazon (Figure 25.2), aligning policies, and innovating and supporting alternatives to monocultural development and unsustainable extractive and extensive economic activities (Zycherman 2016; Hoelle 2017; Soares-Filho and Rajão 2018; Müller-Hansen *et al.* 2019).

Beyond domestic investments and incentives in a proactive agenda to achieve the Living Amazon Vision, financial support should be mobilized from developed countries, as they have a deep responsibility both as buyers of products from areas associated with deforestation and for their accumulated greenhouse gas (GHG) emissions. Supply chain actors, such as companies, investment funds, and portfolios that trade and utilize Amazonian products including land, can mobilize for sustainable production, and should provide transparent information to consumers and investors about their sourcing and investment (Gardner *et al.* 2019). Setbacks on environmental agendas can lead to restrictions on the economies of Amazonian countries. One example is how the current deforestation rates in Brazil have become so critical that they may undermine the MERCOSUR trade agreements with Europe (Gonzalez 2021).

Global cooperation, robust diplomacy, and mutual responsibility are essential for achieving sustainability in the Amazon. Sustainable development pathways for a Living Amazon must be shaped and implemented by Amazonian countries and supported by other nations. The United Nations (UN) Convention on Biological Diversity (CBD), the Nagoya Protocol on Access and Benefit Sharing for the genetic use of biodiversity, the UN 2030 Agenda for Sustainable Development, and the UN Framework Convention on Climate Change (UNFCCC) Paris Agreement on reducing global climate change, are important and relevant multilateral agreements

with a significant impact on the future of the Amazon. All eight countries in the region, as well as French Guiana, explicitly include forest protection in their Nationally Determined Contributions (NDCs) to the Paris Agreement (Wong *et al.* 2019). Brazil's massive reduction of deforestation from 2004–2012 through a series of public policies, as well as private and cross-sectoral measures (see Chapter 17; Assunção *et al.* 2013; Nepstad *et al.* 2014), is a conservation success story that led to the Amazon Fund (Correa *et al.* 2019), even though it was dependent on a complex of activities and global conjunctures (i.e., multilateral engagement on climate change agenda, the rise of green market requirements, world economic crisis) (see Chapters 14 and 15). Nevertheless, these gains were achieved in part by forest clearing elsewhere, such as in the Chaco, Cerrado, and Chiquitania of Bolivia, as a form of avoiding regulations and seeking lower land prices (de Waroux *et al.* 2019). To avoid these leakages in a Living Amazon Vision, it is important to accommodate and harmonize trans-regional and trans-national policies to protect neighboring biomes, as they are also crucial for supporting regional ecological integrity and human well-being.

Regional and cross-country cooperation and coordination are needed to protect forests and restore degraded lands. The Governors' Climate and Forests (GCF) Task Force, a network of 35 tropical states and provinces in eight countries, including Brazil, Peru, Colombia, and Ecuador, has highlighted the role of subnational governments as leaders in sustainable development. In 2014, the members of this task force pledged to reduce deforestation by 80% in their respective jurisdictions' by 2020, contingent on adequate finance (GCF Task Force 2014). In 2019, the national governments of Colombia, Bolivia, Ecuador, Peru, Suriname, Guyana, and Brazil signed the Leticia Pact, which includes commitments to share information and coordinate efforts to fight deforestation and wildfires and restore degraded areas in the region. However, subnational jurisdictions and countries have yet to meet their commitments.

All initiatives emphasize the importance of empowering Indigenous peoples and local communities, paying special attention to gender equality, and engaging the private sector in sustainable finance as key requirements for meeting their goals. In addition, the Amazon Cooperation Treaty Organization (ACTO), an intergovernmental organization formed by the eight Amazonian countries, was created in 1995 to encourage sustainable development and social inclusion in the region. The “Amazon Vision” is another initiative that intended to integrate and engage countries in protecting biodiversity, producing a ten-year action plan (2010–2020) incorporating new strategies and proposing investments and financing plans, all in compliance with the Aichi Biodiversity Targets and the strategic plan of the Program on Protected Areas (PTAP) of the CBD. Implementation of this work plan resulted in a joint declaration to the COP 21 highlighting the importance of protected areas for climate change adaptation and mitigation signed by 17 countries, including all Amazonian countries, except for Suriname. However, ownership of this vision beyond the environmental sector and across scales has not been achieved (Redparques 2019).

It is paramount to strengthen cooperation among Amazonian and non-Amazonian countries’ governments, civil society, financial institutions, private sector, and IPLC organizations to build the Living Amazon Vision. This includes supporting *inter alia* agroforestry and fisheries practices, forestry, and other products connected to the region’s socio-biodiversity that support the Amazon-based global economy (see Chapters 27-29).

25.2.5 Experiences of sustainable development in Amazonian countries

There has been a long history of sustainable development interventions in the Amazon, which have attempted to balance forest conservation with livelihood development and could be used to pave the way for the Living Amazon Vision. These experiences have distinct scales, from local projects to regional policies. Among them, there is the creation

of sustainable-use protected areas, integrated conservation and development projects (ICDPs), and payments for ecosystem services schemes (PES; see Chapter 30), implemented over the years with varying degrees of success (Börner et al. 2020). Some of these experiences are identified in the SDSN-Amazonia Map (SDSN-A 2021), which presents the spatial distribution of initiatives linked with the SDGs. These are only a small portion of initiatives that have been part of decades of history of domestic and international investments, many of them invisible at scale, but that has helped to shape the evolution of local, regional, and global solutions to achieve sustainability.

At the country and government level, there are some relevant initiatives to support standing forests that are worth mentioning in terms of persistence and scale. Since 2008, the Socio-Bosque program or “forest-partner” run by the government of Ecuador offers economic incentives to landowners to preserve their native forests over the medium to long-term through conservation agreements. The program has signed 630,000 hectares for conservation so far (de Koning et al. 2011). The National Program for Sustainable BioTrade (Biocomercio Sostenible) implemented in Colombia, which aims to support sustainable businesses based on biodiversity products and services, is another example of how governments have started to recognize the economic potential of biodiversity conservation to businesses (García Rodríguez et al. 2015). In Peru, the National Forest Conservation Program relies on payments to Amazonian Indigenous communities as an incentive for them to avoid deforestation and adopt sustainable practices, generating modest conservation impacts (Giudice et al. 2019). The Brazilian Bolsa Verde (Green Grant) Program is another example of a public policy aimed to support forest-based local communities living at poverty levels to support their livelihood while sustainably managing their natural resources, reducing the pressure to substitute the forest with pasture and crop fields. The program is currently discontinued due to political reasons, but it had an important impact on supporting local communities that are at high poverty levels and developed a successful

multilevel governance approach for its implementation (Kull et al. 2018).

Among the experiences that aimed to promote forest conservation while sustainably boosting the local economy, one that engaged diverse global stakeholders around the objective of maintaining Amazon forests standing as a way to mitigate climate change was the REDD+ mechanism. REDD+, which stands for reducing emissions from deforestation and forest degradation, along with the conservation and sustainable management of forests, and enhancement of forest carbon stocks, emerged in the context of the UNFCCC negotiations over a decade ago (Moutinho et al. 2011). This mechanism is now enshrined in the Paris Agreement and was seen as a potential win–win for con-

It is important to understand how such international investments have affected forests and people in the region. Although most national REDD+ initiatives have so far failed to stop deforestation, REDD+ finance has contributed to a better understanding of deforestation drivers, stronger and improved forest monitoring capacities (e.g., Brazil, Colombia, Guyana; Laing 2018; Nesha et al. 2021), engagement of local and regional stakeholders in national forest policy discussions, and improved policy coordination among national ministries involved in forest governance (e.g., Brazil, Guyana, and Colombia; Griscom et al. 2020). For example, in Guyana, the REDD+ support from the Memorandum of Understanding with Norway resulted in the USD 250 million of performance-related payments made to the country over five years and was inextricably linked to a wider national development policy and planning process, which is encapsulated in Guyana's Low Carbon Development Strategy (LCDS), in 2009 and 2010.

Although Brazil's success in reducing Amazonian deforestation by approximately 80% from 2004–2012 (see Chapter 17) largely predated the bilateral agreement with Norway, some have argued that the agreement helped consolidate the political will needed for continued progress (Seymour and Busch 2016). It also incentivized the leadership of subnational states and provinces, such as Acre

conservation and development, providing financial incentives to forest-rich countries for maintaining standing forests (Angelsen and Wertz-Kanounnikoff 2008).

Brazil, Colombia, and Ecuador have fulfilled all UNFCCC requirements to access REDD+ results-based payments from the Green Climate Fund. Since 2019, the Green Climate Fund has committed to paying Brazil USD 96.5 million for forest-based emissions reductions in 2014–2015, Ecuador USD 18.6 million for results achieved in 2014, and Colombia USD 8.2 million for 2015–2016. Norway has also invested heavily in Brazil and Guyana: Brazil's Amazon Fund (2008) was the largest climate pay-for-performance mechanism ever created (Duchelle et al. 2019; Figure 25.3).

(Brazil), which aligned its decades-long sustainable development policies through the state System of Incentives for Environmental Services (SISA) (Alencar et al. 2012; Schmink 2014) to become a global model for jurisdictional REDD+. The local government, which had previously seen the forest as a burden for development, started to engage in creating solutions (i.e., Acre's SISA) and articulating policies (i.e., Mato Grosso state policy's Produce, Conserve and Include - PCI). In the case of Brazilian states, resources channelized through the Amazon Fund helped to support Amazonian states with insufficient funds to invest in better state environmental governance systems. The Brazilian Rural Environmental Registry (CAR), which today is one of the most important databases used to identify challenges and design policies for rural areas of Brazil, had fundamental support from the Amazon Fund (Roitman et al. 2018).

Even though REDD+ initiatives, as individual projects or jurisdictional programs, have led to decreased forest clearing (Simonet et al. 2019) and helped improve livelihoods (CIFOR 2018; Souza and Alencar 2020) in some places, REDD+ is not a silver bullet. A major challenge is that the scale of REDD+ finance has paled next to its business-as-usual competition, with the lack of incentives for forest conservation contributing to the environmental and social backsliding experienced in Bra-

zation in recent years. Furthermore, land tenure insecurity remains a key barrier for REDD+, and it is critical to prioritize the rights, participation, and livelihoods of local farmers and communities, including women, in forest-based climate mitigation initiatives to ensure more effective and equitable outcomes (Duchelle et al. 2019). Another problem has been the leakage of destructive activities away from the REDD sites.

The broader challenges to engage in a Living Amazon agenda are the integration and articulation of various conservation and development initiatives, including REDD+. Strategies of integration must be founded on solid principles and values and articulated in innovative and enduring pillars that highlight the importance of the Amazon across scales (e.g., local, national, and global). They must sup-

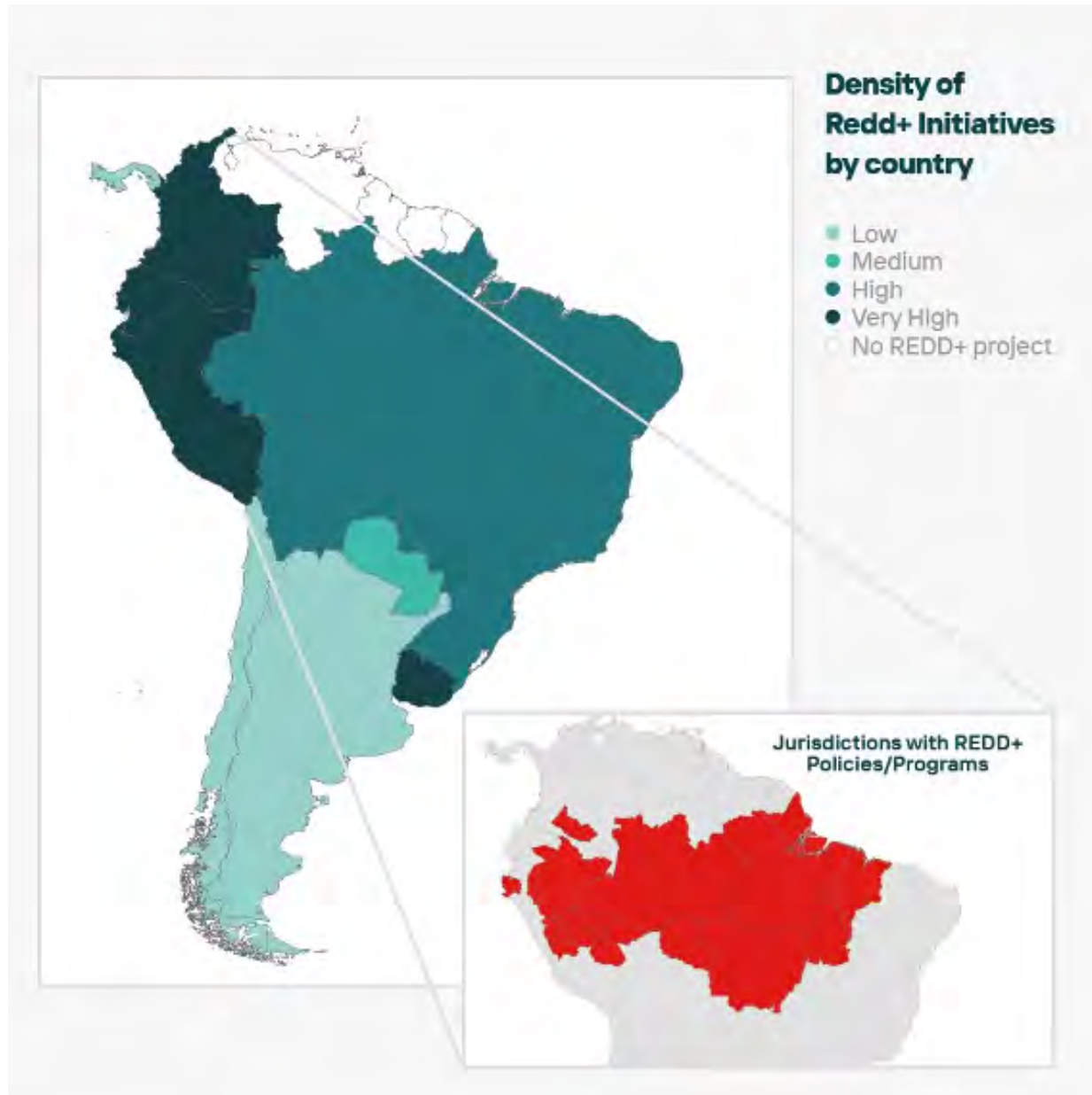


Figure 25.3. The density of REDD+ initiatives at a national level and the existence of REDD+ policies/programs at the subnational level. Adapted from the International Database on REDD+ projects and programs; Simonet et al. 2019; Duchelle et al. 2019.

port possibilities of innovation in a new bioeconomy paradigm, as well as embrace more democratic and representative governance systems.

25.3 Principles and Values for a Living Amazon

Building pathways towards dialogue, negotiation, and articulation of distinct visions on the future of the Amazon is fundamental to developing common principles and values. Values represent intrinsic qualities that influence people's behaviors to achieve a common vision, whereas principles represent a proposition, an objective reality to be followed to guide people's behaviors towards a new vision for the Amazon. Six values and seven principles were highlighted to support the Living Amazon Vision proposed in this chapter. This vision incorporates aspects of the sustainable development triad framed here as ecologically healthy, economically prosperous, and socially fair (Table 25.1). Below, values and principles will be discussed jointly, as they reinforce each other.

25.3.1 The Amazon is the world's largest tropical rainforest and largest river by volume with a unique geodiversity, exceptional biodiversity, and high level of endemism, which must be valued, respected, and protected

The Amazon is a living, active, complex, dynamic, and diverse system (Jézéquel et al. 2020), which is a product of evolution and co-evolution of natural and human interaction with values that go beyond utilitarian in terms of products and services. This principle recognizes the rights of nature, particularly the right of ecosystems to maintain their integrity and their evolution. It is based on a biocentric worldview that recognizes nature's existence or intrinsic value, in contrast with a predominant anthropocentric worldview, in which human well-being is viewed as superior or more important than other beings' existence (Nesshöver et al. 2017). This includes geological resources being well managed to avoid permanent damage to the landscape and impacts on all forms of diversity, more investments in science to fill the knowledge gaps about

this complex and diverse systems, and the promotion of the importance of geodiversity to human-environmental well-being to leverage societal dialogue and engagement in conservation.

25.3.2 The Amazon provides key, cross-scale regulatory ecosystem functions, especially for climate, hydrology, and biodiversity that form the basis of water and food security

The Amazon functions as a critical entity in the hydro-climatic life support system of the Earth's biosphere and key ecological processes at multiple scales. This second principle is associated with the significant local, regional, and global climate benefits from the Amazon (described in section 1), from preserving carbon stocks to maintaining hydrological equilibrium and supporting the health and resilience of terrestrial and aquatic systems. It recognizes that the globe is one large interconnected system and the integrity of the Amazon represents an important piece of that system (Baker and Spracklen 2019). Therefore, it is essential to acknowledge that depletion of the Amazon terrestrial and aquatic systems would have profound impacts that percolate across scales. The health and integrity of the Amazon terrestrial and aquatic systems, including well-functioning ecological processes and connectivity, are essential to improving people's quality of life. Consequently, it is imperative to consider the Amazon in its totality to promote trans-national governance and management strategies and policies to guarantee the integrity of the Amazon as a living support system of the globe.

25.3.3 Use of the Amazon's natural resources must support ecological processes, functions, and livelihoods in the face of a climate crisis and a potential tipping point

This principle is embedded in the diversity and natural socioeconomic vocation of the Amazon. It highlights the value of diversity of production strategies and livelihoods in the region and their interdependence with ecosystem services. It also highlights the Amazon as a potential world bio-

Table 25.1 Principles, values, and keywords that shape the new Amazon vision.

Principles	Values	Keywords
1. The Amazon is a geodiverse and biodiverse system that must be valued, respected, and protected.	1. The Amazon holds the world’s largest tropical rainforest and the largest river by volume, with a unique and complex geodiversity, exceptional biodiversity, and a high level of endemism.	Diversity, Uniqueness, Complexity
2. Amazonian ecosystems’ functions provide benefits at multiple scales.	2. The Amazon provides key, cross-scale regulatory ecosystem functions, supporting climate, hydrology, and biodiversity, forming the basis of water, energy, food, and income security.	Connectivity, Cross-scalar, Integration, Teleconnection
3. Use of the Amazon’s natural resources and its ecosystems must support ecological processes, functions, and livelihoods in the face of a climate crisis and potential tipping points.	3. Amazonian peoples hold diverse and interconnected livelihood strategies that can form the basis of a future world bioeconomy.	Interdependency, Responsibility, Reciprocity
4. Urban and rural areas of the Amazon must function as integrated productive systems that promote and support a wide range of socio-economic and ecological benefits.		Identity, Integration, Innovation, Decentralization
5. Amazonian governance must include participatory processes of engagement between diverse stakeholders and across scales for the well-being of the whole.	4. The Amazon holds diverse worldviews, values, institutions, and governance systems that have contributed, and should continue to contribute, to the shaping of pluricultural, inclusive, and democratic societies.	Engagement, Participation, Inclusion
6. The Amazon houses diverse experiential knowledge systems and cultures resulting from the connection between people and nature, or biocultural diversity, which must be valued, recognized, and protected.	5. The Amazon holds high levels of cultural and linguistic diversity and provides an opportunity for collaborative knowledge production and sharing in relation to sustainable resource use.	Knowledge, Diversity, Collaboration
7. Recognition of the rights of Indigenous peoples, Afro-descendant, and other local communities and ensuring their access to justice is paramount to promoting well-being for all.	6. Recognition of the territorial rights of IPLCs reduces conflict, promotes equity, and increases human-nature well-being.	Rights, Justice, Equity

economy leader (Valli et al. 2018). It assumes forest- and water-based activities, or other economic activities and practices that support forest and aquatic systems and services, as the main activities promoted and supported in the Amazon. Thus, whether properties are private, state, or common, the result of forest and water use must sustain the integrity of the ecosystem services and functions

provided by them. This principle ensures the renewal of natural resources, recognizing the limits on the extent and intensity of their use and avoiding large-scale extractive economic models that consider the Amazon as a region of inexhaustible wealth focusing on short-term profit maximization (Frey et al. 2018; Sauer 2018). It acknowledges synergies, feedbacks, and interactions of climate, eco-

systems, economic activities, and associated infrastructure, thus preventing the impact of these activities on extensive forest loss, river flow, and baseflow, alteration of the energy balance, and the release of carbon to the atmosphere (Guimberteau et al. 2017; Latrubesse et al. 2017).

25.3.4 Urban and rural areas of the Amazon must function as integrated productive systems that promote and support a wide range of socio-economic and ecological benefits

This principle addresses the fact that the Amazon has a strong urban character, and rather than the usual trajectory of countryside occupation, it is gradually shifting into towns and cities (Padoch et al. 2008). Amazonian cities possess a particular matrix of historical, social, and spatial dynamics that enable people to incorporate aspects of Amazonian agroforestry as key assets for the creation of resilient survival strategies on the urban periphery (Costa and Brondízio 2011; de Souza and Alvalá 2014). Hence, this principle is based on the importance of including Amazon cities in the perspective of integrating development and conservation, and the urban with the rural areas, to enhance their mutual socio-ecological and economic benefits. In this principle, the Amazon should invest in more “urban forests”, in which cities are less reflective and contain more green productive spaces that provide habitat value for biodiversity and agrobiodiversity production. Based on this principle, the “urban forest” may be a source of innovative jobs and industries that connect with forest and river use in rural areas in a sustainable form, strengthening the identity of Amazon’s citizenship and the urban/rural relationship.

25.3.5 Amazonian governance must include participatory processes of engagement among diverse stakeholders and across scales for the well-being of the whole

In the Amazon, the governance of common goods requires not only strong government and institu-

tions (i.e., trained people, appropriate infrastructure, sufficient financial support), but also balanced participation in the decision-making process inclusive of diverse worldviews at different scales (Thaler *et al.* 2019). A desired governance system for the Amazon provides equal opportunities for representation and participation in decision-making processes regarding territorial and natural resource use rights. It is fundamental to protect the array of IPLCs’ territories and provide equal opportunities for participation. This principle reinforces the proposition that any decision-making process must involve local people and communities, use the best scientific knowledge to assist in decision-making, value Indigenous and local knowledge (ILK) and cultural practices to assist in decision-making, and ensure public participation and integration of actors/stakeholders from local to international scales. Therefore, it must encompass the following elements: strong and articulated institutions; equity, justice, and rights policies; inclusive decision-making processes that can be referred to as the enabling environment; improved access to information; cross-sectoral articulation and cross-scale alignment that are bridging mechanisms for greater and more effective input from civil society. These are reflected in new models of trans-basin and transboundary cooperation and local activism, which end up creating and reinforcing a collective identity of the Amazonian people.

25.3.6 The Amazon houses diverse experiential knowledge systems and cultures resulting from the interconnection between people and nature, which must be valued, recognized, and protected

The Amazon hosts a range of symbolic, spiritual, and material values that reflect the diversity of IPLCs and their interactions with nature (Millennium Ecosystem Assessment 2005; Hiron *et al.* 2016). This principle acknowledges how diverse cultural heritage knowledge systems of Amazon Indigenous peoples and local communities are

formed and are of special value, needing to be respected, protected, and shared (Olsson 2011). It considers ancient knowledge as a public good that should not be seen merely as the product or possession of individual minds but built and used collectively and dependent on social and physical environments (Athayde *et al.* 2016). This knowledge is fundamental for society to gain a deeper understanding of the Amazon human–nature relations, which is also crucial to promote sociocultural, environmental, and economic sustainability (see Chapters 30 and 33). This knowledge must be protected from private expropriation and biopiracy while at the same time highlighting the potential for dialogue, exchange and articulation within and between IPLCs knowledge systems, scientific knowledge and policy-making in order to inform pathways toward sustainable resource use and sustainability of the Amazon (see Chapter 33).

25.3.7 Recognition of the rights of Indigenous peoples and local communities and ensuring

their access to justice is paramount to promoting well-being for all

Amazonian IPLCs have played an important role in shaping, protecting, and restoring Amazonian ecosystems and biodiversity under different changing contexts, despite genocide, violence, displacement, and conflicts between conservation, livelihood, territorial, and development agendas (see Chapters 8–14). Criminal activities are driven by the demand for high-value resources such as timber and gold and take advantage of weaknesses in the justice system, particularly in border regions, affecting the integrity of IPLCs territories and lives (Villén-Pérez *et al.* 2020). The responsibility behind ecosystem degradation in the Amazon, resource consumption, and hence the planetary crisis is not equally distributed, nor is the vulnerability to this degradation. To promote justice and well-being among peoples that support conservation and depend on natural resources for their livelihoods, there is a need for improved frameworks to defend

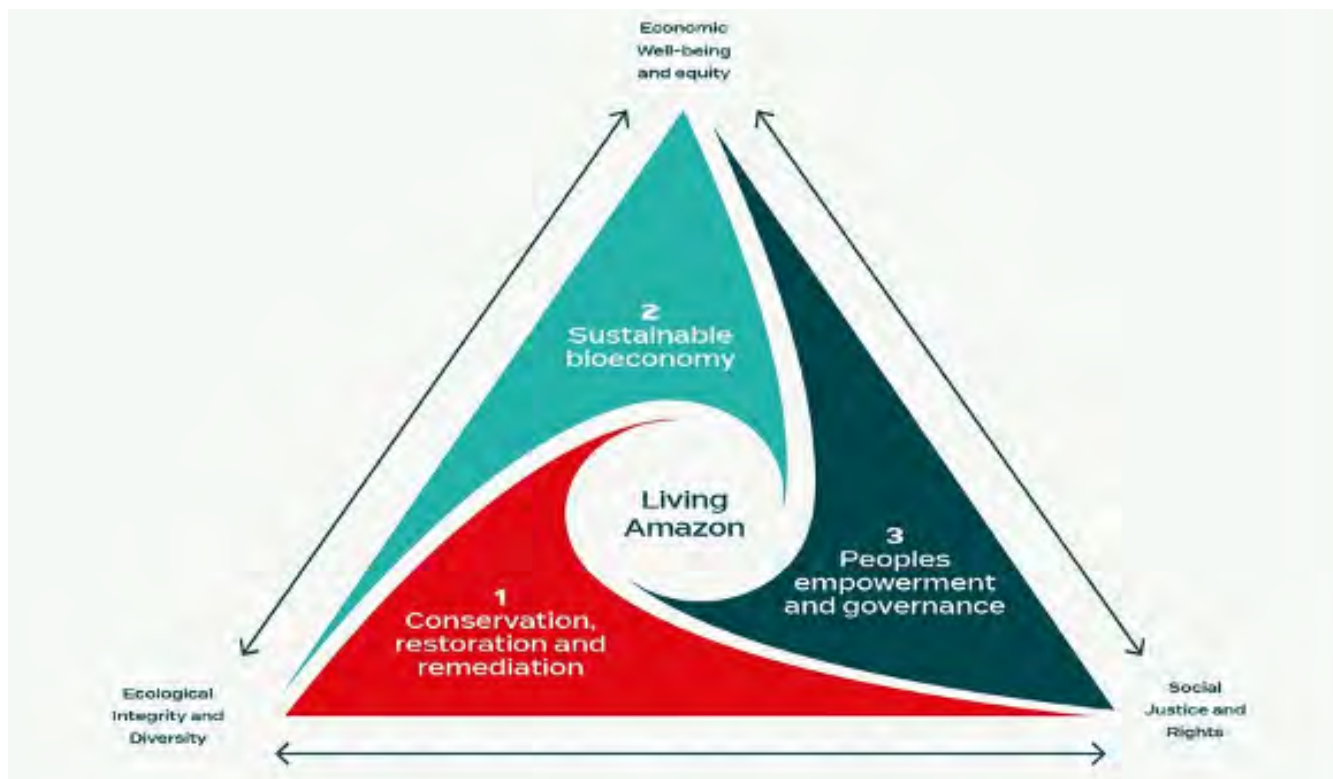


Figure 25.4. Pillars of the Living Amazon and its relation with aspects of the sustainable development tripod.

the collective territorial rights of IPLCs, the rights to a healthy environment for all citizens of today and tomorrow (Living No One Behind principle of the UN Agenda 2030 and SDGs), and the safety of local defenders of nature (see Chapter 31). This principle highlights the importance of recognizing IPLCs' rights to healthier landscapes, to their well-being, and the well-being of the region and the planet. A human rights approach to achieving sustainable livelihoods and well-being is essential to reframe the Amazonian development model to the pursuit of a Living Amazon Vision toward just and sustainable futures for current and future generations.

25.4 Pillars of the Living Amazon

Based on the principles and values described above, we propose a strategy to support a Living Amazon based upon three pillars. The strategy is inclusive and just, and will promote healthy societies, environments, and economies. These pillars are associated with (i) the incentives for conservation, sustainable management, restoration, and remediation (i.e., removal of pollution) of ecosystems, (ii) the incentive for the development of an inclusive bioeconomy, and (iii) the strengthening of governance and people's empowerment (Figure 25.4).

These pillars are inspired by the three dimensions of sustainable development and their desired outcomes: a) the ecological integrity of the terrestrial and aquatic ecosystem; b) the economic dimension represented by socio-economic well-being and equity, and c) the social aspect represented by social justice and rights. They are organized in three objectives and strategies described below (Figure 25.5), and will be further discussed in Chapters 27–34 of this report:

25.4.1 Measures to conserve, restore, and remediate terrestrial and aquatic systems

25.4.1.1 Expand, consolidate, and secure protected areas

The Amazon protected areas, which include Indigenous territories and other types of conservation lands (i.e., national parks, ecological stations, nature reserves, extractive reserves, sustainable development areas, and Afro-descendant territories), have been acknowledged as efficient strategies of conservation in the Amazon to protect both natural and cultural systems (Nepstad *et al.* 2006; Nolte *et al.* 2013; see Chapter 16). In the Amazon, at least half of the standing forests are inside formally protected areas (RAISG 2020) and the protection and consolidation of these territories as sustainable drivers of conservation is the first step to support human-nature well-being and the Basin ecosystem integrity. Nonetheless, these areas were not initially designed to protect river systems, indicating a need for redesign and expansion (Opperman *et al.* 2021). Rivers frequently serve as boundaries of protected areas, and often, only tracts of them are located within the protected area. The protection of free-flowing rivers is essential for freshwater biodiversity conservation and protecting the livelihood of IPLCs that depend on them (e.g., fisheries).

Nonetheless, instead of expansion, these areas have been seriously threatened in recent years (RAISG 2020), being downgraded, downsized, and degazetted (PADDD; see Chapter 16), indicating the need for action and strong political will towards their protection (Kroner *et al.* 2019). Policies designed to support sustainable use and protection of these territories (i.e., Amazon Region Protected Areas Program - ARPA) and that go beyond conservation are important elements to protect and consolidate these areas and promote them as sustainable drivers of conservation in a Living Amazon Vision. Some of these policies initiatives include: a) support IPLCs livelihoods (i.e., education and health); b) discourage forest conversion to extensive land uses (i.e., cattle ranching); c) encourage the expansion of protected areas considering the protection of freshwater biodiversity and fisheries; d) strengthen the capacity of institutions responsible for managing and monitoring these areas (i.e., people, infrastructure, technology); and e) articulate and implement transnational programs to promote connectivity among them.

25.4.1.2 Cease deforestation, degradation, and contamination of terrestrial and aquatic ecosystems

Controlling the loss of Amazon forest and the human impacts on rivers (i.e., pollution by mining, wastewater, plastic, damming) is a centerpiece and one of the main goals in a Living Amazon Vision. Important strategies that need to be strengthened to impede forest and freshwater degradation and the voluntary expansion of non-forest land-uses over forest areas include a) strengthening the governance of land and natural resources; b) improving and supporting monitoring and enforcement; c) providing economic incentives for good practices in areas already deforested or polluted; and d) engaging the public and private sector organizations, including companies in zero-deforestation and freshwater protection agreements (Stabile *et al.* 2020). This would help to restrain illegal deforestation on public lands (i.e., in the Brazilian Amazon, where at least half of deforestation happened on public lands; Alencar *et al.* 2021), and illegal logging and mining, which are important drivers of degradation of both terrestrial and aquatic systems. Private landholders need to be encouraged to go beyond following the deforestation restrictions imposed for each country, using incentives so they can engage in more sustainable land-use practices. Licensing policies for infrastructure such as large dams, hydroways, roads, mining operations, and industries must be strengthened and enforced to reduce the impact of pollution and degradation on freshwater systems (see Chapter 20). In addition, waste treatment policies should guarantee potable water for Amazonian people in both urban and rural areas.

25.4.1.3 Restore and remediate landscapes and watersheds for maximizing multiple ecosystem services

To safeguard the ecological integrity of the Amazon biome, it is not only necessary to halt the loss and degradation of natural resources and support the consolidation of protected areas, but also to restore and remediate terrestrial and aquatic ecosystems in deforested, degraded, or contaminated areas. In the Amazon, at least 867,675 km² was deforested

by 2018 (Mapbiomas 2020), and most of it (80%) was converted to pasture (RAISG 2020). In Brazil, which accounts for 85% of the deforested area in the region, it is estimated that 60% of the area once deforested is either heavily degraded pasture or abandoned (Mapbiomas 2020). In addition, infrastructure and mining have impacted and polluted Amazon rivers (Castello *et al.* 2013). Under a Living Amazon paradigm, there is a need to restore the integrity of these areas and strengthen conservation strategies and policies already in place. These processes must include the restoration of deforested or degraded riparian areas to support forest–river connectivity and ecological functions that support biodiversity (Alvim *et al.* 2020). This measure is legally obliged in some countries such as Brazil, but their riparian widths are still insufficient to protect biodiversity and essential ecological processes (Dala-Corte *et al.* 2020). It also reinforces the recovery of other priority areas that are not necessarily connected by rivers but hold value for endemic and endangered species (Chapter 27 and 29) and provide fundamental ecosystem services. The remediation of areas polluted by mining, pesticides, and industries or disrupted by infrastructure activities is also vital (Chapter 28). In addition to existing restoration strategies, including passive natural regeneration and active induced restoration, silvopastoral systems may also be used to provide economic and other social benefits from restoration (see Chapters 27–29).

25.4.1.4 Implement systems to monitor, evaluate, and hold stakeholders accountable for restoration and remediation

To be effective, restoration and remediation processes require that several prerequisites are met, including policy and legal enforcement, identification of priority areas to be restored in which multiple ecosystem services are maximized; implementation of payment for environmental services; societal participation and engagement; strong and transparent monitoring systems; and social and market-based incentives and investments for restoration. A monitoring system, with a clear framework of accountability and enforcement, to encourage engagement and support, while avoiding

leakage and additionality, is also essential. The creation of an Amazon restoration fund, and/or the reinstatement, expansion, and strengthening of the Amazon Fund, would help to support stakeholders' priorities in conservation and restoration. These efforts would also support tree planting in and around Amazonian cities, promoting climate comfort and reducing the impact of heat islands (see Chapter 29), and large-scale passive restoration of watersheds and biodiversity corridors, supporting healthy rivers and protecting freshwater habitats and biodiversity. In addition, these efforts must be transnational and incentivized as crosscutting policies influencing more than restoration and remediation, also supporting transboundary integrated Basin management and large-scale conservation.

25.4.1.5 Implement global and regional incentives for conservation, restoration, and remediation

There is a need for a comprehensive Living Amazon Conservation and Restoration Pact between all Amazonian countries and backed globally. Such a pact would include a clear target and regional criteria for the percentage of forest cover that must be protected and restored to avert the potential tipping points. Beyond the 30% protection target being discussed within the Convention on Biological Diversity, and more than the proposed Nature Needs Half targets, ensuring the integrity of Amazon's hydrological system would require an estimated 80% of forests to remain standing (Lovejoy and Nobre 2019). These targets must consider regional differences regarding the level of conservation of remaining forests. Although the 80% target has been followed by all Amazonian countries so far (Smith *et al.* 2021), some regions of the Basin are below this threshold. The eastern Amazon is an example of that, trespassing this threshold and impacting carbon and water fluxes with potential implications to other portions of the Amazon that are still preserved (Gatti *et al.* 2021). Thus, significant restoration efforts in highly deforested areas, in addition to conservation efforts in well-preserved areas, are essential, independent of the global proportion of deforested lands in the entire Amazon,

and must be part of Pan-Amazonian countries' urgent agenda. There is boldness and clarity in committing to such a target, which would focus the governments of the Amazon and the world and the private sector, on their shared, yet different responsibilities and contributions to solution pathways for achieving such a goal. There is also a need for regional and global investment for conservation, restoration, and remediation activities. Innovative financial incentives for ecosystem conservation and restoration must be accessible and supported, and restoration should be considered part of a green economy that generates socio-economic benefits, including jobs, while mitigating climate change. These efforts must be counted as part of the well-being indicators as an alternative to the dominant GDP in a Living Amazon Vision.

25.4.1.6 Signaling Urgency

There is an urgent need for the Amazon Basin countries to declare a state of emergency and call for a "ceasefire" for illegal activities, including mining, drug trade, logging, and land grabbing, which cause deforestation and degradation of forest and rivers, social conflicts, and violation of the rights of Indigenous peoples and other communities. This means detaining, with a national and international police force, the criminal organizations that are undertaking the governance of the agriculture frontier in the Basin and halting illegal deforestation and degradation that is auto-financed by drug trade, illegal mining and logging, and land grabbing (Schönenberg 2019; McSweeney *et al.* 2017; see also Chapter 27). International commitments to work together and dismantle these illegal operations among Amazonian countries, as well as the Global North countries that are also part of the demand for the products from illicit activities in the region, is key to reducing the demand for the consumption of these products and removing the money from illegal supply chains including drugs, gold, timber, and animal trafficking, among others. In addition to battling illegal activities, it is necessary to halt industrial operations and government policies that enable further forest and river de-

struction (e.g., the suspension of new operation licenses and new private and public financing for mining, oil, cattle ranching, large dams, and other industrial activities that promote deforestation and degradation). Governments, financial institutions, and corporations would need to commit to respecting the state of emergency to allow time for longer-term agreements to be negotiated. Such agreements would build on prior attempts to achieve zero deforestation, deforestation-free supply chains and investments, robust diplomacy, and commitments to leave fossil fuels in the ground. They would also require supply chain and financial commitments from the global community and importing nations to fund the solution pathways to support workers and sectors most affected in the transition. Finally, they would need to promote institutional innovation and adaptive capacity, including physical and human resources and the ability to anticipate and effectively respond to environmental and other changes.

25.4.2 Developing sustainable and circular bioeconomy arrangements for standing forests and flowing rivers

25.4.2.1. Invest in the research, marketing, and productivity of Amazonian socio-biodiversity products

The mainstream Amazon forest/river-based economies, even if intrinsically diverse, have been mostly based on timber extraction, harvesting of non-timber forest products (NTFPs) (i.e., rubber, vegetal oil, fruits), and fishing; some of these products have had a strong export demand. Besides timber, a few NTFPs and the commercialization of a few fish species, the majority of Amazon forest/river-based products and their potential economies have not been valued (see Chapters 20 and 30). Important barriers for this to happen are the lack of investment in science, technology, and adequate infrastructure to improve the production system, improve quality, and develop sub-products that are more attractive to the market and economically viable to produce. In a Living Amazon Vision, a different economy that values the diversity of products and services provided by forests and

rivers becomes the fundamental strategy for future regional sustainable development. A strong market developed based on socio-biodiverse products that result from the interactions between the biological diversity and cultural and ancestral ways of managing forest and water resources can bring important investment to the region in a sustainable and fair way. Some elements are imperative to promote such a shift. First, there is a need to direct investment to understand and quantify the real size of the socio-biodiversity economy operated in the Amazon. The invisibility of these economies makes it challenging to design and realign policies to support and promote them, besides demonstrating their real value compared with extractive non-forest/river-based economies. Second, it is fundamental to foment organized market strategies, reducing the unbalanced quality of the products and increasing the chances of meeting the demand for socio-biodiverse products. Third, it is essential to support local value socio-biodiverse product aggregation with investment in science, technology, and infrastructure, as well as marketing strategies to engage the society to recognize the co-benefits to support the consumption of forest/river products associated with Amazonian biocultural diversity.

25.4.2.2 Create fiscal incentives to engage the private sector and multilateral institutions in innovation around Amazon products

There is a need to elaborate and strengthen the concept of a sustainable bioeconomy in and for the Amazon. This concept must be decoupled from, and go beyond, the simple forest/river extraction economy. The Amazonian countries can emerge as protagonists of a global bioeconomy, based on the values of socio and biocultural diversity and their services. This will demonstrate and engage society in valuing the Amazon as a functional and integrated socioeconomic system, in which the benefits created by a bioeconomy in promoting peoples' well-being are clear. A co-benefit of a well-established bioeconomy system includes people enjoying food security and having equal access to healthy, sustainable, resilient, and contextually ap-

appropriate food systems. Attractive policies to create incentives (i.e., fiscal incentives) and engage the private sector and governments on investing in incubating innovation on forest/river-derived products is a fundamental step to consolidate this new economic perspective. Research and governance measures need to address and counterbalance the perverse outcomes of market-based interventions, such as social conflict, ‘elite capture’ of the income, weakened social organization, and inequality (e.g., Pokorny *et al.* 2012).

25.4.2.3 Promote job creation and capacity building for a bioeconomy adapted to the Amazon context

The establishment of an economy based on the utilization and conservation of biological resources, such as the bioeconomy of forest/river, is based on solid investment in science, technology, and innovation. The potential for job creation of this type of economy is an important economic and social indicator for a region such as the Amazon, in which the majority of the population is located in the urban centers. The efforts to take the concept of bioeconomy and apply it in and for the Amazon context can create opportunities for a new green sustainable industrial revolution. There is no unique bioeconomy. The concept is diverse by itself and accommodates distinct arrangements to produce, support local communities, and create jobs while providing incentives for healthy standing forests and flowing rivers (Coslovsky 2021). Thus, large-scale and small-scale bioeconomies work side by side, strengthening and modernizing the establishment of industries in the cities while supporting local production in rural areas, shortening the distance between the product, producer, and industry, and stimulating their relationship towards a shared Living Amazon Vision. For that, support for peoples’ capacity building will be fundamental, from the product collectors to the industry workers. Results from that effort would pave the road for sustainable solutions, knowledge generation, and the creation of new products, processes and services, strengthening the connection between the urban and rural areas of the Amazon.

25.4.2.4 Invest in science, education, and the creation of transdisciplinary hubs and centers of excellence in bioeconomy technology in the Amazon

Although some of the potential solutions to Amazonia’s socio-environmental sustainability are well known, many areas require further research. Some of the key knowledge gaps are related to the transition from destructive and exclusive to regenerative, equitable, and sustainable approaches to income generation. To accelerate and facilitate this transition, it is essential to have secure public and private investment in basic education and science, technology, and innovation for sustainable economic activities. Creating hubs and centers of excellence for bioeconomy technology in the Amazon and reconciling Indigenous and local knowledge with science and technology is fundamental to consolidating research on the biodiversity potential for medical, cosmetic, or food industries. These are just some of the investment mechanisms that can contribute to a bioeconomy that values forests, rivers, and peoples. Investment in regenerative practices will also be necessary given the scale of loss, change, and ecological degradation. These investments will potentially generate improvements in local education, the creation of more jobs, and the engagement of local communities in more diversified economies (see Chapter 30). The expansion of the açai economy is one example (Peña-lévano *et al.* 2020). Additionally, eco-tourism in the Amazon and its chain can be leveraged, benefiting distinct stakeholders, from rural areas to urban centers (Medeiros and Young 2011). Furthermore, the environmental services provided by forests and rivers should be valued for all their potential, including the ability to store carbon, provide thermal comfort and clean water, and house biodiversity.

25.4.2.5 Invest in rural, urban, and periurban infrastructure that enables multiple Amazonian human groups to benefit from bioeconomy activities

To reach a scenario in which a bioeconomy is the backbone of the Amazon’s economy, it is fundamental to have policies that also invest in sustainable infrastructure in urban and periurban areas

so that urban Amazonian citizens can benefit from these assets stimulated by the bioeconomy. This economy will probably demand more energy supply, improved sanitation, and better roads. All this infrastructure needs to be realized following the principles and values of a Living Amazon, to support the establishment of a real bioeconomy era in the region, promoting increased public participation in infrastructure decision-making. The roads that support destructive farming and land speculation in the Amazon and that do not support sustainability are not part of this Vision.

25.4.2.6 Promote new rules for a regenerative financial system

The current exponential-growth-based money system will continue to “mortgage” and “indebt” nature, worsen inequality and corruption, and force Amazonian countries to seek perpetual capital growth beyond safe planetary boundaries. For a post-growth, steady-state economy to flourish, we must institute structural solutions that remove the impetus for perpetual capital growth such as credit instead of debt-based money systems, the institution of linear interest rather than compounded interest borrowing, and the promotion of local alternative currencies and systems of exchange. Financial health depends on the robust circulatory flow of money, accountability for externalities, re-localization of primary production and consumption, community-sourced capital, and financial incentives through pollution taxes, fines, and green subsidies to promote ecological and human well-being. Wealth must also be re-defined more holistically to include the biological productivity of ecosystems (IPBES 2019), as well as empowered community cooperation, resilience, and Indigenous and local knowledge. Policies and mechanisms for wealth redistribution are essential, such as wealth taxes on high-net-worth individuals and high-net-income corporations to fund universal or special function basic income, dignified livelihood guarantees, and basic services (e.g., health care, advanced education, housing), especially for rural, urban, and forest/river communities in the Amazon.

25.4.3 Strengthening Amazonian citizenship and governance

25.4.3.1 Implement a Bioregional and Biodiplomacy (environmental diplomacy) governance system to promote better natural resource management and strengthen human and territorial rights

Governance represents one of the major forces of sustainability. Equal opportunities for participation and representation in decision-making processes enhance socio-environmental connections and promote well-being (see Chapter 31). In the Living Amazon Vision, it is imperative that civil society institutions that represent the voices of the forest and rivers be strengthened and heard, creating strong Amazonian citizenship. To achieve this level of governance, some policies must be developed and strengthened, associated with innovative institutional and organizational structures and arrangements. These policies must derive from a governance system that incorporates elements beyond political boundaries and considers “bioregional domains” (i.e., Basin-level governance structures). This requires a type of “biodiplomacy” in which Pan-Amazonian countries and their governance structures have improved mechanisms to interact and articulate transnational strategies and programs to promote better natural resource management and strengthen territorial rights.

25.4.3.2 Promote the recognition of different identities, knowledge systems, and rights

The recognition and value of distinct cultures and identities and their contribution to conservation is essential to support and empower IPLCs and promote social justice. Strong government institutions that work to support and implement IPLC policies need to be in place in Amazonian countries to connect pledges by IPLCs with effective public policies that promote territorial security and human rights. Partnership to support IPLC organizations and articulation among them is also fundamental. Strong IPLC movements are fundamental to pressure for better policy implementation and recognition of its importance by society (see Chapter 31).

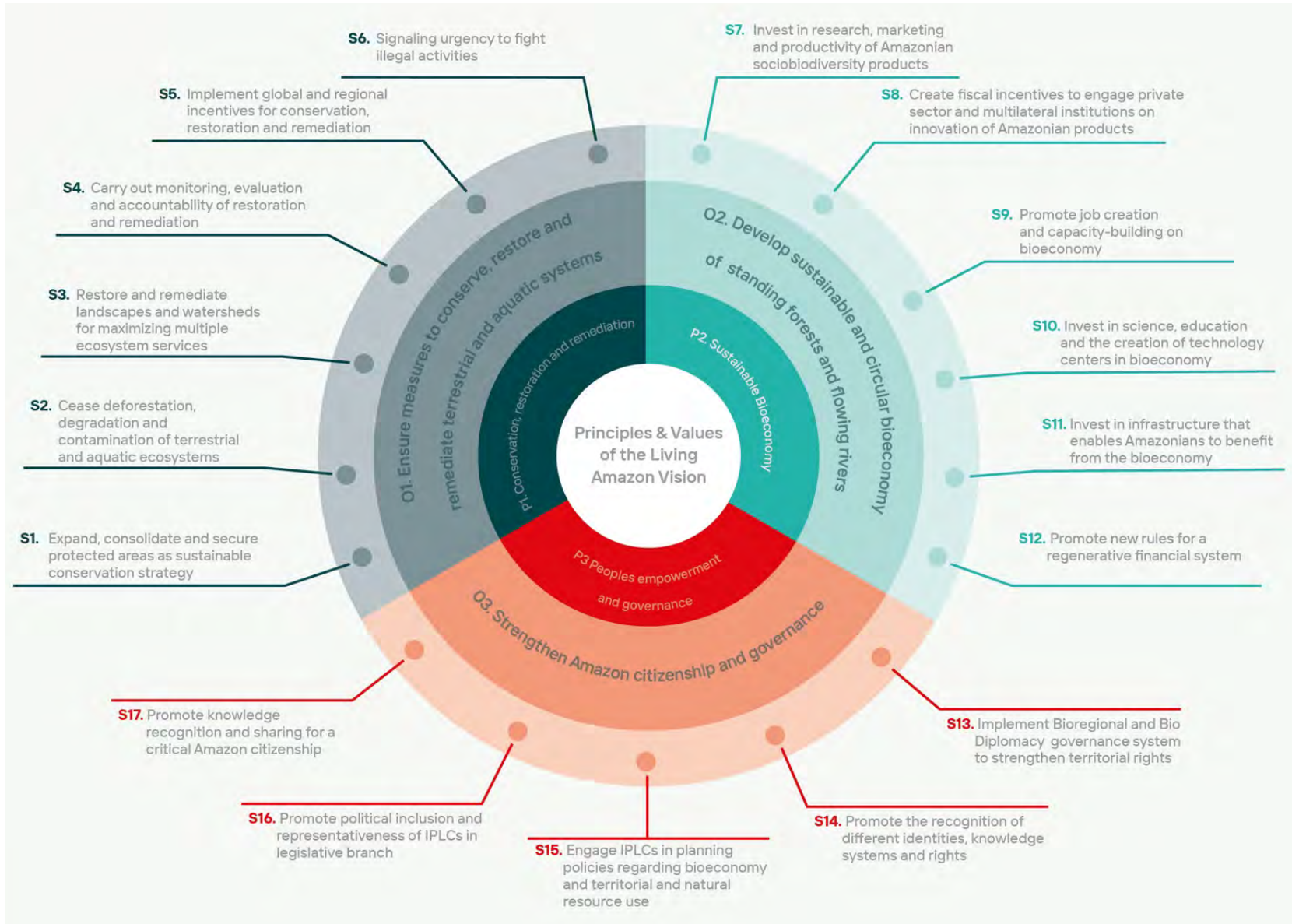


Figure 25.5 Main pillars (P), objectives (O), and strategies (S) for a living Amazon Vision.

25.4.3.3 Engage and consult IPLCs when planning policies regarding bioeconomy arrangements and the use of territories and natural resources

Among all policies, the ones that improve territorial governance and value knowledge and traditional cultures shared by different segments of society envisaged by sustainability policies are primordial. Some examples include participatory planning for rural (i.e., forest and non-forest, river basins) and urban areas (infrastructure planning), the incorporation of Indigenous territorial plans and policies, including policies to support Indigenous and local languages, in national development plans, and programs that support consolidation and co-management of protected areas and their forest and water resources (i.e., ARPA; Amazon Sustainable Landscapes Program - ASL; National Policy on Territorial and Environmental Management in Indigenous Lands - PNGATI).

25.4.3.4. Promote political inclusion and representation of IPLCs in the legislative branch and enhance decision-making capacity in public policy

Some elements need to be included to reach the level of citizenship that values healthy standing forests and flowing rivers in rural and urban areas, such as inclusive governance, which accounts for democratic participation of minorities, mainly those directly dependent on natural resources (e.g., IPLCs). Therefore, the enhancement of the decision-making capacity in public policies by minorities such as IPLCs' representatives with quotas in the legislative branch, associated with the development of broad communication strategies, are important tools to engage society in recognizing and respecting the rights, identities and knowledge of IPLCs.

25.4.3.5 Promote intercultural education, and knowledge recognition and sharing for a critical Amazon citizenship

The recognition of ancient and empirical knowledge and its role in conservation is an important principle of the Living Amazon (see section 3.6). Therefore, policies that value and secure these

knowledge rights are a fundamental part of strengthening governance in the Amazon. In addition, democratic education, such as locally appropriate education curricula, to support a culture of innovation at different scales, increased capacity building for Indigenous peoples and local communities, and knowledge recognition and sharing between IPLCs and other groups of society for the construction of active and critical Amazonian citizenship, are paramount (see Chapters 32 and 33).

The transition to a Living Amazon Vision is not trivial. It requires the establishment of a set of feasible solutions supported by political will, civil society, and private engagement (Figure 25.6). It is further envisaged that establishment of the three pillars will result in eight related outcomes, namely: (i) Improved science and knowledge production and communication characterized by significant improvement in the efficiency of resource utilization, and in finding new development practices, resources, and alternatives, as well as the formulation and selection of sustainable development policies in the decision-making processes at different levels; (ii) More evidence-based decision-making that will rationalize and legitimize public policies and measures that contextualize natural resource utilization and sustainable human development and apply across a broad range of communities and among various populations; (iii) Market equity that ensures a fair distribution of cost and benefits of sustainable resource use and economic development across different scales; (iv) Improved livelihoods and well-being to the extent that Amazonian inhabitants have the ability to live lives that they value, including their cultural heritage, health, access to land and natural resources, and importantly, income-generating opportunities; (v) IPLCs' territorial rights that will protect their land, safeguard biocultural diversity and nature's contributions to their well-being; (vi) Healthier environments that will, in turn, sustain the health and well-being of humans across temporal and geographical scales; (vii) Green urban economies decoupled from extractive activities, which will provide greater scope for Amazonian cities to become highly innovative areas of economic prosperity;

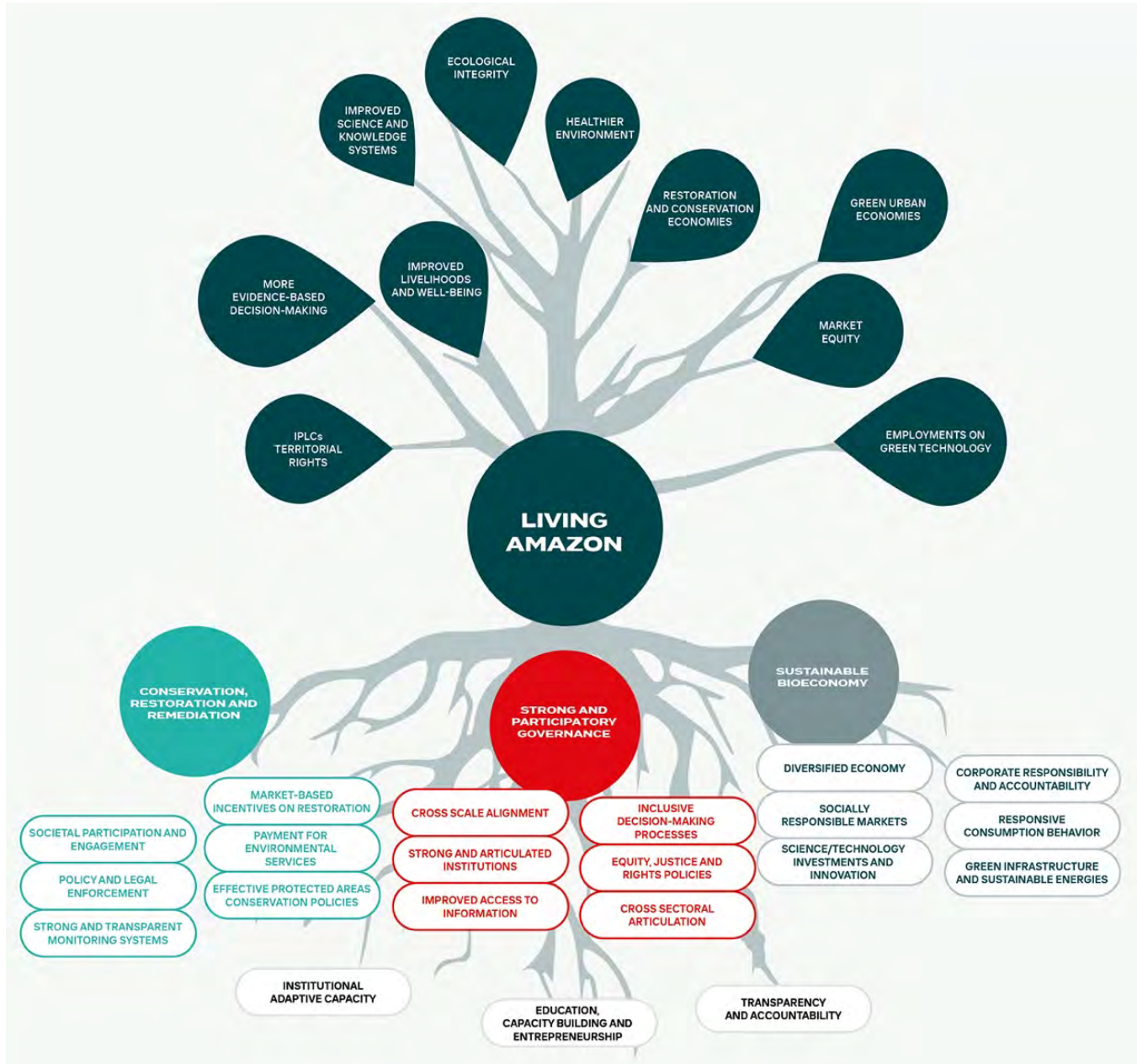


Figure 25.6 The Living Amazon solution tree

prosperity; (viii) Employments in green technology, which will ultimately become the emblem of a more sustainable and low carbon, climate resilient Amazonian economy and society, and will ensure the protection of the environment, with the conservation of natural resources for present and future generations.

Finally, we are seeing increasing alignment between Indigenous worldviews and philosophies of Living Earth, Mother Earth, kinship with all life, and the emerging Earth Systems scientific paradigms of seeing the Amazon as a key entity of the biosphere’s hydro-climatic system and the purveyor of atmospheric rivers, a mediator of carbon, and a bulwark against extinction. Redefining true

wealth as healthy standing forests and flowing rivers is a promising framework for thinking forward and co-developing a life-centric economy.

The COVID-19 pandemic and our global ecological crises are giving rise to the frameworks of “One health” “planetary health”, “well-being”, and “living economies” in the new climate regimes that protect the foundations of life on Earth in contrast to the dominant accumulation ideologies and market economics, in which life is valued only insofar as it produces financial returns and where growth in assets is the primary focus and measure of “prosperity” and, currently, primarily derived from the depletion of Earth’s biological productivity. The responsibility for materializing the Living Amazon goes beyond the Pan Amazonian countries, it is a call to engage all governments and human beings in sustaining life in all forms.

25.5 Conclusions

There are several worldviews in the Amazon, which represent the diversity of social actors that have distinct needs and strategies and use and interact with the region’s natural resources. The complexity and often opposing or conflicting worldviews, values, and principles impose barriers to establishing a consensus among Amazon sustainability and the consolidation of a shared vision for the future of the region. However, one can argue that there are elements that can be used to guide this diversity of views towards a healthier, prosperous, and equitable future. These elements are expressed in principles and values that are fundamental to support the pillars of a new future vision for the Amazon.

These principles and values include recognition of the ecological, biological, and cultural diversity, as well as the heterogeneity of Amazonian landscapes as a product of their long history of geological formation and human/nature interactions. It also recognizes the fundamental role of this geodiversity in providing ecosystems services and functions, which are vital to support life and local, regional, and global climate. It incorporates the idea that

everything is integrated and interconnected from ecological, to economic and socio-cultural systems, where significant disturbances in one can provoke cascade changes in the other. These interconnections include the relationship between urban and rural areas and how Amazon cities can become hubs of sustainability and innovation, which can percolate and positively influence natural resource use in rural areas. It assumes a strong and inclusive level of governance, in which the capacity to engage and promote democratic participation in decision-making processes is strengthened. Lastly, the rights of IPLCs and respect for their cultures, knowledge, traditions, and beliefs are recognized and valued. If these principles and values are recognized and followed, it is likely that the future of a Living Amazon can be materialized, providing benefits to all living beings, including prosperous and inclusive economic activities, ecological integrity and diversity, and social justice and rights.

Here, we envision the future of the Amazon based on three central pillars and strategies intrinsically oriented by the Living Amazon principles and values. These pillars include (i) conservation, restoration, and remediation strategies, (ii) the promotion of a sustainable bioeconomy of forest and rivers, and (iii) the empowerment of peoples and governance. These three pillars offer a set of recommendations based on arguments presented over Parts I and II of this report and detailed in the chapters of Part III.

The Living Amazon Vision for the region represents an opportunity to lead the world by example, recognizing the intrinsic value of nature, culture, and peoples to development and breaking the dichotomy between conservation and aspirations for human well-being.

25.6 Recommendations

- Develop and implement transboundary Amazon restoration and conservation plans that support landscape-level conservation initiatives for forest and rivers and take into consideration levels of priority and risk areas to maintain connectivity and the health of freshwater

ecosystems, ecological functions, and conserve and restore the heterogeneous biomes and their biodiversity;

- Create innovative financial incentives for conservation and restoration, as well as more investment in science and technology to support studies and research collaborations to fill the knowledge gap on biodiversity and its potential to support life;
- Strengthen the management, economies, and governance of protected areas and flowing rivers, as well as their perception to society as a source of cross-scale ecological, economic, and social co-benefits;
- Structure regional innovation bioeconomy hubs aimed at economies that sustain life in the Amazon Basin, connecting rural producers and IPLCs with science and technology centers in urban areas, facilitating the ethical production and dissemination of knowledge and sustainable goods;
- Provide democratic connectivity and internet access and invest in sustainable and green infrastructure as a way to support equal opportunities and promote diversified and digital economies, education, and inclusive and participatory governance strategies;
- Improve governance, transparency, and accountability (e.g., democratic access to monitoring tools), and support enforcement policies and market engagement in good practices to prevent illegal deforestation and associated activities and reduce all causes of anthropogenic forest conversion, pollution, and degradation;
- Support the adaptive capacities of institutions in terms of people, infrastructure, and financial support towards more modernized and interconnected governance procedures that support better management and facilitate collaborative and decentralized monitoring of natural resources;
- Strengthen and enforce international agreements, national laws and constitutions, and other mechanisms to ensure the promotion of sustainable production and the rights of IPLCs;
- Promote and support the participation of IPLCs in the design and implementation of conservation and development policies across the Amazon, and recognize Indigenous Life Plans, Consultancy Protocols, and other initiatives as legitimate instruments of planning and territorial monitoring, while guaranteeing the rights of Indigenous peoples, Afro-descendant communities, and other local communities to prior consultation and full participation in planning and implementation of development initiatives;
- Support the recognition and protection of land, rivers, and territorial rights of IPLCs, including the ones in voluntary isolation, in connection to policies that value and support land, forest- and water-based livelihoods, including economic incentives and credit for non-timber forest products.

Although this list is extensive, it summarizes the main pathways to achieve a Living Amazon in the next three decades, avoiding the over-exploitation of the natural resources, disruption of ecosystem functions, increase of inequalities, poverty, and cultural (especially linguistic) and biodiversity extinction. All of these recommendations embedded in the Living Amazon Vision are in alignment with the 2030 Agenda and the SDGs that face distinct levels of implementation in the Amazon and are presented in the following chapter.

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