

International Adoption of Invasive Alien Species Policy: 2020

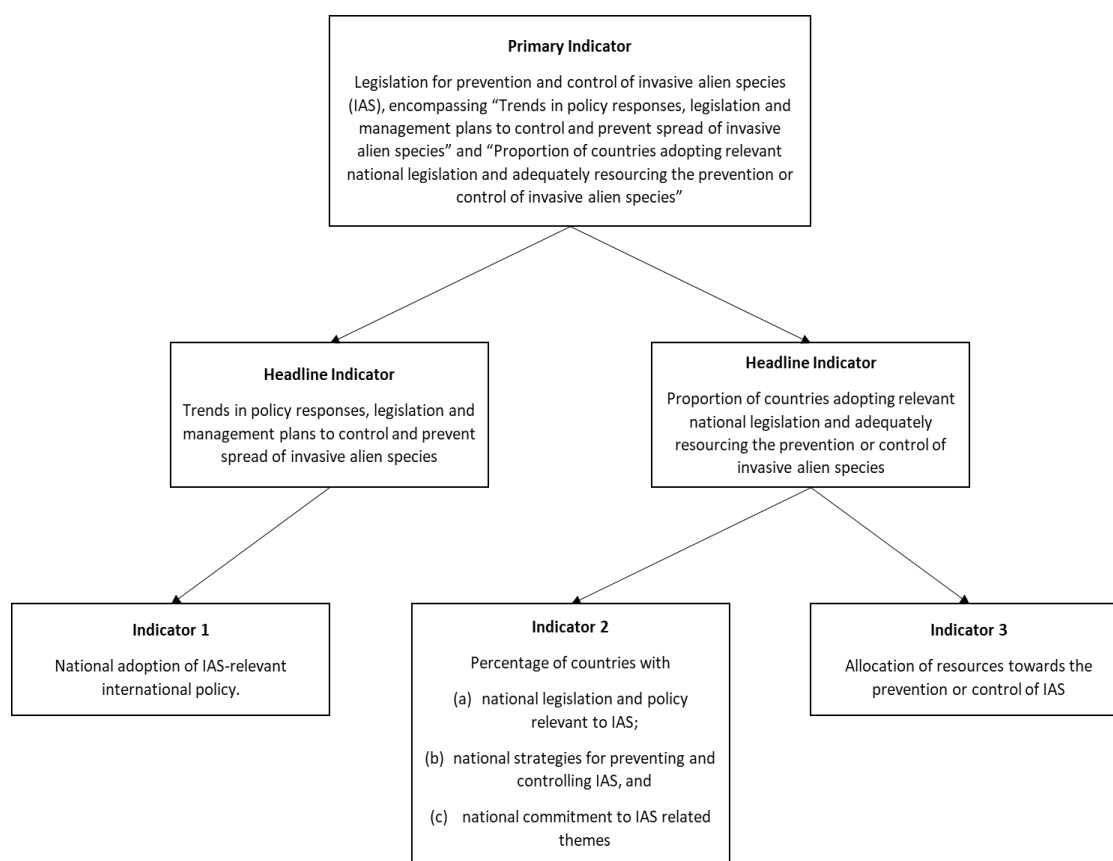
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Indicator structure



Datasets prepared and used in analysis

Dataset	Description	Used to analyse
<i>Dataset_1_ (International Agreements)</i>	Country commitments to global conventions and multinational agreements relevant to invasive alien species (IAS). Provided year of accession/ratification if available.	Indicator 1
<i>Dataset_2_ (National Legislation)</i>	National Legislation considered relevant to the prevention and/or control of invasive alien species.	Indicator 2a
<i>Dataset_3_ (NBSAP)</i>	National Biodiversity Strategy and Action Plan (NBSAP) target alignment with Aichi Biodiversity Target 9	Indicator 2b
<i>Dataset_4_ (Survey)</i>	Results of online country survey on policy responses, mandate, legal authority and resourcing to manage the threat of invasive alien species (survey questions in Appendix 1)	Indicator 2c Indicator 3

Indicator 1: National adoption of IAS-relevant international policy

Methods: The analysis of indicator 1 used data provided in *Dataset_1_ (International Agreements)*. All countries currently party to the Convention on Biological Diversity were considered in the analysis (n = 195), and excluded the European Union as an entity.

Results: Adoption of all multinational agreements considered has increased over the past decade (Table 1). The greatest increase occurred with the International Convention for the Control and Management of Ship's Ballast Water and Sediments (BWM), which observed a 19% increase in signatories (Figure 1). However, the BWM has the fewest signatories overall. Most agreements exhibit uniform adoption across geographic regions.

Table 1: Number of countries in 2010 (n = 192) and 2020 (n = 195) having adopted multinational agreements relevant to the prevention and control of invasive alien species. Only countries party to the Convention on Biological Diversity (CBD) at the time of reporting were considered in the analysis. Nine multinational agreements, in addition to the CBD, were considered.

Multinational Agreement	2010	2020	Percentage Increase
Convention on Biological Diversity (CBD)	192	195	
International Convention for the Control and Management of Ship's Ballast Water and Sediments (BWM)	26 (14%)	64 (33%)	19%
Cartagena Protocol (Cartagena)	159 (83%)	171 (88%)	5%
Convention on International Trade in Endangered Species (CITES)	175 (91%)	182 (93%)	2%
Convention on the Conservation of Migratory species of Wild Animals (CMS)	113 (59%)	129 (66%)	7%
International Plant Protection Convention (IPPC)	176 (92%)	183 (94%)	2%
The World Organisation for Animal Health (OIE)	179 (93%)	179 (92%)	0%
Ramsar Wetlands Convention (Ramsar)	160 (83%)	171 (88%)	4%
Agreement on Sanitary and Phytosanitary Measures (SPS Agreement) of the World Trade Organisation (WTO)	149 (78%)	160 (82%)	4%
World Heritage Convention (WHC)	186 (97%)	192 (98%)	2%

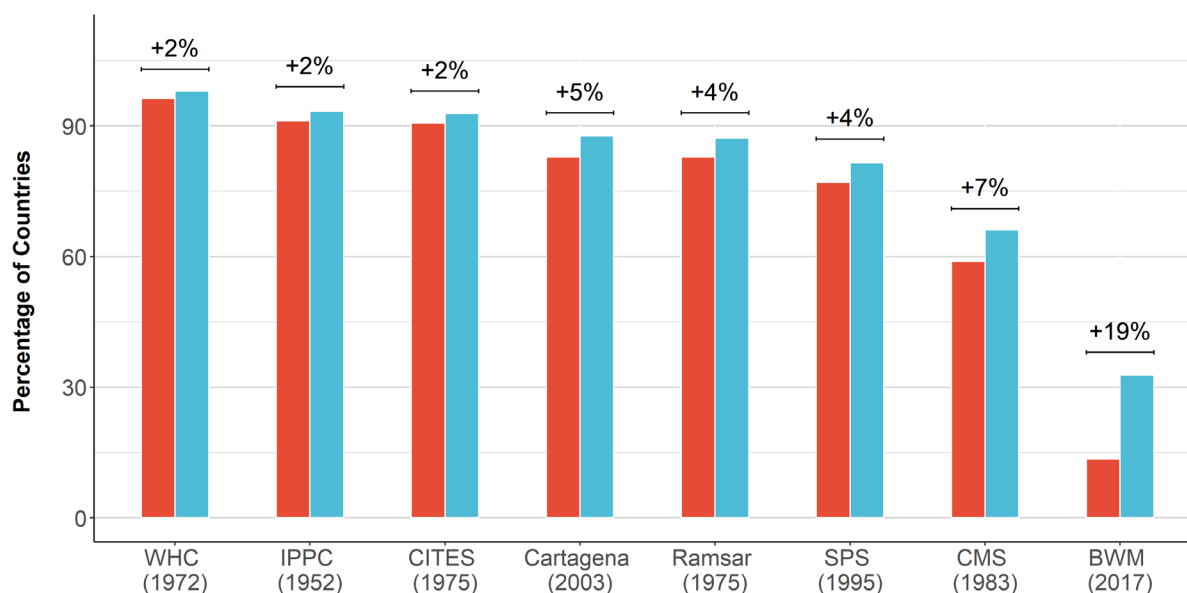


Figure 1: Total percentage of countries in 2010 (red bars; n = 192) and 2020 (blue bars; n = 195), and % increase since 2010 (shown above), signatory to eight multinational agreements relevant to the prevention and control of invasive alien species. Only countries party to the Convention on Biological Diversity at the time of reporting were considered in the analysis. The eight multinational agreements (year of establishment below acronym in figure) analysed were the Cartagena Protocol (Cartagena), the International Plant Protection Convention (IPPC), the Agreement on Sanitary and Phytosanitary Measures of the World Trade Organisation (SPS), the Convention on International Trade in Endangered Species (CITES), the Ramsar Wetlands Convention (Ramsar), the Convention on the Conservation of Migratory species of Wild Animals (CMS), the World Heritage Convention (WHC), and the International Convention for the Control and Management of Ship's Ballast Water and Sediments (BWM).

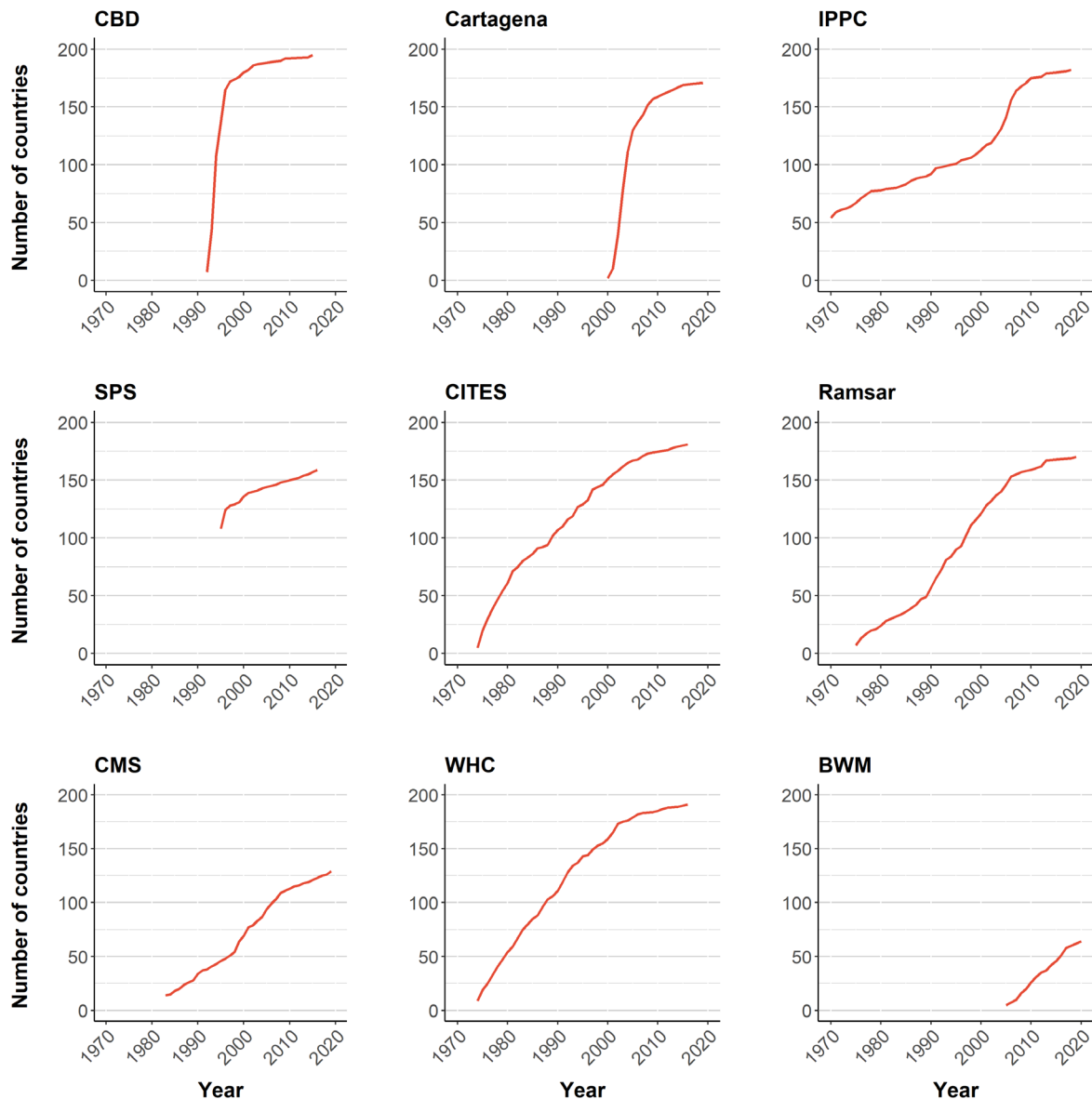


Figure 2: Adoption of nine multinational agreements relevant to the prevention and control of invasive alien species (1970 - 2020). Only countries currently party to the Convention on Biological Diversity were included in the analysis. The nine multinational agreements analysed were the Convention on Biological Diversity (CBD), the Cartagena Protocol (Cartagena), the International Plant Protection Convention (IPPC), the Agreement on Sanitary and Phytosanitary Measures of the World Trade Organisation (SPS), the Convention on International Trade in Endangered Species (CITES), the Ramsar Wetlands Convention (Ramsar), the Convention on the Conservation of Migratory species of Wild Animals (CMS), the World Heritage Convention (WHC), and the International Convention for the Control and Management of Ship's Ballast Water and Sediments (BWM).

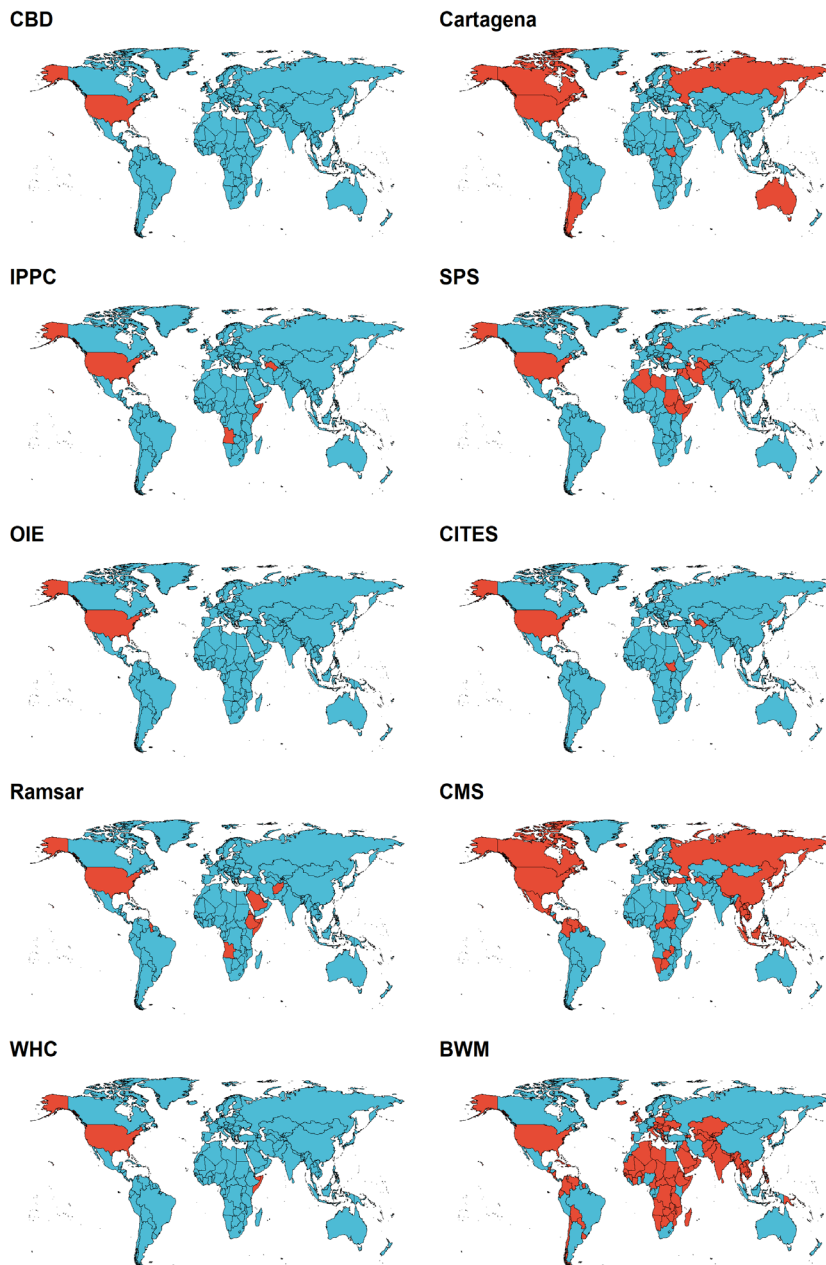


Figure 3: Countries that have adopted (in blue) multinational agreements relevant to the prevention and control of invasive alien species. Only countries party to the Convention on Biological Diversity were considered in the analysis. Multinational agreements include: the Convention on Biological diversity (CBD), the Cartagena Protocol (Cartagena), the International Plant Protection Convention (IPPC), the Agreement on Sanitary and Phytosanitary Measures of the World Trade Organisation (SPS), the World Organisation for Animal Health (OIE), the Convention on International Trade in Endangered Species (CITES), the Ramsar Wetlands Convention (Ramsar), the Convention on the Conservation of Migratory species of Wild Animals (CMS), the World Heritage Convention (WHC), and the International Convention for the Control and Management of Ship's Ballast Water and Sediments (BWM).

Indicator 2a: National legislation and policy relevant to IAS

Methods: The analysis of indicator 2a used data provided in the *Dataset_2_ (National Legislation)*. All countries currently party to the Convention on Biological Diversity were considered in the analysis (n = 195), not including the European Union. Data for five countries were not comparable and were not included. National legislation sectors included animal health, plant health, environment (including protected areas and wildlife protection), biosecurity (as used here relevant to pre- and at-border activities only with no distinction made between potential agricultural or environmental pests) , fisheries and aquaculture (including wetlands and marine legislation), invasive alien species, and others (including hunting well as policy on particular species, such as the Giant African Snail, *Achatina fulica*).

Results:

- 190 countries party to Convention on Biological Diversity now have national legislation relevant to IAS (Figure 4).
- Of these 190 countries, 32 have national legislation specifically targeting IAS (Table 2). Note: the European Legislation applies to the 27 member states of the European Union
- In addition to national legislation related to animal and plant health¹ that is broadly relevant to IAS, 69% of countries have legislation relevant to IAS in other sectors (Figure 4). These include protected area and fisheries (mostly related to introduction of species through aquaculture, mariculture and the aquarium trade) legislation (Figure 4).

¹ **The International Plant Protection Convention (IPPC)** is an international treaty relating to plant health. It is a binding instrument which provides a framework for international cooperation to prevent the spread of pests of plants and plant products between countries and to promote appropriate measures for their control within countries. IPPC recognizes the threat that alien species- weeds, pests and diseases pose to native and cultivated plants and ecosystems. Measures related to these threat form part of the Regulatory Framework of the IPPC. While the Convention applies mainly to quarantine pests involved with international trade, it extends to the protection of natural flora and plant products and pests that affect unmanaged ecosystems.

The World Organization for Animal Health (Office International des Epizooties or OIE) in November 2011 published specific “Guidelines for assessing the risk of non-native animals becoming invasive”. The OIE standard for import risk analysis covers the potential movement of pathogens. The guidelines developed in the document mentioned above are intended to address the complementary process of assessing the risk of non-native animals becoming invasive.

Table 2: Examples of national legislation focused on invasive alien species

National Legislation	Country
Resolución N° 376/97 - Medidas para la introducción de ejemplares de una nueva especie exótica al país, cualquiera fuera la causa o destino de la misma.	Argentina
Invasive Alien Species Act (No. 78 of 2004)	Japan
Law on alien and invasive alien species of plants, animals and fungi.	Montenegro
Invasive Alien Species (Enforcement and Permitting) Order 2019 (S.I. No. 527 of 2019);	United Kingdom
Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species	European Union

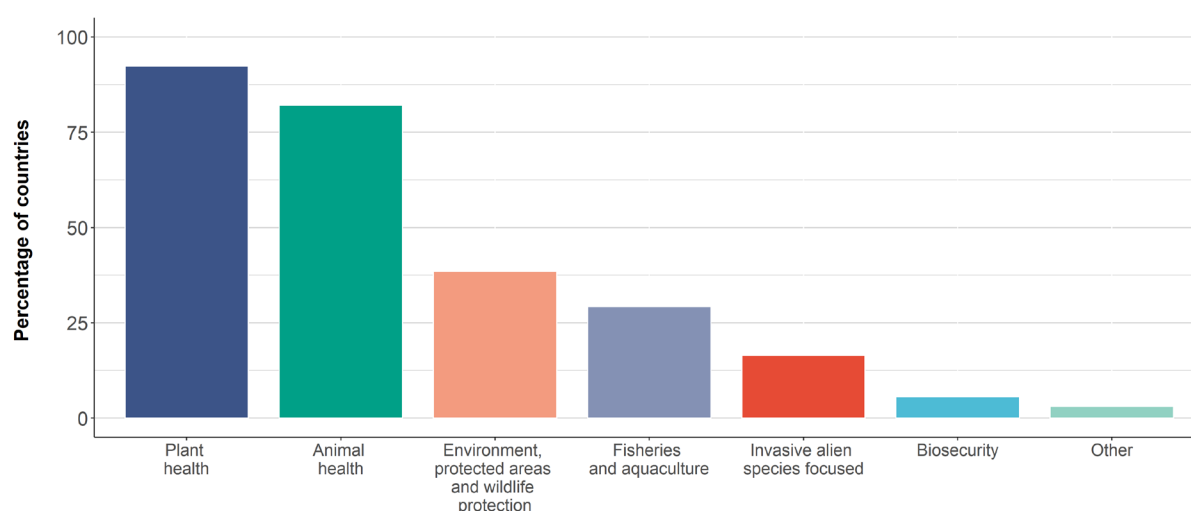


Figure 4: Adoption of national legislation relevant to the prevention and/or control of IAS for 195 countries reporting to the Convention on Biological Diversity. The percentage of countries (number of countries above bars) and national sectoral legislation with IAS-relevant legislation is shown.

Indicator 2b: National strategies for preventing and controlling IAS

Methods: The analysis of indicator 2b used data provided in the *Dataset_3_ (NBSAP)*. All countries currently party to the Convention on Biological Diversity were considered in the analysis (n = 195), excluding the European Union as an entity. This indicator measured whether countries (1) had targets related to IAS management in their NBSAPS, and (2) whether these targets were aligned with Aichi Biodiversity Target 9.

Results: Of the 195 countries party to the Convention on Biological Diversity, 80% (n = 156) have targets related to IAS management in their NBSAPS². 74% (n = 145) of these countries have aligned their IAS targets to Aichi Biodiversity Target 9 (Figure 5). Although not included in analysis, the European Union has also aligned its IAS targets with Aichi Biodiversity Target 9.

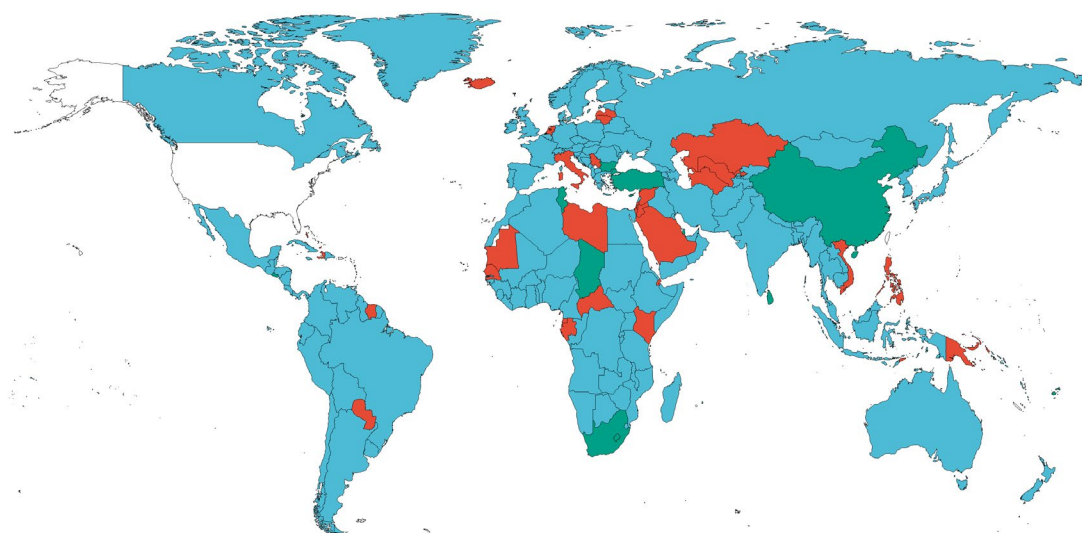


Figure 5: Countries that have aligned their IAS targets to Aichi Biodiversity Target 9 (blue). Those countries with IAS targets partially aligned with Aichi Target 9 (green), and those without an NBSAP (red) are also shown. Only countries Party to the Convention on Biological Diversity were considered in the analysis.

² According to the CBD < <https://www.cbd.int/nbsap/> > 157 Parties have taken the Strategic Plan for Biodiversity (2011-2020) into account while preparing their post 2010 NBSAPS, 13 Parties have not taken the Strategic plan into account. 21 Parties have not submitted an NBSAP post 2010 and 5 Parties are yet to submit an NBSAP

Indicator 2c: National commitment to IAS related themes

Methods: The analysis of indicator 2c used data provided in the *Dataset _4_ (Survey)*. 196 countries were surveyed in 2020 (see Appendix 1). 73% of countries returned surveys (n = 142; Figure 8). Of these, data for one country was not comparable and was excluded from analysis.

Results: On average across all IAS related themes, institutions in 74% of countries have a clear legal mandate and/or necessary powers to implement policy instruments related to the management of IAS (Table 3). Across policy instruments, more institutions have a clear legal mandate in comparison with the necessary powers to manage IAS (Figure 6). The development of plans and policies, management of intentional introductions, and commitment to public awareness of IAS has the highest level of commitment (Figure 6). Fewer countries have the necessary powers across themes in comparison with the number that have a clear legal mandate (Figure 6). Across IPBES regions, Asia and the Pacific, Europe and Central Asia, and the Americas have the highest percentage of countries with mandates and powers to manage invasive alien species (Figure 7).

Table 3: Policy implementation instruments in place across countries. Number of countries (n = 141) whose institutions have a clear legal mandate and/or necessary powers to support nine policy implementation instruments for invasive alien species (IAS) management.

IAS theme	Description	Legal mandate	Necessary powers
Contain and eradicate	Containment and eradication of populations of IAS within the country	98	83
Enforcement	Enforcement of relevant legal provisions regarding the control of IAS	106	94
Information management	Recording and management of information on IAS	106	99
Prevention - intentional	Prevention of the intentional introduction of species assessed as potentially invasive (including importation for the purposes of agriculture, aquaculture, the nursery trade, farming and animal breeding, the pet trade etc.)	112	105
Monitor and detect	Monitoring and surveillance programmes to detect founder populations of IAS at an early stage	104	101
Plans and policies	Development of national plans and policies in relation to invasive alien species	121	115
Public awareness	Promotion of public awareness of IAS issues	110	105
Risk analysis	Risk analyses of potentially invasive species	103	100
Prevention - unintentional	Minimising the unintentional introduction of alien species	108	98

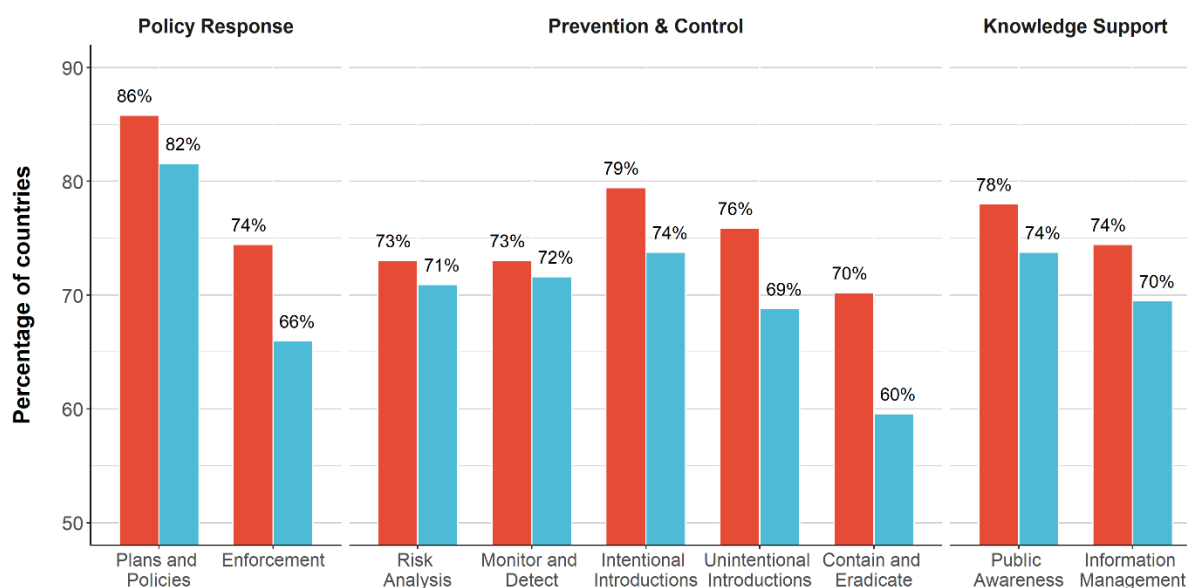


Figure 6: Percentage of countries surveyed (n = 141) with institutions that have a clear legal mandate (red bars) and/or necessary powers (blue bars) to support the nine policy instruments related to invasive alien species (IAS) management (Table 3). Themes relate to three broad categories of response; policy response, prevention and control, and knowledge support.

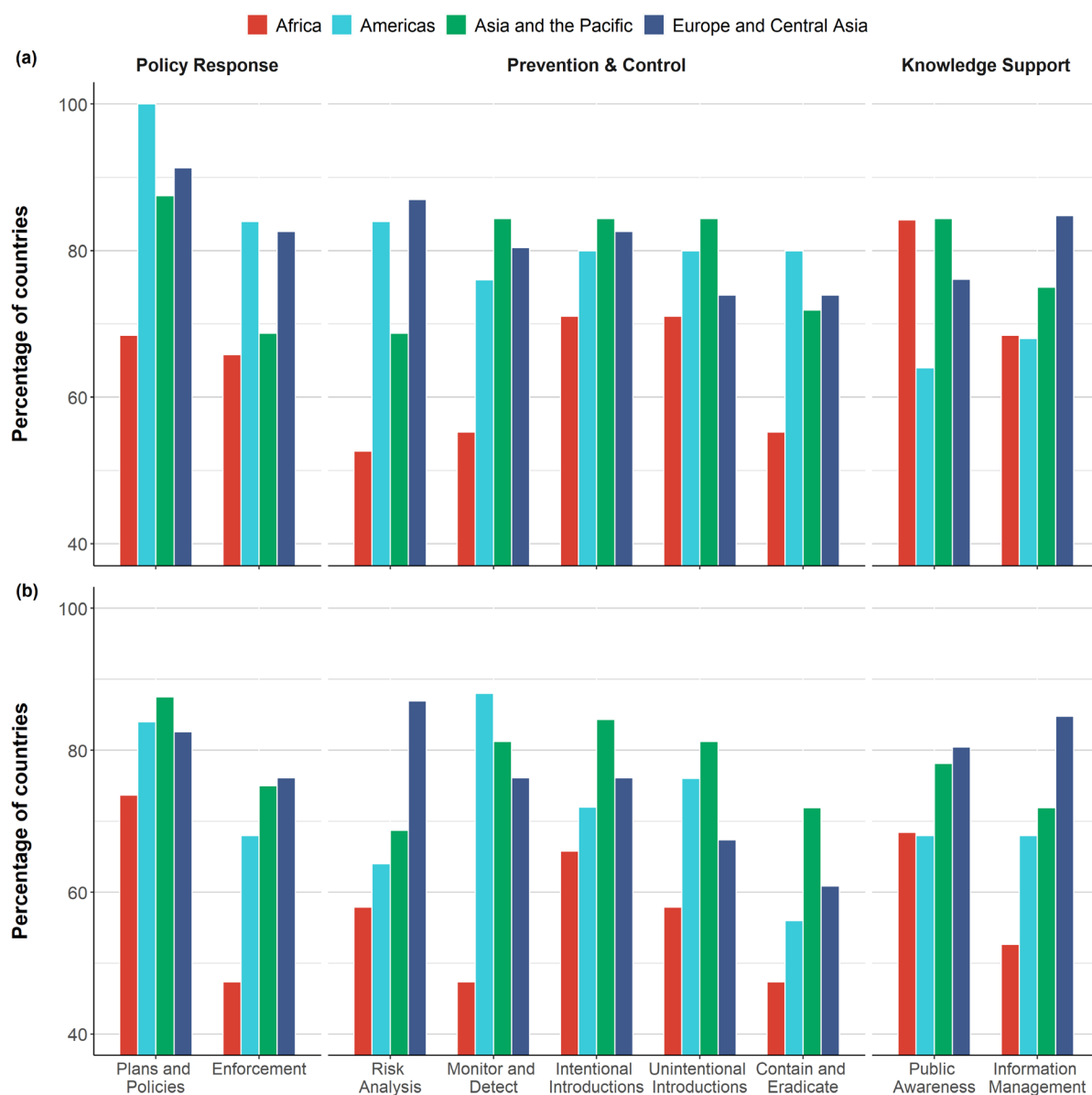


Figure 7: Percentage of countries surveyed within each IPBES region whose institutions have a (a) clear legal mandate and/or (b) necessary powers to support nine instruments related to invasive alien species (IAS) management (Africa: n = 38, Americas: n = 25, Asia and the Pacific: n = 32, Europe and Central Asia: n = 46). Themes relate to three broad categories; policy response, prevention and control, and knowledge support.

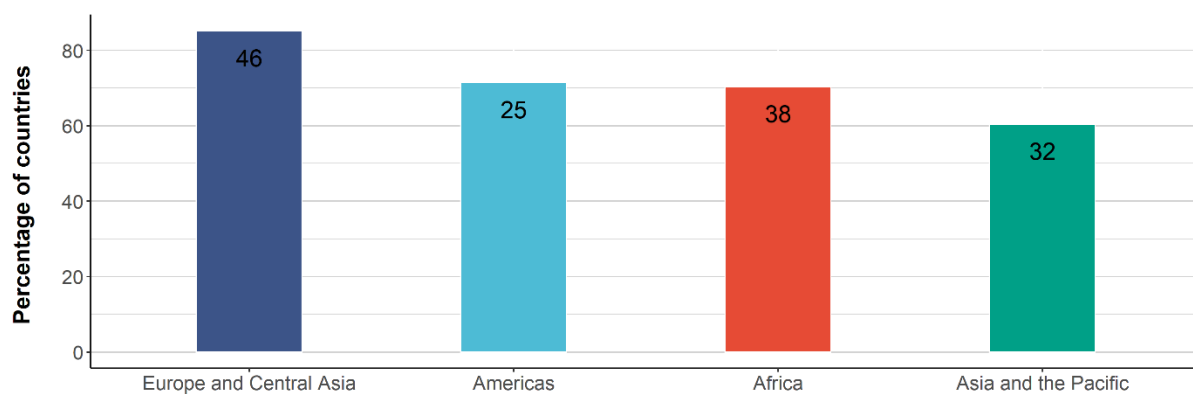


Figure 8: Percentage of countries per IPBES region that returned survey results (number of countries shown within bars). Total number of countries surveyed per region: Africa (n = 54), Americas (n = 35), Asia and the Pacific (n = 53), Europe and Central Asia (n = 54).

Indicator 3: Allocation of resources towards the prevention or control of IAS

Methods: The analysis of indicator 3 used data provided in the *Dataset _4_ (Survey)*. 196 countries were surveyed in 2020. 73% of countries returned surveys (n = 142). Of these, data for one country was not comparable and couldn't be included.

Results: Almost half of the countries surveyed (n = 141) have neither a national budget allocation or have accessed funding from any global financial mechanism for IAS prevention or control activities. Of those countries that have access to a source of funding, 46 have a national budget allocation only, 14 only receive funding through a global financial mechanism, and 18 receive funding from both national and global sources (Table 4; Figure 9). Across IPBES regions, Africa had the most countries with no access to funding (Figure 10). The Europe and Central Asia was the only region that did not access global funding for IAS related activities (Figure 10).

55 countries indicated that they have also developed a National Invasive Species Strategy and Action Plan (NISSAP). Of the 55 countries that reported having a NISSAP, only 47 of these are accessible online.

Table 4: Sources of funding for the prevention and control of IAS for the 141 surveyed countries in 2020. ‘National funding only’ refers to a national budget allocation, and ‘global funding only’ refers to a global financial mechanism as funding sources for IAS related activities.

Funding sources	Number of countries	Percentage of countries
Global Funding Only	14	10%
National & Global Funding	18	13%
National Funding Only	46	33%
No Funding	63	45%

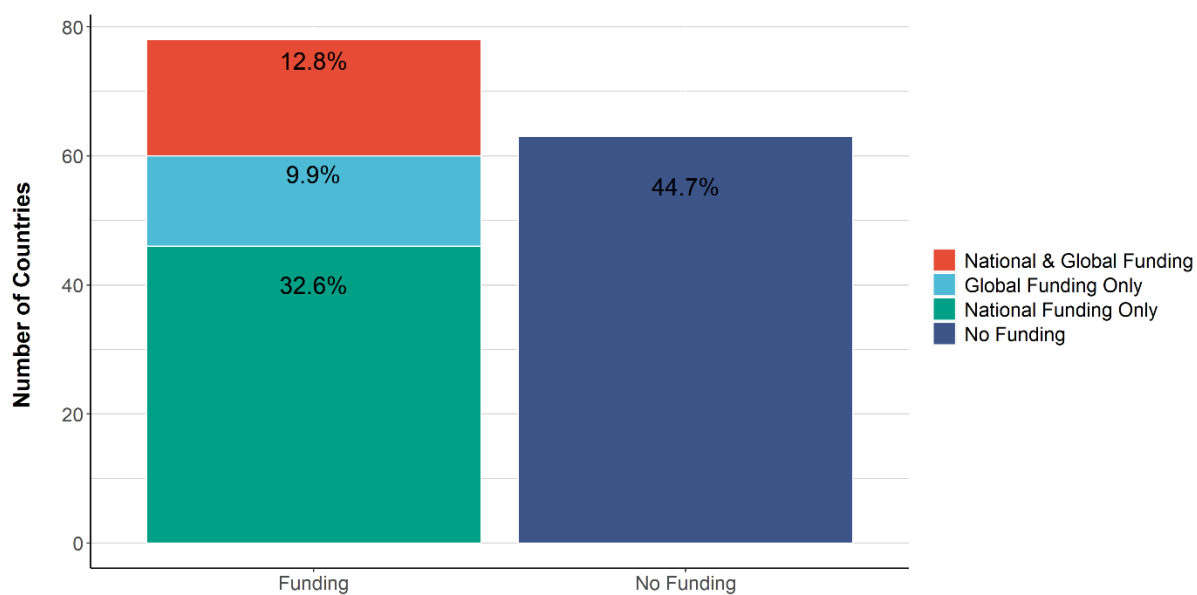


Figure 9: Allocation of financial resources (both national and through global financial mechanisms) towards the prevention and control of IAS.

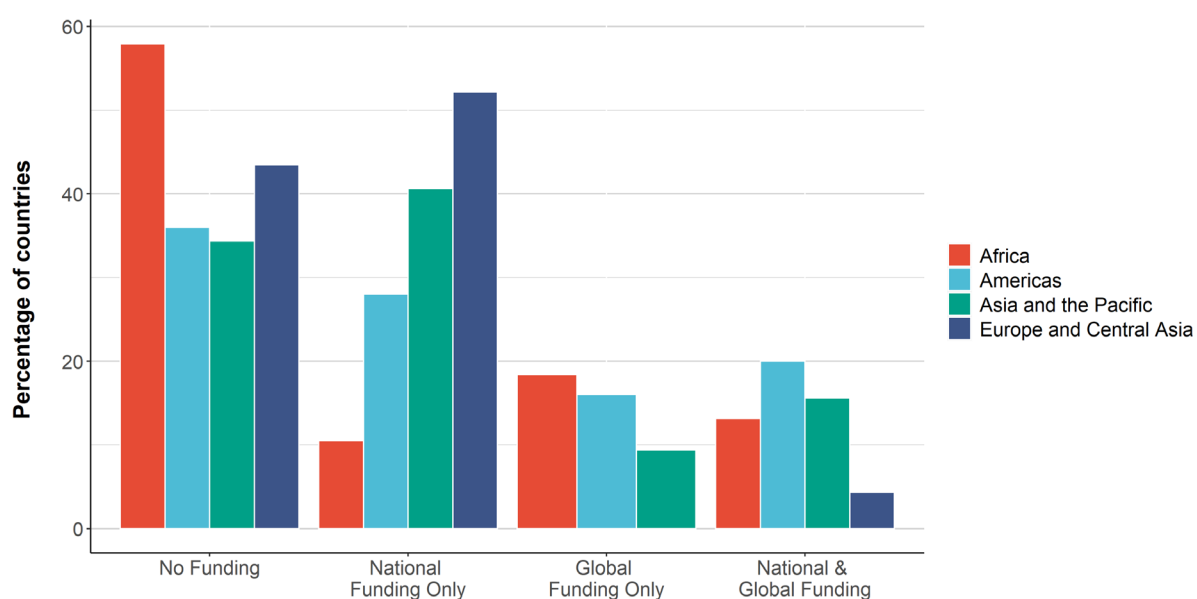


Figure 10: Percentage of countries per IPBES region that have accessed different funding sources for IAS prevention and control (Africa: n = 38, Americas: n = 25, Asia and the Pacific: n = 32, Europe and Central Asia: n = 46).

References

Biodiversity Indicators Partnership. (2017). Legislation for prevention and control of invasive alien species (IAS), encompassing “Trends in policy responses, legislation and management plans to control and prevent spread of invasive alien species” and “Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species”. Retrieved from <https://www.bipindicators.net/indicators/adoption-of-national-legislation-relevant-to-the-prevention-or-control-of-invasive-alien-species>

McGeoch, M.A., Butchart, S.H.M., Spear, D., Marais, E., Kleynhans, E.J., Symes, A., Chanson, J. & Hoffmann, M. (2010) Global indicators of biological invasion: species numbers, biodiversity impact and policy responses. *Diversity and Distributions*, **16**, 95-108.

Tittensor, D. P., M. Walpole, S. L. L. Hill, D. G. Boyce, G. L. Britten, N. D. Burgess, S. H. M. Butchart, P. W. Leadley, E. C. Regan, R. Alkemade, R. Baumung, C. Bellard, L. Bouwman, N. J. Bowles-Newark, A. M. Chenery, W. W. L. Cheung, V. Christensen, H. D. Cooper, A. R. Crowther, M. J. R. Dixon, A. Galli, V. Gaveau, R. D. Gregory, N. L. Gutierrez, T. L. Hirsch, R. Hoefl, S. R. Januchowski-Hartley, M. Karmann, C. B. Krug, F. J. Leverington, J. Loh, R. K. Lojenga, K. Malsch, A. Marques, D. H. W. Morgan, P. J. Mumby, T. Newbold, K. Noonan-Mooney, S. N. Pagad, B. C. Parks, H. M. Pereira, T. Robertson, C. Rondinini, L. Santini, J. P. W. Scharlemann, S. Schindler, U. R. Sumaila, L. S. L. Teh, J. van Kolck, P. Visconti, and Y. Ye. 2014. A mid-term analysis of progress toward international biodiversity targets. *Science* **346**, 241-244.

Turbelin, A. J., Malamud, B. D., & Francis, R. A. (2017). Mapping the global state of invasive alien species: Patterns of invasion and policy responses. *Global Ecology and Biogeography*, **26**(1), 78–92.

Appendix 1: Online survey questions sent to countries for the purpose of assessing country responses to dealing with invasive alien species

1. For your home country, please name any government department, national agency or agencies (including supranational institutions/organizations, e.g. EU) responsible for managing IAS that impact the natural environment, economic sectors (e.g. agriculture, forestry, tourism, etc.) or human health.
2. Are there institutions (including supranational institutions/organizations, e.g. EU) with a clear legal mandate and the necessary powers to develop national plans and policies in relation to invasive alien species?
 - Clear legal mandate (authorisation, decree, directive or official order)

YES/ NO/ UNSURE
 - Necessary powers (legal authority)

YES/ NO/ UNSURE
3. Are there institutions (including supranational institutions/organizations, e.g. EU) with a clear legal mandate and the necessary powers to undertake **risk analyses** of potentially invasive species?
 - Clear legal mandate (authorisation, decree, directive or official order)

YES/ NO/ UNSURE
 - Necessary powers (legal authority)

YES/ NO/ UNSURE
4. Are there institutions (including supranational institutions/organizations, e.g. EU) with a clear legal mandate and the necessary authority to **prevent** the intentional introduction of species assessed as potentially invasive (including importation, for the purposes of agriculture, aquaculture, the nursery/ornamental trade, farming and animal breeding, the pet trade etc.)?
 - Clear legal mandate (authorisation, decree, directive or official order)

YES/ NO/ UNSURE
 - Necessary powers (legal authority)

YES/ NO/ UNSURE

5. Are there institutions (including supranational institutions/organizations, e.g. EU) with a clear legal mandate and the necessary powers to **minimise** the unintentional introduction of alien species?

- Clear legal mandate (authorisation, decree, directive or official order)

YES/ NO/ UNSURE

- Necessary powers (legal authority)

YES/ NO/ UNSURE

6. Are there institutions (including supranational institutions/organizations, e.g. EU) with a clear legal mandate and the necessary powers to **promote public awareness** of IAS issues?

- Clear legal mandate (authorisation, decree, directive or official order)

YES/ NO/ UNSURE

- Necessary powers (legal authority)

YES/ NO/ UNSURE

7. Are there institutions (including supranational institutions/organizations, e.g. EU) with a clear legal mandate and the necessary powers to **monitor and conduct surveillance** programmes to detect introduced populations of IAS at an early stage?

- Clear legal mandate (authorisation, decree, directive or official order)

YES/ NO/ UNSURE

- Necessary powers (legal authority)

YES/ NO/ UNSURE

8. Are there institutions (including supranational institutions/organizations, e.g. EU) with a clear legal mandate and the necessary powers to contain and eradicate populations of IAS within the country?

- Clear legal mandate (authorisation, decree, directive or official order)

YES/ NO/ UNSURE

- Necessary powers (legal authority)

YES/ NO/ UNSURE

9. Are there institutions (including supranational institutions/organizations, e.g. EU) with a clear legal mandate and the necessary powers to record and maintain information on IAS?

- Clear legal mandate (authorisation, decree, directive or official order)

YES/ NO/ UNSURE

- Necessary powers (legal authority)

YES/ NO/ UNSURE

10. Are there institutions (including supranational institutions/organizations, e.g. EU) with a clear legal mandate and the necessary powers to enforce the relevant legal provisions regarding the control of invasive alien species?

- Clear legal mandate (authorisation, decree, directive or official order)

YES/ NO/ UNSURE

- Necessary powers (legal authority)

YES/ NO/ UNSURE

11. Are there any existing legal provisions or institutional arrangements to facilitate cooperation between different government agencies in making decisions regarding IAS?

- Yes
- No
- Unsure

12. Does your country have an allocation from the National budget to manage the threat of IAS?

- Yes
- No

13. Can you provide an estimate of this allocation?

14. If your country is a recipient of global funding (such as the Global Environment Facility (GEF) - has your country accessed any funding from global financial mechanisms for projects related to IAS management?

- Yes
- No

15. If yes, can you list them?

16. Does your Biodiversity Strategy (at the local, national, regional, or supranational level) include objective(s) and actions related to IAS management?

- Yes
- No

17. If yes, are these actions being implemented?

- No implementation
 - Partial implementation
 - Full implementation
18. Is there a budget allocation or are there any financial tools (for e.g. dedicated financial programmes) available for this implementation?
- Yes
 - No
19. Has your country developed a National Invasive Alien Species Strategy and Action Plan (NISSAP)?
- Yes
 - No
20. If yes, are these actions being implemented?
- No implementation
 - Partial implementation
 - Full implementation
21. Is there a budget allocation or are there any financial tools (for e.g. dedicated financial programmes) available for this implementation?
- Yes
 - No
22. If your country has not developed a National Invasive Alien Species Strategy and Action Plan (NISSAP), under what national regulatory or policy framework is IAS prevention, control and management currently done in your country?
23. Do you know of any non-governmental agencies (NGO) or civil society groups involved in IAS management in your country?
- Yes
 - No
24. What is the level of involvement?
- High involvement
 - Low involvement
25. Does your government take precautionary measures to prevent IAS from entering the country, and if so, how does it attempt to manage pathways/vectors?
26. Are there any forms of collaboration with other countries that your government engages in on a regular basis?
27. Please enter the name of your country (not entering a name will invalidate the survey

