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Rio + 20: What Difference Has Two Decades Made to State Practice in the Regulation of Invasive Alien Species?

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RIO + 20: WHAT DIFFERENCE HAS TWO DECADES MADE TO STATE PRACTICE IN THE REGULATION OF INVASIVE ALIEN SPECIES?

SOPHIE RILEY*

ABSTRACT

Invasive alien species (“IAS”) are alien species that threaten ecosystems, habitats, or other species.¹ Article 8(h) of the Convention on Biological Diversity (“CBD”) requires the contracting parties to “prevent the introduction of or control or eradicate those alien species that threaten ecosystems, habitats, or species.”² Members are also required to lodge National Reports with the Secretariat of the CBD, specifying how they are fulfilling their international obligations with respect to IAS.³ While the threats to biodiversity posed by IAS have been extensively documented,⁴

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¹ Conference of the Parties to the Convention on Biological Diversity, Sixth Meeting, The Hague, Neth., Apr. 7–19, 2002, *Report of the Sixth Meeting of the Conference of the Parties to the Convention on Biological Diversity*, U.N. Doc. UNEP/CBD/COP/6/20 (May 27, 2002) [hereinafter COP 6], available at <http://www.cbd.int/doc/?meeting=cop-06>.

² Convention on Biological Diversity, art. 8(h), June 5, 1992, 1760 U.N.T.S. 79, available at <http://www.cbd.int/doc/legal/cbd-en.pdf>. The Convention was in force in 1993 and 193 parties have signed, as of September 2012. CONVENTION ON BIOLOGICAL DIVERSITY, <http://www.cbd.int/convention/parties/list/> (last visited Feb. 7, 2014).

³ Convention on Biological Diversity, *supra* note 2, at 159.

⁴ See generally Ted D. Center et al., *Biological Invasions: Stemming the Tide in Florida*, 78 FLA. ENTOMOLOGIST SOC'Y 45 (1995); Steve L. Coles & L. Eldredge, *Nonindigenous Species Introductions on Coral Reefs: A Need for Information*, 56 PAC. SCI. 191 (2002); INTERNATIONAL UNION FOR CONSERVATION OF CONSERVATION NATURE, IUCN GUIDELINES FOR THE PREVENTION OF BIODIVERSITY LOSS CAUSED BY ALIEN INVASIVE SPECIES (2000), available at http://cmsdata.iucn.org/downloads/2000_feb_prevention_of_biodiv_loss_invasive_species.pdf; Lyle Glowka, *Bioprospecting, Alien Invasive Species, and Hydrothermal Vents: Three Emerging Legal Issues in the Conservation and Sustainable Use of Biodiversity*, 13 TUL. ENVTL. L.J. 329 (2000); Lyle Glowka & Cyril de Klemm, *International Instrument, Processes and Non-indigenous Species Introductions—Is a Protocol Necessary?*, 26 ENVTL. POL'Y & L. 247 (1996); Peter Jenkins, *Paying for Protection from Invasive Species*, ISSUES IN SCI. & TECH. 67 (2002); T. McDowell, *Slow-Motion Explosion: The Global Threat of Exotic Species and the International Response to the Problem in the South Pacific*, 9 COLO. J. INT'L ENVTL. L. & POL'Y 187 (1998); Jeffrey A. McNeely, *Invasive Species: a Costly Catastrophe*

to date, no study has examined states' perceptions of their IAS regimes. This Article collects and analyzes information available from the CBD National Reports to consider what members themselves have identified as their regulatory strengths and weaknesses. Against this backdrop, the Article evaluates the effectiveness of international environmental law in guiding domestic regimes, highlighting that where international law is imprecise or inconsistent, it can hinder the development of successful State practice.

INTRODUCTION	372
I. THE CONVENTION ON BIOLOGICAL DIVERSITY AND INVASIVE ALIEN SPECIES	375
II. FRAMEWORK CONVENTIONS, SOFT LAW, AND COMPLIANCE MECHANISMS	380
A. <i>Hard Law v. Soft Law</i>	380
B. <i>Compliance Mechanisms: The COPs</i>	382
III. STATE PRACTICE AND INVASIVE ALIEN SPECIES	384
A. <i>National Reporting</i>	384
B. <i>Identification of Alien Species</i>	388
C. <i>Assessment of Risks</i>	395
D. <i>Measures to Regulate Invasive Alien Species</i>	401
E. <i>Resourcing</i>	408
IV. OBSERVANCE AND EFFECTIVENESS OF IAS OBLIGATIONS . . .	414
CONCLUSION	423

INTRODUCTION

In 1968, Louis Henkin published his seminal work, *How Nations Behave*.⁵ In that work, Henkin explored, analyzed, and defended the nature of international law, pointing out that “almost all nations observe

for Native Biodiversity, 1 LAND USE & WATER RES. RESEARCH 1 (2002); Marc Miller, *Biological and Cultural Camouflage: The Challenges of Seeing the Harmful Invasive Species Problem and Doing Something About It*, in HARMFUL INVASIVE SPECIES: LEGAL RESPONSES (Marc Miller & R. Fabian eds., 2004), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=452982; Anne Perrault et al., *Turning Off the Tap: A Strategy to Address International Aspects of Invasive Alien Species*, 11 REV. EUROPEAN CMTY. & INT'L ENVTL. L. 211 (2002); JEFFREY A. MCNEELY, GLOBAL STRATEGY FOR ADDRESSING THE PROBLEM OF INVASIVE ALIEN SPECIES (2000) (draft), available at <https://www.cbd.int/doc/principles/ais-strategy-gisp.pdf>.

⁵ LOUIS HENKIN, *HOW NATIONS BEHAVE: LAW AND FOREIGN POLICY* 42 (1st ed. 1968).

almost all principles of international law and almost all of their obligations almost all of the time.”⁶ While this statement may have been apposite to the mid-twentieth century, the international landscape at the beginning of the twenty-first century differs vastly in composition and structure from its configuration at the time of Henkin’s initial work.⁷ Of particular importance is the emergence of international environmental law as a distinct discipline.⁸ Due to the fact that much of this type of law is formulated in terms of framework treaties and non-binding declarations, principles, and guidelines,⁹ one issue is whether Henkin’s statement applies equally to these ‘soft’ characteristics of international environmental law as it does to black letter law. A further issue stems from whether ‘observing’ international law will also lead to more positive environmental outcomes. The first matter addresses observance of international environmental law, while the latter addresses the effectiveness of that law.

It was in fact the continuing degradation of the environment throughout the twentieth century that prompted states to find solutions at the international level.¹⁰ Ultimately, this led to the convening of the United Nations Conference on Environment and Development (“UNCED”), otherwise known as the Earth Summit, held in Rio in 1992 and focusing thereafter on sustainable development.¹¹ UNCED additionally delivered

⁶ *Id.*; LOUIS HENKIN, *HOW NATIONS BEHAVE: LAW AND FOREIGN POLICY* 47 (2d ed. 1979); see also *How Nations Behave*, 78 MICH. L. REV. 825, 825 (1979) (book review).

⁷ See JONATHAN C. CARSON ET AL., *INTERNATIONAL ENVIRONMENTAL LAW AND WORLD ORDER: A PROBLEM ORIENTED CASEBOOK* vii (3d ed. 2011).

⁸ Although by the 1970s, the international community had negotiated some important environmental instruments, the notion of ‘international environmental law’ as a discrete concept had only just started to gather momentum and important environmental treaties were still to be opened for signature. See Law of the Sea Convention, Dec. 10, 1982, 1835 U.N.T.S. 3 (regulating marine pollution and use of marine resources, signed in 1982 and entering into force in 1994, with 162 parties as of 2012); Vienna Convention for the Protection of the Ozone Layer, Mar. 22, 1985, 1513 U.N.T.S. 293 (addressing the newly discovered ozone crisis, signed in 1987, and in force in 1988, with 197 parties as of 2012); Montreal Protocol on Substances that Deplete the Ozone Layer, Sep. 16, 1987, 1522 U.N.T.S. 3 (establishing a regulatory scheme for ozone protection, signed in 1987, and in force in 1989); Madrid Protocol on Environmental Protection to the Antarctic Treaty, Oct. 4, 1991, 30 I.L.M. 1455 (protecting the Antarctic environment, signed in 1991 and in force in 1998, with 50 parties as of 2012).

⁹ Geoffrey Palmer, *New Ways to Make International Environmental Law*, 86 AM. J. INT’L L. 259, 278 (1992).

¹⁰ See generally Peter H. Sand, *UNCED and the Development of International Environmental Law*, 8 J. NAT. RES. & ENVTL. L. 209 (1992).

¹¹ See *United Nations Conference on Environment and Development*, UNITED NATIONS, <http://www.un.org/geninfo/bp/enviro.html> (last visited Feb. 7, 2014).

a clear warning that humankind would need to change its attitude towards the environment and ensure that economic decisions consider the "integrity of . . . global environmental . . . system(s)."¹² This view of sustainable development drew from the earlier Brundtland Report, which defined sustainable development as development that also meets the developmental and environmental needs of present and future generations.¹³

One outcome of UNCED was the negotiation of the Convention on Biological Diversity¹⁴—a treaty that emphasizes the need for sustainable use of biodiversity.¹⁵ Articles 8 and 9 respectively provide for *in situ* and *ex situ* protection,¹⁶ with Article 8(h) dealing with a specific aspect of *in situ* protection, namely, regulating the deleterious impacts of invasive alien species ("IAS").¹⁷ IAS are alien species that threaten ecosystems, habitats or other species.¹⁸ Their impacts have been well documented,¹⁹ and Article 8(h) requires the contracting parties to prevent the introduction of, and/or control, and eradicate these species.²⁰

This Article explores the reach of Henkin's statement, using the regulation of IAS as a case study. While the threats to biodiversity posed by IAS have been extensively documented, to date, no study has examined states' perceptions of their IAS regimes. The discussion commences with an explanation of states' responsibilities pursuant to the CBD before examining what CBD members themselves have identified as their regulatory strengths and weaknesses, and whether states observe most of their IAS obligations. Against this backdrop, the Article evaluates the effectiveness of international environmental law in guiding domestic regimes, highlighting that where international law is imprecise or inconsistent, it can hinder the development of successful applications.

Throughout the discussion, the Article primarily focuses on the CBD and State activities in the two decades following UNCED 1992. Although states have negotiated numerous international environmental

¹² United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3–14, 1992, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. 1), Annex I (Aug. 12, 1992).

¹³ REPORT OF THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE ¶ 27, Part 1, U.N. Doc. A/42/427 (1987).

¹⁴ See Convention on Biological Diversity, *supra* note 2.

¹⁵ See *id.* at 79, 143–45.

¹⁶ See *id.* at 148–50.

¹⁷ See *id.* at 149.

¹⁸ COP 6, *supra* note 1.

¹⁹ For a list of publications, see *supra* note 4.

²⁰ See Convention on Biological Diversity, *supra* note 2, at art. 8(h).

instruments that refer to IAS,²¹ the provisions of the CBD are the most far-reaching. In addition, the CBD enjoys a wide membership, so that its principles and objectives are well accepted, even among states that may find the provisions difficult or problematic to implement.²² Finally, members of the CBD must report on their activities, including their IAS regimes, providing an important source of information on state practice.²³ Indeed, the data used in this Article is sourced from the National Reports lodged with the CBD.²⁴

The discussion concludes that the bulk of states have made progress towards the design and implementation of their IAS regimes and, therefore, in one sense states can consider that they are observing international law. However, the tenor of their observance highlights deficiencies in international law that calls into question the effectiveness of the international regime in guiding domestic regulation towards the protection of biodiversity from IAS.

I. THE CONVENTION ON BIOLOGICAL DIVERSITY AND INVASIVE ALIEN SPECIES

As already noted, Article 8(h) of the CBD requires the contracting parties to “prevent the introduction of or control or eradicate those alien

²¹ Asean Agreement on the Conservation of Nature and Natural Resources, June 9, 1985, 15 E.P.L. 64, *reprinted in* SELECTED ASEAN DOCUMENTS ON THE ENVIRONMENT 27 (K.L. Koh ed., 1996); Convention on the Law of Non-navigable Uses on International Watercourses, May 21, 1997, 36 I.L.M. 700 (calling upon contracting parties to take all necessary measures to prevent the introduction of alien species that may be detrimental to the ecosystem of other states; the Convention was adopted in 1997, but has not yet entered into force); Bonn Convention on the Conservation of Migratory Species of Wild Animals, arts. II, III(4), V(4), June 23, 1979, [1991] ATS 32 (entered into force November 1, 1983 and held 1117 parties as of September 2012); Agreement on the Application of Sanitary and Phytosanitary Measures (SPSA), 1867 U.N.T.S. 493 (this is a specific agreement which is part of the World Trade Organization (“WTO”) and parties to the WTO are automatically parties to the SPSA). The WTO was established on January 1, 1995 by the Marrakesh Agreement Establishing the World Trade Organization, Apr. 15, 1994, [1995] ATS No. 8 (entered into force January 1, 1995, with 157 members as of September 2012).

²² For a discussion of the role of institutions in environmental protection, see generally Thomas Berner, *The Effect of International Environmental Institutions: How We Might Learn More*, 49 INT’L ORG. 351, 364–65 (1995).

²³ See Convention on Biological Diversity, *supra* note 2.

²⁴ See generally *National Reports and NBSAPs*, CONVENTION ON BIOLOGICAL DIVERSITY, <http://www.cbd.int/reports/search/> (last visited Feb. 7, 2014) (search for reports by entering the authoring nation and title of the report) [hereinafter *National Reports and NBSAPs*].

species that threaten ecosystems, habitats, or species.”²⁵ Article 8(h) reflects the fact that worldwide IAS are considered a serious environmental problem.²⁶ The deleterious impacts of these species range from contamination of the native gene pool,²⁷ to destruction of habitat,²⁸ and to reduction in numbers of native species.²⁹ In the United Kingdom, for example, populations of Red Squirrel are in decline largely due to the impact of the invasive alien Grey Squirrel;³⁰ while in the Caribbean, the introduced black rat is threatening several endangered species, including sea birds and sea turtles.³¹ Somewhat ironically, the introduction of the black rat has had a flow-on effect as the mongoose, which was introduced to control the

²⁵ Convention on Biological Diversity, *supra* note 2, at art. 8(h).

²⁶ *Id.* For example, see also ANTIGUA AND BARBUDA, MINISTRY OF ENV'T & FORESTRY, ANTIGUA AND BARBUDA FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 32 (2009) [hereinafter ANTIGUA AND BARBUDA FOURTH NATIONAL REPORT], available at <http://www.cbd.int/doc/world/ag/ag-nr-04-en.pdf>; FINLAND, MINISTRY OF ENV'T & FORESTRY, FINLAND FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 36 (2009) [hereinafter FINLAND FOURTH NATIONAL REPORT], available at <http://www.cbd.int/doc/world/fi/fi-nr-04-en.pdf>; HUNGARY, MINISTRY OF ENV'T & FORESTRY, HUNGARY FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 5 (2009), available at <http://www.cbd.int/doc/world/hu/hu-nr-04-en.pdf>; REPUBLIC OF BULGARIA, MINISTRY OF ENV'T & FORESTRY, REPUBLIC OF BULGARIA FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 25 (2009) [hereinafter REPUBLIC OF BULGARIA FOURTH NATIONAL REPORT], available at <http://www.cbd.int/doc/world/bg/bg-nr-04-en.pdf>; REPUBLIC OF TURKEY, MINISTRY OF ENV'T & FORESTRY, REPUBLIC OF TURKEY FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 28 (June 30, 2009), available at <http://www.cbd.int/doc/world/tr/tr-nr-04-en.pdf>; SOUTH AFRICA, MINISTRY OF ENV'T & FORESTRY, SOUTH AFRICA FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 13 (2009), available at <http://www.cbd.int/doc/world/za/za-nr-04-en.pdf>; UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND, MINISTRY OF ENV'T & FORESTRY, UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 5 (2009) [hereinafter UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND FOURTH NATIONAL REPORT], available at <http://www.cbd.int/doc/world/gb/gb-nr-04-en.pdf>; ZAMBIA, MINISTRY OF ENV'T & FORESTRY, ZAMBIA FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 8 (2009) [hereinafter ZAMBIA FOURTH NATIONAL REPORT], available at <http://www.cbd.int/doc/world/zm/zm-nr-04-en.pdf>.

²⁷ REPUBLIC OF BULGARIA FOURTH NATIONAL REPORT, *supra* note 26, at 25.

²⁸ *Id.*; FINLAND FOURTH NATIONAL REPORT, *supra* note 26, at 36.

²⁹ ZAMBIA FOURTH NATIONAL REPORT, *supra* note 26, at 8.

³⁰ UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND FOURTH NATIONAL REPORT, *supra* note 26, at 19.

³¹ Gary W. Witmer et al., *Rat Management for Endangered Species Protection in the U.S. Virgin Islands*, in PROCEEDINGS OF THE EIGHTEENTH VERTEBRATE PEST CONFERENCE 281–82 (1998).

black rat, has itself now become an abundant IAS, endangering a number of native reptile and bird species.³²

An increasingly common link for introductions of IAS is through the various media associated with international trade.³³ The trade in live food, for example, has been implicated in the introduction and spread of the Giant African Snail, the European Shore Crab, and the Chinese Mitten Crab.³⁴ Species such as the Yellow Crazy Ant, the Asian Long-Horned Beetle, and the Tamarisk have all been introduced to new locations as by-products of the nursery trade—a particularly common source of introductions of IAS.³⁵ In China, for example, 49.3% of invasive alien species were unintentionally introduced in timber, seedlings, and soil used in the nursery trade.³⁶ In Australia, the Australian Academy of Science has highlighted the dangers associated with trade in cut flowers. As the Academy points out, flowers have evolved to attract insects and the perishable nature of the commodity means that cut flowers are often not subject to as rigorous an examination as other products.³⁷ Both of these features increase the likelihood of introducing insect pests to Australia.

³² ANTIGUA AND BARBUDA FOURTH NATIONAL REPORT, *supra* note 26, at 32.

³³ SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, GLOBAL BIODIVERSITY OUTLOOK 3 67 (Aug. 2010), available at <http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf>.

³⁴ *The Chinese Mitten Crab*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=38&fr=1&sts> (last visited Feb. 7, 2014); *The European Shore Crab*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=114&fr=1&sts> (last visited Feb. 7, 2014); *Global Invasive Species Data Base Fact Sheets on the Giant African Snail*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=64&fr=1&sts> (last visited Feb. 7, 2014).

³⁵ For example, see the Yellow Crazy Ant, the Asian Long-Horned Beetle and the Tamarisk. *Global Invasive Species Data Base Fact Sheet on the Asian Long-Horned Beetle*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=111&fr=1&sts=> (last visited Feb. 7, 2014); *Global Invasive Species Data Base Fact Sheet on the Tamarisk*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=72&fr=1&sts=> (last visited Feb. 7, 2014); *Global Invasive Species Data Base Fact Sheet on the Yellow Crazy Ant*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=110&fr=1&sts=sss&lang=EN> (last visited Feb. 7, 2014).

³⁶ H Xu et al., *The Distribution and Economic Losses of Alien Species Invasion to China*, 8 BIOLOGICAL INVASIONS 1495, 1496–97 (2006).

³⁷ AUSTRALIAN ACADEMY OF SCIENCE, SUBMISSION TO THE REVIEW OF THE AUSTRALIAN QUARANTINE INSPECTION SERVICE ¶ 3.3 (Mar. 31, 1996), available at <http://www.science.org.au/reports/aqiscont.htm>; see also SHIRLEY BETHUNE ET AL., MINISTRY OF ENV'T & TOURISM, NATIONAL REVIEW OF INVASIVE ALIEN SPECIES NAMIBIA 42 (2004).

In other instances, trade in commodities such as grains and seeds can increase the risk of introducing weeds, pests, and diseases of plants.³⁸ One particular insect of concern, the Khapra Beetle, is the subject of constant vigilance by the Australian Quarantine Inspection Service (“AQIS”),³⁹ and is listed by the IUCN as one of the 100 worst IAS in the world.⁴⁰ The trade in pet and aquarium products can also act as a pathway for the introduction and spread of many IAS and is implicated in the introduction of Chytrid Frog Fungus,⁴¹ Killer Alga,⁴² and the Walking Catfish.⁴³

While Article 8(h) obliges the parties to prevent, control, and eradicate IAS, the Article does not provide specific guidance as to how these obligations should become operational. This matter is instead addressed by the CBD Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems Habitats or Species (“Guiding Principles”) that have been adopted by the Conference of the Parties (“COPs”) to the CBD.⁴⁴

The genesis of the Guiding Principles is found in a 1999 request by the COPs of the CBD to the Subsidiary Body on Scientific Technical and Technological Advice (“SBSTTA”)⁴⁵ to produce a draft set of guiding principles for the prevention of impacts of alien species in isolated

³⁸ AUSTRALIAN ACADEMY OF SCIENCE, *supra* note 37, ¶ 3.1.1.

³⁹ *Id.* In June 2006, Public Quarantine Alert PQA0479 was issued with respect to cut flowers and the chances of introducing *Phytophthora* insects. *Id.*

⁴⁰ *Global Invasive Species Data Base Fact Sheet the Khapra Beetle*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=142&fr=1&sts> (last visited Feb. 7, 2014).

⁴¹ *Global Invasive Species Data Base Fact Sheet on Chytrid Frog Fungus*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=123&fr=1&sts> (last visited Feb. 7, 2014).

⁴² *Global Invasive Species Data Base Fact Sheet on Killer Alga*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=115&fr=1&sts> (last visited Feb. 7, 2014).

⁴³ *Global Invasive Species Data Base Fact Sheet on Walking Catfish*, INVASIVE SPECIES SPECIALIST GROUP, <http://www.issg.org/database/species/ecology.asp?si=62&fr=1&sts> (last visited Feb. 7, 2014).

⁴⁴ COP 6, *supra* note 1, at 240 (listing the Guiding Principles for the Prevention).

⁴⁵ The Subsidiary Body on Scientific Technical and Technological Advice is an open-ended intergovernmental scientific advisory body established pursuant to Article 25 of the CBD. *Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA)*, CONVENTION ON BIOLOGICAL DIVERSITY, <http://www.cbd.int/convention/sbstta.shtml> (last visited Feb. 7, 2014). It provides advice to the COP, and undertakes assessments of the status of biological diversity. *Id.*

ecosystems.⁴⁶ This draft was considered,⁴⁷ amended,⁴⁸ and eventually adopted by the COPs.

The Guiding Principles consist of fifteen principles designed to improve and harmonize state practice with regard to IAS regulation. They are spearheaded by the application of the precautionary and ecosystem approaches and reinforced by a three-tiered system of regulation that emphasizes preventing introductions, followed by eradication and control measures.⁴⁹ In addition, the Guiding Principles accentuate the importance of evaluating deliberate introductions⁵⁰ as well as detecting accidental ones.⁵¹ In the context of evaluating and detecting introductions, the Guiding Principles acknowledge that regulation of pathways of introduction can lead to more effective outcomes than targeting individual species.⁵² Moreover, in order for states to fulfill their obligations they need

⁴⁶ Executive Secretary, *Development of Guiding Principles for the Prevention of Impacts of Alien Species by Identifying Priority Areas of Work on Isolated Ecosystems and by Evaluating and Giving Recommendations for the Further Development of the Global Invasive Species Programme*, U.N. Doc. UNEP/CBD/SBSTTA/4/8 (Feb. 15, 1999). For a short discussion on history of negotiation of the CBD Guiding Principles, see Miller, *supra* note 4, at 7.

⁴⁷ See, e.g., Conference of the Parties to the Convention on Biological Diversity, Nairobi, May 15–26, 2000, *Reports of the Fifth Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice*, ¶ 3.4, U.N. Doc. UNEP/CBD/COP/5/3 (Feb. 25, 2000); Conference of the Parties to the Convention on Biological Diversity, Nairobi, May 15–26, 2000, *Progress Report on the Implementation of the Programmes of Work on the Biological Diversity of Inland Water Ecosystems, Marine and Coastal Biological Diversity, and Forest Biological Diversity*, U.N. Doc. UNEP/CBD/COP/5/INF/9 (Apr. 20, 2000) (detailing gaps in measures taken to prevent the introduction of, or the adverse effects from, alien invasive species and genotypes that threaten marine and coastal ecosystems, habitats, or species); Conference of the Parties to the Convention on Biological Diversity, Nairobi, May 15–26, 2000, *Report of the Fifth Meeting of the Conference of the Parties to the Convention on Biological Diversity, Decision V/8, Alien Species that Threaten Ecosystems, Habitats or Species*, Nairobi, May 15–16, 2000, 111, U.N. Doc. UNEP/CBD/COP/5/23 (June 22, 2000) [hereinafter COP 5], available at <https://www.cbd.int/decision/cop/default.shtml?id=7150>.

⁴⁸ For example, the current CBD Guiding Principles adopted pursuant to decision VI/23 of the COPs are not limited in their application to isolated areas, whereas in an earlier version of the principles considered in May 2000 as part of decision V/8 (the document is dated June 22, 2000, however the meeting occurred 15–16 May 2000) paragraph 8 of the recital to the principles urged the parties to give priority to geographically and evolutionarily isolated ecosystems. Compare COP 6, *supra* note 1, with COP 5, *supra* note 47.

⁴⁹ COP 6, *supra* note 1, at 248 (detailing Principle 2).

⁵⁰ *Id.* at 250 (outlining Principle 10).

⁵¹ *Id.* (explaining Principle 11).

⁵² *Id.*

to establish procedures that identify, track, and monitor alien species as well as invasive alien species.⁵³ Finally, it is self-evident that to design and implement effective regimes states need adequate financial, human, and technological resources.

The Guiding Principles are a soft law mechanism. As such, they are not binding in the manner of Article 8(h) of the CBD.⁵⁴ Yet compliance with, or observance of, the Guiding Principles is the preferred means within the CBD of making Article 8(h) operational. The Guiding Principles are there to guide CBD members, who at least must consider the principles. Accordingly, the principles can be seen as imposing significant responsibilities for states that are party to the CBD. The practical consequence of classifying the Guiding Principles as hard or soft law may, therefore, be less significant than first appears. This is especially the case as enforcement procedures for the Guiding Principles are the same as for the CBD itself.

II. FRAMEWORK CONVENTIONS, SOFT LAW, AND COMPLIANCE MECHANISMS

A. *Hard Law v. Soft Law*

As noted in the Introduction, much of international environmental law is adopted as either soft law or in treaty-framework format. Classifying instruments as hard or soft law is regularly achieved by scrutinizing the degree of obligation the treaty places on parties, and/or examining enforcement mechanisms.⁵⁵ Strict enforcement mechanisms, such as compulsory and binding dispute resolution, are said to denote hard law, while soft enforcement, such as reporting and information exchange, denote soft law.⁵⁶ Notwithstanding these considerations, the boundaries between hard and soft law are mutable. In particular, the negotiation of framework treaties that provide 'soft law' responses to environmental problems has blurred the distinction between hard and soft law.⁵⁷ Framework treaties are invariably the product of differences of opinion, coupled with the need to achieve a result. They have been described as political compromises on

⁵³ *Id.* at 249 (outlining Principle 5).

⁵⁴ *See id.* at 247 (offering an introduction to the guiding principles of decision VI/23).

⁵⁵ Alan E. Boyle, *Some Reflections on the Relationship of Treaties and Soft Law*, 48 INT'L & COMP. L. Q. 901, 907 (1999).

⁵⁶ *Id.* at 909.

⁵⁷ Sand, *supra* note 10, at 212–14; Palmer, *supra* note 9, at 278.

a grand scale, stemming from the fact that parties wish to reach consensus without accepting formal obligations.⁵⁸

Dissatisfaction with the soft nature of framework treaties can stem from the fact that wording and obligations are often watered down so that the final text imperfectly captures treaty goals and objectives.⁵⁹ Indeed, this was the case during the negotiation of the IAS-related provisions of the CBD. Although some delegates were determined to achieve inclusion of robust provisions for dealing with 'exotic' and 'introduced' species, the final version of Article 8(h) was not as powerful as initially anticipated. On this point, Jenkins has said:

Initial drafts of the CBD included a relatively strong exotics provision. It would have established a scientific authority styled after CITES and a listing process focusing attention on high priority exotic species threats to biodiversity. However, the finally adopted watered down article 8(h) language lacks specificity, lacks a listing process and lacks enforceability due to its vagueness.⁶⁰

Other commentators have similarly noted that the compromise-cycle can diminish compliance to an undemanding level, leading to the adoption of commitments that arguably are those which the parties would have accepted in any event.⁶¹ Yet, in the environmental context, such compromises are important to reaching agreement where parties do not concur on fundamental issues,⁶² such as the nature and extent of environmental problems, or on suitable ways to address these problems.⁶³ The framework treaty format allows parties to agree in principle, while deferring problematic matters for future discussion.⁶⁴ Although framework treaties are essentially a soft law response to environmental problems,⁶⁵ they can still

⁵⁸ Boyle, *supra* note 55, at 907.

⁵⁹ Palmer, *supra* note 9, at 278.

⁶⁰ Peter Jenkins, *Free Trade and Exotic Species Introductions*, in PROCEEDINGS OF THE NORWAY/UN CONFERENCE ON ALIEN SPECIES 145–46 (O. T. Sandlund et al. eds., 1996).

⁶¹ A. Dan Tarlock, *The Role of Non-governmental Organizations in the Development of International Law*, 68 CHL.-KENT L. REV. 61, 66 (1992).

⁶² Jutta Brunée, *COPing with Consent: Law-Making Under Multilateral Environmental Agreements*, 15 LEIDEN J. INT'L L. 1, 7 (2002).

⁶³ *Id.*

⁶⁴ *Id.* at 8.

⁶⁵ Some commentators argue that framework treaties do in fact provide substantial obligations. See PHILIPPE SANDS & JACQUELINE PEEL, *PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW* 276–78 (2012).

foster cooperation and collaborative approaches to environmental problems.⁶⁶ Moreover, the framework model also facilitates the fine-tuning and practical application of treaties, allowing the regime to take into account evolving and emerging issues.⁶⁷ Indeed, the lack of “legally binding force” in framework treaties is balanced by processes and procedures that “are aimed at and may produce practical effects.”⁶⁸ Consequently, an important requirement is the establishment of mechanisms that facilitate cooperation and the practical operation of the treaty.

For instruments negotiated from the latter part of the twentieth century, these mechanisms are often established by institutional arrangements such as the COPs, and information gathering and exchange systems, including reporting, that channel into the COPs.⁶⁹ The CBD is a typical example of such treaties. It operates with a permanent secretariat,⁷⁰ it depends on soft enforcement procedures, such as the COPs,⁷¹ and it relies on information gathering and reporting by members.⁷²

B. *Compliance Mechanisms: The COPs*

The COPs are a plenary body and will usually have power to adopt decisions affecting the internal management of the treaty as well as the treaty's external engagement.⁷³ Article 23 of the CBD, for example, provides that the COPs have power to: adopt rules of procedure for their own meetings;⁷⁴ review the implementation of the CBD, including consideration of amendments;⁷⁵ adopt and amend protocols to the CBD;⁷⁶ act as a focal point for facilitating the reporting requirements pursuant to Article 26

⁶⁶ Armin Schäfer, *Resolving Deadlock: Why International Organizations Introduce Soft Law*, 12 EUR. L.J. 194, 194 (2006).

⁶⁷ Gerhard Loibl, *The Role of International Organisations in International Law-Making International Environmental Negotiations—An Empirical Study*, 1 NON-STATE ACTORS & INT'L L. 41, 43 (2001).

⁶⁸ Schäfer, *supra* note 66, at 195.

⁶⁹ Robin R. Churchill & Geir Ulfstein, *Autonomous Institutional Arrangements in Multilateral Environmental Agreements: A Little-Noticed Phenomenon in International Law*, 94 AM. J. INT'L L. 623, 623 (2000).

⁷⁰ Convention on Biological Diversity, *supra* note 2, at art. 24.

⁷¹ *Id.* at art. 23.

⁷² *Id.* at art. 26.

⁷³ Brunée, *supra* note 62, at 5–6; Churchill & Ulfstein, *supra* note 69, at 626; Nikolaos Lavranos, *Multilateral Environmental Agreements: Who Makes the Binding Decisions?*, 44 EUR. ENERGY & ENVTL. L. REV. 44, 45 (2002).

⁷⁴ Convention on Biological Diversity, *supra* note 2, at art. 23(3).

⁷⁵ *Id.* at art. 23(4)(d).

⁷⁶ *Id.* at art. 23(4)(c), (e).

of the Convention,⁷⁷ and undertake external engagement with the secretariats of other treaty regimes.⁷⁸ The first international environmental agreement to use a COPs, although the meetings were not formally titled as such, was the 1971 Convention on Wetlands of International Importance Especially as Waterfowl Habitat.⁷⁹ Article 6 of that treaty provided that the contracting parties should convene conferences, which were to be of an advisory character, whenever necessary.⁸⁰ Amendments made to the Article in 1987 came into force in 1994 and have formalized the role of the COPs with respect to adopting resolutions and recommendations to promote the operation of the Convention.⁸¹

The first international environmental instrument to use the term “Conference of the Parties” was the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (“CITES”).⁸² Article XI of that Convention provides that the Secretariat should call meetings of the Conference of the Parties every two years⁸³ and that the COPs’ functions extend to a review of the implementation of the Convention,⁸⁴ consideration and adoption of amendments to the Appendices,⁸⁵ and receiving and considering reports prepared by the Secretariat or any other Party.⁸⁶ From approximately 1973, these features became standardized in many international environmental instruments, leading to discussion and commentary on the true nature and importance of the COPs.⁸⁷

Brunée, for example, explores whether COPS are procedures that facilitate “consent-based law-making,” or whether the COPs are evolving

⁷⁷ *Id.* at art. 23(4)(a).

⁷⁸ *Id.* at art. 23(4)(h).

⁷⁹ Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Feb. 2, 1971, [1975] ATS 48 [hereinafter 1971 Convention on Wetlands] (entered into force December 21, 1975 and as of September 2012, the Convention had 163 parties). For discussion, see Churchill & Ulfstein, *supra* note 69, at 629.

⁸⁰ 1971 Convention on Wetlands, *supra* note 79, at art. 6(2).

⁸¹ The amendment to the treaty, known as the “Regina Amendments” were adopted at the third meeting of the Conference of the Contracting Parties, at Regina, Canada on May 27 to June 5, 1987. See *The Regina Amendments to the Convention on Wetlands 1987*, THE RAMSAR CONVENTION ON WETLANDS, http://www.ramsar.org/cda/en/ramsar-documents-texts-regina-amendments/main/ramsar/1-31-38%5E20713_4000_0__ (last visited Feb. 7, 2014).

⁸² 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora, art. XI(1), Mar. 3, 1973 [1976] ATS 29 (entered into force July 1, 1975 and as of Sept., 2012 the Convention had 175 parties). For discussion, see Churchill & Ulfstein, *supra* note 69, at 630.

⁸³ *Id.* at art. XI(1).

⁸⁴ *Id.* at art. XI(3).

⁸⁵ *Id.* at art. XI(3)(b).

⁸⁶ *Id.* at art. XI(3)(d).

⁸⁷ For discussion, see Churchill & Ulfstein, *supra* note 69, at 623.

into autonomous law-making institutions.⁸⁸ She acknowledges that COPs do not make law in the traditional sense, but rather they foster agreement and provide an important platform for communal oversight and regulation.⁸⁹ Churchill and Ulfstein conclude that the COPs are “autonomous” because in reality they are making law and also have at their disposal compliance mechanisms, such as reporting requirements and exchange of information.⁹⁰ Indeed, the lack of formal enforcement mechanisms in treaties is often compensated by the “institutional supervision” that COPs perform.⁹¹ Thus, the salient feature of the COPs, is not whether their resolutions are binding, in a strict sense, but whether the process of reaching agreement is capable of guiding and inspiring state practice, leading to states observing international law.

In framework treaties, the COPs occupy an especially important position. As already noted, framework treaties defer the negotiation of challenging matters, effectively leaving them for further consideration by the COPs.⁹² Thus, the adoption of framework treaties signals the commencement of the law-making process, rather than the end of it.⁹³ In addition, the process results in a system of ‘law making’ that is continuous and sufficiently flexible to deal with current and emerging environmental problems with the COPs at the forefront of this process.⁹⁴ Against this backdrop, Henkin’s concept should still hold true, because the soft nature of international environmental law would not act as a hurdle to states observing most of their international law obligations. In order to test this premise, the discussion now turns to State practice in the regulation of IAS.

III. STATE PRACTICE AND INVASIVE ALIEN SPECIES

A. *National Reporting*

Article 26 of the CBD obliges the parties to prepare and file reports about their endeavours at intervals determined by the COPs.⁹⁵

⁸⁸ Brunée, *supra* note 62, at 5–6, 15–16.

⁸⁹ *Id.* at 51; Alan E. Boyle, *Saving the World? Implementation and Enforcement of International Environmental Law Through International Institutions*, 3 J. ENVTL. L. 229, 231 (1991).

⁹⁰ Churchill & Ulfstein, *supra* note 69, at 623.

⁹¹ Boyle, *supra* note 89, at 243.

⁹² Jacob Werksman, *The Conferences of the Parties to Environmental Treaties*, in GREENING INTERNATIONAL INSTITUTIONS 55, 57 (Jacob Werksman ed. 1996).

⁹³ *Id.*

⁹⁴ Lavranos, *supra* note 73, at 44; Boyle, *supra* note 89, at 230.

⁹⁵ Convention on Biological Diversity, *supra* note 2, at art. 26.

The National Reports contain detail on many elements of compliance with the CBD including how states are implementing the provisions of Article 8(h) and the Guiding Principles.⁹⁶ The CBD notes that these National Reports fulfill a number of important roles, including identifying common issues amongst the parties, detecting gaps in capacity and domestic legislation, and helping states to formulate policy.⁹⁷ To date, the COPs have determined that the contracting parties lodge five National Reports⁹⁸: the First National Report was due in 1997;⁹⁹ the Second in 2001;¹⁰⁰ the Third in 2005;¹⁰¹ and the Fourth in 2009.¹⁰² The Fifth National Report is due in March 2014.¹⁰³

⁹⁶ *Id.* at art. 8(h); COP 6, *supra* note 1, at 240 (listing the Guiding Principles).

⁹⁷ *Introduction to Article 26 of the Convention*, CONVENTION ON BIOLOGICAL DIVERSITY, <http://www.cbd.int/reports/intro.shtml> (last visited Feb. 7, 2014).

⁹⁸ *See Thematic Reports*, CONVENTION ON BIOLOGICAL DIVERSITY, <http://www.cbd.int/reports/thematic.shtml#ais> (last visited Feb. 7, 2014) (making the reports available online). In addition, the COPs have called for eight thematic reports on matters such as mountain biodiversity, protected areas, and IAS. *Id.*

⁹⁹ Conference of the Parties to the Convention on Biological Diversity, Second Meeting, Jakarta, Nov. 6–17, 1995, *Report of the Second Meeting of the Conference of the Parties to the Convention on Biological Diversity, Form and Intervals of National Reports by Parties*, Decision II/17, ¶ 4, U.N. Doc. UNEP/CBD/COP/2/19 (Nov. 19, 1995) [hereinafter *Form and Intervals of National Reports by Parties*], available at <http://www.cbd.int/doc/meetings/cop/cop-02/official/cop-02-19-en.pdf>.

¹⁰⁰ Conference of the Parties to the Convention on Convention on Biological Diversity, *Annex III: Decisions Adopted by the Conference of the Parties to the Convention on Biological Diversity at Its Fifth Meeting*, National Reporting V/19, ¶¶ 3–5, U.N. Doc. UNEP/CBD/COP/5/23 (May 16, 2000) [hereinafter National Reporting V/19], available at <http://www.cbd.int/decision/cop/default.shtml?id=7161>.

¹⁰¹ Conference of the Parties to the Convention on Convention on Biological Diversity, Kuala Lumpur, Sept. 20, 2004, Feb. 27, 2004, *Annex: Decisions Adopted by the Conference of the Parties to the Convention on Biological Diversity at Its Seventh Meeting*, Part B: Guidelines for Third National Report, ¶ 8, U.N. Doc. UNEP/CBD/COP/7/21 (Feb. 20, 2004) [hereinafter Guidelines for Third National Report], available at <http://www.cbd.int/doc/decisions/cop-07/full/cop-07-dec-en.pdf>.

¹⁰² Conference of the Parties to the Convention on Convention on Biological Diversity, Curitiba, Braz., Mar. 20–31, 2006, *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at Its Eighth Meeting, National Reporting and the Next Global Biodiversity Outlook*, ¶ 7, U.N. Doc. UNEP/CBD/COP/DEC/VIII/14 (June 15, 2006) [hereinafter *National Reporting and the Next Global Biodiversity Outlook*], available at <http://www.cbd.int/doc/decisions/cop-08/cop-08-dec-14-en.pdf>.

¹⁰³ Conference of the Parties to the Convention on Biological Diversity, Nagoya, Japan, Oct. 18–29, 2010, *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at Its Tenth Meeting, National Reporting: Review of Experience and Proposals for the Fifth National Report*, ¶ 2, U.N. Doc. UNEP/CBD/COP/DEC/X/10 (Oct. 29, 2010), available at <http://www.cbd.int/doc/decisions/COP-10/cop-10-dec-10-en.pdf>.

In addition to deciding the time frame for lodging the National Reports, the COPs determines the format and emphasis of each National Report.¹⁰⁴ Thus, the four National Reports do not target the same issues, nor emphasize the same matters to an equivalent extent. The First National Report, for example, focused on Article 6 of the CBD and the need to develop national strategies, plans, and programs for the conservation and sustainable use of biodiversity.¹⁰⁵ To assist states, the COPs developed a template for this report,¹⁰⁶ and states were expected to provide information on: the importance of biodiversity in their jurisdiction;¹⁰⁷ the identification of gaps for the protection of biodiversity;¹⁰⁸ and proposed actions to protect biodiversity.¹⁰⁹ This report was in the nature of an information-gathering exercise for states to use in planning their biodiversity regimes.¹¹⁰ Although this report was due in 1997,¹¹¹ by 1998 the fourth COPs noted that many parties were experiencing difficulties and had not yet lodged their reports.¹¹² What is more, the reports already lodged tended to vary greatly in length and scope.¹¹³ For these reasons, the COPs adopted a standardized format, in the form of a questionnaire or survey, for the Second¹¹⁴ and Third National Reports.¹¹⁵ The parties were expected to select answers from a choice of three or four alternatives and they could also provide additional written explanations.¹¹⁶ The questionnaire/survey format was abandoned for the Fourth National Report, where parties were required to answer questions on whether they had achieved specific conservation targets.¹¹⁷ The targets were clustered in modules and Module 6 deals with parties' efforts to regulate and control threats to biodiversity

¹⁰⁴ See generally *National Reports and NBSAPs*, *supra* note 24.

¹⁰⁵ *Form and Intervals of National Reports by Parties*, *supra* note 99, at Annex to Decision II/17(d).

¹⁰⁶ *Id.* at Annex to Decision II/17.

¹⁰⁷ *Id.* at Annex to Decision II/17(b).

¹⁰⁸ *Id.* at Annex to Decision II/17(a), (e).

¹⁰⁹ *Id.* at Annex to Decision II/17(e), (g)–(h).

¹¹⁰ *Id.* at Annex to Decision II/17(b), (c).

¹¹¹ *Form and Intervals of National Reports by Parties*, *supra* note 99, ¶ 4.

¹¹² Conference of the Parties to the Convention on Convention on Biological Diversity, *Annex: Decisions Adopted by the Conference to the Parties to the Convention on Biological Diversity at Its Fourth Meeting*, Decision IV/14, National Reports by Parties, ¶ 5, UNEP/CBD/COP/DEC/IV/4 (May 15, 1998).

¹¹³ *Id.*

¹¹⁴ National Reporting V/19, *supra* note 100, ¶¶ 3–5.

¹¹⁵ *Guidelines for Third National Report*, *supra* note 101.

¹¹⁶ *Id.*

¹¹⁷ *National Reporting and the Next Global Biodiveristy*, *supra* note 102, ¶¶ 1–2.

from IAS.¹¹⁸ The parties were asked to detail their activities on meeting two targets¹¹⁹: Target 6.1 that relates to controlling pathways for major potential alien species;¹²⁰ and Target 6.2, that relates to the design and implementation of management plans for major IAS.¹²¹

The data discussed in this Article is sourced from the first four National Reports. The reports proffer an enormous amount of material and information, and the following material was selected for evaluation, because as far as possible, this is addressed by all four National Reports: whether states have identified alien species in their jurisdictions; whether states have assessed the risks posed by alien species in their jurisdictions; whether states have introduced measures to prevent the introduction of, control, or eradicate IAS; and finally, resourcing issues. These areas of regulation provide sufficient material to gauge whether, and how, members are complying with the IAS provisions of the CBD.

A further consideration in gathering and analysing the information stemmed from the fact that the First and Fourth reports were prepared in a qualitative and descriptive manner,¹²² whereas the Second and Third Reports followed a questionnaire/survey format.¹²³ In order to obtain meaningful comparisons, the data collection was guided by the format of the questionnaire/survey of the Second and Third National Reports.¹²⁴ Although the numbering of the questions differs between these two reports, the content of the questions was largely comparable.¹²⁵ For the

¹¹⁸ *Id.* ¶ 13.

¹¹⁹ Conference of the Parties to the Convention on Biological Diversity, Curitiba, Braz., Mar. 20–31, 2006, *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at Its Eighth Meeting, Framework for Monitoring Implementation of the Achievement of the 2010 Target and Integration of Targets into the Thematic Programmes of Work*, U.N. Doc. UNEP/CBD/COP/DEC/VIII/16 (June 15, 2006), available at <http://www.cbd.int/doc/decision/cop-08/cop-08-dec-15-en.pdf>.

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² See *Form and Intervals of National Reports by Parties*, *supra* note 99, at Annex to Decision II/17; *National Reporting: Review of the Experience and Proposals for the Fifth National Report*, *supra* note 103, ¶¶ 7–15.

¹²³ See National Reporting V/19, *supra* note 100, ¶¶ 3–5; Guidelines for Third National Report, *supra* note 101, ¶¶ 1–2.

¹²⁴ See *Background*, CONVENTION ON BIOLOGICAL DIVERSITY, <http://www.cbd.int/reports/national.shtml> (last visited Feb. 7, 2014).

¹²⁵ In the Second National Report, the IAS questions are numbered 86–102, while in the Third National Report the questions consist of part M and questions numbered 45–56. Compare CONVENTION ON BIOLOGICAL DIVERSITY, SECOND NATIONAL REPORT GUIDELINES 28–30 [hereinafter CBD SECOND], available at <http://www.cbd.int/doc/guidelines/nr-02-gd-lns-en.pdf>, with CONVENTION ON BIOLOGICAL DIVERSITY, THIRD NATIONAL REPORT

sake of consistency, the numbering and wording of the questions was left in the format of the Second National Report.¹²⁶ Any significant differences between the two reports are discussed below. It should also be kept in mind that data was taken from the First and Fourth Reports in as closely aligned a manner as possible to the survey questions of the Second and Third National Reports.¹²⁷ Nevertheless, to some extent, this involved a subjective interpretation of the descriptive content.

The statistics that have been generated are based on data from states that provided usable information.¹²⁸ Accordingly, the data is not solely based on the number of states that lodged National Reports. For example, some states did not answer all questions when completing the Second and Third National Reports,¹²⁹ and other states did not use the standard format.¹³⁰ In the latter case responses were only used where they correlated with a question in the standard format.¹³¹ Finally, in the Second and Third National Reports, states occasionally indicated more than one answer.¹³² Where possible, the most responsive of these was taken into account. The writer and her research assistant made use of the analysing tool available on the CBD website, but in order to be as accurate as possible, they gathered relevant information directly from the National Reports.

Once the data was collected, the replies were tallied and expressed both as absolute numbers in column tables, as well as depicted as a proportion of the total replies in graph form. The replies for each alternative were also tracked over the four National Reports.

B. Identification of Alien Species

Question 88 in the Second National Report, equivalent to Question 45 in the Third National Report, asks whether states have identified

GUIDELINES 70 [hereinafter CBD THIRD], available at <http://www.cbd.int/doc/guidelines/nr-03-gd-lns-en.pdf>.

¹²⁶ Compare CBD SECOND, *supra* note 125, at 28–30, with CBD THIRD, *supra* note 125, at 70.

¹²⁷ Compare CONVENTION ON BIOLOGICAL DIVERSITY, FOURTH NATIONAL REPORT GUIDELINES (2010) [hereinafter CBD FOURTH], available at <http://www.cbd.int/doc/guidelines/nr-04-gd-lns-en.pdf>, with CBD SECOND, *supra* note 125, and CBD THIRD, *supra* note 125.

¹²⁸ See generally *National Reports and NBSAPs*, *supra* note 24.

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Id.*

alien species introduced into their jurisdictions.¹³³ This dataset provides crucial underpinning that enables regulators to identify those alien species likely to become invasive.

Question 88 in the Second National Report asked¹³⁴:

Has your country identified alien species introduced?	
a)	no
b)	only major species of concern
c)	only new or recent introductions
d)	a comprehensive system tracks new introductions
e)	a comprehensive system tracks all known introductions

Question 45 in the Third National Report asked¹³⁵:

Has your country identified alien species introduced?	
a)	No
b)	Yes, some alien species identified but a tracking system not yet established
c)	Yes, some alien species identified and tracking system in place
d)	Yes, alien species of major concern identified and tracking system in place

Response ‘a’ remained the same for both National Reports;¹³⁶ however, the two sets of responses differ in other respects. For example, responses ‘b’ and ‘c’ in the Second National Report refer to new or major introductions, but do not mention tracking systems, which are mentioned in the Third National Report.¹³⁷ In addition, responses ‘d’ and ‘e’ in the Second National Report envisage that states would have implemented tracking systems in the context of comprehensive awareness of alien species;¹³⁸ whereas the Third National Report refers to identification and tracking of “some” alien species, as well as species of “major concern.”¹³⁹ From the

¹³³ Compare CBD SECOND, *supra* note 125, at 28, with CBD THIRD, *supra* note 125, at 70.

¹³⁴ CBD SECOND, *supra* note 125, at 28.

¹³⁵ CBD THIRD, *supra* note 125, at 70.

¹³⁶ Compare CBD SECOND, *supra* note 125, at 28, with CBD THIRD, *supra* note 125, at 70.

¹³⁷ CBD THIRD, *supra* note 125, at 70.

¹³⁸ CBD SECOND, *supra* note 125, at 28.

¹³⁹ CBD THIRD, *supra* note 125, at 70.

nuanced questions, it appears that at the time of the Third National Report, the COPs were focusing on whether states had made a measure of progress towards identifying alien species, rather than whether an apparent minority of states had identified most alien species.¹⁴⁰

Although the responses in the Second and Third National Reports are not totally comparable, it is still possible to make some important evaluations. To start with, question 'a' remains the same in both reports.¹⁴¹ In addition, none of questions 'b' and 'c' in the Second National Report,¹⁴² nor question 'b' in the Third National Report,¹⁴³ refers to tracking systems, and the questions are otherwise roughly equivalent to each other.¹⁴⁴ Furthermore, the answers to questions 'd' and 'e' in the Second National Report can be combined to obtain an overarching view of whether states had implemented tracking systems.¹⁴⁵ Although these responses do not have a direct equivalent in the Third National Report, they are analogous to responses 'c' and 'd' that refer to identification and tracking for major species.¹⁴⁶ As already noted, data from the First and Fourth National Reports was collected from the descriptive content of those reports.¹⁴⁷ The results are set out in Tables 1.1–1.4 below, followed by Diagram One, which tracks the responses.

TABLE 1.1

IDENTIFICATION OF ALIEN SPECIES FIRST NATIONAL REPORT¹⁴⁸

Has your country identified alien species introduced?					
a	b	c	d	Total responses to this question	Not addressed/ no response
59	79	0	8	146	4
40.4%	54.1%	0	5.50%	100%	

¹⁴⁰ *Id.*¹⁴¹ Compare CBD SECOND, *supra* note 125, with CBD THIRD, *supra* note 125.¹⁴² CBD SECOND, *supra* note 125.¹⁴³ CBD THIRD, *supra* note 125.¹⁴⁴ Compare CBD SECOND, *supra* note 125, with CBD THIRD, *supra* note 125.¹⁴⁵ CBD SECOND, *supra* note 125.¹⁴⁶ CBD THIRD, *supra* note 125.¹⁴⁷ National Reporting V/19, *supra* note 100; Guidelines for Third National Report, *supra* note 101.¹⁴⁸ See generally *National Reports and NBSAPs*, *supra* note 24 (search for First National Reports to compare data).

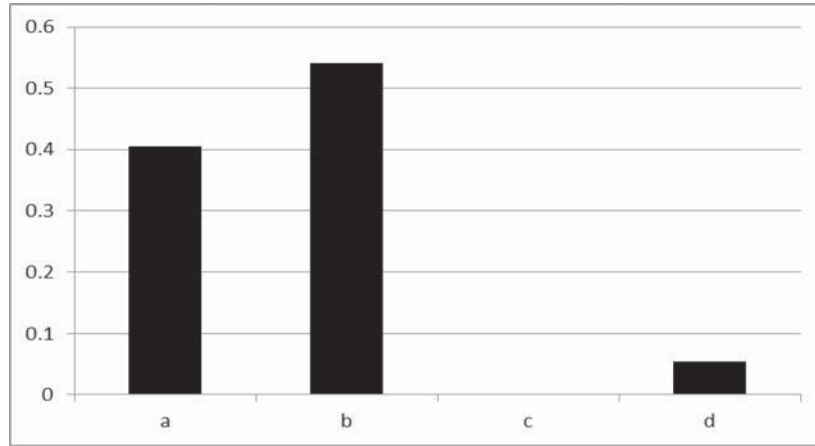
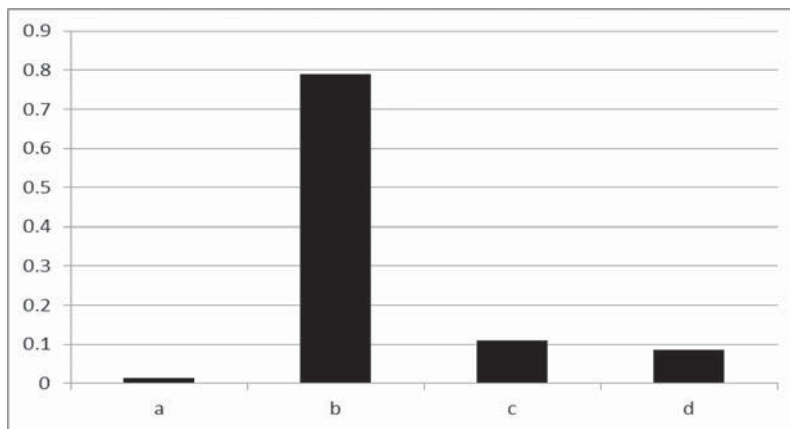


TABLE 1.2
IDENTIFICATION OF ALIEN SPECIES SECOND NATIONAL REPORT¹⁴⁹

Has your country identified alien species introduced?					
a	b	c	d	Total responses to this question	Not addressed/ no response
2	11	15	12	139	5
1.46%	79.14%	10.8%	8.6%	100%	



¹⁴⁹ *Id.* (search for Second National Report to compare data).

TABLE 1.3

IDENTIFICATION OF ALIEN SPECIES THIRD NATIONAL REPORT¹⁵⁰

Has your country identified alien species introduced?					
a	b	c	d	Total responses to this question	Not addressed/ no response
6	69	17	13	105	9
5.7%	65.7%	16.2%	12.4%	100%	

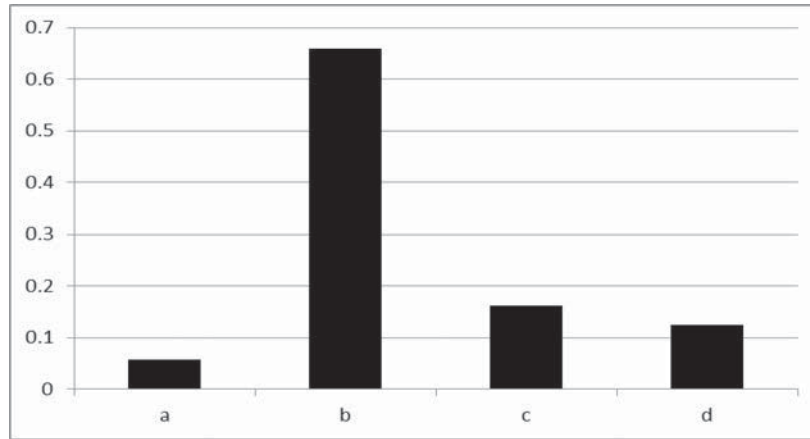


TABLE 1.4

IDENTIFICATION OF ALIEN SPECIES FOURTH NATIONAL REPORT¹⁵¹

Has your country identified alien species introduced?					
a	b	c	d	Total responses to this question	Not addressed/ no response
36	97	1	20	154	18
23.4%	63%	.6%	13%	100%	

¹⁵⁰ *Id.* (search for Third National Report to compare data).¹⁵¹ *Id.* (search for Fourth National Report to compare data).

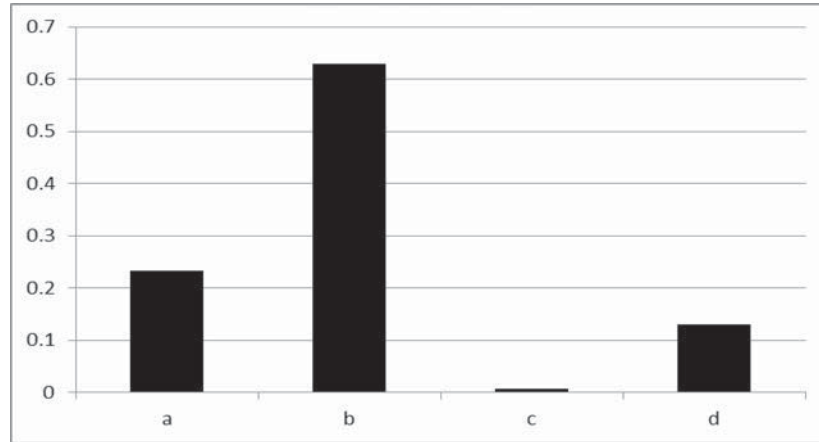
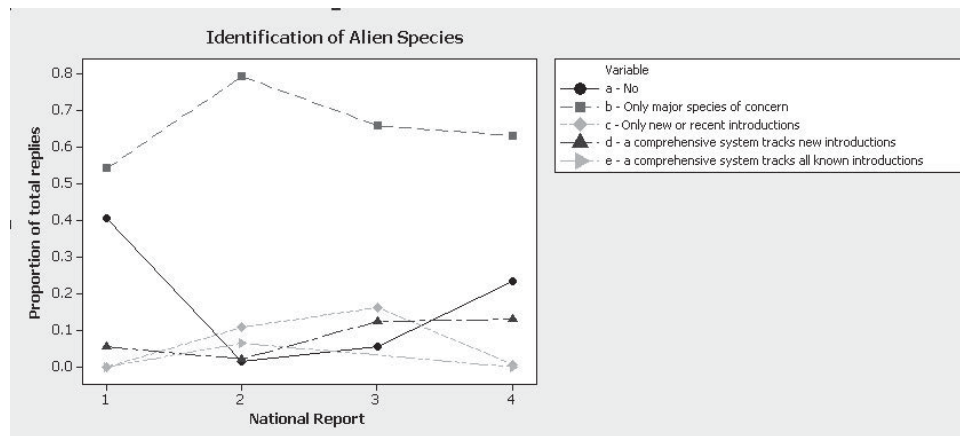


Diagram 1.
Tracking State Practice: Identification of Alien Species¹⁵²
(Question 88)



From the time of the First National Report to the time of the Fourth National Report the percentage of states that had not identified or tracked alien species dropped to almost half.¹⁵³ The figures start at 40.4% in the First National Report, then dip to 1.46% and 5.7% in the Second and Third National Reports,¹⁵⁴ before settling on 23.4% in the

¹⁵² *Id.* See *supra* Tables 1.1–1.4 for a breakdown of data used.

¹⁵³ See *supra* Tables 1.1, 1.3–1.4.

¹⁵⁴ *Id.*

Fourth National Report.¹⁵⁵ By the same token, the percentage of states introducing comprehensive tracking systems is steadily increasing.¹⁵⁶ Data from the First National Report indicates that 5.5% of states had established comprehensive tracking systems,¹⁵⁷ a statistic that improved to 13% by the Fourth National Report.¹⁵⁸ Nevertheless, the percentage of states that have introduced comprehensive measures still remains small.¹⁵⁹

Perhaps the most significant changes are those relating to identification and tracking of major alien species. The statistics demonstrate that while 54.1% of states at the time of the First National Report had introduced some regulation with respect to major alien species,¹⁶⁰ this had increased to 89.22% and 81.9% in the Second and Third National Reports¹⁶¹ before settling on 70% in the Fourth National Report.¹⁶² Clearly, the bulk of states are endeavouring to identify alien species and are concentrating their efforts on what they consider are the most pressing problems—namely identifying and tracking alien species of concern. In addition, more states are implementing tracking systems for new introductions, up from 8.6% in the First National Report to 13% in the Fourth National Report.¹⁶³

One point that requires clarification is a variance in the trend of regulation that occurs between the Third and Fourth National Reports. Diagram One appears to indicate that between these two reports states were generally decreasing their efforts in identifying alien species, although more states were tracking new introductions.¹⁶⁴ One explanation for the spike stems from the different reporting formats adopted by the COPs between the Third and Fourth National Reports. To provide information for Module 6.1 in the Fourth National report, parties needed to include detail on identification of pathways of introduction.¹⁶⁵ Pathway regulation targets the means by which species gain entry and includes

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

¹⁵⁷ *See supra* Table 1.1.

¹⁵⁸ *See supra* Table 1.4.

¹⁵⁹ *See supra* Diagram 1.

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ *Id.*

¹⁶⁴ *Id.*

¹⁶⁵ AUSTRALIA, MINISTRY OF ENV'T & FORESTRY, AUSTRALIA FOURTH NATIONAL REPORT TO THE UNITED NATIONS CONVENTION ON BIOLOGICAL DIVERSITY 79 (Mar. 2009) [hereinafter AUSTRALIA FOURTH NATIONAL REPORT], available at <http://www.cbd.int/doc/world/au/au-nr-04-en.pdf>.

evaluation of activities, such as tourism and trade.¹⁶⁶ It is a form of preventative regulation, because it can facilitate the detection and stopping of accidental introductions.¹⁶⁷ At the same time, pathway regulation involves more complex processes than targeting individual species,¹⁶⁸ which may explain why states are hesitant to utilize pathway regulation.

In general, states have assumed an understandably pragmatic approach towards identifying and tracking alien species. By focusing on recent introductions, regulators can detect early signs of invasiveness and thus implement measures in a timely manner.¹⁶⁹ Similarly, targeting alien species of concern allows regulators to expend resources where the need for eradication and control measures is most pressing.¹⁷⁰ However, knowledge of the presence of alien species within a jurisdiction is important, for one in ten alien species will have some ecological impact.¹⁷¹ Consequently, the greater the number of alien species within a jurisdiction, the more likely it is that IAS will also be found within that jurisdiction.¹⁷²

Moreover, the danger of a long-term focus on recent introductions and alien species of concern is that IAS regimes target species only after they have become invasive.¹⁷³ This leads to the development of reactive measures that generally do not accord with the notion of prevention anticipated by the Guiding Principles.¹⁷⁴ As a stranger to its new location, every alien species has the potential to inflict severe damage upon the biodiversity of its host.¹⁷⁵ Accordingly, regulators need to be aware both of the presence of alien species and of the risks they pose.

C. Assessment of Risks

Question 89 in the Second National Report and Question 46 in Third National Report focus on whether states have assessed the risks

¹⁶⁶ Convention on Biological Diversity, Montreal, Cana., Mar. 12–16, 2001, *Invasive Alien Species: Comprehensive Review on the Efficacy of Existing Measures for their Prevention, Early Detection, Eradication and Control*, ¶¶ 6–8, U.N. Doc. UNEP/CBD/SBSTTA/6/7 (Dec. 20, 2000) [hereinafter *Invasive Alien Species*].

¹⁶⁷ *Id.* ¶¶ 5–6.

¹⁶⁸ *Id.* ¶¶ 7–9.

¹⁶⁹ *Id.* ¶¶ 5, 7, 48.

¹⁷⁰ See GLOBAL INVASIVE SPECIES PROGRAMME: GLOBAL STRATEGY ON INVASIVE ALIEN SPECIES 25–27 (J.A. McNeely et al. eds., 2001), available at <http://www.fws.gov/invasives/volunteerstrainingmodule/pdf/bigpicture/globalstrategy.pdf>.

¹⁷¹ GLOBAL BIODIVERSITY OUTLOOK 3, *supra* note 33, at 64.

¹⁷² *Id.*

¹⁷³ See *Invasive Alien Species*, *supra* note 166, ¶¶ 50–53.

¹⁷⁴ See COP 6, *supra* note 1, at 240–47.

¹⁷⁵ *Invasive Alien Species*, *supra* note 166, ¶¶ 85–93.

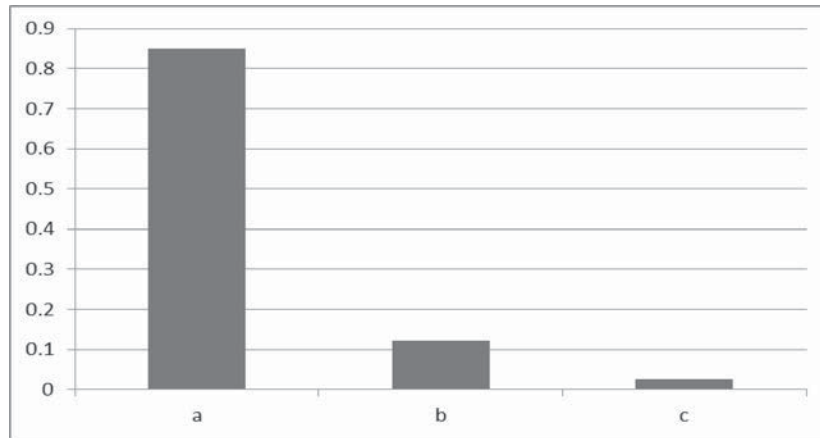
from alien species.¹⁷⁶ The two questions were phrased in virtually identical terms and statistics from the four national reports are set out below, together with a diagram collating the statistics over the four reports.¹⁷⁷

Question 89 in the Second National Report and Question 46 in the Third National Report¹⁷⁸:

Has your country assessed the risks posed to ecosystems, habitats or species by the introduction of these alien species?	
a)	no
b)	only some alien species of concern have been assessed
c)	most alien species have been assessed

TABLE 2.1
ASSESSMENT OF RISKS FIRST NATIONAL REPORT¹⁷⁹

Has your country assessed the risks posed to ecosystems, habitats or species by the introduction of these alien species?				
a	b	c	Total responses to this question	Not addressed/ no response
124	18	4	146	4
84.93%	12.33%	2.74%	100%	



¹⁷⁶ Compare CBD SECOND, *supra* note 125, at 29, with CBD THIRD, *supra* note 125, at 70.

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

¹⁷⁹ See generally National Reports and NBSAPs, *supra* note 24 (search National Reports by nation and title to compare data).

TABLE 2.2
ASSESSMENT OF RISKS SECOND NATIONAL REPORT¹⁸⁰

Has your country assessed the risks posed to ecosystems, habitats or species by the introduction of these alien species?				
a	b	c	Total responses to this question	Not addressed/ no response
23	106	4	133	4
17.30%	79.7%	3%	100%	

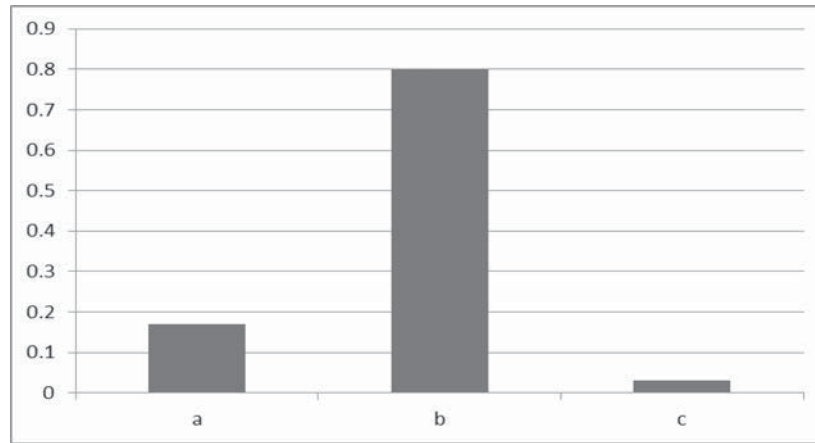


TABLE 2.3
ASSESSMENT OF RISKS THIRD NATIONAL REPORT¹⁸¹

Has your country assessed the risks posed to ecosystems, habitats or species by the introduction of these alien species?				
a	b	c	Total responses to this question	Not addressed/ no response
20	70	14	104	10
19.23%	67.47%	13.3%	100%	

¹⁸⁰ *Id.* (search for Second National Report to compare data).

¹⁸¹ *Id.* (search for Third National Report to compare data).

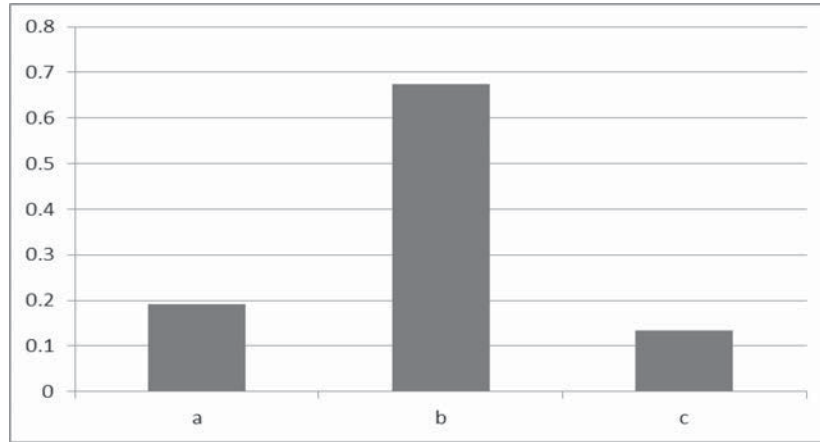
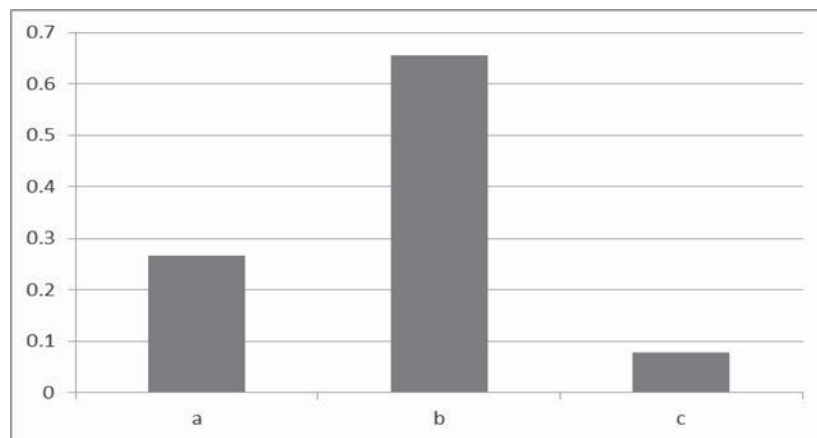


TABLE 2.4
ASSESSMENT OF RISKS FOURTH NATIONAL REPORT¹⁸²

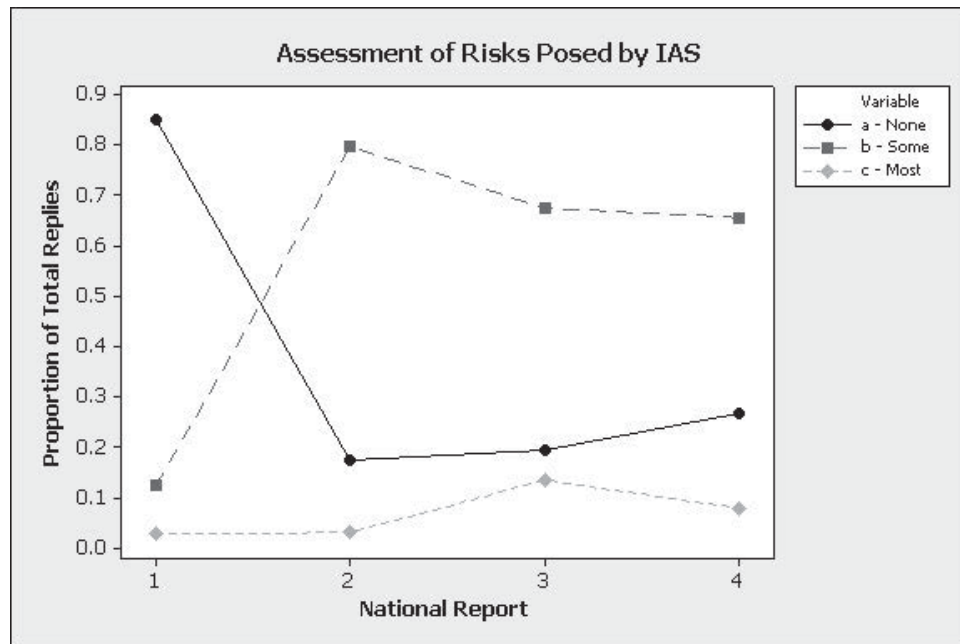
Has your country assessed the risks posed to ecosystems, habitats or species by the introduction of these alien species?				
a	b	c	Total responses to this question	Not addressed/ no response
41	101	12	154	18
26.2%	65.9%	7.9%	100%	



¹⁸² *Id.* (search for Fourth National Report to compare data).

Diagram 2.

Tracking State Practice: Assessment of Risks for Alien Species¹⁸³ (Question 89)



The tracked responses to question 89 demonstrate a significant decline in the percentage of states that are not assessing risks from alien species.¹⁸⁴ In the First National Report, for example, a large percentage of states at 84.93% either noted that they had not assessed risks associated with alien species, or were silent on this point.¹⁸⁵ By the time of the Fourth National Report, the percentage of states that had not assessed the risks of alien species had fallen to 26.23%,¹⁸⁶ or less than one-third of that found in the First National Report.¹⁸⁷ At the same time, the figures reveal an important advance in the percentage of states that have introduced evaluation mechanisms, increasing from 12.33% in the First National Report to 65.9% by the time of the Fourth National Report.¹⁸⁸

¹⁸³ *Id.* See *supra* Tables 2.1–2.4 for a breakdown of data used.

¹⁸⁴ See *supra* Diagram 2.

¹⁸⁵ See *supra* Table 2.1.

¹⁸⁶ See *supra* Table 2.4.

¹⁸⁷ See *supra* Table 2.1.

¹⁸⁸ See *id.*; *supra* Table 2.4.

This development indicates that states are indeed endeavouring to evaluate the risks associated with alien species; and if the figures for 'b' and 'c' are combined, by the time of the Fourth National report 73.8% of states are either assessing some or most risks.¹⁸⁹ Accordingly, more states are assessing the risks of alien species than states that are not. However, this conclusion needs to be tempered by the fact that the percentage of parties assessing most risks is comparatively low.¹⁹⁰ Only four parties in the First National Report indicated that they had assessed most risks, a figure that had increased to twelve by the time of the Fourth National Report.¹⁹¹ The latter represents a small 7.9% of the parties that had lodged the Fourth National Report.¹⁹² The parties from the First National Report are: Australia, Canada, the European Community, and New Zealand;¹⁹³ while the parties from the Fourth National Report are: Australia, Austria, Canada, the European Community, France, Ireland, Japan, Malta, New Zealand, Norway, Slovakia, and the United Kingdom.¹⁹⁴ One encouraging inference that can be drawn from this information is that parties with comprehensive assessment procedures are maintaining their efforts.¹⁹⁵

As with the data on identification of alien species, the trend in state practice towards assessment of alien species varies between the Third and Fourth National Reports.¹⁹⁶ In particular, the figures reveal a movement towards fewer states assessing the risks of alien species.¹⁹⁷ For similar reasons already discussed, this could be due to the type of information requested of states and in particular the more specific information requested by Module 6 in the Fourth National Report.¹⁹⁸ To answer that module, parties had to be clearer and more precise in their reporting.¹⁹⁹ To illustrate, at least seven states that indicated in the Third National Report they had assessed most risks, noted in the Fourth National Report that there was still much work to do in this respect.²⁰⁰

¹⁸⁹ *Id.*

¹⁹⁰ *Id.*

¹⁹¹ *Id.*

¹⁹² See *supra* Table 2.4.

¹⁹³ See *generally National Reports and NBSAPs, supra* note 24 (search for First National Report by nation, including Australia, Canada, European Union, and New Zealand).

¹⁹⁴ *Id.* (search for Fourth National Report by nation, including Australia, Austria, Canada, European Union, France, Ireland, Japan, Malta, New Zealand, Norway, Slovakia, and the United Kingdom).

¹⁹⁵ See *supra* Table 2.1; see also *supra* Table 2.4.

¹⁹⁶ *Id.*

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

¹⁹⁹ *Id.*

²⁰⁰ The states that ticked alternative 'c' in the Third National report are: Bangladesh,

Processes that identify alien species and assess the risks of those species are crucial components of IAS regimes. In particular, they alert regulators to the potential of alien species to become invasive and thus foster the implementation of preventative measures.²⁰¹ Indeed, the design and implementation of measures is a fundamental component of any IAS regime.

D. Measures to Regulate Invasive Alien Species

Question 90 in the Second National Report and Question 47 in the Third National Report, set out below, request parties to comment on the breadth and types of measures developed for their IAS regimes.²⁰²

QUESTION 47 IN THE SECOND NATIONAL REPORT²⁰³

Has your country undertaken measures to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species?	
a)	No measures
b)	Some measures in place
c)	Potential measures under review
d)	Comprehensive measures in place

QUESTION 47 IN THE THIRD NATIONAL REPORT²⁰⁴

Has your country undertaken measures to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species?	
a)	No measures
b)	No, but potential measures are under consideration
c)	Yes, some measures are in place
d)	Yes, comprehensive measures are in place

Cape Verde, Chile, Dominica, Estonia, Poland, and Sweden. *See generally National Reports and NBSAPs, supra* note 24 (search for Third National Report by nation). With respect to the Fourth National Report, see Bangladesh, Cape Verde, Chile, Dominica, Estonia, Poland, and Sweden. *Id.* (search Fourth National Report by nation).

²⁰¹ *What Needs to Be Done?*, CONVENTION ON BIOLOGICAL DIVERSITY, <http://www.cbd.int/invasive/done.shtml> (last visited Feb. 7, 2014).

²⁰² CBD SECOND, *supra* note 125, at 28; CBD THIRD, *supra* note 125, at 71.

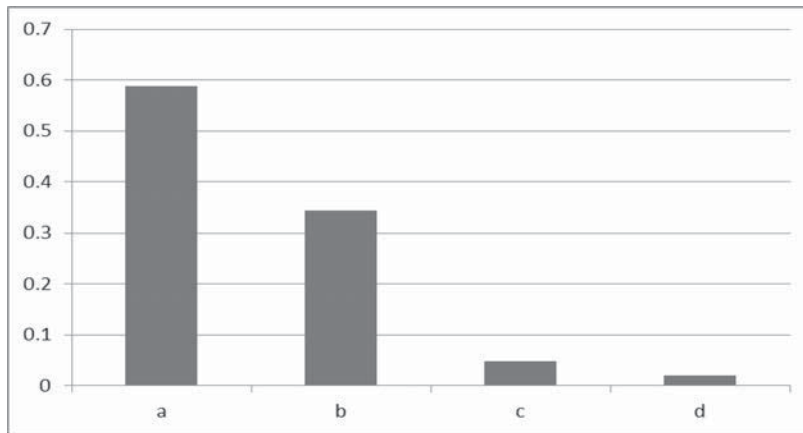
²⁰³ CBD SECOND, *supra* note 125, at 28.

²⁰⁴ CBD THIRD, *supra* note 125, at 71.

The wording of the questions remains identical although the order of options 'b' and 'c' have been swapped in the Third National Report. The data collected follows the order of responses from the Second National Report and is set out in Tables 3.1–3.4 below; while Diagram Three tracks the data across the four National Reports.

TABLE 3.1
MEASURES TO REGULATE INVASIVE ALIEN SPECIES FIRST
NATIONAL REPORT²⁰⁵

Has your country undertaken measures to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species?					
a	b	c	d	Total responses to this question	Not addressed/ no response
86	50	7	3	146	4
58.9%	34.2%	4.8%	2.1%	100%	

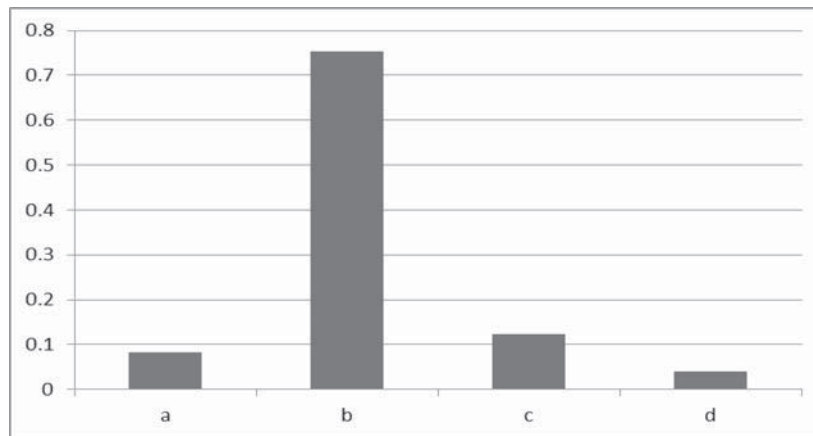


²⁰⁵ See generally *National Reports and NBSAPs*, *supra* note 24 (search for First National Report to compare data).

TABLE 3.2
 MEASURES TO REGULATE INVASIVE ALIEN SPECIES SECOND
 NATIONAL REPORT²⁰⁶

Has your country undertaken measures to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species?					
a	b	c	d	Total responses to this question*	Not addressed/ no response
12	110	18	5	146	4
8.22	75.34%	12.33%	4.11%	100%	

*13 countries gave both b and c as replies.



²⁰⁶ *Id.* (search for Second National Report to compare data).

TABLE 3.3
MEASURES TO REGULATE INVASIVE ALIEN SPECIES THIRD
NATIONAL REPORT²⁰⁷

Has your country undertaken measures to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species?					
a	b	c	d	Total responses to this question	Not addressed/ no response
4	88	10	4	106	8
3.8%	83%	9.4%	3.8%	100%	

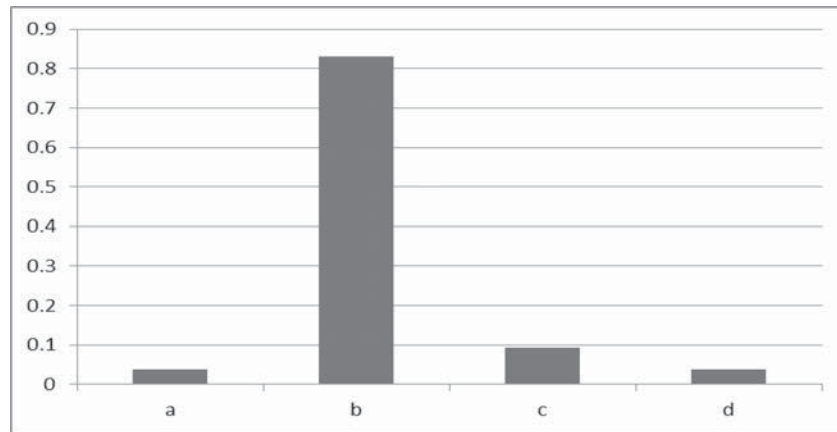


TABLE 3.4
MEASURES TO REGULATE INVASIVE ALIEN SPECIES FOURTH
NATIONAL REPORT²⁰⁸

Has your country undertaken measures to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species?					
a	b	c	d	Total responses to this question	Not addressed/ no response
44	101	2	7	154	18
28.6%	65.6%	1.3%	4.5%	100%	

²⁰⁷ *Id.* (search for Third National Report to compare data).

²⁰⁸ *Id.* (search for Fourth National Report to compare data).

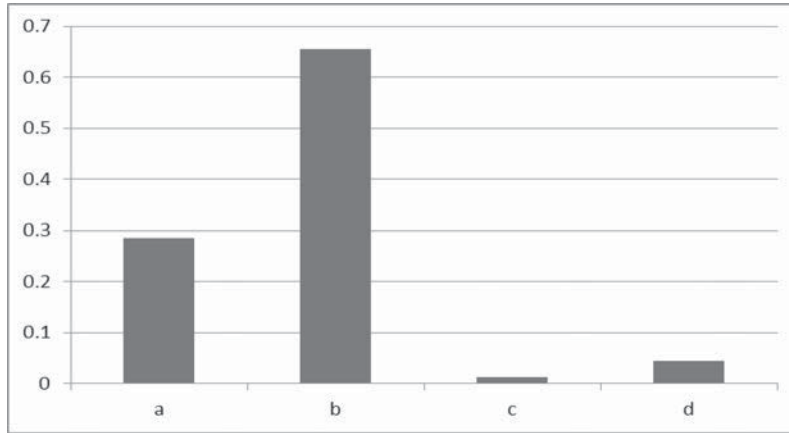
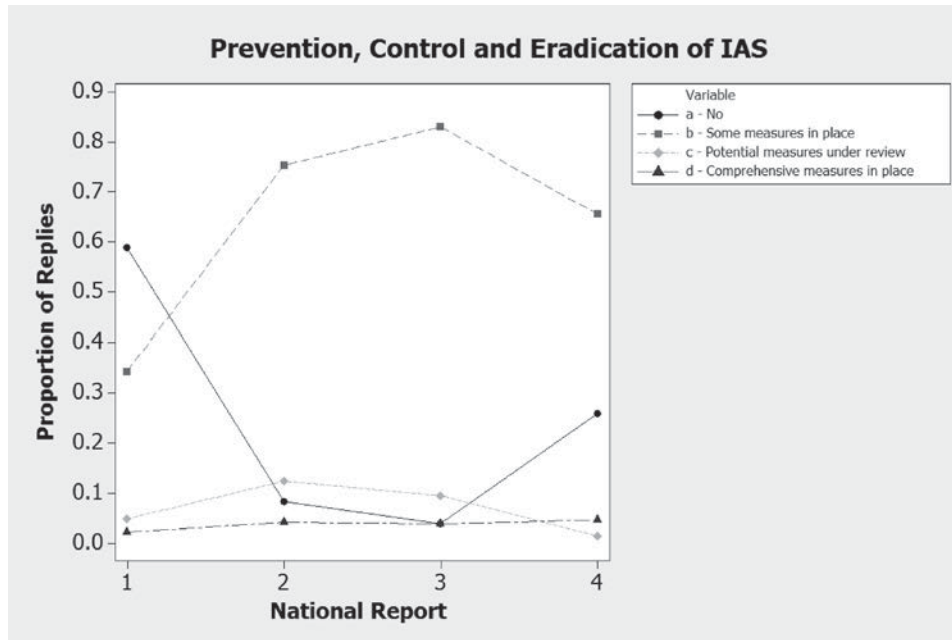


Diagram 3.
Tracking State Practice: Measures to Regulate Invasive Alien Species (Question 90)²⁰⁹



²⁰⁹ *Id.* See *supra* Tables 3.1–3.4 for a breakdown of data used.

As with the identification and assessment of risks of alien species, the percentage of states that selected response 'a,' indicating they had no measures in place, has decreased substantially from the First to the Fourth National Reports.²¹⁰ This statistic started from a high of 58.9% and reduced to 28.6%—a diminution of more than half.²¹¹ All the same, the figure of 28.6% is still considerably higher than the percentage of states that noted they had no IAS measures in the previous two reports—8.22% for the Second National Report²¹² and 3.8% for the Third National Report.²¹³ One conclusion that can be drawn from these statistics is that between the Third and Fourth reports 24.8% of the parties had stopped introducing IAS measures.²¹⁴ Indeed, this deduction is at least partially supported by a somewhat analogous trend detected from response 'b' relating to states that have introduced at least some measures.²¹⁵ Although this figure has increased from 34.2% in the First National Report to 65.6% in the Fourth National Report,²¹⁶ the percentage of 65.6% is still lower than the 75.34% and 83% of states that indicated they had introduced some measures in the Second and Third National Reports respectively.²¹⁷

However, states may not necessarily be decreasing their IAS activities. To start with, as new members join the CBD, they need time to establish their regimes and this lead-in period can result in statistical fluctuations. For example, one new member, Montenegro, noted that it had started undertaking inventories of alien species and had also introduced measures to control some IAS, such as those introduced by ballast water; yet understandably, regulators were yet to introduce comprehensive measures.²¹⁸ In a similar vein, Serbia, another recent member, noted in its National Report that authorities do not systematically regulate IAS, although some laws are in place to deal with particular types of species, such as those that impact the forestry industry.²¹⁹ However,

²¹⁰ See *supra* Tables 3.1–3.4.

²¹¹ Compare *supra* Table 3.1, with *supra* Table 3.4.

²¹² See *supra* Table 3.2.

²¹³ See *supra* Table 3.4.

²¹⁴ See *supra* Table 3.3, 3.2.

²¹⁵ See *supra* Diagram 3.

²¹⁶ Compare *supra* Table 3.1, with *supra* Table 3.4.

²¹⁷ Compare *supra* Table 3.4, with *supra* Table 3.2, and *supra* Table 3.3.

²¹⁸ MONTENEGRO, MINISTRY OF ENV'T & FORESTRY, MONTENEGRO FOURTH NATIONAL REPORT OF MONTENEGRO TO THE CONVENTION ON BIOLOGICAL DIVERSITY 26 (2010), available at <http://www.cbd.int/doc/world/me/me-nr-04-en.pdf>.

²¹⁹ REPUBLIC OF SERBIA, MINISTRY OF ENV'T & FORESTRY, REPUBLIC OF SERBIA FOURTH

an influx of new members does not explain variations of the magnitude just discussed.

Another explanation, which has already been considered, stems from the fact that the Fourth National Report requires parties to explain their activities in precise terms and by reference to outcomes.²²⁰ This is significant because the statistics generated for the Fourth National Report are sourced from these explanations, rather than from self-selection made by the parties ticking an alternative. In some cases, the more detailed explanations of the Fourth National Report may not equate with a self-selection in prior years. For example, in the Third National Report, Latvia and Samoa indicated they had implemented comprehensive measures.²²¹ Yet, an examination of their Fourth National Report reveals that each is in the process of developing their IAS regimes. Latvia refers to regulation of one or two species such as Hogweed,²²² while Samoa notes that the government is in the process of planning legislation to deal with IAS.²²³

In addition, a random sampling of nine states from the 83% in the Third National Report that disclosed they had implemented some measures²²⁴ indicates that, for the most part these measures tend to form clusters around three types of laws that do not necessarily target the protection of biodiversity at large. The first group concentrates on laws applying to specified areas, such as protected areas, nature reserves, or some capital regions,²²⁵ the second group focuses on eradication and

NATIONAL REPORT TO THE UNITED NATIONS CONVENTION ON BIOLOGICAL DIVERSITY 88 (2010), available at <http://www.cbd.int/doc/world/rs/rs-nr-04-en.pdf>.

²²⁰ *National Reporting and the Next Global Biodiversity Outlook*, *supra* note 102, ¶ 3.

²²¹ LATVIA, MINISTRY OF ENV'T & FORESTRY, LATVIA THIRD NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 87 (2005), available at <http://www.cbd.int/doc/world/lv/lv-nr-03-en.pdf>; SAMOA, MINISTRY OF ENV'T & FORESTRY, SAMOA THIRD NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 73 (2006), available at <http://www.cbd.int/doc/world/ws/ws-nr-03-en.pdf>.

²²² LATVIA, MINISTRY OF ENV'T & FORESTRY, LATVIA FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 18 (2010), available at <http://www.cbd.int/doc/world/lv/lv-nr-04-en.pdf>.

²²³ SAMOA, MINISTRY OF ENV'T & FORESTRY, SAMOA FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 34, 45, 67 (2009) [hereinafter SAMOA FOURTH NATIONAL REPORT], available at <http://www.cbd.int/doc/world/ws/ws-nr-04-en.pdf>.

²²⁴ The countries are the Bahamas, the Czech Republic, Lebanon, Lesotho, Malaysia, Rwanda, Uganda, the United Kingdom of Great Britain and Northern Ireland, and Zimbabwe. See *National Reports and NBSAPs*, *supra* note 24 (search for Third National Report by nation name to compare data).

²²⁵ In Belgium, for example, IAS regulation deals mainly with protected areas. See generally BELGIUM, MINISTRY OF ENV'T & FORESTRY, BELGIUM THIRD NATIONAL REPORT

containment measures that center on one or two species causing major damage to agriculture, farming, or aquaculture;²²⁶ and the third group concentrates on quarantine regulation that again leans towards protecting agriculture, farming, and aquaculture.²²⁷ Thus, at the time of the Third National Report, although an overwhelming majority of states considered they had implemented measures that complied with the CBD, the focus of those measures centered on the agricultural area, or on a handful of other species of concern.²²⁸

As with the identification and assessment of alien species, this type of focus is understandable. It demonstrates a rational approach that channels resources towards species, regions, and product sectors where there is an urgent need for a regulatory response. It is mirrored by the fact that across the four National Reports only a small number of states have comprehensive measures in place, a statistic that hovers between three and seven members, representing between 2.1% and 4.11% of the contracting parties.²²⁹ One explanation for this situation stems at least partly from the problematic issue of resourcing.

E. Resourcing

Data on resourcing was collated in the format of question 87 in the Second National Report.²³⁰ This question referred to resourcing for environmental concerns in general²³¹—as did the information in the First

TO THE CONVENTION ON BIOLOGICAL DIVERSITY (2005), available at <http://www.cbd.int/doc/world/be/be-nr-03-en.pdf>. A major piece of legislation, the *Forest Decree*, prohibits the introduction of plants and animals in public forests and forest reserves of the Flemish region without a permit; in a similar vein, it is prohibited to introduce non-indigenous bird species into the wild in the Brussels Capital Region. However, implementation and monitoring activities are limited and apply to the most noticeable IAS, such as the Nile Goose and the Canadian Goose. *Id.* at 98–99.

²²⁶ *Id.* (with respect to the Nile Goose and Canadian Goose). Also in Lebanon, little legislation has been enacted that relates to IAS, but one law does prohibit the import of Cedar seeds, saplings, and plants. LEBANON, MINISTRY OF ENV'T & FORESTRY, LEBANON THIRD NATIONAL REPORT OF LEBANON TO THE CONVENTION ON BIOLOGICAL DIVERSITY 133 (2005), available at <http://www.cbd.int/doc/world/lb/lb-nr-03-en.pdf>.

²²⁷ *Id.* (explaining the law in Lebanon).

²²⁸ See generally *National Reports and NBSAPs*, *supra* note 24 (search for Third National Report by nation to compare data).

²²⁹ *Id.* (search by report name to compare data).

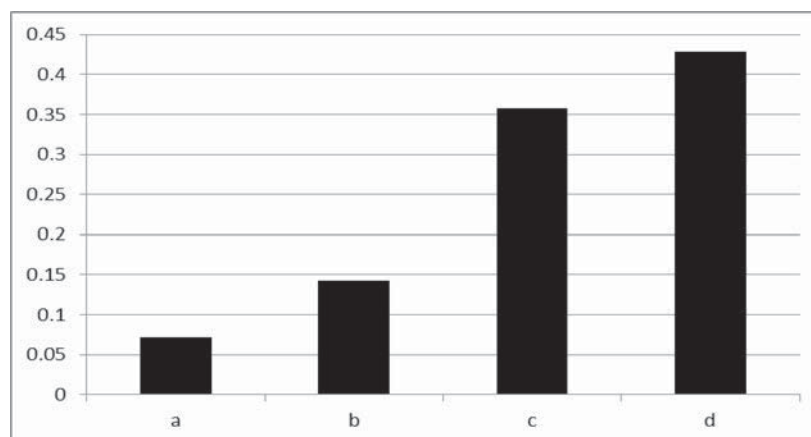
²³⁰ CBD SECOND, *supra* note 125, at 28.

²³¹ *Id.*

and Fourth National Reports.²³² The equivalent question in the Third National Report, question M of question 2, referred to resourcing specifically for IAS.²³³ Although the questions across the four National Reports are not identical, they are sufficiently similar to facilitate worthwhile observations. The individual responses are set out in Tables 4.1–4.4 and the tracked responses are set out in Diagram Four.

TABLE 4.1
RESOURCING AND THE FIRST NATIONAL REPORT²³⁴

To what extent are the resources available adequate for meeting the obligations and recommendations made?					
a) Good	b) Adequate	c) Limiting	d) Severely limiting	Total responses to this question	Not addressed /no response
1	2	5	6	14	136
7.14%	14.29%	35.71%	42.86%	100%	



²³² See, e.g., CBD FOURTH, *supra* note 127.

²³³ CBD THIRD, *supra* note 125, at 9.

²³⁴ See generally *National Reports and NBSAPs*, *supra* note 24 (search First National Report by nation to compare data).

TABLE 4.2
RESOURCING SECOND NATIONAL REPORT²³⁵

To what extent are the resources available adequate for meeting the obligations and recommendations made?					
a) Good	b) Adequate	c) Limiting	d) Severely limiting	Total responses to this question	Not addressed /no response
1	13	75	43	132	5
0.76%	9.74%	56.78%	32.72%	100%	

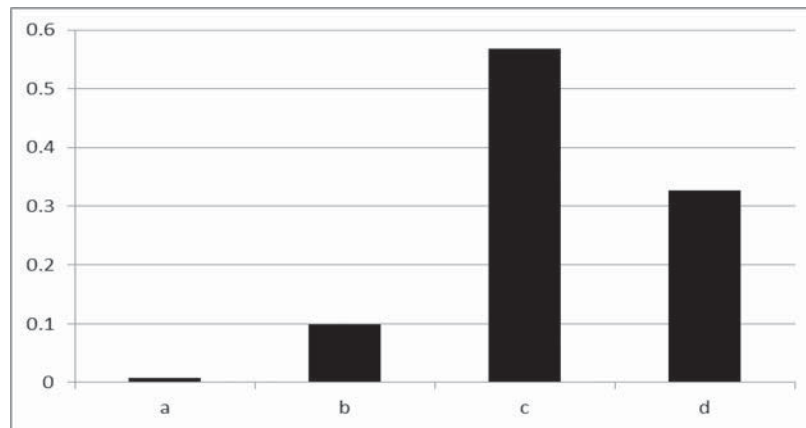


TABLE 4.3
RESOURCING THIRD NATIONAL REPORT²³⁶

To what extent are the resources available adequate for meeting the obligations and recommendations made?					
a) Good	b) Adequate	c) Limiting	d) Severely limiting	Total responses to this question	Not addressed /no response
2	5	34	53	94	20
2.1%	5.3%	36.2%	56.4%	100%	

²³⁵ *Id.* (search the Second National Report by nation to compare data).

²³⁶ *Id.* (search the Third National Report by nation to compare data).

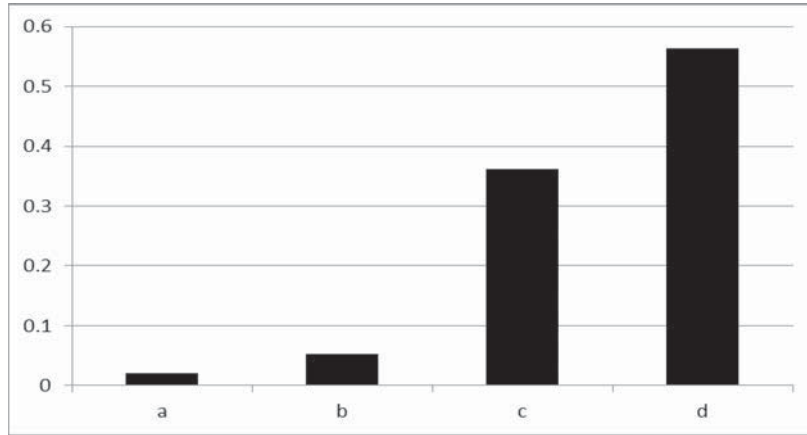
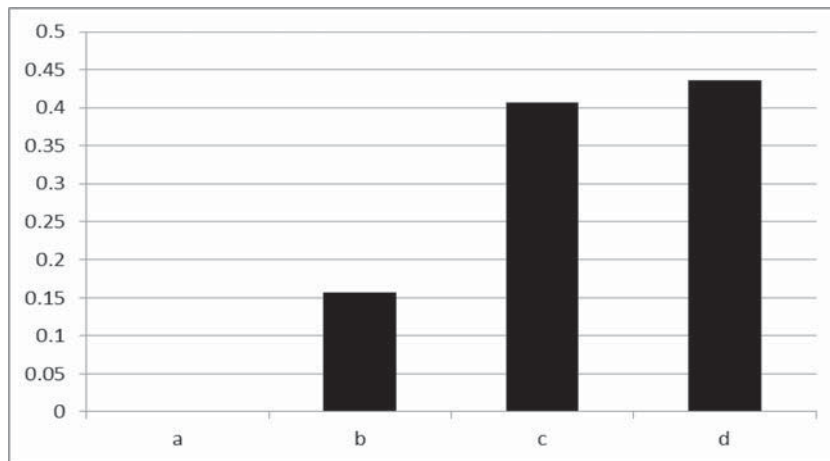


TABLE 4.4
RESOURCING FOURTH NATIONAL REPORT²³⁷

To what extent are the resources available adequate for meeting the obligations and recommendations made?					
a) Good	b) Adequate	c) Limiting	d) Severely limiting	Total responses to this question	Not addressed /no response
0	22	57	61	140	32
0%	15.7%	40.7%	43.6%	100%	



²³⁷ *Id.* (search the Fourth National Report by nation to compare data).

Over the four National Reports, only one or two states considered that they had good resources available to them, and a similarly small percentage of states felt that resources were adequate.²³⁸ In the latter case, the figures varied from a low of 5.3% to a high of 15.7%.²³⁹ By way of contrast, the overwhelming majority indicated that resource constraints were limiting, or severely limiting, to effective environmental regulation: 78.5% for the First National Report; 92.6% for the Second National Report; 89.5% for the Third National Report; and 84.3% for the Fourth National Report.²⁴⁰ It is also worth noting that the figures for the Third National Report specifically relate to resourcing for IAS,²⁴¹ and the fact that fully 89.5% of states consider lack of resourcing a limiting factor,²⁴² signposts that IAS regulation is just as constrained by lack of resources as environmental regulation in general.

Not surprisingly, when the responses to question 87 were correlated with the Human Development Index (“HDI”),²⁴³ the results demonstrate a clear link between the ranking of states and the availability of resources.²⁴⁴ The HDI is an index that draws together matters such as life expectancy, standard of living, child welfare, and education.²⁴⁵ The Index can identify developed and developing states and classifies countries into four categories of human development: very high, high, medium, or low.²⁴⁶ In correlating the IAS data with the HDI, no special weighting was applied for responses with a high selection rate. Consequently, while the Fourth National Report had the greatest number of responses,²⁴⁷ these were not discounted to bring them in line with reports, such as the First National Report that had the least number of responses.²⁴⁸ Table 5 demonstrates that those states which considered their resourcing to be good or adequate were ranked higher on the HDI than which considered their resourcing to be inadequate.

²³⁸ See *supra* Tables 4.1–4.4.

²³⁹ See *supra* Tables 4.3, 4.4.

²⁴⁰ Compare *supra* Table 4.1, with *supra* Table 4.2, *supra* Table 4.3, and *supra* Table 4.4.

²⁴¹ See CBD THIRD, *supra* note 125.

²⁴² See *supra* Table 4.3.

²⁴³ JENI KLUGMAN, HUMAN DEVELOPMENT REPORT 2011, SUSTAINABILITY AND EQUITY: A BETTER FUTURE FOR ALL 127–30 (2011).

²⁴⁴ See *infra* Table 5.

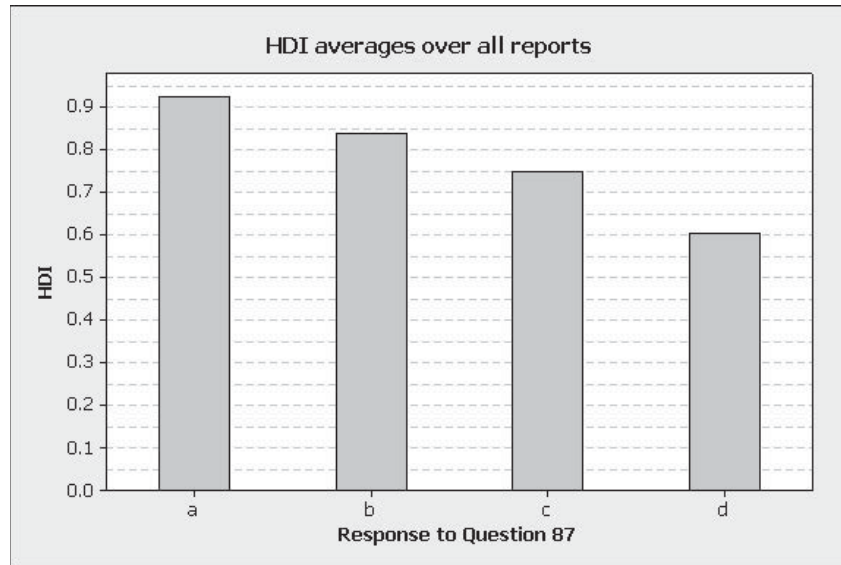
²⁴⁵ *Id.* at 23.

²⁴⁶ *Id.* at 127–30; *supra* Table 1.

²⁴⁷ See *supra* Table 4.4.

²⁴⁸ See *supra* Table 4.1.

TABLE 5
 RESOURCING CORRELATED WITH THE HDI²⁴⁹



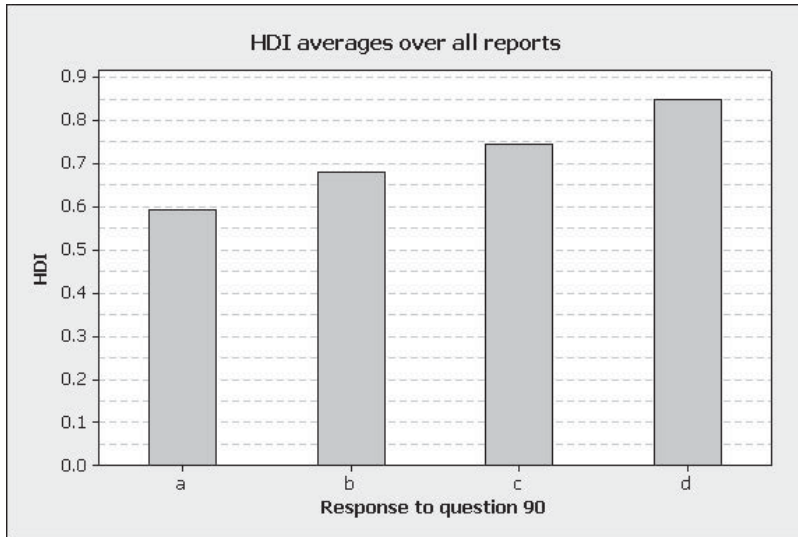
It is also worth noting that in the case of assessment of risks posed by alien species, discussed above in part 4.3, each of the states that indicated they had assessed most of the risks associated with alien species were classified by the HDI as having a high level of human development.²⁵⁰ Moreover, the data in Table 6 correlates the responses to Question 90,²⁵¹ dealing with the implementation of IAS measures, with the HDI, and again reveals that states with lower rankings are least likely to have introduced measures to deal with IAS or to be considering the introduction of such measures.

²⁴⁹ See generally *National Reports and NBSAPs*, *supra* note 24 (search by Second National Report and nation to compare data responses to question 87); see also KLUGMAN, *supra* note 243, at 127–30.

²⁵⁰ KLUGMAN, *supra* note 243, at 127.

²⁵¹ CBD SECOND, *supra* note 125, at 28.

TABLE 6
IAS MEASURES CORRELATED WITH THE HDI²⁵²



Lack of resources is an ever-present phenomenon that potentially affects every facet of environmental regulation. The difficulties states face in implementing IAS regimes in the face of resource constraints²⁵³ channel directly into evaluation of whether states are observing international law and a separate but related issue, the efficacy of that law.

IV. OBSERVANCE AND EFFECTIVENESS OF IAS OBLIGATIONS

The discussion thus far indicates that more states are complying with some of their IAS obligations than are not complying. However, the depth and quality of that compliance varies, meaning that progress towards 'observing' the CBD is occurring at a slow and uneven pace.

As already noted, binding obligations derive from Articles 8(h) and 26 of the CBD,²⁵⁴ while non-binding recommendations flow from the

²⁵² See generally *National Reports and NBSAPs*, *supra* note 24 (search by Second National Report and nation to compare data responses to question 90); see also KLUGMAN, *supra* note 243, at 127–30.

²⁵³ See *supra* Tables 4.1–4.4.

²⁵⁴ Convention on Biological Diversity, *supra* note 2, at art. 8(h), 26.

Guiding Principles.²⁵⁵ Article 8(h) that deals with the need for states to prevent the entry of IAS and/or eradicate and control IAS is prefaced by the phrase “as far as possible and as appropriate.”²⁵⁶ This phrase is repeated in Article 4.3 of the Guiding Principles in the section dealing with the role of states.²⁵⁷ Article 26 that refers to reporting requirements is not subject to a similar qualification.²⁵⁸ Consequently, while states need to comply with Article 26 without excuse,²⁵⁹ states need only comply with Article 8(h) and the Guiding Principles, to the extent of their capabilities.²⁶⁰ Such qualifications can foster a hollow form of compliance, where states only observe those parts of the IAS regime that are expedient, or that are otherwise in the individual state’s own interest, or that they would have fulfilled in any event. If this is the case, it calls into question whether states are truly observing international law.

As already discussed, the depth of a state’s observance of their IAS obligations is interwoven with issues of resourcing. Given that most states face at least some technological and resource constraints,²⁶¹ states can be said to ‘observe’ international law when they undertake activities at a reduced level, but which nevertheless align with their capabilities. Indeed, such a stance accords with the correlation between states, the comprehensiveness of their IAS measures, and their ranking on the HDI—those states with lower levels of compliance also have the least advanced technological and resource bases.²⁶²

By way of contrast, reporting requirements are not tempered by states’ capabilities. Article 26 simply states that every state “shall” report.²⁶³ In practice, the type of information the COPs emphasize is highly influential.²⁶⁴ It not only determines matters for reporting, but also shapes State practice by highlighting areas of significance for domestic

²⁵⁵ See COP 6, *supra* note 1.

²⁵⁶ Convention on Biological Diversity, *supra* note 2, at art. 8(h).

²⁵⁷ COP 6, *supra* note 1, at 249 (Guiding Principle 4.3 notes that states should identify as far as possible species that could become invasive and make such information available to other states).

²⁵⁸ Convention on Biological Diversity, *supra* note 2, at art. 26.

²⁵⁹ *Id.*

²⁶⁰ COP 6, *supra* note 1, at 247–48.

²⁶¹ See *supra* Table 4.3; *supra* Table 4.4.

²⁶² See *supra* Table 6.

²⁶³ Convention on Biological Diversity, *supra* note 2, at art. 26.

²⁶⁴ Stuart R. Harrop & Diana J. Pritchard, *A Hard Instrument Goes Soft: The Implications of the Convention on Biological Diversity’s Current Trajectory*, 21 GLOBAL ENVTL. CHANGE 474, 477, 479 (2011).

biodiversity regimes.²⁶⁵ The Fourth National Report for example, focused on identification of pathways of introduction and development of management plans for major IAS.²⁶⁶ It did not stress compliance with Article 8(h) and the Guiding Principles in all respects.²⁶⁷ Thus, the reporting requirements set by the COPs are encouraging states to build their regimes in explicit stages.

This fact on its own does not contradict Henkin's statement. There is nothing in his pronouncement to indicate that observance happens in one fell swoop.²⁶⁸ Indeed, one of the features of framework conventions is the continuous dialogue that fleshes out treaty provisions and which forms part of the 'observance' process.²⁶⁹ Salient features center on the pattern and long-term progress towards compliance.²⁷⁰ Koh has concluded that when states consciously comply with or observe international law, even when not expedient, this becomes a habit and settles into 'obedience.'²⁷¹ Yet observance may be viewed across a scale that ranges from non-observance, through to shallow observance, deep observance and finally, obedience.²⁷² Although states themselves may consider they are observing international law by implementing domestic measures that sit towards the lower end of the scale, states nevertheless may produce ineffective regimes.²⁷³ Such is the case where their obligations may be so qualified and the observance threshold set so low that their responsibilities are not sufficient to deal with the problem at hand.²⁷⁴ Moreover, a global perspective of 'observance' adds an extra gloss to this problem, because it may not capture variables that potentially distort the relationship between observance and outcomes. Developing states for example may have a wealth of biodiversity, but not be in a position to provide for optimum protection. Accordingly, this magnifies problems with environmental outcomes where states regularly observe their commitments towards the lower end of the scale. In this regard, an overview of state practice and IAS is telling.

²⁶⁵ *Id.*

²⁶⁶ See generally CBD FOURTH, *supra* note 127.

²⁶⁷ *Id.*

²⁶⁸ HENKIN, *supra* note 5, at 47.

²⁶⁹ Harold Hongju Koh, *Why Do Nations Obey International Law?*, 106 YALE L.J. 2599, 2601, 2642 (1996).

²⁷⁰ *Id.* at 2655.

²⁷¹ *Id.*

²⁷² *Id.* at 2602, 2640.

²⁷³ Harrop & Pritchard, *supra* note 264, at 476.

²⁷⁴ *Id.* at 475.

To begin with, the regime established by the CBD has facilitated many positive accomplishments, especially with respect to increasing awareness of the problem of IAS.²⁷⁵ As the CBD itself has noted, broad-ranging activities such as the preparation of national biodiversity strategies and action plans have encouraged states to revise specific components of their regimes, including the control of IAS.²⁷⁶ By way of illustration, the CBD notes that advances in IAS regulation “have helped a number of species . . . move to a lower extinction risk category.”²⁷⁷ At the same time, state practice still demonstrates many weaknesses. Few states, for example, have implemented the Guiding Principles to any meaningful extent.²⁷⁸ Question 52 in the Third National Report²⁷⁹ elicited information on this very point and the responses set out in Table 7 indicate that only 30.5% of states had used the Guiding Principles.²⁸⁰

TABLE 7
USE OF THE GUIDING PRINCIPLES²⁸¹

Question 52: Has your country reviewed relevant policies, legislation and institutions in the light of the Guiding Principles, and adjusted or developed policies, legislation and institutions? (Decision VI/23):						
a No	b No, but review under way.	c Yes, review completed and adjustment proposed.	d Yes, adjustment and development ongoing.	e Yes, some adjustment and development completed.	Total responses to this question	Not addressed /no response
43	30	11	15	6	105	9
41%	28.5%	10.5%	14.3%	5.7%	100%	

The Fourth National Report did not specifically address the use of the Guiding Principles;²⁸² however, in order make the Principles operational, states need at least to identify alien species and assess their risks. Although progressively more states are in fact complying with

²⁷⁵ CONVENTION ON BIOLOGICAL DIVERSITY, REVIEW OF EFFICIENCY AND EFFICACY OF EXISTING LEGAL INSTRUMENTS APPLICABLE TO INVASIVE ALIEN SPECIES 8 (2001), available at <http://cbd.int/doc/publications/cbd-ts-02.pdf>.

²⁷⁶ GLOBAL BIODIVERSITY OUTLOOK 3, *supra* note 33, at 22.

²⁷⁷ *Id.* at 9.

²⁷⁸ *See infra* Table 7.

²⁷⁹ CBD THIRD, *supra* note 125, at 72.

²⁸⁰ *See infra* Table 7.

²⁸¹ *See generally National Reports and NBSAPs, supra* note 24 (search Third National Report by nation to compare data).

²⁸² *See* CBD FOURTH, *supra* note 127.

these obligations,²⁸³ the Fourth National Report reveals that only 13.6% of states had identified and tracked most alien species, and fewer still at 7.9% had assessed their risks.²⁸⁴ Given that these obligations are crucial processes within the Guiding Principles,²⁸⁵ the low compliance rate also indicates a correspondingly low level of uptake of the Principles. Moreover, lack of knowledge of alien species and their risks points to further gaps in the knowledge base, including lack of knowledge of the invasion process and its consequences. Ultimately, such failings potentially result in ineffective regulation. Indeed, as the CBD noted in 2010, goals towards regulating pathways of invasion and implementing management plans for major IAS have not been met globally.²⁸⁶

Informational deficiencies also mean that states will have difficulty implementing important management cornerstones, such as the precautionary approach and the ecosystem approach, both of which are promoted by the Guiding Principles.²⁸⁷ The ecosystem approach, for example, recommends that decisions be decentralized to the lowest appropriate level;²⁸⁸ that managers consider the impacts of their activities on adjacent and other ecosystems;²⁸⁹ and that varying temporal scales and lag-effects should be taken into account for the long-term.²⁹⁰ Each of these recommendations requires a sufficient level of knowledge to facilitate implementation. Similarly, the precautionary approach requires a minimum threshold of knowledge for regulators to determine whether environmental threats are serious or irreversible and whether measures will be cost-effective.²⁹¹

The problems with integrating these two approaches are exemplified by the responses to Questions Y and D in the Third National report,²⁹² set out in Tables Eight and Nine below. The response to Question Y reveals that 76% of states found using the ecosystem approach a medium to

²⁸³ See generally *National Reports and NBSAPs*, *supra* note 24 (search by National Report and nation to compare data).

²⁸⁴ *Id.* (search by Fourth National Report and nation to compare data).

²⁸⁵ COP 6, *supra* note 1, at 248–49 (referencing Guiding Principles 4.3, 5, 8).

²⁸⁶ GLOBAL BIODIVERSITY OUTLOOK 3, *supra* note 33, at 18.

²⁸⁷ COP 6, *supra* note 1, at 247–49 (referencing Guiding Principles 1 and 3).

²⁸⁸ *Ecosystem Approach Principles*, CONVENTION ON BIOLOGICAL DIVERSITY, <http://www.cbd.int/ecosystem/principles.shtml> (last visited Feb. 7, 2014) (describing the approach in Principle 2).

²⁸⁹ *Id.* (describing the approach in Principle 3).

²⁹⁰ *Id.* (describing the approach in Principle 8).

²⁹¹ COP 6, *supra* note 1, at 251 (describing the approach in Principle 15); Convention on Biological Diversity, *supra* note 2, at Preamble.

²⁹² See *infra* Table 8; *infra* Table 9.

high challenge; while the response to Question D indicates that fully 86% of states found using the precautionary approach a medium to high challenge.²⁹³ Taking into consideration the fact that the Guiding Principles were adopted in 2002,²⁹⁴ and were acknowledged as the Interim Guiding Principles two years before that,²⁹⁵ states should have made greater progress towards integration of the principles. Moreover, while these figures relate to the Third National Report, it is reasonable to conclude that in the absence of comprehensive information-gathering and assessment procedures, a comparable situation exists for the Fourth National Report.

TABLE 8
ECOSYSTEM APPROACH AND IAS MEASURES²⁹⁶

Question Y: The lack of knowledge and practice of ecosystem-based approaches to management:					
a Challenge successfully overcome	b Low Challenge	c Medium Challenge	d High Challenge	Total responses to this question	Not addressed /no response
0	21	38	30	89	25
0%	24%	43%	33%	100%	

TABLE 9
PRECAUTIONARY PRINCIPLE AND IAS MEASURES²⁹⁷

Question D: The lack of precautionary and proactive measures:					
a Challenge successfully overcome	b Low Challenge	c Medium Challenge	d High Challenge	Total responses to this question	Not addressed/ no response
1	12	34	45	92	22
1%	13%	37%	49%	100%	

Two features with respect to the ecosystem approach and IAS are significant. First, the ecosystem approach emphasizes the dynamic

²⁹³ See *infra* Table 8; *infra* Table 9.

²⁹⁴ COP 6, *supra* note 1.

²⁹⁵ COP 5, *supra* note 47 (adopting the interim Guiding Principles as part of Decision V/8).

²⁹⁶ See generally *National Reports and NBSAPs*, *supra* note 24 (search Third National Report by nation to compare data).

²⁹⁷ *Id.* (search Third National Report by nation to compare data).

interplays amongst living organisms and also between organisms and their non-living environment “interacting as a functional unit.”²⁹⁸ In general, this encourages regulators to explore interconnections and thus promotes a broader perspective than one simply focussing on biodiversity.²⁹⁹ The ecosystem approach would, for example, draw attention to the types of problems referred to earlier in this Article with respect to the introduction of the mongoose to control the black rat. Moreover, this aspect of the ecosystem approach is likely to prove invaluable as the vagaries of climate change alter the spread and distribution of alien species and their interactions with other organisms in the ecosystem.³⁰⁰ Second, the ecosystem approach endorses consideration of sectoral interests and the full range of stakeholders in management decisions.³⁰¹ As IAS regulation frequently traverses a range of regulatory domains, effective engagement with stakeholders is important to the success of the regime.³⁰² This is especially the case where changes in domestic regulation can result in prohibitions or restrictions on the introduction or use of species that hitherto had been legal.³⁰³ If regulators are not inclusive in their approaches,

²⁹⁸ Convention on Biological Diversity, *supra* note 2, at 2. For a short discussion, see Convention on Biological Diversity, Montreal, Cana., July 7–11, 2003, *Comparison of the Conceptual Basis of the Ecosystem Approach in Relation to the Concept of Sustainable Forest Management*, ¶ 2, U.N. Doc. UNEP/CBD/EM-EA/1/6 (July 3, 2003).

²⁹⁹ IUCN, THE ECOSYSTEM APPROACH, LEARNING FROM EXPERIENCE 3 (Ecosystem Management Series No. 5) (Gill Shepherd, ed., 2008), available at <http://www.cbd.int/doc/external/iucn/iucn-ecosystem-approach-en.pdf>.

³⁰⁰ WILL STEFFEN ET AL., COMMONWEALTH OF AUSTRALIA DEPARTMENT OF CLIMATE CHANGE, AUSTRALIA'S BIODIVERSITY AND CLIMATE CHANGE: SUMMARY FOR POLICYMAKERS 2009 1 (2009), available at http://www.climatechange.gov.au/sites/climatechange/files/documents/04_2013/biodiversity-summary-policy-makers.pdf; DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE NSW, ADAPTION STRATEGY FOR CLIMATE CHANGE IMPACTS ON BIODIVERSITY 34 (2007) [hereinafter ADAPTION STRATEGY FOR CLIMATE CHANGE IMPACTS ON BIODIVERSITY], available at <http://www.environment.nsw.gov.au/resources/threatened-species/0765adaptstrat.pdf>; John Stachowicz et al., *Linking Climate Change and Biological Invasions: Ocean Warming Facilitates Nonindigenous Species Invasions*, 99 PROC. NAT'L ACAD. SCI. U.S. AM. 15497, 15497 (2002); Tracy Benning et al., *Interactions of Climate Change with Biological Invasions and Land Use in the Hawaiian Islands: Modeling the Fate of Endemic Birds Using a Geographic Information System*, 99 PROC. NAT'L ACAD. SCI. U.S. AM. 14246, 14249 (2002).

³⁰¹ ADAPTION STRATEGY FOR CLIMATE CHANGE IMPACTS ON BIODIVERSITY, *supra* note 300, at 30.

³⁰² NATURAL RES. MGMT. MINISTERIAL COUNCIL, A STRATEGIC APPROACH TO THE MANAGEMENT OF ORNAMENTAL FISH IN AUSTRALIA 1 (2006), available at http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/288425/Management-of-ornamental-fish-in-Australia.pdf.

³⁰³ *Id.* at 8.

regulation will most likely fail.³⁰⁴ Indeed, lack of stakeholder engagement is often cited as a reason for regulatory failure in the context of the aquarium industry.³⁰⁵

Another, more general concern is the inconsistent implementation of IAS measures at large. Increasingly, the problem of IAS is acknowledged to be a global one.³⁰⁶ Thus, strong measures in one jurisdiction may be weakened by lack of, or inadequate, measures in other jurisdictions. Given that few states have comprehensive IAS regimes,³⁰⁷ the potential for introducing IAS across international boundaries remains substantial. These difficulties are also likely to be particularly critical with respect to developing states. Not only do developing states contain some of the most diverse biological regions in the world, but they are often keen to develop by increasing their trading activities.³⁰⁸ Yet, increasing trade also increases the likelihood of introducing alien species.³⁰⁹ Hence, these states are progressively under threat from the pressures exerted by IAS.³¹⁰ What is more, where any state, developing or developed, sees trade as a way of fostering economic growth,³¹¹ this strengthens the desire, or need, to increase the volume of trade, which itself lessens the desire to limit imports.³¹²

³⁰⁴ *Id.* at 1.

³⁰⁵ *Id.*

³⁰⁶ See generally GLOBAL INVASIVE SPECIES PROGRAM, ECONOMIC IMPACTS OF INVASIVE ALIEN SPECIES: A GLOBAL PROBLEM WITH LOCAL CONSEQUENCES (2007), available at [http://www.cabi.org/cabreviews/Uploads/File/CABIDotOrg/GISP%20report/gispeconomicstudies071607\(2\).pdf](http://www.cabi.org/cabreviews/Uploads/File/CABIDotOrg/GISP%20report/gispeconomicstudies071607(2).pdf).

³⁰⁷ See *supra* Diagrams 1–3.

³⁰⁸ The *UN Millennium Project* is an independent report commissioned by the UN Secretary-General, Kofi Annan. U.N. MILLENNIUM PROJECT, INVESTING IN DEVELOPMENT: A PRACTICAL PLAN TO ACHIEVE THE MILLENNIUM DEVELOPMENT GOALS x–xi (2005) [hereinafter INVESTING IN DEVELOPMENT], available at <http://www.unmillenniumproject.org/documents/MainReportComplete-lowres.pdf>. The Project identifies eight goals including the eradication of poverty and hunger and the achievement of environmental sustainability. The report recognizes that international trade is a useful means of promoting economic growth. *Id.* at xviii–xix, 4, 5.

³⁰⁹ See generally CLARE SHINE ET AL., INTERNATIONAL UNION FOR CONSERVATION OF NATURE, A GUIDE TO DESIGNING LEGAL AND INSTITUTIONAL FRAMEWORKS ON ALIEN INVASIVE SPECIES (2000).

³¹⁰ *Id.* at 1–4.

³¹¹ INVESTING IN DEVELOPMENT, *supra* note 308, at 5.

³¹² McDowell, *supra* note 4, at 195. For funding issues in developing countries, see generally Nick Robins, *European Community Funding for the Environment in Developing Countries*, 3 REV. EUR. CMTY. & INT'L ENVTL. L. 127, 127 (1994). For economic aspects of funding issues in developing countries, see Philip Suttle, *Financial Flows to Developing Countries: Recent Trends and Near-Term Prospects*, GLOBAL DEV. FIN. 7 (2003).

Accordingly, there will be little incentive to increase understanding of the effects of IAS, or tighten legislation that deals with the effects of IAS.

Studies undertaken in the Pacific region in the decade following the UNCED, for example, noted that legislation and policies in Pacific Island Developing states had not yet comprehensively engaged the issue of invasive alien species.³¹³ This was exacerbated by the bigger gaps in scientific knowledge of biodiversity and alien species that developing states face.³¹⁴ Moreover, as the actual process of gathering sufficient information to substantiate remedial action is resource-consuming, this has led to funds earmarked for environmental programs being expended on areas considered more urgent, such as waste disposal and soil erosion.³¹⁵ The studies also found that even in areas where preventative measures were important, such as border controls in quarantine, lack of funding and of trained personnel meant that measures were implemented irregularly, leading to species remaining undetected.³¹⁶ Information obtained more recently from the Fourth National Reports indicates that the situation in the Pacific region is improving, although implementing effective regulation still remains challenging.³¹⁷ In some cases, for example, authorities have formulated policy instruments, but have yet to introduce legislation.³¹⁸ Such is the situation in Samoa, where the government has adopted a National Invasive Species Implementation Action Plan,³¹⁹ but no legislation.³²⁰ Even in those jurisdictions with a legislative base for their regimes, authorities still find it elusive to achieve certain goals set by the CBD, such as the implementation of pathway regulation.³²¹ In the Cook Islands, for example, although

³¹³ SOUTH PACIFIC REGIONAL ENVIRONMENT PROGRAMME, *INVASIVE SPECIES IN THE PACIFIC: A TECHNICAL REVIEW AND DRAFT REGIONAL STRATEGY 1* (Greg Sherley et al. eds., 2000), available at http://www.issg.org/database/reference/Invasive_strategy_and_species.pdf.

³¹⁴ *Id.*

³¹⁵ McDowell, *supra* note 4, at 195.

³¹⁶ SOUTH PACIFIC REGIONAL ENVIRONMENT PROGRAMME, IUCN ENVIRONMENTAL LAW CENTRE, *ENVIRONMENTAL LAW IN THE SOUTH PACIFIC* 49 (Ben Boer ed. 1996), available at <https://portals.iucn.org/library/efiles/edocs/EPLP-028.pdf>. In a discussion of The Plant Act 1973 of the Cook Islands, the authors point out that although legislation and regulations contain comprehensive provisions to prevent entry of unwanted species "experience has shown that this has been difficult to completely control as a certain amount of plants escape detection through unchecked luggage." *Id.* at 49.

³¹⁷ *See, e.g.*, SAMOA FOURTH NATIONAL REPORT, *supra* note 223.

³¹⁸ *Id.* at 45, 57, 67.

³¹⁹ *Id.* at 57.

³²⁰ *Id.* at 67.

³²¹ For example, Fiji acknowledges that pathway regulation is a continuing challenge. FIJI, MINISTRY OF ENV'T & FORESTRY, FIJI FOURTH NATIONAL REPORT TO THE CONVENTION

authorities updated the Islands' biosecurity legislation in 2008,³²² IAS are still considered the biggest threat to the flora of the Islands.³²³ This situation is largely attributable to the difficulties of monitoring pathways, such as air and sea lanes between trading partners.³²⁴

Given that developing states contain a majority of the world's biodiversity hot spots, this means that if IAS continue to be a major threat, the international community risks losing biodiversity on a large scale.³²⁵ In an attempt to deal with the uneven delivery of IAS outcomes, the CBD has incorporated IAS targets in its Strategic Plan for Biodiversity 2011–2020.³²⁶ The plan, which was adopted at the tenth meeting of the COPs,³²⁷ notes that by 2020 states should have: identified alien species within their jurisdiction; identified pathways of introduction; and introduced a priority system to deal with alien species and pathways of introduction.³²⁸ This approach, which places more precise emphasis on key aspects of domestic IAS regimes, recognizes that states need greater guidance on how they are to fulfil Article 8(h). However, placing obligations on states without dealing with underlying problems, such as lack of resources, will not be sufficient to facilitate implementation of optimum IAS regimes.

CONCLUSION

This Article started with a quote by Henkin that provided the impetus for delving into state practice with respect to IAS. The data gleaned from the first four National Reports indicates that states are progressively strengthening their IAS regimes and thus, in one sense, are observing international law. Yet, at the same time, some twenty years after the Earth Summit 1992, the CBD notes that while activities to halt the loss

ON BIOLOGICAL DIVERSITY 92 (2010), available at <http://www.cbd.int/doc/world/fj/fj-nr-04-en.pdf>.

³²² COOK ISLANDS, MINISTRY OF ENV'T & FORESTRY, COOK ISLANDS FOURTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY 29 (2011), available at <http://www.cbd.int/doc/world/ck/ck-nr-04-en.pdf>.

³²³ *Id.*

³²⁴ *Id.*

³²⁵ Norman Myers et al., *Biodiversity Hotspots for Conservation Priorities*, 403 NATURE 853, 854, 857 (2000).

³²⁶ See *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at Its Tenth Meeting, The Strategic Plan for Biodiversity 2011–2020 and the Aichi Target*, U.N. Doc. UNEP/CBD/COP/DEC/X/2CBD (Oct. 29, 2010), available at http://www.cms.int/about/nbsap/cbd_cop10_decision.pdf.

³²⁷ *Id.* at 1.

³²⁸ *Id.* at 8–9.

of biodiversity are largely producing positive results,³²⁹ the deleterious impacts of IAS continue to be classified as one of the top five threats to biodiversity.³³⁰ This paradox indicates that observance of international law with respect to IAS has not necessarily resulted in effective outcomes.

This problem stems from the fact that when states consider they observe international law, it does not necessarily take into account the depth and level of compliance. In the context of IAS, states may be achieving compliance in accordance with their capabilities, or attaining nominal compliance by targeting economically important species, but this does not result in the protection of biodiversity at large. Furthermore, taking a global view of observance overlooks issues related to the proportionality of compliance. The discussion in part four of this Article demonstrated that among states, party to the CBD developing countries were the most likely to find deep compliance challenging. Given that developing countries are often biodiversity-rich, but technologically and financially poor, this gap in the international regime has the potential to lead to an increased loss of biodiversity on a global scale.

Clearly, finding a workable solution to protect biodiversity from IAS is both imperative and complex. Yet, as the CBD has noted: governments “need to rise to the challenge” of IAS.³³¹ Accordingly, states need to work towards improving their levels of ‘observance’ and as a starting point should strive for greater compliance with the CBD Guiding Principles. However, it is also clear that for many states this objective will remain overchallenging, unless those states also have better access to financial and technological resources. States as a whole therefore need to consider ways of generating funding, and preferably funding that derives from product sectors that benefit from the use of IAS.

Without a doubt, protection of biodiversity would be worse off in the absence of Article 8(h), the Guiding Principles, and the efforts of states to implement these instruments. However, these facts do not preclude improvements to the regime; otherwise, international law runs the risk that it creates a hollow form of compliance which states will be able to fulfill, but is otherwise ineffective in protecting biodiversity from IAS.

³²⁹ GLOBAL BIODIVERSITY OUTLOOK 3, *supra* note 33, at 68.

³³⁰ *Id.* at 7, 9.

³³¹ *Id.* at 6.