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Is sustainable development bad for global biodiversity conservation?

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Review Paper

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Non-technical summary. Global biodiversity is in dramatic decline. The general public appears to equate sustainable development with biodiversity conservation and environmental protection, whereas the international policy discourse treats sustainable development as little more than traditional economic development. This gap between public perception of what sustainable development entails and its translation into formal policy goals is an important barrier to mobilizing the public and critical financial support for meeting global biodiversity conservation objectives. This contribution argues that the goal of nature and biodiversity conservation must be much more clearly distinguished from the 2015 UN Sustainable Development Goals (SDGs) than is currently the case.

Technical summary. The term 'sustainable development' has become widely used since it was popularized through the 1992 Rio UN Conference on Environment and Development. The UN SDGs adopted in 2015 further reinforce the normative centrality of the concept. Yet, the extent to which sustainable development covers nature and biodiversity conservation depends on how it is defined. A better understanding of how the public in different countries assesses the value of local and global biodiversity is crucial for building support for financing the vision to live 'in harmony with nature by 2050' currently under negotiation in the Convention on Biodiversity. This review essay discusses four distinct definitions of sustainable development, and considers how these different conceptualizations are used by political actors to serve particular interests. It then describes how this discourse has unfolded in international agreements related to sustainable development and biodiversity. The analysis shows that the prevalent economic cost–benefit approach used to value ecosystem services to make a case for conservation cannot resolve trade-off decisions between short-term economic and long-term societal interests. What is needed is a broad discourse about the ethical and cultural dimensions of biodiversity as a global heritage at the highest political level.

Social media abstract. The goal of global biodiversity conservation must be more clearly distinguished from the 2015 SDGs economic objectives.

'Humanity is waging war on nature', UN Secretary-General António Guterres told Member States during the opening segment of the UN Summit on Biodiversity September 30, 2020, 'and one consequence is the emergence of deadly diseases such as HIV/AIDS, Ebola, and COVID-19' (IISD, 2020, p. 1). The global COVID-19 pandemic is one more reminder of the need for reexamining how humans interact with nature (Ferreira et al., 2021). As the Convention on Biodiversity (CBD) is to review its strategic plan for the next decades, calls for protecting 30% and then 50% of remaining wilderness around the world have increased and this would require the mobilization of large amounts of additional funding (Barbier et al., 2018; BIOFIN, 2019; Dinerstein et al., 2019). Such financial resources will be impossible to raise without an effort to mobilize the required public support.

This review paper addresses an interdisciplinary readership interested in both sustainable development and global biodiversity and nature conservation from a pragmatic policy perspective. It has five sections. The first briefly documents the dramatic decline in global biodiversity. The second section discusses four distinct ways to define sustainable development to show how some of them are not fully compatible with nature conservation objectives, and the third section analyzes how different actors use these different narratives to serve their interests. The fourth section looks at key international agreements related to sustainable development and biodiversity conservation to assess their compatibility. The concluding section makes suggestions for how the visibility and political support for biodiversity and nature conservation as a distinct objective from sustainable development could be improved.

Sustainable development and sustainability are omnipresent terms in today's global political discourse yet for better or worse, they lack a consensus definition and allow for very different interpretations. On one hand, sustainable development is nothing more than traditional economic development that meets the needs of present and future generations (WCED, 1987). On the other hand, sustainable development includes various conceptions of nature as having an intrinsic value, even legal rights. As will be discussed in more depth further down, these different interpretations or definitions of what sustainable development stands for lead to

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vastly different views on what the reasons for nature protection are beyond securing the planetary life-support systems on which humanity depends. Locally, culturally and gender-specific conceptions of development further add to the complexity of using sustainable development as a normative and conceptual reference point for political action.

At an aspirational level, sustainable development captures the hope of restoring balance to a warming world undergoing rapid change, the promise of providing humans with livelihoods in the present and in the future while protecting the richness of biological life embedded in the planet's intricately woven natural ecosystems. The Sustainable Development Goals (SDGs) adopted by the United Nations General Assembly in 2015 are a 'set of universal goals that meet the urgent environmental, political and economic challenges facing our world' (UNDP, 2020a). The SDGs replace the Millennium Development Goals (MDGs), which started a global effort in 2000 to eradicate extreme poverty. The SDGs entail 17 specific goals and 169 targets, however, do not specify how trade-offs between reaching different objectives related to economic development or environmental protection and nature conservation should be resolved (UNDP, 2020b). As will be discussed in more detail, this vacuum leaves relevant actors a lot of room to define what sustainable development means or should mean, and how the economic and nature conservation components should be weighted in innumerable local situations where nature conservation objectives may stand in the way of lucrative short-term economic opportunities. Such trade-off decisions are intractably political. How they are resolved and to whose benefit is fundamentally a function of prevailing power structures often dominated by vested special economic interests and elite capture, and the imperative of global supply chains of an international capitalist economic order. The sustainable development discourse largely glosses over these critical factors.

1. The big extinction crisis

The natural world is in dramatic decline. Although conservationists have long warned about this, new research from the last few years has documented an unprecedented acceleration of this trend. In May 2019, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) published its first global assessment on the state of biodiversity and ecosystem decline. It states that 'nature is declining globally at rates unprecedented in human history – and the rate of species extinctions is accelerating, with grave impacts on people around the world now likely'. … 'The average abundance of native species in most major land-based habitats has fallen by at least 20%, mostly since 1900. More than 40% of amphibian species, almost 33% of reef-forming corals and more than a third of all marine mammals are threatened' (IPBES, 2019, p. 3). Global averages hide often severe drops in population numbers of species not immediately threatened with extinction. Some studies in developed countries, for example, have shown large declines in total flying insect biomass after such declines have already been documented for mammals, birds, amphibians and fish (Cardoso et al., 2020; Hallmann et al., 2017; IUCN, 2019; Sánchez-Bayo & Wyckhuys, 2019).

The extent to which biodiversity should be considered relevant for human existence beyond its immediate economic value remains subject of a debate of ethical and philosophical nature. Since the 1990s, environmental economists have tried to build an economic case for why the decline of biological diversity and broadly ecosystems harboring it may be a problem for humanity (Barbier, 2014; Costanza et al., 1997; Helm & Hepburn, 2014; TEEB, 2020). Economic valuation of long-term ecosystem services in comparison with the economic value resulting from ecosystem conversion has revolutionized the way politics has treated the issue. It has encouraged and informed the development of comprehensive national nature and biodiversity conservation strategies in line with guidelines by the CBD which recognize the sovereign national rights over natural resources and over determining development priorities (CBD, 2020). Such monetary value is associated with a wide range of ecosystem functions, value of pollinators to agriculture, of marine protection to commercial fisheries, wetland protection for surge protection to coastal communities and insurance companies, water purification of undeveloped land to local communities, beautiful landscapes and rich flora and fauna to eco-tourism, and climate regulation and carbon sequestration by forests to humanity in general (Barbier et al., 2018).

However, as important as the economic valuation approach has proven in the political debate on conservation, market-rationality cannot resolve how economic trade-off decisions between short-term private and long-term public objectives are made. Such decisions involve different political systems, power structures and stakeholders and must include environmental justice concerns about access to natural resources and environmental quality and indigenous peoples' rights (Leach, 2018; Martinez-Alier et al., 2016). They are subject to local, regional, national and even global power structures dominated by capitalist supply chain demands that often are stacked against local nature conservation objectives that would benefit locally and culturally adapted development models and priorities. Many economic activities requiring land conversion – such as palm oil plantations, mining and extraction operations – are highly lucrative in the short term, at least until carbon sequestration and biodiversity would be given a commensurate market price. The question why the world should care about the planet's portfolio of species and its decline and how much of it should be saved, is ultimately a normative question of culture, ethics and values that cost–benefit analysis and economic valuation can at best only partially answer (Curry, 2011; Marris, 2015; Vogel, 2002). Many conservationists fear the 'slippery slope' created by applying cost–benefit analysis to deciding what is worth saving or not (Soulé, 2013).

Old school environmentalism going back to nature romanticists such as Jean-Jacques Rousseau and David Henry Thoreau sees the need for nature conservation not as a question of economic but of intrinsic value and to various degrees as one of human virtue and even sacrifice (Meyer & Maniates, 2010; Phaelke, 1989; Radkau, 2011). Early global conservation proposals based on such an understanding have called for establishing conservation hot spots in developing countries with no concern for indigenous peoples, local communities or a nation's sovereign right over its natural resources (Myers et al., 2000). This led to accusations against large Northern conservation organizations such as Conservation International and World Wildlife Fund (WWF) and their developed country backers of advocating neo-colonial practices in poor developing countries (Wapner, 1996; Chapin, 2004; White, 2014). 'New conservationism' has since recognized that human needs must come first and guide trade-off decisions between nature conservation and economic development objectives (Colloff et al., 2017; Miller et al., 2011). Much has been made of identifying win–win opportunities that combine nature conservation with development objectives to avoid such

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trade-off decisions but in practice it has often proven difficult to realize twin objectives (Brown, 2004; McShane & Wells, 2004; Mwakaje et al., 2013; Silva & Mosimane, 2013). Divers cultural and ethical understandings of the value of biodiversity and nature must furthermore be recognized which defy economic valuation attempts (Hughes and Vadrot, 2019; Kohler et al., 2019).

It is much more compelling to see climate change as a global problem that impacts everyone on the planet, than to make a case that locally existing biodiversity should be seen as a global issue and necessary for human survival. Endemism – the fact that many species exist only in narrow geographical ranges – makes up much of the world's biodiversity (Gibbs, 2001). Equally, not all ecosystems are linked and dependent on each other and not all ecosystems can be shown to be critical for human subsistence. The global importance of much of the richness of plant, animal species and unique ecosystems therefore has to be grounded in a cultural and ethical recognition of its ultimately intrinsic value as a planetary common good heritage. But, complicating such an argument is the fact that most genetic biological diversity is concentrated in just a few mega-divers, mostly developing countries (Swanson & Groom, 2012; UNEP/WCMC, 2021).

Many have called for making SDGs subject to quantifiable metrics as (Engelmann, 2013; Fleurbaey & Blanchet, 2013; Lu et al., 2015). Above discussion highlights the difficulty of doing this – particularly as far as the nature conservation component of it is concerned.

2. Defining sustainable development

From when it emerged as a concept, sustainable development has been criticized as an oxymoron, a convenient vessel with a green shine for anyone to interpret in their own way (Engelman, 2013; Redclift, 2005). A review of articles and books published on the subject between 2007 and 2017 details how elusive a common understanding is (Armstrong & Kamieniecki, 2019).

The idea of sustainable development may be traced back to forest management practices in Germany more than a century ago. In 1980, the WWF defined sustainable development as development that does not exceed the Earth's capacity to sustain human development AND support all life (Wapner, 1996; WWF/IUCN, 1980, p. i). But, it was the United Nation's Rio Conference on Environment and Development in 1992 that launched the term sustainable development into the political orbit, as will be discussed in more detail later. In preparation for the Rio process, the World Commission on Environment and Development had published its report *Our Common Future* that defined sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987).

Since then, the term as used in international environmental negotiations has remained focused on human needs, rights, participatory processes and distributional and environmental justice largely in a North-South context (Clémençon, 2012; Munasinghe, 2009; Redclift, 2005; Robinson, 2004; Seghezzo, 2009). Embedded in a neo-liberal market rationality and politically promoted under the eco-modernity label, sustainable development has superficially promised the squaring of the circle between economic growth and environmental protection while always being biased toward economic development (Bernstein, 2013; Machin, 2019; Paterson, 2000). As such it has prevented a more fundamental search for alternatives to our prevailing production and consumption patterns and their structural determinants.

Nevertheless, folding environmental concerns into the broader development debate in 1992 was a historic step toward elevating the environment into high politics, recognizing the importance of earth systems for human existence and the danger of degrading them (Schellnhuber et al., 2005; UNEP, 2005). More recently, this debate has turned to the question at what point humanity may push up against planetary boundaries (Rockström et al., 2009).

The following section looks at sustainable development through four different theoretical frames to consider how it relates to biodiversity and nature conservation: human–environment, local–global, economy sectors and timescale.

2.1. Human versus eco-centric conceptions of sustainable development

Sustainable development and the role that the environment and nature conservation plays within this discourse can first of all be considered from the vantage point of its immediate usefulness to human existence. There are more or less three possible positions. The anthropocentric definition considers natural ecosystems only valuable as long as they help meet human needs. The eco-centric view discussed earlier, on the other hand, sees nature as having an intrinsic value, independent of its usefulness to humans and requiring protection in its own right. The eco-system emphasis lays somewhere in the middle. It has been embraced by many in the international community as a pragmatic working approach: human needs are important but the global network of ecosystems is more than the sum of its economically useful parts (UNEP, 2005). The distinction between intrinsic value and ecosystem focus is sometimes also referred to as deep and shallow green (Curry, 2011).

As already discussed earlier, the eco-system focus has triggered a large literature on how to value use and non-use functions of the environment to build a case for investing into conservation. In many instances it can be shown that the value of ecosystem services accruing over time greatly exceeds the value of one-time resource extraction – such as from clear-cutting forests which destroys critical habitats of innumerous plant and animal species. In other cases, non-use value exceeding use value cannot as easily be established. In either case, private investment decisions are often driven more by short-term profit opportunities than long-term considerations, which favors hit-and-run operations over sustainable management of ecosystems over time. Ecosystem valuation therefore must be seen as mostly a political tool, rather than a basis for private sector investment decisions.

The theoretical implication of these divergent definitions of sustainable development along the anthropocentric to eco-centric axis is large. For example, in theory one can imagine a world that can sustain human life with highly managed productive ecosystems using genetically modified plants. Such an artificial future world may be able to sustain human life on the aggregate particularly as human ability to manage Earth systems improves. However, excluded from such an aggregate level analysis is not only the fate of the natural world, but how distributional equity issues affecting access to natural resources around the world are resolved (Leach et al., 2018). On the other hand is a future world, in which all development and conversion of remaining natural ecosystems has stopped. Humanity would continue to grow within the bounds of natural boundaries, without any further environmental conversion while reversing some of the degradation that has already happened. Multilateral deliberations within the CBD are about where between these two visions

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humanity should land. How this is answered is less a scientific-technical and economic than a political question.

2.2. Is sustainable development a global issue?

The last point ties into the question to what extent sustainable development is truly a global issue. Fortress or life-boat scenarios envisage a world in which nations and regions retreat into survivalist subsistence mode (Dyer, 2010; Gallopin & Raskin, 1998; White, 2014). Some parts of the world will be better positioned – by geography and resources – to cope with and adapt to changing conditions in a warming world than others. Countries, regions and localities may try to become largely self-sufficient in agricultural production, energy generation and provision of basic goods and services. This view plays into a self-help approach which ultimately defines sustainability as a local or at least national matter demanding exclusionary, 'me first' policies. Such populist–nationalist retractions from multilateral cooperation by rich countries would leave little room for a global approach to biodiversity conservation. The fact that the climate crisis is now recognized by all countries as requiring a global solution hopefully limits such nationalist impulses on biodiversity as well. The election of Joe Biden as U.S. President in November 2020 furthermore gives hope that multilateral cooperation to solve global problems can be revived, after 4 years of U.S. withdrawal from multilateral processes under President Donald Trump.

Despite all the calls for global approaches to global problems, nationalistic definitions of sustainable development can be seen as first of all local and national adaptations to global change which will exacerbate existing inequalities between the richest and least vulnerable and the poorest and most vulnerable countries, with catastrophic consequences for large parts of the world population.

2.3. Sectoral sustainability

Sustainable development that only considers human needs can be operationalized with a focus on key economic sectors, such as on agriculture, fisheries, energy and manufacturing (Morse, 2011). The most essential human need arguably is access to adequate food and water resources. A growing and increasingly affluent world population therefore first of all requires a growing and sustainable world food production. Any agriculture alters the environment and relies on constant human input. Sustainable agriculture can therefore only be defined in terms of *sustained productivity* while impacts on adjacent natural ecosystems are minimized. As long as agricultural ecosystems remain sufficiently productive to cover the demand of a growing world population, a big part of human subsistence concerns may be considered resolved (FAO, 2018). Human adaptation to a warming world is then a function of making social–ecological systems resilient against climate change and ecological decline (Hobman & Walker, 2015; Turner, 2018).

From a purely human needs perspective, the agricultural sector can therefore be seen as the most important sector defining sustainability dependent on making it resilient to climate change. For other sectors – human settlements, energy, manufacturing and transportation – sustainability would then be a function of human adaptation to changing ecological conditions with mitigating dangerous global warming to 'acceptable' levels the key challenge (UNEP, 2020).

2.4. Sustainability over time

The time dimension finally is the politically most controversial factor influencing how sustainable development may be defined. It opens a static analysis to a highly speculative argumentation that allows for trade-offs between present and future generations and thereby necessitates making assumptions about the future. Economists use discount rate and substitution to model the future value of natural resources in comparison with other types of human capital. The simple yet powerful idea behind this is that as long as natural capital can be translated into equally useful other types of capital – infrastructure, increased economic welfare, education and technology – there is a net positive benefit to humanity. However, green accounting approaches to measuring economic growth – taking into account natural resource depletion – have shown the net growth rates to be negative for most countries (Dasgupta & Mäler, 2001). Discounting arguments assume that negative environmental trends can be reversed in the future.

Discounting has become particularly controversial when applied to modeling the cost and benefit of action to mitigate carbon emissions in the present in comparison with an assumed future technology cost function (Ackerman, 2010; Kysar, 2010). Two decades ago, authors of several politically highly influential studies have used discounting arguments to argue against 'costly' carbon mitigation policies seen necessary to implement the 1997 Kyoto Protocol emissions reduction targets (Nordhouse & Boyer, 1999; Stern, 2006). Today it is evident that these models involved wrong basic assumptions and led to overly optimistic projections of technology change and market transformation. The lesson from this is that although technological advances are rapidly changing the human–nature relationship, economic cost–benefit analysis and modeling using various discount rates, are not reliable decision-making tools. Vested economic interests that oppose market transformation require political decisions, which economic modeling cannot capture. Any discourse about what sustainability means over time must recognize the great uncertainties involved in future prognostication. A precautionary approach built on ethical rather than exclusively economic considerations is therefore the only viable alternative to counter the dramatic decline in biodiversity.

3. Actor perceptions of sustainable development and nature conservation

Societal perceptions about global environmental change that affect political-economic realities at higher levels of abstraction – communal, state, nation and world – in the end are socially constructed narratives shaped by many factors including advocacy campaigns, media coverage, social media and political leadership (Guber & Boss, 2013; Lakoff, 2010; Luxon, 2019). International compilations of scientific evidence on climate change and biodiversity loss, and even on deadly health threats such as the Corona virus are filtered through political narratives and value frames and easily and routinely challenged for economic or ideological reasons (Banerjee & Hasemyer, 2020; Oreskes & Conway, 2010).

3.1. The general public

How does the general public see sustainable development? Systematic public surveys on attitudes toward sustainable

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development are not available, but polls by Gallup, PEW and Eurostat track public environmental sentiments going back several decades. These polls mostly position environmentalism as an opposite to economic growth – a framing bias that has also fundamentally shaped political debate and public perceptions for decades – and measure comparative importance assigned to one or the other. They show great swings in attitudes depending on prevalent economic and political framework conditions (EUROSTAT, 2020; GALLUP, 2020; PEW, 2020). In hierarchical rankings, water and air pollution top the public's concern, whereas loss of tropical rain forest, extinction of plant and animal species and global warming generally rank lower. Overall, research has shown that public environmentalism remains shallow and in many countries has become an increasingly polarizing issue along traditional ideological lines (Broadbent et al., 2016; Dunlap et al., 2016; Guber, 2003).

As far as surveys on actual sustainability behavior goes, one meta-analysis found most of them to focus narrowly on individual level behavior related to recycling and energy conservation, leaving out broader social and political attitudes (Scott, 2015). Similarly, others found that sustainable development may be used as a conceptual frame to define collective life-style choices and socially desirable solutions to local and project-level problems but do not reflect coherent conceptual belief systems and largely ignore the global challenges that the concept was meant to address (Holden et al., 2014; Schlosberg, 2019). These studies suggest that behavior motivated by sustainable development is very limited in scope, yet it is implicitly seen as a contribution to protecting the environment and nature and biodiversity. My personal anecdotal insights over two decades from class discussions with students and from reading student essays on sustainable development lead me to the same conclusion. Sustainable development is broadly understood as the solution to the worlds problem's but how it can be translated into comprehensive policies that cover the broad spectrum of what sustainable development is believed to entail, remains largely a black box.

No surveys were found trying to assess respondents understanding of sustainable development, but a global survey conducted in 2019 measured public awareness of the 2015 UN SDGs (World Economic Forum, 2019). Almost 20,000 people aged between 16 and 74 from 28 countries were asked how familiar they were with the SDGs and which SDGs they thought were the most important. Overall, 74% of respondents are aware of the SDGs, but the difference from country to country is significant and perhaps surprising. Turkey, China and India lead the countries with the highest recognition, with about 90% of respondents having heard of the SDGs. On the contrary, only half the public in Great Britain, Japan and the United States recognizes the SDGs, with half of respondents having never heard of them. The survey also found that the global public prioritized SDGs related to immediate human needs, such as zero hunger, clean water and good health, but it does not provide information on how biodiversity and nature conservation objectives ranked.

An international survey from May 2020 asked 2000 respondents from 90 countries to describe what they considered to be 'positive futures' and found respondents in the Global South to highlight less inequality, whereas respondents in the Global North expected shifts toward a smaller ecological footprint (Wood et al., 2021). Systematic comparative research is needed to understand how biodiversity and nature conservation objectives factor into people's preferences and how this may relate to their understanding of sustainable development.

3.2. The private sector

Private sector interests exert the strongest influence on cost–benefit calculations designed to stave off regulatory government interventions to achieve environmental policy objectives. The macro-economic cost–benefit frame employed biases toward weighing short-term costs to private entities against long-term public benefits (Ackerman, 2010). This is perhaps nowhere more pronounced as with the fossil fuel industry which is at the source of the climate crisis (Ekwurzel, 2017; Johnsson et al., 2018). In a highly competitive open international economic system, cost and profit considerations remain the most influential factors shaping political responses to sustainable development, still heavily influenced by traditional North-South positions opposed to any 'green economy' standards and dictated by capitalist supply chains and free trade relationships (Clémençon, 2012; Paterson, 2000). This leads to policy decisions that are mostly short-term and opportunistic, explained with the treadmill of production and free rider analogy that highlights the structural constraints rational actors face in a neo-liberal capitalist world economy (Schnaiberg & Gould, 2000). Political actors develop a strategic response to environmentalism as either useful or unhelpful for advancing a political agenda, which is strongly influenced by underlying economic factors, particularly at the firm level.

The private sector for its part has largely embraced sustainable development as a marketing tool to advertise reduced environmental impact of their operations as part of corporate social responsibility initiatives. Some high-profile cheating cases have underscored existing beliefs that many initiatives are little more than window-dressing (Nyberg & Wright, 2014; Taylor, 2014). The most notorious recent cases are the car manufacturer Volkswagen which – while advertising its 'clean diesel' vehicles deliberately designed software to trick the governments emission control tests, and Exxon Mobil which for decades deceived the public on climate change while advertising its investments into the development of 'green' fuels (Dans, 2015, Supran & Oreskes, 2017; 2020).

3.3. Education and research institutions

The educational system has embraced sustainable development as a pragmatic form of environmentalism (Scott, 2015). At research universities rationalist-oriented scholars across the social sciences have focused on identifying governance models to produce economically optimal solutions (Cashore & Bernstein, 2020). Sustainable development framing has allowed cash-strapped higher education providers to capitalize on a growing pool of paying students seeking applied degrees in 'sustainability' management or science that are marketable in the job market and cater to neo-liberal free market principles and private sector initiatives.

3.4. National differences

It is important to emphasize that public opinion and environmental advocacy has played out very differently in different countries, yet this is not sufficiently leveraged at the multilateral level. Political opportunity structures, for example, in European countries and the United States are very different. Representative parliamentary systems have favored the emergence of Green Parties in many European countries (Carter, 2013; Kitschelt, 1993). Green Parties have become major political players notably in Germany and this in turn has strongly influenced national positions on global environmental politics.

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In the United States, civil society grass roots engagement has a long tradition, but in a two-party majoritarian, winner-takes-it-all electoral system the environmental movement has often failed to translate its broad public support into congressional and presidential election wins, as in contested elections in 2000 and again in 2016 (Clémençon, 2016a; Rosenbaum, 2004; Schreurs et al., 2009). This has had decisive consequences for American positions on global environmental issues.

Such differences of course are relevant in all countries and extend to the broad range of historic, political, economic, institutional and cultural factors shaping countries realities, which are best addressed through multilateral cooperation. Most countries have submitted voluntary national sustainable development strategies to the UN Commission on Sustainable Development but they lack a standardized comparable format and differ widely in detail and level of commitment (Sachs et al., 2019; UN/CSD, 2020a).

Realistically, efforts to step up financial commitments for global biodiversity conservation will need to be spearheaded by countries where the political opportunity structures and citizen perceptions have been most favorable to multilateral cooperation on global environmental issues.

4. Sustainable development, biodiversity conservation and international politics

The following section gives a short overview of the most relevant international political processes related to the intersection of sustainable development and biodiversity conservation: first, of the evolution of the discussion in United Nations forums leading to the adoption of the SDGs, second, of the CBD, and lastly of the Global Environment Facility (GEF), the multilateral financial mechanism for the CBD. There is no room here to do justice to the rich and divers political discourse that has evolved over time in these multilateral forums and in related national government agencies on nature conservation involving a wide range of stakeholders, including indigenous peoples. But, although these deliberations have built the foundation for scaling up conservation efforts around the world and advanced the recognition of the many normative, cultural, traditional, economic and political aspects related to this endeavor, they so far have failed to achieve real progress in halting the broad negative trajectories on global biodiversity identified by the science community.

4.1. The Sustainable Development Goals

The international political debate around sustainable development has not changed fundamentally since the Rio Conference in 1992 (Haas et al., 1992; Smith, 1994). The Rio Principles exemplify the human development-centric definition of sustainable development. Principle 1 declares that 'Human beings are at the centre of concerns for sustainable development' and Principle 2 maintains that states have the 'sovereign rights over their natural resources' (UN, 1992). Principles 4 and 7 come closest to elevating the environment beyond its utilitarian function: 'environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it' (Principle 4) whereas Principle 7 calls on States to 'cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem'. The Rio Principles importantly also introduced the precautionary principle.

Twenty years later, the Rio + 20 conference of 2012 highlighted three pillars of sustainable development – economic, social and environmental – but did nothing to bring more clarity to the economy-environment dichotomy. A push by the European Union to consider green economy objectives to guide international trade relations was broadly rejected (Bernstein, 2013; Clémençon, 2012). Countries did, however, initiate a process that would lead to the adoption of the Agenda 2030 and SDGs by the UN General Assembly on September 25, 2015. The SDGs are 'a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030' (UNDP, 2020b). They comprise 17 goals mostly focused on human development, with ending poverty and hunger the first two and goal 8 calling for 'sustained, inclusive and sustainable economic growth'. Goal 14 calls for sustainable use of oceans, and Goal 15 to 'protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss'.

The SDGs succeed the MDGs the UN had adopted in 2000 to cut global poverty to half by 2015 (Fukuda-Parr & Hulme, 2011). The development of the SDGs followed a less formal playbook than the negotiations that led to the MDGs to avoid getting bogged down by familiar North-South controversies, among them on the need for green economy standards that could restrict access to Northern markets (Beisheim, 2018; Clémençon, 2012). What was finally adopted by the UN General Assembly has been lauded as an aspirational agenda and a significant normative accomplishment (Chasek & Wagner, 2016; Stevens & Kanie, 2016). But, as important as the SDGs are for setting a political signal, they lack any legal national implementation commitment and so far are failing to achieve the profound and transformational changes needed to achieve their ambitious objectives (Deighton, 2019; Sachs, et al., 2019). Related to the argument advanced here, many of the development-related goals appear incompatible with calls in other goals to protect the planet from climate change and environmental degradation (Hickle, 2019).

Formally charged with overseeing progress with implementation of SDGs is a High-Level Political Forum (HLPF) that met for the first time in September 2019 and again virtually in July 2020 (UN/CSD, 2020b). The HLPF has advanced a proposal to shore up environmental commitments 'Towards a Global Pact for the Environment' – based on a French initiative supported by the European Union (EU, 2019; IISD, 2019). It calls for adoption of rights to an ecologically sound environment and for a comprehensive international umbrella agreement that would lead to more integration and coherence of existing institutional and legal instruments related to sustainable development and environmental protection.

4.2. The Convention on Biodiversity

The CBD was signed at the Rio Conference in 1992 in tandem with the Rio Principles, the Agenda21 and the Framework Convention on Climate Change. But, compared to climate change and judged by scant press coverage of CBD conferences, its public and political visibility has been low. No demonstrations in major cities around the world involving hundreds of thousands of people have so far called attention to the global biodiversity crisis as has been the case for climate change leading up to the Paris Agreement in 2015.

Progress on concrete steps to halt the decline in natural ecosystems has also been scant. Not before 2010 in Nagoya, Japan, did

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countries agreed to the Aichi Protocol which defined a number of quantifiable terrestrial and marine conservation objectives (Campbell & Gray, 2014; Morgera & Tsioumani, 2011). But by 2018, the last biannual biodiversity conference had to take note of the fact that only one of the 20 biodiversity targets has been met – on the creation of protected areas (IISD, 2018; Watts, 2018). Before this background, the next CBD conference – postponed to the end of 2021 because of the COVID-19 pandemic – is scheduled to review its strategic plan moving forward. This may involve taking decisions on a post-2020 global biodiversity framework for 'living in harmony with nature' by 2050 which many hope will include significantly increased protected area targets (Dinerstein et al., 2019; IISD 2020).

The CBD has undertaken important foundational work over the years to encourage governments to develop national biodiversity strategies and heighten the domestic appreciation for biodiversity, much of it through the GEF discussed in the next section (CBD, 2020). It has adopted many guidelines on mainstreaming of biodiversity into all economic sectors. It has advanced the discourse on the role of traditional knowledge in nature conservation and on the link between nature conservation and human rights, particularly related to indigenous peoples' rights. Outside the CBD, links between biodiversity and other policy areas has garnered more attention as well. The many links between climate change and biodiversity are now better understood, related to the impact climate change has on biodiversity and the role of nature conservation for sequestering carbon and adapting to climate change. In March 2012, the Human Rights Council appointed a UN Special Rapporteur on human rights and the environment and the 2015 SDGs devote several goals to biodiversity, as discussed earlier.

But, all these multilateral efforts – for all their institutional and normative value – have failed to capture much political and public visibility for global biodiversity in most countries and appear far from leading to the 'transformative changes across economic, social, political and technological factors' IPBES is calling for (2019). Campaigns to raise awareness for nature conservation continue to be mostly associated with non-governmental environmental organizations when they would need strong political leadership.

4.3. The Global Environment Facility

Financial compensation from rich Northern countries to developing countries, particularly least developing countries, is essential for protecting biodiversity as a global heritage as the 1992 CBD sets out. Current investments in biodiversity conservation around the world are tiny, an estimated $52 billion per year, and most comes from domestic sources and is spent in developed countries (Van den Heuvel, 2018). Only $6.2 billion comes from official development assistance, bilateral or multilateral. To put this into perspective, this amounts to two cups of coffee a person per year for citizens in traditional donor countries. Financing needs for achieving the 20 Aichii targets however are estimated to be $150 billion and up to $440 billion annually for implementing the CBD Strategic Plan 2050 (BIOFIN, 2019). Multilateral funding will remain critical to support developing countries in ambitious efforts to protect their natural and biological resources for global benefits, even if it is understood that most of the funding will need to come from domestic sources.

The GEF set up in 1991 is the designated international funding mechanism in support of the CBD. It has gained almost 30 years' experience with biodiversity conservation projects around the world, funding thousands of projects directly or indirectly supporting nature and biodiversity conservation implemented by the World Bank, the United Nations Development Program (UNDP) and 16 other implementing agencies (GEF, 2017). But, total GEF funding since its inception in 1991 has actually declined in inflation-adjusted terms (Clémençon, 2006; GEF, 2020). Biodiversity conservation is furthermore only one of several focal areas of the GEF. The financial resources the GEF has available for biodiversity annually amount to roughly only $200–300 million, sprinkled around the globe.

To make sure, successful nature conservation efforts do not depend on the availability of financial resources only. But, stagnant multilateral resources have had two effects on various GEF programs and projects. Existing initiatives that depend critically on sustained funding from multilateral sources compete with demands for funding new initiatives in line with national biodiversity conservation strategies and priorities. Multilateral grant funding through the GEF is often the critical ingredient to leveraging resources from domestic, bilateral and multilateral sources for supporting more ambitious nature and biodiversity conservation programs.

Biodiversity conservation objectives do benefit from a range of recognized cross-sectional linkages. The GEF and other financial institutions have increasingly focused on programs and projects that create co-benefits across environmental focal areas particularly between land use management, biodiversity conservation and carbon sequestration. Carbon offset mechanism – like REDD+ (Reducing Emissions from Deforestation and Forest Degradation) – that provide financing for forestry projects that reduce emissions can also benefit biodiversity. But, offset mechanisms such as REDD+ have increasingly come under criticism for their neo-colonial characteristics which may dampen their future role in an international climate regime (Wong et al., 2019).

A practical and policy relevant question is if existing multilateral funding levels are all that should be expected for protecting the world's global biological heritage? This analysis suggests that a potential public willingness to provide higher levels of support is not being exploited and a lack of political clarity about the relationship between sustainable development and nature and biodiversity conservation hampers efforts to do so.

5. Policy discussion and conclusion

5.1. Policy discussion

A campaign to halt the global decline in biodiversity will have to start with disentangling the conversation about nature conservation from the conversation about sustainable development which remains heavily focused on poverty alleviation and human development. Although they are mutually compatible and supportive in many respects, their goals do not always overlap. As the earlier discussion has shown, much biodiversity and many ecosystems may not be critical for human existence if narrowly defined in a local context. In a globalized international economic system there is a high level of theoretical substitutability, that is, loss of benefits from local natural resources can be compensated for by imports from elsewhere. The environmental justice discourse also does not necessarily overlap with traditional nature conservation objectives and equity and sustainability objectives need consideration along many different dimensions (Hughes & Vadrot, 2019; Leach et al., 2018).

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The climate crisis as a global environmental problem presents a clear threat to human development but it is much less clear to what extent the general public perceives the loss of biodiversity and decline in population numbers of species as a threat to human life. Compounding this issue is that biodiversity is very unevenly distributed among countries, with much of it situated in least developed countries in the global South for which it may hold little immediate value.

Where the economic case for nature conservation and protection of ecosystems can clearly be made, it is a powerful tool for conservationists and policy makers. Ecosystem services come in many different forms that can be very valuable to countries as discussed earlier. But, there are also many situations in which the ecosystem service value is less apparent or where land development pressures stemming from high-yield economic interests – often fueled by foreign direct investments – are at stake. Conservation benefits mostly accrue over the long-term and are difficult to quantify, while short-term economic benefits from land conversion can be large and immediate.

Financing alone does not conserve nature and biodiversity, as many country representatives emphasized again at the 2020 UN Summit on Biodiversity, and the momentum has to come from the national and local levels (IISD, 2019, 2020). Nevertheless, international financial compensation for services rendered to protect biodiversity as a global common good remains a critical element in support for domestic policy initiatives, and will determine how ambitious the conservation goals will be. Protecting biodiversity at an internationally determined level – as envisaged by the CBD's Strategic Vision 2050 for 'living in harmony with nature' – will require financial compensation for foregoing immediate economic development benefits in order to secure long-term ecosystem health.

5.2. Some policy suggestions

First there should be more support for coordinated research into public understanding of the value of biodiversity – economic and intrinsic – and into the reasons people in different countries and cultures may find nature protection desirable or necessary. This should involve internationally coordinated, comparative research that draws on existing national initiatives led by research institutions and government agencies. A better understanding of the public's views on these issues should help design better and more targeted global conservation strategies that can complement existing ecosystem valuation tools.

A second, procedural step, would be to hold biodiversity convention conferences every year, as is the case for climate change, rather than only every 2 years. Highest-level annual conferences provide continuity and the opportunity to show-case what leader and laggard countries are doing. They support national political momentum by more continuously involving local and national stakeholders and they encourage more regular press coverage that benefits the societal discourse.

A third step is to become more honest about what private sector leveraging can achieve for conservation. Raising funds from private sector interests has always been a key goal of governments, as the long-term economic value to different industries of conservation efforts has been shown to be huge. But in practice expectations have never been met, as the experience by the GEF, World Bank and UNDP over several decades has shown (GEF, 2017). This as well points to the importance of building a broad societal basis for conservation policies moving forward, which should also help encourage more private sector initiatives.

Equally, market-based, private-sector supported mechanisms that link carbon sequestration with conserving natural ecosystems have their limits. REDD+ projects are designed to produce carbon emission credits for investors through forest conservation that can be used at home to meet emissions reduction requirements (McDermott et al., 2011; Wong et al., 2019). But, the biodiversity-climate link is only one pathway to scale up biodiversity conservation and not sufficiently diversifiable to fund protection of the broad variety of ecosystems called for in the Aichi targets. This will require large direct funding streams tied to conservation performance criteria. The COVID-19 pandemic has only made the challenge more daunting, as revenue from eco-tourism in many parts of the world has collapsed and poaching has increased, particularly in Africa, as an IUCN supported assessment published in March 2021 documents (Waithaka et al., 2021).

National farm subsidy schemes tied to conservation objectives could be a critical source of funding. Just 1% of the estimated $700 billion in subsidies a year given to farmers is used to benefit the environment and much instead promotes high-emission cattle production, forest destruction and pollution from the overuse of fertilizer (Carrington, 2019). Financial support systems should be expanded to the international level whereas subsidies for environmentally damaging industries need to be rolled back, something environmentalists and environmental economists have long called for (OECD, 2010). But, domestic political obstacles to such reforms remain large in all countries.

The fourth step is to recognize the limitations the multilateral burden sharing arrangement imposes on fund raising for global biodiversity protection as it has been used to replenish the GEF. United Nations type burden sharing underpins every multilateral financial institution and most United Nations Agencies. The main problem – that it ties funding levels to the least willing donor country – is not germane to the GEF, but the GEF in particular has suffered from declining funding levels, compared to development and poverty alleviation-focused funding agencies. Many fear that questioning the multilateral burden-sharing approach would let laggard countries off the hook and would reduce overall funding levels. But, multilateralism has been under siege for some time now and is undergoing significant realignment. The Paris climate agreement has abandoned any burden-sharing pretense and is building on voluntary nationally determined contributions instead (Clémençon 2016a, 2016b).

A multilateral burden-sharing formula should only be the starting point for financing global biodiversity conservation. Efforts should be increased to complement it with voluntary funding windows tailored to donor countries where public support for global conservation partnerships may be leveraged beyond current official budgetary commitments tied to least-common denominator budgetary arrangements. There are many bilateral partnership arrangements that lead the way and could be scaled up, but they should be better embedded in a more coordinated, multilateral system, at the level of the CBD, rather than simply at the program and project levels managed by implementing agencies.

Fund raising opportunities for global biodiversity conservation will differ strongly from country to country and reflect different views of biodiversity as a global cultural and natural heritage. At the policy level, they could involve various forms of voluntary and mandatory payments, such as direct or indirect taxes, user fees on products or services or linkage to environmental fiscal reforms, in particular to redirecting subsidy payments. The

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OECD has already performed substantial work on environmental taxation and fiscal reform over the years to be built on (OECD, 2010, 2020).

6. Conclusion

During the almost three decades since the Rio Conference popularized the term sustainable development and the CBD was signed in 1992, global biodiversity has continued to decline dramatically. Embedded in a neo-liberal market rationality and politically promoted under the eco-modernity slogan, sustainable development has promised the squaring of the circle between economic growth and environmental protection. This analysis has argued that the sustainable development and sustainability discourse has led to different understandings among NGOs, governments, private sector and the general public, with respect to how nature and biodiversity conservation are prioritized in sustainable development strategies. I have argued that the general public shows only a vague understanding of what sustainable development entails and by and large equates it with environmental protection, nature and biodiversity conservation in general. The international discourse, on the contrary, treats sustainable development as little more than traditional economic development. Research is needed to substantiate this hypothesis and draw practical conclusions from the findings.

As the uncertainty about the immediate economic utility of large parts of global plant, animal and ecosystem diversity remains, the urgency to prevent further dramatic decline exacerbated by global warming has only grown. How much of the natural world and how many wild species to protect are ultimately ethical questions, requiring a broad societal conversation. No cost–benefit calculation can replace this. Sustainable development continues to be framed first of all in economic development terms and as a North-South collective action problem tied to access to global markets, poverty alleviation, distributional environmental justice and adaptation to climate change. Human development goals embodied in the SDGs must remain the priority of governments, but more attention must be devoted to protecting global biodiversity as a clearly distinct objective.

The CBD Executive Secretary Cristiana Paşca has called for a shift in societal narratives to address 'the silent catastrophe' of global biodiversity decline (CBD, 2018). Such societal narratives must be driven by national processes, and they need to disentangle the objectives of nature and biodiversity conservation from the sustainable development discourse. A more concerted political effort is needed to go beyond the mainly economic argumentation for protecting as much of the world's natural heritage as possible and build public support for this, considering the many different national, cultural conceptions of its economic and intrinsic value. This contribution has suggested a few steps that may help move in this direction.

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