THE BIODIVERSIT CONSULTANCY

Invasive alien species: best practice guidance for industry

Business relevance and implications

- Governments, International Financial Institutions and stakeholders are increasing pressure on projects to take pro-active measures to prevent and control Invasive Alien Species.

- Pro-active prevention of invasion is by far the most cost-effective approach to manage IAS.

What are Invasive Alien Species (IAS)?

An alien plant or animal species is 'one that is introduced beyond its original range of distribution' by humans, either on purpose or accidentally, according to the International Finance Corporation (IFC)¹. A subset of these species are described as **invasive** because they negatively impact native biodiversity, ecosystem services or human wellbeing, due to their ability to spread and become established rapidly in the new environment.

Invasive plants are often called weeds, while invasive animals are commonly referred to as pests. Invasive species can also include Living Modified Organisms (Genetically Modified Organisms), which do not naturally occur anywhere.

IAS may include species native to the country of operations, but not native to the specific project area. This distinction is particularly important in freshwater systems, where connections between catchments are limited.

Invasive Alien Species have contributed to 58% of extinctions world-wide – and often cited as the second biggest threat to biodiversity after habitat destruction and over-exploitation since 1500^2 . This is despite the fact that only 5–20% of species introduced outside their native range have negative impacts on the biodiversity, ecosystem services or human well-being in their new environment, as defined by the International Union for Conservation of Nature (IUCN).



Lantana camara, originally from tropical America, has now spread globally invading natural ecosystems, outcompeting native species and negatively affecting agricultural productivity.

At a glance

 Invasive Alien Species (IAS) are introduced by humans to areas outside their natural range and have negative impacts on native biodiversity.

Briefing note

- Invasive Alien Species have contributed to 58% of extinctions world-wide – representing the biggest threat to biodiversity after habitat destruction and over-exploitation.
- Prevention of invasion is by far the most cost-effective approach, followed by early eradication and then on-going management.
- A range of existing measures can be adopted by companies to prevent and manage IAS establishment and spread at project sites. The key to success is understanding the potential invasion 'pathways'.
- 1. IFC defines alien plant or animal species in Paragraph 119 of IFC Performance Standard 6
- 2. Bellard C, Cassey P, Blackburn TM. 2016 Alien species as a driver of recent extinctions. Biol. Lett. 12: 20150623.

INVASIVE ALIEN SPECIES: BEST PRACTICE GUIDANCE FOR INDUSTRY

Risk to industry

Compliance – as part of project guidelines, many lenders and national laws and regulations require organisations to manage IAS. Failure to comply with these standards and regulations may damage relationships with regulators, lead to the suspension of licences, or restrict access to finance.

Costs – the most cost effective way to control IAS is to establish good biosecurity controls at the start of a project to prevent (or significantly reduce) the risk of IAS invasion and establishment. Preventing IAS establishment is vastly more cost effective than controlling invasion through surveillance and eradication measures.

Reputational – as a major actor in an area, industry risks being held accountable if IAS become established and impact local environments, even if not ultimately responsible. Strong IAS prevention, monitoring and response plans are required to demonstrate best-practice approaches. Whether projects **directly** or **indirectly** introduce or spread IAS, stakeholders may hold companies to account for any subsequent environmental or socio-economic impacts.

How does invasion happen?

A "pathway of introduction" is the means of transportation, escape and/or release, of a species to an area outside its natural range. Common pathways of introduction include transport in ship ballast water or contaminants in construction materials and aggregates. Pathways of introduction include:

- Deliberate introduction for food, aquaculture, forestry, rehabilitation, landscaping, pets or as biocontrol agents, (i.e. intended to be a "natural" pest control method).
- Accidental introduction through movements of soil, in ballast water or as fouling on ship hulls, contaminated filler materials, host organisms or on project machinery or infrastructure.
- 3. Already present in the project site, but then spread around the site and surrounding areas through project activity. This can occur through accidental movement of IAS during project operations or by creating conditions that enable IAS to disperse, such as building a road or power line through a forest (creating a corridor of disturbed habitat) or connecting previously isolated lakes or catchments.



Guava (*Psidium guajava*) has been deliberately and widely introduced for food. It has caused severe damage to native ecosystems, notably in the Galapagos.



ramosissima introduced

The common shore crab (*Carcinus maenas*) is commonly introduced (accidentally) to new areas through ship ballast water – giving it a direct link to industry.



Japanese knotweed (*Polygonum cuspidatum*), introduced as an ornamental but accidentally spread via contaminated soil, carries large fines for inappropriate disposal in many countries.





Dutch elm disease is caused by fungal pathogens. Its intercontinental, rapid spread is directly attributable to international trade in timber and firewood.

INVASIVE ALIEN SPECIES: BEST PRACTICE GUIDANCE FOR INDUSTRY

Managing Invasive Alien Species

An expert-informed plan is essential for managing IAS and should include a biosecurity protocol for **preventing** invasion, and **monitoring**, **eradicating** or **controlling** species already present.

Prevention

Prevention is the most economical and effective option (see Figure 1, *right*) for controlling IAS. Biosecurity for preventing IAS should focus on three points:

1. *At source*, to prevent the transport of IAS from the point of origin (e.g. country or operations site).

This includes appropriate cleaning, treatment and packing procedures and then inspection and certification of goods or equipment.

- 2. At international borders and/or entry to the project site, to prevent import of IAS. This includes appropriate inspection, treatment and quarantine procedures undertaken by either government agencies (i.e. quarantine services) or project staff (e.g. equipment moved within country).
- 3. *On site*, as ongoing surveillance to trigger rapid response measures to eradicate any IAS before they establish at the project site.

Eradication

For established species, eradication is the best management option and the second most costeffective option after prevention. Identifying the likely pathways of IAS invasion is vital to the success of any eradication effort. It may therefore be important to engage other stakeholders to ensure eradication measures are not undermined by IAS recolonising from adjacent areas.

Control

Control is only recommended when eradication cannot be achieved (e.g. regular re-invasion from other areas, or where eradication measures do not exist, are technically unfeasible or would be harmful to human health etc.). This last report option is much more costly due to the ongoing management requirements.



Figure 1: ©IUCN, Adapted from the Invasive Plants and Animals Policy Framework, State of Victoria Department of Primary Industries, 2010.

Gathering data on IAS risks

The initial development phase of any project is the optimum time to collect information on IAS risks, through:

- Pre-construction baseline. 'In areas where invasive species are known to pose a significant risk to natural and critical habitats, survey and review for such invasive species should be included in the client's preconstruction baseline' (IFC Performance Standard 6 Guidance Note, paragraph 121).
- Preparation of the Environmental and Social Impact Assessment (ESIA). Baseline environmental studies should include information on the IAS present and their distributions in the landscape.
- **Evaluation of offset options**. Improvement of habitat quality, through removal of IAS, may be a measurable way to demonstrate gains for some species or habitats.



Floating barrier for control of the water hyacinth (*Eichhornia crassipes*), an IAS with wide-ranging impacts, such as inhibiting water flow and supply to hydropower projects, as well as outcompeting native aquatic plants and reducing oxygen levels in the water column.

INVASIVE ALIEN SPECIES: BEST PRACTICE GUIDANCE FOR INDUSTRY

Alignment with IFC lending criteria

IFC Performance Standard 6 (PS6) relates to Biodiversity Conservation and Sustainable Management of Living Resources. PS6 Paragraph 6 specifically requires that IFC clients consider direct and indirect project-related impacts on biodiversity and ecosystem services from Invasive Alien Species. In certain cases, especially for projects operating in largely undisturbed habitats, IFC recommends that clients include biosecurity provisions in suppliers' contracts to prevent alien species from arriving in-country.

PS6 Paragraphs 21–23 require that IFC clients: (i) do not deliberately introduce IAS; (ii) put measures in place to avoid accidental introductions; and (iii) manage the spread of any IAS that are already present.

The best way to meet points i) and ii) is to undertake a pathway analysis to identify existing and future potential pathways of IAS invasion relevant to the project. This would consider the project location, the likely sources of equipment or materials for the project and what species (both native and IAS) are present at those source sites which could become IAS at the project site. A pathways analysis should be undertaken as early as possible in the project planning phase to allow findings to be incorporated into appropriate biosecurity protocols.

When IAS are already present (point iii), specific IFC requirements include preventing spread into new areas and taking measures to eradicate such species in areas under the project's management control. This is best achieved through an Invasive Alien Species Management Plan (or similar) which should be an active working document for the life of the project.

The Biodiversity Consultancy works together with industry-leading clients to achieve an ecologically sustainable basis for development by tackling complex biodiversity challenges and supporting positive conservation outcomes.

+44 (0)1223 366238

enquiries@thebiodiversityconsultancy.com www.thebiodiversityconsultancy.com

The Biodiversity Consultancy Ltd, Cambridge, UK

Copyright © The Biodiversity Consultancy 2019. All images used are under licence from Shutterstock.com. First published Jan 2019.



Suggested citation: TBC (2019) "Invasive alien species: best Industry Briefing Note of The Biodiversity Consultancy, Cambridge, UK.

Deliberate introduction is only permitted under the appropriate national regulatory framework or if a specialised risk assessment does not consider that there is a high risk of the species becoming invasive. There is a clear responsibility for clients to prove that any introduced species will not become invasive. Risk assessments have already been carried out for many species, and some of these assessments are freely available online (e.g. the Global Compendium of Weeds). The risks associated with the introduction of Living Modified Organisms should be assessed using the Cartagena Protocol on Biosafety.



There are many well-documented cases of disastrous deliberate introductions. For instance, the cane toad was introduced from its native South and mainland Central America to various islands throughout Oceania and the Caribbean, as well as Australia, to control the cane beetle. The cane toad's reproductive success and toxicity have devastated local fauna. It is one of the 100 worst invasive species worldwide according to the IUCN SSC Invasive Species SG.

Additional resources

- Global Invasive Species Database
- **Global Register of Introduced and Invasive Species**
- IPIECA guidance: Alien invasive species and the oil and gas industry
- Centre for Agriculture and Biosciences (CABI) International Invasive Species Compendium
- Environmental Impact Classification for Alien Taxa (EICAT)

TBC would like to thank IUCN's Invasive Species Specialist Group (ISSG) for its invaluable contribution to this publication. IUCN is the global authority on the status of the natural world and the measures needed to safeguard it. The ISSG promotes and facilitates the exchange of invasive species information and knowledge across the globe and ensures the linkage between knowledge, practice and policy so that decision making is informed.



