

Annex I

**DRAFT METHODS FOR COST-BENEFIT AND COST-EFFECTIVENESS ANALYSIS WHICH
BEST APPLY TO THE MANAGEMENT OF INVASIVE ALIEN SPECIES**

(PROVISIONAL ADVICE PURSUANT TO DECISION 14/11, ANNEX II, PARAGRAPH 1 (A))

1. Aichi Biodiversity Target 9 states the need for invasive alien species and pathways to be identified and prioritized and for priority species to be controlled or eradicated. The extended technical rationale for this target (UNEP/CBD/COP/10/INF/12/Rev.1) includes the statement that “Given the multiple pathways for invasive species introductions and that multiple alien species are already present in many countries, it will be necessary to prioritize control and eradication efforts to those species and pathways which will have the greatest impact on biodiversity and/or which are the most resource effective to address.” Accordingly, a clear need exists to develop methods to prioritize invasive alien species and the active management thereof.
2. Established cost-benefit and cost-effectiveness methods are widely available and already in use in some regions to assist invasive alien species management decision-making, including prioritization. However, these existing analyses typically require detailed information, for example on costs, and may need technical expertise to apply. Including consideration of biodiversity, animal welfare and public acceptability in cost-benefit analyses can also be problematic as, although possible, these are often difficult to represent in simple financial terms.
3. The final decision to eradicate or manage an invasive alien species carries significant costs and risks. While these rapid methods may produce “short lists” of priority species to consider for management, more detailed pilot studies and economic assessments are recommended before commitments to management are made.
4. To support risk management, methods may be required when large numbers of species need to be rapidly assessed, where detailed information is often lacking and where non-monetary based inputs on social and cultural values are required.

A. Multi-criteria methods

5. Multi-criteria methods can be used in circumstances where more detailed, but data-hungry approaches, such as cost-benefit analysis, may be impractical. Multi-criteria methods provide a route to the rapid assessment of options and are already widely used to support invasive alien species decision-making – for example through the risk assessment process. There is scope to use multi-criteria methods more widely to support decision-making to answer questions such as how to prioritize species for management, when to choose between prevention, eradication or long-term management objectives, how to produce rapid assessments of large numbers of species, or how to compare the feasibility of different management options?
6. Multi-criteria decision-making is concerned with structuring and solving decision and planning problems involving multiple criteria. By breaking problems down into their different components they can be used to assess decisions in a transparent and rational manner, they can be rapidly applied to large numbers of cases, and by using expert opinion, or the knowledge of indigenous peoples and local communities with their prior and informed consent, free prior and informed consent or approval and involvement, they can still be applied where published information is lacking. These modelling and methodological tools are designed to find optimal solutions to complex problems where assessment criteria or data are measured in different currencies.
7. Because multi-criteria approaches often operate in the absence of published data, this may raise concerns over the use of opinion or unsubstantiated information. The way in which multiple criteria are combined to support an overall conclusion can also be problematic and is often based on pragmatism rather than a validated approach. Nevertheless, multi-criteria methods and cost-benefit analysis complement each other, for example an initial prioritization based on a large number of options may be undertaken using a

multi-criteria approach, but the proposed priorities may then be more fully assessed using a more rigorous approach such as cost-benefit before resources are committed.

B. Advice for actions

8. Coordinated national, subnational and local response strategies should be developed to minimize incursions and impacts of invasive alien species, such as national, subnational and local invasive species strategies and action plans as a part of national, subnational and local biodiversity strategies and action plans. This could include strengthening and coordinating existing programmes, identifying and filling gaps with new initiatives, and building on the strengths and capacities of partner organizations, including academia and scientific institutions, indigenous peoples and local communities and women and youth at the national, regional and local levels.

9. The best available prioritization methods should be applied to prioritize management of dispersal pathways of invasive alien species within as well as between countries, and for assessing feasibility and cost-effectiveness. These methods should be in a form compatible with and complementary to existing approaches to risk assessment. Methods used for risk-prioritization of invasive alien species include cost-benefit, cost-effectiveness and risk analysis. However, the detailed information required to undertake cost-benefit and cost-effectiveness analyses are often in short supply or uncertain, and these analyses require sufficient technical expertise. A number of science-based prioritization methodologies for invasive alien species, horizon-scanning, and impact and management for single or multiple types of invasive alien species have been developed by Parties or independent international science teams and are worth consideration by other countries.

10. Knowledge exchange should be promoted, as well as training and capacity-building to apply the best available prioritization methods consistently across environments.

11. The best available methods for prioritizing the invasive alien species to be managed and for assessing feasibility and cost-effectiveness should be used, in a form compatible and complementary to existing approaches to risk assessment. Multi-criteria decision-making approaches should be used to support risk-based prioritization for management when information required to undertake cost-benefit and cost-effectiveness analysis is lacking or uncertain.

12. States, sectoral authorities and organizations and subnational governments are encouraged to share information on their best practices regarding tools and technologies for the management¹ of invasive alien species that can be implemented across sectors at all levels.

13. *Multi-criteria decision-making* approaches can be used, wherever possible, when applying risk analysis, cost-benefit and cost-effectiveness analyses to support risk-based prioritization. Invasive alien species prioritized by actual or potential impacts using such rapid methods can then be considered in more detail to ensure that management, based on clear objectives, is indeed cost-effective and feasible. Multi-criteria decision-making can consider such aspects as effectiveness, practicality, feasibility, likelihood of success, cost, public acceptability, including to indigenous peoples and local communities, women and youth of proposed actions as well as any unintended negative impacts of management alongside the risks and impacts posed by the targeted invasive alien species, in line with relevant multilateral agreements. These methods involve a structured process and can help resolve issues associated with decision-making and planning that involve multiple criteria and are designed to find optimal solutions to complex problems where assessment criteria or data are measured in different ways. They can also be used with expert elicitation when only incomplete or imprecise information is available.

14. Multi-criteria methods to support invasive species prioritization, risk management and decision-making need to be developed further. Opportunities for development include:

¹ This refers to the “application of measures to prevent the introduction of, control or eradicate invasive alien species” (see [CBD/IAS/AHTEG/2019/1/2](#), para. 13(e)).

(a) There is considerable variation in the methods and approaches to prioritization and decision making used in different countries – reviewing the strengths and weaknesses of other approaches to this issue would be valuable;

(b) Risk management as part of a larger risk analysis process is widely used in other fields, such as plant health – increased dialogue with experts from these fields would help to develop best-practice;

(c) Other considerations will be needed when applying the approach to different management questions;

(d) Cases in which multi-criteria methods have been applied to invasive alien species management decision making are still limited – more trials and applications would help refine the approach;

(e) Where possible, published quantitative data should be used to underpin decision-making, in order to better identify and access key information.

15. It is suggested that guidelines be developed in order to more explicitly include social and cultural values when assessing the costs, benefits and prioritization of management. This could build on existing processes (for example, Socio-economic Impact Classification of Alien Taxa (SEICAT)) and international best practices on stakeholder engagement in decision-making. Decisions and risk analyses should be based on science and should follow international standards agreed under relevant international organizations, such as the agreement on the application of sanitary and phytosanitary measures, as appropriate.

16. It is recommended that efforts be made to increase the accessibility of data and vocabulary on management activities across species and ecosystems to support evidence-based management prioritization and decision-making. This will be assisted by the creation of common approaches to sharing and reporting experience and information, common data formats that include information on the taxon, management objective, cost and/or effort, area covered and the outcome of management. To promote the production of prioritized lists for action, there is a need for knowledge exchange, training and capacity-building.

17. It is recommended that, in communicating risks associated with invasive alien species it be highlighted that these risks can affect biodiversity and the economy of indigenous regions/peoples and local communities as well as public health.