

6



Reduce the
Introduction and
Impact of Invasive
Alien Species

Using a cost-benefit, cost-effectiveness and multi-criteria analysis to address invasive alien species

Invasive alien species are one of the leading drivers of biodiversity loss worldwide. Preventing their introduction, reducing their spread and managing their impacts are at the centre of Target 6 of the Kunming–Montreal Global Biodiversity Framework. Because countries often have to deal with multiple invasive species, pathways and affected sites at the same time, it is essential to prioritize actions and use resources effectively.

Did you know that a cost-benefit, cost-effectiveness and multi-criteria analysis can support better decision-making for the management of invasive alien species?

Given the limited financial, technical and human resources, decision makers need tools that help them to compare options, understand trade-offs and select actions that are effective, feasible and adapted to national circumstances. Prevention and early action have consistently proved to be among the most cost-effective strategies for addressing invasive alien species.



Convention on
Biological Diversity



Kunming–Montreal
GLOBAL BIODIVERSITY FRAMEWORK

COST-BENEFIT ANALYSIS

A cost-benefit analysis can be used to compare the costs, benefits and effectiveness of managing specific species or applying management actions in monetary terms.

COST-EFFECTIVENESS ANALYSIS

A cost-effectiveness analysis can be used to measure the costs of different actions against their effectiveness in non-monetary terms.

For invasive alien species, those methods can be used to:

- Provide information on the need for and importance of prevention actions
- Support decisions on the management of invasive alien species, including prioritization
- Determine best management options and assess their feasibility and cost-effectiveness

When using the two methods above, the following should be considered:

- Analyses should be as comprehensive as possible and should ideally encompass multiple areas, such as biodiversity; potential impacts on other non-target species; animal welfare; public acceptability; potential impacts on indigenous peoples and local communities, women and youth; and human health issues
- Consideration of when to proceed with an intervention should be given on a case-by-case basis, even in the absence of all desirable information, and to weighing the time needed for planning a management strategy against the importance of taking prompt and early action
- The final decision to take actions to eradicate, contain or manage and control an invasive alien species carries significant costs and risks, including the cost of inaction; as a result, whenever possible, pilot studies and economic assessments are recommended before decisions are made. This, however, is not always feasible, and there are rapid methods that can be used to inform management actions. These include quick non-monetary assessments, that may assist in producing “shortlists” of priority species or sites.
- These methods are particularly useful for strategic planning and policy-level decisions, even though some biodiversity, social and cultural values may be difficult to express in monetary terms

MULTI-CRITERIA ANALYSIS

A multi-criteria analysis provides a structured process that can help to resolve issues involving several factors and identify the best solutions to complex problems that need to be tackled through various assessment criteria or data sets. It is especially useful for:

- Choosing between prevention, eradication or long-term management objectives
- Producing a rapid assessment of a large number of species
- Comparing the feasibility of various management options

Multi-criteria approaches can also be used when applying risk, cost-benefit and cost-effectiveness analyses to support risk-based prioritization. Invasive alien species prioritized by actual or potential impacts on the basis of such rapid methods can then be considered in more detail to ensure that management is effective, cost-effective and feasible.

When using a multi-criteria analysis, the following should be considered:

- A multi-criteria analysis often operates in the absence of published data. Therefore, concerns may be raised over the use of experts' opinions or unsubstantiated information. To address this issue, the source, relevance and limits of the information and data used, as well as their respective uncertainties, should be integrated into the analysis and explicitly presented in the interpretation of the results.
- Multi-criteria analyses could benefit from existing risk analyses for some species and standardized methods for impact assessment, such as the environmental impact classification for alien taxa* and the socioeconomic impact classification for alien taxa.**
- The way in which multiple criteria are combined to support an overall conclusion can also result in divergent views, as the conclusion is often based on pragmatism rather than a validated approach. Case-by-case assessments of the usefulness of those methods under specific circumstances are therefore advisable.

HOW THE VARIOUS APPROACHES SUPPORT THE IMPLEMENTATION OF TARGET 6

Used together, the various approaches described above can:

- Support the prioritization of invasive alien species, pathways and priority sites
- Inform decisions on prevention, eradication, containment and long-term management
- Strengthen national biodiversity strategies and action plans and invasive species strategies
- Improve transparency, accountability and the communication of decisions

Key Message

There is no single method that fits all situations. Combining cost-benefit, cost-effectiveness and multi-criteria analyses helps decision makers to choose the right actions at the right time, using the best available information to protect biodiversity and support people's well-being.

Learn more at the [CBD website on invasive alien species](#) and through the elements of voluntary guidance on invasive alien species contained in annex I to decision [16/18](#).

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* See www.iucn.org/resources/conservation-tool/environmental-impact-classification-alien-taxa.

** Sven Bacher and others, "Socioeconomic impact classification of alien taxa (SEICAT)", *Methods in Ecology and Evolution*, vol. 9, No. 1 (April 2017).

