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What are the Essential Qualities of a National Level Biodiversity Conservation Regime? – Lessons for Singapore and Other Countries

Nikhil Dutt Sundaraj*

Introduction

The term 'biodiversity' may evoke an image of a pristine forest untouched by humankind teeming with life. In fact, biodiversity is all around us from the pigeons roosting under an overpass to endangered species in protected reserves to the fungi found on damp logs after the rain. A widely agreed international legal definition is found in Article 2 of the Convention on Biological Diversity (CBD)¹ as 'the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems'.² This biodiversity is shrinking at an unprecedented rate, and has been for decades. The Living Planet Report from the WWF back in 2014 found that vertebrate populations around the world have declined by an average of 52% between 1970 and 2010, with a steeper drop in tropical areas³. Furthermore, the IUCN Red List states that more than 41,000 species are threatened with extinction, which represents 28% of all assessed species⁴.

A global problem like this necessitates international cooperation to address it. As such, numerous countries have collaborated to draft and sign a number of international legal documents like treaties and conventions to affirm their commitment to these efforts⁵. The agreement which most directly addresses biodiversity conservation is the CBD. Signed in Rio de Janeiro in 1992, it has been signed by 196 states and ratified by 195 and the European Union, but not the USA. However, despite provisions for seemingly balanced conservation targets, no party to the CBD seems to have met its targets⁶ and some have even repeatedly revised their own national targets to consistently lower levels.⁷ Reasons cited for this cycle of slow progress, review and re-assigning of targets have been put down to multiple

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¹ 1992 Convention on Biological Diversity 1760 UNTS 79, 31 ILM 818 (1992)

² Latty Senior Lecturer, Tanya, and Timothy Lee Associate Lecturer in Life and Environmental Sciences. "How Many Species on Earth? Why That's a Simple Question but Hard to Answer." *The Conversation*. The Conversation, June 29, 2021. <https://theconversation.com/how-many-species-on-earth-why-thats-a-simple-question-but-hard-to-answer-114909>.

³ Anon. "Living Planet Report 2014." WWF. World Wildlife Fund. Accessed August 14, 2021. <https://www.worldwildlife.org/pages/living-planet-report-2014>.

⁴ IUCN. "The IUCN Red List of Threatened Species." IUCN Red List of Threatened Species. IUCN. Accessed July 6, 2021. <https://www.iucnredlist.org/>.

⁵ (*inter alia*) 1973 Convention on international trade in endangered species of wild fauna and flora 993 (p.243), 1979 Convention on the conservation of migratory species of wild animals UNTS 1651, 1979 Convention on the Conservation of European Wildlife and Natural Habitats (ETS No. 104), 1980 Convention on the conservation of Antarctic marine living resources UNTS 1329 (p.47)

⁶ Butchart, Stuart H.M., Martin Clarke, Robert J. Smith, Rachel E. Sykes, Jörn P.W. Scharlemann, Mike Harfoot, Graeme M. Buchanan, et al. "Shortfalls and Solutions for Meeting National and Global Conservation Area Targets." *Conservation Letters*, 24, 8, no. 5 (February 3, 2015): 329–37. <https://doi.org/10.1111/conl.12158>.

⁷ Lockwood, Michael. "Good Governance for Terrestrial Protected Areas: A Framework, Principles and Performance Outcomes." *Journal of Environmental Management* 91, no. 3 (November 2010): 754–66. <https://doi.org/10.1016/j.jenvman.2009.10.005>.

issues across the different signatory states.^{8,9} Analysing why this occurs and working towards greater consistency across the board between different signatories at the national level is key in sustaining a unified effort to conserving biodiversity globally. Achieving consistency across different national biodiversity conservation regimes means that every regime needs to possess certain salient qualities in order to fulfil their broad purpose of successful conservation.

This article outlines and explains the salient qualities of regimes of biodiversity conservation at the national level. To contextualise the conceptual analysis in practical governance, this article's arguments are supported by examples from various jurisdictions and analyses the degree to and manner in which these qualities manifest in Singapore's national legal and political landscape. It is argued that the salient qualities of national regimes of biodiversity conservation are (1) reliable, transparent and science-driven decision making, (2) clarity in language, substance and purpose, (3) robust avenues for enforcement, and (4) feasibility. While reference is made to international agreements between States, this is done mainly to set the broader context in which the national level obligations exist and why the regimes created to address them have been put in place.

Even the Aichi Biodiversity Targets,¹⁰ an internationally agreed all-encompassing 5-pronged policy tool established by the CBD to tackle the issue of biodiversity loss,¹¹ appear to fall short. The Aichi Biodiversity Targets contain 5 core strategies.¹² Within these are targets which CBD signatories were expected to meet collectively by 2020. However, assessment of those targets in 2020 led to the conclusion that they had not been met.¹³ A lot of deference was given to national governments to implement domestic laws and policies to meet them, which brings its own challenges of implementation and compliance.¹⁴ These challenges occur because the CBD is a 'Framework' Multilateral Environmental Agreement (MEA). Framework MEAs are characterised by the use of less prescriptive obligations aimed at allowing flexible implementation by state parties, which (it is hoped) leads to ratification by a wider range of countries. As such, there are often significant discrepancies in implementation and compliance by state parties to those MEAs.¹⁵

While the CBD can be used as a starting point to set the direction and broad obligations which need fulfilling, the answer as to what makes a good conservation law and governance regime is more nuanced than just setting broad targets and relying solely on Framework MEAs to spell out signatories'

⁸ Anon. "The United Nations Must Get Its New Biodiversity Targets Right." *Nature* 578, no. 7795 (2020): 337–38. <https://doi.org/10.1038/d41586-020-00450-5>.

⁹ IISD Reporting Services. (2018). Summary of the UN Biodiversity Conference: 13-29 November 2018. *Earth Negotiations Bulletin*, 9(725). <http://enb.iisd.org/biodiv/cop14/enb/>.

¹⁰ Adopted through decision X/2, the tenth meeting of the Conference of the Parties (COP) for the Convention on Biological Diversity, held from 18 to 29 October 2010, in Nagoya, Aichi Prefecture, Japan

¹¹ Unit, Biosafety. "Aichi Biodiversity Targets." Convention on Biological Diversity. Secretariat of the Convention on Biological Diversity, September 18, 2020. <https://www.cbd.int/sp/targets/>.

¹² The Aichi Biodiversity Targets 5 core strategies are (a) addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society, (b) reducing the direct pressures on biodiversity, (c) improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity, (d) enhancing the benefits to all from biodiversity and ecosystem services, and (e) enhancing implementation through participatory planning, knowledge management and capacity building.

¹³ Anon. "The United Nations Must Get Its New Biodiversity Targets Right." *Nature* 578, no. 7795 (2020): 337–38. <https://doi.org/10.1038/d41586-020-00450-5>.

¹⁴ Ulloa, Astrid. "Perspectives of Environmental Justice from Indigenous Peoples of Latin America: A Relational Indigenous Environmental Justice." *Environmental Justice* 10, no. 6 (2017): 175–80. <https://doi.org/10.1089/env.2017.0017>.

¹⁵ Footnote 7, *supra*

obligations. This article seeks to go beyond assessing any particular treaty or group of treaties, but to distil the key elements that should be part of a biodiversity conservation regime. These elements are as follows:

1. **Reliable Science-driven decision making** which is **transparent** through involving stakeholders and educating the public of the importance for their existence and for biodiversity conservation so that it hopefully encourages ground-up initiatives to help with these efforts.
2. **Clarity** in language, substance, and purpose.
3. **Robust avenues for enforcement** which can lead to harmful actions being reconsidered (preventative) or stopped (active), and readily available avenues to question higher authorities.
4. **Feasibility** vis-à-vis the country's economic situation and policy aims and resource allocation abilities to achieve the above aims, as a sort of balancing act.

The analysis of each quality will be anchored in a Singaporean context, albeit supported by case studies from other countries and regions. These qualities have been distilled from secondary sources such as academic literature, judicial decisions, and the author's own research on sources such as CBD negotiations. These qualities will be discussed and evaluated, and case studies are used show how the aforementioned four qualities are achieved. The incidence of each quality in Singapore's own national biodiversity conservation regime, and how Singapore's regime might learn from other jurisdictions, will then be assessed.

In this discussion, a 'biodiversity conservation regime' encompasses the legal and governmental bodies which help with biodiversity conservation and the tools they have at their disposal to those ends. The legal aspect of this includes (i) laws that are directed as effecting the fulfilment of obligations owed under the CBD and those which may not be directed as such but have incidental effects on biodiversity conservation, (ii) litigation history, (iii) ease of access to courts, and (iv) the presence of legal discourse on biodiversity conservation outside governmental forums. The governmental aspect of this encompasses organs of the state and their relevant policy frameworks geared towards tackling the issue of biodiversity conservation.

A regime should fulfil the 4 criteria as far as possible such that the relevant jurisdiction's government is able to abide by its CBD commitments while consistently pursuing socioeconomic aims needed in their respective jurisdictions. It should be noted that many countries, pursuant to their obligations under the CBD, have formulated and to varying extents implemented national biodiversity strategy and action plans ('NBSAP'), as mandated under the CBD. While these plans have been described as a roadmap for biodiversity conservation in each country, they can differ widely between jurisdictions. The qualities explained in this article are meant to be ubiquitous and underscore any and every jurisdiction-specific national regime.¹⁶

Quality 1: Reliable Science-driven and Transparent Decision Making

¹⁶ Note: To date, in accordance with Article 6 of the Convention, 192 of 196 (98%) Parties have developed at least one NBSAP.

Reliability and being Science-driven

For the purposes of this argument, 'Reliability' in the context of science-driven decision-making means going through a regime of testing, research and cross-review to ensure the rigour of results. Furthermore, the science in question should be corroborated by numerous reputable scientific bodies who operate in more than one jurisdiction, to avoid contextual bias in data analysis.¹⁷ Reliable science-based decision making can be found in biodiversity conservation regimes in numerous jurisdictions. The USA's Fish and Wildlife Service (FWS) states on its website that it bases its decisions on 'sound science'. This entails frequent consultation of experts and a rigorous peer review process of said expert research on influential scientific documents before making their decisions. As stated on its peer review site page, this is done "In order to ensure the quality and credibility of the scientific information (they) use to make decisions".¹⁸ This is pursuant to a 2004 update on their scientific decision-making mechanism which previously only involved consultation of experts without a peer review. The peer review and publication process was added to "ensure the quality, objectivity, utility, and integrity of information (they) use and disseminate, and to provide mechanisms for allowing the public to seek correction of that information".¹⁹ This is a natural reflection of the importance of basing these decisions on sound science and a touch on the need for transparency and involvement of stakeholders (in this case, the American public). Singapore's own decision-makers in this respect, the National Parks Board (NParks), conduct their operations and make their decisions with similar emphases on sound science and involvement of other stakeholders through a citizen science programme involving private citizens as well as nature groups.²⁰

Being science-based is necessary when drafting and analysing regulations which are founded on the premise that human activity can harm the environment. Seeing as the two serve often opposing goals, the natural question when challenging the potentially harmful activity is "How does this activity harm the environment??" Environmental Impact Assessments (EIAs) use scientific research and data to make the relevant assessments and answer that question. The relevant authorities can then properly consider the scientific evidence-backed arguments, after which, decisions on the activity can be made. With regard to the aforementioned assessment of reasonably well-known sectors and components of biological diversity, this can be considered in the context of an environmental impact assessment. EIAs are an important tool for governments and relevant authorities to monitor and if needed, limit any activities which could have an adverse impact on biodiversity. Evidence gathering of the possible impacts on wildlife within the remit of the proposed project requires scientific involvement from relevant experts.

This was the case when Singapore had its first widely known foray into the world of EIAs with its Cross-Island Line (CIL); an underground rail line horizontally bisecting the island, and running under its largest nature reserve, the Central Catchment Nature Reserve. There were two possible routes for the line: either under the nature reserve or around it. The initial plan was to have the line run under the nature reserve at a depth of 70 metres. However, numerous nature groups raised the alarm and

¹⁷ Zvereva, Elena L., and Mikhail V. Kozlov. "Biases in Ecological Research: Attitudes of Scientists and Ways of Control." *Scientific Reports* 11, no. 1 (2021). <https://doi.org/10.1038/s41598-020-80677-4>.

¹⁸ Anon. "Data Management - Fish and Wildlife Service." Life Cycle: Access | U.S. Fish & Wildlife Service. Accessed September 27, 2021. <https://www.fws.gov/data/life-cycle/access>.

¹⁹ Service, U.S. Fish and Wildlife. "Fish and Wildlife Service." Official Web page of the U S Fish and Wildlife Service. Gov. Accessed June 6, 2021. <https://www.fws.gov/informationquality/>.

²⁰ Anon. "Our National Plan for Conservation." National Parks Board. NParks, May 28, 2019. <https://www.nparks.gov.sg/biodiversity/our-national-plan-for-conservation>.

argued that this would disrupt the lives of numerous species living above it in the reserve, some of which are endangered. When the issue reached the wider public, the government took notice and commissioned the Land Transport Authority (LTA) to investigate a possible alternative (and more expensive) route around the reserve by conducting an EIA.²¹ While the route was not altered, plans were changed pursuant to the EIA to include 'mitigation measures' to ensure the safety of species within the reserve, such as the endangered Raffles Banded Langur.²² Without studies such as the aforementioned EIA, no measures would have been taken to protect these species, and while it is a compromise, plans were altered pursuant to the concerns raised by the science and this would hopefully yield results which balance both the ecological needs of the local ecosystem and the development needs of the city-state.

A scientific foundation can be found in the thinking underscoring some environmental legislation too. Pre-2020, the Parks and Trees Act (PTA) was the main source of legislation for protecting vulnerable species in Singapore as it named protected areas within which no activity can be conducted if it is potentially harmful to wildlife, stated in sections 8 and 9 of the Act. However, this protection from harm was extended only inside protected areas. More recently, from 2020 onwards, crucial amendments to the Wildlife Act (WA) have been implemented. This Act, read together with the Wildlife (Protected Wildlife Species) Rules 2020, names species which are protected from harm outright, which notably is distinguished from the conservation technique under the CBD, which does not include a list of protected species or ecosystems. Sections 5C, 8, 9 and 10 of the WA offer protection from harm for these species, especially S.5C(1) which prohibits the 'killing, trapping, taking and keeping' of wildlife, failing which offenders can be levied with a fine, jail term or both. When read together with the Wildlife (Protected Wildlife Species) Rules 2020, this imposes stricter sanctions for harm committed against listed protected species under the Rules than for non-protected species. The basis for which these species were selected as protected is founded in research conducted by NParks and the list can be formally changed by the Minister for National Development as per his/her discretion. This allows expedient action on the latest scientific research to protect any newly named threatened species. Singapore's science-based efforts have been fairly successful in protecting vulnerable species. Findings from Singapore's latest National Biodiversity Report (compiled from 2015-2018 and released in 2020) show that a number of taxonomic groups have seen increases of over 20 species in the last five years, including orthopterans and butterflies. These have benefited from the work of new local scientific experts entering the field. Despite some extirpations being reported, biodiversity trends for Singapore continue to be positive, due to the large number of species still being rediscovered or named, which in turn helps inform any updates to Singapore's biodiversity conservation regime moving forward. As studies are routinely conducted by NParks on high-value green areas on which to focus conservation planning and efforts, Singapore has been able to increase its green cover from 35.7% to 46.5% between 1986 and 2007, despite the population growing by 68% from 2.7 million to 4.6 million in the same period.²³ However, the science will only shine through and

²¹ Tan, Audrey. "Cross Island Line: Concerns about Wildlife Linger despite Plans to Reduce Impact." The Straits Times. Singapore Press Holdings, March 15, 2021.

<https://www.straitstimes.com/singapore/environment/concerns-about-wildlife-linger-despite-plans-to-reduce-impact>.

²² Mahmud, Aqil Haziq. "Cross Island Line Environmental Impact on Nature Reserve Can Be 'Adequately Managed': LTA Study." CNA. Mediastory Singapore, September 2, 2019.

<https://www.channelnewsasia.com/news/singapore/cross-island-line-environmental-impact-central-nature-reserve-11864492>.

²³ Anon. "SINGAPORE SIXTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY (2015-2018)." NParks, 2020. <https://www.cbd.int/doc/nr/nr-06/sg-nr-06-en.pdf>.

bear fruit through effective enforcement of any laws and policies in place, as will be addressed in the 'Enforcement' section of this article.

Being science-based helps cover the widest possible range of threats to local biodiversity. Singapore's NBSAP Strategy 3 is to 'Improve knowledge of our local biodiversity and the natural environment. This reinforces the need to have all bases covered. One of these angles is the threat posed to local species by invasive species which hunt and kill local species, compete with them for land and resources, or spread diseases of foreign origin within the local wildlife. Invasive species have most commonly entered Singapore through human routes of travel like by sea.²⁴

However, Singapore legislation does not have all-encompassing legislation aimed at addressing the problem of invasive species. There are pieces of legislation which could extend to address it. The Wildlife Act S.9(1) prohibits importation of any wildlife into Singapore without the Director-General's prior approval. The Endangered Species (Import and Export) Act prohibits the import, export or transshipment of CITES-listed species, which itself can in practice prevent their effect through disease spread or unintentional escape. Nevertheless, there remains no dedicated legislation to address threats from imported wildlife as a whole. The International Union for the Conservation of Nature (IUCN) Guidelines on invasive species from 2000 recommends national legislation to address it. The CBD calls for it too, as the science for it demands so, and Target 9 of the Aichi Biodiversity Targets is to eliminate and manage populations of high-priority invasive species and prevent the introduction of new ones.²⁵

The only piece of legislation in Singapore which can be said to directly reference invasive species is the Pollution of the Sea (Ballast Water Management) Regulations 2017²⁶ (which was enacted to give effect to the International Maritime Organization 2004 Ballast Water Management Convention which entered into force in 2017). The provision which directly references invasive species is Reg.14(6) which states:

"Where the sampling mentioned in paragraph (2)(c) or (3)(c) leads to a result, or supports information received from another port or offshore terminal, indicating that the ship poses a threat to the environment, human health, property or resources, the Director may direct the owner, master or agent of the ship to take steps to prevent the ship from discharging ballast water until the threat is removed."

While this is a worthwhile note of a very pertinent issue supported by science which poses a threat to local biodiversity and provided for in Art. 8(h) of the CBD aimed at preventing introduction of alien species which threaten the environment, the general legislative framework has not addressed it

²⁴ YEO, DARREN C., and CHERYL S. CHIA. "Introduced Species in Singapore: An Overview." *COSMOS* 06, no. 01 (2010): 23–37. <https://doi.org/10.1142/s0219607710000486>.

²⁵ Chun, Joseph, and Lin Heng Lye. "Wildlife Protection." Essay. In *Environmental Law in Singapore*, 696. Singapore: SAL Academy Publishing, 2019.

²⁶ For completeness, it should also be noted that Part 2 of the Animals and Birds Act 1965 contains provisions regarding the import, export and transshipment of animals and birds and the licensing requirements for doing so, as well as a reporting scheme for the animals and birds concerned. However, while addressing the presence of species of foreign origin imported into Singapore, its text does not concern any threats to the environment or local flora and fauna. As such, it is not taken to be a piece of invasive species legislation for the purposes of this discussion.

beyond this one provision. Furthermore, it does not account for potential effects of invasive species such as Eurasian Rats²⁷ and Common Pigeons²⁸, both of which were invasive species brought through terrestrial craft and as stowaways on maritime vessels and have affected local species. Despite the apparent resistance of some local flora to invasive species, the total numbers of non-native species established in Singapore increase year by year in most major taxa and those that arrive in Singapore tend to stay and, in some cases (such as the aforementioned examples), thrive here. There are numerous other invasive species in the region which could potentially reach Singapore and given projected increases in maritime and airborne travel and transport into Singapore, there is no reason to expect the rates of introduction will decline.²⁹ Hence, there is a great and urgent need for specific legislation and/or policies to address this issue.

In fact, Singapore's legislation on invasive species only seems to be tailored to very specific issues. For instance, the Animals and Birds (Piranha) Rules (Formerly the Fisheries (Piranha) Rules) prevented specifically, the introduction, keeping, breeding, sale, purchase, import or export of any fish known as 'piranha' and the release of them into any water channel in Singapore. It may seem odd that only one species or group of species may be named in this way when similar potential threats could come from a much wider range of species. Indeed, this legislation was enacted due to the fear of exotic animal traders or pet owners illegally dumping carnivorous piranha into our local waterways, which would affect local wildlife and the safety of any people in and around those waterways.³⁰ This is a very niched measure, but inadvertently serves a wider purpose of protecting local biodiversity, which should be addressed more substantially moving forward in accordance with reliable science. This approach is used with scientific backing in other jurisdictions such as the USA. The USA has a National Invasive Species Act (NISA) which addresses the problem of invasive species entering through ballast water and other sources as a holistic and specifically dedicated piece of legislation for addressing the problem of invasive species. The NISA directly addresses problems associated with non-indigenous species, with special attention on aquatic nuisance species in vulnerable and diverse ecosystems like the Great Lakes. This is because pursuant to research conducted by the US Fish and Wildlife Service (FWS), it was discovered that in the proper conditions, non-indigenous species can out-compete indigenous species by dominating resources or spreading diseases or parasites.³¹ Examples of problematic invasive species in this regard are Zebra Mussels and Mitten Crabs. In fact, Zebra Mussels example in Great Lakes and California consuming so many micro-organisms that local mussel species cannot survive.

The EU's own laws provide further endorsement of the need for scientifically-backed conservation practices, which includes invasive species. EU Regulation 1143/2014 on Invasive Alien Species Entered

²⁷ YK, Raynold Toh. "Rats Are Back in Bukit Batok, Raising Fears of Repeat of Infestations in 2014 and 2016." The Straits Times. Singapore Press Holdings, February 6, 2017. <https://www.straitstimes.com/singapore/rats-are-back-in-bukit-batok-raising-fears-of-repeat-of-infestations-in-2014-and-2016>.

²⁸ Co, Cindy. "Need to Understand Motivations to Counter Persistent Pigeon Feeders: NParks." CNA. Mediacorp Singapore, April 18, 2020. <https://www.channelnewsasia.com/singapore/need-understand-motivations-counter-persistent-pigeon-feeders-nparks-763141>.

²⁹ Corlett, R.. (2022). Ten lessons from Singapore for the conservation of tropical biodiversity. 10.26107/NIS-2022-0068.

³⁰ "Website©Ria Tan 2003 WWW.WILDSINGAPORE.COM." Dangerous aliens lurk in the waters of Singapore. Wild Singapore, May 25, 2007. <http://www.wildsingapore.com/news/20070506/070525-5.htm>.

³¹ Jensen, Doug. "Aquatic Invasive Species Campaigns." Aquatic Invasive Species Campaigns | Minnesota Sea Grant. University of Minnesota Duluth, July 14, 2021. http://www.seagrant.umn.edu/ais/zebramussels_threaten.

into force on 1 January 2015, fulfilling Action 16 of Target 5 of the EU 2020 Biodiversity Strategy, as well as Aichi Target 9 of the Strategic Plan for Biodiversity 2011-2020 under the CBD. It is formed around the three tenets of prevention, early detection and rapid eradication, and management of existing invasive species populations. The European Commission has listed these species pursuant to sound scientific research showing that they pose a threat to local species.³²

The importance of scientific bases in selecting species for special protection is evident in the approach taken in the USA. The USA's emphasis on the importance of scientific bases can be found in the US Endangered Species Act (ESA) on how protected species are designated. Section 4 of the ESA Requires the agencies overseeing the Act to designate imperiled species as threatened or endangered. This is similar to Singapore's approach in that competent authorities are the ones with the power to designate the protected species. However, in Singapore, the power in the legislation is stated to be that of the Director-General of Wildlife Management. There is no indication that he would take advice from the relevant authorities with the scientific knowledge on the issue in doing so, even though it probably would happen anyway in practice. This is in contrast to the ESA which names the relevant authorities explicitly within the Act, and goes beyond that to name the criteria which need to be fulfilled in order to list the species as threatened or endangered. To be considered for listing, the species must meet **one** of five criteria³³:

1. There is the present or threatened destruction, modification, or curtailment of its habitat or range.
2. An over utilization for commercial, recreational, scientific, or educational purposes.
3. The species is declining due to disease or predation.
4. There is an inadequacy of existing regulatory mechanisms.
5. There are other natural or manmade factors affecting its continued existence.

The Act says that only ONE of the criteria need to be met for the species to be eligible. Criteria 1-3 seem commensurate with phenomena which would cause declining numbers. However, 4 and 5 seem to be able to give a wider breadth to consider species that may not even be experiencing declining numbers at the moment. For example, there could be an inadequacy of existing regulating mechanisms to protect alligators under point 4, but their numbers may not be low or in decline.

Potential candidate species are then prioritized, with "emergency listing" given the highest priority. Species that face a "significant risk to their well being" are in this category. Section 4 establishes critical habitat as a regulatory link between habitat protection and recovery goals, requiring the identification and protection of all lands, water and air necessary to recover endangered species. To determine what exactly critical habitat is, the needs of open space for individual and population growth, food, water, light or other nutritional requirements, breeding sites, seed germination and dispersal needs, and lack of disturbances are considered. This shows a much more thorough and fleshed-out scientific backing behind the legislative and decision-making process.

John Nagle investigated an inquiry to ascertain whether the ESA has achieved those purposes. The ESA first says that its purpose is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." This is "[t]he central purpose of the ESA,"

³² Anon. "Invasive Alien Species of Union Concern." European Commission. Publications Office of the European Union, 2017. https://ec.europa.eu/environment/nature/pdf/IAS_brochure_species.pdf.

³³ Endangered Species Act of 1973, S.4(a)(1)

according to J.B. Ruhl.³⁴ Ruhl argues that judging by those criteria, the law has been rather unsuccessful. The ESA's provisions related to ecosystem preservation have been the target of complaints voiced by supporters and opponents of the law, especially concerning Section 7 of the Act which is aimed at protecting habitats.³⁵ He argues that this is because there have been relatively few instances in which significant areas of habitat have been conserved thanks to S.7. Nonetheless, the FWS has resisted the designation of critical habitat for listing. Furthermore, he iterates that only five of the eight species delisted between 2000 and 2007 met their stated recovery criteria and that "some recovery criteria were outdated or otherwise not achievable" for the other three species. Mary Christina Wood has thus concluded that the statute has a poor record of achieving the recovery of threatened species, which is its central purpose.³⁶

However, other sources regard the ESA as the USA's most effective law to prevent at-risk species from extinction. Notably, 99% of species listed as protected species under the ESA have avoided extinction. In fact, were it not for the Act, scientists have estimated, at least 227 species would have likely gone extinct since the law's passage in 1973, and that more than 100 species have seen a more than 90% recovery rate since the Act's implementation. Notably, in 2016, more listed species were found to be partially or completely recovered than in any previous year since the ESA became law.³⁷ Claims of the ESA's success are backed by a 2012 study conducted by the USA Center for Biological Diversity which found that 110 species have shown tremendous recovery while protected under the Act, with most meeting or exceeding recovery timelines set by federal scientists. The WWF's independent study on the matter attributes the ESA's success to its basis in scientific data and research. It details the process how populations are monitored over time to determine whether a given species is recovering, as the Act provides. It describes the ESA as the "gold standard for conservation legislation", and calls it one of the world's most effective laws for preventing and reversing the decline of endangered and threatened wildlife.³⁸ This opinion is found in some academic circles too, as Greenwald et al posit estimate that the Endangered Species Act has prevented the extinction of roughly 291 species since passage in 1973, and has to date saved more than 99% of species under its protection. The same paper contends that the failure to prevent the extinction or drastic depletion of species listed under the Act is not due to deficiencies in the Act itself, but insufficient spending and resource allocation on conservation efforts by federal and state authorities tasked with their protection. They state that those species can be saved from extinction, but that must be more of a priority for federal spending and that nevertheless, despite funding shortfalls, the ESA has succeeded in preventing the extinction of the vast majority of listed species and in this regard is a success.³⁹

³⁴ J.B. Ruhl, *Keeping the Endangered Species Act Relevant*, 19 Duke Environmental Law & Policy Forum. 275 (2009).

³⁵ Nagle, John Copeland. "Climate Exceptionalism." *SSRN Electronic Journal*, 1, 40 (August 21, 2009). <https://doi.org/10.2139/ssrn.1459147>.

³⁶ Wood, Mary Christina, "Reclaiming the Natural Rivers: The Endangered Species Act Applied to Endangered River Ecosystems," 40 *Arizona Law Review* 198-286 (1998).

³⁷ Anon. "THE ENDANGERED SPECIES ACT: A WILD SUCCESS." *The Endangered Species Act: A wild success*. Center for Biological Diversity. Accessed November 23, 2021. https://www.biologicaldiversity.org/campaigns/esa_wild_success/.

³⁸ Anon. "The US Endangered Species Act." WWF. World Wildlife Fund. Accessed November 23, 2021. [https://www.worldwildlife.org/pages/the-us-endangered-species-act#:~:text=Endangered%20Species%20Day%20%2D%20May%2020%2C%202022&text=The%20US%20Endangered%20Species%20Act%20\(ESA\)%20is%20our%20nation's%20most,on%20it%20have%20avoided%20extinction.](https://www.worldwildlife.org/pages/the-us-endangered-species-act#:~:text=Endangered%20Species%20Day%20%2D%20May%2020%2C%202022&text=The%20US%20Endangered%20Species%20Act%20(ESA)%20is%20our%20nation's%20most,on%20it%20have%20avoided%20extinction.)

³⁹ Greenwald, Noah, Kieran F. Suckling, Brett Hartl, and Loyal A. Mehrhoff. "Extinction and the U.S. Endangered Species Act." *PeerJ* 7 (April 22, 2019). <https://doi.org/10.7717/peerj.6803>.

It is critical for other jurisdictions like Singapore to keep their legislation and exercise of governmental powers in conservation efforts scientifically-based to ensure their efficacy and that the species are indeed conserved to the degree that is necessary to ensure their survival. As seen with the ESA, the importance of a reliable scientific basis for conservation efforts under any piece of legislation cannot be understated as it will in turn influence where resources will be directed and to an extent, how they will be used. Resources dedicated towards conservation, scarce as they are, need sound scientifically-backed legislation to direct their use to maximise effectiveness.

Transparency

The afore-explained also touches on a wider point of transparency. It is evident from the above that transparency is critical in getting the science to work and monitor the conservation progress, as well as cover as many bases as possible in selecting species and habitats to conserve. This entails being transparent and participative with stakeholders in all aspects of CBD-based conservation.

Transparency is important because the public should be informed on the rationale behind decisions, and where applicable, the public and important stakeholders should be involved in decision making.⁴⁰ As numerous academics argue, greater transparency is seen to facilitate, among other things, more accountable, democratic and effective environment-oriented decision-making and actions across public governance. This means also being easily understood and efforts being made to actively engage some communities which may be hard to reach. Being science-driven is important to ensure that decisions made in conservation follow the latest in generally accepted scientific research on the objects of said conservation, to ensure suitability and effectiveness.

Various provisions within the CBD call for collaboration with vulnerable communities, state actors, and non-state actors. Noting that decision making for CBD objectives tends to be made at the state level, transparency with these other stakeholders is needed to keep them informed and where applicable, allow them to rely on commitments made to direct their own decisions. This also helps foster confidence in the decision-making process. For instance, Art. 7 CBD calls for the identification and monitoring of different components of biodiversity for conservation purposes. The discussions in COP 3 advocated a “two-track approach to assessment and indicator development: in the short-term, assessment of reasonably well-known sectors and components of biological diversity should be carried out; at the same time, longer-term programmes should be developed involving research and capacity-building in areas needing advances in knowledge”.⁴¹ It was and still is widely accepted that the signatory states would engage the relevant authorities for said scientific research and will also utilise the research of non-governmental experts in the field. Being science-driven is especially pertinent for Art 8-10 CBD, particularly Art 10 ‘Sustainable use of components of biodiversity’. This requires extensive knowledge and data regarding adverse impacts and traditional cultural practices. Art 8 requires technical knowledge of biological matters regarding different species and external threats. Also, Art 12 addresses research and training with needs of developing countries, and Art 14 governs impact assessment.

⁴⁰ Aarti Gupta, Ingrid Boas & Peter Oosterveer (2020) Transparency in global sustainability governance: to what effect?, *Journal of Environmental Policy & Planning*, 22:1, 84-97, DOI: [10.1080/1523908X.2020.1709281](https://doi.org/10.1080/1523908X.2020.1709281)

⁴¹ UNFCCC. Conference of the Parties (COP). “Kyoto Climate Change Conference - December 1997.” In *Conference of the Parties on Its Third Session, Held at Kyoto, from 1 to 11 December 1997*. UNFCCC, 1998.

The Cross Island Line (CIL) situation is an example of how transparency in decision making concerning biodiverse areas can be taken very seriously by the public and can lead to alterations in the government's approach to the issue. Politically, since the public is capable of exercising the power of the vote every 4 or so years, there is both a principled and practical benefit to having the process behind these decisions made transparent to the wider public to foster confidence in governmental decision-making .

In Singapore, the importance of transparency in conservation-related decision-making is recognised and reflected in standard practice, even when there is technically no legal requirement for it. An example of this is with regard to amendments to the Parks and Trees Act (PTA) schedule of protected areas.⁴² Expediency allows the Minister by publication in the Gazette to amend the schedule and present it to Parliament. Despite the lack of a legal requirement for disclosure (when compared to previous legislation on the issue) potentially opening the door reduced accountability to Parliament and public as the Minister no longer needs prior Parliamentary approval, this has not been reflected in practice. This is because even after the Act was put in force, general practice has been to explain the rationale to the public and Parliament.⁴³ Notably, however, there is still an absence of criteria in the PTA to be considered when making these decisions. It allows flexibility and expedience but reduces transparency and potentially, accountability if a bad or improper decision is made. Not to say this has happened before and any prior authorised conduct is bad or improper, but an incident occurred in 2016 which highlighted the potential lacuna in the lack of a legal requirement for accountability under the PTA. NParks permitted the drilling of boreholes for construction survey work in 2016 in the Central Catchment Nature Reserve. This is not under the permitted activities per S.7(3) PTA. And approval by commissioner under ss. 8(1) and 9(1) does not absolve the Land Transport Authority (LTA) of criminal liability if something goes wrong. Arguably, a construction company causing such severe harm to a protected Singaporean area that it warrants criminal liability would be a matter of public interest as it affects the natural biodiversity which we possess and enjoy as a nation. As such, transparency would promote accountability and reassurance to the public that such eventualities can and are being prepared for and measures actively being taken to prevent said harm. The presence of (and adherence to) legal requirements for transparency in this respect would also enable a wider range of stakeholders to hold the relevant parties to account when they fall short on their responsibilities in this respect. This in turn should foster more accountable, democratic and effective environment-oriented decision-making and actions across public governance.

Singapore's NBSAP Strategy 5 is to 'Strengthen partnerships with all stakeholders and promote international cooperation', including private, public and people sectors (government agencies, academia, schools, conservation groups, amateur naturalists and private corporations), in a comprehensive partnership. This both encourages more scientific research to come forth and be considered in conservation decision-making and promotes active participation and sharing, which itself breeds transparency.

The combination of the above factors leads to measures which are educative of the public. These strategies, no matter what form they come in, serve to educate the public and stakeholders of the importance for their existence and for biodiversity conservation so that it hopefully encourages ground-up initiatives to help with these efforts and hopefully engenders a spirit of stewardship over

⁴² Chun, Joseph, and Lin Heng Lye. "Protecting and Creating Nature Sites." Essay. In *Environmental Law in Singapore*, 621. Singapore: SAL Academy Publishing, 2019.

⁴³ Chun, Joseph, and Lin Heng Lye. "Protecting and Creating Nature Sites." Essay. In *Environmental Law in Singapore*, 622. Singapore: SAL Academy Publishing, 2019.

nature. This practice is especially important under Art 13 CBD which calls for ‘public education and awareness’ through media, awareness and public education programmes.⁴⁴

This is evident in Singapore’s experience with the CIL. The combined educative effect of NParks’ outreach and public education efforts, as well as their renewed and well-publicised plans to make Singapore a ‘city in a garden’ through focusing on planting and protecting local species of flora and fauna had stoked a keen interest amongst the public in biodiversity conservation and educated the public about these measures and the importance of conserving our natural areas. This led to a cycle of more public education, more public desire for involvement in these issues and therefore more diverse opinions and stronger voices for conservation reaching the government in their decision making. A boon of getting the public to value nature is that they will start to regard it as an important issue, even around election time. This influences governmental action as they could take public opinion into account when policymaking. While the decision on the route of the CIL was still to build it under the nature reserve, the environmental impact assessment (EIA) and alternative route would not have even been considered had public voices not been made loud and clear when the issue arose. There are also efforts to educate other countries about the matter of urban biodiversity and how urban areas too can be vectors for conservation. A slightly older example of this was botanical groups whose expeditions accidentally uncovered the biodiverse and important nature of Chek Jawa (in Pulau Ubin), which led to its designation as a protected area. More education could encourage more efforts like this in a virtuous cycle.

NParks often repeats the idea that in order to be effective, conservation efforts have to be cross-sectoral and multi-agency driven. Singapore NBSAP Strategy 4 is to ‘Enhance education and public awareness’. Effective communication will create greater awareness and interest in our natural heritage and instil a sense of national pride. Increase appreciation, awareness and understanding of Singaporeans for nature through public seminars, road shows and events. Education curricula also include biodiversity elements. More public events to raise awareness. The cooperation in this respect is found in Singapore NBSAP Strategy 5 to ‘Strengthen partnerships with all stakeholders and promote international cooperation’, including private, public and people sectors (government agencies, academia, schools, conservation groups, amateur naturalists and private corporations), in a comprehensive partnership. Encourage active participation in the stewardship of the environment for all sectors.

However, one may argue (and some have) that the public regards other issues as more paramount than conservation and thus when there is tension between them, conservation would take a back seat, often in favour of urban development for multiple purposes. The broad argument that effectiveness if the public does not have that much interest to begin with will be limited as mentioned earlier, the government does tend to follow some trends of public opinion in decision making. Understandably, some factors are down to the public’s own interest in conservation and if they do not regard it as an issue, it may not be right for the government to govern against those interests. Conservationists often point to Ecuador’s effectiveness with its ‘Pachamama’ law and policy which affords nature protection for its own sake and is named after the indigenous word for the spirit of nature. Pachamama is not just a law or a religion, it is a way of life in Ecuador (and neighbouring

⁴⁴ ‘Public Education and Awareness’ Art 13:

- a. Promote and encourage understanding of the importance of, and the measures required for, the conservation of biological diversity through media and education programmes
- b. Cooperate, as appropriate, with other States and international organizations in developing educational and public awareness programmes

Bolivia). Education both in schools and at home through cultural teachings emphasises the importance from a young age of living in harmony with nature and loving nature as something to be protected. In this context, the willingness to conserve can be put down to a powerful cultural (almost religious) identity and protectiveness over their natural world, which would not be present in other societies without similar cultural paradigms.

Nevertheless, sometimes, the impetus has to be from the top down and focus on both hard and soft measures to change public opinion. Furthermore, governing according to public interests also involves doing what's best for the country and therefore the public by extension, so the government has to make these tough decisions. The objective is to create a positive feedback loop of educational policies which sway public opinion and interests in favour of conservation so that the public then takes the initiative to voice their concerns for future policies/projects and influence policymaking and legislation to be more conservation-friendly. However, all of these educational measures are arguably only effective insofar as the relevant authorities firstly, practice what they preach and secondly, hold responsible parties to account. Public opinion and action is not solely influenced by education, but by the effects of leadership by example. The Singapore Government's latest efforts to take conservation and environmental protection seriously through new financing guidelines and extensive EIA reporting from 2020 onwards generated a lot of interest and made waves across multiple industries with thousands scrambling to understand the concept of responsible financing and biodiversity-grounded EIAs. This permeation of biodiversity conservation principles into wider policy and the public sphere educates not just members of the public, but also the corporations on the importance of conservation in of itself and to them as corporate entities.

Quality 2: Clarity

Any measures undertaken in the governmental and legislative spheres to conserve biodiversity in a country need (broadly) to have clarity in language, substance and purpose. This is to ensure that the roles that each public body has to play in conservation are clear to those who will be playing them, and those who are tasked with monitoring the execution and progress of these goals. This encompasses but is not strictly limited to: Clarity in language of formulation/drafting and clarity in organisation.

The former, clarity in language of formulation/drafting entails an easily-followed and accessible delegation of responsibility and elucidation of the focuses of various conservation efforts.

The latter, clarity in organisation, aids in facilitating the smoothness of enforcement and execution of the policies and actions called for in any biodiversity conservation regime. This type of clarity is necessary for all provisions mentioned.

In Singapore, there are numerous government agencies whose functions intersect with biodiversity protection, such as those which deal with land use and the Port Authority. However, there is a centralised authority which looks after biodiversity, which is NParks. Having a single agency looking after this issue helps streamline decision-making and the formulation and execution of any conservation policies and Singapore's NBSAP. It also allows NParks to advise other government authorities in matters concerning biodiversity which would be affected by their activities, particularly infrastructural development works.

This stands in contrast to larger jurisdictions, especially those with a hierarchy of legislatures and agencies at both national and state levels, such as the USA. The USA has multiple agencies which combine to oversee various aspects of biodiversity conservation, with some overlap. The areas of overlap may be seen as a 'grey area' of sorts. For instance, the Aquatic Nuisance Species Task Force (ANSTF) was created by Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA), which is now the National Invasive Species Act (NISA) as the "coordinating body in developing and implementing the national program for prevention, research, monitoring, and control of infestations of nonindigenous aquatic species.". NISA reauthorizes the Task Force, as established by NANPCA, and it is responsible for developing the guidelines, regulations, education and training programs, ecological surveys, and information clearinghouse described in the Invasive Species Act. There is a lot of overlap in duties between the named agencies in the Task Force to achieve the goals set out in the Act, especially with the day-to-day duties of the Fish and Wildlife Service (FWS), whose role is "enforcing federal wildlife laws; protecting endangered species; managing migratory birds; restoring nationally significant fisheries; conserving and restoring wildlife habitats".

The overlap here may not be as big of a problem as The ANSTF is composed of 13 federal agencies, but the Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration (NOAA) are the co-chairs. Other agencies include the Coast Guard, Environmental Protection Agency, Army Corps of Engineers, Forest Service, Bureau of Land Management (BLM), and the National Park Service. The Fish and Wildlife Service does acknowledge the existence of overlap in duties with other agencies both in the context of this task force and outside it, but counter by saying that they are usually separated due to specific origins or jurisdiction. As stated on its website, "For instance the two most commonly confused agencies are the Department of National Resources and the USFWS which in many areas duties are similar but the USFWS manages federal resources and lands where as the DNR is a state agency and manages state owned resources."⁴⁵ Legislative measures are in force to attempt to coordinate the FWS' responses to issues of conservation. The Fish and Wildlife Coordination Act (FWCA) of the United States was enacted March 10, 1934 to protect fish and wildlife when actions of federal agencies result in the control or modification of a natural stream or body of water. The Act provides the basic authority for the involvement of the FWS in evaluating impacts to fish and wildlife from proposed water resource development projects. Even so, this coordination is limited to activities which modify a stream or body of water, and not other functions of the FWS which may also see overlap. This Act should therefore not be seen as an attempt to prevent overlap, but to encourage it where it would help. It may very well be that the existence of various agencies with differing but overlapping functions is a necessary product of having such a large country with diverse conservation needs and ensuring that as many of those needs are addressed as possible, and thus any overlap or 'grey area' does not necessarily constitute a lack of clarity per se.

However, for the purposes of the CBD, signatories' commitments to their CBD obligations are crystallised by the implementation of a national level NBSAP which besides maintaining their commitments, also functions as a central policy tool to set the direction which the country as a whole takes with regard to biodiversity conservation. Every signatory has ratified the CBD and most have come up with NBSAPs. However, the USA has neither ratified the CBD, nor published or implemented an NBSAP or any policy document to that effect. It would seem that at this point, the various US governmental agencies tasked with conservation are performing their roles pursuant to federal laws which created them and bestow their power, but without a unified objective in sight with regard to conservation. While insiders within these agencies or the federal government may argue that this does

⁴⁵ Anon. "Frequently Asked Questions - Windom - U.S. Fish and Wildlife Service." U.S. Fish & Wildlife Service. FWS, November 23, 2012. https://www.fws.gov/refuge/Windom_WMD/about/faq.html.

not necessarily breed a lack of coordination between the agencies or a lack of direction, it ostensibly does not provide any clarity to citizens or outsiders, which in turn does not provide the assurance that the USA is working on a clear set of objectives to conserve its biodiversity as per the CBD.

For the sake of clarity, there should also be a general lack of ambiguity in laws which afford protection to species and natural habitats. This would aid in enforcement by authorities which are tasked to do so by making it clear exactly what the obligations are which are meant to be fulfilled and the level of fulfilment which would be expected, plus the powers entrusted in the authorities tasked with enforcement.

Specifically, in laws protecting named species, there should be clarity in which species are protected. For instance, Singapore's Wildlife (Protected Species) Rules refers to 'all' 'dolphins', and 'all' 'skates and rays', without specifying the exact species or other named families of related organisms which may need protection as well. Whether this lack of specificity constitutes a lack of clarity depends on whether it is clear what is to be done if such species are encountered or if an individual member of these groups of species is involved in an incident (for example, by being caught by an angler). This, however, does not lend itself to a lack of clarity as S.5C of the Wildlife Act clearly states that any trapping or taking must be intentional. As to what constitutes 'trapping' in terms of the exact nature of the Act, it is likely that this will be given an interpretation closest possible to the legislative purpose of the act in the event that an incident is brought to the Courts.⁴⁶ On a cursory reading of this legislation, its objective is to protect named species from certain harmful acts and interpreting the term 'trapping' too narrowly may defeat the act's legislative purpose. One may argue that it may not be clear to a layman what a 'skate or ray' is as opposed to a non-protected fish species, which would affect the magnitude of the potential action the perpetrator faces. However, the Law as it stands does not require the accused to *know* that the species was protected, but the mere fact that it *is* listed grants that higher protection. This is meant to compound the fact that no take/trapping of *any* species is allowed as per S.5C WA. Ergo, the position which it would appear the Act encourages its subjects to take is a 'safe' stance of not catching, trapping or killing *any* wildlife (except when permitted).

It is indeed argued by Lye and Chun that in the event of ambiguity, the definition should be given its widest possible interpretation to maximise protection.⁴⁷ In their chapter written and published before the WA was enacted, they raised the possible ambiguity in the legality of the taking of eggs of any species. However, presumably recognising this lacuna, Parliament included the 'eggs' of a species as a member of that species for the purposes of the WA. This is found in S.2 WA as 'wildlife' includes the egg of the animal as a member of its species. Hence, if there is any legislative ambiguity, it could be supplemented by a catch-all provision such as S.5C WA.

Greater clarity in the scope of legislation and the remit of the powers of the relevant governmental authorities lends itself better to enforcement in Court. The interpretation of the ESA and US legislation in US courts has been key how lawyers used it to argue and how judges have used those arguments to advance the common law protection over the environment in the USA, especially over endangered species. The clarity in legislation like the ESA and in documents setting out governmental power help the judiciary enforce obligations owed by public authorities via judicial review and helps the Courts arrive at a judgment that accurately reflects those duties and allows them to set out the obligations owed and where/if any authorities fell short. An example of this is Section 7 of the ESA and how it was

⁴⁶ GOH, Yihan. Chapter 12: Statutory Interpretation. (2015). *The Legal System of Singapore: Institutions, Principles and Practices*. 403-453. Research Collection Yong Pung How School Of Law.

⁴⁷ Chun, Joseph, and Lin Heng Lye. "Wildlife Protection." Essay. In *Environmental Law in Singapore*, 655. Singapore: SAL Academy Publishing, 2019.

used in the landmark case of *TVA v Hill* to afford more concrete protection over environmental areas vis-à-vis actions of governmental agencies.

A brief summary of the relevant provisions of S.7 is as follows:

- S.7 purpose: Directs federal agencies to use their authorities to help conserve listed species.
- S.7(a)(1):
 - Directs the Secretary of the Interior and all federal agencies to proactively use their authorities to conserve such species. This directive is often referred to as an ‘affirmative requirement.’
 - Requires federal agencies to work with FWS and NMFS to coordinate endangered and threatened species conservation. Federal agencies should also account for any effects on endangered or threatened species in planning their activities.
- S.7(a)(2):
 - Requires federal agencies to ensure their actions do not jeopardize listed species or adversely modify critical habitat. Federal agencies (referred to as “action agencies”) must consult with the Secretary of the Interior before taking any action which may affect listed species. This is the ‘consultation process’.
 - An action agency is required to consult with the Services if it has reason to believe that a species listed under the ESA may be present in the proposed project area. It also must consult if the agency believes the action will likely affect the species.

Following formal consultation, the Services may determine that the action will result in jeopardy or adverse modification to critical habitat. If this is the case, this finding will be included in the biological opinion. In *TVA v Hill*, plaintiffs argued dam construction as allowed by a US governmental agency would destroy critical habitat and endanger the population of snail darters, a local threatened species. The case of *TVA v Hill* held that the strict construction-plain meaning canon of construction, and the equitable principle that courts cannot balance equities to override statutory mandates unless on constitutional grounds, effectively confirming S.7 as a strong substantive provision. Environmental protection in federal law form that point on has been a federal duty in the USA.

A potential issue which may pose a lack of clarity thereby hampering enforcement is legislative overcrowding. Some academics have pointed this out as a problem in the international arena with multiple Multilateral Environmental Agreements (MEAs) often overlapping and breeding a lack of coordination between legislation aimed at addressing similar but fundamentally different problems (such as CITES – aimed at addressing illegal wildlife trade, and the CBD – aimed at conserving for ostensibly ecological reasons).⁴⁸ This, as Caddell argues, can lead to an insufficient address of some objectives while others are given more attention than they are due. While Caddell analysed this on a multilateral scale, this problem can also exist between pieces of domestic legislation.

An example of dual-addressing would be Singapore’s emphasis on preventing trade in endangered species (with the Endangered Species [Import and Export] Act) and preventing the import and export of wildlife under ss. 8 & 9 WA respectively. Legal import or export under the ESIEA would require written permission from the director-general of wildlife trade control whereas under the WA, it requires written permission from the director-general of wildlife management. It is conceivable (though has not occurred yet) that one may receive permission under the ESIEA to import a scheduled

⁴⁸ Caddell, Richard. “Inter-Treaty Cooperation, Biodiversity Conservation and the Trade in Endangered Species.” *Review of European, Comparative & International Environmental Law* 22, no. 3 (November 20, 2013): 264–80. <https://doi.org/10.1111/reel.12039>.

species, but still be caught by the WA as it refers to any species, albeit with a lower penalty. Of course, in this scenario, one argument might be that one should seek approval from both directors-general before import, but that is not clear from the legislation due to a lack of coordination. Furthermore, the purpose of the WA is to protect local biodiversity, whereas the purpose of the ESIEA is to protect global threatened and endangered species by reducing their trade. Where there is opportunity for coordination, such as protecting a species which is 'protected' under the WA (and Protected Species Rules) and protected by CITES legislation like the ESIEA, such coordination would add clarity in interpretation, which would in turn help enforcement of obligations.

With regard to marine protected areas, no specific legislation exists except for guidelines for specific authorities like NParks and the Sentosa Development Corporation, as well as the Sisters Islands Marine Park after the 2017 Parks and Trees Act (PTA) amendment. This is despite both UNCLOS and CBD calling for preservation of marine areas. One may think that some of the named oceanic species under the Wildlife (Protected Species) Rules 2020 might offer adequate protection, but it remains that most of their harm comes from commercial activities taking place in their habitat, especially those offshore islands. With greater clarity, and perhaps coordination, in the legislation seeking to address this, their protection may be more effective if also given to their general habitat as well as their specific species.⁴⁹ It should also be noted that the clarity posited in this argument does not dictate the exact measures to be taken by authorities whose task it is to do so in each context, but to provide a macro guideline-oriented explanation of what clarity should entail. This is in order to ensure that countries who may be more reluctant to engage in conservation efforts are not dissuaded by obligations which they may deem onerous under the pretext of ensuring clarity.

Quality 3: Robust Avenues for Enforcement

Any regime has to also be effective in achieving protection for vulnerable local natural communities and areas, as Nagle said in his criticism of the US courts' treatment of the Endangered Species Act (ESA). Shaffer similarly criticised the US Courts for their lack of accessibility in that they maintain a visage of accessibility on paper, but limit it in fact due to the additional costs that their decisions have on the political process, as their judgments can provide a powerful and responsive source of policy change. Some jurists share their opinions of existing accountability mechanisms. Renowned ITLOS Judge Anthony Lucky asked in 2018 how the environment would judge the judiciary.⁵⁰ He underlined the fundamental bedrock of international public law environmental protection as the success of judges to equate environmental protection and biodiversity conservation with a fundamental right which mandates swift and accessible avenues to the courts. He says this having himself dissented in a prominent ITLOS case in which the majority in his opinion did not award an action which sufficiently protected the environment or marine life; the Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore).⁵¹

There needs to be ample scope and ability for the Courts and other independent bodies to enforce the obligations owed by authorities in conserving biodiversity and hold both public and private actors to account when their conduct goes against the aims of conservation. This necessitates the presence and operation of robust avenues for enforcement which can lead to harmful actions being

⁴⁹ Chun, Joseph, and Lin Heng Lye. "Protecting and Creating Nature Sites." Essay. In *Environmental Law in Singapore*, 645-647. Singapore: SAL Academy Publishing, 2019..

⁵⁰ Lucky, Judge Anthony. "Diversity in Judgments: The Role of the Courts in Promoting Biodiversity." *Journal of International Wildlife Law & Policy* 21, no. 1 (2018): 1–10. <https://doi.org/10.1080/13880292.2018.1439702>.

⁵¹ Case No. 12, Order of 8 October 2003, ITLOS Rep. 10 at 10, 12

reconsidered (preventative) or stopped (active), and clear avenues and a willingness to question higher authorities. In order to ensure this, the effectiveness of said mechanisms are integral, along with the access to them for any interested party.

It has been pointed out that other than the compliance committees for the Nagoya and Cartagena Protocols, the CBD lacks review systems on national implementation and mechanisms to call Parties to account for their (lack of) action, opting only to mandate a policy-level NBSAP, the formulation and implementation of which entails a very wide berth for signatory parties. This also includes the VPR (voluntary peer review) system agreed to in 2016 by parties to the CBD.⁵² The underscoring element of each of the above is that voluntariness is central and that enforcement of obligations is not strict, if it could be said to exist at all. Ulloa advocates the use of more robust review mechanisms as they have potential to promote implementation of international norms by mobilising constructive criticism. She further argues that beyond normative considerations as a practice of good governance, accountability is conceptualised as an active practice of giving and demanding of reason of conduct with transformative potential, and the potential to promote implementation of IEAs. On a more localised level, enforcement is regarded as a central necessity for which the EU 2030 Biodiversity Strategy goals are to be attained.⁵³ Enforcement is needed to ensure that harmful actions of both public and/or state actors can be **prevented** before set in motion or **stopped** once already in motion, and that clear avenues to question higher authorities are open.

A good marker of this would be the presence of biodiversity litigation in a jurisdiction. Biodiversity litigation, as described by the Max Planck Institute for Comparative Public Law and International Law is 'any legal dispute at the national, regional or international level that concerns conservation of, sustainable use of and access and benefit-sharing to genetic resources, species, ecosystems and their relations'.⁵⁴ This is seen as an alternative to administrative review mechanisms, which is a broad descriptor for non-judicial review mechanisms which are handled by independent or government-linked/government-appointed authorities or tribunals. Litigation in general is a crucial tool in developing norms of law, and in the case of a common law system, creating and/or developing the law itself. In some jurisdictions, landmark pieces of legislation have worked to achieve this. The USA and Ecuador have seen landmark decisions to this effect, and an increased use of civil lawsuits before domestic courts.⁵⁵ By contrast, jurisdictions like Singapore without biodiversity litigation of note, lack even the important first stepping stone in bringing issues of biodiversity conservation to the Courts.

In Singapore, NParks is empowered to take prosecutorial action against parties which violate the PTA. This prosecutorial action under the PTA is largely limited to that within its parks and nature reserves. Examples of environmental related enforcement may typically include the dumping of waste material from outside of the park or nature reserve, illegal tree felling, clearing of land, fouling of waterbodies and the poaching of flora and fauna. NParks does not have jurisdiction to cover environmental issues

⁵² Ulloa, Astrid. "Perspectives of Environmental Justice from Indigenous Peoples of Latin America: A Relational Indigenous Environmental Justice." *Environmental Justice* 10, no. 6 (2017): 175–80. <https://doi.org/10.1089/env.2017.0017>.

⁵³ Anon. "Policy Protecting Biodiversity at the Global, EU and National Levels - a Complex Yet Comprehensive Policy Framework." Europa. European Commission. Accessed September 20, 2021. <https://biodiversity.europa.eu/policy>.

⁵⁴ Futhazar, Guillaume. "Biodiversity Litigation." Max Planck Institute. Max Planck Institute for Comparative Law and Public International Law. Accessed July 20, 2021. <https://www.mpil.de/en/pub/research/areas/public-international-law/biodiversity-litigation.cfm>.

⁵⁵ "'Conservation Litigation' Tries to Put a True Price on Wildlife Crime." Mongabay Environmental News, June 15, 2021. <https://news.mongabay.com/2021/06/conservation-litigation-tries-to-put-a-true-price-on-wildlife-crime/>.

(e.g. pollution) outside of parks and nature reserves under the remit of the PTA. Environmental offences outside parks and nature areas are mainly under the National Environment Agency's (NEA) jurisdiction, which does not necessarily concern itself with matters of biodiversity conservation. Traditionally, NParks does not usually see offences by organisations except where a contractor may cut or damage trees within a park without their approval. Offences committed by individuals are usually more difficult to establish unless the person is caught on-site. Furthermore, offences that are not within the remit of our statutes may fall within the jurisdiction of other statutory boards such as NEA. They would refer the matter to the relevant statutory board in such event. The main challenge is evidential. Often, the feedback received is some time after an incident and the offenders are long gone before officers arrive at the scene.

NParks can however take action against the killing, trapping or taking of wild animals outside of parks and nature reserves also under the WA. Any police officer, officer of customs or authorised officer (s.12(1)) may arrest without warrant anyone whom in their view commits an offence under the WA, and any fees, charges and moneys collected under the Act (except composition sums) have to be paid to NParks (s.14). To date, no notable cases have arisen with regard to offences under this Act, but the ability of strict enforcement via an arrest without warrant could be effective in stopping any illegal activity.

There is significant limitation in respect of enforcing NBSAP obligations. This is because NBSAP obligations are generally non-enforceable,⁵⁶ and any attempt to bring a public law action is likely to be futile due to lack of standing and other rules in administrative law. Furthermore, NBSAP language is generally vague and it is hard to assert any specific obligation which has been violated if the language used is so vague. As explained in the previous section, clarity in language makes obligations and powers under an Act clearer for all parties concerned. Language such as 'incorporate biodiversity conservation considerations, including integrated coastal management principles, into existing administrative processes' found in Strategy 2.1 of the Singapore NBSAP does not lend itself to any specific obligation to which authorities can be easily held to account should they fail to act on any specific strategy. Furthermore, this NBSAP does not establish any formal avenues for progressive review or enforcement, not even on an administrative level. NBSAPs alone do not suffice in adding teeth to a jurisdiction's biodiversity conservation regime. They merely set policy directions, but enforcement has to be conducted separately.

Ecuador has had an interesting experience with biodiversity litigation. Ecuadorian litigation arguably brought more attention to the use of Pachamama laws in Court to offer judicial protection to the environment. There has been successful litigation based on the Pachamama statutory law. In 2011, a couple living in Ecuador sued a construction company when road construction narrowed a river. Known as the '*Wheeler*' case, this was the first case in Ecuador's history to vindicate the Rights of Nature. The suit was filed against the local government, who were responsible for a road expansion project that dumped debris into the river, causing ecological damage. Furthermore, that project was also done without the completion of an EIA or consent of the local residents. The case is regarded as momentous because the court stated that the rights of nature would prevail over other constitutional rights if they were in conflict with each other, setting an important precedent, while also iterating that the burden of proof of no damage lies with the defendant.⁵⁷ This was repeated shortly after, despite

⁵⁶ Chun, Joseph, and Lin Heng Lye. "Nature Conservation and Biodiversity Management." Essay. In *Environmental Law in Singapore*, 610. Singapore: SAL Academy Publishing, 2019.

⁵⁷ Daly, Erin. "THE Ecuadorian Exemplar: The First Ever VINDICATIONS of Constitutional Rights of Nature." *Review of European Community & International Environmental Law* 21, no. 1 (2012): 63–66. <https://doi.org/10.1111/j.1467-9388.2012.00744.x>.

obstacles putting it in conflict with local mining laws. The law upholding Pachamama was in conflict with the Mining Law which gave mining companies access to all resources, including water. This means that mining companies could legally impact water sources and springs, making it harder to apply the rights of nature law in this environment. Nevertheless, an Ecuadorian Provincial Court upheld the 'rights of nature' law in this case, known as the 'Los Cedros' case, filed by the Ecuadorian government against local mining companies. The Ecuadorian Constitutional Court has yet to decide on this matter after it has gone on appeal, but expectations in many corners are optimistic.⁵⁸ This offers hope for the situation in the Galapagos Islands under Ecuador's jurisdiction, where the rights of nature are in need of strictest enforcement, yet seem to be falling by the wayside in favour of tourism and commercial activities due to burgeoning numbers of local residents and international visitors. The economic goals here have caused illegal hotels to be constructed, and more electricity and freshwater is needed to support the increased numbers. The Wheeler and Los Cedros cases offer hope that avenues to judicial protection exist. However, local accounts are that enforcement of the courts' rulings tend to be slow, and cessation of harmful activities takes a long time. This would need to be improved in order for enforcement to have a more substantial impact.

The Ecuadorian example shows us that the availability of the judicial route to the enforcement biodiversity protection would need to be paired with on-the-ground enforcement from public authorities as well. This is present in other jurisdictions. Singapore, known to have strict penalties under many laws, has a system of fines for PTA and WA related offences – and in the case of the WA, higher penalties for species under the list in the Wildlife (Protected Species) Regulations. These are some examples of the penalty structure:

- \$10000/6 months for first offence if not protected species. \$20000/12 months for subsequent offences
- \$20000/12 months if doing in the course of employment
- \$50000/12 months if protected species

While the presence and levying of fines are not necessarily sure-fire ways to reduce recalcitrance, the custodial element of these penalties might, as they would physically prevent offenders from even being near animals which they could take, keep or kill.

Similarly, under the USA's ESA, there are ways to address harm done by government agencies. While outright stoppage of a government-approved project or activity may be tough to do, there are mandatory steps taken under the regime to mitigate and prevent environmental harm as much as reasonably possible, using a process of formal consultation. Following formal consultation, the Services (FWS and associated services) may determine that the action will result in jeopardy or adverse modification to critical habitat. If this is the case, this finding will be included in the biological opinion and 'prudent alternative actions' will be mandated to avoid the harm done. The USA has a litany of landmark decisions, a number of which have invoked the ESA 1973 to achieve favourable decisions for the environment, especially *TVA v Hill* explained earlier.

⁵⁸ Murphy, Devin. "Landmark Case Before Ecuador's Constitutional Court Will Set Precedent for Rights of Nature and Could Affect All Protected Areas in the Country." Landmark case Before Ecuador's Constitutional court will set precedent for rights of nature and could affect all protected areas in the country. Re:Wild. Accessed May 27, 2021. <https://www.rewild.org/press/landmark-case-before-ecuadors-constitutional-court-will-set-precedent-for-rights-of-nature-and-could-affect-all-protected-areas-in-the-country>.

However, Nagle⁵⁹ sets out an inquiry to ascertain whether the law has achieved those purposes. The ESA first says that its purpose is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." This is "the central purpose of the ESA," according to J.B. Ruhl and other writers. He asserts that by those criteria, the law has been rather unsuccessful. The ESA's provisions related to ecosystem preservation have been the target of complaints voiced by supporters and opponents of the law. Despite the ruling in *TVA v Hill*, there have been relatively few instances in which significant areas of habitat have been conserved thanks to section 7 ESA. Nonetheless, the FWS has resisted the designation of critical habitat for protection listing, indicating an unwillingness among the authorities to live up to the precedent set in such landmark cases and the spirit of conservation. Furthermore, only five of the eight species delisted between 2000 and 2007 met their stated recovery criteria and that "some recovery criteria were outdated or otherwise not achievable" for the other three species. Nagle and Mary Christina Wood have thus concluded that the statute has a poor record of achieving the recovery of threatened species, which is its central purpose.

Avenues for enforcement, especially judicial, should be accessible if they are to be effective. This is because there are numerous stakeholders who may be fully willing to bring attention to an issue of biodiversity conservation, but this is only possible so long as they are able to do so. Jurisdictions should make sure that aggrieved parties and those who want accountability or to take action have readily available and accessible ways to do so to ensure that measures to conserve biodiversity are indeed effective.

Judge Anthony Lucky, in International Tribunal on the Law of the Sea, *The Role of the Courts in Promoting Biodiversity* summates that the most important criterion is the success of judges to equate environmental protection and biodiversity conservation with a fundamental right which mandates swift and accessible avenues to the courts.⁶⁰ The main obstacle in the way of parties aiming to bring an action tends to be judicial standing, which are the rules that determine whether the party concerned has a sufficient legal interest in bringing the claim, and therefore whether the Courts will even take a second look at it. According to Judge Lucky, these rules cannot be too restrictive and should accord standing to parties who warrant it.

In the USA, this came to the fore in the case of *Lujan v. Defenders of Wildlife*,⁶¹ in 1992. This was a United States Supreme Court case in which the court held that a group of American wildlife conservation and other environmental organizations lacked standing to challenge regulations jointly issued by the U.S. Secretaries of the Interior and Commerce, regarding the geographic area to which a particular section of the Endangered Species Act of 1973 applied. The case arose over issues of US funding of development projects in Aswan, Egypt and Mahaweli, Sri Lanka that could harm endangered species in the affected areas. The government declared that the act did not apply to projects outside of the United States and the plaintiffs, Defenders of Wildlife, sued. It was held that Defenders had failed to satisfy Constitutional requirements for "injury in fact" that would grant standing under the Endangered Species Act. Essentially, Defenders of Wildlife were not able to present any harm in question on which they would be granted leave to continue with the case. The Court rejected the view that the citizen suit provision of the ESA conferred upon "all persons an abstract, self-contained, non-instrumental 'right' to have the Executive observe the procedures required by

⁵⁹ Nagle, John Copeland. "Climate Exceptionalism." *SSRN Electronic Journal*, 1, 40 (August 21, 2009). <https://doi.org/10.2139/ssrn.1459147>.

⁶⁰ Lucky, Judge Anthony. "Diversity in Judgments: The Role of the Courts in Promoting Biodiversity." *Journal of International Wildlife Law & Policy* 21, no. 1 (2018): 1–10. <https://doi.org/10.1080/13880292.2018.1439702>.

⁶¹ 504 U.S. 555 (1992)

law." Rather, The Court explained, an American citizen plaintiff must have suffered a tangible and particular harm. This is a huge obstacle for a common class of plaintiff in cases of biodiversity protection, the environmental or conservation-focused non-governmental organisation. Many of these NGOs take it upon themselves to engage in voluntary activities to protect biodiversity and see themselves as (as the name of the NGO in the case suggests) defenders of wildlife (or biodiversity). Furthermore, as tied in with the first section of this article and the basis of the CBD, global biodiversity has a very substantial and tangible impact on humankind, even if not visible with immediate first or second degree chains of causation. A simple example would be pollinating insects. If just two of the most common species of pollinating insects were to vanish, 39% of all crops would lose their ability to flower and therefore reproduce and generate sustenance for humans.⁶² Similar arguments could be made about migratory species which often cross between multiple jurisdictions. Harm to them in one area could have ramifications on the biodiversity of another area on their route. The very short-sighted view taken in the principle of legal causation when assessing 'tangible harm' does not lend itself well to biodiversity protection.

The American requirement for standing in environmental cases requiring the plaintiff to have suffered a tangible and particular harm stands in contrast to other jurisdictions, even in the Global South. India, for instance, has a system of National Green Tribunals (NGTs) which have jurisdiction over all civil cases where a substantial question relating to environment (including enforcement of any legal right relating to environment)⁶³. The NGTs hear these cases which may come before them as a result of a direct application from concerned parties or on appeal from lower or parallel courts or tribunals. The standing rules for applicants are found in section 18 of the Act. The NGT's standing requirements allow very open access to the court, as persons may bring claims in the public interest even if they have no direct, personal connection to the matter. This is found in section 18(2)(e) of the National Green Tribunals Act 2010 which states that "any person aggrieved, including any representative body or organisation" may bring an application or appeal before the Tribunal.

In addition, a person may bring a claim on behalf of a group of people (the assumption being that those people would not be bringing the claims themselves), such as villagers or agricultural workers who may ordinarily face linguistic and financial difficulties *inter alia* in bringing their own claim. The Tribunal has also taken on cases on its own accord. One such case concerned the failure of the local government to provide safe public drinking water in Chennai, India, and is called Consumer Action Group v. State of Tamil Nadu, the Chennai Metropolitan Development Authority. Upon learning that the situation concerned involved potential environmental harms, the Tribunal called parties before it to explain the situation. The brief facts of this case are as follows: Section 113-A of the Tamil Nadu Town and Country Planning Act, 1971. Section 113-A provided for regularization of illegal constructions on payment of a fee. However, the local government kept amending the act to extend the exemptions and move the deadlines for compliance by existing buildings. Effectively, they had also effectively exempted the buildings developed immediately before the date of commencement of the proposed legislation by mass-collecting regularization fees. The court was of the view the illegal constructions were *ultra vires* under Articles 14 and 21 of the Indian Constitution posed a serious threat to ecology and the environment and affected water supply, sewerage and traffic movement facilities in the city. They also held that it was not open to the Government to keep on amending

⁶² Rader, Romina, Ignasi Bartomeus, Lucas A. Garibaldi, Michael P. Garratt, Brad G. Howlett, Rachael Winfree, Saul A. Cunningham, et al. "Non-Bee Insects Are Important Contributors to Global Crop Pollination." *Proceedings of the National Academy of Sciences* 113, no. 1 (2015): 146–51. <https://doi.org/10.1073/pnas.1517092112>.

⁶³ Section 14(1) National Green Tribunal Act, 2010

schemes frequently extending the cut-off date. Without the NGT's permissive standing rules, pertinent environmental concerns would not have been addressed in this case, and any potential applicants would have had to deal with arguments of standing, high costs and logistical barriers to environmental justice, which would have been high insurmountable by a low-income local population. It is not inconceivable, therefore, that India's NGTs could take on cases of biodiversity conservation on their own accord, especially those which deal with constitutional rights and obligations.⁶⁴

Concerning practical barriers to claims, high legal costs are also a problem. To many authors, the U.S. courts provide a powerful and responsive source of policy change, but they also impose an array of additional costs onto the political process. Robert Kagan's *Adversarial Legalism* provides a prominent example of this sort of work. According to Kagan, U.S. courts are remarkably accessible, but also adhere to a decision-making process that "tends to be particularly complex, protracted, and costly." Many environmental statutes, which rely on "citizen suits" for their enforcement, have been common targets of this kind of criticism.⁶⁵ Conversely, Rachel Shaffer concludes that the U.S. judiciary can perform important oversight functions sometimes lacking in other nations.⁶⁶ She adds that judicial intervention does not seem to slow the policymaking process to an unacceptable pace, nor does it appear to impact the substantive quality of the American biodiversity protection system. Courts, then, can contribute usefully and efficiently to the policymaking process. To aid enforcement, access to the courts should not be restricted by high costs, or strict rules of legal standing (or any other rules to similar effect), nor any other administrative obstacles.

It would appear that a system combining the strengths of the respective approaches from Singapore, India and the USA would lead to better outcomes. Vesting prosecutorial powers in the Government, as Singapore does in NParks for statutory environmental offences would aid in speedy access to courts for prosecuting environmental offences stipulated in legislation. Private persons would then be at liberty to bring potential breaches of environmental statutes to the relevant governmental authority for their investigation and further action. However, this should not be done at the expense of permitting access to the courts by a wider range of interested parties, for civil claims. The rules of standing for bringing civil claims to the courts should be relaxed enough that environmentally-concerned persons can bring matters to the court's attention, as not every civil claim around environmental issues would involve a breach of statute. A less strict and more permissive interpretation of standing rules, where possible, should be adopted to enhance this access to courts. In this respect, India's NGT standing rules of allowing applications to be brought before by "any person aggrieved, including any representative body or organisation" is most permissive and the model which should be worked towards. Finally, financial means should not present a barrier of access to justice and in that vein, India's model facilitating class action on behalf of multiple small claimants would

⁶⁴ The Supreme Court opined in 2013 that Article 21 of the Constitution of India ("Right to Life") not only protects the human rights "but also casts an obligation on human beings to protect and preserve a species becoming extinct, protection of environment is an inseparable part of right to life".

⁶⁵ Kagan, Robert A. *Adversarial Legalism: The American Way of Law, Second Edition*. 1. 2nd ed. Vol. 1. 1 vols. Cambridge, MA: Harvard University Press, 2019.

⁶⁶ Shaffer, Rachel M., Samuel P. Sellers, Marissa G. Baker, Rebeca de Buen Kalman, Joseph Frostad, Megan K. Suter, Susan C. Anenberg, et al. "Improving and Expanding Estimates of the Global Burden of Disease Due to Environmental Health Risk Factors." *Environmental Health Perspectives* 127, no. 10 (October 18, 2019). <https://doi.org/10.1289/ehp5496>.

allow for the costs to be shared equitably among the parties such that none of them are priced out of access to courts individually. On front , Singapore’s lack of biodiversity litigation does not permit an analysis of how permissive or restrictive the Courts would be in their legal standing rules, let alone how they treat the merits of the claim. Nevertheless, the vesting of prosecutorial powers for biodiversity related matters in NParks indicates that the government expects biodiversity related legal action to be taken from a top-down angle by its own bodies. It remains that citizens and concerned parties can bring biodiversity related issues to NParks’ attention, but the prosecutorial discretion rests with them. If the government elects not to use that discretion to address the issues brought to their attention, the same concerned parties are hitherto unlikely to pursue them in the courts through a civil claim as there is no culture of class action claims in Singapore. The closest equivalent in Singapore to a class action suit is a “representative proceeding”. Though theoretically possible, they rarely happen in practice. There have been only a handful of representative proceedings in Singapore’s history and none concerned environmental matters. Therefore, wider and more permissive access to courts for biodiversity related matters would be needed to strengthen enforcement of statutory obligations and pursue justice in civil claims.

Quality 4: Feasibility

Lastly, the measures undertaken at both a governmental and legislative level need to be feasible in their immediate adoption and sustainable to be maintained for time to come and maximise their effect and longevity. This feasibility is weighed vis-à-vis the country’s economic situation and policy aims and available resources to achieve the above aims. Ultimately, policies and laws promoting biodiversity conservation may very well be at odds with other policy aims. As such, in achieving as much as possible of said conservation aims, a balancing act needs to be done to ensure that those efforts themselves are feasible in the short term and sustainable in the long term in that they do not place unduly large obstacles on running the country. This balancing act contains two general limbs:

- Balancing biodiversity conservation goals with competing policy aims
 - “It seems quite clear from the analysis that, as it stands, international law is not well suited either to the variety of conditions that obtain in the Territories or to striking a satisfactory contemporary balance between conservation and development goals.”⁶⁷ This quote highlights the point that many international policy documents and international political calls for conservation do not necessarily account for the vast difference in economic development levels between Global North and Global South nations and that the latter may need to conduct growth-centric economic activities which may harm their biodiversity.
- Not overburdening resources
 - Broadly speaking, biodiversity conservation efforts should not overburden the resources of the country undertaking them. Technology, research and resource sharing by developed nations can prevent this and thereby help developing nations meet their CBD goals. One strategy is to share research findings and build research

⁶⁷ Watts, Nicholas S., and Geoffrey Wandesforde-Smith. “The Law and Policy of Biodiversity Conservation in the Caribbean: Cutting a Gordian Knot.” *Journal of International Wildlife Law & Policy* 9, no. 3 (July 2006): 209–21. <https://doi.org/10.1080/13880290600764927>.

collaborations – which is what Singapore tries to do. This may be seen as more feasible than the logistical and financial difficulties of resource sharing.

This balancing act acknowledges the limitations of countries which may not be in a strong position to engage on large scale biodiversity conservation projects without significantly hampering their other industrial goals and economic aims. The importance of balance between conservation activities and other economic goals is acknowledged and advocated by numerous academics. Jan McDonald et al argue that offset⁶⁸ decision-making for instance should move beyond ad hoc, proponent-driven proposals; it should instead occur as part of a strategic bioregional planning process that expose competing values and make explicit, transparent trade-offs in a climate constrained world.⁶⁹ Stuart Butchart follows that with the assertion that it is no surprise then that poorer countries have the largest relative shortfalls. He asserts then that greater focus is therefore needed on alternative approaches, including community and privately managed sites and other effective area-based conservation measures.⁷⁰ The underlying principle here is that any measures undertaken to conserve biodiversity need to firstly, balance competing values on a strategic level and secondly, not overburden the resources of the government implementing them.

A key source of tension lies between conservation objectives and some economic aims, especially when it comes to industries which either require a lot of land and other resources or pollute heavily. In Singapore this tension surfaces during issues of land use and carbon taxation, for instance. Singapore's NBSAP Strategy 2 is to 'Consider' Biodiversity issues in policy and decision making. In saying this, there is still an element of biodiversity conservation included in the implementation of policies across the board. The focus on other policies would naturally mean that the biodiversity-related policies do not overly hinder the pursuit of competing objectives, but the downside in this approach is that merely 'considering' biodiversity issues, there is not enough of a commitment to acting on them.

This tension and approach in favour of competing policy aims is found in Singapore's carbon taxation system established by the Carbon Pricing Act 2018 (CPA), with higher atmospheric carbon having substantial effects on global ecosystems and thus biodiversity. A carbon tax is charged on the total amount of reckonable GHG emissions of a taxable facility of a registered person in a reporting period. This is to be based on emissions reports sent by registered persons recognised under the Act.⁷¹ The amount of payable tax is determined by the NEA⁷² at a rate of S\$5/tCO₂e.⁷³ Carbon credits are also purchasable at a price of S\$5 per credit.⁷⁴ The tax is levied on a registered and taxable facility. This is a two-stage process under S.7 of the Act. Firstly, a facility would have to be registered⁷⁵, which entails

⁶⁸ Biodiversity offsets are measurable conservation outcomes that result from actions designed to compensate for significant, residual biodiversity loss from development projects. Source: Biodiversity Offsets Effective design and implementation, 2022, Oecd.org. 2022. *Biodiversity Offsets Effective design and implementation*. (online) Available at: <<https://www.oecd.org/environment/resources/Policy-Highlights-Biodiversity-Offsets-web.pdf>> Accessed 18 October 2022.

⁶⁹ McDonald, Jan. "A Short History of Climate Adaptation Law in Australia." *Climate Law* 4, no. 1-2 (July 2014): 150–67. <https://doi.org/10.1163/18786561-00402013>.

⁷⁰ Butchart, Stuart H.M., Martin Clarke, Robert J. Smith, Rachel E. Sykes, Jörn P.W. Scharlemann, Mike Harfoot, Graeme M. Buchanan, et al. "Shortfalls and Solutions for Meeting National and Global Conservation Area Targets." *Conservation Letters*, 24, 8, no. 5 (February 3, 2015): 329–37. <https://doi.org/10.1111/conl.12158>.

⁷¹ Carbon Pricing Act [No. 23 of 2018] ss.11(1) and 11(2)

⁷² *ibid* S.21

⁷³ *ibid* Schedule 2

⁷⁴ *ibid* Schedule 2

⁷⁵ *ibid* S.7(1)(b)

reporting its emissions regularly⁷⁶, if its emissions cross the first threshold of 2000 tCO₂e.⁷⁷ If the second threshold is met for at least 1 year of registered operation, then the facility will have to register as a taxable facility.⁷⁸ However, the second threshold is much higher than the first, being 25000 tCO₂e.⁷⁹ The basis for this threshold seems to be a limiting measure for appeals to the High Court; essentially allowing them only when the amount at stake is sufficiently large.⁸⁰ The reason for this seems to be fear of the effect a higher carbon tax would have on fossil fuel, energy, transport and manufacturing industries, which are all key sectors for Singapore.⁸¹ Furthermore, according to a 2018 report by the IPCC, the carbon tax rate levied by Singapore is far too low to even come close to achieving the Paris Agreement maximum target of 1.5°C warming, with Singapore’s tax rate needing to be at least 1,250% higher.^{82,83} This also has ramifications on Singapore’s conservation efforts as it is widely documented that global temperature rises have adverse effects on entire ecosystems, which affect most if not all of its inhabitants. This balancing act seems to be tipping against general environmental concerns, which include biodiversity conservation.

Another approach taken by Singapore is to include permitted derogations from obligations codified in legislation, when allowed by the relevant executive authorities or individuals representing those authorities. This is a double-edged sword. On one hand, it makes it easier to square off CBD aims with other policy aims. On the other hand though, it does leave a lot of discretion in the hands of the executive and they are under no obligation to give reasons for their decisions, which is especially problematic if they allow a derogation which has a potentially large impact. An example of this was when a fully forested area of Singapore’s Kranji Woodland (home to 47 species of birds) was ‘erroneously’ cleared by the development corporation known as the Jurong Town Corporation (JTC). Despite government-approved local media reports that the clearing was ‘erroneous’, arguments were still made that it was necessary in order to construct industrial buildings in and around the cleared site, while no transparency was given on how the site could have been ‘erroneously’ cleared without the knowledge of supervising authorities over the course of a year. Despite this, and NParks’ own investigation of the incident, it seems unlikely that any further action will be taken against the JTC,

⁷⁶ *ibid* S.11(2)(a)

⁷⁷ *ibid* Part 1 of Schedule 2

⁷⁸ *ibid* S.7(1)(c)

⁷⁹ *ibid* Part 1 of Schedule 2

⁸⁰ Bea E and Lu S, “The Pathway to Paris: A Commentary on the Carbon Pricing (Draft) Bill” (eco-business.com February 8, 2018) <https://nuselsa.wordpress.com/2018/01/28/the-pathway-to-paris-a-commentary-on-the-carbon-pricing-bill/>; accessed February 10, 2021

⁸¹ Dutt Sundaraj, Nikhil and Lin, Jolene, Singapore: Breaking Circuits and the Norm (October 1, 2021). “Integrating Climate Change Concerns into Post-COVID Recovery Packages in the European Union, United States and Asia: Reconciliation with the Needs of Industrial Development” (editors: Chien-Te Fan, Anton Ming-Zhi Gao), Kluwer Book Series: Energy and Environmental Law (Forthcoming), NUS Law Working Paper No. 2021/022, NUS Asia-Pacific Centre for Environment Law Working Paper 21/04, Available at SSRN: <https://ssrn.com/abstract=3955589> or <http://dx.doi.org/10.2139/ssrn.3955589>

⁸² Masson-Dalmonde V and others, “Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty” (2018) 106 IPCC Policy Report 1323

⁸³ N.B.: Singapore’s National Climate Change Secretariat announced in February 2022 that Singapore’s carbon tax rate will be raised to \$25/tCO₂e in 2024 and 2025, and \$45/tCO₂e in 2026 and 2027, with a view to reaching \$50-80/tCO₂e by 2030. However, as of the time of writing this paper, the rate still remains \$5/tCO₂e. The emissions thresholds remain unchanged.

though 2 JTC officers have been charged in Court over the incident.⁸⁴ The ‘permitted derogations’ approach is used in a number of pieces of Singaporean conservation legislation such as the PTA which prohibits any activities within parks and nature areas unless the Commissioner of Parks and Recreation approves. Approval is not difficult to obtain if the activity is deemed ‘necessary’ as per development plans, as shown by the Cross-Island Line example. Another example was the NParks ‘night run’ in 2013; originally supposed to cut through nature reserve. As Reg. 8(1)(b) of the Parks and Trees Regulations gives the commissioner the power to make the decision to authorise certain types of activity. After public outcry about effects on nocturnal animals, it changed route to avoid those areas. Furthermore, under SS. 8(1), 9(1) and 9(3) of PTA, any party that feels aggrieved by a refusal of NParks to allow an activity can appeal to the Minister to overturn the decision. This allows centralised top-down coordination between opposing goals but at the expense of NParks’ function as a guardian of biodiversity as they may find themselves encumbered by concerns about the economic implications of their conservation proposals or otherwise compelled to permit activities which are harmful to biodiversity.

Arguably, there is some balance found with policies which oblige large players in industries to make biodiversity conservation and general sustainability a core concern. One interesting development is the development of stricter Environmental Impact Assessment (EIA) guidelines, which are not strictly enforceable in court. It was announced in November 2020 that sweeping changes to Singapore’s EIAs will ensure that Singapore’s development is more sensitive to wildlife and biodiversity. Details on these sweeping changes are not known yet, but the focus on environmental conservation has increased, while still maintaining a focus on how this can help Singapore’s growth as a financial centre, especially as Singapore is due to be the home of the world’s first international carbon credit exchange.⁸⁵ Further evaluation of this particular policy is not possible at this time as its implementation is still beginning. Its effects will likely become clearer in time to come.

Furthermore, The Monetary Authority of Singapore (MAS) announced and published a sustainable finance action plan⁸⁶ and a Green and Sustainability-Linked Loan Grant Scheme (GSLs) to support loans of the type.⁸⁷ This is aimed at encouraging sustainable and environmentally-conscious investing and corporate behaviour and could in turn could help breed a new generation of investors and corporate officers who are more environmentally conscious in their business decisions. While not explicitly stated, this would help keep an environmental focus and consciousness in some companies’ recovery efforts post-pandemic. This shows a trade-off between enforceability and feasibility, as these guidelines are not strictly enforceable against its subjects. This is an example of the Singapore government generally erring on the side of caution by taking smaller steps and less enforceable ‘guidelines’ for conservation concerns instead of hard law where these issues arise, which may not afford adequate protection for beneficiaries of those conservation efforts. It has been suggested by

⁸⁴ Tham, Davina. “Kranji Woodland Clearance: 2 JTC Officers among 3 People Charged in Court.” CNA. MediCorp Pte Ltd, April 22, 2022. <https://www.channelnewsasia.com/singapore/kranji-woodland-trees-clearance-jtc-officers-charged-nparks-2640636>.

⁸⁵ Anon, “Development Works in Singapore to Be More Sensitive to Wildlife” (www.singaporelawwatch.sg November 10, 2020); <https://www.singaporelawwatch.sg/Headlines/Development-works-in-Spore-to-be-more-sensitive-to-wildlife>>; accessed February 10, 2021

⁸⁶ Anon, “Sustainable Finance” (Monetary Authority of Singapore November 2, 2020) <<https://www.mas.gov.sg/development/sustainable-finance>>; accessed February 10, 2021

⁸⁷ Anon, “MAS Debuts Grant Scheme to Support Green and Sustainability-Linked Loans” (CNA November 24, 2020) <<https://www.channelnewsasia.com/news/singapore/mas-green-sustainability-loan-grant-finance-banks-ocbc-uob-13628212>>; accessed February 10, 2021

Lye and Chun to separate the scientific/ecological considerations of decision making and the political considerations (which tend to include economic considerations). They also suggest imposing on NParks a statutory selection function to designate areas of 'high biological importance' similar to the National Heritage Board's role in designating important heritage sites.⁸⁸ A separation of ecological consideration from economic in governance may necessitate bodies such as NParks be more focused on biodiversity conservation without being hindered in their policies and recommendations by concerns of unfeasibility.

The considerations are very intertwined. This procedure would allow the ecological considerations to be heard seriously by superior government authorities, independent of the economic considerations. This is probably the more efficacious 'weighing exercise': not to weigh the general abstract importance of ecological considerations over economic ones – but to hear each its own merit and weigh them only within the context of the specific area mentioned. However, NParks already runs into a lot of problems in advocating for protected areas, especially those in areas like the Kranji Woodland and similar areas like the Dover Forest and Clementi Forest which are not designated 'nature parks' but still have important functions in maintaining our biodiversity. They have indicated that they need to choose their battles, and prioritise advocating for the conservation of the most important sites, which would indicate that they already run into a substantial amount of resistance. Bestowing this enhanced statutory role on them would give them more authority in this regard, but is unlikely to make the advocacy of conservation for these green areas any easier. It may also lead to a more 'siloed' model of governance in conservation where some government bodies are more dedicated to conservation while others will be tasked with advocating the countervailing arguments (be they economic, political, or others), leaving superior authorities to make the final call. This process may slow down decision making by being more internally adversarial and therefore require more time to arrive at a final policy decision, but it would at least allow an unfettered assessment of issues central to conservation (and of course, any countervailing issues), in a manner not too dissimilar from a legal hearing.

This stands in contrast to Ecuador's Pachamama example and how the impetus for that was largely backed by public support and therefore those policies were inherently integrated into the government's political aims, and did not cost too much economically. The revolutionary Ecuadorian approach is found in Art. 71 of its constitution Nature or Pachamama, where life is reproduced and exists, has the right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes in evolution. In contrast, the more human centric approach of Art. 74 states that the persons, people, communities and nationalities will have the right to benefit from the environment and form natural wealth that will allow wellbeing. This approach aims to preserve nature, but by phrasing Art. 74 as a more human-centric approach than Art. 71, allows even those more sceptical of conservation efforts to see their importance vis-à-vis human activity and continued existence, thus bringing aboard even those not inclined to conserve for nature's sake. However, Ecuador's example is not as easily followed by other developing countries. While proponents of nature's rights acted during a key political moment, their efforts were successful due to the presence of environmentalist social movements that elevated the environmental agenda at the national level during prior decades, and due to the power of indigenous organizations and their call to recognize Ecuador as a "plurinational" polity.⁸⁹

⁸⁸ Chun, Joseph, and Lin Heng Lye. "Protecting and Creating Nature Sites." Essay. In *Environmental Law in Singapore*, 624. Singapore: SAL Academy Publishing, 2019.

⁸⁹ Akchurin, Maria. "Constructing the Rights of Nature: Constitutional Reform, Mobilization, and Environmental Protection in Ecuador." *Law & Social Inquiry* 40, no. 04 (June 26, 2015): 937–68. <https://doi.org/10.1111/lisi.12141>.

In keeping with efforts to separate economic considerations from environmental ones, the USA has a list of 'Concerns' when choosing species to be protected under the ESA: During the listing process, economic factors cannot be considered, and the decision to list a species must be "based solely on the best scientific and commercial data available." The 1982 amendment to the ESA added the word "solely" to prevent any consideration other than the biological status of the species. This overrode the 1978 amendment which called for economic considerations to factor in and resulted in almost no new additions.⁹⁰ This swing towards focusing purely on the science and not other policy concerns in conservation may have faced criticism at that time, but the years since have shown that those concerns might have been overblown as the USA has since then only cemented its place as the world's largest economy.

Jurisdictions like the EU are developed regions which are not looking into expanding any land and resource-intensive industries like agriculture. They look to upgrading agri-tech, genetically modified crops and the like to increase yields with the land they already have. As such, they start from a much lower threshold than nations which are still looking to expand their agricultural sector with more land to meet not just domestic but regional or global demand. Feasibility of their policies to them does not mean the same thing as it does to developing countries which lack this technology or even the means to use it if they had it. Furthermore, regions like Brazil and Indonesia (two oft-criticised nations for their agricultural processes and effects on biodiversity) are much more biodiverse than the USA or EU, and they were much more biodiverse when the CBD was being written and signed. As such, Brazil and Indonesia arguably needed (and still need) to devote more resources to their CBD efforts *ab initio* than the USA or EU.

Ultimately, the assessment of the feasibility of any jurisdiction's biodiversity conservation regime depends on its socio-political-economic context. A balance between competing goals is needed but governmental authorities tasked with conservation need to have a strong voice and powers. Singapore's own growth-focused economic goals do not appear to be shrinking compared to previous periods in which the economy experienced steady growth, and include plans for *inter alia*, population increase and expanding industrial areas.⁹¹ Therefore, its own biodiversity conservation policies cannot overly impede its growth plans, in contrast to more developed countries which are not looking at population expansion or land use increases. While it may not be politically or economically feasible to expect Singapore's government to adopt policies akin to Pachamama, less emphasis is needed on economic and political considerations when making biodiversity-centric policy decisions. Economic considerations should not factor *ab initio* into Singapore's conservation laws and policies, but the final balancing act should be performed by the ultimate decision makers who have that call to make. Conservation focused authorities such as NParks should have the power and freedom to recommend actions without being overly encumbered with concerns about whether their proposals are 'too ambitious' to put forth.

⁹⁰ Anon. "History of the Endangered Species Act: Principal Amendments: U.S. Fish & Wildlife Service." FWS.gov. U.S. Fish & Wildlife Service. Accessed November 23, 2021. <https://www.fws.gov/page/endangered-species-act-amendments>.

⁹¹ Subhani, Ovais. "Gan Kim Yong Unveils Singapore Economy 2030 Plan Aimed at Boosting Exports to \$1 Trillion." *The Straits Times*. March 4, 2022. <https://www.straitstimes.com/singapore/politics/gan-kim-yong-unveils-singapore-economy-2030-plan-aimed-at-boosting-exports-to-1-trillion#:~:text=Min%20Daily%20News-,Gan%20Kim%20Yong%20unveils%20Singapore%20Economy%202030%20plan,boosting%20exports%20to%20%241%20trillion&text=SINGAPORE%20%2D%20Minister%20for%20Trade%20and,Singapore's%20trade%20volumes%20by%202030>.

Recognising that Global South countries face these difficulties in policymaking and resource allocation, the CBD contains two important Articles to allow Global North countries to assist those in the Global South with their conservation efforts, especially pertinent as some of the most biodiverse countries are in the Global South. Art. 16 on the access to and transfer of technology looks to facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment, from both the public and private sectors, and on both the legislative and policy levels. Art. 17 CBD calls for countries to facilitate the exchange of information, from all publicly available sources, including exchange of results of technical, scientific, and socio-economic research, as well as information on training and surveying programmes, specialized knowledge, indigenous and traditional knowledge. These provisions are meant to close the gap by elevating countries which need these technologies and information to be able to access and use them without hampering their own development goals. Singapore’s strategy in this regard is its changing approach to ‘city in a jungle’ to integrate natural habitats and endemic flora into the built environment, while also turning itself into a regional hub for citizen research and ‘city biodiversity’ with the new indicator in that regard being the Singapore Index in Cities’ Biodiversity, also known as the City Biodiversity Index. All of these show that feasibility in biodiversity conservation strategies do not necessarily mean that there has to be a constant tension between competing goals of development and conservation, but that the two can go hand-in-hand by fostering more efficient methods of industrial and agricultural production which have a lower impact on biodiversity, often through the use of constantly improving technology. Becoming a research hub also facilitates a technology transfer and exchange of ideas which can help developing countries reach their economic goals in a more sustainable way while still looking after their biodiversity. The feasibility argument is most often raised by global south countries because it is effectively economic self-sabotage for them to sacrifice so many engines for growth as their populations will suffer in the short-medium term. Cross-border cooperation and transfer needs to come from the global north to incentivise and assist with the greening of the global south without sacrificing their economic wellbeing. Singapore would do well in this regard to maintain or grow its current information sharing and technology transfer efforts.

Where does Singapore Stand?

As this discussion covered each quality, a brief assessment of Singapore’s performance was made, along with suggestions on how Singapore can move forward. Table 1 below condenses and summarises these points as covered:

Quality	Singapore’s Present Positives	Possible Recommendations
1: Reliable Science-driven and Transparent Decision Making	<p>General emphasis on sound science, grounded in research, in legislation and policy</p> <p>Routine monitoring of natural areas and species to focus conservation efforts</p> <p>General practice to transparently explain amendments to the PTA schedule of protected areas to the public and Parliament</p>	<p>Push for more extensive use of EIAs across the board</p> <p>More targeted legislation to comprehensively address large problems highlighted as such by scientific research, especially invasive species</p> <p>Codifying a statutory obligation for the Director-General of Wildlife Management to take advice from authorities in</p>

	<p>Involvement of stakeholders through citizen science programme and public outreach</p>	<p>scientific research when making policy decisions</p> <p>More transparent codification of the scientific bases or criteria met for a species or space to be offered higher protection in law or policy</p> <p>Greater engagement of the public, nature groups, and other stakeholders in decision-making</p>
2: Clarity	<p>Streamlined and defined role of centralised authority (NParks) tasked with biodiversity conservation and protection</p> <p>Use of catch-all provisions which make clear that certain acts in respect of <i>all</i> species or in <i>all</i> nature areas are forbidden, with strict liability for offenders</p>	<p>Dual-addressing of certain offences under multiple acts requiring any permit-seekers to in theory obtain dual approval could be streamlined through agency-level coordination or by legislative amendment</p> <p>Legislation which is explicit in offering protection to marine areas in addition to terrestrial natural areas, as the PTA and WA do not necessarily cover offshore commercial activity which could harm wildlife or habitats</p>
3: Robust Avenues for Enforcement	<p>Statutory powers of prosecution vested in relevant authorities to bring action against parties who commit statutory environmental offences</p> <p>Avenues of communication between the public and the relevant authorities to bring these issues to their attention</p>	<p>Less rigid rules of legal standing and a more permissive interpretation of existing standing rules, permitting a wider range of potential claimants for cases involving environmental harm</p> <p>Improving accessibility to courts for purposes of environmental litigation, such as by relaxing rules concerning class action litigation or representative proceedings</p> <p>Expanding NParks' prosecutorial powers to include environmental offences (such as pollution) taking place outside parks and nature reserves</p>
4: Feasibility	<p>A lot of deference given to arguments of economic concerns when weighed against conservation concerns</p> <p>Active participation in international technology transfer and resource sharing for biodiversity conservation, including the development of the City Biodiversity Index</p>	<p>More weightage in the balancing act in favour of environmental concerns, such as the carbon tax rate in the CPA and the emissions threshold for taxability</p> <p>Being less permissive in allowing derogations from legislation aimed at environmental and biodiversity protection, such as the PTA and WA</p>

		<p>Separation of economic concerns from environmental and conservational concerns in governmental decision-making to allow each to be heard in full before final decisions are made.</p> <p>Economic concerns should not feature <i>ab initio</i> in Singapore's conservation laws and policies</p>
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Limitations and Further Study

This article addresses and aims to tackle a substantial issue at a rather macro level. While the main points of a biodiversity conservation regime have been addressed and explained, an expansion on the scope of the discussion would be welcome in order to cement the generality of the discussion, instead of localising it within a Singaporean context with some international case studies. Further discussion could consider different jurisdictions, especially more from developing countries with high biodiversity, like in South America, Africa or ASEAN. Furthermore, the merit of existing individual regimes from different countries is not examined in too much detail because the aim of this article is not to judge the merit of their arguments against conservation, but to broadly use these countries to identify the qualities of a good conservation regime. However, value judgments of different biodiversity conservation regimes would need to be made in order to more thoroughly evaluate the effectiveness of each regime and substantiate claims about each quality that a biodiversity conservation regime should have.

A further examination of different jurisdictions' regimes and their effects in conservation over the years could have been done to further add to arguments about the effectiveness of certain strategies and better colour any arguments about why certain strategies work or do not work, thus illuminating the veracity of arguments for certain qualities mentioned in this article, such as enforcement mechanisms. This would necessitate going into more detail with more research findings and numbers on conservation effectiveness vis-à-vis reducing species and habitat loss. However, that data is not easily available and would require extensive tabulation and thus is not included in the discussion at this present stage. With this detailed examination could come a further evaluation on why the CBD itself has proven to not be entirely effective in achieving its goals. Very few of its objectives have been fulfilled and some countries who had even ratified it are rolling back protections for endemic species.

While the importance, relevance and effect of each quality has been explained herein, it is hoped that this article will be a springboard for further and deeper research into each individual quality. This further research should focus on the specifics of how these qualities can and do manifest in national biodiversity conservation regimes globally.

Conclusion

These criteria are ones which are needed by a good governance and legal framework for biodiversity conservation. The bedrock of the decisions made and measures taken need to be rooted in reliable science in order for them to even have a chance of producing a positive effect, as The US FWS

endeavours to do; and this can even foster greater transparency and public involvement as it did with Singapore's Cross-Island Line development. The roles and responsibilities of parties with the power to effect these measures need to be clear in order to ensure an efficient process, which commonly manifests in governmental authorities such as NParks, but any overlap should not lead to incoordination. Building on that, the language used in instructing and bestowing power upon the concerned parties needs to be clear to ensure that those parties know what they have to do and have a concrete reference point for their powers and responsibilities, such as the ESA has done as elucidated in *TVA v Hill*. Robust avenues for enforcement of the laws and policies and the people who administer them ensure the effectiveness of the regime as a whole and act as a further safety net for breaches when they occur by crystallising the principles behind conservation and protecting the rights of parties involved. Ecuador's 'rights of nature' legislation could be a potential model for future conservation-oriented litigation to build on, but the effects of said litigation can only be as meaningful as permitted by the official avenues through which they travel. Finally, any and all measures in the regime need to be feasible in order to ensure that they can be adhered to and strengthen their longevity. A government's ability to protect biodiversity is limited only insofar as it has the resources to do so, but advances in technology and avenues for technology transfer and sharing would hopefully make previously expensive and onerous efforts more accessible for more countries in both the Global North and Global South.

Realistically, the governmental and legal aspects of the issue and any solutions therein need to be coupled with the 'soft' effect of inculcating an innate valuing of nature within the general populace, and incentives for the private sector to push for pro-conservation business practices. This article is a mere slice of the tip of the iceberg in this discussion, and does not promise to be a be-all and end-all solution to global biodiversity conservation issues in its present state. However, it is hoped that intensified scholarship on this issue in the manners explained above (and others) could further illuminate the issue and lead to policy and legislative action on both a local and international scale. The quest to conserve continues.

"It is that range of biodiversity that we must care for - the whole thing - rather than just one or two stars." – Sir David Attenborough