



ipbes

Assessment Report on Invasive Alien Species and their Control

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The Intergovernmental Science-Policy Platform on Biodiversity & Ecosystem Services

#InvasiveAlienSpecies Assessment



Food and Agriculture Organization of the United Nations



Developed over 4 years

3 Authors meetings (Tsukuba, online & Aarhus)

2 External reviews

1 Additional review by governments

Produced by a multidisciplinary team of 86 experts and many contributing authors

Over 13,000 documents reviewed in depth

Various values and knowledge systems considered, drawing on scientific and grey literature, and information from indigenous and local knowledge

Engagement with Indigenous and local knowledge

3 dialogue workshops (Montreal and online),

a call for contributions, and

collaboration with ILK experts and holders within the expert team and as contributing authors

#InvasiveAlienSpecies Assessment

Meet the team

86 nominated experts from 47 countries,
encompassing all regions and many disciplines

About 200 contributing authors

Supported by a management committee
Technical support unit based in Japan (Institute
for Global Environmental Strategies, IGES)



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1

- What are invasive alien species?

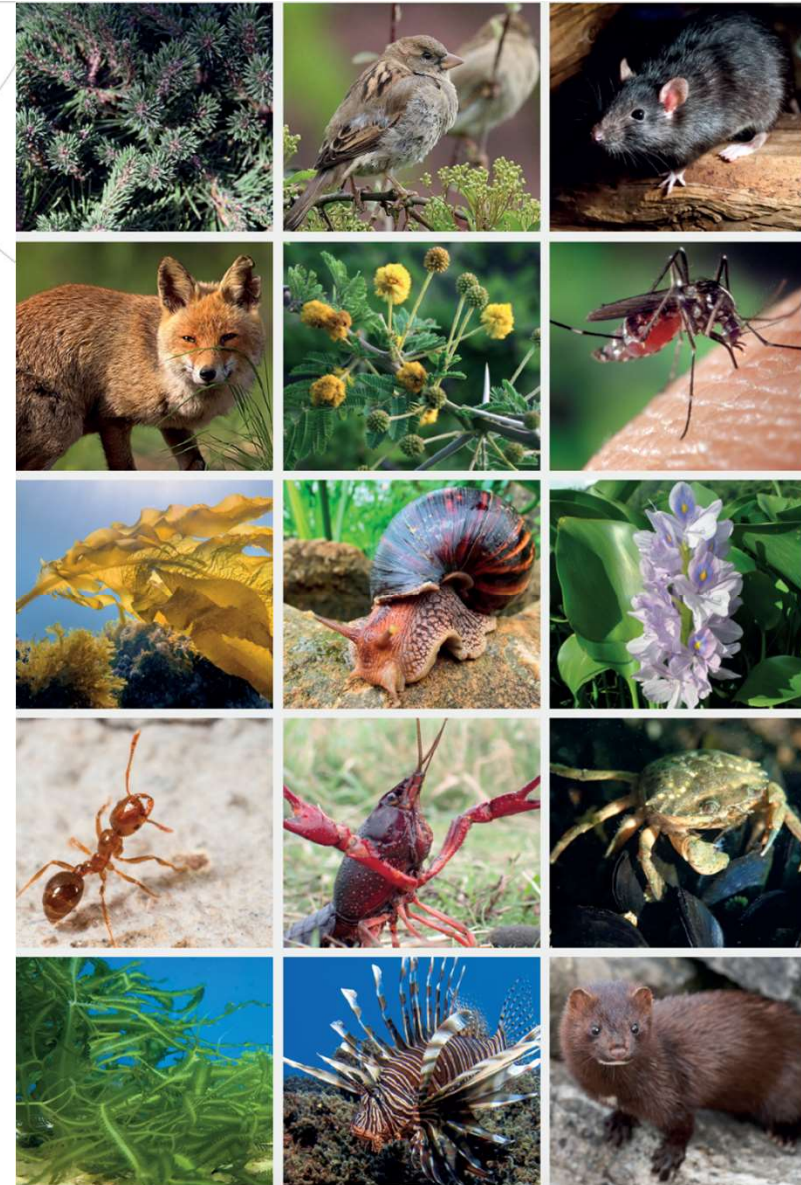


Invasive alien species are one of the 5 major drivers of biodiversity loss

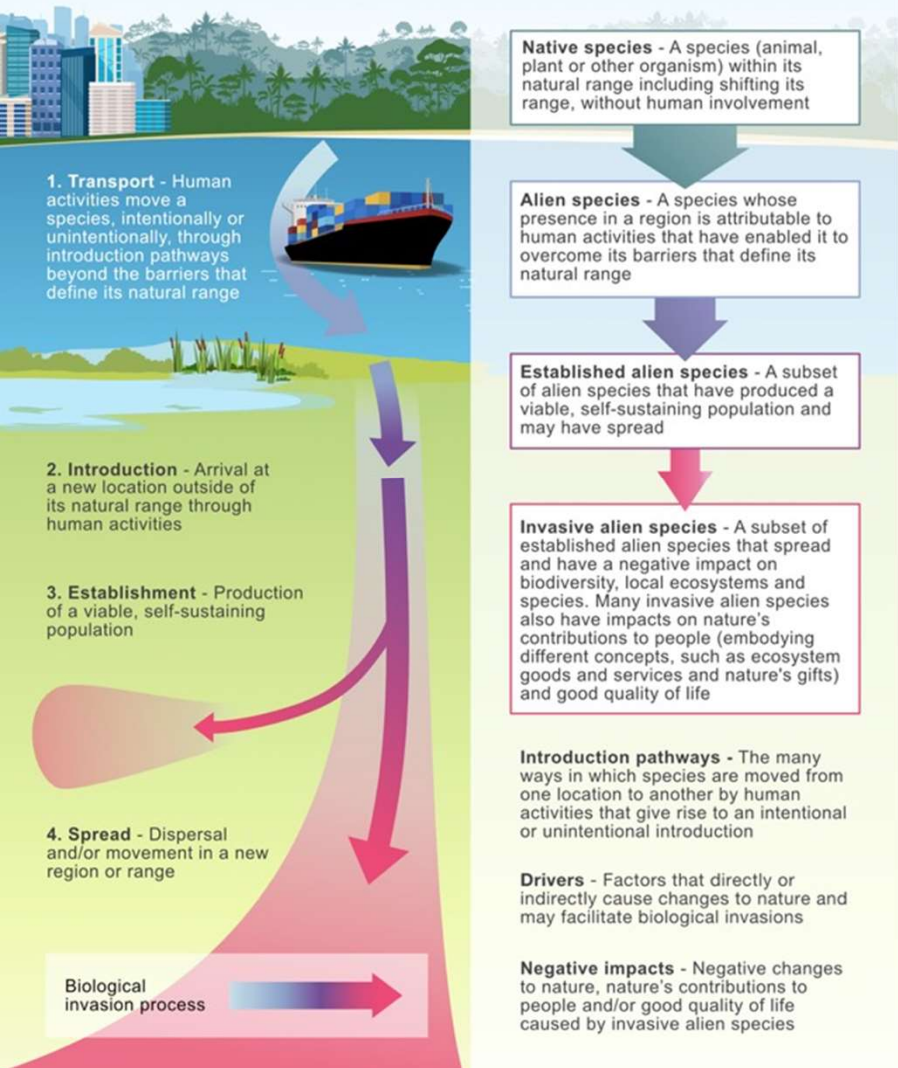
Alien species are animals, plants, and other organisms that have been introduced by human activities to new regions

Invasive alien species are a subset of alien species, known to have established and spread with negative impacts on nature. Many invasive alien species also have impacts on people

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Biological invasion - a process that transports (moves) and introduces a species outside of its natural range, intentionally or unintentionally by human activities to new regions where it may become established and spread



“Biological invasions” is a term used to describe the process involving the intentional or unintentional transport or movement of a species outside its natural range by human activities and its introduction to new regions, where it may become established and spread.



2

■ Findings of the report



People and nature are threatened by invasive alien species in all regions of Earth

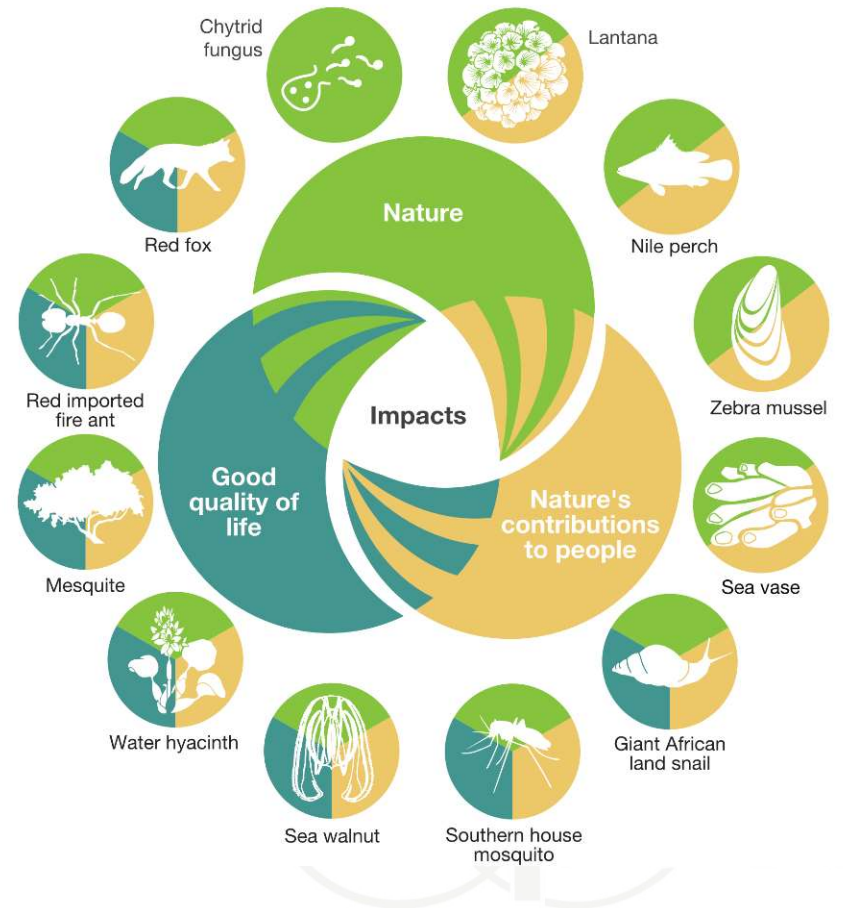
37,000 established alien species have been introduced by human activities worldwide

200 new alien species every year

3,500 invasive alien species, with negative impacts on nature, and also on people

More than 2,300 invasive alien species are found on lands of Indigenous Peoples across all regions of Earth

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Current policies have been insufficient in managing biological invasions and preventing and controlling invasive alien species

Although most countries (80%) have targets for the management of biological invasions within their national biodiversity strategies and action plans

83% of countries do not have national legislation or regulations directed specifically toward the prevention and control of invasive alien species.

Nearly half of all countries (45%) do not invest in management of invasive alien species



A few numbers on impacts

60%

of **global species extinctions** have been caused, solely or alongside other drivers, by invasive alien species

>\$423 billion

is the estimated **global annual costs** of biological invasions in 2019.

85%

of impacts on **nature and good quality of life** are **negative**

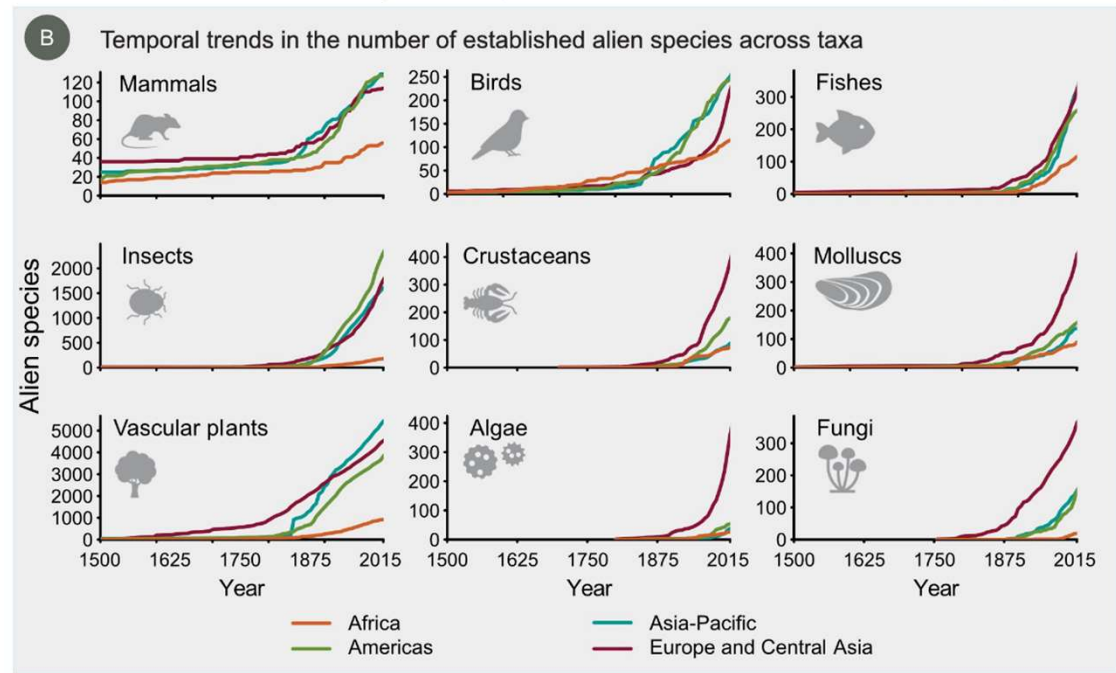
80%

of impacts on **nature's contributions to people** are **negative**

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The threats from invasive alien species are increasing significantly in every region



People at the heart of the problem...

Many human activities facilitate the transport, introduction, establishment and spread of invasive alien species

If things remain unchanged, by 2050 the total number of alien species globally is expected to be about one-third higher than in 2005.

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A large fire burning in a field with firefighters in the foreground. The fire is intense, with bright orange and yellow flames rising into a thick, dark grey smoke that fills the sky. In the foreground, four firefighters in full protective gear are visible, standing in a field of tall, dry grass. They appear to be working to contain the fire. The overall scene is dramatic and highlights the impact of climate change on natural environments.

Invasive alien species and other drivers of change have complex interactions

Other drivers of change such demographic, economic, and land- and sea-use change are increasing and can amplify the threats and impacts of invasive alien species

Climate change will also be a major cause of future increases in the risk of invasive alien species

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... People at the heart of the solution

Biological invasions and their adverse impacts can be prevented and mitigated through effective management

There are **3 management options**:

- (a) management of **pathways** of introduction and spread of invasive alien species;
- (b) management of target **invasive alien species** at either local or landscape scales; and
- (c) **site-based** or ecosystem-based management.

Management includes prevention, preparedness, eradication, containment, control and ecosystem restoration

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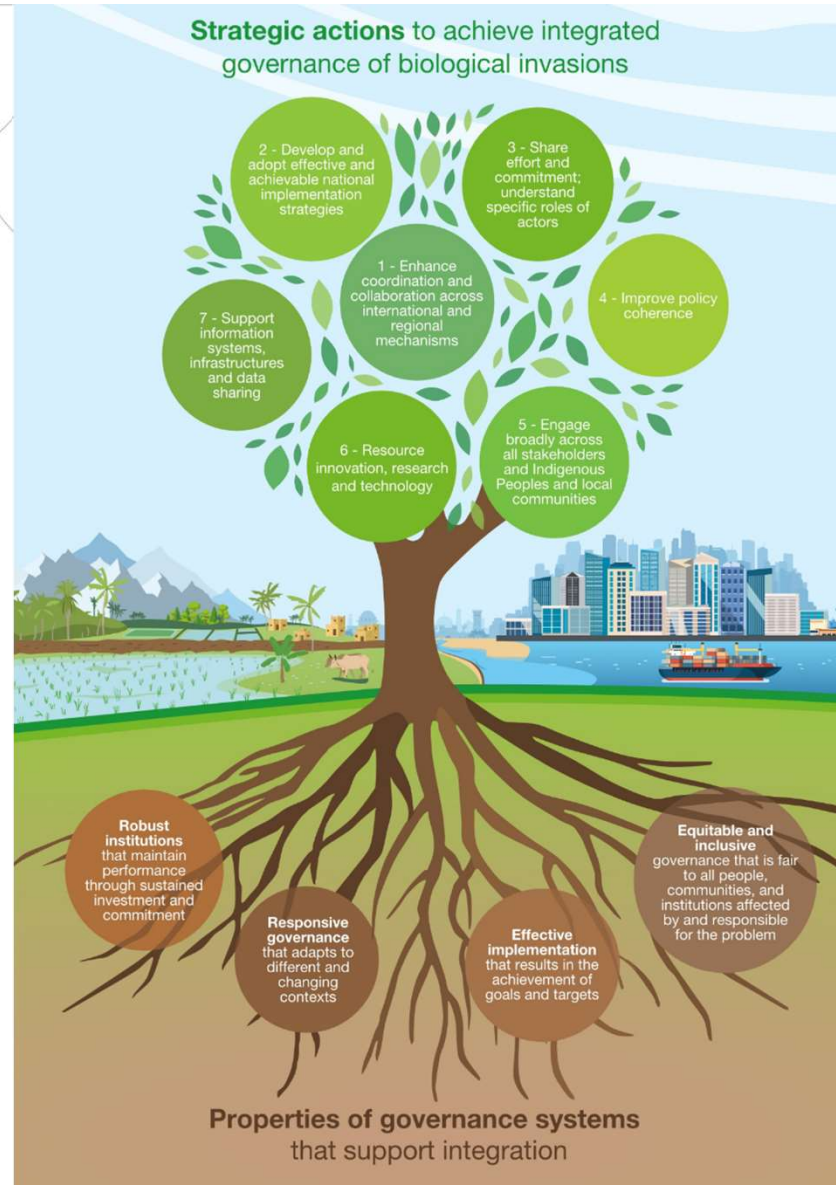


Ambitious progress in biological invasion management can be achieved with integrated governance

In December 2022, Governments have agreed to

“Eliminate, minimize, reduce and or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by identifying and managing pathways of the introduction of alien species, preventing the introduction and establishment of priority invasive alien species, **reducing the rates of introduction and establishment of other known or potential invasive alien species by at least 50 per cent by 2030**, and eradicating or controlling invasive alien species, especially in priority sites, such as islands”
Kunming-Montreal Global Biodiversity Framework, Target 6.

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CATEGORY	GAP	IMPLEMENTATION CHALLENGE		POTENTIAL GAIN	
		Estimated research cost	Estimated scientific challenge	For taking management action	For better understanding biological invasions

Gaps in biomes, units of analysis and species groups

Incomplete or lack of inventories of invasive tropical and Arctic ecosystems {2.5.2.1, 2.5.2.4, 2.5.2.5, 2.5.4}

Incomplete or lack of inventories of invasive plants and invertebrates {2.3.1.11, 2.3.3.3}

Lack of understanding of the drivers of change that facilitate biological invasion for some animal groups (notably fungi and microbes) {3.6.1}

Lack of understanding and synthesis of the drivers of change that facilitate biological invasions in aquatic and marine systems {3.6.1}

Poor understanding of drivers of change that facilitate biological invasions in aquatic and marine systems {3.6.1}

Lack of data on successful restoration attempts in marine systems {5.5.6, 5.6.2.1}

Regional gaps in data and knowledge

Comparatively incomplete inventories of invasive alien species in Africa and Central Asia {2.4.2.5, 2.4.5.5}

Comparative lack of understanding of the drivers of change that facilitate biological invasions in developing regions {3.6.1}

Lack of data and knowledge of the drivers of change that facilitate biological invasions in sub-Saharan Africa, tropical Asia and South America {3.6.1}

Incomplete data on the impacts of invasive alien species in Africa and Central Asia {4.7.2}

Interoperable data for monitoring invasive alien species and effects of drivers of biodiversity change

Lack of standardization of terminology for monitoring {2.4.4.5, 6.6.2.3, 6.6.2.7}

Lack of information on the role of indirect drivers, especially governance and sociocultural drivers, in affecting biological invasions {3.1.5, 3.6.1, Box 3.13}

Lack of understanding of the net effects of multiple interacting drivers in shaping and promoting biological invasions {3.5, Box 3.10, 3.6.1, Box 3.13}

Lack of knowledge on interactions and feedback across drivers in promoting invasions {3.1.5, 3.6.1}

Incomplete or lack of inventories of invasive alien species in marine, tropical and Arctic ecosystems {2.5.2.1, 2.5.2.4, 2.5.2.5, 2.5.4}

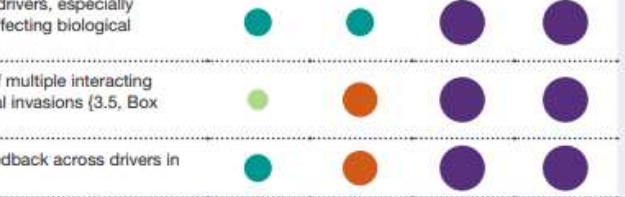
Incomplete or lack of inventories of invasive alien microorganisms and invertebrates {2.3.1.11, 2.3.3.3}

Lack of understanding of the drivers of change that facilitate biological invasion for some animal groups (notably invertebrates), fungi and microbes {3.6.1}

Lack of understanding and synthesis of the impacts of invasive alien microbes {4.7.2}

Poor understanding of drivers of change that facilitate biological invasions in aquatic and marine systems {3.6.1}

Lack of data on successful restoration attempts in terrestrial and marine systems {5.5.6, 5.6.2.1}



CATEGORY	GAP	IMPLEMENTATION CHALLENGE		POTENTIAL GAIN		
		Estimated research cost	Estimated scientific challenge	For taking management action	For better understanding biological invasions	
Interoperable data for monitoring	Lack of integration of impact data and knowledge sources across languages {4.7.2}	●	●	●	●	
Gaps in biomes, units of analysis and species groups	Incomplete or lack of inventories of invasive alien species in marine, tropical and Arctic ecosystems {2.5.2.1, 2.5.2.4, 2.5.2.5, 2.5.4}	●	●	●	●	
	Incomplete or lack of inventories of invasive alien microorganisms and invertebrates {2.3.1.11, 2.3.3.3}	●	●	●	●	
	Lack of understanding of the drivers of change that facilitate biological invasion for some animal groups (notably fungi and microbes) {3.6.1}	●	●	●	●	
	Lack of understanding and synthesis of the impacts of invasive alien microbes {4.7.2}	●	●	●	●	
	Poor understanding of drivers of change that facilitate biological invasions in aquatic and marine systems {3.6.1}	●	●	●	●	
	Lack of data on successful restoration attempts in marine systems {5.5.6, 5.6.2.1}	●	●	●	●	
	Regional gaps in data and knowledge	Comparatively incomplete inventories of invasive alien species in Africa and Central Asia {2.4.2.5, 2.4.5.5}	●	●	●	●
	Comparative lack of understanding of the drivers of change that facilitate biological invasions in developing regions {3.6.1}	●	●	●	●	
	Lack of data and knowledge of the drivers of change that facilitate biological invasions in sub-Saharan Africa, tropical Asia and South America {3.6.1}	●	●	●	●	
	Incomplete data on the impacts of invasive alien species in Africa and Central Asia {4.7.2}	●	●	●	●	
Interoperable data for monitoring invasive alien species and effects of drivers of biodiversity change	Lack of standardization of terminology for monitoring {2.4.4.5, 6.6.2.3, 6.6.2.7}	●	●	●	●	
	Lack of information on the role of indirect drivers, especially governance and sociocultural drivers, in affecting biological invasions {3.1.5, 3.6.1, Box 3.13}	●	●	●	●	
	Lack of understanding of the net effects of multiple interacting drivers in shaping and promoting biological invasions {3.5, Box 3.10, 3.6.1, Box 3.13}	●	●	●	●	
	Lack of knowledge on interactions and feedback across drivers in promoting invasions {3.1.5, 3.6.1}	●	●	●	●	
Implementation challenges and potential gains	Lack of eradication guidelines and strategies for generalist invasive alien invertebrates, diseases and hard-to-detect freshwater and marine invasive alien species {5.6.2.1, Table 5.11}	●	●	●	●	
	Lack of scenarios and models of invasive alien species that consider interactions with other drivers of global change {2.6.5, 6.6.1.6}	●	●	●	●	
	Missing information on the implementation of adaptive-collaborative governance for biological invasions and factors important to the success of that governance strategy {6.4.4.5}	●	●	●	●	
	Incomplete data on the effectiveness of policies, management strategies and actions related to biological invasions {6.1.3, 6.6.3}	●	●	●	●	

CATEGORY	GAP	IMPLEMENTATION CHALLENGE		POTENTIAL GAIN	
		Estimated research cost	Estimated scientific challenge	For taking management action	For better understanding biological invasions
Gaps in biomes, units of analysis and species groups	Comparatively incomplete inventories of invasive alien species in Africa and Central Asia {2.4.2.5, 2.4.5.5}	●	●	●	●
	Comparative lack of understanding of the drivers of change that facilitate biological invasions in developing economies {Box 3.12}	●	●	●	●
	Lack of data and knowledge of the drivers of biological invasions in sub-Saharan Africa, tropical Asia and South America {3.6.1}	●	●	●	●
	Incomplete data on the impacts of invasive alien species across Africa and Central Asia {4.7.2}	●	●	●	●
	Incomplete or lack of inventories of tropical and Arctic ecosystems (2.5.1)	●	●	●	●
	Incomplete or lack of inventories of and invertebrates (2.3.1.11, 2.3.3.3)	●	●	●	●
Regional gaps in data and knowledge	Comparatively incomplete inventories of invasive alien species in Africa and Central Asia (2.4.2.5, 2.4.5.5)	●	●	●	●
	Lack of control options for marine invasive alien species and invasive alien microbial fungal pathogens of plants and animals {5.6.1.1}	●	●	●	●
	Lack of eradication guidelines and strategies for generalist invasive alien invertebrates, diseases and hard-to-detect freshwater and marine invasive alien species {5.6.2.1, Table 5.11}	●	●	●	●
	Lack of information on the role of indirect drivers, especially governance and sociocultural drivers, in affecting biological invasions (3.1.5, 3.6.1, Box 3.13)	●	●	●	●
Interoperable data for monitoring invasive alien species and effects of drivers of biodiversity change	Lack of standardization of terminology for invasive alien species monitoring (2.4.4.5, 6.6.2.3, 6.6.2.7)	●	●	●	●
	Lack of understanding of the net effects of multiple interacting drivers in shaping and promoting biological invasions (3.5, Box 3.10, 3.6.1, Box 3.13)	●	●	●	●
	Lack of knowledge on interactions and feedback across drivers in promoting invasions (3.1.5, 3.6.1)	●	●	●	●

Comparatively incomplete inventories of invasive alien species in Africa and Central Asia {2.4.2.5, 2.4.5.5}

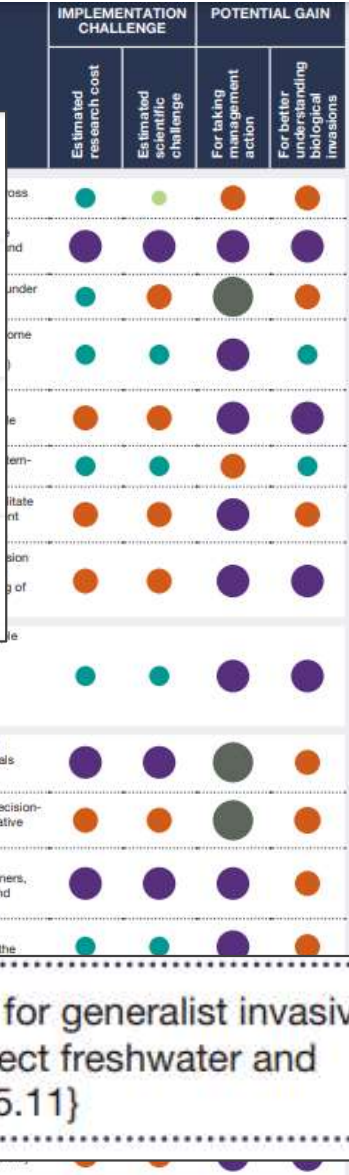
Comparative lack of understanding of the drivers of change that facilitate biological invasions in developing economies {Box 3.12}

Lack of data and knowledge of the drivers of biological invasions in sub-Saharan Africa, tropical Asia and South America {3.6.1}

Incomplete data on the impacts of invasive alien species across Africa and Central Asia {4.7.2}

Lack of control options for marine invasive alien species and invasive alien microbial fungal pathogens of plants and animals {5.6.1.1}

Lack of eradication guidelines and strategies for generalist invasive alien invertebrates, diseases and hard-to-detect freshwater and marine invasive alien species {5.6.2.1, Table 5.11}

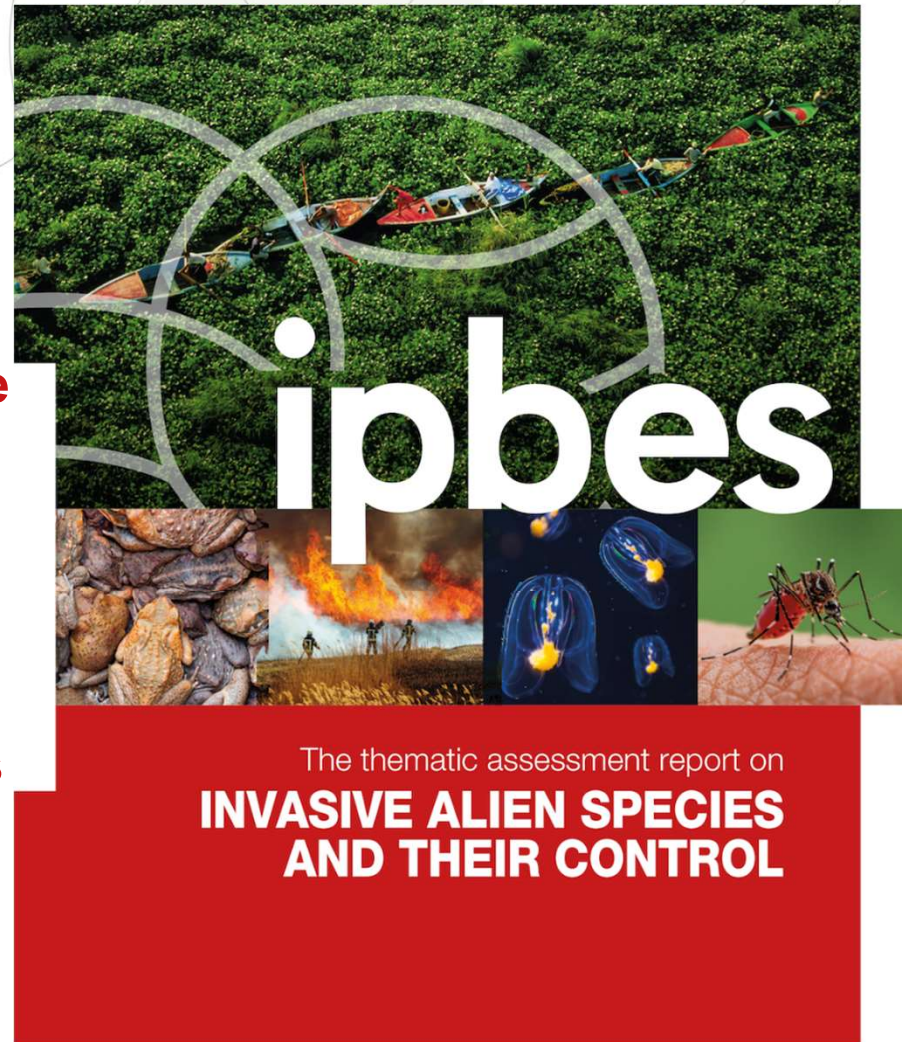


CATEGORY	GAP	IMPLEMENTATION CHALLENGE	POTENTIAL GAIN		
			Estimated scientific challenge	For taking management action	For better understanding biological invasions
Lack of research and data on how best to implement integrated governance systems to manage biological invasions {6.6.1.3, 6.6.1.4, 6.6.2}	Design principles for an integrated governance system to manage biological invasions {6.7.2.3, 6.7.3}	Lack of mechanisms that allow effective collaboration among different elements of the socioecological systems {Figure 6.7, 6.7}	●	●	●
			●	●	●
			●	●	●
			●	●	●

Gaps in knowledge on invasive alien species of particular relevance to Indigenous Peoples and local communities	Lack of information on land and water managed by Indigenous Peoples and local communities {1.6.7.3, 4.7.1, ...}	Lack of information on land and water managed by Indigenous Peoples and local communities {1.6.7.1, Box 2.6}	Lack of information on Indigenous and local knowledge, values and culture regarding the drivers and impacts of invasive alien species on land and water managed by Indigenous Peoples and local communities {1.6.7.1, Box 3.12}	Lack of understanding of and mechanisms for sharing knowledge on invasive alien species and their drivers, impacts, management and governance among Indigenous Peoples and local communities and researchers and other outsiders {6.6.1.5}

There is compelling evidence for immediate and sustained action

With sufficient resources and long-term commitment, preventing and controlling invasive alien species are attainable goals that will yield significant long-term benefits for people and nature.



#InvasiveAlienSpecies Assessment





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■ Expected impacts of the Report





The invasive alien species Assessment is the first comprehensive global report on invasive alien species and their control

It provides the best-available evidence, critical analysis and options for governments, civil society, Indigenous Peoples and local communities, the private sector and all those seeking to address the issue of biological invasions

#InvasiveAlienSpecies Assessment



The findings of the invasive alien species assessment are expected to contribute to achieving international targets on biological invasions:

- Target 6 of the Kunming-Montreal Global Biodiversity Framework**
- Support implementation of the Sustainable Development Goals of the 2030 Agenda for Sustainable Development, especially Goal 15**



#InvasiveAlienSpecies Assessment



The invasive alien species Report will support sharing of information within and across countries

The Report will also support capacity building globally, especially in developing countries

#InvasiveAlienSpecies Assessment

NEWS | 11 SEPTEMBER 2023

GBIF ramps up support of information needed to tackle invasive alien species

New task group to address data challenges revealed by IPBES assessment, national needs for tracking progress toward reducing impacts of invasive alien species



The invasive alien species Report will contribute to raise awareness on the issue of biological invasions

The New York Times
Invasive Species Are Costing the Global Economy Billions, Study Finds
A new scientific report offers the most exhaustive look yet at how nonnative plants and animals can drive extinctions, disrupt food systems and harm human health.

Hindustan Times
Invasive species are threatening India's coastal
By Badi Chatterjee
Sep 09, 2023 09:53 PM IST
A closer look at the spread of non-native species significantly ecological functions of marine ecosystems

XPLORE Environment
423 tỷ USD bốc hơi khỏi nền kinh tế thế giới môi trường
08/09/2023 09:21 AM | CÔNG NGHỆ
Nghe đọc bài 2:04
Tôn thất thực sự có thể lên tới hàng nghìn tỷ USD, trong đó tổn kém nhất là sức khỏe con người.

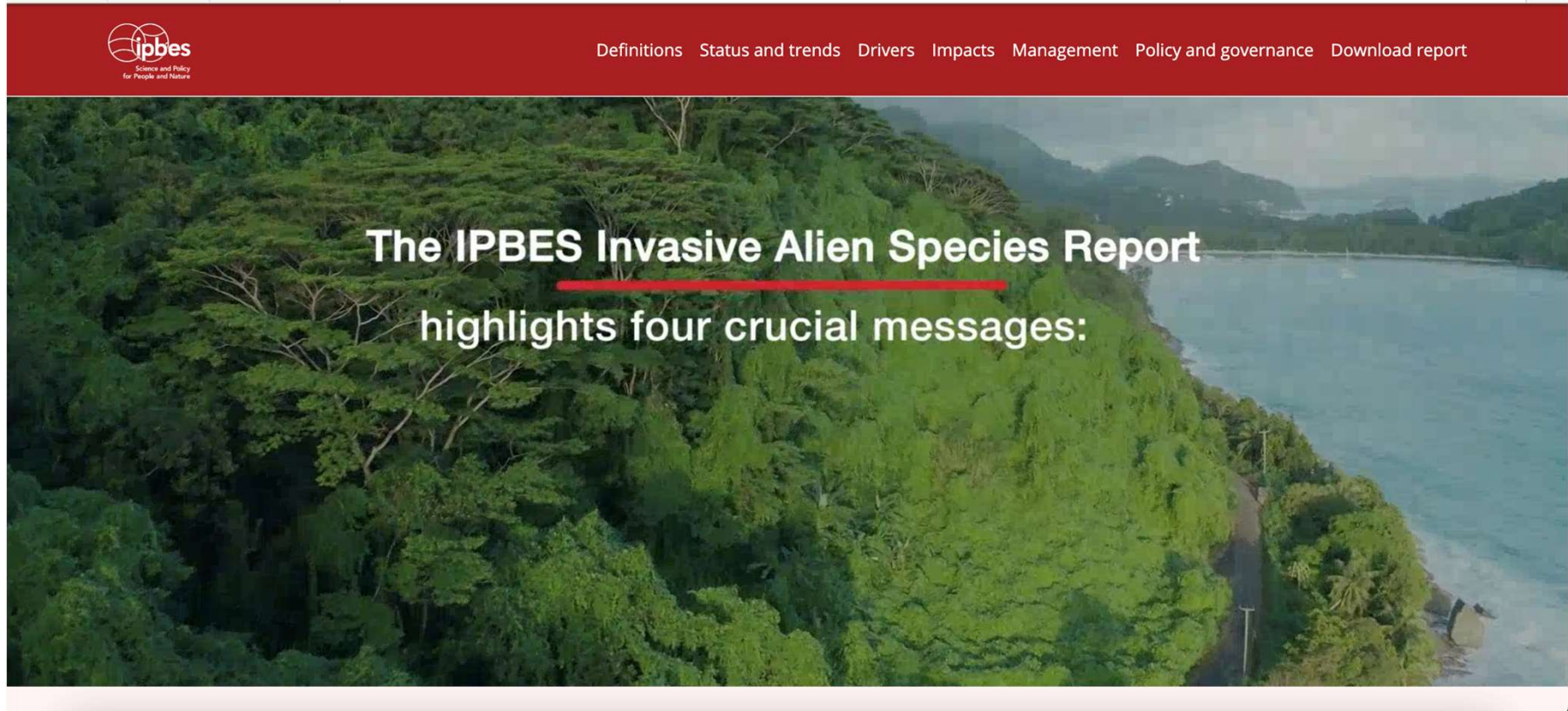
EL PAÍS
La invasión biológica: 3.500 especies exóticas introducidas por el hombre causan multimillonarias pérdidas y extinciones
Un exhaustivo informe internacional advierte de que los costes económicos causados por estas plantas y animales se disparan hasta alcanzar va cerca de

BIODIVERSITÀ
Le specie aliene costano al Pianeta 423 miliardi di dollari all'anno
di Cristina Nadotti
Il "Rapporto di valutazione sulle specie esotiche invasive e il loro controllo" dell'Ipbes rivela che, oltre ai drammatici danni per la biodiversità e gli ecosistemi, il costo economico globale si è almeno quadruplicato ogni decennio dal 1970

#InvasiveAlienSpecies Assessment

Media articles in ~ 50 languages in over 100 countries

The invasive alien species Report will contribute to raise awareness on the issue of biological invasions: an educational web platform



#InvasiveAlienSpeciesAssessment

Media articles in ~ 50 languages in over 100 countries

Preliminary uptakes and impacts

Communication on the issue of biological invasions: revision of a national communication strategy to align with the language from the Assessment (Belgium), official communication (Chile, France), translation of the summary for policymakers (South Korea, Japan – in progress)

Presentations and events organized by Japan, the UK, Finland, France, Norway, CABES (Africa), EU Parliament, BES-Net, UNDP, Argentine Society of Ecology, and many others

Presence in policy fora: CBD SBSTTA-25, G7

Action from a science network: A new GBIF task group will address the need for improved access to better data and information on invasive alien species

Action from the private sector: Impact Pathway for invasive alien species (~30 international companies such as BASF, Bayer, Holcim, SAP, BNP Paribas etc.), Invasive Species Corporation secures \$2.5m from Silverstrand Capital to develop

Funding opportunities: AU\$2.2M for the control of Buffel Grass in South Australia

Register impacts at: <https://www.ipbes.net/impact-tracking>

#InvasiveAlienSpecies Assessment

 Sarah EL HAÏRY
@sarahelhaury

L'@IPBES m'a remis son rapport d'évaluation sur les espèces exotiques envahissantes et leur contrôle.

Ce rapport, que je salue, nous donne un cadre précis et opérationnel pour renforcer la Stratégie nationale #biodiversité que je présenterai prochainement.





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Thank you!

¡Gracias!

Merci!

