

Annex III to decision IPBES-4/1

Scoping for a thematic assessment of invasive alien species and their control (deliverable 3 (b) (ii))

I. Scope, rationale, utility and assumptions

A. Scope

1. The objective of the proposed thematic assessment of invasive alien species and their control is to assess the array of such species that affect biodiversity and ecosystem services; the extent of the threat posed by such species to various categories of biodiversity and ecosystem services, including impacts on agrobiodiversity and food, human health and livelihood security; the major pathways for and drivers of the introduction and spread of such species between and within countries; the global status of and trends in the impacts of such species and associated management interventions by region and subregion, taking into account various knowledge and value systems; the level of awareness of the extent of invasive alien species and their impacts; and the effectiveness of current international, national and subnational control measures and associated policy options that could be employed to prevent, eradicate and control invasive alien species. Emphasis should be placed on response options.

2. For purposes of the assessment, invasive alien species are defined as animals, plants or other organisms introduced directly or indirectly by people into places out of their natural range of distribution, where they have become established and dispersed, generating an impact on local ecosystems and species.

3. The assessment will focus on species fitting this definition, especially those with a demonstrable impact on or risk for biodiversity and, through their effects on ecosystem services, human well-being. In addition, however, for the assessment to be most useful for policy formulation it should assess not only the current impacts of invasive alien species, but also sources of emerging risk. The assessment should also recognize that invasive alien species do not constitute a purely passive phenomenon. Most of the movement of species is human mediated or human driven, e.g., through trade. Lastly, the assessment could suggest prevention and management strategies that are sensitive to the fact that many alien species may be both problematic and useful. Furthermore, some species will be manageable, but others will be intractable and need to be recognized as such. Responses, including strategies for prevention and adaptive management, will therefore need to be flexible and pragmatic.

B. Geographic coverage of the assessment

4. The assessment will be global, encompassing invasive alien species in terrestrial, freshwater and marine ecosystems.

C. Rationale

5. The proposed assessment responds directly to Aichi Biodiversity Target 9: “By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment”, as contained in the Strategic Plan for Biodiversity 2011–2020.⁵⁰ It also contributes directly to Sustainable Development Goal 15, target 15.8, of the 2030 Agenda for Sustainable Development: “By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species” (<https://sustainabledevelopment.un.org/post2015/transformingourworld>). Lastly, it will also contribute to the achievement of Aichi Biodiversity Targets 5, 11, 12 and 17 and help to determine priorities for prevention and management under these targets. Invasive alien species are acknowledged as major drivers of species extinctions globally; they degrade habitats and have serious impacts on protected areas around the world.

6. Invasive alien species constitute one of the most serious and rapidly growing threats to biodiversity, ecosystem services and food, health and livelihood security. Invasive alien species often show newly evolved traits, such as increased competitive and dispersal abilities in new habitats. For many countries, invasive alien species are seen as a more serious threat than climate change. Such

⁵⁰ Decision X/2 of the Conference of the Parties to the Convention on Biological Diversity, annex. Available at www.cbd.int/sp/targets.

species have been responsible for the extinction of native plants and animals, degradation of rare and threatened ecosystems and ecological communities, crop failure and declining agricultural productivity, loss of cultivar and animal breed diversity and damage to property, infrastructure, native fisheries, tourism and outdoor recreation. The threats to native biodiversity from marine invasive alien species, either from deliberate or accidental introductions (e.g., in contaminated ballast water or as encrusting organisms on ships), are increasingly serious and very poorly understood.

7. A large proportion of globally and locally threatened species and ecosystems are at risk from invasive alien species. Habitat loss remains the primary threat to most species, but the impact of invasive alien species is an additional significant threat. The impacts on oceanic islands are serious, with a majority of all extinctions of mammals, birds, amphibians, reptiles, land crabs, land snails and insects being directly or indirectly the result of invasive alien species. They also have a significant impact on economies: worldwide, for example, it has been estimated that the cost of damage from such species in 2001 exceeded \$1.4 trillion, amounting to 5 per cent of the global economy.⁵¹ The use of pesticides to control invasive alien species is also a major cause of the loss of biodiversity and represents a threat to human health. Similarly, invasive alien species may introduce pathogens leading to significant public and agricultural health burden and associated disease treatment and control cost.

D. Utility

8. The rapidly growing threat that invasive alien species pose to biodiversity, ecosystem services, sustainable development and human well-being is generally poorly quantified and understood by decision makers. The proposed assessment would raise awareness of the nature and seriousness of the threat posed by such species and identify policies that could be used at the international level and by Governments, the private sector and civil society to prevent the spread of, eradicate or control the impact of invasive alien species. This assessment would highlight how the Platform can add value to policy formulation to address the biodiversity crisis.

9. The assessment will aim to address, inter alia, questions of relevance to decision makers dealing with invasive alien species, such as:

- (a) What progress has been made in tackling the Aichi Biodiversity Targets of relevance to invasive alien species globally?
- (b) What global-level policy initiatives would assist in invasive alien species prevention and management?
- (c) What are the obstacles to the uptake of invasive alien species prevention and management measures?
- (d) What methods are available for prioritizing invasive alien species threats?
- (e) How can networks assist in the prevention and management of invasive alien species? What role can regional partnerships play?
- (f) Are there perverse policy drivers that unintentionally create risks in relation to invasive alien species?
- (g) How can decision makers decide which issues to tackle first given limited resources?
- (h) Would there be value in developing a database of effective legislation, monitoring and response systems for invasive alien species, and of those countries and other stakeholders in need of capacity-building?
- (i) What are the impacts, risks and benefits of invasive alien species for biodiversity and ecosystem services, sustainable development and human well-being?
- (j) How might policy sectors, businesses, non-governmental organizations and other stakeholders benefit from better prevention and management of invasive alien species?
- (k) How does one prevent and manage invasive alien species that cause harm to biodiversity but contribute to economic activities?

⁵¹ Pimentel, D., et al., 2001. "Economic and environmental threats of alien plant, animal, and microbe invasions". *Agriculture, Ecosystems and Environment* 84: 1–20.

E. Assumptions

10. The proposed assessment will be based on existing assessments, scientific literature, grey literature and indigenous and local knowledge and will draw on the work of existing institutions and networks (see section IV on relevant stakeholders). The assessment team will be able to draw upon a list of references of published and grey literature, along with comments assembled during the e-conference scoping process. Levels of confidence, as outlined in the Platform's guide for assessments, will be assigned to all findings. The assessment expert group will be diverse in terms of skills, gender and global coverage.

11. The assessment expert group will consist of 2 co-chairs, 52 authors and 12 review editors, who will be selected in accordance with the procedures for the preparation of the Platform's deliverables following a call for nominations after approval of the scoping report by the Plenary. The assessment expert group will be supported by a technical support unit (comprising one full-time equivalent Professional staff member).

12. As requested by the Plenary at its third session, the Multidisciplinary Expert Panel, in consultation with the Bureau, has developed a coordinated approach for regional and subregional assessments and thematic assessments. In accordance with this approach, ten authors with expertise in invasive alien species have been embedded in each of the expert groups for the four regional assessments approved by the Plenary at its third session.⁵² These 40 experts are to contribute both to the regional assessments and, by virtual means, to the thematic assessment of invasive alien species. In addition, two of these ten experts from each of the regional assessments will be fully integrated, as lead authors, in the expert group for the invasive alien species assessment in order to ensure full coherence among all the assessments with regard to work on such species.

II. Chapter outline

13. The thematic assessment report will be a policy-relevant six-chapter report, as set out below.

14. Chapter 1 will be an introduction to the assessment. It will introduce the concept of invasive alien species. It will include terminology and definitions; the risks posed by such species to marine, freshwater and terrestrial ecosystems; information on invasive alien species in the context of the Platform's conceptual framework; and a brief overview of the importance of understanding perceptions of invasive alien species in the context of different value systems. The chapter provides a roadmap to the assessment.

15. Chapter 2 will provide an analysis and synthesis of previously completed invasive alien species assessments, the Platform's regional assessments, the scientific and grey literature and information from indigenous and local knowledge systems. The chapter should provide a synthesis of past and future trends in the spread, pathways, evolutionary change and distribution of invasive alien species and identify gaps in existing knowledge.

16. Chapter 3 will provide an analysis and synthesis of direct and indirect drivers responsible for, inter alia, the introduction, spread, abundance and dynamics of invasive alien species from previous assessments, Platform regional assessments, the scientific and grey literature and information from indigenous and local knowledge systems.

17. Chapter 4 will provide a global and overall analysis and synthesis of the environmental, economic and social impact of invasive alien species from previous assessments, including the Platform's regional and subregional assessments, the scientific and grey literature and information from indigenous and local knowledge systems. The chapter will focus on the impact of invasive alien species on nature and nature's benefits to people and a good quality of life, as defined in the conceptual framework, including non-economic values, e.g., cultural, social and shared, recreational, scientific, spiritual and aesthetic values.

18. Chapter 5 will review the effectiveness of past and current programmes and tools for the global, national and local prevention and management of invasive alien species and their impacts. In particular, the chapter will consider and assess past experience with:

(a) Preventing the international and intranational spread of invasive alien species, including the role of trade and economic development;

⁵² The undertaking of four regional assessments was approved by the Plenary in decision IPBES-3/1, section III, paragraph 1.

- (b) The precautionary approach in preventing and managing invasive alien species and the efficacy of risk assessment as a tool for managing such species;
- (c) National quarantine measures and the adoption of biosecurity approaches;
- (d) Managing complexity and intersectoral conflict, e.g., introduced species that are useful or harmful, depending on context and values;
- (e) Uses of social media and citizen science for the detection, prevention and management of invasive alien species outbreaks;
- (f) Eradicating or managing invasive alien species once they are present, including control options such as precision application of pesticides, baits and biological control, depleting populations of such species through use and exploitation and other practices such as “gene drive” technology. Methods for the ethical control of invasive animals will be documented;
- (g) Capacities of different countries to manage invasive alien species, and barriers to the uptake of tools; and
- (h) Managing invasive alien species in protected areas, including wetlands designated as significant under the Convention on Wetlands of International Importance, especially as Waterfowl Habitat, and biosphere reserves;
- (i) Managing biological communities in which invasive alien species are present, considering co-existence, including direct and indirect interspecific interactions.

19. Chapter 6 will explore future options for the prevention and management of invasive alien species and provide an analysis of possible support tools for decision makers, such as the categorization and classification of invasive alien species according to the type and magnitude of their impact, as well as an analysis of their costs and benefits, in order to support decision-making about prevention and management and control options regarding invasive alien species. The chapter will present options for global awareness-raising, for creating early warning systems, for capacity-building and for sharing knowledge internationally and regionally in respect of prevention and management. The assessment will also suggest policy options for handling complex intersectoral trade-offs. Options such as strengthening international networks and customs controls, developing strategies and procedures for forecasting the spread of invasive alien species and preventing and controlling such spread will be assessed. The chapter will explore, where possible, information using scenarios and models for future invasive alien species trends, including their spread.

III. Indicators, metrics and data sets

- 20. Biodiversity and ecosystem service indicators serve multiple purposes that can broadly be categorized into three key functions: (a) tracking performance; (b) monitoring the consequences of alternative policies; and (c) scientific exploration. Assessments use these indicators mainly for the first two purposes.
- 21. The assessment will review the use and effectiveness of existing indicators, such as those developed by the Biodiversity Indicators Partnership, and will explore other possible indicators that could be used.
- 22. The assessment will survey the availability of data, recognizing that the scoping process indicated that such data are likely to be very patchy globally. Where possible, the assessment will be carried out at the country scale, or at a more detailed “actionable” scale when appropriate. Data collection and structuring should allow disaggregation based on relevant variables such as environment or system and taxa.
- 23. The assessment will use existing knowledge products and tools.

IV. Relevant stakeholders

24. Important stakeholders for this assessment will include decision makers who deal with biodiversity and borders and health. For such stakeholders, there needs to be a strong focus in the assessment on the benefits for countries and their people, including human well-being, of managing the risks of invasive alien species. However, because these species are often the result of intentional movement of species, or of human-driven processes such as trade, important stakeholders will also include international trade organizations, border officials and agencies involved in the intentional movement of species such as those in the forestry and agriculture sectors. Much invasive alien species prevention and management must be conducted at the local level. The assessment findings will

therefore need to be communicated through context-sensitive material to a broad range of audiences at various scales, including indigenous and local knowledge holders. In addition, public demand for novel pets and ornamentals is a rich source of invasive alien species and many Governments will probably need support in communicating with this important risk-creating sector. Useful communication materials stemming from the assessment could also include training material for natural resource managers and case studies of successful invasive alien species prevention and management plans. The assessment will consider the benefits of building an invasive alien species global support network to facilitate the sharing of expertise and experience. Maintaining capability and continuity in the long term has been a significant issue for many countries in the past; the assessment will need to explore mechanisms to address that.

V. Capacity-building

25. The list of priority capacity-building needs approved by the Plenary at its third session will be used in the invasive alien species assessment.

26. Capacity-building with regard to invasive alien species will aim to improve human, institutional and technical capacities in the long term for the informed and effective implementation and use of assessments, for the development and use of policy support tools and methodologies and for improving access to necessary data, information and knowledge. It will draw upon the findings of the assessment, aiming to improve the science-policy interface. An important capability may well be the expertise to carry out assessments of existing and potential invasive alien species threats for any development or project and, based on these assessments, develop biosecurity plans and species management plans.

27. The assessment will identify gaps in scientific and other skills that are hindering the prevention and sound management of invasive alien species, including in relation to taxonomy, expertise in biotic impact assessment, active adaptive management, structured decision-making, systematic conservation planning and known response and management approaches (eradication, integrated pest management and biological control) and associated infrastructure.

VI. Process and timetable

28. The proposed process and timetable for preparing the assessment report, including actions, milestones and institutional arrangements, are set out below.

<i>Date</i>	<i>Actions and institutional arrangements</i>
Year 1	
First quarter	The Plenary approves the conduct of the thematic assessment of invasive alien species and their control coupled with the regional assessments of biodiversity and ecosystem services, asks for offers of in-kind technical support for the assessment and requests the Bureau and the secretariat to establish the necessary institutional arrangements to put in place technical support The Chair, through the secretariat, requests from Governments and other stakeholders nominations of experts to prepare the assessment report
Second quarter	The secretariat compiles the list of nominations The Panel selects the assessment co-chairs, coordinating lead authors, lead authors and review editors, using the approved selection criteria set out in decision IPBES-2/3 (IPBES/2/17, annex) Meeting of the management committee (co-chairs, head of the technical support unit, and Multidisciplinary Expert Panel/Bureau members) to select remaining expert team and respective roles (i.e., coordinating lead authors, lead authors and review editors) and prepare for the first author meeting Selected nominees contacted, gaps filled and list of co-chairs, authors and review editors finalized
Second/early third quarter	First author meeting with co-chairs, coordinating lead authors and lead authors, 8 liaison experts involved in regional assessments (two experts for each of the four regional assessments), Panel/ Bureau members.
Fourth quarter	Zero order drafts of chapters prepared and sent to secretariat (technical support unit)

<i>Date</i>	<i>Actions and institutional arrangements</i>	
Year 2	First quarter	First order drafts of chapters prepared and sent to secretariat (technical support unit) Compilation of chapters into a first order draft (6 weeks)
	Second quarter	First order draft of collated regional and subregional invasive alien species assessments sent for expert review (6 weeks, June/July) Collation of review comments by secretariat (technical support unit) for first draft sent to authors (2 weeks)
	Early third quarter	Second author meeting including: 8 liaison experts involved in the regional assessments, Panel/ Bureau members, co-chairs, coordinating lead authors and review editors
	Third quarter	Second order drafts of chapters and first order draft of summary for policymakers prepared (5–6 months)
Year 3	First quarter	Second order draft of the assessment and first order draft of the summary for policymakers sent for Government and expert review (2 months)
	First quarter	Collation of review comments for second order draft of the assessment and first order draft of the summary for policymakers sent to authors (2 weeks)
	Second/early third quarter	Third author meeting (co-chairs, coordinating lead authors, lead authors, review editors and Panel/Bureau members)
	Third quarter	Final text changes to the assessment and the summary for policymakers (6 months)
	Fourth quarter	Translation of the summary for policymakers into the six official languages of the United Nations (12 weeks before the Plenary session)
	Fourth quarter	Submission of the assessment, including the translated summary for policymakers, to Governments for final review prior to next Plenary session (6 weeks)
	Fourth quarter	Final Government comments on the summary for policymakers for consideration by authors prior to next Plenary session
Fourth quarter	Plenary to approve or accept the thematic assessment of invasive alien species, including the summary for policymakers	

VII. Cost estimate

29. Discussions regarding the Platform's work programme budget at the fourth session of the Plenary indicated that the indicative cost of this assessment should not exceed \$800,000. A revised cost estimate for this assessment will be presented at the fifth session of the Plenary, when the launch of the assessment will be reconsidered.