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国际自然保护联盟环境法学院

An independent multi-country examination of the implementation of the United Nations 1992 Convention on Biological Diversity

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An independent multi-country examination of the implementation of the United Nations 1992 Convention on Biological Diversity

A report prepared by members of the IUCN Academy of Environmental Law.

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Introduction

In 2015, the IUCN "Natural Resource Governance" initiative led to a project involving the IUCN Environmental Law Centre and the IUCN World Commission on Environmental Law, to develop and test an evidence-based evaluation method for the United Nations Convention on Biological Diversity 1992 ("the CBD"[1]). This report documents independent evidence-based evaluations of the implementation of the CBD in five countries using that method, led by members of the IUCN Academy of Environmental Law.

The original expectation was that all the evaluations would relate to the same CBD reporting periods, to facilitate comparison. The teams carried out their initial evaluations in 2017 and 2018. Editing and integration commenced in 2019. However, contingencies including the timing of national CBD reporting, Covid and its many consequences, and other factors beyond the control of the reporting teams and the project coordinator frustrated this intention. The leaders of the teams have been invited to provide additional commentary on developments since their evaluations were completed, or to adjust their reports if necessary to bring them up to date.

Each evaluation considers 4 aspects of implementation: (1) how well international principles have been translated into national laws, policies, industry standards etc.; (2) institutional implementation plans, allocated responsibilities and budgets, and actions; (3) evidence of behaviours by people with implementation responsibilities, those whose behaviour is being managed, and intermediaries; and (4) evidence of social or environmental outcomes [2].

Biodiversity involves complex natural (and social) systems, and individual species or ecosystems are "the tip of the iceberg". Biodiversity is interwoven with energy, climate, hydrology, genetics, and many other elements which are dynamically interwoven with human systems by resource consumption, industry, economics, laws, politics, and cultures. The CBD, and related agreements and processes, involves norms that address different aspects of closely coupled natural and social systems. The rules are complicated, and each country tailors its rules to its natural conditions and institutional structures. The voluntary teams that carried out these evaluations had limited resources, so a comprehensive examination of all relevant aspects of implementation of the CBD in each country was not feasible. For this reason, each team had discretion to decide which aspects of CBD implementation to focus on, and to design an approach that was feasible for them (within the evaluation structure provided). Thus, these national evaluations are "snapshots" that together allow us to draw reasonable inferences about what is happening in each country, and about patterns of implementation of the CBD as a whole.

The commitments made by the CBD signatories

The Rio Declaration on Environment and Development of 1992 (http://www.unesco.org/education/pdf/RIO_E.PDF) contains Principles for implementing the 1972 Stockholm Declaration (http://www.un-documents.net/unchedec.htm). The 1992 Convention on Biological Diversity (https://www.cbd.int/convention/text/) reflected these

[1] IUCN Environmental Law Centre "Law for Sustainability", https://www.iucn.org/theme/environmental-law/our-work/governance-and-meas/law-sustainability

2 Martin, P., Boer, B., & Slobodian, L. (2016). Framework for Assessing and Improving Law for Sustainability. (P. Martin, B. Boer, & L. Slobodian, Eds.). Gland, Switzerland: IUCN International Union for Conservation of Nature.

principles, and added other principles, in 42 legally binding Articles, to which the 196 signatory states committed themselves.
These countries committed to implement the 42 Articles which in summary require:

- Sound strategies to protect the environment (Art. 6), taking into account intergenerational equity (Rio Principle 3);
- A reliable biodiversity monitoring system (Art. 7):
- Robust in-situ protection of biodiversity (Art. 8);
- Ex-situ species preservation (Art. 9);
- A system to govern biodiversity resources for sustainable use (Art. 10);
- Suitable incentives to protect biodiversity (Art 11), including the use of the polluter pays principle and appropriate economic structures (Rio Principle 16);
- Reliable environmental impact assessment (Art. 14);
- Mechanisms to provide funding for the purposes of the Convention (Art. 20);
- A viable environmental impact assessment and protective regime (Rio Principles 4 and 17); and
- That signatories address patterns of production and consumption and trade (Rio Principles 8, 12, 13, 14).

Article 10 and Rio Principles 16 and 22, supported by Article 7 (monitoring), Article 12 (research and training), Article 13 (education), Article 14 (impact assessment), Art 17 (information exchange), Article 26 (reports), coupled with the Articles listed above, in effect constitute a commitment to a transparent system to govern implementation of the CBD. Principle 11 of the Rio Declaration specifies the need for an effective system of environmental laws.
The signatories to the Rio Declaration (notably Principles 2,3,8, and 15) made a commitment to the Precautionary Principle. In the CBD Preamble this principle is stated as *where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat*. A slightly different version is expressed in the Rio Declaration.
There is also a commitment to equitable benefit sharing from the use of biodiversity, and to participatory processes. In the CBD, citizen engagement issues are only addressed in the Preamble and Article 15 (cultural respect and benefit sharing). However, the Rio Declaration expands this (beyond Indigenous people and women's interests) to also require systems to ensure:

- Respect for Indigenous people's interests, including equitable benefit sharing and cultural respect for their interest in genetic resources (CBD Preamble, CBD Article 15, 8, 10 and Rio Principle 22);
- Respect for women's interests in biodiversity (CBD Preamble and Rio Principle 20); and
- Citizen participation in managing biodiversity (Rio Principle 10).

The 196 signatories to the CBD are each required to report on its implementation. As at October 2021, 103 countries had lodged their 6th implementation reports. Our initial evaluations considered the 5th report. The CBD Secretariat instructions for the 6th report further shifted the focus away from the specific commitments made by countries within the CBD, to focus on progress against Aichi national targets. National reports and other documents can be found at https://www.cbd.int/reports/search.

The CBD is the fountainhead of a network of international instruments which build on the principles within the CBD, or pursue sustainable and equitable use of nature, but many of the subsequent instruments do maintain the governance system focus of the CBD. These instruments are the Cartagena Protocol on Biosafety to the Convention on Biological Diversity and The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity, the Aichi Biodiversity Targets. The Sustainable Development Goals (SDGs) are often reported on as if they were part of the CBD suite of instruments, but they are a development of the earlier Millennium Development Goals (MDGs), and are thus focused on sustainable economic development and social goals, rather than the conservation of biodiversity *per se*.

Our evaluations are intentionally focused on the principles contained within the original CBD itself, as these were designed to be legally binding norms. These have notionally been adopted in each country for 3 decades, giving ample time for refinement and implementation. The Secretariat of the CBD (in response to resolutions of CBD Parties) has increasingly shifted attention to the targets from the international biodiversity strategy to the Aichi targets, and to the SDG targets. As discussed in the conclusions of this study, this has shifted attention away from the specific CBD governance commitments, rather than building on them.

Our teams' evaluations differ somewhat from what the countries themselves have reported. Our teams followed a specific method for conducting their assessments and were encouraged to consider both government and non-government implementation (this is consistent with the rationale of the CBD).

Our evaluations do show the need to improve CBD implementation. Particularly they demonstrate the need for a more disciplined approach to evaluation of implementation effort, as well as reporting and accountability mechanisms, in order to improve effectiveness and accountability. They also demonstrate the need to refocus on the specific governance commitments of the CBD, at the same time as addressing other (later) international biodiversity and social justice commitments.

Introduction: Rose-Liza Eisma Osorio, Chair of the Governing Board of the Academy of Environmental Law

On behalf of the IUCN Academy of Environmental Law, I am pleased to introduce this publication that presents an independent multi-country examination of the implementation of the 1992 Convention on Biodiversity (CBD). This book, which is a product of active collaboration among members of the Academy, is meant to show the actual status of implementation of the CBD, applying the same evaluation scoring system across different jurisdictions.

There has never been a more opportune time than now to underscore the importance of biodiversity to the health and well-being of the planet. With biodiversity showing a significant decline, effective environmental governance across various jurisdictions is vital more than ever. Using the same methodology, an evidence-based evaluation of CBD implementation was conducted in five countries – Australia, Brazil, China, New Zealand, and South Africa. Four areas of implementation were examined, including how international principles have been translated into national laws, policies, standards, etc., institutional mechanisms for implementation, behavioral evidence, and evidence of environment and social outcomes. Evaluations were tailor fit to each country's natural environment and institutional structures. All these efforts demonstrate the possibility of replicating and scaling this evaluation method in other jurisdictions.

This work is a tangible confirmation of the Academy's goals of building environmental legal education as a vital contributor to the rule of law and to robust environmental governance as necessary ingredients for sustainable development. As countries across the world seek to improve biodiversity governance, this can become a valuable resource to enhance capacity for the implementation of environmental law. The Academy continues to draw inspiration from noteworthy works such as this.

Rose-Liza Eisma Osorio
Chair, Governing Board
IUCN Academy of Environmental Law

Introduction: Professor Dr. Christina Voigt, Chair, IUCN World Commission on Environmental Law

The effective implementation of the Convention on Biological Diversity is crucial to address the global crisis of rapidly declining biological diversity. This evaluation study provides a comprehensive and evidence-based account of the state of the Convention´s implementation in Australia, Brazil, China, South Africa, and New Zealand. Importantly, it highlights challenges and causes of under-implementation and lack of effectiveness. In particular it points to a systemic failure to focus on implementation, and the lack of a strong meta-governance system to ensure accountability and transparency. The insights from this study provide valuable information for the implementation of the post-2020 Global Biodiversity Framework under the Convention - a Framework designed to put the world on track with "Living in Harmony with Nature" by 2050.

The IUCN World Commission on Environmental Law congratulates the authors and editors to this timely and most relevant publication.

Professor Dr. Christina Voigt
Chair, IUCN World Commission on Environmental Law

Overview

The evaluation method used for this study is documented in the IUCN *Framework for Assessing and Improving Law for Sustainability*[3]. While respecting scientific objectivity, the method recognises that subjective considerations such as justice and fairness, and politics, must also be considered when evaluating law and policy issues.

Our teams were led by members of the IUCN Academy of Environmental Law from Australia, Brazil, China, New Zealand, and South Africa. These volunteer teams had limited resources and adjusted the scope of their evaluations to what was feasible given the vast coverage of the Convention, and the many issues in each jurisdiction:

- The Australian evaluation focused particularly on the CBD commitments concerning the sustainable use of biodiversity;
- The team from Brazil focused particularly on implementation of CBD principles concerning environmental protected areas, including financial and management arrangements and economic exploitation;
- China's evaluation was focused on the many biodiversity conservation and restoration activities of the national government; The New Zealand team paid particular attention to national resource management legislation, including its interaction with regional decision-making and judicial interpretation;
- The South Africa evaluation particularly considers the effectiveness of a combination of domestic law, the CBD, and regional agreements, including policing and enforcement.

Numerical scores for the effectiveness of implementation of each CBD commitment were used to highlight patterns, but inevitably these involve judgements that others might not agree with. What is more significant than the individual country scores is the consolidated scores, a 'triangulation' that gives confidence in the overall pattern.

Overall, the evaluations demonstrate the importance of: (1) objective monitoring and reporting on governance actions and effectiveness to facilitate accountability and to drive improvement; (2) having transparent evidence of the biodiversity stewardship of national governments; (3) adequate economic or other incentives for conservation and restoration (compared to the incentives for exploitation); and (4) better public and private sector resourcing of biodiversity conservation and restoration.

Good legal rules are pivotal, but they must be supported by sufficient resources and robust data information systems (to monitor the effectiveness and integrity of implementation), and sound management strategies that are energetically implemented. As a whole, the evaluations (alongside other studies) suggest that more attention should be paid to biodiversity governance systems overall, if we want legal instruments to be fully effective.

[3] Martin, P., Boer, B., & Slobodian, L. (2016). Framework for Assessing and Improving Law for Sustainability. In P. Martin, B. Boer, & L. Slobodian (Eds.), *Framework for Assessing and Improving Law for Sustainability* (No. 87). IUCN International Union for Conservation of Nature. https://doi.org/10.2305/IUCN.CH.2016.EPLP.87.en

AUSTRALIA

Evaluators: HAMMAN Evan[4]; VAN GEELEN, Tess; RICHARDSON Lucy; SHEPPARD Eva[5]; MACTAGGART Phoebe[6].
2018 report updated in July 2022

Australia team leader's introduction

Australia is a very large, biodiverse country, and the scientific evidence highlights significant pressures and threats to that diversity. A complex assemblage of laws and policies has been created to deal with the many issues that arise. Its national, six state governments, territory administrations and several hundred municipal governments carry out many biodiversity governance functions, which generates a great number of law and policy instruments (and actions).

Australian states and territories have primary jurisdiction for natural resource governance given their historical role in land use law and policy. The federal government can complement or, in some cases, override state and territory jurisdiction over biodiversity through the constitutional power to implement international agreements (known as the 'External Affairs' power). Biodiversity governance in Australia is highly fragmented. Numerous publications and reports have shown many failings in conservation and sustainable use, particularly the most recent of these, an independent review of Australia's *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).[7]

In this evaluation we have focused on the implementation of the CBD principle of 'sustainable use of biodiversity', particularly in the Australian state of Queensland, to illustrate issues that apply across Australia.[8] We took a broad view of this principle, consistent with its meaning in the context of the CBD: viz., to use natural resources at a rate that the Earth can renew them.[9] Such a concept has its genesis in ecological economics

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[4] In 2018 Dr Evan Hamman was a lecturer at the Queensland University School of Law. At the time of its update Dr Hamman was an employee of the Australian Government. This report represents the research of the team, combined, and does not reflect in any way the views of his employer.

[5] At the time this research was conducted Ms Sheppard was a student at QUT. At the time of publication she was an employee of the Queensland Government. The views in the report represent the combined views of the team, and do not in any way reflect the views of her employer.

[6] Due to the time difference between research and publication and the fact that many of the team members had moved on to other careers, not all team members were able to fully contribute to the finalization of this publication in 2022.

[7] Samuel, G. (2020). Independent Review of the EPBC Act – Final Report. Australian Government Department of Agriculture, Water and the Environment

[8] There are considerable differences in biodiversity and approaches to its management across Australian states and territories. Queensland is a vast biodiverse state which faces many biodiversity challenges from droughts and floods to hurricanes, to bushfires, agricultural and mining development and urban sprawl. The challenges of managing impacts on biodiversity at scale are clearly evident through the example.

[9] CBD Sustainable Use of Biodiversity <https://www.cbd.int/undb/media/factsheets/undb-factsheet-sustainable-en.pdf>

insofar as biodiversity is a key component of the Earth's *natural capital* (which also includes, air, water and soil) and the constancy of that 'stock' is a key principle underlying the notion of sustainable development.

Under the CBD, sustainable use principles are focused upon those industries and areas that most affect biodiversity across the world, especially agriculture, forestry, fisheries, and water governance.[10] In Australia, all of these sectors impact biodiversity in complex and increasingly well-understood ways. The *cumulative pressures* of these industries have been a driver of biodiversity declines across Australia and restoration at scale is now urgently required.

There have been a few significant biodiversity governance developments in Australia since our initial evaluation which are worth noting:

1. Australia's National Strategy for Nature 2019–2030[11.] replaced the *Australia's Biodiversity Conservation Strategy 2010-2030*. A key feature of this change was to shift the focus from CBD commitments to a focus on the SDGs, which focus on mixed eco-social goals and do not specify any governance commitments.
2. Australia lodged its Sixth National Report to the Convention on Biological Diversity 2014–2018 [12]. Following the instructions of the CBD Secretariat, the report shifted focus towards the bio-social and institutional goals under *Australia's Biodiversity Conservation Strategy 2010-2030*, and Australia's Aichi biodiversity targets. The report details many national and state initiatives which appear to be broadly consistent with CBD implementation.
3. The 2017 Australian State of Environment report on Biodiversity[13] provides extensive scientific evidence of the state and trends in biodiversity and discusses the effectiveness of biodiversity management. In particular that discussion highlights laudable projects, declines in the already insufficient investment in biodiversity protection, and substantial gaps in the data needed for more effective management.
4. The Queensland State of the Environment Report [14], details examples of state government initiatives, including legislation, policies, and programs. It uses case studies to demonstrate these instruments in action. The report summarises the state of, and pressures on, the elements of biodiversity across the state. It does not, however, explicitly evaluate governance arrangements.
4. Analysis by the Australian Panel of Experts in Environmental Laws (APEEL)[15] highlighted many problems with the existing national environmental laws, including those for

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[10] ibid.

[11] Commonwealth of Australia. (2019). Strategy *for Nature 2019–2030*. Canberra ACT.

[12] *Australia's Sixth National Report to the Convention on Biological Diversity 2014-2018*. (2020). Commonwealth of Australia.

[13] Cresswell, I. D., and H. T. Murphy. "Australia state of the environment 2016: biodiversity, independent report to the Australian Government Minister for the Environment and Energy." Australian Government Department of the Environment and Energy, Canberra (2017)

[14] Queensland State of the Environment 2017, Biodiversity theme, at https://www.stateoftheenvironment.des.qld.gov.au/biodiversity

[15] *Blueprint for the next generation of Australia's environmental laws*. (2017). Melbourne Australia.

biodiversity protection. The panel examined Australia's record in environmental protection and identified the need for fundamental reform to the "architecture", the details and the implementation of national laws including those to protect biodiversity.

5. Achieving Biodiversity Protection in Megadiverse Countries: A Comparative Assessment of Australia and Brazil [16] was a comparative team-based examination of environmental protection effectiveness with a focus on CBD commitments. It identified many gaps in the principled implementation of the CBD, in each country.
6. The Samuel Review of Australia's EPBC Act[17] was a statutory review of the principal legal instrument for implementing Australia's CBD commitments. The unambiguous conclusion was that:

   > *The EPBC Act is outdated and requires fundamental reform. It does not enable the Commonwealth to effectively fulfil its environmental management responsibilities to protect nationally important matters. The Act, and the way it is implemented, results in piecemeal decisions, which rarely work in concert with the environmental management responsibilities of the States and Territories. The Act is a barrier to holistic environmental management which, given the nature of Australia's federation, is essential for success*.[18]

These law and governance analyses, and many other examples, tend to support the governance judgement that biodiversity continues to decline in Australia despite the relatively clear articulation of well-intentioned principles into national and sub-national laws and policies. One is left to assume that the failure is attributable to practical requirements of governance, including adequate resourcing of agency effort, more sophisticated behavioural modification tools (education, outreach, conservation covenants, offsets, and trading mechanisms) and enhanced monitoring and compliance and enforcement of rules.

[16] Martin, Paul, et al., eds. Achieving Biodiversity Protection in Megadiverse Countries: A Comparative Assessment of Australia and Brazil. 2020 Routledge

[17] Samuel, G. (2020). Independent Review of the EPBC Act – Final Report. Australian Government Department of Agriculture, Water and the Environment

[18] ibid., at ii.

Overall evaluation: Biodiversity Governance

Based on the available evidence, is the signatory state meeting its obligation to use and govern its environment responsibly to maintain biodiversity?

Summary evaluation score

Consistency of the behaviours of key government, private and NGO actors with responsible biodiversity governance	6/10
Sustainability of the biodiversity and social outcomes that are being achieved	3 /10

By most published accounts, Australia is not meeting its obligations to sustainably use its natural capital (including biodiversity). Whilst there are positive behaviours evident from some state and non-state actors, especially in terms of laws and policies, environmental outcomes continue to show declines across the board. One can infer from this that the basic principles of sustainable use, as set out in Article 10 of the CBD are not being fully implemented in Australia:

> *Each Contracting Party shall, as far as possible and as appropriate: (a) Integrate consideration of the conservation and sustainable use of biological resources into national decision-making; (b) Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity; (c) Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements; (d) Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced; and (e) Encourage cooperation between its governmental authorities and its private sector in developing methods for the sustainable use of biological resources*.

Further, the Addis Ababa Principles and Guidelines [19] show that sustainable use should be supported by laws, adaptive management, and respect for traditional knowledge. Aboriginal and Torres Strait Islander rights, and consent for use of natural resources[20], are reflected, at least to some extent in Australia's implementation of the CBD[21], but implementation appears variable. The Samuel Review of the EPBC Act, for instance, found Australia's

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19 Secretariat of the Convention on Biological Diversity (2004) Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (CBD Guidelines) Montreal: Secretariat of the Convention on Biological Diversity 21 p. https://www.cbd.int/doc/publications/addis-gdl-en.pdf

20 Wright, Evana; Cahill, Ann; Stoianoff, Natalie --- "Australia and Indigenous traditional knowledge" [2017] UTSLRS 6; (2017) Indigenous knowledge forum: comparative systems for recognising and protecting indigenous knowledge and culture (ed.) Natalie Stoianoff 39

21 See for instance the object of the EPBC Act, to, *inter alia*, in section 3 of the Act, to recognize the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.

approach to incorporation of Aboriginal and Torres Strait Islanders in biodiversity governance as 'tokenistic'.[22]

Australia's challenges

Australia can be described as 'mega-diverse' [23] with 560, 000 unique species.[24] The 200 years since Europeans entered the country has seen rapid biodiversity loss.[25] Australia lists over 1,300 endangered plant species, and more than 30 have become extinct.[26] Threats to biodiversity include climate change, mining, agriculture (e.g. vegetation clearing) and other development.[27] For fauna, the specific challenges include feral pests (e.g. cats, toads, pigs, foxes and dogs), diseases, fire, floods, droughts and weather events. Amphibian declines are particularly severe.[28] Australia's latest State of the Environment Report 2016 (SOE 2016) - produced every five years - identified salinity, erosion, vegetation clearing, and pesticides as major contributors to biodiversity loss.

Problematically, Australia's fifth national report on the CBD (2014) highlighted that insufficient data makes it difficult to make reliable precautionary judgments.[29] The SOE 2016 highlighted similar concerns.[30]

At a macro level, Australia faces also considerable public policy challenges including declining trust in government, an increasingly casual and older workforce, rising health care, housing and cost of living pressures, and uncertain geopolitical pressures in the Indo-Pacific region, all which take attention away, to varying extents, from the challenge of biodiversity conservation and sustainable use at the national level.

Government actions

There is some evidence that the Australian Government has attempted to integrate consideration of the conservation and sustainable use of biological resources into national decision-making (Article 10 above). There is evidence that this has occurred, to varying extents, in both law and policy. In November 2019, for example, *Australia's Strategy for Nature 2019-2030* (ASN 2019) was released. This replaced *Australia's Biodiversity Conservation Strategy 2010-2030 (ABCS 2010)*, which had been reviewed in 2015.

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[22] f/n 17, at pp 6 and 57.

23 Department of the Prime Minister and Cabinet, Office of the Chief Scientist, 'Access to Australia's biological resources– a discussion paper', a paper prepared for the coordination committee on science and technology, March 1994 (AGPS, Canberra, 1994), p9.

24 Australian Government Department of Environment 2014, Australia's Fifth National Report to the Convention on Biological Diversity, Department of the Environment, Canberra'

25 Butchart, S. H. M., Walpole, M., Collen, B., van Strien, A., Scharlemann, J. P. W., Almond, R. E. A., … Watson, R. (2010). Global Biodiversity: Indicators of Recent Declines. Science, 328(5982), 1164–1168. https://doi.org/10.1126/science.1187512

26 Australian Government EPBC Act List of Threatened Flora. http://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora

[27] f/n 24, p 18.

28 Stuart, Simon N., et al. "Status and trends of amphibian declines and extinctions worldwide." Science 306.5702 (2004): 1783-1786.

29 f/n 24, p 10.

30 f/n13 page 8

The explicit language of Australia's strategies indicates a declining focus on specific commitments of the CBD. Australia's NSCBD 1996, for instance, aimed 'to fulfil Australia's obligations under the 1993 United Nations Convention on Biological Diversity (CBD).'[31] The later ABCS 2010 [32] addressed 'conservation of biological diversity' in general terms. Australia's most recent ASN 2019 however, only loosely refers to CBD obligations.
Within the ABCS 2010, 'use' was treated as a subset of 'conservation' defined as:

> *the protection, maintenance, management, sustainable use, restoration and improvement of the natural environment*….'[33]

ABCS 2010 identified 'unsustainable use' as a cause of biodiversity loss but did not specify strategies. ASN 2019 reiterated that "[s]ustainable use of nature must meet the needs of today without compromising the needs of future generations" (a classic definition of Sustainable Development) but does not propose comprehensive actions other than a general statement about farmland. It has an objective to develop and use natural resources sustainably, with progress measures that address: the 'consideration' of environmental flows; agricultural practices; fisheries management; and 'explicit consideration' of measuring natural capital when considering sustainable development.
Sustainable use was indirectly addressed in Australia's original NSCBD 1996 [34] using a version of the principles of what Australia refers to as *Ecologically Sustainable Development* (ESD). Australia's EPBC Act is focussed on declared matters of national environmental significance ("MNES") rather than biodiversity broadly, although it does mention '*ecologically sustainable use* of natural resources' in its objects.[35] MNES include nationally listed species and ecosystems, migratory species, World Heritage areas and Commonwealth marine areas, and major developments that may threaten these. The legislation does not, however, address the sustainable use of *all biodiversity and its components,* consistent with the CBD. States have primary jurisdiction over most developments that affect biodiversity, including licences to take and use protected plants, trade, or transport wildlife, or make or sell seeds or other genetically modified organisms.
At the time this report was initially prepared, the national ESD strategy had not been updated since 1992. [36] However, in 2019 a new biodiversity national strategy (ASN2019) was established, and the national government proposed 'reforms' to the EPBC Act focused on reducing (perceived) impediments to economic development or 'green tape' inefficiencies.

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31 Australian Government. National strategy for the conservation of Australia's biological diversity. (1996). Canberra ACT. http://nrmonline.nrm.gov.au/downloads/mql:2330/content
32 f/n 24.
33 Australia's Biodiversity Conservation Strategy 2010-2030 page 78
34 A note on the national biodiversity strategy website http://www.environment.gov.au/about-us/esd/publications/national-esd-strategy-part1 as at May 2020 indicates that the content of the website is under review.
35 See Environment Protection and Biodiversity Conservation Act 1999, ss3-3A
36 Since completing our initial report, the Samuel, G. (2020). Independent Review of the EPBC Act – Final Report has been published by the Department of Agriculture, Water and the Environment. It heavily criticises Australia's environmental protection laws and processes.

Implementation of Australia's commitments under the CBD in 1992 have received little attention, other than process streamlining.

In specific contexts, the implementation of the principle in Australia also varies. The regulatory and policy framework for the Great Barrier Reef, for example, discussed below, includes reference to sustainable use of biodiversity. Moreover, the regulatory framework for Australia's Murray Darling Basin (MDB), an enormous socio-ecological water system that traverses jurisdictional boundaries (including significant Indigenous cultural values) includes specific consideration of the principle of sustainable use of water resources. Section 21 of the *Water Act 2007* (Cth) provides, that in the development of the MDB Plan, international agreements like the CBD must be considered, including specifically promoting the sustainable use of water resources. Explicit reference is made to Articles 7 and 8 of the CBD.

Marine environmental 'sustainable use'

As we noted above, fisheries and the marine environment is one of the key areas for concern of the CBD in the context of a sustainable use agenda.[37] The Australian government has primary authority over offshore marine environments (greater than three nautical miles from the coastline) including considerable control over the iconic Great Barrier Reef, where sustainable use issues constantly arise. Section 3AA of the federal *Great Barrier Reef Marine Park Act 1975* defines *ecologically sustainable use* as:

> *"[use] that is consistent with: protecting and conserving the environment, biodiversity and heritage values of the Great Barrier Reef Region; and ecosystem-based management; and that is within the capacity of the Region and its natural resources to sustain natural processes while maintaining the life-support systems of nature and ensuring that the benefit of the use to the present generation does not diminish the potential to meet the needs and aspirations of future generations*."

The reference to intergenerational benefits arguably reflects the CBD and Rio frameworks. Under fisheries legislation, there are similar use management goals, see, for the example, the *Fisheries Management Act 1991* (s 3). Australia's marine biodiversity outcomes appear to show insufficient commitment to the principle as encapsulated in the CBD although it is worth nothing Australia's approach to fish stocks sustainability as reflected, for instance, in investment in fishery science, such as the Australian Fisheries Management Authority (AFMA) research 'hub'.[38]

A 2014 study examined 150 fish stocks: 98 were classified as "sustainable", 11 as "transitional", 39 were "undefined" due to insufficient data[39]. Australia's fisheries scientists

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[37] F/n 9

38 Bax, N.J. & Hedge, P. [Eds]. 2015. Marine Biodiversity Hub, National Environmental Research Program, Final report 2011–2015. Report to Department of the Environment. Canberra, Australia

[39] Flood, M, Stobutzki, I, Andrews, J, Ashby, C, Begg, G, Fletcher, R, Gardner, C, Georgeson, L, Hansen, S, Hartmann, K, Hone, P, Horvat, P, Maloney, L, McDonald, B, Moore, A, Roelofs, A, Sainsbury, K, Saunders, T, Smith, T, Stewardson, C, Stewart, J & Wise, B (eds) 2014, Status

and managers can claim that they have largely implemented CBD biodiversity management principles[40]. However, the Yale *Environmental Performance Index* (EPI) (discussed later in this report) does place Australia in the bottom third of nations on fish stocks sustainability.

Sustainable Use and the Sub-National Level

Though Australian states and territories have no legal obligations under international law (i.e. to implement the CBD), they make the bulk of planning and land use decisions that impact biodiversity across the nation and hence their actions are important to consider when exploring implementation questions. States and territories may include sustainable use as a legislative objective in their regulatory frameworks, that may not necessarily translate into strong legal effect under Australian law. Examples include Victoria's *Environment Protection Act 1970* (s 49) which addresses the sustainable uses of resources, and best practices in waste management; or the state's *Water Act 1989* (ss 1, 93) that states the need for water to be used sustainably. In New South Wales, the NSW *National Parks and Wildlife Act 1974* (s 5) identifies that visitor use of national parks should be 'sustainable', similar to the ecologically sustainable use of nature in Queensland's *Nature Conservation Act 1992* (the "NCA").

A key-word search of state laws reveals 30 instances where sustainable use is referenced. For example, Section 11 of the *Nature Conservation Act 1992* ("the NCA") in Queensland talks about the 'ecologically sustainable use of nature', defined as:

> 'the taking or use of wildlife, or the use of protected areas …within their capacity to sustain natural processes while maintaining the life support systems of nature; and ensuring that the benefit of the use to present generations does not diminish the potential to meet the needs and aspirations of future generations.'

Authorisation is assessed on a case-by-case basis, but inadequate data may make it difficult to judge whether use is truly sustainable.

Though Section 11 of the NCA promotes the sustainable use of 'protected areas' in Queensland (e.g. national parks, nature refuges and conservation reserves), these cover less than 5% of Queensland's landmass. Most land in Queensland is covered by mining, petroleum, pastoral or agricultural leases, permit or licence. Accordingly, the NCA 'sustainable use' framework does not govern most biodiversity-related decisions, despite the biodiversity hotspots that they may or may not seek to protect. The Queensland *Environmental Protection Act 1994* and the *Planning Act 2016* refer to principles of sustainability (and *Planning Act 2016* addresses 'ecological sustainability' (s 3(2)) but do not refer to 'sustainable use of biodiversity and its components', nor mention the conservation

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of key Australian fish stocks reports 2014, Fisheries Research and Development Corporation, Canberra.

[40] Anthony Bergin (2018) Australia's approach to Indian Ocean fisheries: towards closer regional engagement, Journal of the Indian Ocean Region, 14:1, 100-113, DOI: 10.1080/19480881.2017.1368247

of biodiversity in planning decisions. This may have the effect of de-emphasising the specific commitment, converting it to a guiding principle rather than a binding obligation.
The Northern Territory's *Biological Resources Act 2006* (s 3) better reflects the CBD principle. The object of that Act is 'promoting the conservation of biological resources in the Territory and the *ecologically sustainable use* of those biological resources'. This mirrors the CBD, in two respects: (1) it addresses the use of components of biodiversity rather than the less specific use of the environment generally; and (2); it distinguishes between 'conservation' and 'use' as the CBD does (unlike Australia's national laws). It may be the case that such specificity makes it more likely than not that the goals and principles of the CBD will be implemented as intended.

Non-government/private activities

Private industry and private land use has had an important impact on the state of Australia's biodiversity. Vegetation clearing has had an enormous impact on biodiversity across Australia, and in particular in Queensland where most of the clearing has occurred. The loss of habitat for small mammals and birdlife can be attributed to past policies of land conversion for grazing and cropping activities. These activities in coastal areas have increased sediment and nutrient flow into the marine environment further placing stress on marine ecosystems and marine biodiversity (including impacting the Great Barrier Reef). Mining and gas infrastructure by the private sector supported by State and Territory governments, in return for royalties, has stressed Australia's biodiversity and made it challenging to implement landscape-scale plans for conservation and sustainable use of natural resources. Development pressures in the form of increasing urban and peri-urban development have impacted biodiversity corridors for migratory species and native tree-dwelling species such as the iconic koala.
Combined, these private land use activities, largely supported by State and Federal governments over the years have resulted in a 'death by a thousand cuts' across the Australian landscape. Coupled with the impacts of invasive species and bushfires, cumulative pressures of private land use for economic gain are supported by a property rights regime that has historically focused on land productivity.
There are other direct examples of unsustainable behaviour too. Exploitation of plant biodiversity is intrinsic to industries including the plant part/cut flower industry; plant harvesters; commercial plant traders and the nursery and garden industry. For fauna, farmers, graziers, tourism operators, pest eradicators, scientists and others may interfere with (or use) native wildlife and habitats, under permit arrangements. Some of this may be sustainable but on other occasions it may not. In Queensland, commercial permits may be issued for harvesting, commercial wildlife interactions, commercial trade in live or dead protected wildlife, and farming.[41] Whilst permits for the use of nature are not inconsistent

[41] Queensland Government Permits, licences and authorities at https://www.qld.gov.au/environment/plants-animals/wildlife-permits/requirements/

with the principle per se, it would seem consistent with the CBD for private organisations to implement the principle of sustainable use within their business structures and executive/shareholder decision-making. The evidence that Australian mining, forestry, agriculture, fisheries, and other resource intensive industries are embracing the CBD principles of sustainable use (or ESD) is not clear. It is difficult to differentiate between truly sustainable actions in these industries and 'greenwashing' that may occur in the context of marketing and business decisions. That is not to say, however, that there are not impressive sustainable agricultural and other private stewardship arrangements which are benefitting biodiversity across the landscape (including in grazing and cropping areas), but they are often not comprehensive in terms of coverage across the nation.

Indigenous cultural or customary uses

The CBD creates an obligation to respect the needs and culture of Indigenous and other traditional users of biodiversity, and to foster their sustainable use of nature (Article 8(j)). Further, the Addis Ababa Guidelines state: 'Sustainability of use depends on biological parameters .. [but].., social, cultural, political and economic factors are equally important. It is therefore necessary to take such factors into consideration and involve indigenous and local communities and stakeholders ...'.[42]

In Australia, as in other nations, the use of biodiversity by Indigenous people is intertwined with legal land rights and customary practices. The 1994 Australian Native Title Act provides a mechanism for Indigenous peoples' proprietary interests in land and/or waters, and the concomitant use of natural resources (e.g. hunting and fishing). The protected practice must predate European arrival (i.e. pre 1788), and government intervention must not have extinguished the right. There is not strong evidence that the Native Title framework has substantially improved the lives of Indigenous People's, for example in terms of economic opportunities or sustained protection of their unique cultural heritage and access to biodiversity. Cultural heritage protection legislation, which is interlinked with biodiversity, has also been found lacking. The recent Samuel Report into the EPBC Act noted that Indigenous issues are not routinely considered when it comes to biodiversity governance and environmental decision-making in Australia. Far greater effort could be made to integrate unique traditional knowledges into decision-making by government agencies, and through the law.

On paper, Indigenous engagement in biodiversity management is mentioned in the ABCS 2010 as a component of 'conservation' rather than promoting *sustainable use* by Indigenous Australians.[43] The ABCS 2010 supported recognition of Indigenous peoples' ecological knowledge, but such use was only incidentally noted:

[42] F/n 19, page 16.

[43] F/n 33 p 16

> *Increasing Indigenous engagement means not only acknowledging Indigenous ecological knowledge but actively supporting its maintenance and use*.[44]

In the past, an Indigenous Advisory Committee has been established to advise the government on environmental law issues related to Indigenous peoples' knowledge of biodiversity[45] and more recent efforts to address co-governance of biodiversity, protected areas and the preservation of cultural heritage across Australia are being pursued.[46]

State and territory law can make Indigenous uses of biodiversity a statutory right, additional to native title. In Queensland, for instance, section 61 of the *Aboriginal and Torres Strait Island Communities (Justice, Land and Other Matters) Act* 1984 provides that subject to some conditions:

> *.. a member of a community of Aborigines or Torres Strait Islanders resident in a community government or IRC area shall not be liable to prosecution as for an offence for taking marine products or fauna by traditional means for consumption by members of the community.*

As is well known, Indigenous cultural heritage is also closely connected to traditional use of biodiversity, land rights and spiritual and sacred views of the Earth. However, as a recent review found, cultural heritage laws in Australia tend to focus on tangible aspects of the physical world and less so upon traditional knowledge of biodiversity and sacred interactions with the surrounding natural landscape, as manifested through distinct forms of culture and expression such as Aboriginal song lines, storytelling, artwork, and other expressions. Both tangible and intangible aspects of culture have been poorly protected through law in Australia.[47]

Judicial decisions

Courts in Australia arguably have a pivotal role in applying CBD principles, but Australian legal traditions do not encourage courts to directly import principles from international instruments.[48] This has been the job of the Legislature, and to a lesser extent, the Executive.

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[44] ibid. p 40

[45] F/n 35 Section 505B

[46] Australian Government, Government signs First Nations alliance partnership < https://www.indigenous.gov.au/news-and-media/announcements/government-signs-first-nations-alliance-partnership>

[47]https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Northern_Australia/CavesatJuukanGorge/Report

[48] Preston, J. B. (2018). Bridging the gap between aspiration and outcomes: the role of the court in ensuring ecologically sustainable development. In C. Voigt & Zen Makuch (Eds.), Courts and the Environment (pp. 35–58). Cheltenham UK: Edward Elgar Publishing. https://doi.org/10.4337/9781788114677.00009; and Peel, J. (2009). Interpretation and Application of the Precautionary Principle: Australia's Contribution. Review of European Community and International Environmental Law, 18(1), 11–25. https://doi.org/10.1111/j.1467-9388.2009.00620.x

The principle of sustainable use of biodiversity and its components in the context of the CBD has not been judicially examined in depth.[49]

That said, judicial interpretation of the principles of ESD, particularly the precautionary principle, has occurred through several cases at the state level in Australia including:

- Rainbow Shores Pty Ltd v Gympie Regional Council [2013] QPEC 26;
- Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Ltd [2013] NSWLEC 48; (2013) 194 LGERA 347;
- Telstra Corp Ltd v Hornsby Shire Council [2006] NSWLEC 133; (2006);
- Port Stephens Pearls Pty Ltd v Minister for Infrastructure and Planning [2005] NSWLEC 426 [56]–[58];
- Ulan Coal Mines Ltd v Minister for Planning [2008] NSWLEC 185; (2008) 160 LGERA 20, 40 [98].

At the federal level, courts have examined various principles of ESD in the context of the EPBC Act (where it is an object of the Act), including:

- Blue Wedges Inc v Minister for the Environment, Heritage and the Arts [2008] FCA 399;
- Friends of Leadbeater's Possum Inc v VicForests (No 4) [2020] FCA 704 (27 May 2020);
- Sharma by her litigation representative Sister Marie Brigid Arthur v Minister for the Environment [2021] FCA 560 (27 May 2021).

The federal nature of Australia's legal system, however, means that there is fragmentation in how these concepts and principles are interpreted and applied across Australia. Decisions in one state are not binding on another and Commonwealth law is largely separate from state and territory law when it comes to environmental protection and natural resource governance.

Whilst some Courts, such as the Land and Environment Court in New South Wales, have comprehensive jurisdictional coverage and can widely implement principles across environmental crime, planning pollution, land rights and other aspects of governance, other states such as Queensland, separate planning from crime from mining from agricultural development. Fragmentation can make it difficult to streamline an approach to legal implementation of key principles like sustainable use of biodiversity across the nation.

Non-Government Organisations (NGOs) and Research Institutions

Though NGOs (and hybrid organisations like the IUCN) may be prominent in developing treaties like the CBD, their role in implementing principles, at least in Australia, has been largely domestic advocacy, research, on-ground action, and monitoring effort. During development of the 1992 ESD strategy NGOs left the negotiations, arguing the principles had been watered down by government and industry. [50] Most political NGOs, today, seem to support protectionist conservation rather than 'sustainable use' of biological resources,

[49] Brian Preston, 'The Judicial Development of the Precautionary Principle' (2018) 35 *Environmental and Planning Law Journal* 123

[50] See Michael Emery (1993) Background Paper No. 3 Ecologically Sustainable Development Processes in Australia 1990-1992. Parliamentary Research Service https://www.aph.gov.au/binaries/library/pubs/bp/1993/93bp03.pdf

per se, but Landcare and other frontline "stewardship" NGOs seem to be oriented towards sustainable use, as is some private conservation.[51] Larger NGOs with international links such as WWF-Australia, have embraced the notion of *nature-based solutions* and there are many instances of other organisations like The Nature Conservancy (TNC) purchasing land across Australia for effectively private conservation effort.

In terms of research effort, principle 6 of the Addis Ababa Guidelines support *'interdisciplinary research into all aspects of the use and conservation of biological diversity should be promoted and supported.* Australian research on the 'sustainable use' of Indigenous use of biodiversity is illustrated by research on fishing resources,[52] other marine resources,[53] estuarine crocodiles,[54] Indigenous knowledge and intellectual property,[55] and Indigenous harvesting of wildlife.[56] 'Sustainability' has been researched in relation to rural

[51] See for example Campbell, A., Alexandra, J., & Curtis, D. (2017). Reflections on four decades of land restoration in Australia. Rangeland Journal, 39(5–6), 405–416. https://doi.org/10.1071/RJ17056; or Hamrick, K. (2016). State of Private Investment in Conservation 2016: A Landscape Assessment of an Emerging Market. Ecosystem Marketplace.

[52] McPhee, Daryl P., Duncan Leadbitter, and G. A. Skilleter. "Swallowing the bait: is recreational fishing in Australia ecologically sustainable?." Pacific Conservation Biology 8.1 (2002): 40-51.

[53] Greiner, R., et al. "Incentive instruments for the sustainable use of marine resources." *Ocean & Coastal Management* 43.1 (2000): 29-50.

[54] Thorbjarnarson, John. "Crocodile tears and skins: international trade, economic constraints, and limits to the sustainable use of crocodilians." *Conservation Biology* 13.3 (1999): 465-470.

[55] f/n 20, 39; Michael Blakeney, 'Ethnobiological knowledge and the intellectual property rights of indigenous peoples in Australia' in Michael Blakeney (ed), *Intellectual Property Aspects of Ethnobiology* (Sweet and Maxwell, 1999) 83;

[56]Wilson, George R., Melanie J. Edwards, and Jennifer K. Smits. "Support for Indigenous wildlife management in Australia to enable sustainable use." *Wildlife Research* 37.3 (2010): 255-263.

areas,[57] urban infrastructure and buildings,[58] sustainability reporting (of governments and businesses),[59] and education.[60]

How much progress has Australia made towards sustainable use?

It appears that Australia, as a whole, has only partially embraced the principle of sustainable use of biodiversity in law, policy, and stakeholder action. It is important to point out that sustainable development and the conservation and sustainable use of biodiversity are not the same thing. The Australian Government's 1992 National Strategy for ESD enshrined sustainable development – or ESD - as the overarching framework in Australia and has subsequently been adopted by state and territory laws as well as federal regulatory frameworks.[61] This effectively places sustainable management and environmental considerations alongside economic considerations. A proposal for a national sustainability commissioner in the past was not adopted[62]. Whilst ESD 1992 has been subsumed ASN 2019, the focus has shifted somewhat to the Aichi Targets (nos. 2 to 15 and 18) and SDGs (16, and 11 to 14), away from the initial CBD commitments.

As alluded to above, dozens of Australia's laws and policies do refer to *using nature sustainably*, commonly as 'ecologically sustainable use' (for instance, Queensland's *Nature Conservation Act 1992* (Qld), the national *Great Barrier Reef Marine Park Act* 1975 (Cth), the *Water Act 2007* (Cth) and the EPBC Act). However, administrative, political, and financial barriers may impede on-ground implementation of this CBD-based commitment. The outcomes are clearly not being seen through the scientific reporting.

There are many examples of biodiversity exploitation outside protected areas that are not adequately controlled, despite the EPBC Act and state and territory regulations. Despite planning law, vulnerable species and habitats are not well protected against land clearing for agriculture, mining, and other development.[63] Environmental Impact assessments does

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[57]Cocklin, Chris, and Jacqui Dibden, eds. *Sustainability and change in rural Australia*. UNSW Press, 2005.

[58]Wilkinson, Sara J., Kimberley James, and Richard Reed. "Using building adaptation to deliver sustainability in Australia." *Structural survey* 27.1 (2009): 46-61.

[59]Williams, Belinda, Trevor Wilmshurst, and Robert Clift. "Sustainability reporting by local government in Australia: Current and future prospects." *Accounting Forum*. Vol. 35. No. 3. Elsevier, 2011; Frost, Geoff, et al. "A survey of sustainability reporting practices of Australian reporting entities." *Australian Accounting Review* 15.35 (2005): 89-96; and also Bond, Alan, Angus Morrison-Saunders, and Jenny Pope. "Sustainability assessment: the state of the art." Impact Assessment and Project Appraisal 30.1 (2012): 53-62.

[60] Tilbury, Daniella, et al. *A national review of environmental education and its contribution to sustainability in Australia: Further and higher education*. Australian Research Institute in Education for Sustainability (ARIES), 2005.

[61] Australia's National Strategy for Ecologically Sustainable Development National Strategy for Ecologically Sustainable Development, (1992) Council of Australian Governments Ecologically Sustainable Development Steering Committee. Now archived.

[62] Sustainability for survival: creating a climate for change. Inquiry into a sustainability charter, House of Representatives, Standing Committee on Environment and Heritage, September 2007

[63] For example, see V.J. Neldner, M.J. Laidlaw, K.R. McDonald, M.T. Mathieson, R.I. Melzer, R. Seaton, W.J. F. McDonald, R. Hobson, and C.J. Limpus (2017). Scientific review of the

not seem to effectively address cumulative impacts, and development approvals do not consistently implement the precautionary principle. The rules governing Indigenous people's benefit sharing (viz. from seeds, genetics, and plant materials) are also reported to be under-developed and somewhat inconsistent between states.[64]

It is perhaps notable that a national Threatened Species Commissioner was appointed in 2013 to strengthen oversight of biodiversity conservation.[65] The Commissioner guides a national threatened species strategy to address particular issues (e.g. feral cat predation on vulnerable species) and to reverse declines in selected species (e.g. 20 vulnerable bird species). The previous national strategy had four priorities: feral cat impacts, safe havens for at-risk species, habitat, and emergency interventions to prevent extinctions[66] and the Commissioner reported laudable progress[67], but national and state of environment reports and scientific studies continue to indicate widespread biodiversity loss.

The 2016 State of Environment Report (SOE 2016) noted:

> '*The risks faced by biodiversity in Australia today are much the same as in 2011. SoE 2011 noted that many risks facing biodiversity in the short and medium term relate to potential failure to take advantage of current opportunities for better management. If anything, these risks have increased in 2016 because, although the impact of pressures overall has increased, the resources available for managing biodiversity, and undertaking research and monitoring have not*.'[68]

Two impediments to implementing Australia's CBD commitments, at all government levels, are: (1) resistance from strong exploitative interests, and (2) insufficient public and private funds (notwithstanding the CBD obligations for resourcing and incentives) [69].

Australia does invest in natural resource management programmes such as the long-term National Landcare Programme, or the more recent Biodiversity Fund and Reef Rescue

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impacts of land clearing on threatened species in Queensland. Queensland Government, Brisbane.

[64] There is a tension between intellectual property standards and benefit sharing under the CBD. See Charles Lawson; The conflict for patented genetic materials under the Convention on Biological Diversity and the Agreement on Trade Related Aspects of Intellectual Property Rights, 2001 12(2) Australian IP Journal 104

[65] Threatened Species Commissioner at http://environment.gov.au/biodiversity/threatened/commissioner

[66] Replaced by the Threatened Species Strategy 2021-2031 http://environment.gov.au/biodiversity/threatened/publications/threatened-species-strategy-2021-2031

[67] Threatened Species Strategy 3 Year Report, https://www.environment.gov.au/system/files/resources/ff192035-6dd2-42a4-b421-7ab98edd3d38/files/threatened-species-strategy-year-3-progress-report.pdf

[68] f/n 13, page 6.

[69] Martin, P., Cosby, A., & Werren, K. (2017). The environment needs billions of dollars more: here 's how to raise the money. The Conversation, https://theconversation.com/the-enironment-needs-billions-of-dollars-more-heres-how-to-raise-the-money-70401; Ongoing underinvestment in environmental protection puts all Australians at risk. (2017). Pre-Budget Submission to the Department of the Treasury. WWF and ACF

(conserving the Great Barrier Reef).[70] However biodiversity loss and NGO claims of insufficient funding highlight the substantial investment gap. Governments seem to be employing market instruments and environmental philanthropy to help, but insufficient funds is a chronic problem.

Ultimately, an effective biodiversity strategy requires ongoing monitoring and evaluation.[71] Australia does fund environmental monitoring and evaluation, and science including environmental reporting (e.g. the Australian Biological Resources Study[72] or national and state "state of environment" reports); program evaluations (e.g. of natural resource management investments such as the Natural Heritage Trust, or Regional Forest Agreements); through Australia's national science agency (CSIRO) and statistical agencies such as the Australian Bureau of Statistics, and other organizations and studies (e.g. the Coastal Monitoring Strategy, the National Rangeland Monitoring Program). Compared to many other nations, Australia is data rich, but still has gaps in knowledge and data, and government publications tend to reflect positively on government activities and mask governance failings.

At the time of our initial analysis, Australia's 5th report under Art 26 was current[73], but Australia has since submitted its 6th report.[74] The 5th report focused on federal government activities (largely ignoring non-government and state government action) and presented a by and large positive assessment. However, NGO and independent scientific reports have remained critical of Australia's failure to implement its international commitments.[75] Only passing reference is made to the State of Environment evidence of ongoing biodiversity loss in Australia.

The 6th report is notable in not fully appreciating the fact that government strategies are not preventing (and may well be driving) ongoing biodiversity loss. NGOs such as the WWF-Australia continue to highlight that land clearing as unsustainable.[76] Indeed, estimates suggest that 70% of Eastern habitats in Queensland have been cleared since the 1800s, predominately for grazing.[77] Australia's CBD reports do not comprehensively refer to the

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[70] Adam Gartrell, Election 2016: Coalition's $1 billion funding promise for Great Barrier Reef, Sydney Morning Herald June 12 2016. l

[71] F/n 333

[72] Various databases are available online from https://www.environment.gov.au/science/abrs/online-resources

[73] F/n 24.

[74] Department of the Environment and Energy, 'UN Convention on Biological Diversity' <http://www.environment.gov.au/biodiversity/international/un-convention-biological-diversity> accessed 28 March 2017.

[75] e.g. Ritchie, E. G., Bradshaw, C. J. a, Dickman, C. R., Hobbs, R., Christopher, N., Johnston, E. L., Woinarski, J. (2013). Continental-Scale Governance Failure Will Hasten Loss of Australia's Biodiversity. Conservation Biology, 27(6), 1133–1135.

[76] e.g. Martin F J Taylor. Bushland at Risk of Renewed Clearing, WWF-Australia, May 2013; and Australian Conservation Foundation, Queensland's tree-clearing laws must be strengthened https://www.acf.org.au/queenslands_tree_clearing_laws_must_be_strengthened.

[77] Australian Conservation Foundation, Submission on Vegetation Management (Reinstatement) and Other Legislation Amendment Bill 2016 to the Agriculture and Environment Committee Parliament House 22 April 2016

seriousness of the land clearing problem and difficulties in regulating private use of agricultural land.
A national task force has been established to monitor achievement of Australia's biodiversity targets [78]. Its strategy included the following:

- Monitoring implementation of the Strategy with 5-year formal reviews;
- All jurisdictions to report on implementation progress;
- The ability to commission interim independent reviews to address obstacles to implementation;
- Consolidated reports managed centrally by the Australian Government;
- Monitoring of the effectiveness of the strategy.

A review conducted by the Biodiversity Working Group [79] identified that the strategy failed to communicate effectively with key stakeholders, did not comprehensively address all landscapes, did not drive biodiversity conservation, and did not align particularly well with Australia's international obligations.
Australia's national biodiversity strategy and action plan (ASN 2019) outlined a framework for government, non-government and community action and references Australia's international commitments, including the CBD, and links actions to selected Aichi Targets and SDGs. It has 12 strategies, with performance measures. However, it does not seem to be linked to specific commitments under the CBD and related international instruments. The related Nature Hub website (www.australiasnaturehub.gov.au) is being populated with links to actions that various organisations are undertaking, but non-government/private actions are largely ignored.

[78] F/n 33
[79] F/n 33

Evaluation of the biodiversity protection system

Based on the available evidence is the signatory state meeting its obligation to have a viable system of biodiversity protection?

Summary evaluation scores

Sufficiency of the governance instruments (laws, policies, codes, standards etc.)	8/10
Implementation of the governance instruments (strategies, plans, budgets, programs etc.)	5/10
Behaviours that are consistent with effective implementation (key public, private and NGO actors)	6 /10
Achieved biodiversity and social outcomes (biophysical and social data, expert opinions, other evaluations)	3 /10

Australia has many institutions for biodiversity governance, with the chief instrument being the national EPBC Act that aims to conserve biodiversity through:

- Requiring environmental impact assessment of developments which may have a significant impact on MNES;[80]
- Requiring environmental impact assessment of developments that may have a significant impact on the environment in Commonwealth land or waters;[81]
- Listing threatened species and ecological communities, identifying their critical habitat, and making recovery plans for them;[82]
- Listing of migratory and marine species;[83]
- Regulating trade in wildlife through a system of licenses and penalties;[84]
- Listing key threatening processes and making threat abatement plans;[85]
- Providing for conservation orders;[86]
- Providing for wildlife conservation plans;[87] and
- The declaration of conservation or biodiversity reserves managed for biodiversity purposes.[88]

Relative to other nations, Australia's institutional capacity appears to be high, with dedicated government and private agencies and groups concerned with the conservation of biodiversity. It does have a system (or systems) to protect habitats and endangered species, and formal environmental governance broadly reflects principles of sustainability. The design of its legal instruments seems reasonably focused on the end goal of conservation and sustainable use (though improvements in legislative drafting or approaches may be needed). Despite this capacity, and the fact that the EPBC Act attempts to implement the

[80] EPBC Act, Chapter 2.
[81] EPBC Act, Chapter 2, pt 3, div 2.
[82] EPBC Act, Chapter 5, pt 13, div 1.
[83] EPBC Act, Chapter 5, pt 13, divs 2–4.
[84] EPBC Act, Chapter 5, pt 13A.
[85] EPBC Act, Chapter 5, pt 13, div 5.
[86] EPBC Act, Chapter 5, pt 13, div 5.
[87] EPBC Act, Chapter 5, pt 13, div 5.
[88] EPBC Act, Chapter 5, pt 15, div 3.

CBD, governance implementation and outcomes continue to fall short of what is needed to protect the environment, evidenced through numerous (government and non-government) reports.

During 2016-17, an Australian Panel of Experts on Environmental Law (APEEL) reviewed Australia's environmental laws. A central focus was the 1999 EPBC Act which was designed to implement principles of international environmental law (e.g. polluter pays, precautionary principle, and public participation). Australia has the potential to harness diverse interests (governments, NGOs, experts, and Indigenous groups) to achieve conservation, but declines in biodiversity (arguably a crisis)[89] indicate considerable shortcomings. The APEEL reports identified doctrinal and implementation failings and proposed significant reforms[90]. A later study of biodiversity protection in Australia and Brazil reinforces these lessons.[91].

While acknowledging that there is substantial room for improvement in Australia's biodiversity protection rules, we assess that the most significant problems are poor implementation, rather than the lack of legal instruments or organisational structures. This may be due to a variety of governance elements which are poorly understood, including lack of funding and technical resourcing, weaknesses in compliance and enforcement, poor data or data-collection and collation techniques, political biases (e.g. towards unsustainable uses and over-development) and an inability to proactively address major economic and environmental challenges such as climate change.[92]

Biodiversity Monitoring

Though there is substantial data on biodiversity in Australia, and monitoring by states and territories, relative to other nations, there are still gaps in the coverage. The Australian Government has highlighted this deficit in some of its reporting and publications. For example, Australia's 5th national report under the CBD notes:

> data on species of animals around Australia is very limited for most groups in most jurisdictions. In many cases, it is not possible to draw conclusions about trends in the state of animal species groups and sometimes it is not possible to draw confident conclusions about the state of the taxon itself.[93]

Australia's national state of environment (SOE) reports identify biodiversity loss, threats to species, and the limited effectiveness of protection and restoration. Research institutions partly provide biodiversity monitoring, but this research seems to be fragmented, and does not form a comprehensive biodiversity information system across the nation.

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[89] Williams, Jann E. "The biodiversity crisis and adaptation to climate change: A case study from Australia's forests." Environmental Monitoring and Assessment 61.1 (2000): 65-74.

[90] F/n 15. Retrieved from http://apeel.org.au/. Detailed APEEL documents on different aspects of biodiversity protection are available from that site.

[91] F/n 16

[92] It was outside the scope of our work to examine these other aspects of governance failure - they require further empirical work.

[93] F/n 24 P 10.

In-situ conservation

Article 2 of the CBD specifies in-situ conservation as:

> '*the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated species, in the surroundings where they have developed their distinctive properties*.'

Article 8 of the CBD creates the obligation to establish protected areas, and to protect natural habitats. The commitment requires:

- A system of protected areas, such as national parks, wildlife refuges and nature reserves;
- Involvement of indigenous and local communities in management and restoration efforts;
- information systems to monitor and manage adverse impacts on protected areas and/or relevant policies; and
- policies and strategies to eradicate threats to in-situ environments.

Australia is doing relatively well in establishing protected areas, although there is always room for improvement. As well as the national system of protected areas (Ramsar Wetlands, World Heritage Sites etc.), each state has their system of protected areas which may or may not overlap with the federal protections. For example, the Queensland Nature Conservation Act 1992 establishes a system of national parks, and a system for marine parks (Marine Parks act 2004), and in New South Wales, the National Parks and Wildlife Conservation Act 1974 serves a similar purpose [94]. Ramsar sites in Queensland may be marine parks at the state level, and the Great Barrier Reef is a federal marine park, world heritage site and incorporates many state national and parks (i.e. on the islands).
Invasive species are identified in SOE and other reports as a major threat to biodiversity [95] including in Australia's protected areas. Australia's protected areas are vast and diverse (Kakadu for example is almost 2 million hectares) whilst the Great Barrier Reef is 344,000km2). Keeping invasive species under control in and out of these areas is a challenge. Whilst there are control programs, and Australian State and Federal governments and other stakeholders invest substantially to control pests (feral cats, foxes, and pigs in

[94] Protected area performance is reviewed in Farrier, D., Godden, L., Holley, C., McDonald, J., & Martin, P. (2017). Terrestrial Biodiversity Conservation and Natural Resources Management (Technical paper No. 3). Australian Panel of Experts in Environmental Law (APEEL). Melbourne Australia. http://apeel.org.au/s/APEEL_Terrestrial_biodiversity_conservation_NRM.pdf

[95] Wintle, B., & Bekessy, S. (2017, October). Let's get this straight, habitat loss is the number-one threat to Australia's species. The Conversation; Australian Senate Environment and Communications References Committee. (2015). *Environmental Biosecurity*. Canberra ACT. http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/biosecurity/Report

particular) the challenge continues to overwhelm authorities[96]. Because invasive species cause both environmental and economic harms (notably to agriculture) substantial industry and citizen investment is made to manage this problem. Recent reviews have led to revision of Australia's national pest animal and weeds strategies[97]. National and state invasive species programs provide some coordination between public and private activities, but insufficient funds continue to be a constraint on effective action.

There is legislation concerning invasive species in Australia. Relative to other nations, this may be seen as somewhat impressive. Laws includes federal border controls to prevent the entry of harmful species; federal and state arrangements to control new incursions, and (mainly) state laws for the control of established species. Reforms to these laws support better coordinated national/state strategies. An innovation is landholder "biosecurity duties of care" to control invasive species in some states but the effectiveness of duties without sufficient incentives and resources as required by the CBD [98] is uncertain.

Ex-situ approaches

Ex Situ conservation under the CBD (Article 2) is the 'conservation of components of biological diversity outside their natural habitats, 'complementary' to in-situ conservation. Article 9 outlines ex-situ approaches: establishing facilities for ex-situ conservation for research on plants, animals, and micro- organisms; and measures for rehabilitation of threatened species and their reintroduction under appropriate conditions. Australian Governments at all levels, and non-state conservators, have implemented, to varying extents, reasonably effective measures.

Herbariums and other research facilities for plant and seed material contribute to knowledge of Australia's flora, and to *ex situ* conservation. The Royal Botanic Garden, Sydney, is the oldest botanic garden and scientific institution in Australia. Queensland's herbarium is a government institution for research and information on Queensland ecosystems, plants, and fungi. Australia has a National Seed Bank (NSB) which collects native seeds for conservation and research. The NSB has conservation, research, propagation, and supply functions. It holds around '5,500 accessions (individual seed collections, normally stored in a single packet) representing more than 3,000 plant taxa.'[99] The NSB deposited seeds for safekeeping with the Global Seed Vault in Norway in 2011 and in 2014 'as insurance against any loss to the Australian collection.'[100] The NSB and other Australian initiatives align with Aichi Target 13 (Genetic Diversity is Maintained) [101] and the

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[96] Martin, P., & Verbeek, M. (2011). "Australia" in Sonigo, P., et al. "A comparative assessment of existing policies on invasive species in the EU member states and in selected OECD countries." Final report for the European Commission, DG ENV (2011).

[97] Australian Weeds Strategy 2017 to 2027 and the Australian Pest Animal Strategy 2017 to 2027; prepared by the Australian Department of Agriculture and Water Resources and the Invasive Plants and Animal Committee

[98] Martin, P., & Taylor, N. (2018). Environmental stewardship duties in biosecurity: Issues and challenges. Environmental and Planning Law Journal, 35(6), 743–762.

[99] The National Seed Bank - http://www.anbg.gov.au/gardens/living/seedbank/

[100] F/n 24. P 60.

[101] See Quick guide to the Aichi Biodiversity Targets - 13 - https://www.cbd.int/doc/strategic-plan/targets/T13-quick-guide-en.pdf

Global Strategy for Plant Conservation (under the CBD framework).[102] However the evidence is insufficient to justify claims of truly *sustainable use* or the effective conservation of plant biodiversity, and the national and state SOE reports do not give much cause for further confidence.

Finally, private NGOs contribute enormously to wildlife rehabilitation and restoration of degraded habitat in Australia and zoos support ex situ conservation. NGOs offer animal rescue and rehabilitation centres, and private conservation projects complement government efforts, and can be fundamental to *ex-situ* conservation.[103]

Polluter pays, trading and economic incentives

Australian governments tend to favour economic conservation instruments over stricter regulatory interventions. That said, at times the policy mix is difficult to disaggregate. A polluter-pays approach, for example, uses license fees to regulate harmful activities such as mining and gas exploration or extraction, coastal development, vegetation clearing, plant harvesting, wildlife interference and other direct and indirect uses of biodiversity. Breach of licenses can trigger penalties, and in this sense these interventions are regulatory. The application of the polluter-pays is however not comprehensive. For instance serious harm to the Great Barrier Reef from farming is not fully priced into crop production.[104] Industries such as mining continue to enjoy subsidies, tax concessions and other benefits which may be considered inconsistent with the polluter pays principle.[105]

Offsetting has become a popular governance mechanism in recent years at the national and sub-national level. The New South Wales biodiversity banking regime illustrates offsetting:

> *BioBanking is a voluntary, market-based mechanism that gives development proponents upfront certainty about their biodiversity obligations, and offers landowners payments for creating offsets and undertaking conservation management actions on their own land. BioBanking provides an alternative assessment pathway to the assessment of significance and species impact statement requirements under the [NSW] Environmental Planning and Assessment Act (EP&A Act). If a proponent assesses and offsets their development in accordance with BioBanking and obtains a biobanking statement, the consent authority does not need to further consider the impacts of the development on threatened species,*

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[102] Global Strategy for Plant Conservation The targets 2011-2020 - https://www.cbd.int/gspc/targets.shtml

[103] A list of examples is available at http://wildlife.org.au/wildlife-rescue-and-care/

[104] See e.g. past analysis of the polluter pays principle in the sugarcane industry. Hamman, Evan, Woolaston, Katie, Koroglu, Rana, Johnson, Hope, & Lewis, Bridget (2015) Managing the impacts of sugarcane farming on the Great Barrier Reef: An evaluation of the implementation of the Polluter Pays Principle. Law for Sustainability - Case Studies. IUCN Environmental Law Centre, Germany.

[105] Morton, A. (2018). Miners receive twice as much in tax credits as Australia spends on environment. The Guardian. https://www.theguardian.com/environment/2018/feb/02/miners-receive-twice-as-much-in-tax-credits-as-australia-spends-on-environment

populations or ecological communities and their habitat during the planning approval process.[106]

Offsetting essentially involves counterbalancing environmental impacts by providing a site (or funds for a site) to conserve species or ecosystems elsewhere. Australia has a national offset policy[107] and state level policies and legislation.[108] Many offset policies aim for 'like for like' approaches, or 'no net loss' in habitat or species populations, but protection of equivalent biodiversity values is often difficult.[109]. In relation to koala habitat for instance, a recent survey report:

Participants raised concerns with the environmental offsets framework (59%), including concerns with restrictions that only allow offsets to be in the same local government area where the clearing originated, the cost of implementing offsets, compliance enforcement and monitoring, and lack of a streamlined process between different levels of government.[110]

Biodiversity offsetting has, however, been criticised from an environmental and commercial perspective[111]. Environmental criticisms include that the approach overall does not effectively retard environmental destruction, partly because endangered habits and species are not fungible, and partly because of implementation failings. Commercial concerns include: (1) administrative delays; (2) the high cost of assessing sites; (3) uncertainty whether credits can be sold; (4) uncertainty of offset supply; (5) inflexibility (6) uncertainty around 'red flag' decisions and (7) risk of high transaction costs. [112]

Many different environmental market instruments have been adopted in Australia, for biodiversity, water, emissions, and other eco-environmental issues. An example is 'Ecomarkets', an initiative of the Victorian State Government:

EcoMarkets is a term used by the Victorian Government to describe a range of market-based systems aimed at addressing environmental decline. The main function of ecoMarkets is to provide incentives for private landholders, who own 65% of Victoria's land, to manage their land in ways that conserve and enhance the environment. BushTender, EcoTender and BushBroker are examples of ecoMarkets that have had significant positive impacts on environmental quality on private land. BushTender and EcoTender adopt auction-based approaches, while BushBroker is a

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[106] BioBanking Scheme: Statutory Review Report, (2014) State of NSW and Office of Environment and Heritage http://www.environment.nsw.gov.au/resources/biobanking/140695BBRev.pdf p 4.

[107] Australian Government EPBC Act environmental offsets policy http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy

[108] In Queensland, see Environmental Offsets Act 2014.

[109] See for example NSW Biodiversity Offsets Policy for Major Projects http://www.environment.nsw.gov.au/biodivoffsets/oehoffsetprincip.htm

[110] Koala Expert Panel Interim Report, Queensland Government (2017) https://www.ehp.qld.gov.au/wildlife/koalas/pdf/koala-expert-panel-interim-report.pdf p 10

[111] Environment and Communications References Committee. (2014). Environmental Offsets. Canberra ACT: Commonwealth of Australia.

[112] http://www.environment.nsw.gov.au/resources/biobanking/140695BBRev.pdf p vi.

system of tradeable credits. Landholders are able to earn income from ecoMarkets if they are able to provide environmental improvements in a cost-effective way.[113]

Another example is the emissions reductions fund (ERF) which pays farmers and landholders to reduce their emissions through land management thereby contributing to carbon budget. Some have suggested carbon credit schemes are not robust enough in Australia, labelling them 'a sham'.[114] Australia's market mechanisms, and private citizen involvement and investment in ecosystems, contribute to biodiversity protection, but there are failures and management complexities. [115]

Environmental Impact Assessment

Environmental impact assessment (EIA) should, in theory, limit the impacts on vulnerable species and habitats. It has been widely used in Australia since the 1970s, but there are implementation failings.

National level EIA focus on nationally listed species, World Heritage areas, Commonwealth areas, Ramsar wetlands, National Heritage places and migratory species. These are largely project specific assessments, although the EPBC Act does have the capacity to undertake Strategic Assessments at the landscape scale. States and territories are responsible for assessing impacts not covered by national instruments and in some cases a joint assessment can occur to avoid duplication. These include developments that threaten biodiversity, particularly through cumulative impacts, but, as with the EPBC Act approach, comprehensive assessment of cumulative environmental impacts of individual developments appears weak. The application of EIA to major projects such as mines, railways, port developments, dams, pipelines, and other substantial facilities, of state or national significance (which could have substantial impacts) can at times be 'fast tracked', and/or appeal rights limited, which limits effective assessment of the environmental impacts on biodiversity.

As with other nations, expedited EIA processes for major projects in Australia (in particular) can leave citizens little time, and insufficient expertise and resources, to challenge perhaps thousands of pages of information. The onus is largely on the community (rather than the proponent) to carry out studies to identify risks to biodiversity.[116] Indigenous communities, which are often structurally disadvantaged, face particular difficulties in terms of access to relevant information, timing and good faith of negotiations and appreciating what is at stake in a proposal (e.g. to mine their land).

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[113] http://www.environment.gov.au/biodiversity/publications/australias-biodiversity-conservation-strategy-summary

[114] Adam Morton, Australia's carbon credit scheme 'largely a sham', says whistleblower who tried to rein it in' The Guardian, Online, 23 March 2022 <https://www.theguardian.com/environment/2022/mar/23/australias-carbon-credit-scheme-largely-a-sham-says-whistleblower-who-tried-to-rein-it-in>

[115] Ansell, D., Gibson, F., & Salt, D. (Eds.). (2016). Learning from agri-environment schemes in Australia: Investing in biodiversity and other ecosystem services on farms. Canberra ACT: ANU Press; and Rolfe, J., Whitten, S., & Windle, J. (2017). The Australian experience in using tenders for conservation. Land Use Policy, 63, 611–620.

[116] For example, the Maules Creek mining development – see Northern Inland Council for the Environment v. Minister for the Environment [2013] FCA 1419.

Conclusion

Australia's ASN 2019 strategy refers specifically to Aichi Biodiversity Targets and the SDGs. It does not reference implementation of the principles from the CBD or other international environmental commitments for that matter. The ASN 2019 is linked to many Australian national and state instruments and programs, but those links are not necessarily made explicit.

At a national level, the EPBC Act is the main regulatory mechanism to ensure that environmental matters are considered in planning and decision-making.[117] The EPBC Act respects the constitutional limit to the Commonwealth's responsibilities under the Constitution. Accordingly, 'full implementation' of the CBD depends substantially on the action (in action as the case may be) of state, territory, and local governments.[118]

Part 3 of the EPBC Act does seem to reflect, at least on paper, Articles 8 and 14 of the CBD, but the national focus is limited to declared MNES including listed threatened species and communities[119]. Chapter 5 of the EPBC Act addresses the identification, monitoring, inventory, surveying, planning, and listing of biodiversity and threatened species which seems at least consistent with Articles 7 and 8 of the CBD. State and territory governments remain responsible for the bulk of biodiversity conservation matters within their jurisdiction, including national parks and wildlife, native vegetation, threatened species, and land and water use.[120] The national strategies do not seem to actively promote nor supervise implementation from the states, or by the private sector.

Australia's current biodiversity strategy, to which all Australian states have agreed, is the ASN 2019 which replaces the ABCS 2010, which had 10 measurable national targets. Target 9 stated that by 2015 all jurisdictions would review relevant legislation, policies, and programs to maximize alignment with Australia's Biodiversity Conservation Strategy, but this process has been very much delayed. [121] The review of the first five years of the conservation strategy (released in 2016) was, it must be said, less than complimentary, stating, *inter alia*, that:

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[117] Convention on Biological Diversity, Australia – Country Profile, available at: https://www.cbd.int/countries/profile/default.shtml?country=au#measures (accessed April 2017).

[118] State of NSW and Office of Environment and Heritage, Independent Biodiversity Legislation Review Panel: Issues Paper, available at: http://www.environment.nsw.gov.au/resources/biodiversity/140864objects.pdf (pg 20, 2014).

[119] EPBC Act, Section 18.

[120] Australian Government, Report on the Review of the first five years of Australia's Biodiversity Conservation Strategy 2010 – 2030, available at: https://www.environment.gov.au/system/files/resources/fee27a4f-8a96-430d-ad18-9ee8569c8047/files/bio-cons-strategy-review-report.pdf (pg 26, 2016).

[121] A recent review of the EPBCA expressed that "The EPBC Act is outdated and requires fundamental reform. It does not enable the Commonwealth to effectively fulfil its environmental management responsibilities to protect nationally important matters. The Act, and the way it is implemented, results in piecemeal decisions, which rarely work in concert with the environmental management responsibilities of the States and Territories." Samuel, f/n 7. pii.

> "*Overall, the Strategy's targets did not effectively guide the efforts of governments, other organisations or individuals. Some targets were unclear or difficult to measure, while others were not tightly tied to the Strategy's outcomes*".[122]

Sadly, this trajectory appears the case today, and subsequent reviews of environmental legislation continue to find shortcomings in the national system for conservation. [123]

[122] F/n 120 (pg 40, 2016).
[123] F/n 17.

Evaluation of precautionary principle implementation

Based on the available evidence has the precautionary principle been adequately incorporated in the resource governance system?

Summary evaluation scores

How well do laws, policies, codes, standards etc. incorporate the precautionary principle?	9 /10
Is the precautionary principle implemented fully in governance strategies, plans, budgets, programs etc?	5/10
Are the behaviours of key public, private and NGO actors consistent with effective implementation of the principle?	3/10
Do biophysical and social data, expert opinions, or other outcome evidence indicate the effective use of the precautionary principle?	3/10

The precautionary principle, though formulated in different ways depending on the context, broadly proposes that threats to the environment (including to human health) should be addressed in an environmentally protective and science-based manner. In the absence of reliable scientific data, threats from human activity should therefore be avoided, or at the very least, steps taken to ensure they are minimised. This does not require that decision-makers prohibit all potentially harmful activity (for instance, issuing a licence to take wildlife) but it does require that the level of risk be carefully considered, and, if triggered, then positive action to protect the environment should be taken.

The precautionary principle is a standalone principle under the CBD, but it is also integral for other principles. For instance, one of the preconditions of sustainable use (discussed above) is a precautionary approach. The AddisAbaba principles make this clear:

> '*To ameliorate any potential negative long-term effects of uses it is incumbent on all resource users, to apply precaution in their management decisions* ***and to opt for sustainable use*** *management strategies and policies that favour uses that provide increased sustainable benefits while not adversely affecting biodiversity. Likewise, Governments should be certain that licensed or authorized sustainable uses of biological diversity are taking such precaution in their management*.'[124]

There is considerable literature on the precautionary principle including concerning environmental law,[125] and aspects of governance,[126] and therefore little need to go into that here.

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[124] Addis Ababa Principles, page 7-8

[125]Barton, Charmian. "The status of the precautionary principle in Australia: its emergence in legislation and as a common law doctrine." *Harv. Envtl. L. Rev.* 22 (1998): 509; Gullett, Warwick. "Precautionary Principle in Australia: Policy, Law & Potential Precautionary EIAs, The." *Risk* 11 (2000): 93; Harding, Ronnie, and Liz Fisher. "The precautionary principle in Australia." *Interpreting the precautionary principle* (1994).

[126]Lauck, Tim, et al. "Implementing the precautionary principle in fisheries management through marine reserves." *Ecological applications* 8.sp1 (1998): S72-S78; Calver, M. C., J. S. Bradley, and I. W. Wright. "Towards scientific contributions in applying the precautionary principle: an example from southwestern Australia." *Pacific Conservation Biology* 5.1 (1999): 63-72; Hamman, Evan, Woolaston, Katie, & Lewis, Bridget (2016) Legal responses to human-

Precautionary instruments in Australia

Australia's laws, including of the states and territories, often refer to the precautionary principle. The EPBC Act operationalised the principle as a biodiversity decision-making requirement (e.g.S.391 of the Act). Australia's national strategy on ESD,[127] and the intergovernmental agreement on the environment (IGAE)[128] adopt principles of ESD including the precautionary principle.

Under section 391 of the EPBC Act, the Federal Environment Minister 'must consider the precautionary principle' in making decisions including:

- To approve a development which significantly impacts a matter of national environmental significance (MNES);
- To grant a permit to interfere with or take native wildlife or habitat; or
- To approve a recovery plan, threat abatement plan or wildlife conservation for a particular species.

In considering when a Minister must take into account the precautionary principle when deciding on project approval, the Federal Court in 2016 [129] determined that:

> *A lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.*

This definition differs slightly from that within the CBD, though this is probably immaterial. The Federal Court confirmed that there is no need to accord "pre-eminence" to the precautionary principle in determining a development application meaning that other factors may outweigh its application provided they are consistent with the legislation. The principle under the EPBC Act is triggered by a risk of a significant impact on protected biodiversity (or other MNES), with the potential for serious or irreversible damage, when activities are likely to cause a 'significant', 'serious' or 'irreversible' impact on a species or its habitat.

Versions of the precautionary principle exist in various Australian laws including section 3A of the national *Fisheries Management Act 1991* (Cth), the Queensland *Environmental Protection Act 1994* (Qld), the Northern Territory's *Public and Environmental Health Act* (2016),[130] Victoria's *Transport Integration Act* 2010 (Vic)[131] and regulations for Queensland's Wet Tropics World Heritage Area (Qld).[132]

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wildlife conflict: The precautionary principle, risk analysis and the 'lethal management' of endangered species. *IUCN Academy of Environmental Law*, *7*, pp. 57-83; and Woolaston, Katie & Hamman, Evan (2015) The operation of the precautionary principle in Australian environmental law: An examination of the Western Australian White shark drum line program. Environmental and Planning Law Journal, 32(4), pp. 327-345.

[127] Ecologically Sustainable Development Steering Committee (1992) National Strategy for Ecologically Sustainable Development, Council of Australian Governments

[128] Intergovernmental Agreement on the Environment (1992), Council of Australian Governments

[129] Australian Conservation Foundation Incorporated v Minister for the Environment [2016] FCA 1042

[130]Section 5

[131]Section 19

[132]Wet Tropics Management Plan 1998, Regulation 57

Implementation instruments

The precautionary principle is also found in non-statutory rules. Australia's previous national biodiversity strategy (ABCS 2010) incorporated the precautionary principle, but the recent ASN 2019 does not reference this principle.

ABCS 2010 did not detail how the principle should be applied. It suggests only the need to use science to inform management and indicates (at p11) that the strategy 'builds on previous and existing work and is underpinned by science. However, it also takes an approach that is new and very different from that taken previously. It moves away from a purely protection-based approach and strives to incorporate adaptation, resilience and natural resource management ...' This qualification to science-based precaution seems to be well short of what the CBD anticipates.

From a behavioural science perspective, the precautionary principle requires environmentally conservative decisions concerning ecological risk[133]. Pure implementation would therefore likely see agencies using reliable methods to try and quantify risk or manage uncertainty. [134] In addition, for their part, industry actors (including consultants) would also utilise well-developed methods to analyse the ecological risk to ' [help] promote the pursuit and the application of the precautionary principle.'[135] In our limited research, we did not obtain comprehensive evidence of whether or not precautionary environmental risk approaches are widely used in Australia (despite Ministerial decisions routinely suggesting they did consider the precautionary principle). That said, it is possible that the general incorporation of adaptive management techniques into the development approval process may have led to a greater increase in the use of skilled environmental consultants, and, potentially to protective conditions in development approvals. This still, however, seems unclear.

[133] See Nicolas De Sadeleer, *Environmental Principles* (Oxford University Press, 2002) 149-150

[134] Deborah Peterson, 'Precaution: principles and practice in Australian environmental and natural resource management' (50th Annual Australian Agricultural and Resource Economics Society Conference in Manly, New South Wales, February 2006) 32 a

[135] Jalava, K., Pölönen, I., Hokkanen, P., & Kuitunen, M. (2013). The precautionary principle and management of uncertainties in EIAs – analysis of waste incineration cases in Finland. *Impact Assessment and Project Appraisal*, *31*(4), 280–290. https://doi.org/10.1080/14615517.2013.821769

Evaluation of protection of human interests

Based on the available evidence is there adequate recognition and protection of people's biodiversity interests (particularly of indigenous people and women), including in genetic material? And do the community participation arrangements being implemented adequately reflect these interests?

Summary evaluation scores

Do governance instruments including laws, policies, codes, standards etc. adequately recognise human biodiversity interests?	7/10
Do the governance strategies, plans, budgets, programs etc. implement recognition of human interests in biodiversity?	5/10
Are the behaviours of key public, private and NGO actors consistent with effective recognition of human biodiversity interests?	3/10
Do social, economic, cultural, and ecological outcomes reflect effective implementation of this recognition?	2/10

Consistent with its CBD commitments, Australia does have rules and processes to involve citizens in decisions about biodiversity conservation and sustainable use. Recognition of Indigenous peoples' interests in biodiversity and the valuing of indigenous knowledge, are less well developed, though there are examples in Australian law and policy, at least on paper. The recent Samuel Review of the EPBC Act described these as particularly weak, Public participation is enshrined in state and federal laws to provide opportunities for the public to comment, enquire about and/or legally challenge environmental impact assessment and other decisions that affect the environment. The public is often entitled to comment on (though they perhaps may not always know about) draft plans, strategies, laws, planning instruments and other documents that may affect biodiversity. Merits review of the substance of administrative decisions is available for some decisions (although not at the federal level), and judicial review is generally available to appeal against abuses of power or procedural failures. However, implementation of citizen rights often does not meet citizen expectations,[136] and is costly and time-consuming to implement.
Access to the courts in Australia is expensive, and de-funding of environmental law groups (e.g. Environment Defenders' Offices) has restricted citizen environmental litigation.[137]
These problems are particularly significant for Indigenous and disadvantaged communities. Australia's laws for community involvement, and accountability mechanisms, do exist but these have many failings.

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[136] See Howard, T. (2015). From international principles to local practices: a socio-legal framing of public participation research. *Environment, Development and Sustainability*, *17*(4), 747–763 and Lindsay, B., Jaireth, H., & Rivers, N. (2017). *Democracy, and the environment* (Technical Paper No. 8). Melbourne Australia. http://apeel.org.au/s/APEEL_democracy_and_environment.pdf

[137] Note the recent commitment from the Australian Labor Government to re-fund these organizations: Amelia Thorpe, 'Labor pledges $14m funding boost to Environmental Defenders Offices – what do these services do?' The Conversation (online) 28 March 2019. https://theconversation.com/labor-pledges-14m-funding-boost-to-environmental-defenders-offices-what-do-these-services-do-114360

The rights of Indigenous citizens have been strengthened, somewhat, through Native Title rights such as exemptions allowing "take and use" of wildlife (flora and fauna) for traditional purposes although bargaining power of Indigenous peoples appears to be a continued challenge with a recent report suggesting Native Title law should be urgently reviewed 'with the goal of levelling the playing field'[138] In Queensland, provisions enable involvement of Indigenous communities in many decisions about 'nature' – for example S.6 of the NCA (which covers protected flora, fauna and habitat) provides:

> *This Act is to be administered, as far as practicable, in consultation with, and having regard to the views and interests of, landholders and interested groups and persons, including Aborigines and Torres Strait Islanders.*

The NCA does provides for Indigenous National Parks to be run and/or co-managed by Indigenous Australians, and for protected Aboriginal and Torres Strait Islander lands and Indigenous joint management areas. The laws have enabled co-management, and the increasing significance of "Indigenous Protected Areas" within the national protected areas system. Federally, the involvement of Indigenous peoples in biodiversity conservation and sustainable use is contemplated in Section 3 of the EPBC Act objects, which include:

> '*to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge*.'

Section 3 suggests something of a partnership for 'recognising and promoting indigenous peoples' role in, and knowledge of, the conservation and ecologically sustainable use of biodiversity.' Section 303BAA protects Indigenous rights to exploit wildlife using traditional means, exempting them from most controls.

Section 359A of the EPBC Act preserves Indigenous peoples' rights to use Commonwealth land (and its biodiversity) for traditional purposes. Section 390 confirms these rights for listed protected areas and provides for "access to" biological resources in Commonwealth areas.[139] State legislation such as the Northern Territory's *Biological Resources Act 2011* and *Biodiscovery Act 2004* (Qld) regulate access to and the use of biological resources. However, the laws protecting Indigenous interests are not fully adequate.[140]

As we have noted above, however, the presence of these commitments on paper is indeed one thing, and their implementation quite another. The Samuel Review's scathing report into the EPBC Act, including in the context of Indigenous people's involvement in biodiversity use and conservation highlights the distance that still needs to be travelled in Australia. Many of these issues are wrapped up in weaknesses in cultural heritage protection, as well as broader socio-economic issues (e.g. Indigenous inequality in Australia) and the need for constitutional recognition or a functioning treaty. These debates continue, but our tentative conclusion is that the behaviour of public and private actors in Australia

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[138] Joint Standing Committee on Northern Australia A Way Forward: Final report into the destruction of Indigenous heritage sites at Juukan Gorge https://parlinfo.aph.gov.au/parlInfo/download/committees/reportjnt/024757/toc_pdf/AWayForward.pdf;fileType=application%2Fpdf at p 200.

[139] f/n 20

[140] F/n 20

does not align with the overall goals of inclusive decision-making and equality in approach stipulated by the CBD (including in Article 8j).

There are many praiseworthy aspects of Australia's approach to implementing a workable biodiversity conservation framework. It is widely acknowledged that Australia has substantial expertise in conservation and environmental management; and, relative to other nations, a credible legal framework for conservation and sustainable use does exists. By the same token, state and federal governments have credible legislation and numerous policies to protect and conserve nature.

Most states and territories, as well as the federal government have measures to implement in-situ and ex-situ conservation, but funding (including for socio-legal and scientific research) seems consistently to be insufficient or targeted towards iconic sites or species like the Great Barrier Reef and the koala market-based mechanisms are increasingly used to help provide incentives and resources (which is consistent with CBD obligations), but these can be unreliable and participants may not be particularly accountable. Initiatives like the appointment of a threatened species commissioner and national plans to address plant and animal pests are among the more encouraging signs for CBD implementation.

Community organisations in Australia (e.g. the Australian Conservation Foundation, WWF-Australia, Birdlife Australia, Greenpeace, Landcare, and others) are generally very well-organised and respected. They are active in consultation, (including participation on boards and committees, developing plans and policies) and in legal challenges, and many are involved in frontline conservation work as well (e.g. on ground restoration or conservation projects, grant funding and so forth). Many of their members have expertise in advocacy and conservation science and groups like WWF-Australia collaborate with other conservation NGOs,[141] for example in fisheries[142] and the sugarcane industry.[143]

In Australia, the principles of sustainability enunciated at the international level are, by and large, treated as components of 'ecologically sustainable development (ESD)' in state and territory laws as well as national laws including the national EPBC Act. CBD principles such as the 'conservation of biological diversity' and the 'principle of sustainable use', have been subordinated to the concept of ESD, where sustainable development continues to be the dominant vernacular. Policy decision-making generally does not require decision-makers adopt principles (or even turn their mind specifically to the concept) of "sustainable use". The end result may be that the environment protection principles from the CBD have been diluted at the domestic level and evaluating implementation will always have limitations.

Environmental impact assessment (EIA), the precautionary principle and public participation are relatively well encapsulated in Australian laws. Public participation and the precautionary principle were principles of ESD in previous versions of Australia's national biodiversity strategy, but in ASN2019 'participation' has been reinterpreted to mean involvement in on-ground work or the enjoyment of nature, rather than empowerment in governance and involving citizens in deliberative democratic society (including through court action and advocacy).

EIA laws tend to focus on the individual (case by case) impacts on biodiversity, and do not sufficiently address cumulative risk, which, in Australia, as elsewhere, has become the major

[141] e.g. Koala conservation. http://www.wwf.org.au/about-us/partners/koala#gs.eDhY2PA

[142] Reeling in Reef fishing. http://www.wwf.org.au/what-we-do/oceans/great-barrier-reef/reeling-in-reef-fishing#gs.cr7ZR7w

[143] http://www.wwf.org.au/about-us/partners/the-coca-cola-foundation#gs.MXqVi1g

driver of biodiversity loss. The treatment of climate change in evaluating environmental impacts has been, at best, 'patchy' and court decisions have exposed this weakness in the policy approach.[144]
Three possible factors which limit the effectiveness of implementation of CBD principles in Australia deserve special consideration:

- Gaps in the scientific data such as those relating to:
  - The 'use of biodiversity' and its components, including who uses what, for what purposes and under what conditions;
  - The distribution, abundance and impacts of pest plants and animals (in protected areas and elsewhere);
  - Detailed and timely data about the decline in species and eco-systems across the continent.
- A lack of a coordinated national approach to the conservation and sustainable use of biodiversity. There a gradual increase in coordination, for example, ASN2019 and its information hub incorporate some state developments and programs, and nationally coordinated programs exist. However, a fully coordinated approach is lacking. The Samuel Review has called for 'nationally consistent standards' in this regard.
- Objective evaluation of programs and plans for biodiversity conservation and use is weak. Though national state of environment reports assess biophysical trends and outcomes, objective analysis of governance performance and legal effectiveness is often missing.

National strategies and reports

Under Article 26 of the CBD parties to the convention report: (1) implementation actions; and (2) performance relative to CBD objectives. Australia's reporting does not seem to provide a comprehensive objective evaluation (partly due to the CBD Secretariat's reporting guidelines).
Australia's 2014 (5th) report partly reflected the national 2011 State of Environment Report. It drew on the Australian Bureau of Statistics and specialist agencies such as the Great Barrier Reef Marine Park Authority and the Murray Darling Basin Authority. It described national government biodiversity programs but downplayed the extent of biodiversity loss and issues of governance (in)effectiveness. In response to the question of '*how effectively has biodiversity been mainstreamed into relevant sectoral and cross sectoral strategies, plans and programmes?*' the report describes national measures and programs but does not critique their effectiveness. The 6th report, submitted after completion of our initial evaluation, shifted its analysis from implementation of the CBD principles, to examining performance against outcome targets (reflecting the instructions from the CBD secretariat)[145]. Neither the 5th nor the 6th Reports reflect on the substantial academic or other literature' that is critical of biodiversity governance programs and performance, nor State, local government, or private sector initiatives.

[144] In Queensland, for instance, mining companies need not consider 'scope 3 emissions' when applying for a licence or lease to mine materials: See the case of *Coast and Country Association of Queensland Inc v Smith & Anor; Coast and Country Association of Queensland Inc v Minister for Environment and Heritage Protection &Ors* [2015] QSC 260
[145] F/n 12.

In the 2018 Yale University Environmental Performance Index (EPI) Australia ranked 21st in the world out of 180 nations. It scores well in the categories of water and sanitation and air quality but poorly on forests, fisheries, and sustainable agriculture. Australia ranked 82nd in the world in the Biome Protection (National) category which measures 'the percentage of biomes in protected areas, weighted by national composition of biomes.'[146] It ranked 57th in the world on the '*Protected area representativeness index*' which refers to the extent to which 'terrestrial protected areas are ecologically representative.' These assessments suggest that Australia's biodiversity protection system is credible, but that there are areas where significant improvement is possible.

Governance is clearly underperforming in the protection of habitats and forests. Deforestation in Queensland is around 300,000ha per year, equivalent to the Amazon deforestation), causing tremendous impacts on biodiversity [147]. One report estimated the impacts on birdlife alone is around 5.2 million bird deaths or relocations per year.[148]

Australia's CBD report is surprisingly sanguine about this issue:

> *Steps have been taken to limit clearing of native vegetation in many regions of Australia, but it remains a significant pressure in some areas, and the legacy effects of past clearing mean that the impacts are not yet reducing*.[149]

On fisheries and marine life, Australia ranks 132 out of 180 nations based 'on an assessment of the percentage of fish stocks caught within a country's Exclusive Economic Zone (EEZ) that are overexploited or collapsed'[150] which seems at odds with the relatively strong capabilities Australia has to sustainably approach fishing resources. The concerns raised by the Yale Environmental Performance Index are not considered in the report that:

"Australian fisheries are considered well managed by global standards. It has been estimated that only 15 per cent of Australia fisheries are classified as overfished."[151]

There are other indicators that Australia's CBD performance reporting is somewhat selective. An example is reporting on reptiles in the CBD Fifth Report, where it is noted that between 2009 and 2014, 'reptile endemism ha[d] jumped from 89 to 93 per cent.'[152] There is no mention that reptiles are danger, despite IUCN's Red List noting:

> *The Red List now includes 975 Australian reptile species – almost all of Australia's reptiles, the majority of them endemic to the continent … [this is particularly problematic because] Australia's unusually diverse reptiles evolved in isolation from those elsewhere and represent almost 10% of the world's reptile fauna. Some of these animals are important components of the environment and wider food chain.*[153]

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[146] https://epi.envirocenter.yale.edu/epi-indicator-report/TBN

[147] https://www.ehp.qld.gov.au/wildlife/threatened-species/documents/land-clearing-impacts-threatened-species.pdf

[148] Cogger H, Dickman C, Ford H, Johnson C and Taylor MFJ, 2017. Australian animals lost to bulldozers in Queensland 2013-15. WWF-Australia technical report.

[149] F/n 24 Page 12.

[150] https://epi.envirocenter.yale.edu/epi-indicator-report/FSS

[151] F/n 24 page 56.

[152] F/n 24 page 5.

[153] http://www.iucnredlist.org/news/australias-reptiles-threatened-by-invasive-species-climate-change-iucn-red-list

Selective discussion occurs about amphibians, which have been rapidly declining [154] with the note that 'projects have been funded to address impacts of *Chytridiomycosis*, which is an infectious disease that affects amphibians worldwide.'[155]
Overall, Australia's past reporting does not seem to provide the critical evaluation of the threats to biodiversity and environmental governance performance that one might expect from a nation that is in the midst of the biodiversity crisis.[156] Though it may be argued that this is the result of the Convention Secretariat reporting instructions to countries, some other countries are more focused on self-improvement, and are more critical of their own performance.

[154]Cogger, Harold. *Reptiles and amphibians of Australia*. CSIRO publishing, 2014 p 35.
[155] F/n 24page 59.
[156] Senate Inquiry into Australia's faunal extinction crisis (2019) https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Faunalextinction

BRAZIL

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2018 report updated in July 2022

Brazil team leader's introduction

Brazil is a megadiverse country which signed the Convention on Biological Diversity on June 5th, 1992, during the United Nations Conference on Environment and Development in Rio de Janeiro, in 1992 (Rio 92). Besides, Brazil agreed to the Aichi Biodiversity Targets during the Tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10) in October 2010.

Environmental protection in Brazil had a very robust regulatory framework and a set of public and private institutions invested in protecting the environment even before these events. Law nº 6,938, of 1981, established the National Environmental Policy in Brazil, providing for a series of environmental management instruments and defining that civil liability for environmental damage is objective, which means that it does not depend on proof of intent or guilt. This law also created the National Environmental System – SISNAMA.

SISNAMA is composed of the Ministry of the Environment - MMA, the Brazilian Institute for the Environment and Renewable Natural Resources - IBAMA, the Chico Mendes Institute for Biodiversity Conservation - ICMBio and states and municipal environmental protection agencies. Each of these institutions has specific powers to define and implement environmental policies, carry out environmental licensing and inspection, create and manage protected areas, among others.

In 2002, through Federal Decree No. 4339, principles and guidelines were instituted for the implementation of the National Biodiversity Policy.

Although Brazil has rules, institutions, and National Policies whose objective is the protection of the environment, including biological diversity, the effectiveness of this protection is still a challenge. The lack of budget and, consequently, of personnel and infrastructure for the implementation of surveillance actions or management of protected areas has hampered the implementation of environmental policies.

The chapter's objective is to evaluate the issues Brazil has been facing to implement the Convention on Biological Diversity. It begins by dealing with the challenges of biodiversity governance based on the results of the Fifth National Report to the Convention on Biological Diversity and the analysis of the effectiveness of the law on the National System of Conservation Units, known as SNUC Law (Law nº 9.985, 2000), Public Forests Management Act (Law n. 11.248, 2006) and Atlantic Forest Act (Law n. 11.482, 2006).

These laws deal with the creation and management of protected areas (called conservation units in Brazil), the protection of the Atlantic Forest, and the management of public forests, respectively. The Atlantic Forest is a tropical forest located along the Brazilian Coast. It is rich in biodiversity but has been severely degraded since the Portuguese colonization. The management of public forests mainly concerns the regulation of the exploitation and sustainable use of the natural resources at national forests of the Amazon region.

In this chapter, the authors make an evaluation of biodiversity governance, the system of biodiversity protection, including social participation, and evaluation of the precautionary principle implementation, considering current legal provisions. The role of NGOs, the participation of civil society, and issues such as mining activities in full protection conservation units (IUCN Categories I and II, for example) are also addressed. The chapter provides data to evaluate legislation and actions aimed at protecting biological diversity in Brazil.

With the largest portion of the Amazon rainforest in its territory, Brazil has a huge responsibility in relation to its protection. For this reason, in 2004, the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm) was prepared and put into practice. This plan was enormously successful until 2012, when it began to suffer setbacks. Environmental setbacks in general, as it is important to note, became more evident from 2003 onwards, with successive Provisional Measures that allowed the marketing of "Round Up Ready" soybeans smuggled from Argentina and Paraguay. The revocation of the 1965 Forest Code and the amendment of the present Forest Code, in 2012, also meant a strong setback, which had a dramatic impact on the protection of the Amazon, initiating a period of constant increase in annual deforestation rates. The most intense setback occurred from the end of 2019 and in 2020.

Since then, significant events have made environment governance much more fragile in Brazil. The present President and the former and present Ministries of the Environment have been acting to encourage mining and logging, especially in the Amazon Forest, and monitoring has been significantly weakened. Federal administrative fines for environmental damage have decreased and only demands from the productive sectors, with emphasis for agriculture and mining have been met. Therefore, deforestation and degradation increased in all the Brazilian biomes, and monitoring decreased as has public participation in the environmental governance.

Overall evaluation of biodiversity governance

Based on the available evidence, is the signatory state meeting its obligation to use and govern its environment responsibly to maintain biodiversity?

Summary evaluation score

Consistency of the behaviours of key government, private and NGO actors with responsible biodiversity governance	6 /10
Sustainability of the biodiversity and social outcomes that are being achieved	5 /10

Brazil has 6 terrestrial biomes – Amazon Forest, Cerrado, Caatinga, Atlantic Forest, Pantanal, and Pampas – and 3 main marine ecosystems – coral reefs, beaches, and mangroves. There are more than 103,870 animal species and 43,020 species of plants found in the country[157] (approximately 20% of the world's species).

The Convention on Biological Diversity was opened for subscriptions during the UN Conference on Environment and Development, in 1992 in Rio de Janeiro. Brazil was the first country to sign it on June 5th, 1992. This was ratified by Legislative Decree n. 2, 1994, and enacted by Federal Decree n. 2.519, 1998. The Brazilian Government Decree n. 1354, 1994 created the National Program for Biological Diversity (*Pronabio*) to implement its CBD commitments. In 2002, the Decree n. 4.339 established that the Ministry of the Environment should coordinate implementation of the National Policy on Biodiversity through *Pronabio* and cooperation between the Government and civil society. The Decree n. 4.703, 2003 modified *Pronabio*. It created a National Committee on Biodiversity (*Conabio*)[158]. *Conabio* is composed of government and civil society organizations. It promotes the implementation of the CBD commitments; and can propose areas for research, conservation, and sustainable use of biodiversity [159].

Brazil also agreed to the Aichi Biodiversity Targets during the Tenth Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10) in October 2010. Under this a Strategic Plan for Biodiversity, containing the Aichi Targets, should be adopted into national strategies and plans within two years. The Strategic Plan was elaborated for 2011 - 2020[160]. The Brazilian National Biodiversity Strategy and Action Plan was only completed in 2016.[161] The Brazilian Fifth National Report to the CBD 2015, indicated that the country was developing indicators to assess the progress of the Aichi Targets[162]. The Brazilian Fifth National Report indicates that implementation actions were spread across various sectors. The federal government was responsible for 40.8% of actions, state governments for

[157] Retrieved from: http://www.mma.gov.br/biodiversidade/comissao-nacional-de-biodiversidade. Access 15 April 2017.

[158] Retrieved from: http://www.mma.gov.br/biodiversidade/comissao-nacional-de-biodiversidade. Access 15 April 2017.

[159] Retrieved from: http://www.mma.gov.br/biodiversidade/comissao-nacional-de-biodiversidade. Access 15 April 2017.

[160] Retrieved from: https://www.cbd.int/sp/ . Access 24 April 2017.

[161] Retrieved from: https://www.cbd.int/nbsap/search/default.shtml/ . Access 24 April 2017

[162] Brazil, Ministry of the Environment. Secretariat of Biodiversity and Forests. Fifth National Report to the Convention on Biological Diversity: Brazil. Brasília, 2015.

37.4%, civil society for 13.7%, private sector for 5.2%, academia for 2.8%, and municipalities for 0.1%

According to the Report, of the 46 Aichi Targets, 37 were progressing at an insufficient rate to be met by 2020; 3 had not made significant progress; 5 were on track; and 1 was expected to be achieved by 2020[163]. The 5th report indicated that:

> *12% of actions were concluded, 54% are under implementation, 15% are at the planning phase or initial implementation, and only 7% have not yet initiated. The actions for which no information was provided comprise 12% of the total… According to the evaluating institutions, most of the assessed actions were considered efficient (51%) and partially efficient (25%). Only 3% of actions in the action plan have been evaluated as inefficient.* (p.22)

The report contains a detailed discussion of many aspects of environmental stewardship, and the resulting trends. However, the performance evaluations are largely based on self-reporting by the organisations that have implementation responsibilities. The 2020 book "Achieving Biodiversity Protection in Megadiverse Countries"[164] presents a detailed (and more critical) analysis of the implementation and outcomes of the CBD, addressing issues such as rural biodiversity, access and benefit sharing, stewardship incentives and resourcing, protected areas, covering the implementation of many CBD principles. It provides examples of non-implementation or ineffective implementation of many CBD objectives, and this justifies scepticism about bias on the national reports.

Governance challenges

The Amazon region is hampered by illegal logging and occupation. Monitoring is difficult due to the enormous area of rainforest, and difficult access. Similar problems affect other Brazilian tropical forests. The Atlantic Forest has been severely impacted by different economic cycles since the Portuguese colonization.

Deforestation in protected areas, especially conservation units (Law n. 9,985, 2000), is regulated by legal instruments. For example, the Public Forest Management Act (Law n 11.284, 2006) allow time-limited harvesting of forests, and the Atlantic Forest Protection Act (Law n. 11.428, 06) governs authorization for deforestation in some special cases determined by the law.

In Brazil, there are many types of protected areas. Most of them are regulated by Law n. 9.985, 2000, which designed a National System of Nature Conservation Units. There are other kinds of protected areas not included in this system such as *botanic gardens*, *permanent preservation areas* and *legal forest reserves* (the last 2 regulated by the Law n. 12,651, 2012, which designed the new Forest Code), indigenous people's lands, and lands set aside for quilombolas (remnants of an ethnic-racial group formed by descendants of escaped slaves during the period of slavery in Brazil).

The National System of Nature Conservation Units provides 12 management categories that are shared into 2 groups: full protection (IUCN I to IV categories) and sustainable use (IUCN V and VI). National parks, biological reserves, ecological stations, natural monuments, and wildlife refuges are full protection conservation units. Environmental protection areas, relevant ecological interest areas, extractive reserves, sustainable development reserves, fauna reserves, national forests and natural heritage private reserves are sustainable use

[163] ibid.

[164] F/n 16

conservation units. At the federal level, there are 149 full protection units and 855 sustainable use units. Besides, there are also state and municipal conservation units[165].
The use of natural resources or land occupation for housing is forbidden inside full protection conservation units, even for traditional communities. On the other hand, within sustainable use conservation units, the use of land and natural resources and even occupation for housing is allowed.
The core issue for the management of conservation units is the lack of financial resources to hire specialist staff, including rangers, to invest in infrastructure, and to design and implement management plans. According to the National Registry of Conservation units (CNUC), there are 334 federal conservation units (not including private reserves). 211 of them have management plans, but only 50 plans have been updated, even though some of these plans were issued decades ago[166]. The lack of management plans for sustainable use conservation units makes their management difficult because the direct use of nature resources is allowed, but not regulated. This situation makes the work of the agencies in charge of biodiversity management much harder. Chico Mendes Institute for Biodiversity Conservation (ICMBio) is the agency responsible for the management of these protected areas at federal level.
In terms of federal management plans, there was a significant advance due to a new approach initiated by ICMBio in 2017, based on the Normative Instruction nº 7, 2017. The new model adopted made those plans simpler, easier to create and cheaper. The results so far are satisfactory.

The Public Forest Management Act

The Public Forest Management Act (Law n. 11,284, 2006) allows use of the public forests by private companies. This law intends to provide management and supervision to conservation units when this could not be afforded by the government, especially in the Amazon region. Legislators thought that allowing controlled access to public forests would limit illegal exploitation, land grabbing and deforestation, over-logging, and other unsustainable uses[167].
Under this Law, public forest management comprises (article 4):

1. The creation of National Forests, which is a category of conservation units provided for by the SNUC Law. It is a sustainable use category and therefore economic exploitation of natural resources is allowed. When they are managed by the States, they are called State Forests, and when they are managed by municipalities, they are called Municipal Forests.
2. Allocation to local/traditional communities. In this case, the area is intended for traditional communities to live or use natural resources by the creation of a) extractive and sustainable development reserves (conservation units), and b) settlement projects, sustainable development projects or agricultural/extractive projects under the guidelines of the National Program of Land Reform. Those initiatives are important because most traditional populations do not own the lands that they occupy, and risk being expelled

[165] Retrieved from: http://www.mma.gov.br/areas-protegidas/cadastro-nacional-de-ucs. Access 15 November 2021.
[166] Retrieved from: http://www.mma.gov.br/areas-protegidas/cadastro-nacional-de-ucs. Access 15 November 2021.
[167] Instituto Floresta Tropical. As concessões de florestas públicas na Amazônia brasileira: a lei de gestão de florestas públicas e o panorama das concessões florestais na Amazônia brasileira. Retreived from: http://ift.org.br/wp-content/uploads/2014/11/Informativo-T%C3%A9cnico-2.pdf. Access 21 April 2017.

from them. Different types of land grant for rural settlements have been managed since the 1970's by the National Institute of Colonization and Land Reform (INCRA). Early settlement projects were intended to provide access to land to the rural poor. The government began to distribute land to them, especially in the Amazon, using the slogan "a land without men to men without land" [168].

3. Concessions to private Brazilian companies. In this case, a contract is signed by the private company and the governmental agency in charge of the public forest which allows the exploitation of timber and non-timber resources for a certain period.

According to the government agency in charge of public forest allocations, the Brazilian Forest Service (SFB), the area of public forests listed in the National Register of Public Forests in 2020 was approximately 309.4 million hectares (36% of the Brazilian territory), a decrease of 1.59 % (4.97 million hectares) compared to the area registered in 2014. The biggest reduction was public forests that had not been allocated to any use[169]. Allocation means they became indigenous lands (37.8%), federal conservation units (20.3%), State Conservation units (14.1%), Municipal Conservation units (0.4%), Settlements (5.3%), Military areas (1.0%) or other (0.6%)[170]. 79.5% of all the public forests registered have been allocated.

In 2021, 1,050 million hectares of public forests were under concessions to private companies. This area corresponds to 18 forest management units located in 6 National Forests in the states of Rondônia and Pará, both in the Amazon region[171]. Companies hold large areas in their private concessions.

The administrative process lacks accountability. Records of how much private companies paid the federal and state governments are not publicly available. The last record of payments in the SFB website is from 2012. Besides, the records of the amount of wood extracted also cease in 2012.

The Sustainable Forest Management Plan (which must be approved by the SFB) requires an 'absolute reserve' of at least 5% of the total area. This area cannot be exploited for any use. Besides preserving biodiversity, this provides a biophysical baseline for assessing the impact of the forestry.

The Atlantic Forest Protection Act

The Atlantic Forest Protection Act (Law n. 11.428, 2006) regulates the conservation, protection, regeneration, and use of the Atlantic Forest biome, considering the state of preservation of each vegetation fragment: primary vegetation and secondary vegetation in early, middle, and advanced stages of regeneration. The objective of this law is to address the

[168] Le Torneau, François-Michel; BURSZTYN, Marcel. Assentamentos rurais na Amazônia: contradições entre a política agrária e a política ambiental. Retrieved from: http://www.scielo.br/pdf/asoc/v13n1/v13n1a08.pdf. Access 21 April 2017.

[169]Retrieved from: https://www.florestal.gov.br/cadastro-nacional-de-florestas-publicas/127-informacoes-florestais/cadastro-nacional-de-florestas-publicas-cnfp/2050-cadastro-nacional-de-florestas-publicas-atualizacao-2020. Access 15 November 2021.

[170]Retrieved from: https://www.florestal.gov.br/cadastro-nacional-de-florestas-publicas/127-informacoes-florestais/cadastro-nacional-de-florestas-publicas-cnfp/2050-cadastro-nacional-de-florestas-publicas-atualizacao-2020. Access 15 November 2021.

[171]Retrieved from: https://www.florestal.gov.br/florestas-sob-concessao Access 15 November 2021.

alarming degradation of the Atlantic Forest that has been happening since Portuguese colonisation.

The logic of this law is that the more preserved the vegetation is, the greater is the legal restrictions on deforestation. For primary forests that have never been cut or that have recovered completely[172] only limited harvesting authorizations are possible. Articles 14, 19 and 20 identify limited justifications for permits: public utility (for national security and infrastructure works such as for transport, basic sanitation, and energy), research, and preservation practices (control of fire, erosion, and invasive species). An Environmental Impact Study is mandatory prior to the authorisation.

For secondary forests at an advanced stage of regeneration, deforestation may be permitted for these same reasons, and for urban development or mining. This treatment of secondary forests at an advanced stage of regeneration is hard to justify.

For secondary forests at middle stage of regeneration, claims of social interest and agriculture or forestry by small producers or traditional populations can justify approved deforestation.

Deforestation is prohibited in areas: a) where endangered species are present; b) if the vegetation contributes to controlling erosion or to protect water supplies; c) when it is a conservation unit buffer zone; d) when it is a corridor connecting forest fragments; e) when it has exceptional scenic value; f) if the owner does not comply with environmental legislation.

Under article 9 of the Law and Federal Decree n. 6660, 2008, traditional populations and small rural producers are allowed to cut 15m³ of vegetation for domestic use per year (firewood, food etc.) and 20 m³ for construction or improvements every 3 years, without authorization, provided that this use is not for a direct or indirect commercial purpose. This rate of permissible cutting is inconsistent with the slow volumetric growth of the Atlantic Forest, that is around 1.47 and 3.7 m³ per year, so this concession may become a problem if small producers or traditional populations increase.

Deforestation for commercial purposes, even by traditional or small rural producers, requires prior authorisation by the environmental agencies. A serious problem identified in recent surveys is that commercial agroforestry by small producers often require the use of pesticides and can also lead to erosion[173]. Although this law does contribute to the protection of biodiversity, it is not enough to prevent further significant species loss.

Because only a fraction of the Atlantic Forest that existed in 1500 when the Portuguese colonised Brazil remains, it is necessary that deforestation stops, and that regeneration takes place.

[172] A secondary forest presents similar features to primary forests after 50 to 60 years of recovery. SIPS, P.A. Polycyclic multi-purpose management of tropical secondary rain forest in Amazon. International Symposium of management and rehabilitation of degraded land. Santarem, Pará, 1993. Tropical Forestry Program, International Forestry. Washington: Department of Agriculture, Forest Service.

[173] Dubois, Jean. Uma contribuição ao debate: monoculturas – modelo predatório e modelos sustentáveis na Mata Atlântica. Retrieved from: http://www.rebraf.org.br/media/palestraUNIRIO.pdf. Access 24 April 2017.

Evaluation of the system of biodiversity protection

Based on the available evidence is the signatory state meeting its obligation to have a viable system of biodiversity protection?

Summary evaluation scores

Sufficiency of the governance instruments (laws, policies, codes, standards etc.)	6.5 /10
Implementation of the governance instruments (strategies, plans, budgets, programs etc.)	6.5 /10
Behaviours that are consistent with effective implementation (key public, private and NGO actors)	6.5 /10
Achieved biodiversity and social outcomes (biophysical and social data, expert opinions, other evaluations)	6.5 /10

The National System of Conservation units (SNUC) is the main device for the protection of biodiversity *in-situ* in Brazil. It provides tools to govern biodiversity using strategies of full protection and sustainable use management. The major challenge is to fully implement the conservation units created under this Law, to ensure effective biodiversity protection. Some of the difficulties for its implementation are addressed in the next items.

Implementation of the National System of Conservation units

Although the contribution of conservation units to reducing deforestation and greenhouse gas emissions is recognized, an audit on protected areas by the Brazilian General Accounting Office concluded that protected areas are not fulfilling their economic, social, and environmental potential[174]. The Evaluation of Implementation and Management of Protected Areas (Indimapa) indicators and indexes[175] has shown the inefficacy of management policies for conservation units due to the fragility of governance and management for public use, concessions, extractive, research, and monitoring activities[176]. Many factors hamper effectiveness, including the insufficiency of resources.

According to data released by ICMBio, many conservation units do not have Management Plans[177]. High management costs and insufficient staff are identified by the managers of the National System of Conservation units as barriers to plan development. Therefore, there are many protected areas which are unable to achieve their conservation goals, although, as

[174] TCU. Tribunal de Contas da União. Auditoria Coordenada Áreas Protegidas. Available at: <https://contas.tcu.gov.br/pls/apex/f?p=9577:32:143428475131402::NO::P32_ID_NOTICIA,P32_ID_CATEGORIA:95002,542>. Access on: April, 2017.

[175] TCU. Tribunal de Contas da União. Áreas Protegidas, Auditoria Coordenada. Relatório de auditoria coordenada em áreas protegidas da América Latina. Available at: <https://uc.socioambiental.org/sites/uc.socioambiental.org/files/Relatório%20de%20Auditoria%20América%20Latina%20TCU%202015.pdf>. Access on: April, 2017.

[176] NARDES, João Augusto Ribeiro; ALTOUNIAN, Cláudio Sarian; VIEIRA, Luís Afonso Gomes. Governança Pública: o desafio do Brasil. Ed. Fórum. 2 ed. rev. e atual. Belo Horizonte, 2016, p. 345.

[177] The TCU audit team found that only 45 of the 107 federal Conservation units in the Amazon biome have their Management Plan, of which only 5 were fully implemented.

already mentioned, the process for the development of management plans has been simplified by ICMBio in 2017 (Normative Instruction nº 7).[178]

The budget for federal conservation units in 2021 was practically the same as in 2001 (approximately US$ 100 million per year)[179]. However, this funding is increasingly insufficient because conservation units have significantly expanded in number and size in this period. Due to the devaluation of the Real, the budget for 2021 was even lower, US$ 64 million.[180]

The SNUC Law highlights the need for financial sustainability and adequate resources for conservation units to fulfill their objectives[181]. This is a major challenge to the management of conservation units[182] which has, historically, had insufficient financial and human resources[183]. The investment per hectare in conservation units in Brazil is one of the lowest in the world. In 2011, Brazil invested approximately U$ 1.22 per hectare, while other countries invested significantly more: Argentina U$6.42, Costa Rica U$9.78, Mexico U$14.98, Canada U$16.20, Australia U$16.81, South Africa U$20.48, New Zealand U$33.63, and the United States U$47.69. Some of these countries, including Argentina, Costa Rica, and South Africa, have lower GDP than Brazil but invest more in protected areas.[184]

In Brazil, public investment is the main source of funding for protected areas[185] and is often subject to budget cuts,[186] contributing to the problem.[187]

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[178] Nurit, Bensusan. Conservação da Biodiversidade: em áreas protegidas. Ed. FVG: Rio de Janeiro, 2006, pg. 50.

[179] Ministério do Meio Ambiente. Pilares para a Sustentabilidade Financeira do Sistema Nacional de Unidades de Conservação. Secretaria de Biodiversidade e Florestas. Departamento de Áreas Protegidas. Brasília: MMA, 2009, p. 19, figura 5.2.

[180] Retrieved from: https://oeco.org.br/noticias/brasil-destina-a-conservacao-menos-de-1-do-orcamento-dos-eua-para-a-area/. Access 15 November 2021.

[181] Article 5, VI and XI, of Law n. 9,985, of July 19th, 2000.

[182] Geluda, Leonardo; Serrao, Manoel; Muanis, Manuela; Tua, Jon; Oliviera, Daniela; Catapan, Marisete; Tararan, Samuel. Quanto custa o programa Áreas Protegidas da Amazônia? Uma modelagem financeira para as unidades de conservação do Arpa. Rio de Janeiro: Funbio, 2012, p. 10.

[183] Benusan, Nurit. Conservação da biodiversidade em áreas protegidas. Rio de Janeiro: Ed. FGV, 2006, p. 9; Dourojeanni, Marc Jean; Padua, Maria Tereza Jorge. *Biodiversidade a hora decisiva.* 2. ed. Curitiba: Ed. UFPR, 2007, p. 85 e ss.

[184] Medeiros, Rodrigo; Young, Carlos Eduardo F; Pavese, Helena B.; Araujo, Fábio F. S. (Editores). Contribuição das unidades de conservação brasileiras para a economia nacional: sumário executivo. Brasília: UNEP-WCMC, 2011, p. 10.

[185] Emerton, L.; Bishop, J. and Thomas, L. Sustainable financing of protected areas: a global review of challenges and options. Gland, Switzerland and Cambridge, UK: IUCN, 2006, p. 9.

[186] More, Thomas A. Manning, Robert E. The Public Function of Parks and Protected Areas. Working Papers of the Finnish Forest Research Institute 2. Available at: <http://www.metla.fi/julkaisut/workingpapers/2004/mwp002-42.pdf>. Accessed on: April 11th, 2017.

[187] Diefendorf, Sarah; Barbaria, Lauralee, Roberts, Nancy; Fox, Floyd; Bovarnick, Andrew. International Guidebook of Environmental Finance Tools: a sectoral approach. Protected Areas, Sustainable Forest, Sustainable Agriculture and Pro-Poor Energy. Chapter 4: Protected Areas. New York: UNDP, august, 2012, p. 3. Available at:

According to "Contribution of Brazilian conservation units to the national economy" the number of employees managing conservation units in Brazil is among the lowest in the world[188]. For example, while South Africa has one employee for every 1,176 hectares of protected area, Brazil has one employee for every 18,600 hectares. Non-government sources, including international projects, business donations and license payments for environmental impacts have not been sufficient to fill the funding gap.

There are other significant challenges. One is the lack of scientific knowledge about biodiversity to support decision-making. However, it is not possible to defer decisions until sufficient data is available.[189]

The Brazilian National System of Conservation Units also requires that management be advised by Deliberative and Consulting Committees, but few conservation units have functional committees although most have established one.

Land title uncertainty complicates property acquisition, when the public authority does not have reliable information about land rights[190]. Although the National Management System was intended to provide a coordinated decentralized framework, with harmonized rules and practices[191] the Brazilian General Accounting Office (TCU)[192] has pointed out that limited coordination between the Federal, the States and the municipalities governments is hampering implementation of protected areas [193] and ecological corridors[194].

In conclusion, a significant part of Brazilian conservation units does not have a high level of effectiveness. ICMBio and WWF have used 2 different methods – RAPPAM (Rapid Assessment and Priorization of Protected Area Management) and SAMGe (Management Analysis and Monitoring System) - to measure the effectiveness of federal conservation units, in 2015 and in 2016[195]. In both cases, the result was practically the same: almost 50% of all federal

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<http://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/Environmental%20Finance/chapter%204.pdf>. Accessed on: March 30th, 2017.

[188] Medeiros, Rodrigo; Young, Carlos Eduardo F; Pavese, Helena B.; Araujo, Fábio F. S. (Editores). Contribuição das unidades de conservação brasileiras para a economia nacional*:* sumário executivo. Brasília: UNEP-WCMC, 2011, p. 10 e 11.

[189] Nurit, Bensusan. Conservação da Biodiversidade: em áreas protegidas. Ed. FVG: Rio de Janeiro, 2006, pg. 54.

[190] Collares, Izabela Zanotelli. Da criação de uma unidade de conservação, sua eventual violação ao direito à propriedade e possível instrumento de defesa. In Forum de Direito Urbano e Ambiental. Ano 15-n.86, março/abril- 2016, pg. 88.

[191] Nardes, João Augusto Ribeiro; ALTOUNIAN, Cláudio Sarian; VIEIRA, Luís Afonso Gomes. Governança Pública: o desafio do Brasil. Ed. Fórum. 2 ed. rev. e atual. Belo Horizonte, 2016, p. 352.

[192] TCU. Tribunal de Contas da União. Auditoria Coordenada Áreas Protegidas. Disponível em: <https://contas.tcu.gov.br/pls/apex/f?p=9577:32:143428475131402::NO::P32_ID_NOTICIA,P32_ID_CATEGORIA:95002,542>. Acesso em: abr. 2017.

[193] The integrated management of close, overlapping or juxtaposed Conservation units

[194] Territorial management that seeks the connection between PAs, the dispersion of species and the restoration of degraded habitats.

[195] WWF. https://www.wwf.org.br/natureza_brasileira/areas_prioritarias/mata_atlantica/mata_atlantica_acoes_resultados/unidades_de_conservacao/rappam2/; ICMBio. http://samge.icmbio.gov.br/. Access 28 January 2022.

conservation units have between low and moderate effectiveness. The other half, rate between regular and high. The results demonstrate that biodiversity conservation is not being fully achieved even inside Brazilian conservation units.

Evaluation of precautionary principle implementation

Based on the available evidence has the precautionary principle been adequately incorporated in the resource governance system?

Summary evaluation scores

How well do laws, policies, codes, standards etc. incorporate the precautionary principle?	8.5 /10
Is the precautionary principle implemented fully in governance strategies, plans, budgets, programs etc?	7.5 /10
Are the behaviours of key public, private and NGO actors consistent with effective implementation of the principle?	6 /10
Do biophysical and social data, expert opinions, or other outcome evidence indicate the effective use of the precautionary principle?	6 /10

The existence of legal principles and norms to protect the environment helped environmental law to be recognized as a legal discipline in Brazil.-The Precautionary Principle is not defined in Brazilian legislation but has been interpreted to consider relative scientific uncertainty, and assessment of the risk of damage. Later, this interpretation was reviewed to also include in *dubio pro natura*, which means that in the face of doubts about possible harm, one must act in favour of environmental protection, and reverses the burden of proof, which means that the entrepreneur/citizen proposing the development must provide the scientific evidence to apply the principle, inverting the normal burden of proof.[196]

The Brazilian Federal Constitution aims for an ecologically balanced environment, guided by precautionary policies, and preservationist arrangements to implement the fundamental right stated in Article 225.

The management of Federal conservation units applies the precautionary principle through restrictions on activities that might cause environmental degradation. Law n. 9,985/2000 incorporates the Precautionary Principle through: a) Provisional Administrative Limitation Areas (ALAP) for the institution of CUs, b) Management Plans, c) Environmental Licensing and d) requirements for authorization of the cultivation of Genetically Modified Organisms (GMOs). These topics will be discussed next.

Temporary Administrative Limitations

For the creation of a conservation unit, SNUC Law requires technical studies and public consultation around the area where the conservation unit would be implemented. While this work is underway, Public Authorities can establish temporary administrative limits to control activities that may cause environmental degradation. These temporary limitations are precautionary instruments, used when the environmental authority detects a risk of damage to biodiversity, and requires protection pending formalization of the protected area.

[196] Leme Machado, Paulo Affonso. *Direito ambiental brasileiro*. 26ª ed. São Paulo: Malheiros, 2018.

Management Plans

According to the SNUC Law all categories of conservation units in Brazil must have management plans[197]. These plans are the main management tool of the protected area[198]. The management plans should cover the area of the conservation unit, its buffer zone, and potential ecological corridors, including measures to promote the conservation unit integration into the economic and social life of neighboring communities.

The management plan should embed a precautionary approach whenever there is doubt or discrepancy of opinion or scientific understanding on its content and activities, construction works, and zoning projects carried out in a conservation unit.[199] Besides, while the management plan is not completed, activities within any Full Protection Units should be limited to maintaining the integrity of natural resources and ensuring that the needs of traditional populations are met.[200] These rules are based in the precautionary principle.

In 2021, as we have already mentioned, there were 336 federal conservation units spread across the Brazilian territory. From those, 211 have management plans, but only 50 of these plans have been updated.[201] The lack or insufficiency of the management plans to facilitate enforcement of the precautionary principle limits the effectiveness to environmental protection in conservation units.

Authorization for Environmental Licenses

Environmental Licensing of potentially harmful actions also applies the precautionary principle. SNUC Law requires Environmental Impact Assessments (EIA)[202] and previous authorization[203] for any activity that may impact a conservation unit or its buffer zone. The responsible body may require an environmental impact study and specific studies when necessary.[204] Environmental impact studies must be considered towards the objectives of the

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[197] The Management Plan is mandatory for all Conservation units and must be elaborated up to 5 years after the creation of the area, according to Article 27, §3 of Law n. 9,985/2000.

[198] Milaré, Edis. Direito do ambiente: doutrina, jurisprudência, glossário. 4. ed. rev., atual. e ampl. São Paulo: Revista dos Tribunais, 2005, p 390.

[199] Machado, Paulo Afonso Leme. Direito ambiental brasileiro. 9. ed. São Paulo: Malheiros, 2001, p. 769.

[200] Article 28, Sole Paragraph of Law n. 9,985/2000.

[201] ICMBio. Available at: http://qv.icmbio.gov.br/QvAJAXZfc/opendoc2.htm?document=painel_corporativo_6476.qvw&host=Local&anonymous=true. Accessed on 15 February 2021.

[202] Leuzinger, Márcia; Lima, Gabriela; Fernandes, Maria Heloisa; Godoy, Larissa; Franco, Márcia; Campanha, Paulo. op. cit. p. 22.

[203] A different situation occurs for the environmental licensing processes for projects not subject to EIA. The environmental licensing body must inform the organization responsible for the management of the CU in three situations: 1) when the enterprise can have a direct impact on the CU; 2) when it is located in its buffer zone; or 3) when it is located within the limit of up to two thousand meters of the unit that does not have the buffer zone. Idem. p. 24.

[204] Article 2 of CONAMA Resolution n. 428, of December 17th, 2010.

conservation unit and its management plan. Authorization may be refused on technical grounds.[205]

Genetically Modified Organisms

Law n. 11,460 of March 21, 2007[206] addresses research and cultivation of Genetically Modified Organisms (GMO) within Environmental Protection Areas (IUCN Category V) and in buffer zones of other conservation units. Under a modification of the SNUC Law,[207] the authorization for cultivating GMOs in conservation units requires technical information provided by the National Technical Biosafety Commission (CTNBio), although this committee is not committed to the National Environmental System.[208] Thus, it is not the managers of the conservation units that assess and evaluate possible risks of cultivating GMO at buffer zones or at Environmental Protection Areas (IUCN Category V). CTNBio often authorize the planting of GMOs prior to the establishment of a formal buffer zone[209] (included in management plans),[210] disregarding conservation units safeguards Therefore, the precautionary principle was overlooked by this law when it was altered.

Challenges to the Precautionary Principle on SNUC Law

Legal effectiveness requires compliance with norms.[211] Empirically assessing effectiveness requires indicators that reflect the issues being managed.[212] For administrative controls, management plans, and permits for GMO to achieve a precautionary regime they must be properly implemented.

The challenges are great. Legal provisions like Temporary Administrative Constraints demonstrate an attempt to apply the precautionary principle within environmental law, concerning protected areas.

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[205] Leuzinger, Márcia; Lima, Gabriela; Fernandes, Maria Heloisa; Godoy, Larissa; Franco, Márcia; Campanha, Paulo. op. cit. p. 23.

[206] Law n. 11,460, of March 21, 2007.

[207] Research and cultivation of GMOs on indigenous lands and within most categories of management of protected areas are prohibited.

[208] The CTNBio decisions are based on: the recording of occurrence of direct ancestors and wild relatives; the reproduction, dispersion and survival characteristics of the genetically modified organism; the reproductive isolation of the genetically modified organism from its direct ancestors and wild relatives; and risk situations of the genetically modified organism to biodiversity. Idem. p.25.

[209] Decree n. 5,950/07 establishes a 500-meter range for genetically modified soybean planting, event GTS40-3-2, which confers resistance to glyphosate; 800 meters for genetically modified cotton, event 531, which confers resistance to insects, and 5,000 meters for the same cotton, when there is record of occurrence of direct ancestor or wild relatives within the conservation unit.

[210] Leuzinger, Márcia; Lima, Gabriela; Fernandes, Maria Heloisa; Godoy, Larissa; Franco, Márcia; Campanha, Paulo. op. cit. p. 25-26.

[211] Barroso, Luís Roberto. Curso de Direito Constitucional Contemporâneo. 5ª ed. São Paulo: Saraiva, 2015. p. 255.

[212] Leuzinger, Márcia; Lima, Gabriela; Fernandes, Maria Heloisa; Godoy, Larissa; Franco, Márcia; Campanha, Paulo. op. cit. p. 30.

Although temporary administrative constraints are not being used, probably due to political considerations, their use can make the process of creation a conservation unit easier. This process is often considered an obstacle to economic development,[213] even though conservation units could provide socio-economic benefits for a region while protecting biodiversity.[214]

Many conservation units still lack management plans, as already pointed out. Without management plans, measures for administration of these areas may not be applied or may lack technical support, which may undermine conservation. There are no data available on how many requests for authorization of potential impacts upon conservation units have been granted or denied. Processes of refusal of authorization can be sensitive due to economic and political pressures.[215] This situation reveals a significant need to adopt the precautionary principle in practice.

The consent requirements for the cultivation of GMOs in or near Conservation units have been weakened from the point of view of the precautionary principle by Law n. 11,460/2007, as discussed above.

The effective adoption of the precautionary principle could be improved by greater use of provisional administrative limitations, especially in areas where there are land use conflicts, previous identification of potential damage to a Conservation Unit or its surroundings from a possible harmful enterprise, monitoring licensed activities, and preparation and updating of management plans.[216]

Mining in conservation units

Brazil is rich in minerals, with a large territory and varied geology. Brazilian mining production has grown and diversified, rising from 10 billion dollars in 1994 to its highest level in 2011, of 53 billion dollars.

The environmental impacts are worrisome, especially in conservation units. The SNUC Law anticipates three legal situations concerning mining in Federal conservation units for Sustainable Use: 1) where mining is permissible; 2) where permission is uncertain and 3) where mining is prohibited.

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[213] What makes the creation of Conservation units particularly difficult is the opposition of people, groups or sectors (and their policy makers) who occupy, exploit, or plan to exploit the known or potential natural resources of the proposed areas. Their interests are impaired by the creation of units. Such stakeholders include farmers, loggers, miners, energy companies (oil, hydroelectric), real estate, etc. MERCADANTE, Mauricio. Depoimento: avanços e retrocessos pós SNUC. Available at:< https://uc.socioambiental.org/o-snuc/depoimento-avan%C3%A7os-e-retrocessos-p%C3%B3s-snuc>. Access 16 April 2017.

[214] Studies have increasingly shown that Conservation units contribute to the country's economic development and poverty reduction. MMA. The National System of Nature Conservation units. Available at: <http://www.mma.gov.br/estruturas/240/_publicacao/240_publicacao05072011052536.pdf>. Access 16April 2017.

[215] Pinto, Carlos Eduardo Ferreira. Descaso com os riscos. Available at: <http://www.revistaecologico.com.br/materia.php?id=98&secao=1711&mat=1957>. Access 16 April 2017.

[216] Ibidem. p. 30.

An Environmental Protection Area (IUCN Category V) has the least restriction on resource use (including mineral exploitation) provided that care for the conservation of nature is used. Areas of Relevant Ecological Interest (IUCN Category IV) are smaller versions of the APAs and theoretically can host economic development, subject to environmental protections and a management plan.

Annex VIII of Law n. 6,938/81 considers mining's potential for pollution and assumes that mining has a significant environmental impact potential. An Environmental Impact Study/Environmental Impact Report is required for mining activities, which may justify the rejection of an otherwise lawful activity. The SNUC Law provided for Fauna Reserves (REFAU), where mining is not excluded. Until 2021 no REFAUs had been created.

Regarding Extractive Reserves (IUCN Category VI), despite this activity being classified as 'sustainable use,' Law n. 9,985/2000 prohibited the "exploitation of mineral resources," in Article 18, §6. National Forests (IUCN Category VI) are not open to mining as only the use of forest resources is allowed.

Rules for Natural Heritage Private Reserves (IUCN Category IV) exclude mineral extraction. Leuzinger (2009) clarifies that this management category of conservation unit should have been listed as Full Protection, as exploitative use of natural resources is not permitted due to the presidential veto to Article 21, §2º, III of the SNUC Law that allowed the exploitation of non-timber resources.

Article 20, §1, of the SNUC Law deals with the Sustainable Development Reserves (IUCN Category VI). The objectives are specific to traditional populations, and do not envisage mineral extraction.

Though it is possible to obtain legal permission to exploit natural resources in the Sustainable Use category of Conservation Units, mining is not allowed. However, the Digital Map on the website of ISA, with data from the Mining Register from the National Department of Mineral Production, shows that non-compliant mining occurs in 29 Federal Conservation Units of Sustainable Use, including 7 FLONAs (Pau-Rosa/AM, Carajás/PA, Sacará-Taquera/PA, Tapirapé-Aquiri/PA, Amaná/PA, Ipanema/SP, Jamari/RO) and 2 RESEXs (Lago do Cuniã/RO, Acaú-Goiana/PB/PE).

In the case of National Forests, the issue is complex. One interpretation of the SNUC Law suggests this activity is prohibited, but the Ministry of the Environment interprets that it may be allowed. In Opinion n. 212/2004, the Attorney General of the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA) states that mineral extraction in these areas lacks legal support but contemplates continuation of mining that had started before a unit was created. Opinion n. 21/2014 by the Federal Attorney General's Office also emphasizes the unlawfulness of mining in FLONAs under the SNUC Law but suggests that previous authorizations can be maintained. The National Department of Mineral Production (DNPM) issued Opinion n. 525/2010/PROGE indicating that public administration should contemplate the 'phasing out ' of mining authorisations, but this is not always the case. Of the 17 National Forests hosting mining before the creation of the SNUC Law, mining continued in 6: Carajás/PA, Saracá-Taquera/PA, Tapirapé-Aquiri/PA, Amaná/PA, Jamari/RO, Ipanema/SP.

For Environmental Protection Areas (IUCN Category V), governance issues are also unclear. Whether mining permission is possible will depend on the originating documents and the management plans. Some of them, however, do not have management plans authorizing mining, for example: APA of the Chapada do Araripe, APA of the Islands and Várzeas of the

Paraná River, APA Serra da Ibiapaba and others. In this case, permits for mining violate Article n. 28 of the SNUC Act.

The Illegality of Mining in Federal Conservation units of Full Protection

SNUC Law prohibits the extraction of natural resources (renewable or not) in Full Protection conservation units.

In an Ecological Station (IUCN Category Ia), only conservation activities and scientific research are permitted. Public visitation is permitted only for educational purposes and even traditional populations should be removed. In Biological Reserves (IUCN Category Ia), human interference or environmental modifications are prohibited and, as well as in Ecological Stations, public visitation is permitted only for educational purposes and traditional populations must also be removed. Therefore, mining is not allowed. In National Parks (IUCN Category II), landfill and excavation work, including mining, as well as dams, hydroelectric, flood control, alteration of riverbeds and other activities that may modify natural conditions, are prohibited. In Natural Monuments (IUCN Category III), which aim to "preserve rare natural sites, unique or of great scenic beauty," extraction activities are also prohibited. Finally, in small areas characterized as Wildlife Refuges (IUCN Category III), use and leisure activities are limited, to protect the socio-environmental functions. Mining is also not allowed.

Given that there are broad prohibitions on exploitation, authorization for mining exploration in these places is arguably unlawful, because extraction cannot legally take place. Nevertheless, Act n. 6 allows the possibility of mining in Full Protection conservation units provided the activities are licensed and authorized. This applies to: Alto Mauês, Cuniã and Juami-Japurá Ecological Stations (located in the State of Amazonas); the Rio San Francisco Natural Monument, the Boa Nova Wildlife Reserve, and the Alto Cariri National Park.

A review of the Mine Register made available by the DNPM showed illegalities. 49 Federal Conservation units had authorization for mining exploration issued after the SNUC Law. These were in 6 ESECs (Alto Maués/AM, Cuniã/AM, Jari/AP, Pirapitinga/MG, Terra do Meio/PA, Mata Preta/PR); 1 MONA (Pontões Capixabas/ES); (AM/RO/MT), Mapinguari/AM/RO, Tumucumaque Mountains/AP/AM/PA, Anavilhanas/AM/PA, Chapada Diamantina/ BA, Boa Nova/BA, Alto Cariri/BA, Caparaó/ES/MG, Chapada dos Veadeiros/GO, Serra da Canastra/MG, Serra do Gandarela/MG/MS/PR, Serra do Pardo/PA, Jamanxim/PA, Rio Novo/PA, Saint-Hilaire/Lange/PR, Campos Gerais/PR, Guariana/PR, Serra da Bocaina/RJ/SP, Tijuca/RJ, Furna Feia/RN, Serra da Cutia/RO, Serra do Itajaí/SC, São Joaquim/SC, Serra de Itabaina/SE); 10 REBIOs (Uatumã/AM, Manicoré/AM, Trains/ES, Mata Escura/MG, Rio Trombetas/PA, Tapirapé/PA, Bom Jesus/PR, Tinguá/RJ, União/RJ, Santa Isabel/SE); 2 REVISs (Santa Cruz/ES, Campos de Palma/PR).

From the Mining Register and the Interactive Map of Conservation Units, on the website of ISA, it was verified that prior to March 2017 there were: 19 Federal Full Protection Conservation Units hosting mineral extraction, specifically: 16 PARNAs (Anavilhanas/AM, Jaú/AM, Mapinguari/AM/RO, Chapada Diamantina/BA, Chapada dos Veadeiros/GO, Serra da Canastra/MG, Serra do Cipó/Serra do Gandarela/MG, Sempre Vivas/MG, Itatiaia/MG/RJ, Ilha Grande/MS/PR, Campos Gerais/PR, Guaricana/PR, Serra da Bocaina/RJ, Aparados da Serra/RS/SC, Serra dos Órgãos/RJ); 2 REBIOs (Contagem/DF and Tinguá/RJ); and 1 MONA (Pontões Capixabas/ES).

In Full Protection Units, mining focusses on non-metallic resources used for civil construction, including sand, granite, gravel, and clay. However, there are instances of extraction of high value minerals such as gold and gemstones.

Where we have identified mining, it is typically based on newly permitted exploration and extraction, or the failure to interrupt activities in progress. In view of the illegalities that have been identified, the DNPM has been questioned on issues including exploration and mining authorization in prohibited areas and the lack of supervision.
The lack of supervision contributed to the mining disaster (known as the Mariana Disaster) near the town called Mariana, in the State of Minas Gerais, involving Samarco Mineração S.A. The tragedy highlighted failings in the accountability of Brazilian public agencies. The event occurred on November 5th, 2015, with the failure of the Fundão mine tailings dam. Approximately 35 million cubic meters of ore and mud tailings escaped, causing destruction within the municipality of Bento Rodrigues, and some rivers as Gualaxo do Norte, Carmo, Doce and its tributaries.
In addition to failing to protect biodiversity, these governance problems also indicate the failure of prior consultation rules.

Citizen participation in managing conservation unit mining activity

In Brazil, citizen participation has constitutional status, and must be “carried out as far as possible in relation to the factual and juridical possibilities”. This reflects the primacy of the Democratic Rule of Law, inscribed in Article 1 of the Brazilian Federal Constitution of 1988. The specific instrument for environmental issues is the caput of Article 225 of the 1988 Brazilian Constitution. The right to popular participation is present in most environmental laws, including Federal Law n. 9,985/00, which established the National System of Nature Conservation units.
The primacy of participation needs to be linked to rights to information. Principle 10 of the Rio Declaration on Environment and Development stresses the need to ensure the participation of stakeholders who should have access to the information available to government authorities.
Under the SNUC Law, citizen participation generally takes place through public consultations for the creation of new Conservation units, for category modification and expansion of existing units, and through management councils of existing CUs and their buffer zones and affected areas. Management councils facilitate the creation of local regulations for each conservation unit, the planning process, and access to knowledge regarding social and environmental issues. These councils are mandatory for all conservation units, and they may be deliberative or advisory.
SNUC Law requires that Extractive Reserves (IUCN Category VI) and Sustainable Development Reserves (IUCN Category VI) have Deliberative Councils. The function of these bodies includes to approve management plans and ratify partnership agreements with civil society organizations (Article 20, subsection IV, of Federal Decree n. 4,340/02). Advisory Councils are required for Full Protection Units, National Forests, and the Mosaics of Conservation units, and have an advisory role.
SNUC Law does not require Councils for Areas of Relevant Ecological Interest (IUCN Category V), Wildlife Reserves and Natural Heritage Private Reserves (IUCN Category IV). For Environmental Protection Areas (IUCN Category V) a council is required, but the SNUC Law does not specify what type of council must be created. This does not make management councils irrelevant, as popular participation is legally central to the System of Conservation Units of Nature.

In Brazil, as already mentioned, only 154 conservation units for Sustainable Use out of 846, have a management council. The situation is slightly better with Full Protection Units, as management councils exist for 127 of the 150 Full Protection conservation units.
Significant delay between the creation of a conservation unit, implementation of its management plan and activation of a management council (or the lack of any of these) can compromise governance and facilitate illegal activities.

Table 1: Sustainable Use Conservation units with mining activities

Unit with mining activities	Year of creation	Year of creation of Management Plan	Year of creation of Management Council
APA da Baleia Franca	2000	-	2006
APA de Cairuçu	1983	2004	2001
APA de Cananéia-Iguapé-Peruíbe	1985	2016	2002
APA do Rio Descoberto	1983	2014	2014
APA da Bacia do Rio São Bartolomeu	1983	-	-
APA da Bacia do Rio São João	2002	2008	2009
APA Carste de Lagoa Santa	1990	1998	2010
APA Cavernas do Peruaçu	1989	2005	2004
APA Chapada do Araripe	1997	-	2008
APA Delta do Rio Parnaíba	1996	2009	2007
APA das Ilhas e Várzeas do Rio Paraná	1997	-	2009
APA Morro da Pedreira	1990	2014	2004
APA Petrópolis	1992	2009	2001
APA do Planalto Central	2002	2015	2002
APA Serra da Ibiapaba	1996	-	2012
APA da Serra da Mantiqueira	1985	-	2004
APA Serra da Meruoca	2008	-	-
APA do Tapajós	2006	-	2011
APA Meandros do Rio Araguaia	1998	-	2007
ARIE Serra da Abelha	1996	2016	2015
RESEX Lago do Cuniã	1999	-	2006
RESEX Acaú-Goiana	2007	-	2012
FLONA Pau-Rosa	2001	2009	2012
FLONA Carajás	1998	2003	2012
FLONA Sacará-Taquera	1989	2001	2002
FLONA Tapirapé-Aquiri	1989	2006	2005
FLONA Amanã	2006	2010	2009
FLONA de Ipanema	1992	2002	2001
FLONA Jamari	1984	2005	2003

Of the 29 Sustainable Use Units with mining activities, only 2 did not have management councils in 2017: the Environmental Protection Area of the São Bartolomeu River Basin and the Meruoca Environmental Protection Area.

However, 11 Units did not have a management plan: Environmental Protection Areas of the Baleia Franca, the São Bartolomeu River Basin, the Chapada do Araripe and Ilhas de Várzeas of the Paraná River, the Serra da Ibiapaba, the Serra da Mantiqueira, the Serra da Meruoca, the Tapajós, the Meandros do Araguaia River, Extractive Reserve Lago do Cuniã and Extractive Reserve Acaú-Goiana. The lack of these plans makes it difficult to guide local management.

Table 2: Full Protection Conservation units with mining activities

Unit with mining activities	Year of creation	Year of creation of Management Plan	Year of creation of Management Council
PARNA de Anavilhanas	1981	1999	2006
PARNA do Jaú	1980	1998	2008
PARNA Mapinguari	2008	-	2013
PARNA da Chapada Diamantina	1985	2007	2005
PARNA da Chapada dos Veadeiros	1961	2009	2001
PARNA da Serra da Canastra	1972	2005	2004
PARNA da Serra do Cipó	1987	2009	2004
PARNA da Serra da Gandarela	2014	-	-
PARNA das Sempre-Vivas	2002	-	2009
PARNA de Itatiaia	1937	1982	2002
PARNA da Ilha Grande	1997	2008	2015
PARNA dos Campos Gerais	2006	-	-
PARNA Guaricana	2014	-	-
PARNA da Serra da Bocaina	1971	2002	2010
PARNA de Aparados da Serra	1959	2003	2003
PARNA da Serra dos Órgãos	1939	2008	2002
REBIO de Contagem	2002	-	2014
REBIO do Tinguá	1989	2006	2002
MONA dos Pontões Capixabas	2002	-	-

Of 19 Full Protection conservation units with mining, 4 lacked a Management Council in 2017: Serra do Gandarela National Park, Campos Gerais National Park, Guaricana National Park and Pontões Capixabas Natural Monument.

7 of the 19 Units did not have a management plan in 2017: Mapinguari National Park, Serra do Gandarela National Park, Sempre-Vivas National Park, Campos Gerais National Park, Guaricana National Park, Contagem Biological Reserve, and the Pontões Capixabas Natural Monument.

The Serra do Gandarela National Park was an example of a conservation unit without a management plan or a management council in 2017. Large areas of this unit were used for mining of bauxite, dolomite, iron, Itabirite, manganese, aluminium, copper, iron, and gold. It is estimated that mining will occupy 12,247.5 ha of a total of 31,284 ha.

Limited participation of people in the management of protected areas, partly due to the lack of management councils, hinders good governance of conservation units (with or without mining). Brazil did take an important step towards stimulating awareness and popular

participation by editing Law n. 12,527 (the Law on Access to Information) on November 18th, 2018. This Law provides deadlines, resources, and forms to obtain information from all levels of government - Federal, States, Municipalities, and the Federal District - including public institutions that administer the Executive Branch, the Legislative Branch, the Accounts Courts, the Judiciary and Public Prosecutor's Office, which reflects Principle 10 of the Rio Declaration on Environment and Development.

Mining in Conservation units under the Mining Code

The Brazilian Mining Code (Decree-Law n. 227/1967) guidelines conflict with the sustainable development requirements of the Federal Constitution (Article 225), and with National Environmental Policy and International Environmental Agreements to which Brazil is a signatory.

Of the many bills presented to the National Congress, Bill n. 37/2011, Bill n. 5,306/2013 and Bill n. 5,807/2013 are the most relevant. Bill n. 37/2011 deals with minerals (excluding nuclear ores, oil, and natural gas) under a new Mining Code. The text refers to the duty to restore and protect the environment or to repair environmental impact but does not specifically deal with protected areas.

Bill n. 5,306/2013 considers mining activity, addressing the National Council of the Mineral Politics and other measures. The effect is to repeal Decree-Law n. 227/1967, Law n. 6,567/1978 and Article 5 of Law n. 8,970/1999, consolidating relevant norms on mining.

In Bill n. 5,807/2013 environmental questions are considered in subsection III of Article 2; in subsection IX of Article 3; in subsection III of Article 5; in subsection I of Article 28; in subsection III of §2 and §3 of Article 30; in Article 32 and in Article 50. Nature Conservation units or protected areas was not addressed. The bill modifies rules for Financial Compensation for the Exploration of Mineral Resources (CFEM), creates the National Council of Mineral Policy (CNPM) and transforms the National Department of Mineral Production (DNPM) into the National Mining Agency (ANM).

In 2014, the Special Committee to deliver an Opinion on Bill n. 37/2011 and its appendices (Bills n. 463/2011, 5,138/2013, 4,679/2012, 5,306/2013, 5,807/2013 and 3,430/2012) presented an amended version of that bill for a comprehensive restructure of the Mining Code. §1 and §3 of Article 109 of this bill are environmentally regressive, allowing environmental restrictions to be overridden if they make it impossible to take advantage of significant mineral resources. Even the creation of conservation units may be vetoed by the National Mining Agency (ANM). Given the importance of integration between mining and environmental management, this subordination of the environment is counterproductive.

In 2015, legislation was introduced to reformulate the Mining Code, placing the economic interest above all others. At the time of writing this issue remained on the legislative agenda and had not yet been voted on.

The involvement of parliamentarians who were involved in the Special Commission of the New Mining Code who were allegedly receiving benefits from miners for electoral campaigns raises concerns. The study *Who's Who in the discussions of the new Mining Code* pointed out that of the 27 federal deputies forming the Special Commission, only 7 did not receive donations from companies with relevant interests in 2014. Similarly in relation to the 25 substitute deputies, allegedly 11 received donations from companies linked to mining.

The table below provides scores on biodiversity conservation related to exploitation of protected areas (particularly resource extraction), to provide a contrast to the overall score on biodiversity protection given above.

Evidence based evaluation of protected area protection	Rating out of 10
Sufficiency of governance instruments (laws, policies, codes, standards etc.) in implementing interests prioritized under the CBD.	7
Effective implementation of governance instruments (strategies, plans, budgets, programs etc.) that designed to implement principles prioritized by the CBD.	6.5
Behaviours consistent with effective recognition of prioritized interests (by key public, private and NGO actors)	7
Do the outcomes (social, economic, cultural, and ecological) reflect effective implementation of the CBD principles.	6

Discussion: Overall evaluation

The Brazilian Fifth National Report to the CBD discusses 46 elements that comprise the 20 Aichi Targets. It reported at the time it was issued that 37 were progressing towards the target but at insufficient rate to meet it by 2020; 3 elements had not shown significant progress; 5 elements were on track to meet the target by its deadline; and only one element was expected to meet the target before 2020. Only 13% of the targets were expected to be met by the deadline. This evidence suggests that the management of biodiversity in Brazil is not consistent with fully implementing the principles and standards envisaged by the Stockholm Declaration, the CBD, and the Rio Declaration.

The Sixth Report to the CBD was not released by May 2022. The message shown at the Environmental Ministry website when we tried to download the document is that it will be released soon, but this message has been shown for many months.[217].

The 1988 Brazilian Constitution, Article 225 states that a balanced environment is a fundamental human right. Although the Constitution created obligations on the State to implement environmental education, for cooperation with civil society, prevention of environmental damages and economic and social development, implementation is not sufficiently effective.

Citizen participation for instance, one of the most important principles of the 1992 Rio Declaration, is not fully implemented, as there are still many conservation Units that have not yet created their councils. Management councils are composed of representatives of civil society and the State, and all conservation units should have one. Decree 4340/2002 provides that civil society should be represented by scientists, NGOs, local populations, traditional peoples, the local private sector etc.

The precautionary principle is also not being fully observed, also indicated by the lack of management plans for many federal conservation units.[218]

[217] MMA. Available at: https://antigo.mma.gov.br/biodiversidade/conven%C3%A7%C3%A3o-da-diversidade-biol%C3%B3gica/relatorios-brasileiros.html. Access 11 May 2022.

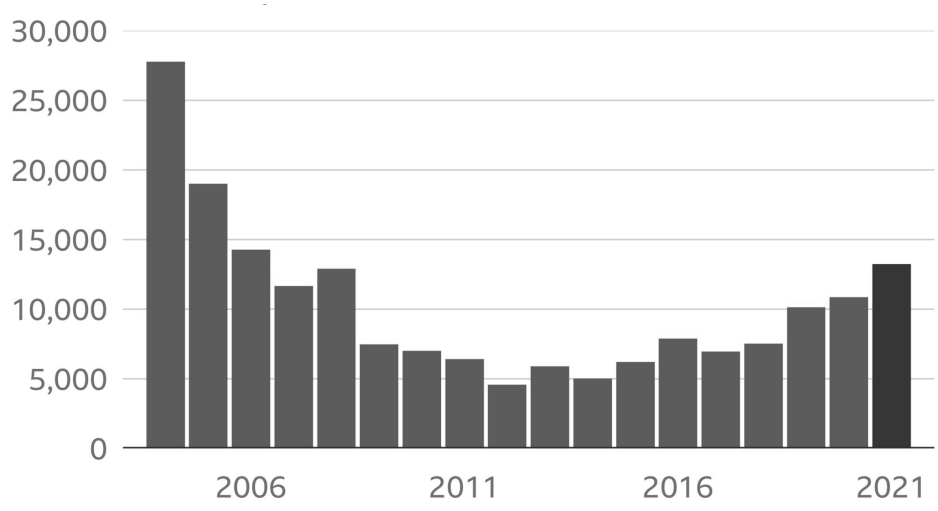
[218] ICMBIO. Conservation units. Advices. Available at: <http://qv.icmbio.gov.br/QvAJAXZfc/opendoc2.htm?document=painel_corporativo_6476.qvw&host=Local&anonymous=true>. Access 20 Jun 2018.

However, NGOs do become partners of the public authorities, through incentives for environmental services, and compensation for conservation measures, and incentives for recovery, conservation, and sustainable use of native vegetation. Civic participation is a challenge for local public management mainly due to the need to democratize decision-making processes for public policies and to ensure their effectiveness.
Brazil has modern and sufficient statutes to protect biodiversity, but their effectiveness is low. This is largely due to political and implementation issues. An illustration of this is that political pressure from agricultural industrialists led to the revocation of the 1965 Forest Code, which was replaced by a much less protective law (2012 Forest Code).

Discussion: national strategies and reports

The Brazilian National Reports on implementation of the CBD are reliable[219]. The Reports are produced by the Brazilian Ministry of the Environment, which has a capable staff, composed by technicians, and it does not attempt to conceal that most of the Aichi Targets will not be achieved on time. The National Reports must be approved by Conabio[220] before the Ministry sends it to the CBD Secretariat.
As at the date of writing evidence, a belief that the targets that the Report says would be achieved on time were probably sound (though subject to political contingencies). For example, as reported, Amazon Forest deforestation had been slowed and many conservation units in the region formed. Until 2008 the rate of deforestation in the Amazon Forest was more than 1 million hectares per year, reaching almost 3 million hectares in 1995. Since 2009 this rate has been reduced to an average of 630 hectares according to data from the PRODES Project[221]. In the same period, 28 new conservation units were created in the Amazon Region, protecting a total of 6 million hectares.
The total area of deforested Amazon Forest in 2020 was 10,551 Km².[222] Unfortunately, from 2012 onwards, the rate of deforestation in the Amazon rose again, having accelerated dramatically in 2019 and 2020, as shown by the data provided by the National Institute for Space Research (INPE), as shown at the following graphic:
Deforestation rate in km² for the Brazilian Legal Amazon

[219] Available at Convention on Biological Diversity repository of national reports at https://www.cbd.int/reports/search/?country=br
[220] National Biodiversity Commission
[221] PRODES Project is a governmental project to monitor deforestation in the Amazon Forest. Retrieved from: www.obt.inpe.br/prodes/prodes_2011.htm; www.obt.inpe.br/obt/assuntos/programa/amazonia/prodes. Access 20 June 2018
[222] Retrieved from: http://www.inpe.br/noticias/noticia.php?Cod_Noticia=5811. Access 11 May 2022.



Annual figures August to July

Source: PRODES, Inpe BBC

Retrieved from https://www.bbc.com/news/world-latin-america-59341770. Accessed 13 July 2022.

One of the main causes of reduced deforestation in the 2000s was the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm). The Plan was created in 2004 and aimed to continuously reduce deforestation and create the conditions for the transition to a sustainable development model in the Legal Amazon. Although it was a great success for some years, political pressures from the agriculture and timber sector led to its shelving and deforestation has grown again.

Discussion: implementation and effectiveness issues

Deforestation control in the Amazon Forest, and the creation of conservation units used to be the most consistent and effective biodiversity policies in Brazil.

The maintenance of conservation units as the main strategy to protect biodiversity in Brazil is so important that a government agency was created in 2007 with this purpose. The Chico Mendes Institute for the Conservation of Biodiversity (ICMBio) is a federal agency in charge of the creation and the management of all the federal conservation units in Brazil.

The PRODES Project for monitoring deforestation in the Amazon Forest using satellite technology, which is costly for the Brazilian Government, has been maintained since the 1980's.[223] A similar project to monitor deforestation in other Brazilian biomes, called Projeto de Monitoramento do Desmatamento dos Biomas Brasileiros por Satélite (PMBDDS)[224] operated only from 2003 to 2012.[225]

The replacement of the 1965 Forest Code by the 2012 Forest Code led to an amnesty for rural landowners who had degraded protected areas prior to June 12, 2008. Monitoring of biodiversity conservation is poor. A report by the General Comptroller of the Union (CGU) highlights that environmental monitoring carried out by IBAMA, the federal agency in charge of the protection of the environment (other than control of conservation units), has many problems. The problems include a lack of storage space for seized goods; a lack of staff; a lack of resources, and the prioritization of the Amazon over the other biomes (91% of the

[223] Retrieved from: www.obt.inpe.br/prodes/prodes_2011.htm. Access 20 June 2018.

[224] Project to Monitor the Deforestation of Brazilian Biomes by Satellite

[225] Retrieved from: www.siscom.ibama.gov.br/monitora_biomas/. Access 20 June 2018.

monitoring resources are used in the Amazon Region).[226] For conservation units, the number of monitoring actions performed by the ICMBio is low. For instance, in 2016, only 497 monitoring actions were performed of the 1,111 that were planned.[227]

Discussion: Recommendations for improving implementation

Our main conclusion is that it is not essential to change the legislation, but it is essential to enforce it and to prevent backsliding (exemplified by the regressive replacement of the 1965 Forest Code and the archiving of the PPCDAM Program). A substantial improvement in the integrity of implementation of Brazil's political commitments and laws is necessary. However, there has been substantial regression in practice. A consequence is the serious reduction in investment in environmental protection and restoration.

Since 2012, Brazil has been suffering a serious economic crisis, worsened by the COVID-19 pandemic. Regardless, Brazil needs to invest more money in biodiversity conservation. The federal environmental budget was reduced by 43% in 2017.[228] In 2013, the budget was 5 billion Reais. In 2018, the authorized budget was only 3.7 billion Reais,[229] a reduction of 1.3 billion Reais. In 2021, the budget was 1,72 billion Reais, the smallest in 21 years,[230] despite the need to supervise new conservation units and other issues.

With more funding, it would be possible to invest in technology to make environmental protection more efficient. New technologies, such as drones or satellite data, could be used for monitoring biodiversity degradation, and more investments could be made in research and development. Public universities are also important for research related to biodiversity conservation such as environmental engineering, public environmental policies, environmental law etc. 70% of the Brazilian federal universities suffered budget cuts totalling 249 million Reais in 2017[231]. Moreover, the Budget in 2021 is 1 billion Reais smaller then in 2020, showing that investing in education is still not a priority in Brazil.[232]

[226] Retrieved from: www.cgu.gov.br/noticias/2017/08/ministerio-da-transparencia-avalia-acoes-de-fiscalizacao-ambiental-realizadas-pelo-ibama. Access 20 June 2018.

[227] Retrieved from: www.gov.br/informma/item/11298-acoes-de-fiscalizacao-nas-uc. Access 20 June 2018.

[228] Retrieved from: www.oeco.org.br/reportagens/governo-corta-43-do-orcamento-do-ministerio-do-meio-ambiente/. Access 20 June 2018.

[229] Retrieved from: https://g1.globo.com/natureza/noticia/em-5-anos-orcamento-do-ministerio-do-meio-ambiente-cai-r-13-bilhao-diz-estudo.ghtml. Access 20 June 2018.

[230] Retrieved from: https://www.greenpeace.org/brasil/blog/meio-ambiente-tem-o-menor-orcamento-em-21-anos-como-podemos-mudar-isso/. Access 20 November 2021.

[231] Retrieved from: https://g1.globo.com/educacao/noticia/quase-70-das-universidades-federais-do-pais-tiveram-cortes-no-orcamento-entre-janeiro-e-junho.ghtml. Access 20 June 2018.

[232] Retrieved from: https://ufsb.edu.br/ultimas-noticias/2860-corte-no-orcamento-das-universidades-federais-para-2021-pode-chegar-a-r-1-1-bilhao. Access 20 November 2021.

CHINA

Evaluators: QIN Tianbao (team leader); YANG Xue; SUN Rui
2018 report, updated in June 2022

China team leader's introduction

China's land and sea territories are both vast; its complex terrain and diverse climate gave birth to unique ecosystems, abundant species, and rich genetic variety, as one of the most biodiverse countries in the world. China, one of the first countries to sign and approve the *Convention on Biological Diversity*, has always attached great importance to biodiversity conservation and preserves biodiversity with creative and up-to-date measures, achieving substantial progress on a distinctively Chinese path of conservation".[233]

During the period of this assessment, China has taken many effective implementation measures in biodiversity conservation.

The first is the reform of nature reserve system. In 2017 and 2019, China successively issued the *Overall Plan for the Construction of National Park System* and the *Guiding Opinions on the Establishment of Nature Reserve System with National Parks as the Main Body*, putting forward the development direction of the system to further improve the scientization and humanization of habitat protection of important species.

The second is delimiting the "red line" of ecological protection. In 2017, the general office of the CPC Central Committee and the general office of the State Council issued *Several Opinions on Delimiting and strictly Observing the Red Line of Ecological Protection*. The ecological protection red line is an area that has special important ecological functions and must be protected strictly in the land space, with the main function of providing ecological services or ecological products. It is the bottom line and lifeline to ensure and maintain national ecological security.

The third is the systematic protection and restoration project of mountains, rivers, forests, fields, lakes, and grasses. In 2015, the *General Plan for the Reform of Ecological Civilization System* issued by the CPC Central Committee and the State Council sought to integrate financial funds to promote the ecological restoration project for mountains, rivers, forests, fields, lakes, and grasses. Since 2016, the Ministry of Finance, the Ministry of Natural Resources and the Ministry of Ecological Environment jointly promoted 25 pilot projects for ecological protection and restoration.

Last but not least, in November 2021 the general office of the CPC Central Committee and the general office of the State Council issued the *opinions on Further Strengthening biodiversity protection*. The first phase of the fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity was successfully held in Kunming, Yunnan. This provides a good start for biodiversity conservation during the 14th Five Year Plan period.

[233] The State Council Information Office of the People's Republic of China, Biodiversity Conservation in China, October 2021, http://www.scio.gov.cn/ztk/dtzt/44689/47139/index.htm.

Overall evaluation: Biodiversity Governance

Based on the available evidence, is the signatory state meeting its obligation to use and govern its environment responsibly to maintain biodiversity?

Summary evaluation score

Consistency of the behaviours of key government, private and NGO actors with responsible biodiversity governance	9 /10
Sustainability of the biodiversity and social outcomes that are being achieved	8 /10

Despite conservation measures taken by the Government of China, the country continues to suffer biodiversity decline. China's major biodiversity challenges include:

1. Degradation or loss of habitats. Habitats for wild animals and plants have been destroyed by activities such as reclamation of wetlands and grasslands, coastal development and major transportation and hydropower projects.
2. The loss of genetic resources in China has not been effectively contained. According to the results of the second national survey on genetic resources of poultry and livestock, there are 15 local poultry and livestock breeds in China that have disappeared. The population of more than half of the local breeds is in decline, and the endangered breeds account for about 18% of the total number of local poultry and livestock breeds.[234]
3. Excessive exploitation of natural resources. Overgrazing of grasslands has led to their degradation and desertification. Over-fishing has accelerated the depletion of fishery resources and threatened their sustainability.
4. Water pollution in rivers, lakes and seas negatively impacts aquatic biodiversity. Pollution of the marine environment has impacted marine biodiversity, causing marine ecological disasters, such as red tides.
5. Invasion of alien species. There are more than 500 invasive alien species in China, which negatively impact the environment and the economy.
6. Climate change. Climate change has changed the phenology, distribution, and migration of species over the Chinese landscape. It has caused the disappearance of some species from their original habitats and aggravated the impacts of alien species.

Much has been done to protect endangered species and genetic resources in China, but it is clear that more effective policies and measures are needed.

Ratification and implementation of the CBD

To increase its capacity to protect the country's abundant biodiversity, China established a National Committee for Biodiversity Conservation (NCBC) to coordinate biodiversity conservation actions at the national level. The government of China has also updated China's National Biodiversity Strategy and Action Plan (2011-2030) (NBSAP) and the UN Biodiversity Program for China.[235]

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[234] China's Sixth national report on the implementation of the convention on biological diversity. https://chm.cbd.int/database/record?documentID=241353

[235] Key documents are available from the CBD Clearing House at https://chm.cbd.int/database?hostGovernments_ss=cn&schema_s=nationalReport

The *Convention on Biological Diversity* (*CBD*) was adopted at the Rio Conference on Environment and Development in 1992 and entered into force on 29 December 1993. China was one of the first countries to sign the *Convention*, on June 11, 1992. On November 7, 1992, the 28th session of the Standing Committee of the Seventh National People's Congress of China approved the *Convention* and submitted the Ratification to the UN on January 5, 1993. The *Convention* entered into force for China on 29 December 1993; applying also to Hong Kong and Macao SARs (HKSAR).
The *Cartagena Protocol on Biosafety* was adopted on 29 January 2000 and entered into force on September 11, 2003. China signed on 8 August 2000 and ratified the *Protocol* on April 27, 2005. The *Protocol* applied to the Hong Kong SAR from 6 April 6 2011 but not to the Macao SAR.
The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from its Utilization was adopted on 29 October 2010 and entered into force on October 12, 2014. China joined the Protocol on June 8, 2016. The Protocol entered into force for China on 6 September, 2016 but does not apply to Hong Kong and Macao SARs.
China's Fifth and Sixth National Report on the Implementation of the *CBD* shows that conservation actions have positive impacts in ecological improvements:

- Forest resources in China have increased at least by 23%, the forest coverage rate increasing by 3.8% and forest reserves by 21.8%.
- A number of wetlands of national and international importance have been rescued and protected, the protection rate of natural wetlands increasing by over 1% annually on average. As a result, about a half of the natural wetlands have been effectively protected.
- Areas of mangroves and degraded wetlands in the near-shore coastal areas, such as tidal flats, have been restored, exceeding 2,800 km^2, through an investment of 4.43 billion yuan RMB.
- The area of soil erosion control reached 270,000 km^2 as a result of integrated control measures taken in 12,000 small river basins.
- The area enclosed for reforestation and conservation has reached 720,000 km^2, with initial ecological recovery occurring over 450,000 km^2.
- Since 2008, the central government has allocated more than 19.5 billion yuan RMB for rural environment improvement. These funds supported environmental improvements in 46,000 villages, and more than 87 million people in rural areas benefited from these efforts.
- Since 2006, an additional 18,000 km^2 of wetlands has been protected and 1,000 km^2 of wetlands have been restored.
- The populations of national key protected animals and plants have remained steady and, in some cases, are increasing. Their distribution and their habitats have been constantly improving. The number of Giant Pandas (*Ailuropoda melanoleuca*) rose from over 1,000 in the 1980s to 1,590 currently. The number of Crested Ibises (*Nipponia Nippon*) has grown from 7 in the 1980's to more than 1,800 at present. The populations of protected plants such as yews, orchids and cycads have also been expanding.

- China had established 2,750 nature reserves, covering about 1.4717 million km^2, about 14.86% of China's land area.[236] China has established 3,505 forest parks,[237]as well as 225 national-level scenic spots and 737 province-level scenic spots, covering about 194,000 km^2 or 2% of China's land area. Over 50,000 community-based conservation areas have been established, covering 15,000 km^2; 179 national-level protected sites of agricultural wild plants and 468 wetland parks have been established. Forty-five national-level special marine protected areas (marine parks) have been established, covering 66,800 km^2, and 368 national-level conservation areas for aquatic germplasm resources have been established, covering over 152,000 km^2. Nature reserves conserve 90% of terrestrial ecosystem types, 85% of wild animal population types and 65% of higher plant biota, covering 25% of primary forests, more than 50% of natural wetlands, 30% of typical desert areas and nearly 3% of the marine areas under China's jurisdiction.
- Two hundred botanical gardens have been established, collecting 20,000 plant species that represent two-thirds of China's flora. More than 240 zoos and 250 rescue and breeding sites for wild animals have been established. A system of protection of livestock genetic resources has been established, composed primarily of conservation farms complemented by protected areas and gene banks, protecting 138 varieties of rare and endangered livestock species. Collection and storage facilities for agricultural genetic resources have been strengthened, with the number of agricultural crops collected coming to 423,000 accessions, about 30,000 accessions more than in 2007. More than 400 conservation bases for wild plant germplasm resources have been set up. Wild germplasm banks have been established in southwest China to collect wild germplasm resources.

The number of pollutants and carbon emissions have been decreasing. Since 2000, the intensity of emission of pollutants per unit of GDP has decreased by more than 55%. Since 2004, the intensity of CO_2 emission per unit of GDP has decreased by 15.2%. The Government of China has been strictly implementing environmental impact assessments (EIAs). Since 2008 the national government has refused approval to 332 projects, which would have had a total investment value of 1.1 trillion yuan RMB, because of risks of pollution, energy consumption and/or resource consumption, and other reason. According to *Responding to Climate Change: China's Policies and Actions*, by the end of 2019, China has exceeded the 2020 climate action goal, ahead of schedule. From 2011 to 2020, China's energy consumption intensity decreased by 28.7%. During the 13th Five-Year Plan period, China's annual average energy consumption growth of 2.8% supported the annual average economic growth of 5.7%, and energy conservation accounted for about half of the global energy savings in the same period.

In addressing biodiversity loss and ecosystem degradation, China upholds the philosophy of harmonious coexistence between humanity and nature, prioritizing biodiversity conservation and seeking green development. It has established conservation mechanisms led by the government and featuring multilateral governance and win-win cooperation, in

[236] China's Sixth national report on the implementation of the convention on biological diversity.

[237] ibid.

which all citizens participate. This way, China keeps making progress and contributes to efforts in global biodiversity conservation. [238]

Environmental protection budget

The state invests heavily in environmental protection. In 2017, the Environmental Protection Department spent 23.262.21 million yuan RMB on the implementation of pollution control and environmental impact assessment. The spending was predominantly in three areas:

- Controlling emissions of major pollutants, particularly by implementing, promoting, and supervising sewage construction permit and emissions trading schemes.
- Implementing the environmental impact assessment system for construction projects and major regional and industry development strategies and conduct post-implementation evaluation of projects and strategies.
- Gathering environmental protection related data and conducting audits, including establishing systems for collection of data.

The 2017 budget for the supervision of ecological and environmental protection programs was 12,263.58 million yuan, mostly spent in three major categories:

1. Ecological and environmental protection supervision and management, including the protection and management of key ecological functional areas, ecological compensation legislation and practice, resource development, ecological and environmental protection and supervision, the national ecological environment remote sensing survey, and management of the national nature reserve system.
2. Protection of biodiversity, including promotion of biodiversity conservation strategies and action plans, biodiversity conservation policies and regulations, standards for construction of structures, identification of baseline biology, and the preparation of the species red list and species exit management directory.
3. Contributing to the building an ecologically sustainable civilization, including the construction and technical assessment of ecologically sustainable provinces (cities and counties) and development of an ecologically sustainable civilization construction demonstration area.[239]

In addition, a national green development fund was set up in 2020, raising RMB88.5 billion as a start.[240]

Government behaviour related to sustainable use

Upholding the new development philosophy, China pursues green development with priority given to eco-environmental conservation.
China encourages eco-friendly planting and breeding industries and sustainable operations. It has formulated guidelines on sustainable production for better conservation of bio-resources. It has improved the certification of green products such as green food, organic farm produce, forest products with ecolabels, and sustainable aquaculture products. China

[238] The State Council Information Office of the People's Republic of China, Biodiversity Conservation in China, October 2021, http://www.scio.gov.cn/ztk/dtzt/44689/47139/index.htm.
[239] http://gcs.mep.gov.cn/bmysgl/201704/P020170407509579052897.pdf.
[240] F/n 239.

is leveraging innovative technology in protecting biodiversity, and sustainably utilizing bio-resources in the fields of agriculture, forestry, fishery, and animal husbandry.[241]
China has put in place systems for the utilization and administration of key wildlife resources, such as hunting licenses, collecting permits, and domesticating and breeding certificates, and encourages conservation and sustainable utilization of premier bio-resources.[242]

[241] The State Council Information Office of the People's Republic of China, Biodiversity Conservation in China, October 2021, http://www.scio.gov.cn/ztk/dtzt/44689/47139/index.htm.
[242] Ibid.

Evaluation: System of biodiversity protection

Based on the available evidence is the signatory state meeting its obligation to have a viable system of biodiversity protection?

Summary evaluation scores

Sufficiency of the governance instruments (laws, policies, codes, standards etc.)	9 /10
Implementation of the governance instruments (strategies, plans, budgets, programs etc.)	8 /10
Behaviours that are consistent with effective implementation (key public, private and NGO actors)	8 /10
Achieved biodiversity and social outcomes (biophysical and social data, expert opinions, other evaluations)	8 /10

Legislation and strategies

China has promulgated and implemented more than 20 laws, more than 40 administrative regulations and more than 50 departmental rules related to biodiversity protection.[243]

For biodiversity, China attaches great importance to biosecurity firstly. The Biosecurity Law was promulgated and came into force in 2021. A succession of laws and regulations have been promulgated, including Regulations on the Safety Administration of Genetically Modified Organisms in Agriculture (2001), Measures for the Safety Assessment and Administration of Genetically Modified Organisms in Agriculture (2002), Measures for the Safety Administration of Biotechnology Research and Development (2017), and Measures for the Administration of Inspection and Quarantine of Inbound and Outbound Genetically Modified Products (2004). Safety testing and assessment of GMOs has been conducted to prevent any potential negative impact on biodiversity conservation and on the sustainable utilization of bio-resources resulting from the release of GMOs into the environment. With the issuance of over 200 technical norms on the safety testing, assessment, supervision and regulation of GMOs, a national system of GMO safety administration is being completed in steps.

The *Forest Law*, the *Grassland Law*, the *Fishery Law*, the *Wildlife Conservation Law*, the *Animal Law*, the *Regulations on the Protection of Wild Plants* and the *Import and Export of Endangered Wild Animals and Plants in the Biological Resources Protection Law System Regulations*, help to maintain China's biological resources security and promote China's biodiversity conservation.

Many other laws and regulations affect biodiversity conservation. In addition to the relevant provisions of the *Constitution* and the *Criminal Law*, the environmental protection legal system consists primarily of the *Environmental Protection Law*, the *Environmental Impact Assessment Law*, the *Marine Environmental Protection Law*, the *Soil and Water Conservation Law*, The *Air Pollution Control Law* , *Water Pollution Control Law*, *Noise Pollution Prevention Law*, *Sand Control Law* and *Administrative Regulations*, *Nature Reserve Regulations* and others providing for actions beneficial to biodiversity conservation. The *Standardization Law* provides for the development of biodiversity conservation standards. China's environmental legal system is relatively sound.

[243] Zhang Huiyuan et al., Biodiversity Conservation and Green Development in China, Science Press, 2021, p.78.

For Administrative regulations, the State Council issued a number of administrative regulations targeting the implementation of laws and regulations, and administrative regulations on the use of wild medicinal resources, and on national nature reserves, wetland protection and other biodiversity issues where the state has not yet enacted legislation.

At the ministerial level, the Ministry of Environment and Protection, the State Development and Reform Commission, the Ministry of Finance, the Ministry of Land and Resources, the Ministry of Housing and Urban and Rural Development, the Ministry of Water Resources, the Ministry of Agriculture, the State Forestry Administration, the Chinese Academy of Sciences and the State Oceanic Administration have jointly released regulations concerned with the assessment, establishment and use of nature reserves.

In 2010, the Chinese government issued the *National Major Functional Area Planning and the China Biodiversity Conservation Strategy and Action Plan (2011-2030*). The State Council has also approved implementation of the *National Plan for the Protection and Utilization of Biological Species Resources*, the *Action Plan for the Conservation of Aquatic Resources*, the *Regional Water Function Classification of important rivers and lakes (2011-2030)*, the *National Marine Conservation Plan (2011-2020)*[244], the *National Livestock and Poultry Genetic Resources Protection and Utilization Plan*, and so on. These plans all promote biodiversity conservation.

The government has launched the “construction pilot work of national water ecological civilized city” plan and released two groups of “national water ecological civilized city construction pilots”, which cover 104 cities. The protection of biodiversity is incorporated into the local economic and social development plan.

China has issued the *National Ecological Function Zoning initiative*, completed a remote sensing survey and assessment on the *National Ecological Environment Decade (2000-2010) changes*, delineated 35 priority areas for biodiversity conservation, issued a red list on “China Higher Plants”, and a red list on vertebrate species and three lists of Chinese invasive alien species. China has completed management assessment of more than 400 national nature reserves, and regularly carries out law enforcement inspections on nature reserves, punishing illegal wild animal and plant resources wrongdoers.

Provinces, such as Shandong, Hainan, Yunnan, Shanxi, Hunan, Hubei, Guizhou, Ningxia, Sichuan, Fujian, Tibet, Qinghai, Jiangsu, Guangxi and Tianjin, have published local "biodiversity conservation strategy and action plans" and carried out activities to promote ecological provinces, cities and counties.

There are some significant strategies. To strengthen the management of nature reserves, many departments in China have jointly carried out "Green Shield" special actions, including "Green Shield 2017", "Green Shield 2018" and "Green Shield 2019", to rectify violations in nature reserves and strengthen accountability. The inspection scope of "Green Shield 2017" is 446 national nature reserves. The inspection scope of “Green Shield 2018" was expanded to 469 national nature reserves and 847 provincial nature reserves, and all kinds of nature reserves at all levels in 11 provinces (cities) of the Yangtze River economic belt were included in the scope of key inspections. "Green Shield 2019" expanded the inspection scope to the

[244] http://cncbc.mep.gov.cn/zgxd/zdgc/.

mainstream, main tributaries and some nature reserves within 5km of the Great Lakes in 11 provinces (cities) of the Yangtze River economic belt.[245]
Besides, the general office of the CPC Central Committee and the general office of the State Council issued the *opinions on Further Strengthening biodiversity protection* in 2021, which defines the overall requirements, key tasks, and safeguard measures for biodiversity protection in the new era. This means that China will take more effective measures to protect biodiversity.

Organisations and administrative arrangements

In 2011, the National Committee on Biodiversity Conservation was set up to co-ordinate biodiversity conservation. The committee is chaired by the Vice Premier of the State Council, and the vice chairmen are the Minister of Environmental Protection, Deputy Secretary for State of the State Council and Vice Minister of Foreign Affairs. The committee consists of the Minister of Environmental Protection, Deputy Secretary for State of the State Council and Vice Minister of Foreign Affairs as Vice Chairman and Central Propaganda Department, National Development and Reform Commission, Ministry of Education, Ministry of Science and Technology, Ministry of Public Security , The Ministry of Finance, Ministry of Land and Resources, Ministry of Environment and Protection, Ministry of Housing and Urban and Rural Development and other 25 ministries and units.
The Provincial People's Government has strengthened the institutional system of environmental protection, agriculture, forestry, marine and other organizations involved in the protection of biodiversity and set up a cross-sectoral coordination mechanism.
China has conducted central environmental protection inspections to solve outstanding problems. The system of central inspection on eco-environmental protection was established in 2015. Since then, it has been developed to cover 31 provincial-level administrative units, relevant departments under the State Council and some state-owned enterprises directly under the central government. To solve prominent environmental problems, China has carried out inspections focusing on major issues such as biodiversity conservation, climate change, the 10-year ban on fishing in the Yangtze River, and marine environmental protection. The system serves to push governments at all levels and relevant departments to take responsibility for protecting the eco-environment, providing strong institutional guarantees for conserving biodiversity.[246]

Cross-sectoral mechanisms

To implement the Convention on Biological Diversity (CBD), the State Council created China's Coordinating Group for Implementation of the Convention on Biological Diversity, headed by the Ministry of Environment and Protection, and composed of 24 departments. The CBD Implementation Office was established in the Ministry of Ecology and Environment.
To strengthen conservation and management of biological resources, the State Council has approved the establishment of an Inter-ministerial Joint Conference on Conservation of Biological Resources, headed by the Ministry of Ecology and Environment, and composed of 17 ministries and commissions. An office for this joint conference was established in the

[245] Zhang Huiyuan et al., Biodiversity Conservation and Green Development in China, Science Press, 2021, p.94.

[246] The State Council Information Office of the People's Republic of China, Biodiversity Conservation in China, October 2021, http://www.scio.gov.cn/ztk/dtzt/44689/47139/index.htm.

Ministry of Ecology and Environment (MEE). To organize activities to celebrate the International Year of Biodiversity in 2010, the Government of China established a National Committee for the International Year of Biodiversity (2010), headed by one of the Vice Premiers of the State Council responsible for the environment and composed of 25 departments. In 2011, the State Council decided to change this Committee into National Committee on Biodiversity Conservation. This Committee consists of 25 departments and the Secretariat of this Committee was established in the MEP. These three implementation coordination bodies, headed by MEP, consist of 33 mutually supporting departments, with each department exercising their unique, roles in biodiversity conservation.

China has carried out trans-department, cross-region, and cross-border joint actions to crack down on the trafficking of rare and endangered wildlife. It has improved the long-term mechanism for monitoring law enforcement concerning wild animal protection. Special law enforcement campaigns have been launched to combat illegal activities threatening wildlife and their habitats, including the Green Shield inspections of nature reserves, the Blue Sea initiative for marine environmental protection, the Sword campaigns targeting fisheries, and the Kunlun actions against crimes and violations in the fields of food, drugs, and the environment. In a tough stand against illegal activities, China has established collaboration mechanisms for cross-region and trans-department joint actions on enforcing the Yangtze River fishing ban and withdrawal of fishermen concerned and has conducted special campaigns against illegal fishing.[247]

Biodiversity monitoring system

China has organized nationwide biodiversity surveys. Apart from including biodiversity indicators in the system of comprehensive assessment indexes for ecological quality, a system for surveying, assessing, and monitoring natural resources has been developed, and surveys on forests, grasslands, waters, wetlands, deserts, oceans, and other natural resources have been carried out.

China has built a species distribution database, covered 2,376 county-level administrative units and totalling over 34,000 km in line transects. An information platform has been set up to survey and collect various species, accurately mapping the spatial distribution of wildlife.[248]

China has completed biodiversity surveys and assessment in more than 180 county-level administrative units in the Yangtze River Economic Belt, Beijing-Tianjin-Hebei Region, and some other national strategic areas. Offshore resources studies have been carried out to build an initial profile of fishery resources.[249]

China has released the China Red Data Book of Plants, China Red Data Book of Endangered Animals, China Species Red List, and China's Red List of Biodiversity to establish the overall situation of biodiversity and lay a scientific basis for better biodiversity conservation.[250]

China has also put in place sound biodiversity monitoring and observation networks for various ecosystems and species. Among them, the Chinese Ecosystem Research Network (CERN) and the Chinese Terrestrial Ecosystem Research Network (CTERN) cover all ecosystems and elements; the China Biodiversity Monitoring and Research Network (Sino

[247] Ibid.
[248] Ibid.
[249] Ibid.
[250] Ibid.

BON) covers a variety of biological groups such as animals, plants and microorganisms; the China Biodiversity Observation Network (China BON) has designated plots for the observation of indicator species all over the country.[251] The China Forest Biodiversity Monitoring Network (CForBio) was established in 2004,[252] for monitoring different types of forest vegetation at different latitudes, including coniferous and broad-leaved mixed forests, deciduous forests, evergreen deciduous and broad-leaved mixed forests, ever-green broad-leaved forests and tropical rainforests. By 2012, CForBio had monitored 12 major sites, with each site covering an area ranging from 9 to 25 ha.

Since 2004, China has established 18 marine ecological monitoring zones in 36 ecologically vulnerable and sensitive coastal and near-shore areas, and has been undertaking systematic biodiversity monitoring, assessment, and conservation in these zones. The area being monitored has reached 52,000 km^2, including ecosystems such as bays, estuaries, coastal wetlands, coral reefs, mangroves, and sea grass beds. Since 2005, China has established an ecological monitoring system at the sources of three major rivers in Qinghai Province. This includes 5 ecological monitoring systems, 14 ecological monitoring stations, 486 on-the-ground monitoring points, 3 soil conservation monitoring communities, 2 mobile monitoring stations of hydrological resources and 2 automatic meteorological stations.

Since 2011, China has been undertaking pilot monitoring of birds and amphibians. More than 200 monitoring sites have been established in different regions and ecosystems, with more than 450 line transects and more than 430 point transects established.

In-situ Conservation

China's various types of land protected areas account for about 18% of its land area and has fulfilled the target of 17% of CBD by 2020.[253]

Laws for in-situ protection of biodiversity include: “Regulation on Nature Reserves”, “Regulations on Protection of Wild Plants”, “Regulations on the Implementation of Terrestrial Wildlife Conservation”, “Regulations on the Protection of Aquatic Wild Animals”[254] and Interim Measures for the administration of national parks in process of public consultation.[255] In addition, there are many policies and strategies to strengthen in-situ protection of biodiversity.

A conservation system has been established, primarily composed of national parks, nature reserves and complemented by scenic spots, forest parks, community-based conservation areas, protected sites of wild plants, wetland parks, geological parks, special marine protected areas, and germplasm conservation areas. By the end of 2013, 2,697 nature reserves of various categories had been established, covering approximately 1.463 million km^2 and accounting for about 14.8% of the country's land area. There are 407 national-level nature reserves, covering about 940,000 km^2 which accounts for 64.3% of the total area of

[251] Ibid.

[252] http://www.cfbiodiv.org/wlgs.asp.

[253] Zhang Huiyuan et al., Biodiversity Conservation and Green Development in China, Science Press, 2021, p.89.

[254] http://www.zhb.gov.cn/stbh/zrbhq/zrbhqzcfgbz/.

[255] Government network of State Forestry and Grassland Administration, The Interim Measures for the administration of national parks (Draft for comments) were publicly solicited for comments,2022-03-24, http://www.forestry.gov.cn/main/4461/20220324/160617292292569.html.

nature reserves and 9.8% of the country's land area. Since 2008, the number of marine protected areas, in particular national-level MPAs, has increased substantially. By the end of 2012, more than 240 marine protected areas had been established, covering 87,000 km^2, accounting for nearly 3% of the marine areas under China's jurisdiction.
The old system of protected areas (PAs) management has many shortcomings. However, "since 2015, it has launched on a trial basis 10 national parks, including one at Sanjiangyuan, the cradle of the Yangtze, Yellow and Lancang rivers. The relevant PAs have been integrated into these national parks under unified management, comprehensive protection, and systematic restoration. "The well-planned PA system has brought 90 percent of terrestrial ecosystem types and 71 percent of key state-protected wildlife species under effective protection. The habitats for wild animals have been expanding and their populations are growing."[256] China is setting up new PAs and opening national parks on a trial basis, to create a PA framework with a focus on national parks", and also "propose and implement the red line strategy for ecological conservation and has designated priority areas in biodiversity conservation."[257]
Opinions on delineating and adhering to the red line of ecological protection launched in 2017 also reflects the determination of China to protect biodiversity. Setting red lines for ecological conservation (ECRLs) is an important institutional innovation in China's land use planning and eco-environmental reform. China has also brought "essential ecological functional areas for biodiversity conservation and the most ecologically fragile regions under the ECRLs and apply stringent conservation measures to them", which "cover various important ecosystems such as forests, grasslands, deserts, wetlands, mangrove forests, coral reefs and sea grass beds across key regions of biodiversity all over the country, bringing most rare and endangered species and their habitats under protection".[258]
China has designated 35 priority areas for biodiversity protection connecting the current PAs across different administrative regions. Among these, 32 terrestrial priority areas cover a total of 2.76 million sq km and make up about 28.8 percent of the total land area. [259]

Managing ex-situ species preservation (including genetic resources)

First, China has set up a relatively complete ex-situ conservation system including botanical gardens, wildlife rehabilitation and breeding centres, germplasm resource centres, and gene banks and so on. China has built a total of about 200 botanical gardens and arboretums exhibiting 23,000 species of plants, and 250 wildlife rehabilitation and breeding centers where over 60 types of rare and endangered wild animal are successfully bred. [260] China has also established over 400 conservation and breeding sites for wild plant germplasms, and conservation centres for cycads and orchid germplasms, with more than 240 varieties of cycads and 500 varieties of orchids. China has more than 240 zoos (including animal

[256] The State Council Information Office of the People's Republic of China, Biodiversity Conservation in China, October 2021, http://www.scio.gov.cn/ztk/dtzt/44689/47139/index.htm.
[257] The State Council Information Office of the People's Republic of China, Biodiversity Conservation in China, October 2021, http://www.scio.gov.cn/ztk/dtzt/44689/47139/index.htm.
[258] Ibid.
[259] Ibid.
[260] Ibid.

demonstration areas) and 250 rescue and reproduction sites for endangered wild animals.[261]

Second, China has launched a batch of projects for germplasm resource protection and breeding. By the end of 2020, China had put in place a national crop genetics protection system with the national long-term germplasm banks and their duplicates as the core, supported by 10 medium-term banks and 43 germplasm fields. It had built 199 state-level livestock and poultry germplasm resource preservation fields (areas, storehouses), preparing state-level sites for the conservation of germplasms of over 90 percent of breeds under the National Catalogue of Livestock and Poultry Genetic Resources. There are over 520,000 copies of crop germplasm resources and 960,000 copies of livestock and poultry genetic resources in long-term storage. China has established 99 state-level germplasm resource banks for trees, and two state-level germplasm resource sub-centers for trees and grass in Xinjiang and Shandong, preserving 47,000 copies of germplasm resources for trees. It has also built 31 germplasm preservation fields and two germplasm resource centers for medicinal plants, preserving over 12,000 copies of seeds and seedlings.

Third, China has launched campaigns to rescue rare and endangered wildlife, expand their population through artificial breeding, and reintroduce them to natural habitats in a phased manner. The captive population of breeding pandas has grown in numbers and quality. They have been downgraded from “endangered” to “vulnerable” on the list of species at risk of extinction, and some have been released into natural habitats to integrate into the wild population. Elks, once nowhere to be found in the wild, have grown to 8,000 in number thanks to the three conservation bases in Nanhaizi of Beijing, Dafeng of Jiangsu, and Shishou of Hubei. Emergency measures have also been taken to save and protect 120 plant species with extremely small populations such as the Cycas debaoensis, Manglietiastrum sinicum and Abies beshanzuensis, and to restore to their natural habitats 112 species of rare and endangered wild plants native to China.[262]

Incentive measures

Article 54 of the Environmental Protection Law requires a sewage permit system and laws such as the “Water Pollution Control Law”, the “Environmental Noise Pollution Prevention Law” and the “Air Pollution Prevention Law”, adopt the polluter pays principle. Through the Environmental Protection Tax Law", sewage charges will gradually translate into sewage tax collections.

Article 31 of the Environmental Protection Law stipulates that the state will increase payments to fund ecological protection areas. Relevant local governments are required to implement an ecological protection compensation fund for ecological protection compensation. The "Grassland Law", "Forest Law", "Wildlife Protection Law", "Fishery Law", "Land Management Law" and other natural resources protection laws stipulate how ecological compensation will be carried out. In 2011, the "National Key Ecological Function Area Transfer Payment Measures” was declared. This involves actions to develop the county's ecological and environmental indicators of the effectiveness of environmental protection, and to carry out performance evaluations in the form of a regular census, annual

[261] China's Fifth National Report on the Implementation of the Convention on Biological Diversity.

[262] F/n 258.

sampling and special inspections, and every 3 years to conduct a comprehensive assessment of the environment, and to survey ecological changes in each city and county.[263]
All these incentives are provided by government and are top-down initiatives. This increases the government's financial burden and China is not building an economic structure to increase incentives to protect biodiversity and will. As at 2014, the central government had allocated 2,004 billion yuan RMB to the national ecological functions.[264] The main outcomes include:

1. Eliminating subsidies unfavourable to biodiversity. To avoid negative impacts on biodiversity and the environment, in 2007China eliminated export tax rebates on 553 high energy consumption, polluting and resource consuming products, and products using endangered animals and plants.
2. Guaranteed funds for ecological restoration and environmental improvement in the mining sector. In 2006, the Ministry of Finance, together with the Ministry of Land Resources and the State Environmental Protection Administration initiated standards for ecological restoration and environmental improvement in the mining sector. The guidance requires the mining sector to provide guaranteed funds from mining incomes for ecological restoration and environmental improvement. 30 provinces (autonomous regions, province-level municipalities) have established funds for ecological and environmental restoration in the mining areas. By the end of 2012, 80% of mines had contributed guarantee funds, totalling 61.2 billion yuan RMB and accounting for 62% of the total funds expected under the scheme.
3. Subsidizing households that return cultivated land to forests. Since 1999, the central government has been subsidizing households to return cultivated lands to forests, subject to verification. These households retain ownership of the forests grown on returned land, under contracts for as long as 70 years, and enjoy tax incentives. In 2007 the State Council issued a notice on improving this policy, aiming to increase the subsidies to households. Households in the Yangtse River Basin and South China may be subsidized by 1,575 yuan RMB per hectare of land annually, while households in the Yellow River Basin and North China may obtain a cash subsidy of 1,050 yuan RMB per hectare of land. Farmers who return land to forests for ecological use may be compensated for eight years, while those that return land to forests with economic use may be compensated for five years. From 2008 to 2011 the central government provided grants totalling 46.2 billion yuan RMB. By the end of 2012, the central government had invested 324.7 billion yuan RMB, and 124 million farmers in 2,279 counties benefited from this investment, with an average benefit per household of 7,000 yuan RMB.
4. Subsidizing returning grazing land to grasslands. Since 2003 such projects have been implemented in eight provinces including Inner Mongolia, Sichuan, Qinghai and Xinjiang. The central government subsidises the construction of fences and the provision of forages. In 2011 the central government raised the subsidy standards. Three hundred yuan RMB per hectare is provided for fence building in Qinghai-Tibet Plateau and 240 yuan RMB per hectare in other regions. A subsidy of 300 yuan RMB per hectare is provided for reseeding grass; 2,400 yuan RMB per hectare for forage production and 3,000 yuan RMB per household for feed facilities. The central

[263] http://www.gov.cn/gzdt/2011-07/28/content_1915488.htm.
[264] http://news.xinhuanet.com/politics/2014-07/01/c_1111405072.htm.

government invested a total of 17.57 billion yuan RMB in this during 2003-2012, with projects benefiting 174 counties, more than 900,000 farm households and more than 4.5 million farmers and herdsmen. By the end of 2012, the areas covered by subsidies for grassland grazing bans had reached 820,000 km2, and the areas where rewards are available for sustainable grazing reached 1,737,000 km2.

5. Wetland conservation. In 2010 the Ministry of Finance and the State Forestry Administration initiated subsidies for wetland conservation for 27 wetlands of international importance, 43 natural wetland nature reserves and 86 national wetland parks. Some local governments increased financial support for wetland conservation and have gradually included important wetlands in programs for ecological compensation.
6. Ecological compensation for key ecological function zones. In 2008, the central government established a budget to support national key ecological function zones. In 2013, funds were transferred to 492 counties, and development was prohibited in 1,367 land zones, with the total funding reaching 42.3 billion yuan RMB. In 2013, scenic spots in Yunnan, Guizhou, Sichuan, and Xinjiang were included in the pilot program on ecological compensation.[265]

Environmental impact assessment

China formally implemented the “Environmental Impact Assessment Law” in 2003 and revised it in 2016. The law extends the requirement for environmental impact assessment (EIA) of construction projects to environmental impact assessment of development planning. The Ministry of Environment and Protection has promulgated supporting laws and regulations, standards, and guidelines. The “Planning Environmental Impact Assessment Regulations” are important legislation in this regard.

Although the “Environmental Impact Assessment Law” stipulates the EIA requirement for planning and construction projects, the scope of evaluation is limited and policy, legislation and other matters are not included in the scope of environmental assessment. The “Environmental Impact Assessment Law” stipulates the requirement for public participation, but laws and regulations have few provisions for public participation in EIAs.

[265] China's Fifth National Report on the Implementation of the Convention on Biological Diversity.

Evaluation: Precautionary principle implementation

Based on the available evidence has the precautionary principle been adequately incorporated in the resource governance system?

Summary evaluation scores

How well do laws, policies, codes, standards etc. incorporate the precautionary principle?	9 /10
Is the precautionary principle implemented fully in governance strategies, plans, budgets, programs etc?	8 /10
Are the behaviours of key public, private and NGO actors consistent with effective implementation of the principle?	8 /10
Do biophysical and social data, expert opinions, or other outcome evidence indicate the effective use of the precautionary principle?	8 /10

The precautionary principle in specialised laws

First, in order to cope with the increasingly frequent biosafety risks, to follow the logical thinking of the overall national security concept, and to meet the needs of the construction of the biosafety legal system, China has formulated Biosafety Law with safety as the focus. The precautionary principle is listed as the primary principle of Biosafety Law, which makes it clear that when biological related behaviours and activities may cause serious harm to human health, ecological environment and national security, preventive measures should be taken to prevent the harm (even if there is no scientific and reliable evidence to prove the inevitability of the harm).[266]

Second, Article 1 of the "Environmental Impact Assessment Law" stipulates: "This Law is enacted in order to implement the sustainable development strategy, to take precautions against adverse effects on the environment after implementation of plans and completion of construction projects, and to promote the coordinated development of the economy, society and environment." The environmental impact assessment system is a further manifestation of the precautionary principle. It predicts and controls environmental impacts that may result from projects and provides measures to prevent or mitigate adverse environmental impacts.

Third, China's dangerous chemical safety management legislation includes "Regulations on the Safety Management of Dangerous Chemicals", the "Measures for the Prevention and Control of Environmental Pollution by Hazardous Chemicals, enacted by the State Environmental Protection Administration, and "Measures for Environmental Management of New Chemical Substances", enacted by the Ministry of Environment and Protection. "Hazardous Chemicals Safety Management Regulations" and "Waste Hazardous Chemicals Pollution Prevention and Control Measures" embody the spirit of the precautionary principle. The concept of "New chemical substances environmental management approach" reflects international standards for the evaluation of new chemical substances, environmental pollution control measures and safety protection measures, and implements the requirements of the precautionary principle.

[266] Qin Tianbao, Legislative orientation and extension of Biosafety Law, Social Science Journal, 2020(3), pp.134-147.

Article 1 of the “Promote Cleaner Production Law” enacted in June 2002 stipulates that: “This Law is enacted with a view to promoting cleaner production, improving the efficiency of resource use, reducing and avoiding the generation of pollutants, protecting and improving the environment, protecting human health and promoting economic and social Sustainable development.” Clean production is a concrete measure implemented the precautionary principle, emphasizing the need for the prevention and control of pollution sources, and applying preventive strategies in servicing and using products, to reduce environmental risks.

The precautionary principle in administrative regulations

Implementation

The “Regulations on the Safety Management of Agricultural Genetically Modified Organisms” embodies the precautionary principles. In the definition of “the safety of genetically modified organisms”, the regulations seek to prevent risk from agricultural genetically modified organisms (GMOs) to humans, animals, and plants, microorganisms, and the environment in general. The regulations stipulate that the state should implement a hierarchical evaluation system for the safety of agricultural GMOs, establish that system and implement a protective labelling system. These three elements reflect the spirit of the precautionary principle in relation to GMOs. Finally, for research, testing, production, processing, operation and import and export of GMOs, the regulations create a stringent approval procedure, primarily a permit system. China has carried out environmental safety testing and assessment of genetically modified organisms and established and improved the environmental risk assessment system of genetically modified organisms.
Since China acceded to the Cartagena Protocol on Biosafety in 2005, it has prepared four national reports on China's implementation of the protocol on Biosafety and submitted them to the Secretariat of the Convention on Biological Diversity.

Biological and social outcomes

- The implementation of environmental impact assessment (EIA). The Environmental Protection Department utilizes “regional limit approved”, “industry limit approved” and other measures to restrict EIA of construction projects. During the period from 2008 to 2015, the number of refused permissions using EIA nationally was 332, with a foregone investment value of 1.1 trillion yuan RMB, with refusals for reasons including potential pollution, energy consumption, consumption of resources, and other concerns.
- Monitoring and warning network system establishment. China has a forest pest monitoring and early warning network and an agricultural alien invasive species monitoring and early warning network; carries out invasive alien species investigations; analyses alien invasive species distribution and harm; has advanced alien species risk assessment technology; and completed more than 1,500 alien species risk assessments. The State Oceanic Administration has set up a group on climate change to plan work on marine climate change. It has implemented marine and climate change research and forecasting on El Nino and La Nina, and carried out monitoring of sea water temperature, sea levels, seawater intrusion and soil salinization and other data related to climate change. The State Oceanic Administration has strengthened scientific research on marine climate change, established a calculation method for calculating carbon fixation and carbon burial in coastal wetlands, and advanced carbon fixation and carbon storage technology for coastal wetlands.

- Water and soil conservation. Since the “Eleventh Five-Year Plan”, China has continued to carry out ecological projects such as the construction of the Beijing-Tianjin sandstorm control, the construction of the three-north shelterbelt system, the conversion of cropland to forest, controlling the grazing of grassland, the protection of grassland, and comprehensive management of small watersheds. China has commenced sand control projects in the Tarim Basin, Xinjiang, sand control and ecological restoration of the Shiyang River Basin, construction of an ecological security barrier in Tibet, and the centralized management of risks of desertification, promoting the continuous improvement of ecological status in sandy areas. Monitoring shows that in the "Eleventh Five-Year" period, programs to control desertification affected 1,717 km2, and that moderate, severe and extreme desertification decreased by 36,000 km2. Soil and water loss in some areas has been controlled, soil erosion has decreased significantly, and the annual sediment load into the Huang river has reduced by more than 300 million tons.

Evaluation: Protection of human interests

Based on the available evidence is their adequate recognition and protection of people's biodiversity interests (particularly of indigenous people and women), including in genetic material? And do the community participation arrangements being implemented adequately reflect these interests?

Summary evaluation scores

Do governance instruments including laws, policies, codes, standards etc. adequately recognise human biodiversity interests?	8 /10
Do the governance strategies, plans, budgets, programs etc. implement recognition of human interests in biodiversity?	8 /10
Are the behaviours of key public, private and NGO actors consistent with effective recognition of human biodiversity interests?	8 /10
Do social, economic, cultural and ecological outcomes reflect effective implementation of this recognition?	8/10

Equitable benefit sharing and cultural respect, genetic resources

First, China's access to genetic resources and benefit-sharing legislation has been incorporated into the national security work plan. At present, the *Interim Measures for the Administration of Human Genetic Resources* promulgated by the Ministry of Science and Technology and the Ministry of Health, is the main instrument dealing with benefit sharing of genetic resources. The Ministry of Environment and Protection is working with the relevant departments to promote access and benefit sharing legislative work to establish China's biological genetic resources and traditional knowledge system aligned with the "Nagoya Genetic Resources Protocol".

Since 2004, the state has implemented the "Outline of the National Plan for the Protection and Utilization of Biological Species Resources", the "Outline of the National Intellectual Property Strategy", the "Plan for China's Biodiversity Conservation Strategy and Action Plan (2011-2030)", and the "Diversity of Red Listings - Vertebrate Volumes ", "National Program of Work on the Strengthening of Biological Genetic Resources Management (2014-2020)", "Biosafety-Related Traditional Knowledge Classification, Survey and Cataloguing Technical Regulations (Trial)", and identified access to genetic resources and genetic resources related to traditional knowledge a strategic priority. Since 2016, China has assessed vegetation, species diversity, genetic resources; and traditional knowledge in specific areas to capture the cultural status of biodiversity.

Second, the government provides various subsidy policies to local residents, according to China's Fifth and Sixth National Report on the Implementation of the *CBD*.

- The Government of China subsidizes rural households involved in key ecological projects. Subsidies were given to farmers who have returned cultivated land to forests, in targeted areas. By the end of 2012, the central government had cumulatively invested 324.7 billion yuan RMB into this activity, benefiting 120 million farmers, with households being given a subsidy of 7,000 yuan RMB on average.
- The Government of China has provided subsidies for forest management, conservation, silviculture, and reforestation. The government has also covered pension and other insurances for employees of forestry enterprises and subsidized the living expenses of laid-off employees and the social expenditures of forestry enterprises. During the first

phase of the natural forest protection project the government invested 118.6 billion yuan RMB. At the end of 2010, the State Council decided to implement a second phase of this project, investing about 244 billion yuan RMB in total from 2011 to 2020.

- The Forest Ecological Benefits Compensation Fund was established to subsidize plantation, nurturing, conservation, and management of forests for ecological benefits. In 2013, the central government transferred a total of 14.9 billion yuan RMB to local governments to subsidize public benefit forests.
- Subsidies were also provided to herdsmen who returned grazing land to grassland, to cover part of costs for grassland enclosures and forages. Between 2003 and 2012, the central government invested 17.57 billion yuan RMB, benefiting more than 4.5 million herdsmen. In 2011 a mechanism to subsidize and reward grassland ecology conservation was established and by the time of writing subsidies worth 28.6 billion yuan RMB have been provided cumulatively, to areas (820,000 km^2) where grazing bans are implemented and areas (1.737 million km^2) where balancing grass supply with herd size is required. The government has set up a fund to support national key ecological function zones, in 2013 amounting to 42.3 billion yuan RMB.[267]

Third, the government is integrating biodiversity conservation with “precision poverty alleviation”. There is a high degree of spatial overlap between poverty-stricken areas and ecologically fragile areas and biodiversity rich areas In China. For example, among the counties involved in biodiversity priority protection areas, the proportion of national poor counties (cities and districts) reaches about 38%, and about 76% of counties (cities and districts) in ecologically fragile areas are poor counties (cities and districts). [268] China has successively issued the *National Main Functional Area Plan*, *China's Biodiversity Conservation Strategy and Action Plan (2011-2030)*, *China's Rural Poverty Alleviation and Development Outline (2011-2020)*, and the *Decision of the CPC Central Committee and the State Council on Winning the Battle Against Poverty*. Under these major policies and plans, the "five areas" of key ecological function areas, priority areas for biodiversity protection, concentrated and contiguous areas with special difficulties, key counties for poverty alleviation and development and key areas for comprehensive improvement of rural environment have been superimposed, forming 138 key counties (cities and districts) in which biodiversity protection and poverty alleviation work are carried out simultaneously. China has used biodiversity conservation to help reduce poverty, forming a variety of effective models, including alternative livelihood model, utilizing special resources model, ecotourism model, community co-management model, ecological migration model and green evaluation model of leading cadres. [269]

China takes into full account eco-environmental factors in the process of rural revitalization. With an aim to promote rural progress and improve farmers’ living standards, it has redoubled efforts in preserving bio-resources, as a means of facilitating sustainable development.[270] For example, the Guangnan county government combines poverty alleviation and ecological management, using one-term mechanisms for ecological

[267] China's Fifth National Report on the Implementation of the Convention on Biological Diversity.

[268] Zhang Huiyuan et al., Biodiversity Conservation and Green Development in China, Science Press, 2021, p.85.

[269] ibid. pp.85-86.

[270] F/n 258.

compensation and poverty alleviation, and has developed a “Guangnan County Ecological Compensation Precision Poverty Alleviation Implementation Plan”. The county resumed sloping fields for afforestation for the purpose of returning farmland to forest and grasslands, giving priority to poor villages and encouraging cooperatives, and enterprise transfers of farmland. It is estimated that by 2020, 18 villages will return 2.15 million ha of farmland to forests and 0.1 million ha to grassland.[271]

The combination of biodiversity conservation and "precision poverty alleviation" has contributed to the social and economic outcomes of the CBD. As of 2015, the number of National Forest Parks, the National Wetland Parks and other state-level forest tourism sites reached 537, distributed in 415 poor counties, representing 50% of China’s poor counties. Huaihua City, Hucheng District, Huangyan Provincial Forest Park uses "forest security fund raising, forest farmers poverty alleviation loans, dividends" and other development models and has improved poor household incomes by more than 20,000 yuan annually. By the end of 2016, the tourism industry helped 61 local poor households, 220 people, to rise above the poverty line ”.[272]

Citizen participation

The “Environmental Impact Assessment Law” states the need to “encourage relevant units, experts and the public to participate in environmental impact assessment in an appropriate manner”. The *Environmental Protection Law*, amended in 2014 provides for information disclosure and public participation. The *Environmental Protection Public Participation Approach (Trial)* issued in 2015 proposes that the public participate in the formulation or revision of environmental protection laws, regulations and other normative documents, policies, plans and standards; preparation of planning or construction project environmental impact reports; addressing possible serious damage to public environmental or health rights and interests concerning major environmental pollution; and ecological damage investigation and redress.

China has incorporated biodiversity knowledge into primary and secondary school curriculum and provided biodiversity-related degree programs in many universities and colleges. By 2012 more than 556,000 professionals in biodiversity have been trained through such programs. Government departments and governments of all levels have strengthened communication and education in biodiversity. In particular, activities were organized to celebrate the International Year of Biodiversity in 2010, and relevant media reached more than 900 million people. In each of the subsequent years, training activities were organized for journalists, and large-scale communication and educational activities were organized to promote business engagement with biodiversity conservation. As a result, public awareness of biodiversity conservation has increased, and greater public participation in biodiversity conservation has been mobilized.[273]

China has also explored new publicity models, broadened participation channels, improved incentives, and invited public participation in policy making, information disclosure and public-interest litigation related to biodiversity, creating a positive environment for biodiversity conservation. *Beautiful China*, *I’m a Contributor – Action Plan to Raise Public Awareness of Ecological Conservation (2021-2025)*, and *Guidelines on Advancing Volunteer*

[271] http://zfs.mep.gov.cn/hjjj/hjjjzcywxz/201609/t20160919_364329.shtml.

[272] http://finance.ifeng.com/a/20160817/14757764_0.shtml.

Service in Eco-environmental Protection have been released to provide guidelines and norms for entities and individuals to participate in biodiversity conservation.[274] And China has formed alliances for protecting key species including the Yangtze finless porpoise, the turtle and the Chinese white dolphin, which serve as platforms of communication and cooperation for all stakeholders.[275]

In 2015, China joined the Global Partnership for Business and Biodiversity (GPBB), initiated by the Secretariat of the Convention on Biological Diversity. Enterprises are encouraged to take part in biodiversity-related initiatives and actions against illegal wildlife trade.[276]

[274] F/n 258

[275] Ibid.

[276] Ibid.

Discussion and Recommendation

Discussion: Overall evaluation of implementation and effectiveness

Biodiversity conservation is valued by the Government of China. For China, the greatest impact on biodiversity conservation is the attitude of the Chinese Communist Party and the Chinese government. The promotion of biodiversity conservation from top to bottom is important for China, and China's unique political system dictates government control and intervention. The government has laid out its blueprint for an ecological civilization and Beautiful China. And with the *opinions on Further Strengthening biodiversity protection issued*, a good start for biodiversity conservation was provided during the 14th Five Year Plan period. Biodiversity conservation is being integrated into economic, political, cultural, and social developments, with a view to establish spatial layouts, industrial structures, and production and consumption patterns that promote green, recycling and low-carbon development, resource conservation and environmental protection. The Chinese government has launched many strategies and policies not only at the national level, but also at the regional and sectoral levels, to covert CBD principles into the national or regional goals, and to guide local laws, administrative orders and local arrangements with strategies and policies. In this way the requirements of the principles of the CBD can be effectively implemented in the country. It is because the Chinese government attaches importance to biodiversity conservation that conservation work can be carried out effectively. At the same time, the lack of bottom-up participation and non-fulfilment of policies remains great challenges for the Chinese government.

Discussion: Comments on national strategies and reports

China's reporting of implementation of the Biodiversity Convention is prepared by the Ministry of Environment and Protection. All government departments are responsible for supporting and coordinating the work. So, the reliability of report is high. The data in the report is substantially from *Biodiversity Conservation in China（2021)*，the *Second National Assessment Report on Climate Change*, *China's marine environmental status bulletin (2000-2012)*, *China Forestry Statistics Yearbook (1995-2012), China Statistical Yearbook (2000-2012), China Environmental Statistics Yearbook (1997-2012), National Grassland Monitoring Report (2005-2012)* and other authoritative reports. The Chinese government has always valued the image and identity of China's as a responsible power and attaches great importance to the influence of its' compliance report.

Discussion: Key implementation and effectiveness issues

The implementation of CBD is generally good in China. China has established a relatively robust system of legislation and policies, which provides a basic guarantee of implementing the CBD. Nevertheless, to effectively implement the laws, the executive capacity of administrative organs need to be strengthened. In order to implement the precautionary principle, China has formulated strict Environmental Impact Assessment and protective regimes, but the full implementation of these systems remains a problem and the scope of impact evaluation is still limited, with incomplete consideration of policy, legislation and other governance matters in the scope of environmental assessments.

China's adoption of sewage charges through an environmental protection tax demonstrates adoption of the polluter pays principle. China has also outstanding achievements in

information sharing, data platform construction and international cooperation in biodiversity conservation.

Despite these great efforts, many details are still being developed and need to be addressed. China's performance in public participation in biodiversity conservation needs to be improved, as it only focusses on the popularization of biodiversity conservation knowledge, without the public being truly involved in decision-making. China's list of protected species does not adequately address China's range of endangered species in a timely and accurate manner and is urgently in need of renewal.[277]

Recommendations for improving implementation of the CBD

First, China has established a relatively sound legal system, executive institutions, and executive mechanisms at present, but it faces huge implementation costs to promote the implementation of measures. How to promote the implementation of these measures in a more economical, scientific, and humanized way is the next problem need to be solved for China.

Second, China's benefit sharing, and ecological compensation system and mechanism of biogenetic resources are not perfect, and still faces the risk of biological plagiarism and unfair distribution. Therefore, it is necessary to improve the legal system for the utilization and benefit sharing of biological genetic resources, to clarify the specific implementation of "jointly agreed conditions" and "prior informed consent", safeguarding national biosafety and promoting the development of biological industry. China also needs improve the implementation mechanism of ecological compensation and protect the development right of residents around nature reserves.

Third, China has performed poorly in public participation in the conservation of biodiversity. Although it has achieved results in the promotion of biodiversity knowledge and science, China still need promulgate laws to build a public participation system. China should promote real public participation in the policy decision-making process of biodiversity conservation， especially in environmental impact assessment. And China also needs make the public participate in the process of biodiversity conservation in a more convenient and economical way through community co management, volunteer services and publicity and education activities.

Fourth, China's biodiversity conservation still lacks more advanced biological science and technology as support. Therefore, it is necessary to promote the development of biotechnology, strengthen science and technology communication and cooperation with other countries, and to stimulate technological innovation with domestic institutional innovation.

[277] China Nature Watch 2014（http://www.hinature.cn/Report/view/report_id/104）China Nature Watch 2014 is an independent report on the status of China’s biodiversity conservation over the past decade, based on data accumulated by the Center for Nature and Society of Peking University, the Shanshui Conservation Center and the China Birdwatching Association and on data obtained from the public domain.

NEW ZEALAND

Evaluators: DAYA-WINTERBOTTOM Trevor; MORGAN Gay
2018 report updated July 2022

NZ team leader's introduction

Halting the decline of indigenous biodiversity has been a persistent and intractable issue in New Zealand since the publication of the first state of the environment report in 1997. That position remains the same at the time of writing. Despite a strong legislative framework that has been in place under the umbrella of the Conservation Act 1987 for the protection of indigenous biodiversity on the Crown conservation estate (covering one third of terrestrial New Zealand) there is no effective legislative or statutory policy framework in place concerning the protection of biodiversity on private land.

The primary statute governing biodiversity on private land is the Resource Management Act 1991 (RMA), a framework statute which relies on a hierarchy of standards, policy statements, and plans prepared to ensure the effective implementation of the statute. While s 6(c) of the RMA provides for the protection of significant areas of indigenous vegetation and significant habitats of indigenous fauna to be recognised and provided for as a national priority, no national direction has been provided via an operative national policy statement (NPS). In the context of protecting indigenous biodiversity under the RMA, it is notable that the purpose of NPS under s 45(2)(b) includes having regard to New Zealand's interests and obligations in maintaining or enhancing aspects of the national or global environment. NPS therefore provide the statutory implementation mechanism for giving effect to multilateral environmental agreements entered into by New Zealand, including the Convention on Biological Diversity 1992 (CBD).

Successive governments have attempted to prepare NPS for indigenous biodiversity in 2001, 2011, and 2019. The current draft NPS remains stalled in a holding pattern of further public consultation with the political promise that it should become effective sometime during 2022. The stumbling block has been the intersection of environmental protection with private property rights, despite s 85 of the RMA providing emphatically that no interest in land is deemed to be taken or injuriously affected by reason of any plan provision put in place under the RMA.

The NPS drafts have all approached the task of protecting indigenous biodiversity on private land by putting in place an additional framework of descriptive objectives and policies that provide guidance to local authorities about how they should go through the formal statutory process of changing their plans to include rules (which have the same force and effect as statutory regulations) to regulate land use. This process will take some time to achieve. A more directive approach would be more appropriate.

In the meantime, the Biodiversity Strategy 2000 (which was prepared as part of New Zealand's national obligations under the CBD) remains in place as a source of non-statutory guidance that (arguably) does not have any normative effect in the context of New Zealand's current legislative and statutory policy framework

Overall evaluation: Biodiversity Governance

Based on the available evidence, is the signatory state meeting its obligation to use and govern its environment responsibly to maintain biodiversity?

Summary evaluation score

Consistency of the behaviours of key government, private and NGO actors with responsible biodiversity governance	05/10
Sustainability of the biodiversity and social outcomes that are being achieved	03/10

Two key policy documents were prepared by the government prior to 2019 in response to New Zealand's requirements under the CBD. Both are high-level policy documents. These are the New Zealand Biodiversity Strategy *Our Chance to Turn the Tide* (February 2000) and the New Zealand Biodiversity Action Plan (September 2016). After the completion of this evaluation, the Te Mana o Te Taiao - Aotearoa New Zealand Biodiversity Strategy 2020 came into force. New Zealand's 5th report was lodged in 2014 and its 6th report on its implementation of the CBD had not been lodged as of November 2021.

The primary objective of the 2016 New Zealand Biodiversity Strategy was to halt indigenous biodiversity loss. The purpose of the Action Plan was to update progress with implementation of the Strategy and to set priorities for 2016-2020. That strategy should be read in the context of the series of State of the Environment reports 1997, 2007 and 2015 prepared by the Ministry for the Environment that recorded significant and ongoing biodiversity loss, particularly on private land. The recent 2020 Te Mana o Te Taiao strategy is contextualised as a response to a national and international biodiversity crisis, and it reflects the Environment Aotearoa 2019 State of Environment report and other thematic State of Environment reports.[278]

While focused on the period 2016-2020 the 2016 Action Plan included longer-term 2025 and 2050 targets in relation eradicating alien species and associated risk for indigenous biodiversity. The Action Plan had five goals – 1) mainstreaming biodiversity values across government and society; 2) reducing pressures on biodiversity and promoting sustainable use; 3) safeguarding ecosystems species and genetic diversity; 4) enhancing benefits to all; and 5) enhancing implementation. However, the overall theme that emerges from the presentation of all five goals is alien species eradication. The Action Plan was extremely light on any implementation detail. The 2020 strategy contains a set of principles and guidelines for implementation plans that are to be developed but does not specify implementation actions.

Responsible agencies

Key groups include the Minister of Conservation and the Minister for the Environment and their respective departments and ministries. These include two major institutional players for on the ground enforcement or implementation of rules or statutes relating to biodiversity. One is the Environment Court as an adjudicatory body under four out of 34 environmental law statutes (including the Resource Management Act 1991 (RMA), which is regarded as the principal environmental statute). The other is the Environmental Protection

[278] accessible through the national State of Environment reporting repository https://environment.govt.nz/facts-and-science/environmental-reporting/

Authority which operates in relation to promulgating national environmental standards under the RMA and deciding applications regarding activities in the exclusive economic zone. Other important players are local authorities; private landowners and persons carrying out farming, forestry, and primary industry activities on private land.

Evaluation: System of biodiversity protection

Based on the available evidence is the signatory state meeting its obligation to have a viable system of biodiversity protection?

Summary evaluation scores

Sufficiency of the governance instruments (laws, policies, codes, standards etc.)	08/10
Implementation of the governance instruments (strategies, plans, budgets, programs etc.)	04/10
Behaviours that are consistent with effective implementation (key public, private and NGO actors)	05/10
Achieved biodiversity and social outcomes (biophysical and social data, expert opinions, other evaluations)	03/10

Strategies to protect the environment

As mentioned above New Zealand does not have statutory framework to protect biodiversity. The pivotal policies prior to 2019 were the New Zealand Biodiversity Strategy *Our Chance to Turn the Tide* (February 2000) and the New Zealand Biodiversity Action Plan (September 2016). The Te Mana o Te Taiao - Aotearoa New Zealand Biodiversity Strategy came into force in 2020, partly reflecting a review of lessons from implementation of earlier strategies (NZ Dept of Conservation *Lessons learnt from the 2000 New Zealand Biodiversity Strategy*[279]) that identified implementation failings. That 2020 strategy is explicitly linked to implementation of New Zealand's commitments under the CBD.

The primary objective of New Zealand's biodiversity strategy is to halt indigenous biodiversity loss. The status of biodiversity is regularly reported in triennial State of Environment ("SOE") reports, with topic-specific reports on a shorter reporting cycle. The most recent overarching SOE report is Environment Aotearoa 2019, enhanced by topic specific reports for Land and for Freshwater (2020) and the Marine environment (2019).

The 2016 Action Plan had five goals – 1) mainstreaming biodiversity across government and society; 2) reducing pressures on biodiversity and promote sustainable use; 3) safeguarding ecosystems species and genetic diversity; 4) enhance benefits to all; and 5) enhance implementation. However, the overall theme of all five goals is to eradicate invasive or noxious alien species, though the Action Plan was extremely light on any implementation detail. The 2020 Strategy has very many goals, which are categorised by type and timing (2025, 2030 and 2050), and how implementation will be planned and managed is specified with an initial implementation plan scheduled for release in 2021.

The 2020 strategy has a particular focus on rehabilitation of biodiversity. It is notable in the context of the CBD that attention is paid to remedying deficiencies in the complex biodiversity governance system, noting at p22. that "the current system has no single, overarching point of governance, leadership or coordination". The emphasis on the treaty-based relationship with the traditional owners of New Zealand throughout the strategy is substantial.

These documents suffer from systemic problems regarding environmental policy in New Zealand identified by past Parliamentary Commissioners for the Environment, namely, an

[279] https://www.doc.govt.nz/globalassets/documents/conservation/biodiversity/anzbs-2020-lessons-learnt.pdf

over reliance on voluntary methods and the failure to prioritize issues for resolution.[280] Arguably, these problems will persist despite the efforts put into the Action Plan.
Environmental protection is implemented in two broad ways regarding biodiversity – via the Department of Conservation (DOC) for the Crown conservation estate of national parks and reserves which extend across 33% of New Zealand, and via district plans prepared under the Resource Management Act 1991 (RMA) by 67 separate territorial authorities across New Zealand concerning the protection and promotion of biodiversity on private land.
An elaborate framework of strategies and plans promulgated under the Conservation Act 1987 and related statutes governing the Crown conservation estate does not appear to be implemented consistently. This is illustrated by a Court of Appeal decision overturning a land swap deal because no proper assessment of conservation values had been carried out by DOC (*Royal Forest and Bird Protection Society of New Zealand Inc v Minister of Conservation* [2016] NZCA 411).
Very few national statutory planning documents have been promulgated under the RMA during its 25-year lifetime - for example, at the time of the evaluation there were five operative national environment standards (NES) and four operative national policy statements (NPS). None of them relate to biodiversity, which means that district plans (by territorial authorities) were prepared in a biodiversity policy vacuum with no national guidance on methods or priorities. This gives rise to significant problems in developing a consistent approach to matters such as biodiversity offsets in resource consent decision-making. In the absence of any national policy direction, this decision-making has relied on ad hoc litigation before the Environment Court to declare how offsets should be approached in a principled way (*JF Investments Ltd v Queenstown Lakes District Council* C48/2006).
The significant problems with the "architecture" and implementation of the biodiversity governance system have been openly acknowledged in the 2020 strategy. There are specific commitments to multi-stakeholder engagement, reform of the relevant laws, sufficient resources from multiple sources to implement the biodiversity strategy, practical respect for the interests and rights of indigenous people, and the better use of economic instruments.
Attempts to progress a draft NPS on indigenous biodiversity have been slow. The draft NPS was notified in 2008 and submissions were received. Notably the responsible minister elected not to refer the submissions to a Board of Inquiry for hearing and recommendation. Instead, recommendations were made in-house by ministerial officials and, despite this streamlined process, the draft NPS was stalled since 2010. The Minister for the Environment announced that progress should be made during 2018 via a collaborative stakeholder group to mediate the final version of the NPS. This was revised to be due in April 2021 after the 2020 elections, and that date has now been extended to the end of 2021. The delay is explained as enabling an implementation plan to accompany the statement, but nothing had eventuated at the time of writing.

Reliable biodiversity monitoring

Notwithstanding the series of State of the Environment reports between 1997 and 2007, there was concern regarding the quality of (inter alia) biodiversity monitoring. As a result, the then current government enacted the Environmental Reporting Act 2015 which was designed to provide a consistent framework for environmental reporting and monitoring

[280] Dr Jan Wright, Parliamentary Commissioner for the Environment, "The Environment – What Matters Most?" (Salmon Lecture 2014, Resource Management Law Association of New Zealand).

key indicators. This was to be led by Statistics NZ and to address land, freshwater, and marine domains, with cross-cutting analysis regarding (inter alia) biodiversity. This gave rise to the 2015 and subsequent reports[281].

The first set of data compiled in relation to biodiversity as the cross-cutting theme analysed "how a range of processed and human activities affect biodiversity". It recorded the loss of 33% of indigenous forests, a 90% loss of wetlands, and an extinction risk rate regarding endangered species that increased by 7% per annum since 2005. In particular, the data set records that 81% of resident bird species, 72% of freshwater fish, 88% of reptiles, 100% of frogs, and 27% of marine mammal species face extinction. The 2020 biodiversity strategy also presents key statistics about the state of the NZ environment that tell a similar story of unique and rich biodiversity being degraded through human activity. Such statistics invite criticism of the reliability of previous monitoring, the implementation of prior strategies, and the effectiveness of New Zealand's environmental laws in addressing biodiversity protection.

The Environment Aotearoa 2015 report prepared by Statistics NZ also recorded that farming, forestry, and other productive activities on private land appear to have the greatest impact on indigenous biodiversity. Later state of environment reports reinforce this theme. This highlights the fact that district (territorial) plans are important in providing a last local of defence of nature.

Robust system of in-situ protection of biodiversity

Current New Zealand statute law preferences protecting biodiversity in situ. For example, the Wildlife Act 1953 starts from the premise of absolute protection to indigenous fauna with only limited exceptions for permits for killing, taking, and use of wild animals. The Marine Reserves Act 1971 adopts a similar approach with no-take marine reserves but in practice the statute has had limited impact because less than 5% of the New Zealand coastline is protected, and because the statute has not been updated to extend beyond the 12 nautical mile (nm) limits of the territorial sea.

System to manage ex-situ species preservation

DOC manages 220 islands within the 12nm territorial sea under the Conservation Act 1987 and the Reserves Act 1977. In particular, 50 islands are managed as predator (alien species) free offshore island reserves for ex-situ conservation of critically endangered species such as black robin, kakapo, and tuatara. These islands (e.g. Mercury Islands) represent the last refuges for some of New Zealand's rarest flora and fauna. These projects are highly acclaimed and have been very successful in protecting species unable to be sustained in their normal mainland habitat.

Reliable system to govern biodiversity resources for sustainable use

Some New Zealand statutes that were world leading when originally enacted are now outdated compared with methods used in other jurisdictions or in other regulatory regimes. For example, the Wildlife Act 1953 does not contain criteria to guide decision-making regarding whether permit applications for the killing, taking, or use of wild animals should

[281] All available from the environmental reporting repository at https://environment.govt.nz/facts-and-science/environmental-reporting/?limit_4988=12

be granted. Similarly, implementing the Marine Reserves Act 1971 has met with opposition from commercial and recreational fishermen. Attempts to update the statute have stalled due to a lack of political resolve to address difficult trade-off decisions. For example, a review of the Marine Reserves Act 1971 was announced in 2002 but the amendment Bill remained before Parliament until 2012 and was finally withdrawn with a promise that a replacement Bill would be introduced. Later, the responsible minister announced the intention to introduce the Bill in 2016, and though consultations were initiated, at the time of writing this has not yet occurred. The original Act was reprinted in 2018.

Incentives to protect biodiversity (including use of the polluter pays principle)

The polluter pays principle is implemented through civil and criminal enforcement provisions in the Conservation Act 1987, the Marine Reserves Act 1971, and the RMA (e.g. s314 regarding enforcement orders and s 339 regarding sentencing), all of which provide those breaching statutory requirements to be liable for any loss or damage caused, in addition to penalties (*Machinery Movers Ltd v Auckland Regional Council* [1994] 1 NZLR 492). s.65 of the Biosecurity Act 1993 enables the Governor-General to impose levies to fund pest management to eradicate alien species.

Additionally, provision is made for environmental offsets under s108 of the RMA, when including such conditions under resource damage consents. However, as noted above the lack of nationally consistent guidelines regarding biodiversity offsets is likely to impede effective implementation. The loss of indigenous biodiversity since the first State of the Environment report of 1997 and the increasing rate of biodiversity loss indicate that these arrangements are not working in practice.

The loss of lowland forests provides an interesting paradox. Private landowners are incentivized to protect indigenous forest cover on their land via statutory covenants for the preservation and maintenance of the forest in perpetuity, under the Conservation Act 1987, the Reserves Act 1977 and the Queen Elizabeth the Second National Trust Act 1977. In return for entering into a covenant agreement, the landowner may be eligible under grant schemes for assistance with forest maintenance, and for relief from local authority rates on the land. These covenant schemes have proved to be popular and highly successful. In contrast, the protection of indigenous forest remnants under the Forestry Act 1949, using management agreements concluded in return for the grant of felling rights for other trees, has been ineffective. This is due to the lack of appropriately qualified personnel to carry out the baseline survey work for the agreements or to monitor those agreements (*Politics and biodiversity: a New Zealand perspective* [2011] 4 Env Liability 119).

Reports prepared by the Environmental Defence Society conclude that the consent conditions under the RMA are not monitored nor enforced by a number of local (territorial) authorities, due to a lack of funding (*Vanishing Nature* (2015) and *Pathways to Prosperity* (2016)).

Reliable system of environmental impact assessment

Mandatory systems of environmental impact assessment (based on EU requirements) are features of the RMA (sch.4) and the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (s39).

Suitable mechanisms to provide funding for conservation

Funding for conservation on the Crown conservation estate is provided through Vote Conservation (i.e. the allocation of funding for the Department of Conservation) as part of the annual government budget process e, while local (territorial) authorities are generally responsible for funding pest management to eradicate alien species, and landowners are responsible for funding conservation on private land unless they qualify for grants or rates relief under statutory covenants. without grants or rates relief where statutory covenants are in place, no other public funding is available to incentivize action by private landowners, so protecting biodiversity on private land becomes a matter of conscience.

Rules to protect indigenous biodiversity on private land are put in place through district plans promulgated by territorial authorities, and s.85 of the RMA expressly provides that compensation is not payable for the impact of such rules on the reasonable use (i.e. value) of land. The only option available to territorial authorities, or the Environment Court on appeal, in response to objections against such rules is to amend or cancel the rule if the objection is upheld. Rules have the same legal effect as statutory regulations. As a result, the introduction of restrictive rules in district plans to protect biodiversity on private land can become politically charged. This is a particular issue in the context of New Zealand's three year election cycle, as proposed plans or changes can take up to 6 years before implementation due to the plan-making process under sch. 1 of the RMA.

Viable environmental and impact assessment and protective regime

This is addressed in the section on environmental impact assessment, above.

Effective system of environmental laws

New Zealand has a well-developed system of 34 environmental statutes (together with subordinate legislation) and a number of institutions for environmental governance. Notwithstanding these laws and institutions, the OECD voiced concern in its environmental performance reports regarding New Zealand's silo-ed approaches and implementation gaps (OECD 2017).

In terms of transposing international environmental law obligations into domestic law, New Zealand adopts a dualist approach that requires express statutory amendment to incorporate these obligations. The RMA is regarded as the omnibus mechanism for translating international environmental law into domestic law – subject to exceptions in areas such as climate change, law of the sea, ozone layer protection, or trade in endangered species, where separate specific transposing statutes have been enacted.

These arrangements are problematic in relation to the CBD because there is no express reference to that convention in the RMA, even though the national biodiversity strategy is explicit in linking New Zealand's strategy to its CBD commitments. While the CBD could be incorporated using subordinate methods such as the promulgation of a NPS under s. 45 of the RMA or regulations under s 360 of the RMA, no such regulations have been made and the proposed NPS on indigenous biodiversity is not operative. As mentioned, this has been bogged down in the mire of the property rights debate since 2010. It is also of note that any regulations made under s 360 regarding biodiversity would only apply within the 12nm territorial sea in relation to the coastal marine environment. As noted above, rules are however included in district plans under the RMA to protect biodiversity on private land,

but without any operative NPS, these rules depend on s 6(c) of the RMA for the protection of indigenous flora and fauna habitat, rather than statutory incorporation of the CBD. A similar position applies in relation to the Convention on Wetlands 1976 (RAMSAR). However, RAMSAR sites are given statutory protection as part of the Crown conservation estate.

In particular, the declaratory decision of the Environment Court in *Kaimanawa Wild Horse Society v Attorney-General* [1997] NZRMA 356 is relevant to whether the RMA transposes the CBD into domestic law. The Court stated that:

> *I have also to consider the society's submissions based on the Convention on Biological Diversity. The relevant authority of the Environment Court to make declarations is confined to declarations about functions, powers, rights, duties under the Resource Management Act and about contraventions of that Act (s 310(a) and (c)). The Court has not been given any authority to make declarations about New Zealand's obligations at public international law, or about the application or interpretation of international instruments. Even a superior Court of general jurisdiction does not enforce provisions of international instruments (see R v Home Secretary ex parte Brind [1991] 1 AC 696; [1991] 1 All ER 720, and Tavita v Minister of Immigration [1994] 2 NZLR 257).*
>
> *I accept that an international instrument might assist a Court in interpreting an ambiguous statutory provision. Mr. Reeves submitted that the Resource Management Act being an Act of Parliament dedicated to the sustainable management of New Zealand's natural and physical resources, the concept of sustainability must be understood by reference to the Convention. Yet the Convention is dated 5 June 1992, while the Resource Management Act was enacted in 1991. Mr. Reeves asserted that "the Crown promoted, drafted and/or negotiated both at the same time", and that the Convention had been drafted by a process which began on 22 December 1989, a period which coincided with the progress of the Resource Management Bill. However, to whatever extent this country may have been involved in the drafting of the Convention, that would have involved the Crown, and its officials, not Parliament. I am not willing to infer from the part coincidence of the processes, that in passing the Resource Management Act Parliament intended that the meaning of sustainable management given so fully in s 5 should take colour from an international instrument which was not before it, and which did not then exist other than as an incomplete draft.*
>
> *…*
>
> *Counsel for the society also submitted that the Convention is available to expand the purview of the Resource Management Act if international comity is to be served where a doubt exists which does not amount to an ambiguity. I may not have understood that submission correctly, but to the extent that I have, I do not accept it. It remains my understanding that as a matter of law it is not for a Court to give effect to international instruments as such, even to expand the purview of an Act of Parliament; and that it is not appropriate to ascribe to Parliament an intention to use words with meanings to be taken from an international instrument that was still in preparation at the time the Act was passed.*

Thus, while the courts will interpret New Zealand law "in a way which is consistent with New Zealand's international obligations" (*Tavita*) it is reasonably clear that without an

operative NPS the CBD has not yet been transposed into domestic law. One implication of this position following the UK Supreme Court decision in *R (Miller) v Secretary of State for Exiting the European Union* [2017] UKSC 5 is that is doubtful whether the use of the prerogative to repudiate or terminate the CBD absent legislative authority would be susceptible to judicial review. This is likely a particular issue for Westminster style constitutions.

Addressing patterns of production and consumption and trade

While identified as an issue in the 2016 biodiversity Action Plan, patterns of production and consumption and trade are not addressed in any meaningful or detailed way. This is an area for which Statistics NZ now has a remit, under the Environmental Monitoring Act 2015. Work commenced on economic reports designed to mirror the environmental domains and relevant cross-cutting issues reported on. Over time, this reporting should begin to fill this particular void.

Evaluation: Precautionary principle implementation

Based on the available evidence has the precautionary principle been adequately incorporated in the resource governance system?

Summary evaluation scores

How well do laws, policies, codes, standards etc. incorporate the precautionary principle?	04/10
Is the precautionary principle implemented fully in governance strategies, plans, budgets, programs etc.?	06/10
Are the behaviours of key public, private and NGO actors consistent with effective implementation of the principle?	06/10
Do biophysical and social data, expert opinions, or other outcome evidence indicate the effective use of the precautionary principle?	06/10

Precautionary principle in New Zealand environmental law and management

A precautionary approach derived from Rio Principle 15 is embedded in various environmental statutes. For example:

- Risk assessment in terms of "acting or not acting" is required under s 32 of the RMA when local (territorial) authorities are preparing policy statements and plans that (when operative) will guide resource consent decision-making.
- Caution is required in relation to managing the adverse environmental/diversity effects of activities under s 7 of the Hazardous Substances and New Organisms Act 1996 in cases "where there is scientific and technical uncertainty".
- In relation to fisheries management, decision-makers are required under s 10 of the Fisheries Act 1996 to have regard to information principles including the Rio precautionary principle. They are to base decisions on the best available information, considering any uncertainty, being cautious where information is uncertain or inadequate, while not using uncertainty as a reason for failing to make decisions to promote the sustainable management of fish stocks.
- In relation to granting consents for activities in the 200nm exclusive economic zone (EEZ) s 34 of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 also requires decision-makers to have regard to a similar set of information principles to those set out in the Fisheries Act, and to consider whether applying an adaptive management approach would be an appropriate way of managing activities. Despite the similarity between the two statutes, there is no reference to Rio Principle 15 in the 2012 statute pertaining to the EEZ.

Beyond that, the courts have been active in developing the precautionary approach in relation to environmental decision-making. For example, in relation to the standard of proof the courts have found that application of the civil standard (balance of probabilities) is unhelpful in relation to both preparing policy statements and plans and to deciding resource consent applications when assessing risk (*Shirley Primary School v Telecom Mobile Communications Ltd* [1999] NZRMA 66; *Long Bay Okura Great Park Society Inc v Auckland Regional Council* A78/2008; *RJ Davidson Family Trust v Marlborough District Council* [2017] NZHC 52). Instead, they have focused on the probability of identified risks occurring. Since 2014 the courts have also developed a more principled way of applying statutory planning documents when dealing with appeals regarding RMA decision-making (Environmental

Defence Society Inc v The New Zealand King Salmon Company Ltd [2014] NZSC 38; *RJ Davidson Family Trust v Marlborough District Council* [2017] NZHC 52). This approach applies the principle of validity to policy statements and plans by assuming that they promote sustainable management as required under pt 2 of the RMA unless "there has been invalidity, incomplete coverage or uncertainty of meaning within the documents" (*Davidson* at [74]). The combination of these approaches to assessing risk and probability and applying the hierarchy of planning documents in *Davidson* enabled the Court to conclude that the risk presented by a proposed mussel farm in the 12nm territorial sea in relation to its potential adverse effect on the habitat of the endangered New Zealand King salmon, and subsequent extinction of that species, could be assessed as an 11% probability of that risk occurring. Although the language may give a somewhat deceptive description of the court's certainty as to the probable risk, it aids the court in assessing what may be a tolerable risk.

The developing case law provides a reasonable level of comfort that the decision-makers are now equipped to apply the precautionary principle in cases where there is a threat of significant biodiversity reduction or loss when deciding resource consent applications. There is however less confidence regarding the ability of local (territorial) authorities to manage ill-informed property rights debates in the political environment when preparing district plans for the protection of indigenous biodiversity on private land (*Politics and biodiversity: a New Zealand perspective* [2011] 4 Env Liability 119). The inability to manage misinformation in some cases has led to proposed plans being withdrawn in the aftermath of local elections.

Evaluation: Protection of human interests

Based on the available evidence is their adequate recognition and protection of people's biodiversity interests (particularly of indigenous people and women), including in genetic material? And do the community participation arrangements be implemented adequately reflect these interests?

Summary evaluation scores

Do governance instruments including laws, policies, codes, standards etc. adequately recognise human biodiversity interests?	03/10
Do the governance strategies, plans, budgets, programs etc. implement recognition of human interests in biodiversity?	05 /10
Are the behaviours of key public, private and NGO actors consistent with effective recognition of human biodiversity interests?	04 /10
Do social, economic, cultural and ecological outcomes reflect effective implementation of this recognition?	05/10

Indigenous people's interests

New Zealand's biodiversity strategies, and indeed its governance of natural resources generally, has been strongly informed by the Treaty of Waitangi between the native inhabitants and the colonising Europeans. That treaty has enabled the indigenous people to exercise a powerful influence on biodiversity stewardship and pervades environmental jurisprudence. The *Te Mana o Te Taiao - Aotearoa New Zealand Biodiversity Strategy 2020* places this at the heart of a national response to a biodiversity crisis.

The RMA includes a significant suite of provisions designed to respect indigenous peoples' interests. For example, the statutory purpose (sustainable management) includes express reference to (inter alia) enabling "people and communities to provide for their … cultural well-being" in s 5(2). The purpose is supplemented by a number of accessory and subordinate principles in the remainder of pt 2 which are designed to provide examples of what may be sustainable management in particular cases. They include:

- "the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga" (s 6(e));
- "the protection of protected customary rights" pertaining to the coastal marine area or 12nm territorial sea (s 6(g));
- "kaitiakitanga" or guardianship exercised by Māori in relation to specific natural and physical resources (s 7(a));
- Taking "into account the principles of the Treaty of Waitangi" (s 8) described by a range of learned authors as being New Zealand's foundational constitutional document (Paul McHugh, *The Māori Magna Carta* (Oxford University Press 1991)).

The RMA does not provide for equitable benefit sharing, but under the Treaty of Waitangi Act 1975 a grievance procedure has been put in place to enable Māori claims in relation to natural and physical resources of the kinds found in s 6(e), s 7(a) and s 8 of the RMA. These grievances must be resolved by a special tribunal, which is chaired by a High Court judge with expertise regarding Māori tikanga or customary law. Since 1975 the Waitangi Tribunal has produced a series of reports recommending that legal mechanisms be put in place regarding the development, use and protection of harbours, fiords, rivers, and mountains of particular significance to Māori. Prior to 2010 these recommendations typically resulted in

(inter alia) RMA amendments inserting special notification and consultation requirements for issues affecting such features, to provide statutory acknowledgement the unique Māori interests in them. Since 2010 a more diverse range of legal methods have been used. These including co-governance models (Waikato-Tainui Raupatu Claims (Waikato River) Act 2010, transfers of legal title to substantial blocks of Crown land (Te Urewera Act 2014), and grants of legal personality to natural resources and appointing guardians to litigate and enforce rights on behalf of the relevant resource (Te Awa Tupuna (Whanganui River Claims Settlement) Act 2017).

Women's interests

The RMA does not include any specific provisions to ensure the protection of women's interests in biodiversity. Generally, s 21 of the Human Rights Act 1993 (HRA) prohibits discrimination on the grounds of sex, marital status, religious or ethical belief, while pt 1A of the HRA prohibits discrimination as a result of any act or omission by central or local government. Freedom from discrimination on the grounds set out in the HRA is also reinforced by s 19(1) of the New Zealand Bill of Rights Act 1990. There has been no litigation as to whether this gap in the RMA violates the relevant sections of the HRA 1993.

Citizen participation

Rio Principle 10 emphasises two aspects regarding citizen participation (a) access to environmental information, and (b) public participation in decision-making. While every resource consent application is required to include an assessment of environmental effects (AEE) in accordance with s 88 and sch 4 of the RMA, access to such information by interested persons will, in practice, be trigged by notification of the application. Beyond that, there are no access to information rights included in the RMA. Instead, access to environmental information is governed by the Local Government Official Information and Meetings Act 1987, which is the law pertaining to access to information about local governance issues generally. There is general dissatisfaction with the operation of the official information statutes pertaining to central and local government. Sir Geoffrey Palmer QC has recently called for a complete review of these statutes as part of ongoing consultation regarding his proposals for a written New Zealand constitution. The 2020 strategy indicates a commitment to significant improvement in citizen engagement in biodiversity conservation.

Regarding citizen participation, the RMA provides local (territorial) authorities with discretion as to whether any resource consent application for an activity that may give rise to adverse environment effects on biodiversity should be notified (s 95A of the RMA). In particular, the RMA provides limited notification to the persons likely to be most directly affected by the proposed activity (s 95B), and public notification under s 95C. Resource consent applications are notified in some way (either limited or public) where the relevant local (territorial) authority decides that adverse effects are likely to be more than minor (s 95D) and where such effects are likely to have an impact on any persons judged by the local authority to be affected persons (s 95E). Approximately, 50,000 resource consents are filed with local (territorial) authorities each year and less than 4% of applications are notified. The RMA does not provide any objection or appeal rights that would enable formal complaint by any person aggrieved by the local (territorial) authority's decisions regarding notification. As a result, the only available legal remedy is via judicial review in the High Court. The superior courts apply the 'hard look' doctrine (where the local (territorial)

authority decision is subject to more scrutiny by the Court and limited deference is given to the decision-maker) regarding any applications for judicial review concerning notification decisions, and subject the local (territorial) authority's decision-making process to "close and anxious scrutiny" due the gate-keeping nature of these decisions, which effectively shut members of the public out of any participation in the decision-making process, whether via submissions, hearings or appeals under the RMA. In policing the non-notification decision-making on judicial review, the superior courts focus on whether there was sufficient information to support the decisions (*Westfield (New Zealand) Ltd v North Shore City Council* [2005] NZSC 17).

Where affected persons are notified, they are provided with rights to make submissions to the local (territorial) authority regarding the resource consent application under s 96 of the RMA. These submissions may request that the application should be granted or refused, or that conditions should be included to the grant of any resource consent (s 108). Where submitters request to be heard in support of their submissions, they have the right to be heard by the local (territorial) authority (s 100). They are also given appeal rights against any adverse local (territorial) authority decisions to the Environment Court on both merits and law (s 120), and beyond that to the High Court on questions of law only (s 299). Such appeal rights can be exercised without leave. Absent notification, there is mechanism to interrogate the substantive merits of local authority decisions under the RMA.

Overall evaluation of implementation and effectiveness

The extent that relevant international principles influence what happens on the ground is a product of local circumstance, and private sector and NGO initiative regarding the protection of biodiversity on private land, rather than government action outside the Crown conservation estate. This position appears strongly influenced by property rights

Comments on national strategies and reports

Overall, the documents produced up to 2019 have been at a high level and reflect New Zealand's desire to project a "clean and green" image as opposed to the reality of significant and continuing biodiversity loss despite actions by key interest groups over 25 years. The 2020 strategy may signal a stronger commitment to remediate past harm and protect natural assets.

Key implementation and effectiveness issues

Effectiveness is patchy overall and reflects the absence of any national statutory instruments that directly transpose the CBD principles into domestic law. Property right and economic interests are often, but not always, at odds with the principles. Those issues aside, there are some real highlights such as ex-situ protection of native birds and reptiles on offshore island, predator free, sanctuaries. There are also some real low points such as fishing rights and economic considerations outweighing the effective protection of critically endangered, genetically unique, Māui Dolphin, which has a very defined and limited near shore range along one short stretch of coast (Manganui Bluff to Whanganui). That range could be protected without undue economic impact. Unfortunately, the existing protections to not extend to the limits of that range, and numbers continue to decline through especially fishing net entanglement and boat strike, with adults thought to number around 57.

As mentioned above, market and property rights often seem to trump at the level of effective legal implementation of principles. Some of the above-mentioned predator free islands, besides being islands of protected biodiversity, serve as tourist attractions, in a sense paying their own way. There is a nascent movement to pursue a predator free New Zealand more effectively, which might be a tourist attraction along the lines of the Galapagos Islands. That is to say, those biodiversity principles which seem to be most attractive and effective, and most likely to be implemented, are those which align with NZ's economic interests.

Discussion: Recommendations for improving implementation of the CBD

Overall, the single key recommendation for improving implementation of the CBD in New Zealand is that the Minister for the Environment should proceed with urgency to prepare a National Policy Statement (NPS) on Indigenous Biodiversity under the RMA and to promulgate a National Environmental Standard on Indigenous Biodiversity under the RMA regarding private land (i.e. land not vested in the Crown and managed by the Department of Conservation).

These instruments should include:

One: Objectives and policies that are binding on all local authorities and require local authorities to amend their policy statements and plans to include the

NPS objectives and policies within 6 months using the fast-track process under the RMA that does not require compliance with sch 1 of the RMA.

and;

Two: Regulations in the NES that require restricted discretionary resource consent to be obtained for all activities that may adversely affect habitat, setting out relevant assessment criteria, and listing standard conditions that should be imposed on the grant of all consents (including conditions requiring compliance bonds and regular periodic monitoring and review throughout the duration of consent). Activities that do not comply with the restricted discretionary activity regulations should be classified by the NES as prohibited. Local authorities should be required to amend their policy statements and plans by deleting any inconsistent rules within 6 months, and by amending any remaining rules to ensure that they are consistent with the NES.

SOUTH AFRICA

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2018 report updated in June 2022

South Africa team leader's introduction

South Africa, similar to the other countries in this report, is known for its biodiversity. Similarly, to the other countries, South Africa's biodiversity is under threat from the continued pressure from developers, housing projects, mining and in general a population explosion, amongst others. *Apartheid* led to the unfair distribution of land and resources, and therefore the pressure to achieve social justice via redistribution of land and resources is severe. Government has to ensure job creation and economic growth, and plans to introduce large infrastructural, mining and exploration projects both inland and in South Africa's economic maritime zone.[282] These new projects may pose an additional threat to biodiversity protection.

Similar to other countries, South Africa's legal framework dealing with the protection of biodiversity is complex and all spheres of government, national, provincial, and local have to play a role in this regard. In addition, each traditional community, has its own rules about how that specific community should share its resources. South Africa consists of a national government, nine provinces with some autonomy in relation to environmental matters, as well as district and local governments that may regulate on certain biodiversity matters. In a few court decisions the courts stated that local government may legislate on biodiversity matters.[283] South Africa therefore has a fragmented legal and governance framework pertaining to biodiversity.

Subsequent to the initial evaluation 2017-18 a number of new developments impacted on the biodiversity scoring. These include, amongst others:

- South Africa released its Sixth National Report on the Convention of Biological Diversity (CBD)[284] as well as the Department of Forestry, Fisheries and Environment updated

[282] See in this regard, Republic of South Africa National Planning Commission. National Development Plan 2030 Our Future – Make it work.; Operation Phakisa https://www.operationphakisa.gov.za/pages/home.aspx accessed 10 February 2022; Department of Forestry, Fisheries and Environment. Operation Phakisa Oceans Economy Aquaculture Sector. https://www.dffe.gov.za/projectsprogrammes/operationphakisa/oceanseconomy accessed 10 February 2022l President Ramaphosa, State of the Nation Address, 10 February 2022. https://www.gov.za/speeches/president-cyril-ramaphosa-2022-state-nation-address-10-feb-2022-0000 accessed 10 February 2022.

[283] *Le Sueur and Another v Ethekwini Municipality and Others* (9714/11) [2013] ZAKZPHC 6 (30 January 2013); Alexander Paterson. Biodiversity. In Anél du Plessis, ed. Environmental Law and Local Government. Chapter 19. Juta 2021.

[284] https://chm.cbd.int/pdf/documents/nationalReport6/241240/2 accessed 10 February 2022.

South Africa's State of the Environment (SoE) 2019 report.[285] The information is incorporated into this report.

- At the end of 2021 and at the beginning of 2022, non-governmental organizations successfully halted exploration for gas and petroleum in South Africa's territorial waters, citing the harm such exploration may have on the marine environment as well as cultural and spiritual linkages to the marine environment.[286]
- These cases also emphasized the importance of public participation in matters that deal with possible impacts on the environment and people's livelihoods.
- In relation to mining, the courts found that communities with insecure land rights must give their prior and informed consent before mining activities permits are approved. They must understand the impact of the activity on their lives, which would include on the biodiversity they rely on.[287]
- The Department of Forestry, Fisheries and Environment excluded certain activities that are aimed at biodiversity and ecosystem protection from the need to obtain environmental authorizations. This will make it easier to implement these restoration projects. The Department also developed generic environmental management programmes for these activities to ensure that they still adhere to environmental norms.[288]
- The Department published South Africa's National Biodiversity Framework 2019-2024 for comment in March 2021.[289] The purpose of the Framework is to align all efforts aimed at the conservation and management of biodiversity in South Africa. The Framework addressed accelerators[290] to ensure the implementation of the National Biodiversity Strategy and Action Plan (or NBSAP) of 2015's priorities. Once accepted, the new Framework may ensure better coordination and planning as well as a concerted effort of both the public and private sector to implement the goals set by the CBD.

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[285] http://soer.environment.gov.za/soer/CMSWebSite/Content.aspx?menuId=4353,4353 accessed 22 February 2022.

[286] *Sustaining The Wild Coast NPC and Others v Minister of Mineral Resources and Energy and Others* (3491/2021) [2021] ZAECGHC 118 (28 December 2021); P. Burkhardt. Activists target west coast oil and gas exploration plans in SA - Groups won a case against Shell to halt earlier seismic study. BusinessLive, 12 January 2022. In *Border Deep Sea Angling Association and Others v Minister of Mineral Resources and Energy and Others* (3865/2021) [2021] ZAECGHC 111 (3 December 2021) the court kept to a strict interpretation of the law and allowed the exploration to proceed.

[287] *Baleni and Others v Minister of Mineral Resources and Others* [2019] 1 All SA 358 (GP); 2019 (2) SA 453 (GP); *Maledu and Others v Itereleng Bakgatla Mineral Resources (Pty) Limited and Another* 2019 (1) BCLR 53 (CC); 2019 (2) SA 1 (CC).

[288] GN 105-107 in GG 44173 of 5 February 2022 (Working for Ecosystems Programme; Working for Water Programme, Working for Wetlands Programme).

[289] GN 171 in GG 44229 of 5 March 2021.

[290] 'Accelerators' is defined as 'those measures that can most effectively remove bottlenecks and/or systemic or underlying barriers to implementation, or that provide the best opportunities for fast-tracking implementation, or achieving multiple goals simultaneously" par 3.2 of the draft Framework.

- Statistics South Africa published a report on Natural Capital 2 – Accounts for Protected Areas, 1900-2020[291] that forms part of South Africa's Natural Capital Accounting in terms of the 'Natural Capital Accounting and Valuation of Ecosystem Services (NCAVES) project, which was implemented from 2017 to 2021, led globally by the United Nations Statistics Division (UNSD) and United Nations Environment Programme (UN Environment) with funding from the European Union (EU). South Africa was one of five countries (along with Brazil, China, India, and Mexico) participating in this international project. It was found that by 2020 land-based national protected areas (nature reserves, national parks and protected environments) accounted for 9.2% (11 280 684 ha) of South Africa's surface area, while provinces differ in their protection percentages. Mpumalanga protects 22% of its surface area, with Limpopo following with 19.3%, Western Cape 15.1%, KwaZulu Natal 10%, Gauteng 7.9%, Eastern Cape 7.1%, Northern Cape 5.5%, Free State 4.1% and North West 3.6%. The report also refers to the World Heritage Sites that have been declared and their contribution percentage to the statistics above. It also refers to the percentage of protected biomes. In all these scenarios South Africa indicates a growth towards 2020.
- At the United Nations Biodiversity Conference (COP15) in Kunming, China in 2021 'South Africa called for a new global finance facility for biodiversity when the conference adopted a new post-2020 framework to save nature.' South Africa indicated that it wants to expand its protected areas from 16% to 30% by 2036.[292]
- In 2021 the African Union adopted Resolution 489 on the Recognition and Protection of the Right of Participation, Governance and Use of Natural Resources by Indigenous and Local Populations in Africa.[293] The Resolution recognizes that instability may follow if the natural environment is destroyed. Communities are seen as the custodians of the natural resources on their land and to prevent illegal poaching. The Resolution accordingly recognizes 'the rights of indigenous populations and communities over the conservation, control, management and sustainable use of their natural resources including wildlife.' Governments must ensure that these local communities' skills be developed to enable them to do so.
- Seven additional Ramsar Sites had been declared.[294]

The publication of the South African State of the Environment Report and the Sixth National Report indicate that South Africa's biodiversity remains under threat. However, civil society is active in taking government to task, should South Africa's ecosystems be threatened and

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291 Statistics South Africa (StatsSA). "Natural Capital 2: Accounts for Protected Areas, 1900 to 2020" (Report October 2021). http://www.statssa.gov.za/publications/D04012/D040122020.pdf accessed 11 February 2022. Also see E. van Diemen. SA's protected areas growing at a healthy rate, report reveals. Daily Maverick, 6 October 2021 https://www.dailymaverick.co.za/article/2021-10-06-sas-protected-areas-growing-at-a-healthy-rate-report-reveals/ accessed 11 February 2021.

292 T. Phillips. South Africa calls for global biodiversity fund. Mail & Guardian, 23 October 2021 https://mg.co.za/environment/2021-10-23-south-africa-calls-for-global-biodiversity-fund/ accessed 23 October 2021.

293 ACHPR/Res. 489 (LXIX) 2021.

294 Annotated List of Wetlands of International Importance (ramsar.org).

the courts emphasise the importance of public participation when livelihoods and the environment are threatened. New published documents and declarations indicate that the South Africa Government is serious about expanding its protected area network as well as to ensure cooperation amongst all stakeholders involved in biodiversity protection. The strong emphasis on development and job creation, and the increase in poverty, may hamper its efforts.

In this report, as indicated above, the South African evaluation considers the effectiveness of a combination of domestic law, the CBD, and regional agreements, including policing and enforcement.

Overall evaluation: Biodiversity Governance

Based on the available evidence, is the signatory state meeting its obligation to use and govern its environment responsibly to maintain biodiversity?

Summary evaluation score

Consistency of the behaviours of key government, private and NGO actors with responsible biodiversity governance	6 /10
Sustainability of the biodiversity and social outcomes that are being achieved	6 /10

South Africa's area is 1 219 090 km^2 including 4620 km^2 of territorial waters.[295] 79.4% of the land is used for agriculture, providing roughly 843000 jobs.[296] Jobs that depend directly on biodiversity continue to increase. The current estimate is that more than 418000 people depend directly on biodiversity for a job.[297] The population was 56.5 million in mid-2017.[298] The GNI per capita, according to the Atlas method (US$) was 5,490 in 2016 and 5.430 in 2017. The percentage of the population living below the national poverty line was 55.5% in 2015.[299]

South Africa ratified the Convention of Biodiversity on 31 January 1996, acceded to the Cartagena Protocol on 12 November 2003, and ratified the Nagoya Protocol on 12 October 2014.[300] South Africa lodged its first National Biodiversity Strategy and Action Plan in 1998, with the most recent in 2016, with progress reports updated until 2014. South Africa submitted their 6th National Report through the Clearing House Mechanism in December 2018.[301]

South Africa ratified the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), the United Nations Convention on the Law of the Sea (UNCLOS),

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295 Skowno AL et al (eds) *National Biodiversity Assessment 2018: The status of South Africa's ecosystems and biodiversity. Synthesis Report* (South African National Biodiversity Institute, an entity of the Department of Environment, Forestry and Fisheries Pretoria 2019) 41.

296 Ibid. 293 at 3.

297 Biodiversity-related jobs include: protection of biodiversity, restoring ecological infrastructure, research and professional services, tourism and recreation, and extractive use of biodiversity. For a breakdown of numbers see figure 3 in Skowno et al (eds) op cit note 293 at 3.

298 The population growth is due to migration from other African countries but may also be ascribed to more accurate census numbers. See also STATS SA http://www.statssa.gov.za/ accessed 24 January 2021.

299 https://data.worldbank.org/country/south-africa?view=chart accessed 18 January 2018 and https://data.worldbank.org/indicator/ny.gnp.pcap.cd accessed 17 November 2018.

300 South Africa is, however, not a party to the Kuala Lumpur supplementary Protocol on Liability and Redress.

301 6th National Report for the Convention for Biological Diversity (submitted to the CBD CHM on 21 December 2018) https://chm.cbd.int/database/record?documentID=241240 accessed 25 February 2021.

World Heritage Convention, the Antartic Treaty and some articles of the International Convention for the Prevention of Pollution from Ships (MARPOL Convention). The country is a party to the Convention on the Migration of Migratory Species of Wild Animals (CMS) and adheres to the International Convention for the Regulation of Whaling (ICRW). It is a contracting party to the International Plant Protection Convention (IPPC). It acceded to Chapter XXI 3 of the Convention on Fishing and Conservation of the Living Resources of the High Seas. South Africa is a member of the Arctic Council, the International Maritime Organisation, IPBES and the IPCC.[302]

The government shows concern for the protection of biodiversity and participates in international discussions. However, despite the adherence to international documents and structures in place, South Africa's biodiversity is declining. It is not only government that tries to ensure sustainable use of South Africa's biodiversity. NGOs and land owners increasingly participate in the protection of species. The pressure for land, job creation and poverty alleviation, however, hamper these attempts.[303]

Evidence of the sustainability of the use of biodiversity

According to its 6th National Report:[304] South Africa is home to over 95 000 known species, contributing a significant proportion to world plant species (10%), reptile, bird, and mammal species (combined 7%), with more species regularly discovered and described. Moreover, South Africa hosts 15% of the world's marine species. Endemism rates reach 56% for amphibians, 65% for plants and up to 70% for invertebrates.[305]

South Africa has nine biomes [306] and three recognised biodiversity hotspots.[307]

The National Biodiversity Assessment 2018[308] on which the South African Outlook Report of 2019[309] is based, summarises the position with threatened species as follows:

> "*Almost half the of the 1 021 ecosystem types assessed in the NBA 2018 are categorised as threatened. Overall estuaries and inland wetlands have the highest proportion of threatened ecosystem types. … Over two-thirds of ecosystem types are represented in the current protected area network, leaving 31% in the Not Protected category. Wetland and river ecosystem types have the lowest levels of protection overall. … From a species perspective, all 20 401 plants have been assessed and 14%*

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302 http://biodiversitya-z.org/content/south-africa.pdf accessed 18 January 2018.

303 See South Africa State of the Environment Report 2019 https://soer.environment.gov.za/soer/CMSWebSite/Content.aspx?menuId=4307,3307 accessed 23 February 2021.

304 South Africa's *6th National Report for the Convention on Biological Diversity* op cit note 7 at 243. The 6th National Report is not written in the same detail as the 5th National Report, and so we have used statistics from both reports.

305 6th *National Report* op cit note 302 at 243.

306 Skowno et al (eds) op cit note 293 32. Also see GI Cowan, Nobusika Mpongoma, P Britton (eds*) Management effectiveness of South Africa's protected areas* (Department of Environmental Affairs Pretoria 2010) para 1.3.

307 Skowno et al op cit note 293 at 31.

308 Skowno et al (eds) op cit note 293 at 1.

309 State of the Environment South Africa 2019 – Biodiversity. Also see Adams J et al "National Wetland Map 5: an improved spatial extent and representation of inland aquatic and estuarine ecosystems in South Africa" 2020 *Water SA* 46(1) 66-79.

are categorised as threatened. All mammals, birds, reptiles, amphibians, freshwater fishes, butterflies and dragonflies were assessed, together with selected marine and estuarine fishes and invertebrates. Of the 2 911 animals assessed, a total of 12% are threatened. … Using the new protection level indicator for species 63% of plants are categorised as Well Protected (based on a random sample of 900 species). Mammals, reptiles, birds, amphibians, freshwater fishes and butterflies were assessed using the new method, and overall 63% of these species are categorised as Well Protected."

The South African National Botanical Institute (SANBI)[310] reports that more than a quarter of South African flora is threatened or of environmental concern;[311] 0.2% of plant species are extinct.[312] Of the 6581 endemic taxa in the biodiverse Western Cape Province, 1939 are threatened.[313] Key threats include habitat loss, habitat degradation, invasive alien species, harvesting and pollution. The drivers are urban development, cultivation,[314] timber plantations and industrial and mining operations. South Africa's Strategy for Plant Conservation 2015[315] has five objectives: to create an e-platform for data on plant species and conservation; to ensure that plant diversity is conserved and sustainably and equitably used; and not endangered by international trade; the use of education and awareness programmes; along with public participation, networks, and partnerships.

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310 SANBI Statistics: Red List of South African Plants version 2020.1 (2020) Redlist.sanbi.org accessed 23 February 2021. See also Department of Environmental Affairs *2nd South Africa Environment Outlook. A report on the state of the environment* Executive Summary (Department of Environmental Affairs Pretoria 2012 para 3.4) (hereafter *2nd South Africa Outlook Report*). Also see the newer statistics as mentioned above at State of the Environment Report 2019 – Biodiversity – Terrestrial realm op. cit. note 301.

311 14.3% of South African flora is threatened and 11.6% of conservation concern. See SANBI "Red List Statistics" http://redlist.sanbi.org/stats.php accessed 25 February 2021.

312 SANBI op cit note 308.

313 The area has a total of 10751 known taxa of which 1866 is threatened. See SANBI op cit note 308.

314 For example, 82 per cent of land in South Africa is agricultural land (approximately 100 million hectares of 127 million hectares). Only 14 per cent can be utilised for arable crop production, and less than 10 per cent is irrigated. Mostly land is used for grazing, forestry or wildlife or nature conservation. See in this regard *2nd South Africa Outlook Report* op cit note 16 at para 3.4. According to South Africa State of the Environment 2019 op cit note 9: "there has been a total increase of 3.27% in transformed land specifically associated with urban expansion, mining, cultivation and plantations. This represents an increase from 15.26% transformed land in 2009 to 18.53% in 2014 across South Africa. Urban areas have increased from 3.05% to 3.36%, forestry from 1.23% to 1.77%, and cultivation from 10.98% to 13.4%."

315 https://www.cbd.int/doc/world/za/za-nbsap-oth-en.pdf accessed 18 January 2018. Also see updated information at SANBI "Plant Conversation Strategy" http://biodiversityadvisor.sanbi.org/planning-and-assessment/plant-conservation-strategy/ accessed 23 February 2021.

The over-harvesting of rare indigenous plants is driving plant species to extinction.[316] 20 000 tonnes of medicinal plants to the annual estimated value of R270 billion is harvested in South Africa.[317] These include succulents, bulbs, roots and bark.[318] The CITES appendixes list 852 South African plant species with 44 listed on Appendix I, which prohibits commercial trade.[319] The majority of these listed species are cycads,[320] the most threatened plant species in South Africa.[321] Between 2012 to 2014 the list of South African Threatened or Protected Species under Section 56 of National Environmental Management: Biodiversity Act 10 of 2004 was updated and 172 species added.[322]
Major threats to South Africa's biodiversity include:[323]

- "loss and degradation of natural habitat in terrestrial, freshwater, estuarine and marine ecosystems due to unsustainable land-use practices, inappropriate or poorly-located land uses;
- Invasive alien species (both plant and animal);
- Destructive and over-harvesting of species, especially in the marine environment;
- Illegal wildlife trafficking and other illegal resource use;
- Over-abstraction of water and pollution of aquatic ecosystems;
- Disruption of natural drivers of ecosystem functioning (such as fire cycles)
- Impact induced by climate change";[324]
- Community invasion of protected areas.[325]

Poaching and trade in endangered species are significant.[326] These are driven by bushmeat trade (for local communities), religious, horticultural, and medicinal uses (healthcare), the

316 State of the Environment (2006) 114.
317 Ibid.
318 Ibid at 122.
319 South Africa's Strategy for Plant Conservation op cit note 21 at 52.
320 Ibid.
321 Ibid.
322 Ibid. GN 255 in GG 38600 of 31 March 2015.
323 6th National Report op cit note 7 at 250 (section VII) and Van As J *et al The Story of Life & the Environment: An African Perspective* 43-46.
324 See in this regard also Caroline Petersen and Stephen Holness "South Africa: Ecosystem-Based Planning for Climate Change" in Petersen, Caroline and Stephen Holness (eds) *World Resources Report Case Study. South Africa: Ecosystem-Based Planning for Climate Change* (2013 World Resources Report, Washington DC) http://www.worldresourcesreport.org accessed 20 January 2018.
325 Carnie T. Ndumo Game Reserve: The complicated balancing act of subsistence farming and nature conservation in KwaZulu-Natal. Daily Maverick. 6 December 2021.
326 Rapid biodiversity loss is seen as a modern age anthropocentric challenge that descends from human induced activities and the need to fulfil in the necessities of growing populations. The discussion on poaching is based on the 3rd *South Africa Environment Outlook Report Chapter: Biodiversity and Ecosystem Functioning* (2017) 1.

exotic pet trade and ornamental collections, leisure and trophy hunting, the fashion industry and the capture and killing of wildlife for illegal markets.[327]
Wildlife poaching occurs at an alarming pace causing irreversible consequences,[328] being one of the greatest threats to terrestrial protected areas in South Africa.[329] Many South African wildlife species are a target for poaching, but some are of particular concern.[330] The poaching of rhinoceros and elephants is a growing concern.[331] According to Save the Rhino,[332] 6115 rhinoceros were poached in South Africa from 2007 to 2016, with 1028 rhinoceros poached from January to December 2017 (with 518 poachers and traffickers arrested).[333] Poaching is the main driver of the decline in elephant numbers, followed by the destruction of habitats.[334] The Kruger National Park witnessed the poaching of 67 elephants

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327 Broad S, Mulliken T and Roe D "The Nature and Extent of Legal and Illegal Trade in Wildlife" in Oldfield S (ed) *The Trade in Wildlife: Regulation for Conservation* (Earthscan Publications London 2003) 11.

328 Nelleman C ea (reds) *The Environmental Crime Crisis: Threats to Sustainable Development from Illegal Exploitation and Trade in Wildlife and Forest Resources* (United Nations Environment Programme Nairobi 2014) 7.

329 *National Biodiversity Assessment: Synthesis Report* (2011) 46.

330 Ibid. 119.

331 International Union for Conservation of Nature 2016 *IUCN Reports Deepening Rhino Poaching Crisis in Africa* https://www.iucn.org/content/iucn-reports-deepening-rhino-poaching-crisis-africa accessed 21 August 2017. S.M. Ferreira and L. Dziba, Where are rhinos safest? (2021). South African Journal of Science. 117(9/10) DOI: https://doi.org/10.17159/sajs.2021/11300. The culling of elephants to preserve ecosystems is also controversial, see R. et al. Could Culling of Elephants Be Considered Inhumane and Illegal in South African Law?" (2021). Journal of International Wildlife Law & Policy. DOI: 10.1080/13880292.2021.1972529.

332 Save the Rhino 2017 *Poaching Statistics* https://www.savetherhino.org/rhino_info/poaching_statistics accessed 18 August 2017.

333 Department of Environmental Affairs "Minister Edna Molewa highlights progress on the implementation of the integrated strategic management of rhinoceros" 2018 https://www.environment.gov.za/mediarelease/molewa_highlightsprogressonimplementationofintegratedstrategicmanagementofrhinoceros accessed 29 January 2018.

334 International Union for Conservation of Nature 2016 *Poaching Behind Worst African Elephant Losses In 25 years – IUCN Report* https://www.iucn.org/news/species/201609/poaching-behind-worst-african-elephant-losses-25-years-%E2%80%93-iucn-report accessed 21 August 2017.

during 2017.[335] Due to the Covid-19 lockdown, the Department of Environment, Forestry and Fisheries[336] indicated a decline in rhino poaching in the first half of 2020.[337]
It is, however, not only wildlife poaching that is rife, but all species (e.g. plant, insect, reptile, and marine living resources) are at risk of poaching, as stated in the National Compliance and Enforcement Report 2019-2020 of the Department of Environmental Affairs, Forestry and Fisheries (NECER 2019-2020).[338] According to the NECER 2019-2020, the National prosecuting authority instituted 883 criminal trials, some of which were biodiversity related. From 2019 to 2020, the National Prosecuting Authority recorded 883 criminal trials with a conviction rate of 97.1%.[339] In 2019 in *S v Khosa* (Mpumalanga case), the accused was sentenced to 37 years imprisonment for biodiversity-related charges and possession of firearms. In 2021, an accused was sentenced to 244 years imprisonment for the poaching of abalone and attempted bribery.[340] This is an indication that the National Prosecuting Authority and the courts take biodiversity-related crimes seriously.[341]
The IUCN Species Survival Commission Pangolin Specialist Group[342] estimates that more than 20,000 kilograms of illegal African pangolin scales have been seized since 2012. In China and Vietnam, pangolin meat is a delicacy, and the scales are used in traditional medicine.[343] From 2005 to 2015, South Africa exported approximately 4296 lion carcasses.[344] The legitimate export of lion bones, claws, teeth, and skulls fosters demand for

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335 Department of Environmental Affairs op cit note 36.

336 Note that the name of the Department responsible for environmental affairs changes from time to time depending on the political dispensation. It has been known as the Department of Environmental Affairs, the Department of Environmental and Water Affairs; the Department of Environmental Affairs, Forestry and Fisheries, and the most recent in 2022 (changed in 2021) the Department of Forestry, Fisheries and Environment. The names will be used interchangeably depending on the date of the relevant document or policy.

337 Department of Environmental Affairs, Forestry and Fisheries "Rhino poaching decreases by more than half in first half of 2020" 31 July 2020 Rhino poaching decreases by more than half in first half of 2020 | Department of Environmental Affairs accessed 23 February 2021.

338 Department of Environmental Affairs, Forestry and Fisheries *National Compliance and Enforcement Report 2019-2020* (2020) (NECER 2019-2020) para 4.2 and para 9 https://www.gov.za/sites/default/files/gcis_document/202011/environmental-compliance-2020-report.pdf accessed 23 February 2021.

339 Ibid para 10.

340 Anon "Abalone poacher sentenced to 244 years in jail for paying officials to get his haul back" *The Citizen* 16 February 2021.

341 For other case law, see NECER 2019-2020 op cit note 42 para 6.

342 International Union for Conservation of Nature 2016 *Seizure of Huge African Pangolin Scale Shipment Points to Worrying Increase in Trafficking* https://www.iucn.org/news/secretariat/201606/seizure-huge-african-pangolin-scale-shipment-points-worrying-increase-trafficking accessed 21 Augustus 2017.

343 MK Boakye *et al* "Knowledge and Uses of African Pangolins as a Source of Traditional Medicine in Ghana" 2015 *PLoS ONE* 1-14

344 Protecting African Lions 2017 *Statistics* http://protectingafricanlions.org/statistics/ accessed 21 August 2017. Also see General Notice 19 in GG 41393 of 23 January

tigers, leopards, cheetahs and caracals.[345] In 2020 The High-Level Panel of Experts for the Review of Policies, Legislation and Practices on Matters of Elephant, Lion, Leopard and Rhinoceros Management, Breeding, Hunting, Trade and Handling[346] saw the light, recommending, amongst others, that 'Three different approaches to captive lions are presented by the panel, with the majority view being that, in future, South Africa will not captive breed lions, keep lions in captivity, or use captive lions or their derivatives commercially.' The panel's recommendations are still under consideration.

In the case of *National Council for the Society for the Prevention of Cruelty to Animals v Minister of Environmental Affairs and others,*[347] the applicants challenged export quotas for lion bone and other products for the captive lion breeding industry. They argued that the then Minister of Environmental Affairs and the Department acted irrationally in not taking captive lions' welfare into account. The court agreed with the averment of the applicant and found that "[i]t is illogical, irrational and against the spirit of Section 24 and how our courts have included animal welfare concerns in the interpretation of Section 24. Simply put if as a country we have decided to engage in trade in lion bone, which appears to be the case for now, then at the very least our constitutional and legal obligations that arise from Section 24, NEMBA and the Plan require the consideration of animal welfare issues."[348] It seems that the South African courts relying on section 24 of the Constitution would not tolerate decisions where animals' welfare comes into play.

According to BirdLife International,[349] seven of Africa's eleven vulture species are critically endangered. The African Wildlife Foundation[350] determines that vultures are killed because their presence indicates the presence of other wildlife species' carcasses, revealing poachers' location and activities. In some cases, vultures die after scavenging the poisoned

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2018 – Non-detriment finding assessment for *Panthera leo* (African lion) Reference number: Pan_leo_Sep2017 of 25 September 2017.

345 Environmental Investigation Agency *The Lion's Share: South Africa's Trade Exacerbates Demand for Tiger Parts and Derivatives* https://eia-international.org/wp-content/uploads/The-Lions-Share-FINAL.pdf accessed 2 Augustus 2017*; International Union for Conservation of Nature 2015 Conservation Successes Overshadowed by More Species Declines – IUCN Red List Update* https://www.iucn.org/content/conservation-successes-overshadowed-more-species-declines-%E2%80%93-iucn-red-list-update accessed 21 Augustus 2017.

346 https://www.dffe.gov.za/sites/default/files/reports/2020-12-22_high-levelpanel_report.pdf accessed 21 February 2022.

347 [2019] 4 All SA 193 (GP).

348 Ibid para [74].

349 BirdLife International 2015 *Africa's vultures are sliding towards extinction warns BirdLife* http://www.birdlife.org/worldwide/news/africa%E2%80%99s-vultures-are-sliding-towards-extinction-warns-birdlife accessed 21 Augustus 2017.

350 African Wildlife Foundation 2017 *Vultures: Protecting Vultures also Safeguards Entire Ecosystems* http://www.awf.org/wildlife-conservation/vulture accessed 21 Augustus 2017.

carcasses of other poached wildlife.[351] Other African wildlife species the target of poaching include the zebra,[352] giraffe,[353] cheetahs,[354] multiple reptile species[355] and primates.[356] South Africa had 21 recognised Ramsar Convention sites in 2013[357] and six proclaimed biospheres.[358] By 2021 South Africa had recognised 26 Ramsar sites,[359] and by 2022, 28 such sites.[360] According to South Africa's *5th National Report to the Convention on Biological Diversity*[361] some of South Africa's ecosystems are under threat.[362] The latest terrestrial ecosystem threat status assessment, 2018 compares the status of red list ecosystems (RLE) against the data of the NBA 2011.[363] The following table explains the trend of changes per province between 2011 and 2018:[364]

Summary of changes in threatened ecosystem listing per province between 2011 NEMA list and 2018 NBA RLE

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351 McCall M 2015 *Why Africa's Vultures are "Collapsing Toward Extinction"* http://news.nationalgeographic.com/2015/07/150731-vultures-africa-birds-animals-science/ accessed 21 Augustus 2017.

352 Lee JJ 2015 *Giraffes, Zebras Face Surprising Top Threat: Hunting* http://news.nationalgeographic.com/2015/05/150501-herbivore-largest-africa-hunting-poaching-conservation-science/ accessed 21 Augustus 2017.

353 Actman J 2016 *Giraffes Are Being Killed for Their Tails* http://news.nationalgeographic.com/2016/08/wildlife-giraffes-garamba-national-park-poaching-tails/ accessed 21 Augustus 2017.

354 Petri AE 2016 *Cheetahs are Dangerously Close to Extinction* http://news.nationalgeographic.com/2016/12/cheetahs-extinction-endangered-africa-iucn-animals-science/ accessed 21 Augustus 2017.

355 Herbig J "The Illegal Reptile Trade as a Form of Conservation Crime: A South African Criminological Investigation" in White R (ed) *Global Environmental Harm: Criminological Perspectives* (Willian Publishing Portland 2010) 110-131.

356 Pan African Sanctuary Alliance 2017 *Illegal Wildlife Trade* https://www.pasaprimates.org/illegal-wildlife-trade/ accessed 21 Augustus 2017.

357 Report op cit note 4 at vi.

358 https://www.informea.org/en/countries/za accessed 18 January 2018.

359 Ramsar "South Africa" https://www.ramsar.org/wetland/south-africa accessed 23 February 2021.

360 Anonymous "World Wetlands Day: Berg Estuary gets international recognition" (3 February 2022) available at https://www.bizcommunity.com/Article/196/628/224700.html accessed 6 February 2022.

361 (March 2014) available at https://www.cbd.int/doc/world/za/za-nr-05-en.pdf accessed 16 January 2018. *I*t was prepared in terms of Article 26 of the Convention and decision X/10 of the Conference of the Parties.

362 Report op cit note 64 at note ii, 3-10.

363 In 2021 a draft Revised List of Threatened Terrestrial Ecosystems were published for comment – GN 1476 in GG 45426 of 5 November 2021.

364 Table used with the written permission of the lead author Skowno op cit note 293 at 7.

Province	Narrative of changes
Eastern Cape	Threatened ecosystems now cover 8% of the natural remaining habitat extent of the province, up from 4% estimated in 2011. The number of threatened ecosystem types has decreased slightly from 19 to 18. The vast majority of these threatened types are vulnerable. The major contributors to the differences are the use of a new map of Albany Thicket biome ecosystems types and the use of the degradation data from the STEP programme.
Free State	Threatened ecosystems now cover 12% of the natural remaining habitat extent of the province, down from 15% estimated in 2011. The number of threatened ecosystem types has decreased from 9 to 5. The differences are caused by the higher habitat loss thresholds for Endangered and Critically Endangered categories in the IUCN system compared to the South African system.
Gauteng	Threatened ecosystems now cover 45% of the natural remaining habitat extent of the province, down from 57% estimated in 2011. The number of threatened ecosystem types has decreased from 24 to 7. These decreases are due to the exclusion of SA Criteria F "special" ecosystems which are no captured as priorities within systematic biodiversity plans (e.g. critical biodiversity areas).
KwaZulu-Natal	Threatened ecosystems now cover 30% of the natural remaining habitat extent of the province, up from 26% estimated in 2011. The number of threatened ecosystem types has decreased from 102 to 18 due to the exclusion of a large number of small "special" ecosystems (identified under SA Criterion F) which are now captured as priorities within systematic biodiversity plans (e.g. critical biodiversity areas).
Limpopo	Threatened ecosystems now cover 5% of the natural remaining habitat extent of the province, down from 7% estimated in 2011. The number of threatened ecosystem types has decreased from 12 to 7. The differences are caused by the higher habitat loss thresholds for Endangered and Critically Endangered categories in the IUCN system compared to the South African system.
Mpumalanga	Threatened ecosystems now cover 30% of the natural remaining habitat extent of the province, up from 47% estimated in 2011. The number of threatened ecosystem types has decreased from 39 to 9 due to the exclusion of a large number of small "special" ecosystems (identified under SA Criterion F) which are now captured as priorities within systematic biodiversity plans (e.g. critical biodiversity areas).
North West	Threatened ecosystems now cover 12% of the natural remaining habitat extent of the province, down from 25% estimated in 2011. The number of threatened ecosystem types has decreased from 14 to 7. The differences are caused by the higher habitat loss thresholds for Endangered and Critically Endangered categories in the IUCN system compared to the South African system and the exclusion of a large number of small "special" ecosystems (identified under SA Criterion F) which are now captured as priorities within systematic biodiversity plans (e.g. critical biodiversity areas).

Province	Narrative of changes
Northern Cape	Less than 1% of the natural remaining ecosystem extent of the Province is listed as threatened in both 2018 and 2011 assessments. The number of listed ecosystems remains the same.
Western Cape	Approximately 10% of the natural remaining ecosystem extent of the Province is listed as threatened in both 2018 and 2011 assessments. The number of ecosystem types listed as threatened has decreased slightly from 58 to 54 due to a refinement in the approach for including threatened species data.

In the *5th National Report* it was indicated that approximately 50% of wetlands and 40% of estuaries are critically endangered. The Report further indicated that these areas as well as offshore areas were the least protected.[365] The Report also indicated that 57 of the 223 river ecosystems that provide freshwater are under threat from abstraction damming and pollution.[366] The 6th National Report does not indicate a change from these percentages, and states that in the upper reaches and tributaries, the rivers are fairly healthy but that rivers that flow through cities are in poor condition.[367] In February 2021 the South African Human Rights Commission brought out a damning report on the Vaal River's state in the Vaal Triangle in the Gauteng Province. The state of the river is attributed to the lack of maintenance of sewage and drain water systems in the towns in the vicinity of the river.[368] Mining is a significant threat for wetlands, but it seems that the courts and the Water Tribunal chose to protect wetlands and protected areas from mining in recent years.[369]

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365 5th Report op cit note 64 at iii.

366 2nd South Africa Outlook Report op cit at note 9 at para 3.3.2. See also StatsSA "Four facts about our rivers you probably do not know" 2 February 2021 http://www.statssa.gov.za/?p=9490 accessed 27 February 2021; Paterson A "Maintaining the Ecological Flows of Estuaries: A Critical Reflection on the Application and Interpretation of the Relevant Legal Framework through the Lens of the Klein River Estuary" 2018 21 *Potchefstroom Electronic Law Journal* DOI: http://dx.doi.org/10.17159/1727-3781/2018/v21i0a2781.

367 https://soer.environment.gov.za/soer/CMSWebSite/Content.aspx?menuId=813,0 accessed 27 February 2021.

368 South African Human Rights Commission "Final Report of the Gauteng Provincial Inquiry Into the Sewage Problem of the Vaal River" 17 February 2021 https://www.sahrc.org.za/home/21/files/The%20Vaal%20Inquiry%20Final%20Report_17022021.pdf accessed 27 February 2021. The river system corrected itself after floods in February 2021. but if the initial problem is not addressed similar findings would soon follow.

369 See in this regard *Endangered Wildlife Trust and Others v Director-General, Department of Water and Sanitation and Another* (WT 03/17/MP) [2019] ZAWT 3 (22 May 2019); *Mining and Environmental Justice Community Network of South Africa and Others v Minister of Environmental Affairs and Others* 2019 (5) SA 231 (GP); *Mining and Environmental Justice Community Network of South Africa and Others v Minister of Environmental Affairs and Others* [2019] 1 All SA 491 (GP); *Global Environmental Trust and Others v Tendele Coal Mining (Pty) Ltd and Others* (1105/2019) [2021] ZASCA 13 (9 February 2021).

South Africa has national parks, nature reserves and nine World Heritage Convention sites.[370] The government adopted a National Protected Area Expansion Strategy 2008,[371] aiming to increase the protected land in South Africa from 6.5% in 2011 to 7.8% by 2013. In 2016 a 20-year long-term strategy as finalised, focusing on protecting special areas such as wetlands, coastal areas and rivers.[372] Different percentages are set or these areas, for example, ranging from 10% to 28.3%. It is foreseen that in 20 years from 2016 h 363 392 km^2 of the long term goal of 547 735 km^2 land should be protected. "The long-term target for marine pelagic ecosystems is 214 719 km^2, 107 359km^2 of which should be protected in the next 20-years."[373] The provinces concluded biodiversity stewardship agreements with landowners (private and communal) to achieve this goal. In September 2013, 30 provincial protected areas (138 482 ha) were proclaimed through these agreements.[374] The Government includes land reform projects within the biodiversity stewardship programme.[375] In terms of the IUCN Protected Areas Management Categories, South Africa has category Ia,[376] II[377] and IV[378] protected areas and others that do not fall within these categories.

In 2013 South Africa declared the Prince Edward Islands Marine Protected Area (MPA), an offshore MPA. A third of the Prince Edward Islands Exclusive Economic Zone (part of South

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370 https://www.informea.org/en/countries/za and http://biodiversitya-z.org/content/south-africa accessed 18 January 2018. Also see Department of Environment, Forestry and Fisheries "Protected Areas Register" https://egis.environment.gov.za/protected_areas_register accessed 23 February 2021.

371 Report op cit note 15 at 19-22.

372 Department of Environmental Affairs "National Protected Area Expansion Strategy for South Africa 2016" (NPAES 2016) 18 https://www.environment.gov.za/sites/default/files/docs/national_protectedareas_expansionstrategy2016_ofsouthafrica.pdf accessed 23 February 2021.

373 Ibid at 18-22.

374 150 properties (500 000 ha) were at the writing of this report in 2018 under negotiation – 5th National Report op cit note 64.

375 5th National Report op cit note 64 at v.

376 "Strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values." http://biodiversitya-z.org/content/south-africa.

377 "National Park - Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities." http://biodiversitya-z.org/content/south-africa.

378 "Habitat/species management area - Protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV Protected Areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category." http://biodiversitya-z.org/content/south-africa accessed 9 June 2018.

Africa's territory) is now protected.[379] Other marine areas include the Dwesa-Cwebe Marine Protected Area,[380] and the Tsitsikamma National Park Marine Protected Area.[381] Subsequently, 20 new marine protected areas were proclaimed, for example, the Aliwal Shoal Marine Protected Area[382] and the Southwest Indian Seamount Marine Protected Area.[383] This was undertaken as part of the Government's Operation Phakisa Oceans Economy, and approximately 5% of South Africa's marine area is now protected.[384] South Africa is, however, struggling to reach its targets for protected land and marine areas.[385] The oceans' condition and the biodiversity in the South African territorial waters are classified as "marginally healthy", but some decline is noticed.[386] Recently, the communities along the eastern coast of South Africa demanded a stop to exploration for oil and gas in the coastal waters as ecosystems and biodiversity are threatened.[387] Fish species are a concern as commonly caught line species experience a 68% collapse, while 11% are overexploited, with 16% sustainably exploited. In the case of South African marine species in general, 48% are categorised as optimally exploited and 14.8% overexploited. 7.4% are underexploited, while the status of approximately 29% is unknown.[388]

The Department of Environmental Affairs' *2nd Outlook Report* of 2012,[389] sketched a sombre picture. All environmental indicators showed a decline other than an improvement in: areas under protection, state funding for conservation, job creation in removing alien and invasive plants, an increase in marine aquaculture, (e.g. abalone and oysters, legislation and policy). The Department of Forestry. Fisheries and Environment and the Department of Agriculture, Land Reform and Rural Development are committed to conservation but have limited funding. Under the National Environmental Management Act 107 of 1998, the Minister of Forestry, Fisheries an Environment, may appoint environmental inspectors to oversee

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379 5th National Report op cit note 64 at vi. GN R1422 in *GG* 36572 of 21 June 2013.

380 GN 1073-1074 in *GG* 39379 of 6 November 2015 - Declared in terms of the National Environmental Management: Protected Areas Act 57 of 2003. Several other marine protected areas were declared in terms of the Marine Living Resources Act 18 of 1998 – GN R1429 in *GG*21948 of 29 December 2000; GN 694-697 in *GG* 26430 of 4 June 2004; GN R1198 in *GG* 31516 of 17 October 2008; GN R730-731 in *GG* 34596 of 16 September 2011.

381 GN 1578-1579 in *GG* 40510 of 19 December 2016 - Declared in terms of the National Environmental Management: Protected Areas Act 57 of 2003.

382 GN R 781 in *GG* 42479 of 23 May 2019.

383 GN 783 in *GG* 43528 of 17 July 2019.

384 Marine Protected Areas South Africa https://www.marineprotectedareas.org.za/protecting-the-ocean accessed 25 February 2021.

385 Also see Hoveka LN, Van der Bank M and Davies JT "Evaluating the performance of a protected area network in South Africa and its implications for megadiverse countries" 2020 *Biological Conservation* 248 DOI: 10.1016/j.biocon.2020.108577.

386 2nd South Africa Outlook Report op cit note 16 at para 3.5.

387 Buthelezi Siphelele "Durban residents outraged over deep-sea oil drill" IOL 13 May 2018 https://www.iol.co.za/sunday-tribune/news/durban-residents-outraged-over-deep-sea-oil-drill-14950548 accessed 28 June 2018.

388 2nd South Africa Outlook Report op cit note 16 at para 3.10.

389 Op cit note 16.

biodiversity conservation.[390] Under the Marine Living Resources Act 18 of 1998 fishery control officers are appointed to enforce the Act.[391] SANBI is responsible for monitoring the protection of biodiversity in South Africa. The Department of Mineral Resources and Energy[392] is the decision-maker on environmental matters related to mining. The Minister of Mineral Resources and Energy may appoint mineral environmental inspectors to oversee environmental matters.[393] The relevant Ministers and the mining sector, including the Mineral Council South Africa,[394] agreed upon a best practice Mining and Biodiversity Guideline. Activist and concerned community groups act as environmental gatekeepers and take the government to task or to court to ensure environmental protection.[395]

390 Section 31A of the NEMA.

391 Section 51 of the MLRA.

392 Note that the Department's name changed from time to time. It was known as the Department of Minerals and Energy, the Department of Mineral Resources and changed again in 2021 to Department of Mineral Resources and Energy. The names will be used interchangeably depending on the date of the relevant document or policy.

393 Section 31BB of NEMA.

394 Formerly known as the Chamber of Mines.

395 See e.g. *Parkscape v MTO Forestry (Pty) Ltd and Another* (15910/2016) [2017] ZAWCHC 22; 2018 (1) SA 263 (WCC) (1 March 2017); *Minister of Water and Environmental Affairs v Kloof Conservancy* (106/2015) [2015] ZASCA 177; [2016] 1 All SA 676 (SCA) (27 November 2015); *Lionswatch Action Group v MEC: Local Government, Environmental Affairs And Development Planning and Others* (5278/2013) [2015] ZAWCHC 21 (2 March 2015); *Kloof Conservancy v Government of the Republic of South Africa and Others* (12667/2012) [2014] ZAKZDHC 60 (22 October 2014); *Langebaan Ratepayers And Residents Association v Western Cape Provincial Minister for Local Government Environmental Affairs and Developmental Planning and Others* (4917/2013) [2014] ZAWCHC 212 (19 August 2014); *Mining and Environmental Justice Community Network of South Africa and Others v Minister of Environmental Affairs and Others* (50779/2017) [2018] ZAGPPHC 807 (8 November 2018).

Evaluation: System of biodiversity protection

Based on the available evidence is the signatory state meeting its obligation to have a viable system of biodiversity protection?

Summary evaluation scores

Sufficiency of the governance instruments (laws, policies, codes, standards etc.)	8 /10
Implementation of the governance instruments (strategies, plans, budgets, programs etc.)	5 /10
Behaviours that are consistent with effective implementation (key public, private and NGO actors)	6 /10
Achieved biodiversity and social outcomes (biophysical and social data, expert opinions, other evaluations)	5 /10

Section 24 of the Constitution of the Republic of South Africa, 1996 places an obligation on the State, within the limits of ecological sustainable development, to protect the environment, to prevent ecological degradation and to promote conservation. The South African courts have elaborated upon section 24 as a justiciable inter-generational right.[396] The sustainable development principles in section 2 of the National Environmental Management Act 107 of 1998 provide for inter-generational equity to be considered in the decision-making on matters that may affect the environment.
Cabinet adopted a National Development Plan 2030 that stresses the importance of ecosystems, ecosystem services and the protection of South Africa's biodiversity:[397]

> "*The biodiversity and ecosystems in conservation areas are national assets. Long-term planning to promote biodiversity and the conservation and rehabilitation of natural assets is critical and should be complemented by a strategy for assessing the environmental impact of new developments as an important component of overall development and spatial planning. Where damage cannot be avoided or mitigated, and where the social and economic benefits justify the development, a commensurate investment in community development and the rehabilitation and conservation of biodiversity*."

The National Development Plan is operationalised by the National Infrastructure Plan and Strategic Integrated Projects. The Department of Forestry, Fisheries and Environment may commission strategic environmental assessments to take biodiversity priority areas into account.[398]

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396 *Fuel Retailers Association of SA (Pty) Ltd v Director General, Environmental Management Mpumalanga and Others* 2007 (2) SA 163 (SCA); *HTF Developers v Minister of Environmental Affairs and Tourism and Others* (337/06) [2007] ZASCA 37; [2007] 4 All SA 1108 (SCA).

397 5th assessment report op cit note 64 at x-xi. Republic of South Africa National Planning Commission 'National Development Plan 2030 Our Future – Make it work' 201.

398 National Infrastructure Plan https://www.gov.za/issues/national-infrastructure-plan assessed 18 January 2018; B Dambuza 'Strategic Infrastructure Projects (SIP) 18 and

The National Strategy for Sustainable Development and Action Plan's[399] Priority 2 states that South Africa's ecosystems should be sustained, and natural resources be used efficiently. Four goals were set to:[400]

- Manage the use of all natural resources to ensure their sustainability;
- Protect and restore scarce and degraded natural resources;
- Prevent pollution of air, water, and land resources so that community and ecosystem health is not adversely affected; and
- Avoid the irreversible loss and degradation of biodiversity (marine, terrestrial and aquatic ecosystems.

For each of these, interventions and indicators or 'headlines' were set. The National Strategy further refers to biodiversity in relation to "the sustainable utilisation of natural resources and the role of ecosystems in climate change adaptation".[401]
Other sectoral strategies refer to ecosystems. The National Water Resource Strategy and the Water Pricing Strategy refer to the importance of freshwater ecosystems. The then Ministers of Environmental Affairs and Mineral Resources issued a "Mining and Biodiversity Guideline" in 2013.[402]
The 5th Assessment Report[403] assessed the National Biodiversity Strategy and Action Plan of 2005 (NBSAP). The NBSAP had 27 outcomes with 122 activities. By 2016 27% of the activities were implemented, and 27% substantially implemented. 37% of the activities were implemented to a limited extent, while 7% were not implemented. More significant achievements occurred in institutional effectiveness, followed by the introduction of legislation and policy. Objectives of sustainable use and increased protected areas were achieved to a lesser extent.[404] The Department of Environment, Forestry and Fisheries' *2019/20 - 2023/24 Strategic Plan and 2020/21 Annual Performance Plan*[405] indicates that the Department is well on track with their biodiversity protection and other targets set for 2023.

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related SIPs: briefing by Department of Human Settlements' 7 October 2013 https://pmg.org.za/committee-meeting/16437/ accessed 2018; 5th National Report op cit note 64 at x-xi; Dee Fisher 'Streamlining environmental planning in Strategic Integrated Projects (SIPs)' Paper delivered at 2013 Biodiversity Planning Forum Golden Gate Highlands National Park, 7 – 10 May 2013.

399 Para 3.2 - approved by Cabinet 23 November 2011 available at https://www.environment.gov.za/sites/default/files/docs/sustainabledevelopment_actionplan_strategy.pdf accessed 18 January 2018.

400 Para 3.2 read with Table 3.2.

401 5th assessment report op cit note 4 at x-xi. See also para 3.5.

402 See in this regard the 5th National Assessment op cit note 4 at xii.

403 Op cit note 64 at x-xi.

404 See in this regard 5th National Report op cit note 64 at xiii, 50-60 and AICHI Targets – report 64-80.

405 At 18-23 https://www.environment.gov.za/sites/default/files/docs/strategicplan202021to202324.pdf accessed 23 February 2021.

A reliable biodiversity monitoring system

SANBI is the state organ to monitor "the conservation status of all listed threatened and protected species and listed ecosystems; the status of listed invasive species" and GMOs' impacts on the environment. Protected areas are under increasing threat from external and internal pressures.[406] SANBI is developing a draft National Biodiversity Monitoring framework in partnership with other institutions and agencies.[407] South African National Parks and universities are also involved in biodiversity monitoring.[408] Scientists raised concerns that red tape is hampering biodiversity research.[409]

Biodiversity Monitoring and Assessment

Reyersa and McGeoch[410] found that biodiversity monitoring arrangements do not necessarily correspond to CBD objectives, so South Africa's reporting may have lacunae. However, Bubb *et al* found in 2011 that South Africa reports measurable and quantitative targets are set, especially concerning the percentage of land to be protected by 2020.[411]

A robust system of in-situ protection of biodiversity

In-situ protection occurs in protected areas, protected marine areas, nature reserves, private land, protected forests, and the listing of threatened and vulnerable species under the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA). The South African Strategy for Plant Conservation sets a target of "at least 75% of known threatened plant species [shall be] conserved in situ" by 2020.[412]

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406 Sections 10-11 National Environmental Management Biodiversity Act 10 of 2004.

407 https://www.sanbi.org/biodiversity-science/state-biodiversity/biodiversity-monitoring-assessment accessed 19 January 2018.

408 Belina Reyersa and Melodie A McGeogh MA 'A biodiversity monitoring framework for South Africa: progress and directions' 2007 103 *South African Journal of Science* 295-300.

409 G. Alexander, B. Maritz and K. Tolley. Red tape is choking biodiversity research in South Africa. What can be done about it? The Conversation. 7 October 2021 https://theconversation.com/red-tape-is-choking-biodiversity-research-in-south-africa-what-can-be-done-about-it-169189 accessed 11 February 2022.

410 Ibid.

411 National Indicators, Monitoring and Reporting for the Strategic Plan for Biodiversity 2011-2020 A Review of Experience and Recommendations in Support of the CBD ad hoc Technical Expert Group (AHTEG) on Indicators for the Strategic Plan 2011-2020 A Report by UNEP-WCMC with IUCN and ECNC for the UK Department for Environment Food and Rural Affairs (Defra). Project "National indicators, monitoring and reporting for CBD targets". Project code CR 0495 available at https://www.bipindicators.net/system/resources/files/000/000/401/original/815.pdf?1480337853 accessed 18 January 2018 para 6. See also South Africa 'State of the Environment Indicators' http://soer.deat.gov.za/29.html accessed 18 January 2018.

412 Target 7. Also see White paper on the Conservation and Sustainable Use of South Africa's Biological Diversity July 1997, Goal 1. http://www.waternet.co.za/policy/le_bio_goal1_exsito8.html accessed 20 January 2018.

A system to manage ex-situ species preservation

Ex-situ protection of species occurs in botanical gardens, zoos, and aquariums. The South African National Parks follow a breeding programme for threatened and vulnerable species. Farmers contribute to saving species, for example, the white rhino. Techniques include cryopreservation, seed banking, tissue culture, field gene banking, and cultivation collections. Sometimes threatened and vulnerable species are sent to other areas, including outside South Africa. South Africa's Strategy for Plant Conservation pursues a 60% target for "threatened plants in *ex situ* collections, preferably in the country of origin, and available for recovery (restoration) programmes, with 1% in active reintroduction programmes" by 2020.[413]

A reliable system to govern biodiversity sustainable use

The National Environmental Management: Protected Areas Act 57 of 2003, the National Forests Act 84 of 1998, the NEMA, the National Environmental Management: Integrated Coastal Management Act 24 of 2008, the Marine Living Resources Act 18 of 1998, the Conservation of Agricultural Land Act 43 of 1983, the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA) and the National Water Act 36 of 1998 all provide for the protection of biodiversity. Biodiversity governance is fragmented between the Department of Forestry, Fisheries and Environment, provincial departments, the Department of Agriculture, Land Reform and Rural Development, the Department of Water and Sanitation and the Department of Mineral Resources. In a recent case, it was found that local government have a mandate to protect biodiversity.[414] The Department of Forestry, Fisheries and Environment hosts a committee for environmental coordination of line ministries. The relevant national and provincial departments must prepare environmental management and implementation plans, which have to be coordinated.[415] Whether sufficient coordination of biodiversity conservation occurs is not known.

Incentives, polluter pays and economic structures

Section 24(b) of the Constitution states that government should introduce reasonable legislative and other measures to promote conservation. The NEMBA and NEMPA and several other laws give effect to this mandate. The sustainable development principles in section 2 of NEMA state that "disturbance of ecosystems and loss of biological diversity, are [to be] avoided or, where they cannot be altogether avoided, are minimized and remedied"; that the use of renewable sources should not exceed "the level beyond which their integrity is jeopardized"[416] and that a "risk-averse and cautious approach is [to be] applied";[417] there should be equitable access to all environmental resources" and the state is the custodian of

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413 Target 8. Also see the White paper on the conservation and sustainable use of South Africa's biological diversity July 1997, Goal 1.8 http://www.waternet.co.za/policy/le_bio_goal1_exsito8.html accessed 20 January 2018.

414 *Le Sueur and Another v Ethekwini Municipality and Others* (9714/11) [2013] ZAKZPHC 6 (30 January 2013).

415 Section 11 of NEMA.

416 Section 2(4)(a)(i), (vi) of NEMA.

417 Section 2(4)(a)(vii) NEMA.

South Africa's environment.[418] "Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure".[419] Government is required to take these principles into account in decision-making on matters affecting the environment.[420]

Under NEMPA the Minister may declare on the request of a land owner or land owners areas as protected environments to, for example, "enable owners of land to take collective action to conserve biodiversity on their land and to seek recognition therefor".[421] The minister or a member of an executive committee of a province may assign the management of privately-owned protected environments to a suitable person, organization or organ of state.[422] Private land owners qualify for a tax benefit through a Biodiversity Stewardship model under section 37D of the Income Tax Act 58 of 1962. The landowners may deduct a percentage of the expenditure and value of land preserved for biodiversity conservation.[423] Section 37C of the Income Tax Act allows for deductions for environmental conservation and maintenance, while section 37B allows deductions for environmental expenditures. All deductions are subject to limitations.[424]

Section 28(1) of NEMA places a duty of care on everyone in South Africa to avoid pollution and degradation of the environment.[425] Section 28 entrenches the polluter pays principle and provides for cleanup by the polluter and a substantial fine or imprisonment for causing pollution or degradation of the environment. Similar sections are included in the National Water Act[426] and the MPRDA.[427]

System of environmental impact assessment

The environmental impact assessment (EIA) procedures in South Africa are robust.[428] Environmental impact assessment practitioners must ensure that proper studies are undertaken.[429] In one case, an assessment practitioner was convicted for ignoring the

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418 Section 2(4)(d), (o) NEMA.

419 Section 2(4)(r) NEMA.

420 Section 2(1) NEMA.

421 Section 28(1)-(2) read with section 35 NEMA.

422 Section 38(2) NEMPA. The managers must in consultation with all stakeholders including communities and local governments develop a management plan (section 39). This plan must be aligned with the NEMBA – sections 40-41.

423 http://biodiversityadvisor.sanbi.org/wp-content/uploads/2017/05/Infographic-Fiscal-Benefits-Project.pdf accessed 28 June 2018.

424 See also http://biodiversityadvisor.sanbi.org/wp-content/uploads/2017/05/Environmental-Tax-Overview-2017.pdf accessed 28 June 2018.

425 See also the duty of care with regard to alien species – section 69 of NEMBA – and invasive species (section 73). Risk assessments have to be undertaken before any GMO is released (sections 78 and 89).

426 Section 19.

427 Sections 43 and 45.

428 Section 24 of NEMA, read with GN R982-985 in GG 38282 of 4 December 2018.

429 Appendices 2 and 3 to GN R982.

wetlands' existence in the proposed development area.[430] Environmental authorizations will not be issued if specific species are threatened or if serious mitigation measures or offsets have not been undertaken.
According to the *5th Assessment Report*[431] biodiversity mainstreaming tools are used in decision-making. The Grasslands Programme assists the government and the plantation sector to decide where afforestation can take place.[432] The National Biodiversity and Business Network develops guidelines for businesses about integration of biodiversity strategies into business planning. Local governments must include the protection of biodiversity in their Integrated Development Plans and Spatial Development Frameworks. "A Local Government Support Strategy has been developed, identifying 108 municipalities (out of a total of 234) where urgent attention is needed."[433]

Mechanisms to provide funding

The National Budget shows R 773.4 million for biodiversity and conservation, to be increased to R 845.8 million for 2020/21.434 The budget aim of the Department of Forestry, Fisheries and Environment is to "increase South Africa's land area under formal protection to ensure the conservation of ecosystems and minimize threats to ecological sustainability by: increasing the percentage of land under conservation from 12.7 per cent (15 492 882 ha out of 121 991 200 ha) in 2017/18 to 14.2 per cent (17 343 142 ha out of 121 991 200 ha) by 2020/21 improving the percentage of protected areas that are effectively managed by the state from 75 per cent (4 894 416 ha out of 6 525 889 ha) in 2017/18 to 81 per cent (5 285 970 ha out of 6 525 889 ha) by March 2021." The Department aims to "improve access to, and the fair and equitable sharing of, natural resources by: implementing the biodiversity sector transformation framework by 2030 implementing Vision 2024 and establishing 30 natural resource-based enterprises over the medium term finalizing a minimum of 20 benefit sharing agreements arising from the use of biological resources by 2019/20".

Environmental Impact assessment and protective regime

See the discussion above on the system of impact assessment.

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430 *S v Frylinck and Mpofu Environmental Solutions CC* Case no 14/1740/2010 (decided 6 April 2011) Regional Court.

431 Op cit note 64 at xi-xii.

432 E.g "Guidelines for Grasslands Management in the Forestry Sector; Environmental Guidelines for Commercial Forestry in South Africa a Biodiversity Screening Tool and a Conservation Planning tool" – 5th Assessment Report xi-xii.

433 Department of Cooperative Governance and Traditional Affairs "State of Local Government in South Africa" (2009) http://pmg-assets.s3-website-eu-west-1.amazonaws.com/docs/091017tas.pdf accessed 20 February 2018.

434 Budget 2018 Booklet - Department of Environmental Affairs Vote 27 - http://www.treasury.gov.za/documents/national%20budget/2018/enebooklets/Vote%2027%20Environmental%20Affairs.pdf accessed 29 June 2018.

An effective system of environmental laws/governance

The Department of Environmental Affairs' 2010 study on the 'Management effectiveness of South Africa's protected areas' [435] showed four national authorities and nine provincial authorities managed protected areas, excluding private nature reserves.[436] The Department assessed 230 protected areas and found that 108 protected areas (mostly nature reserves) received a management score of less than 33%, 121 received a score between 33-67 % (indicating basic management with significant deficiencies). Few scored between 67 % and 86% to indicate that they had a sound management system.[437] Investigating legal compliance of protected areas further shows that legal arrangements are typically in place and all protected areas have management plans. The data typically indicate a low score for law enforcement (especially in relation to poaching) and inadequate community partners' involvement, heritage resource management, and land and water resource planning in the areas outside the protected area.[438]

South Africa scores the highest of all African countries on the Property Rights Index and was 26th in the World in 2017. However, scores for the rule of law and protection against corruption remains low.[439] In 2018 a new President was appointed, hoping to stimulate the economy and eradicate the culture of corruption and state agency capture.

Patterns of production and consumption and trade

According to the *5th Assessment Report*[440] all nine provinces have spatial biodiversity plans to protect habitat.[441] According to the Report, some municipalities have biodiversity sector plans and bioregional plans. Maps indicate Critical Biodiversity areas and Ecological Support areas and land use guidelines. The Department of Environmental Affairs has implemented a biodiversity offset framework. For example, one mine in the Northern Cape purchased several farms to assist in protecting Camel Thorn Trees, an endangered species. The mine is now protecting more trees than they would destroy through mining.[442]

Several Biodiversity Management Plans for specific species were introduced, for example, for black rhinos.[443] The Global Environmental Facility supports a Grasslands Programme of

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435 Cowan, Mpongoma and Britton, (eds) op cit note 12.

436 Cowan, Mpongoma and Briton (eds) op cit note 12 para 1.2.

437 Cowan, Mpongoma and Briton (eds) op cit note 12 para 4.1.

438 Cowan, Mpongoma and Briton (eds) op cit note 12 para 4.1.1.

439 https://internationalpropertyrightsindex.org/compare/country?id=71 accessed 18 January 2018; http://info.worldbank.org/governance/wgi/index.aspx#reports accessed 18 January 2018.

440 Op cit note 64 at vi.

441 In 2021 the Western Cape Biodiversity Act 6 of 2021 was adopted.

442 "Anglo American Kumba Iron Ore's Sishen mine opens an education centre at newly proclaimed nature reserve" Kathu Gazette 16 June 2018 http://www.kathugazette.co.za/index.php/hard-news/79-mynbou-nywerheid-mining-industry/2515-learners-walk-away-with-first-prizes-5 accessed 20 June 2018.

443 See e.g. Norms and Standards for Marking of Rhinoceros and Rhinoceros Horn, and for Hunting of Rhinoceros for Trophy Hunting Purposes – GN 962 in GG 41913 of 21 September 2018; Draft National Norms and Standards for the Management of Elephants in South Africa – Gen Not 1208 in GG 42015 of 2 November 2018; Biodiversity Management Plan for Cape Mountain Zebra (Equus zebra zebra) – GN

R3,8 million.[444] The Department of Forestry, Fisheries and Environment instituted work programmes (e.g. the eradication of alien and invasive species).[445]
For the trade-in species, the Minister of Environmental Affairs issued the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) CITES Regulations, 2010.[446]

214 in GG 41498 of 16 March 2018; Draft Biodiversity management plan for bontebok (Damasliscus Pygargus Pygargus) – GN 889 in GG 41249 of 14 November 2017; Management Plan for Pickergill's Reed Frog (Hyperolius pickergilli) – Gen Not 423 in GG 40883 of 2 June 2017.

444 5th Assessment Report op cite note 64 at vii-x.

445 See https://www.environment.gov.za/branches/biodiversity_conservation#projects accessed 28 June 2018.

446 GN R629 in *GG* 36770 of 23 August 2013.

Evaluation: Precautionary principle implementation

Based on the available evidence has the precautionary principle been adequately incorporated in the resource governance system?

Summary evaluation scores

How well do laws, policies, codes, standards etc. incorporate the precautionary principle?	6 /10
Is the precautionary principle implemented fully in governance strategies, plans, budgets, programs etc?	5 /10
Are the behaviours of key public, private and NGO actors consistent with effective implementation of the principle?	5 /10
Do biophysical and social data, expert opinions, or other outcome evidence indicate the effective use of the precautionary principle?	5 /10

Precautionary measures

South African legislation does not explicitly adopt the precautionary principle. However, the NEMA's sustainable development principles state that "a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions".[447] There is a general duty of care to avoid ecological degradation.[448] With genetically modified organisms (GMOs), the Minister may not issue a permit if she believes that the GMO may threaten any indigenous species. She may request that a risk assessment be undertaken.[449]

The precautionary principle has been raised in court decision especially where mining rights were granted in protected areas. The court in the case *of WWF South Africa v Minister of Agriculture, Forestry and Fisheries and others (South African Small-Scale Fisheries Collective as amicus curiae*)[450] the court applied the precautionary principle with regard to the allocation of fishing rights, finding that the relevant official did not consider the lack of scientific evidence in her determination of the lobster quotas.

In *Endangered Wildlife Trust and Others v Director-General, Department of Water and Sanitation and Another*[451] the Water Tribunal stresses that the principle should apply in cases of scientific uncertainty and not uncertainty in general. The court relied on the principles of sustainable development in general to determine whether the water use licence could be suspended. The Tribunal acknowledged the impact the mine may have on the wetland but did not suspend it licence. It however added conditions to the existing licence.[452]

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447 Section 2(4)(a)(vii) NEMA.

448 Section 28(1) NEMA.

449 Sections 78 and 89 NEMBA and the Genetically Modified Organisms Act 15 of 1997.

450 [2018] 4 All SA 889 (WCC) para [100]-[117].

451 (WT 03/17/MP) [2019] ZAWT 3 (22 May 2019).

452 Also see other cases on mining in this protected area and where the precautionary principle was raised but not necessarily discussed: *Mining and Environmental Justice Community Network of South Africa and Others v Minister of Environmental Affairs and Others* [2019] 1 All SA 491 (GP); *Mining and Environmental Justice Community Network of South Africa and Others v Minister of Environmental Affairs and Others* 2019 (5) SA 231 (GP); *Mining and Environmental Justice Community Network of*

Evaluation: Protection of human interests

Based on the available evidence is their adequate recognition and protection of people's biodiversity interests (particularly of indigenous people and women), including in genetic material? And do the community participation arrangements being implemented adequately reflect these interests?

Summary evaluation scores

Do governance instruments including laws, policies, codes, standards etc. adequately recognise human biodiversity interests?	7 /10
Do the governance strategies, plans, budgets, programs etc. implement recognition of human interests in biodiversity?	5 /10
Are the behaviours of key public, private and NGO actors consistent with effective recognition of human biodiversity interests?	5 /10
Do social, economic, cultural and ecological outcomes reflect effective implementation of this recognition?	5 /10

CBD preamble, Art 15, 8, 10

The CBD preamble recognises:

> "*the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of TK, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components*".

Articles 15 and 8(j) of the CBD deal with access and benefit sharing relating to genetic resources. The 2014 NBSAP document reports that 79 notifications for the discovery phase of bioprospecting have been registered. The then Minister of Environmental Affairs approved 15 bioprospecting permits, 69 Material Transfer Agreements, and 19 Benefit Sharing Agreements.

The NBSAP adopts the CBDs Strategic Plan for Biodiversity for 2011 - 2010, reflecting the Aichi Targets. In South Africa's revised NBSAP 2015 – 2025 specifies targets. One strategic objective is "[e]ffective knowledge foundations, including indigenous knowledge and citizen science, support the management, conservation and sustainable use of biodiversity". This is a fundamental objective for the achievement of all other strategic objectives. The NBSAP relies on indigenous knowledge for medicinal and used plants.

Regional (African) law

This discussion will only focus on recent developments related to articles 15, 8 and 10 of the CBD. The African Convention on Human and Peoples' Rights, 1981 contains an 'environmental right' based on the African Convention on the Conservation of Nature and Natural Resources, 1968 and the revised African Convention on Nature and Natural Resources, 2003. This analysis focuses on the 2003 Maputo Convention.

South Africa and Others v Uthaka Energy (Pty) Ltd (11761/2021) [2021] ZAGPPHC 195 (30 March 2021).

Consistent with Article 15 and 8 of the CBD, Article IX(2)(j) of the Maputo Convention provides for fair and equitable access to genetic resources *on terms mutually agreed between providers and users of such resources*.[453] Article IX(2)(k) states that benefits from access to genetic resources must be shared fairly and equitably. Article IX(3) and Article XVII require signatory states to adopt relevant legal instruments, including voting rights[454] and incentivising sustainable use. Annex 2 embeds the role of local communities with protected areas, focusing on access to benefits and sustainable use.

Concerning Article 10 of the CBD the Preamble enshrines sustainable use as a primary concern. Under Article II sustainable use is a primary objective. Any protected area that aims to use natural ecosystems sustainably can be classified as a conservation area[455] reflecting multi-dimensional governance and stakeholders' inclusivity.

Sustainable use is also a theme of the Convention. Sustainable use and inclusivity are reflected in SANParks' vision, for example, within the Management Plan of the Kruger National Park (2018-2028) with a vision for "a sustainable national park system connecting society".[456] Parts of the SADC legal framework give effect to Articles 8, 15 and 10 of the CBD. Under the South African Development Community Treaty, sustainable use of biodiversity is a primary objective.[457] Sustainable use is a theme throughout the environmental protocols and policy in SADC.[458]

Access to genetic resources is mentioned in the preamble to the SADC Forestry Protocol. The Protocol places a duty on states to adopt national policies and implement mechanisms to facilitate forest genetic resources based on prior informed consent.[459] There is a duty to ensure mutually agreed terms and equitable sharing of any benefits.

Concerning benefits derived from biodiversity, the SADC Protocol on Wildlife Conservation and Law Enforcement of 1999 disappoints. The Preamble acknowledges that the Protocol may promote awareness of the 'socio-economic value of wildlife and enable equitable distribution of the benefits derived from the sustainable use of wildlife', but no substantive provisions give effect to this statement. The Protocol defines 'community-based wildlife management' where benefits are derived by groups or communities.[460]

The 2001 Protocol on Fisheries aims for the responsible and sustainable use of aquatic resources and ecosystems.[461] States are obliged to prevent overfishing following sustainable

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453 Emphasis added.

454 Access to information as well as participation in decision making is dealt with in more detail in article XVI.

455 This aim is one of many aspects that can fall under the definition of a conservation area. See article V(6).

456 KNP Management Plan 2018-2028 pg 38. This vision applies to all protected areas in South Africa. It is available at https://www.sanparks.org/assets/docs/conservation/park_man/knp/knp-approved-plan.pdf accessed 11 February 2022.

457 Article 5(1) of the Treaty establishing the Southern African Development Community, 1992 (as consolidated and amended in 2015).

458 In general see http://www.sadc.int/themes/natural-resources/.

459 Article 17 of the SADC Forestry Protocol.

460 Article 1 of the Wildlife Protocol.

461 Article 3 of the Fisheries Protocol.

use.[462] The Protocol places a duty on states to base their decisions on the best scientific advice and guides scientific advice.[463]

Rio Principle 22, 20, 10

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation emerged from the CBD; South Africa ratified the Protocol on 13 January 2013.

Domestic law

Chapter 6 of the NEMBA regulates exploration for commercially valuable indigenous genetic and biological resources. This protects certain stakeholders' interests, outlines the requirements of material transfer and benefit-sharing agreements, and establishes the Bioprospecting Trust Fund. The NEMBA and the Bioprospecting, Access, and Benefit Sharing Regulations[464] give communities rights to engage, based on free, prior, and informed consent, with users of indigenous biological resources and traditional knowledge. Commercialisation may only take place subject to a permit granted once the resource owner provides access, and if a benefit-sharing agreement is in place.

Under NEMBA, the Bioprospecting, Access, and Benefit Sharing (BABS) Regulations,[465] 2008 govern the discovery and/or the commercialisation phase,[466] the export of indigenous biological resources for bioprospecting[467] and the export of indigenous biological resources for any research.[468]

The Patents Act 57 of 1978 provides for benefit-sharing arrangements and compensation where an indigenous community is the traditional knowledge owner.

The Protection, Promotion, Development and Management of Indigenous Knowledge Act 6 of 2019 establishes a National Indigenous Knowledge Systems Office (NIKSO). Indigenous knowledge is recognised as property but only registered indigenous knowledge is protected.

Domestic access and benefit-sharing

South African National Parks (SANParks) has adopted a conservation approach where community stakeholders play an important role. In early 2018, revision of most major national parks' management plans commenced. Stakeholders are: any persons having direct or indirect interests or rights in a National Park; local communities, non-governmental organisations, special interest groups, business partners, private land owners and local

462 Article 7(8) of the Fisheries Protocol.

463 The measures proposed are '(a) peer review including external evaluation of research by recognized centres of excellence; (b) regional and international participation in national research seminars; (c) promoting publications of regional interest, including electronic journals; and (d) promoting networks and professional associations.' See article 17(2) of the Protocol.

464 GN R138 in *GG* 30739 of 8 February 2008.

465 GG 30739 of 8 February 2008.

466 Reg 3(a).

467 Reg 3(b).

468 Reg 3(c).

government representatives.[469] The SANParks' Vision is for a sustainable National Parks system connecting society,[470] acknowledging that:[471]

> "[*i*]*t has to ensure that a broad base of South Africans participate and get involved in biodiversity initiatives, and further that all its operations have a synergistic existence with neighbouring or surrounding communities for their educational and socio-economic benefit, hence enabling the broader society to be connected to national parks*."

The Annual Performance Plan 2019/2019 reports that benefit-sharing is implemented through land claims and five social legacy projects.[472] An estimated 218,000 people will participate in the Environmental Education Programme. Although a lot is being done, SANParks identifies a breakdown in relationships with neighbouring communities as a risk, partly due to the increased militarisation of rangers. A plan is in place to strengthen community ties.[473] According to the *2019/20 - 2023/24 Strategic Plan and 2020/21 Annual Performance Plan,*[474] three biodiversity economy initiatives were implemented during 2017/2018, and 500 ha of land were identified for the cultivation of indigenous species, of which 294.52 ha of land is already cultivated. By 2023 2500 ha of land should be cultivated with indigenous species. By 2017/2018 seven benefit-sharing agreements were concluded and approved. The Rooibos Access and Benefit-sharing Agreement concluded on 1 November 2019 is an example of a new agreement post-2018. The agreement was between the Khoikhoi and San (represented by the National Khoi and San Council) and the South African rooibos industry. The then Department of Environmental Affairs facilitated the process, and the negotiation process took nine years to complete.[475]

Compliance with international law

The interim report on the Nagoya Protocol's implementation[476] highlights that South Africa has taken legislative, administrative and policy measures on Access and Benefit-sharing, reflecting Article 13. Permits provide evidence of prior informed consent (PIC) under mutually agreed terms (MAT). South Africa has issued 56 permits since 2008, and 9 permits for the creation of an internationally recognised certificate of compliance under Article 17.2. The Department of Environmental Affairs highlights those human resources capacity is a major challenge.

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469 SANParks Stakeholder Participation in Developing Management Plans 3.

470 SANParks Annual Performance Plan 2018/2019 9.

471 SANParks Annual Performance Plan 2018/2019 15.

472 SANParks *Annual Performance Plan 2018/2019* 30. Social legacy projects run of a levy charged to visitors of National Parks. These funds are then invested in local communities near or adjacent to National Parks.

473 The 14 point mitigation plan is available in the SANParks *Annual Performance Plan 2018/2019* at 54.

474 Op cit note 109 at 16.

475 See in this regard Natural Justice "The Rooibos Access and Benefit-sharing Agreement" https://naturaljustice.org/the-rooibos-access-and-benefit-sharing-agreement/ accessed 25 February 2021.

476 https://absch.cbd.int/countries/za accessed 30 August 2018.

Informed consent for bioprospecting is regulated by the BABS regulations with processes under Article 6.3(c). An applicant must disclose all material information to relevant stakeholders to achieve a valid consent. A material transfer- and benefit-sharing agreement is required. South Africa thus complies with the requirement of a clear and transparent written decision by a competent national authority, required by Article 6.3(d). NEMBA section 81 provides for permit requirements for commercialisation, prospecting, or research, reflecting Article 6.3(e). Article 6.3(g) requires rules and procedures in place through NEMBA articles 82, 83 and 84, and regulations 38 and 39.
Compliant with the Protocol for benefit-sharing, everyone in the bioprospecting value chain must obtain a permit. The permit application must be submitted with a material transfer and benefit-sharing agreement with traditional knowledge holders and access stakeholders. This aims to ensure that commercialisation benefits are shared with the stakeholders, including indigenous communities and the holders of traditional knowledge (section 82 of the Act and regulation 38 of the Regulations).
The Department of Forestry, Fisheries and Environment provides support to communities through workshops and one-on-one engagement. It sets minimum requirements for mutually agreed terms in the BABS Regulations. These address sharing of benefits, the types of benefits; payments; review; third party transfer; breach and termination and proof that the parties agree. Model contractual clauses are provided. The Global Environment Facility (GEF) has funded officials' training on implementation, but insufficient funding is an obstacle to further training.
South Africa requires users of genetic resources to seek PIC from those providing the genetic resource, and for the parties to establish MAT on the utilisation of genetic resources. Verification that exported resources have the relevant permit occurs at a designated checkpoint, provided for in Art 17.1. For non-compliance, the Department of Forestry, Fisheries and Environment alerts the provider country's National Focal Point.
Should a patent be registered based on or derived from an indigenous biological resource, genetic resource or traditional knowledge, registration must be accompanied by a declaration. However, South Africa lacks resources to monitor the utilisation of genetic resources.
Benefits from genetic resources can be channelled towards the conservation of biological diversity and its sustainable use under Article 9, through the BABS regulations.
Measures to ensure that genetic resources access complies with the ABS legislation or requirements of the other party involved (as per Article 15.1) are lacking. While there is no formal legislation, if a South African institution accesses resources in another jurisdiction, that institution can be required to show that they comply with the foreign jurisdiction’s ABS laws. The Act is undergoing amendment in this respect.
Another weakness is dispute resolution mechanisms included in the MAT, required by Article 18(1). The Act does provide recourse for offences listed in the BABS Regulations (Art 18.2). Proposed amendments will provide for mutual recognition and enforcement of foreign judgements and arbitral awards.

Overall evaluation of implementation and effectiveness

South Africa is a signatory to the Stockholm Declaration, the CBD, and the Rio Declaration, and has demonstrated willingness to implement the principles and standards, incorporating them into legislation. South Africa regularly submits reports and has policies, strategies and plans to give effect to their obligations. In this regard South Africa is substantially compliant. However, when it comes to effective biodiversity governance, it is another matter. South Africa is a middle income and developing country. There are many pressures on the South African government for development. Government departments do not always cooperate, leading to a fragmented system. NGOs and private organisations take government to task about decisions where biodiversity or water resources will be seriously affected by development. The courts are protectors of the environment and criticise government when development is prioritised over the environment.

South Africa has protected areas and nature reserves and recently promulgated marine protected areas. However, South Africa is still far from the IUCN goal to have 10 % of its land and the marine area protected. The pressure on ecology is increasing due to poaching and illegal trade in wildlife and plants. There is a serious threat to some of South Africa's IUCN red list species.

South Africa has legislation to protect traditional knowledge, but traditional communities believe that their traditional knowledge is not well protected and is under threat by companies claiming their knowledge. The government acknowledges this threat.[477]

Comments on national strategies and reports

SANBI compiles the national reports for the CBD. A service provider is appointed to research, coordinate, and compile the research for the report:[478]

> "*Working closely with SANBI and DEA, the service provider will be required to coordinate and analyse inputs from a wide range of biodiversity stakeholders on progress towards CBD targets and attend workshops in this regard. Furthermore, the service provider will be required to liaise through the CBD National Focal Point, with officials responsible for national reporting within the CBD Secretariat. The service provider will be required to coordinate the draft report review process, and address and integrate comments into the final draft*."

Stakeholders provide inputs into the draft report through a workshop. The service provider conducts semi-structured interviews with government officials and other stakeholders. The service provider must also comprehensively source research done on the topic and incorporate this into report.

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477 Kemantha Govender "Govt to protect indigenous knowledge" SANews 26 July 2018 https://www.sanews.gov.za/features/govt-protect-indigenous-knowledge accessed 17 November 2018.

478 Terms of Reference: Service provider to research, coordinate inputs for, and compile South Africa's 6th country report to the Convention on Biological Diversity SANBI Ref: Q6006/201 https://www.sanbi.org/.../TOR-CBD-6th-Country-Report-writer-and-compilation_FIN accessed 18 November 2018.

The mandate of SANBI is to monitor all species in South Africa continuously. Still, scientific monitoring seems to be *ad hoc* for purposes of reporting. According to academics who assessed the CBD reports, the data used are credible. However, more studies may be needed to understand the effect of continuous development and urbanisation on South Africa's biodiversity. SANBI acknowledges that there are still knowledge gaps concerning conservation, especially for marine species and invertebrates.

Key implementation and effectiveness issues

South Africa does comply with its obligation to lodge national reports. South Africa has a justiciable environmental right in its Constitution and has given effect to treaties and conventions by enacting national and provincial policies, strategies, legislation, and plans.[479] These reflect the principles in, for example, the CBD. The National Development Plan 2030 and the National Strategy for Sustainable Development and Action Plan address the protection of biodiversity as an aim and have specific targets.

Government departments and institutions are responsible for the protection of biodiversity. The legislation is enforced by environmental management inspectors and control officers, with incentives for private landowners.

The country has a robust (project) environmental impact assessment system, but strategic environmental assessments are still voluntary. There is no legal obligation to conduct strategic environmental assessments.[480] Decisions about environmental impact assessments are regularly challenged in court.

The National Biodiversity Strategy and Action Plan of 2005 set 27 outcomes and 127 activities. According to the 5th Assessment Report in 2016, 27 % of the activities were achieved, 27 % substantially achieved, 37 % were achieved to a limited extent and 7 % not at all. The targets set in the 6th Assessment Report do not differ substantially. The achievements mainly concern institutional effectiveness and new legislation and policies.

SANBI is responsible for monitoring the state of biodiversity in the country. The *in situ* protection occurs in terrestrial and marine protected areas, nature reserves, on private land, protected forests and the listing of threatened and vulnerable species. The Department of Environmental Affairs published a management plan for specific vulnerable species. *Ex situ* protection occurs in botanical gardens, zoos, and aquariums. The South African National Parks conducts a breeding programme for threatened and vulnerable species. Private individuals and institutions also contribute to *ex situ* protection.

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479 E.g. National Environmental Management Act 107 of 1998; National Environmental Management: Biodiversity Act 10 of 2004; National Environmental Management: Protected Areas Act 57 of 2003; the National Forests Act 84 of 1998; National Environmental Management: Integrated Coastal Management Act 24 of 2008; Marine Living Resources Act 18 of 1998; Conservation of Agricultural Land Act 43 of 1983; Mineral and Petroleum Resources Development Act 29 of 2002 and the National Water Act 36 of 1998.

480 Strategic environmental assessments are listed in section 24 of the National Environmental Management Act as one of the possible environmental management instruments that could be used. The Minister must publish regulations to give effect to the use of the instrument, which have not happened yet.

According to the 5th Assessment Report, all nine provinces have spatial biodiversity plans. Some local governments have implemented plans – especially the metropoles or towns in sensitive biodiversity areas. The Department of Forestry, Fisheries and Environment also introduced a biodiversity offset programme.
South Africa incorporated the precautionary principle in relation to genetically modified organisms and has a principle that a cautious and risk-averse approach should be followed. The NEMA also incorporates an environmental duty of care in section 28(1).
The Department of Treasury increased the budget for biodiversity protection to R 845.8 million for the fiscal year 2020/21 – an increase of approximately R 50 million from 2018. The purpose is to increase protected areas.
South Africa introduced protection for indigenous knowledge through an Act that provides for communities' participation and ensures benefit-sharing when traditional knowledge is used.
South Africa fails in effectively protecting its biodiversity. Although there are successes in protecting some species, many species are critically endangered, endangered, and vulnerable or near-extinct according to the IUCN Red Lists. The most threatened are freshwater fish, inland mammals, and plant species. Threats include habitat loss or degradation, invasive species, and pollution. Challenges include urbanisation, cultivation, plantations, mining, and climate change. Poaching and demands for traditional medicine or medicinal plants and animal species place tremendous pressure on natural resources. South Africa is also vulnerable to climate change. Water pollution in rivers, estuaries and dams is a major concern. The pressure for land, housing, and economic development hamper protection. The Department of Forestry, Fisheries and Environment and its affiliates and provincial and local governments are responsible for many matters additional to biodiversity that need attention, including services such as water and sanitation, health, and land demands.
The then Department of Environmental Affairs conducted a study on the management effectiveness of protected areas in 2010. One hundred eight protected areas received a score of less than 33 %, while 121 received a score between 38 and 67 %. Only a few protected areas receive a score higher than 68 %.
South Africa has recognised 28 Ramsar sites and six proclaimed biospheres, national and provincial protected areas, and nature reserves.[481] There are private initiatives to protect rural and urban land. The Government adopted a national Protected Area Expansion Strategy in 2009 to increase protected land to 7.8%. The World Bank indicates that South Africa's terrestrial protected areas covered 8.85 % of South Africa in 2014.[482] South Africa's marine protected areas cover now 5 % of its territorial waters.[483]
The South African governance structure is fragmented. The pressure for economic development, housing and land is increasing, making it very difficult for politicians to favour

481 https://rsis.ramsar.org/sites/default/files/rsiswp_search/exports/Ramsar-Sites-annotated-summary-South-Africa.pdf?1516436196 accessed 11 February 2022.
482 https://tradingeconomics.com/south-africa/terrestrial-protected-areas-percent-of-total-land-area-wb-data.html accessed 17 November 2018.
483 https://www.aquarium.co.za/blog/entry/22-new-marine-protected-areas-for-south-africa-show-your-support accessed 17 November 2018.

biodiversity protection. South Africa scores well on the Property Rights Index[484] but poorly on the Corruption Index.[485] South Africa has a vigilant community and NGOs take the government to task in the courts. The courts do not hesitate to hold government to account if they do not consider environmental matters in their decision-making.[486]
In summary, South Africa scores well in terms of introducing institutions, policies, and legislation to give effect to the CBD and in the submission of plans to the CBD Secretariat. South Africa scores 'average' in practical implementation of the CBD. The country has protected areas, NGOs, communities, private individuals, and institutions that contribute to biodiversity protection. The courts are serious about protecting the environment and biodiversity. South Africa, however, scores poorly in the actual protection of biodiversity, with loss of species indicating that much more needs to be done to give effect to the principles and measures of the CBD.

Recommendations for improving implementation

The following recommendations may be used to improve the implementation of the CBD. These recommendations will have to be considered in light of financial and human resource constraints within the Department Forestry, Fisheries and Environment. It must also be acknowledged that the Department issued its strategy, and its implementation plans to ensure the protection of biodiversity in South Africa. The recommendations will focus more on the governance aspects pertaining to the protection of biodiversity.
Firstly, it should be stated that South Africa does not need more laws and policies. They are in place. Although NEMBA and NEMPA have been promulgated to give effect to the CBD, there is still fragmentation in the protection of biodiversity between the different spheres of government due to old laws that have not been repealed or replaced. There should be a rationalisation of the provincial legislation, and it should be ensured that the laws are in line with the NEMBA and NEMPA. The enforcement and implementation of these policies and

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484 Property Rights Alliance "2020 | International Property Rights Index – South Africa" https://www.internationalpropertyrightsindex.org/country/south-africa accessed 25 February 2021.

485 "Global Corruption Index" 2020 https://risk-indexes.com/global-corruption-index/ accessed 25 February 2021.

486 In a recent case, considering potential coal mining activities in a protected area, the High Court stated: "NEMPAA provides in section 3 thereof that 'in fulfilling the rights contained in section 24 of the Constitution, the State, through the organs of state implementing legislation applicable to protected areas, must act as the trustee of protected areas in the Republic'. Although the principle of sustainable development finds application, it is subject to more scrutiny than otherwise if the area in which the proposed development, in this case, underground coal mining, is to take place, is a protected environment. The MPE comprises of wetlands and grasslands which, . . . have largely been classified as 'Irreplaceable Critical Biodiversity Areas'" See (11761/2021) [2021] ZAGPPHC 195 (30 March 2021). In *WWF South Africa v Minister of Agriculture, Forestry and Fisheries* 2019 (2) SA 403 (WCC) the High Court also very strongly supported the precautionary principle. Most recently, in *Sustaining the Wild Coast NPC v Minister of Mineral Resources and Energy* (3491/2021) [2021] ZAECGHC 118 (28 December 2021) the court also to a very firm stance in protecting marine biodiversity (and cultural beliefs) in a case concerning seismic surveys.

laws need more attention. A recent development is the reinstitution of a court in the Kruger National Park to deal with poaching related crimes specifically.[487] More such courts could be instituted or dedicated to environmental crimes all over South Africa.[488]

The in-situ and ex-situ conservation of species should be expedited. It is recommended that the Department of Forestry, Fisheries and Environment increases the involvement of more non-government organisations, universities, private individuals, business, and traditional communities in their quest to preserve South Africa's biodiversity. Providing incentives, such as tax incentives, could entice private landowners or business to contribute their land for conservation.

Where land is transferred in terms of land claims or land is redistributed, the community should be made aware of their responsibility (also in terms of their own customs and beliefs) to protect their area's biodiversity. The community should also be able to benefit from their own projects.

The environmental frameworks and spatial planning instruments in South Africa, should indicate no go areas for industrial, mining and housing developments. The Department of Forestry, Fisheries and Environment, and the Department of Agriculture, Land Reform and Rural Development should cooperate to determine where and what type of agriculture can take place. The environmental instruments of the Department of Forestry, Fisheries and Environment, such as environmental management frameworks, should not only be used to inform decision-making but could be used to ensure that areas with high endemic biodiversity cannot be considered for development. This should also be reflected in the spatial development frameworks. More use can be made of strategic environmental assessments in combination with the other environmental management instruments. The Minister of Forestry, Fisheries and Environment introduced the concept of development zones where certain projects can take place and where less stringent environmental conditions must be met.[489]

Captive breeding and trading in animal products remain a contentious issue, but it is also true that the survival of the white rhinoceros' species also depended on the actions of private landowners and private game reserves.[490] It is recommended that government and the farming community find a solution concerning the trading of animals and animal products in relation to near-extinct or threatened species.

It is foreseen that by 2023 government would have concluded 25 benefit-sharing agreements – this number could be increased if landowners, traditional communities, and

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487 "SANParks Welcomes Order for Skukuza Regional Court to Continue Operating" *SA People News* 4 February 2020 https://www.sapeople.com/2021/02/04/sanparks-welcomes-order-for-skukuza-regional-court-to-continue-operating/ accessed 25 February 2021.

488 Also see Kidd M "Greening the judiciary" 2017 *Potchefstroom Electronic Law Journal* 9(3) 71 DOI: 10.17159/1727-3781/2006/v9i3a2826.

489 This is especially true for energy projects.

490 WWF https://www.worldwildlife.org/species/white-rhino accessed 25 February 2021; Rubino EC and Pienaar EF "Applying a conceptual framework to rhinoceros conservation on private lands in South Africa" 2017 *ESR* 34:89-102 DOI: https://doi.org/10.3354/esr00844; Ferreira SM, Botha JM, Emmett MC "Anthropogenic Influences on Conservation Values of White Rhinoceros" 2012 *PLoS ONE* 7(9): e45989. https://doi.org/10.1371/journal.pone.0045989.

business are incentivised to participate in these agreements. Traditional communities should be enabled to exploit their own indigenous knowledge systems for their own benefit.[491] It is further proposed that if it is not possible to expand protected areas due to agriculture or housing needs, then more incentives should be provided for private landowners to introduce conservation on their land.

491 See for example, Constant NL and Tshisikhawe MP "Hierarchies of knowledge: ethnobotanical knowledge, practices and beliefs of the Vhavenda in South Africa for biodiversity conservation" 2018 *Journal of Ethnobiology and Ethnomedicine* 14(1):1-28; Bruce R and Shaun M "Identifying and assigning values to the intangible cultural benefits of ecosystem services to traditional communities in South Africa" 2020 *South African Journal of Science* 116(7-8) 36-41.

CONCLUSIONS AND RECOMMENDATIONS

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The motivation for this research project was to illuminate the implementation and effectiveness of the foundational CBD principles. The preceding evaluations all highlight a significant need, and significant opportunities, to improve the implementation of the commitments that each country has made under the CBD. However, this is a matter for each country: the Convention on Biological Diversity acknowledges that national sovereignty is paramount, and that each country will tailor implementation of the Convention principles to their circumstances through a national strategy. Each of the 196 countries that committed to the CBD principles has unique species and natural systems, political, constitutional, and legal institutions, and implementation of CBD principles is inevitably different between jurisdictions.

The governance structure for the CBD is complicated. It involves National Biodiversity Strategies and Action Plans that incorporate national targets, national implementation reports, guidance documents, COPs (Conference of Parties), and various guidance documents and initiatives.

Countries self-evaluate and report on the implementation of their strategies, but there is not an over-arching transparent CBD mechanism for independent review or audit. The CBD Secretariat issues reporting guidance to countries, to facilitate the comparability of strategies and reports, but does not have an independent accountability mechanism for the CBD. A subsidiary body on Implementation established in 2014 has not published an evaluation of the implementation and effectiveness of the CBD principles.

Summary CBD implementation scores

The table below summarises the scores that each team provided for key aspects of the CBD, using our common evaluation approach. The teams' scores inevitably reflect the different evidence and the judgement of the team members, which means that there is an unavoidable risk of subjective biases. However, pooling, and averaging scores across the teams has allowed us to 'triangulate' the different viewpoints, giving confidence in the inferences that we draw, and the recommendations that we make, below.

The team scores for various aspects of implementation of the CBD are consolidated in the following table. The principles that have on been implemented least effectively (average score of 4.5 to 5.4 out of 10) are indicated by a black infill. The infill for that been implemented best (average 7 to 7.9 out of 10) is uncoloured; and those in-between (6 to 6.4 out of 10) are coloured grey.

Evaluation item	Australia	Brazil	China	NZ	SA	Average	Rating
Consistency of the behaviours of key government, private and NGO actors with responsible biodiversity governance	6.0	6.0	9.0	5.0	6.0	6.4	**Moderate**
(Overall) sustainability of the biodiversity and social outcomes that are being achieved	3.0	5.0	8.0	3.0	6.0	5.0	**Worst**
Sufficiency of the governance instruments (laws, policies, codes, standards etc.)	8.0	6.5	9.0	8.0	8.0	7.9	**Best**
(Overall) implementation of the governance instruments (strategies, plans, budgets, programs etc.)	5.0	6.5	8.0	4.0	5.0	5.7	**Worst**
(Overall) Behaviours that are consistent with effective implementation (key public, private and NGO actors)	6.0	6.5	8.0	5.0	6.0	6.3	**Moderate**
(Overall) achieved biodiversity and social outcomes (biophysical and social data, expert opinions, other evaluations)	3.0	6.5	8.0	3.0	5.0	5.1	**Worst**
How well do laws, policies, codes, standards etc. incorporate the precautionary principle?	9.0	8.5	9.0	4.0	6.0	7.3	**Best**
Is the precautionary principle implemented fully in governance strategies, plans, budgets, programs etc?	5.0	7.5	8.0	6.0	5.0	6.3	**Moderate**
Are the behaviours of key public, private and NGO actors consistent with effective implementation of the (precautionary) principle?	3.0	6.0	8.0	6.0	5.0	5.6	**Worst**
Do biophysical and social data, expert opinions, or other outcome evidence indicate the effective use of the precautionary principle?	3.0	6.0	8.0	6.0	5.0	5.6	**Worst**
Do governance instruments including laws, policies, codes, standards etc. adequately recognise human biodiversity interests? *	7.0	7.0	8.0	3.0	7.0	6.4	**Moderate**
Do the governance strategies, plans, budgets, programs etc. implement recognition of human interests in biodiversity? *	5.0	6.5	8.0	5.0	5.0	5.9	**Worst**
Are the behaviours of key public, private and NGO actors consistent with effective recognition of human biodiversity interests? *	3.0	7.0	8.0	4.0	5.0	5.4	**Worst**
Do social, economic, cultural and ecological outcomes reflect effective implementation of this recognition (of human biodiversity interests)?	2.0	6.0	8.0	5.0	5.0	5.2	**Worst**
Average of all scores, by country	4.4	6.8	8.1	4.7	5.3	5.9	

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Despite differences between countries, some patterns can be seen.

- All the sampled countries have formalized laws and policies that reflect many (though not all) aspects of the CBD. Countries have formalized the CBD principles in ways that range from constitutionalized environmental laws, through to 'soft' policy frameworks. However, countries have been selective in what principles enjoy formal status. None of the countries have directly adopted all CBD principles into domestic law. These results

[492] the Brazilian team was focused on protected areas governance and in the table above marked with * their assessment was not focused on human interests *per se*. To facilitate broad comparative evaluation we have included these scores, though they are not strictly aligned.

confirm that the CBD has influenced national environmental laws (to varying degrees), but other results that formalization has not necessarily led to effective implementation.

- The scores indicate partial (but variable) success in moving from formalization to practical implementation of those norms. The evaluators' assessment of the effective implementation of pro-biodiversity norms, including the precautionary principle, varies. The evaluation reports provide an explanation of the scores for each country. Some repeated causes of under-implementation include:
- Insufficient resources of government or private actors (including for citizens to implement stewardship behaviours), notwithstanding the commitment to adequate resources under Art. 10.
- An imbalance of power between the forces supporting or those opposing implementation of biodiversity protection or restoration. Aspects of public agency capture, path-dependence, markets for regulatory power, and corruption, are evident (to varying degrees) in the national implementation experience.
- The degree of commitment of public agencies and industries to implementation of formal instruments is an important consideration. This commitment reflects the political climate of the country and can oscillate between being supportive or antagonistic to effective implementation.
- The least positive scores for implementation and effectiveness are for biodiversity and social outcomes, behaviours consistent with the precautionary principle, recognition of human interests (e.g. minorities, indigenous and traditional people, and women). These scores are generally consistent with other in-country evaluations (e.g., national state of environment reports), and with the worldwide evidence (e.g. the IUCN Red List). Low outcome scores should not be surprising, as many of the biodiversity governance failures that the CBD principles were designed to avoid still exist. The deficiencies in national biodiversity governance systems include:
- Governments being selective in what CBD governance norms they choose to formalize within their jurisdictions. The suite of CBD principles constitutes an architecture for a governance system and failing to adopt any element will naturally weaken its overall performance.
- The historical (and ongoing) disempowerment of indigenous, minority and female citizens means that they are intrinsically disadvantaged in achieving the biodiversity arrangements sought through the CBD.
- Deeply entrenched political and economic imbalances favour those who benefit from biodiversity loss over those who try to prevent or remediate that loss. Governments have often not been committed to redressing such imbalances or managing their effects, or they may have lacked the power to do so.
- The political and governance structures in many countries fragment biodiversity policies, programs and investment across agencies, programs, and jurisdictions. This undermines coordinated action and sufficient investment, relative to the magnitude of the problems that must be addressed.

The evaluations demonstrate that progress on implementing the CBD principles from the original convention has been very slow. The multi-decadal timeframe should have enabled more comprehensive implementation, evaluation and refinement than is apparent. As well as our analyses, other biophysical and social evidence also indicate that biodiversity governance systems are insufficiently effective, and we surmise this partly reflects a failure

to effectively implement the original CBD principles. Our evaluations suggest four fundamental implementation problems.

- Narrow selection by signatory states of what CBD principles they choose to implement, their hierarchical and cross-sectoral engagement, and the ecological, social, and economic issues they target.
- Imbalances of economic and political power for (or against) biodiversity governance activities. These imbalances may be chronic (e.g. the strength of exploitative industries or established elites) or episodic (e.g. due to natural, economic, and political cycles).
- Changing national commitment, which affects the vigor of implementation and investment, and the continuity of programs. Implementation falters when national governments re-prioritize away from environment or social justice priorities to prioritize the exploitation of nature.
- The incapacity of international accountability and transparency arrangements to drive implementation of the original CBD commitments, and continuous improvement in how these norms are implemented.

Metagovernance and CBD implementation

The Preamble of the CBD reaffirms that "States have sovereign rights over their own natural resources", to manage as they see fit. Respect for national sovereignty is central to the architecture of the CBD, which relies on state-determined and assessed biodiversity strategies, substantially self-selected and self-evaluated metrics, and the use of COPs and other mechanisms to negotiate governance arrangements. Though the CBD secretariat provides coordination and manages reporting, it has limited capacity to force countries to implement their national obligations and lacks mechanisms for independent audit and review of reported national actions and outcomes.

Page 8 of this report summarises the principles that made up the original Convention on Biological Diversity that signatory countries agreed to implement. This comprehensive suite of biodiversity governance arrangements proposes a coherent governance architecture. Logically, failing to implement any of these institutional components will undermine the achievement of the desired outcomes of that system. The original CBD commitments were to implement:

- Biodiversity strategies (Art. 6), incorporating intergenerational equity (Rio Principle 3) and an effective system of environmental laws;
- Reliable biodiversity monitoring (Art. 7);
- In-situ and ex-situ protection of biodiversity (Art. 8, 9);
- Biodiversity resources governance for sustainable use (Art. 10);
- Biodiversity incentives;
- Reliable environmental impact assessment (Art. 14) incorporating the precautionary principle (CBD Preamble and Rio Declaration Principles 2,3,8, and 15);
- Funding (Art. 20);
- Environmental impact assessment and protection (Rio Principles 4 and 17);
- managing production, consumption, and trade (Rio Principles 8, 12, 13, 14); and
- Respecting the interests of vulnerable people (CBD Preamble, CBD Article 15, 8, 10 and Rio Principle 22); and women's interests (CBD Preamble and Rio Principle 20), particularly through engagement (Rio Principle 10).

Signatory countries are obliged to report on CBD implementation (Article 26), and these reports are complemented by the Aichi metrics under the Strategic Plan for Biodiversity 2011-2020.[493]

The Strategic Plan for Biodiversity 2011-2020 signalled a significant conceptual shift. Whilst the purpose of the strategy was to implement the CBD, during the process of its development attention shifted away from the governance content of the CBD, to concentrate on a mix of desirable outcomes. The Aichi targets (and later the Sustainable Development Goals) reinforced a shift of attention from the quality of governance to desired outcomes. Governments were enabled to ignore or disguise their failure or inability to implement their original commitments.

Tracking an incremental process

The accumulation of instruments, targets and measures has gradually shifted attention from implementation of the original CBD governance commitments, towards a mixture of social, economic, and environmental metrics. This has provided an opportunity for governments to down-play CBD commitments and to disguise CBD underperformance. This dilution of accountability and transparency has happened in incremental steps. The content of national CBD reports (sourced from the CBD Clearing House repository[494]) demonstrates the incremental transition. We contrasted these in two 'blocks' (the first and second, and the fourth and fifth).

The 1st National Reports (1992-1998) were not standardised. Australia reported specifically against the implementation of each of the CBD Articles. Brazil provided an extensive report of 270 pages on biophysical conditions, with in-depth description of government programmes and institutional arrangements. China provided a detailed descriptive report and discussed implementation of its specific CBD commitments. New Zealand deferred reporting, and South Africa summarised its biodiversity issues and status, and described their national biodiversity strategy.

The 2nd National Reports (1997-2001) reflect the CBD Secretariat's standardisation of reporting requirements on specific CBD commitments, with countries responding to specified questions on implementation and priorities, with checklists and comments on checklist responses. Australia reported on specific actions and initiatives, Brazil provided more commentary but also Article-specific progress reports, as did China, New Zealand, and South Africa (which discussed national governance reforms).

The 8th Conference of the Parties to the CBD decided that fourth national reports were due in March 2009 (Decision VIII/14). It agreed that the reports should be focused on the 2010 Biodiversity Target, and the Global Biodiversity Outlook. The Secretariat Guidelines for the Fourth National Report reflected this, and none of the 4th reports deal with implementing the Articles of the CBD.

Australia's 4th report reflects the COP guidelines, but also discussed biodiversity status and trends/drivers and Australia's national strategy. There was some discussion of environmental protection/sustainable use though voluntary industry arrangements, and of collaboration with states and territories. Brazil's report "is essentially analytical, presenting

[493] The CBD Clearing House Mechanism https://chm.cbd.int/database provides searchable access to submitted reports.

[494] Ibid. under the tag "National Reports and NBSAPs" for Australia, Brazil, China, New Zealand, and South Africa.

an analysis of the status of Brazilian biodiversity and ecosystems, of the effectiveness of the national biodiversity strategy, and of the degree of achievement of the national and global biodiversity targets, among other related themes“ (p. vi). China's report also discusses biodiversity, and implementation of the national strategy. There is a substantive discussion of integration of biodiversity into sectoral/cross-sectoral plans and of progress towards the 2010 Targets. The report does reflect on governance performance and intended improvements. The New Zealand report closely follows the Secretariat reporting guidelines. The South African report follows the guidelines but is more expansive concerning its national "Strategic Objective 1 An enabling policy and legislative framework integrates biodiversity management objectives into the economy"; and "Strategic Objective 2 Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector." It is indicative of the general loss of focus on the original CBD Articles that the report notes "… substantial progress has been made in implementing the South Africa's commitments to the CBD" but the discussion does not address the actual commitments under the CBD. Rather it is focused on biodiversity strategy issues, which have a limited relationship to the original commitments.
With the 5th National Reports (2009-2014) the shift of focus away from the CBD Articles is largely complete:

- Australia's report discusses Australia's National Biodiversity Action Plan and Progress relative to the Strategic Plan for Biodiversity 2011-2020 and the Aichi targets. There is no discussion of progress for implementing the CBD Articles. The Millennium Development Goals are treated as part of the national biodiversity strategy.
- Brazil's online 5th report is relatively brief and pays no attention to the CBD Articles.
- The China 5th report follows the prescribed structure. It does consider governance issues and discusses some major programs.
- The New Zealand 5th report focusses on the Aichi 2015 and 2020 Biodiversity Targets, and the Millennium Development Goal 2015 targets.
- The South Africa 5th report includes information about biodiversity, and on substantive governance improvements, but does not address the CBD Articles. It considers the MDG Targets, and the national biodiversity strategy to pursue of 5 strategic objectives; and reports progress relative to the Aichi targets and the CBD Strategic Plan.

Three of the countries where we have carried out evaluations have lodged their 6th national reports. None of these reports address implementation of the original CBD Article commitments.

SDG targets are not CBD implementation measures

Measurement against targets from the Sustainable Development Goals are sometimes treated as performance measures for CBD implementation, which is misleading. The Sustainable Development Goals (SDGs) were adopted in 2015 through the *2030 Agenda for Sustainable Development*. The Sustainable Development Goal 15 aims 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

have a historically tenuous link to the CBD, and biodiversity governance reform is far from a central concern[495].
Goals 5, 6, 10, 12, 12, 13, 14 and 15 can be linked to some CBD principles, but that link is tenuous. The United Nations Department of Economics and Statistics' web portal reports on national performance measures for more than 200 metrics for the Aichi targets, and provides substantial data and analysis.[496] Tellingly, there is no goal for 'implementation of international commitments nor any measure of that implementation.

The Aichi Targets do not measure CBD implementation

A Strategic Plan for Biodiversity 2011-2020 established the 20 Aichi Biodiversity Targets to address five goals for CBD implementation:

- Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society;
- Reduce the direct pressures on biodiversity and promote sustainable use;
- To improve the status of biodiversity by safeguarding ecosystems, species, and genetic diversity;
- Enhance the benefits to all from biodiversity and ecosystem services;
- Enhance implementation through participatory planning, knowledge management and capacity building.

There is no Aichi goal for the full implementation of the specific CBD Articles, or for any measures to supervise the integrity of national implementation or reporting.
Each country determines the specific Aichi targets for its national strategy, and reports on its performance relative to those targets. An innovation is the 79 indicator data sets, supported by 146 sub-indicator data sets. An Aichi dashboard provides details of the extent of implementation of each target,[497] and evidence from countries about their actions in pursuit of their targets. The evidence shows that countries vary a lot in their actions, and their targets and poor progress towards achieving many of the targets.
The 2020 Global Biodiversity Outlook 5 published by the CBD Secretariat[498] tells of partial implementation of CBD and other commitments, and of "variable" pursuit of CBD (and related instrument) targets. This is consistent with our evaluations. The Outlook document reports at page 10 that:

> *At the global level none of the 20 targets have been fully achieved, though six targets have been partially achieved (Targets 9, 11, 16, 17, 19 and 20). Examining the 60 specific elements of the Aichi Biodiversity Targets, seven have been achieved and 38*

[495] Pavoni, R., & Piselli, D. (2016). The Sustainable Development Goals and International Environmental Law: Normative Value and Challenges for Implementation. Veredas Do Direito: Direito Ambiental e Desenvolvimento Sustentável, 13(26), 13–60. https://doi.org/10.18623/rvd.v13i26.865
[496] https://unstats.un.org/sdgs/unsdg.
[497] https://www.cbd.int/aichi-targets/, searchable by target. A full list of the targets, indicators and measures is available from Informea, https://www.informea.org/en/goals/aichi-targets.
[498] Secretariat of the Convention on Biological Diversity (2020) Global Biodiversity Outlook 5. Montreal.

show progress. Thirteen elements show no progress or indicate a move away from the target, and for two elements the level of progress is unknown.

The performance of countries against their self-determined Aichi targets is far from encouraging:

> *On average, countries report that more than a third of all national targets are on track to be met (34%) or exceeded (3%). For another half of the national targets (51%), progress is being made but not at a rate that will allow the targets to be met. Only 11% of national targets show no significant progress, and 1% are moving in the wrong direction. However national targets are generally poorly aligned with the Aichi Biodiversity Targets, in terms of scope and the level of ambition. Fewer than a quarter (23%) of the targets are well aligned with the Aichi Targets and only about a tenth of all national targets are both similar to the Aichi Biodiversity Targets, and on track to be met. Progress is reported to have been greatest towards the national targets related to Aichi Biodiversity Targets 1, 11, 16, 17 and 19. The information from the national reports therefore suggests that there have been gaps in both the level of ambition of the commitments of countries to address the Aichi Biodiversity Targets …*

Though both the CBD and the Aichi Targets are intended to motivate countries to protect or restore natural biodiversity, they are focused on different aspects of the problem. The Aichi Targets concern eco-social outcomes, the expected results of environmental and social governance actions. The CBD principles concern the governance actions and institutional arrangements to deliver socially desired better eco-social outcomes.

The logic that the CBD Articles will ensure appropriate institutional "means" are used to deliver the desired Aichi eco-social "ends", has been gradually lost. Effective governance requires attention to both means, and the outcomes of these means (and objective diagnosis to identify how both means and ends can be improved).

Implementing an environmental rule of law

The CBD is not a mere political statement of intentions or ambitions, it is a United Nations legal instrument designed to bind the signatory states to fulfil specific obligations. The "Environmental Rule of Law" requires that legal obligations be fully satisfied, and that legal institutions ensure integrity and transparency in how this is done:[499]

> *Without environmental rule of law, development cannot be sustainable. With environmental rule of law, well-designed laws are implemented by capable government institutions that are held accountable by an informed and engaged public lead to a culture of compliance that embraces environmental and social values.*[500]

This study was triggered by the IUCN Natural Resource Governance initiative, leadership of which was taken up by the IUCN Commission on Environmental, Economic and Social Policy (CEESP). Our methods arose from a collaboration between the World Commission on Environmental Law and the IUCN Environmental Law Centre, with the engagement of

[499] IUCN World Commission on Environmental Law. (2016). World Declaration on the Environmental Rule of Law. Rio de Janeiro, Brazil.

[500] Bruch, C., Schang, S., Pendergrass, J., Fulton, S., Moraga-Lewy, N., Wright, M., & Swanson, G. (2019). Environmental Rule of Law, First Global Report. Nairobi , Kenya.p.1.

members of the IUCN Academy of Environmental Law, at the early stages of the Natural Resource Governance Initiative.[501]

This research was intended to inform the post 2020 Biodiversity Strategy, to support the United Nations and the IUCN efforts to improve international biodiversity governance with an independent, disciplined evaluation of signatory countries implementation of commitments under the original CBD.

Though the Articles of the CBD have triggered significant improvements in biodiversity governance in many countries, none of the countries we have examined has fulfilled all their legal commitments. Countries have formalised some, but not all, of their obligations in domestic law. However, implementation of the instruments they have created is frustrated by opposition to biodiversity stewardship or by party politics, further undermined by insufficient resources, claims for more development and housing, corruption, incompetence, or a lack of political commitment.

The proliferation of international environmental and social instruments with some biodiversity relevance, which vary in content and legal status, has unintentionally diluted focus on the legally binding biodiversity norms. Countries have substituted later instruments for (as yet incompletely implemented) binding norms, and this substitution has been facilitated. Even though these later initiatives are valid and valuable, the accumulation has undermined implementation of the binding norms of the CBD.

Recommendations

The following institutional requirements are needed to ensure that CBD implementation is consistent with the Environmental Rule of Law:

1. Domestic institutional arrangements should ensure that countries translate all their international legal obligations into domestic legal and policy instruments.
2. Domestic law and policy arrangements should reliably implement these legal norms.
3. Domestic review and accountability mechanisms should monitor and evaluate the implementation and the effectiveness of these instruments.
4. Domestic arrangements should ensure effective community engagement, participation, and accountability.
5. International institutional arrangements should ensure national accountability (preferably interwoven with disciplined continuous improvement).[502]

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[501] Martin, P., Boer, B., & Slobodian, L. (2016). Framework for Assessing and Improving Law for Sustainability. (P. Martin, B. Boer, & L. Slobodian, Eds.), Framework for Assessing and Improving Law for Sustainability. Gland, Switzerland: IUCN International Union for Conservation of Nature. https://doi.org/10.2305/IUCN.CH.2016.EPLP.87.en

[502] This need has been partly identified in the Report on the Consultation Workshop of Biodiversity related Conventions on the Post-2020 Global Biodiversity Framework, Bern, 10-12 June 2019 indicated the following elements that might form part of the post-2020 global biodiversity framework, which proposed:

> *.. an accountability framework that enables coordination between assessments, indicators and national reporting under the various conventions, including the potential for harmonization of data management and reporting; that takes into account accountability frameworks established under related conventions and their*

We suggest that the following actions could deliver these governance essentials:

Action 1: Clarify national obligations under international environmental law.

There is a need to re-focus countries and international bodies on the legal obligations' countries have under the CBD (and other relevant legal norms). Non-law commitments and political or scientific instruments are important, and can complement legal obligations, but legal obligations should be a central concern.

A restatement of binding norms, to distinguish them from instruments that have lesser legal status, could reduce the ambiguity that has gradually entered biodiversity governance.

Action 2: Communicate legally binding norms.

Legal norms should be clearly communicated and understood, consistent with the World Declaration on the Environmental Rule of Law principle of community engagement and participation.

Clear standards and measures of effective implementation, against which countries and their citizens could evaluate performance, would aid this communication.

Action 3: Reporting on national compliance and implementation.

Objective review of the implementation of specific legal norms is not a feature in current arrangements. Reporting of how each of the specific CBD Articles is being implemented could be required through the guidelines for national reports. A goal of 'effective implementation of international eco-social commitments' with metrics under the Aichi or SDG schemes, would strengthen this measure.

Action 4: Strengthen accountability, audit, and review.

Independent audit and compliance reviews help ensure the integrity of implementation of norms and standards, and to motivate improvement. Though a thorough audit process would be the 'gold standard', securing the full cooperation of countries may be difficult. Reviews of national reports by independent stakeholder organisations (such as IUCN Commissions) could provide basic peer review.

Action 5: Institutionalise continuous improvement.

Implementation could be strengthened by institutionalising structured continuous improvement. Incorporating critical self-review and proposed improvements in implementation as issues in national reports would be a basic approach. This could be complemented with regular COP meetings focused on shared learning about how to improve implementation.

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systems for monitoring; and that enables a relevant involvement of non- Party stakeholders.