

#InvasiveAlienSpecies



# Integrated Governance of Biological Invasions



[www.ipbes.net](http://www.ipbes.net)

**Alejandro Ordonez**

Associate Profesor

Section of Ecoinformatics and Biodiversity.

Aarhus University.

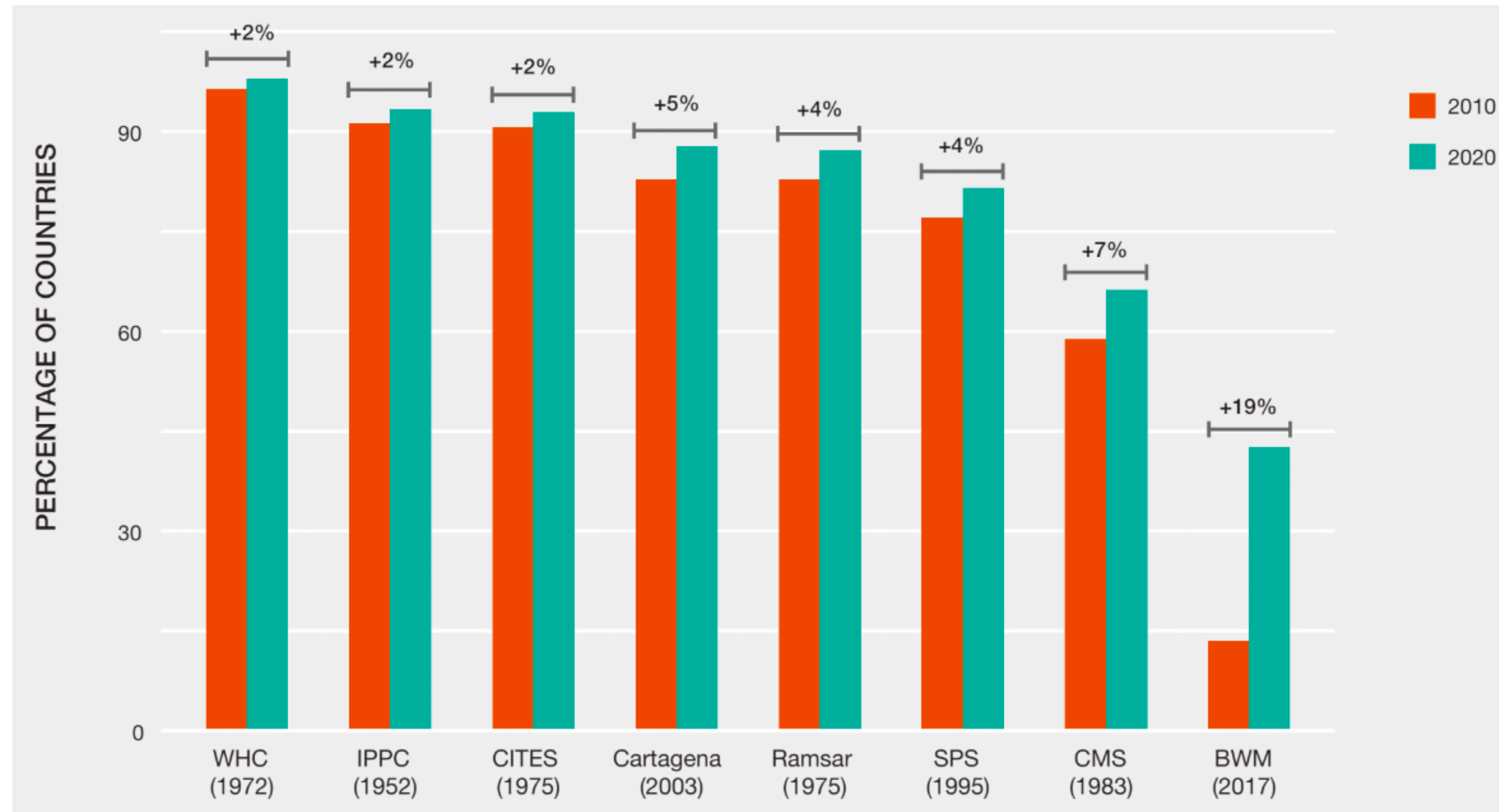
Invasive alien species pose significant threats to global nature, economies, food security, and human health.



They are a global problem with local impacts

# A score card on the IAS governance?

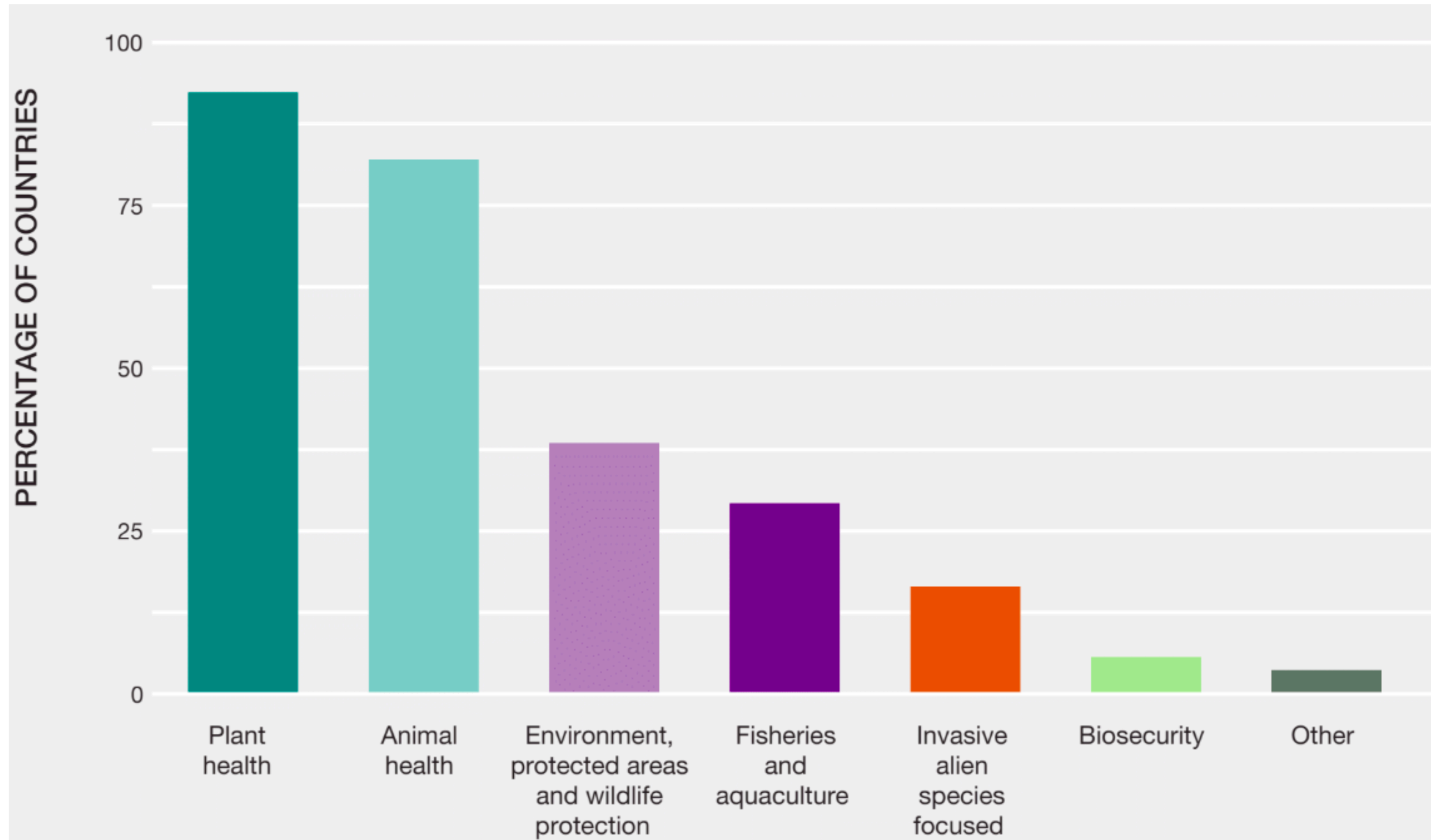
How many countries are signatories to eight multilateral agreements relevant to preventing and controlling invasive alien species?



Source: Pagad et al. (2020)

# A score card on the IAS governance?

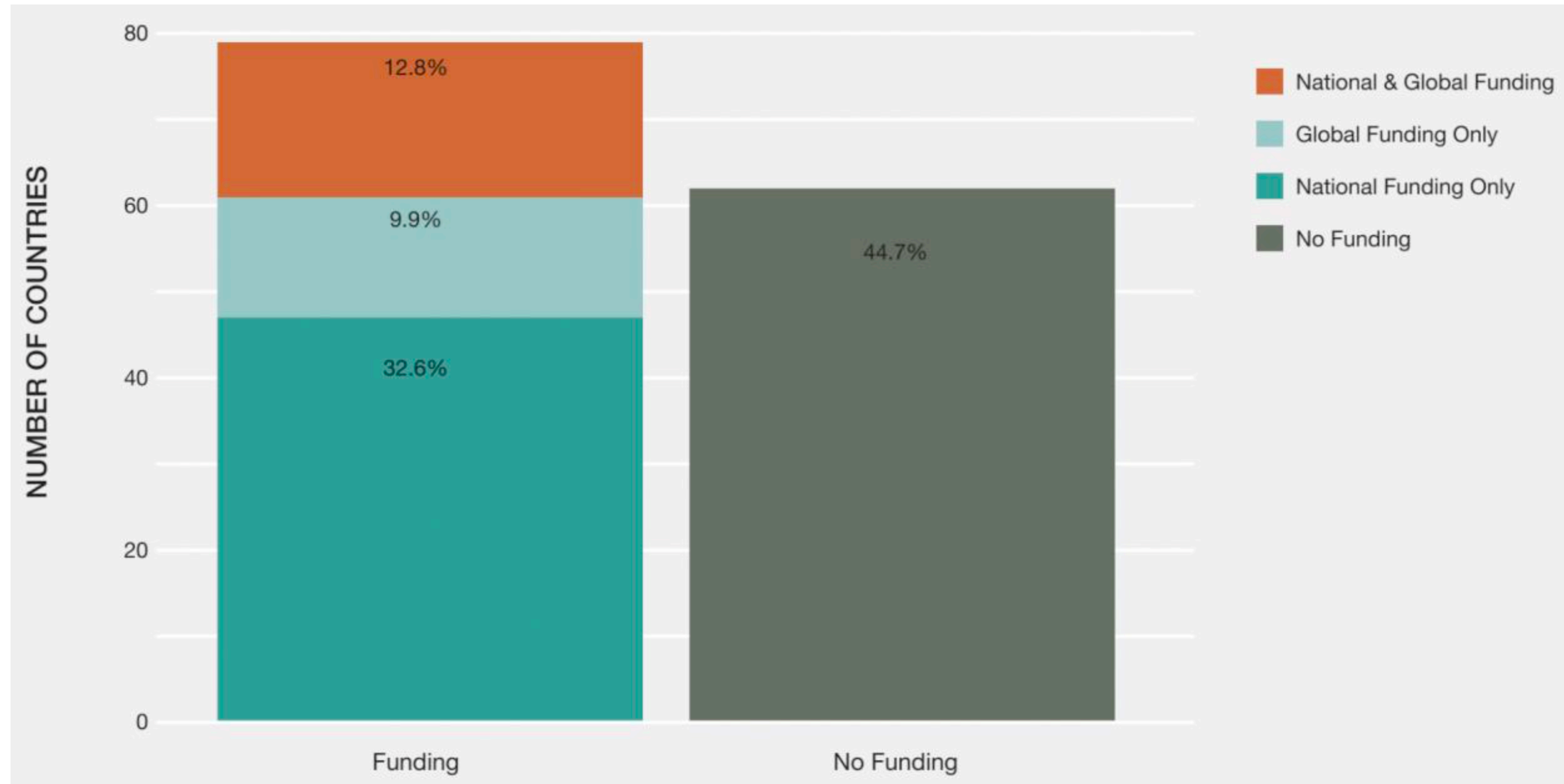
How many countries have adopted national legislation relevant to the prevention and/or control of invasive alien species?



Source: Pagad et al. (2020)

# A score card on the IAS governance?

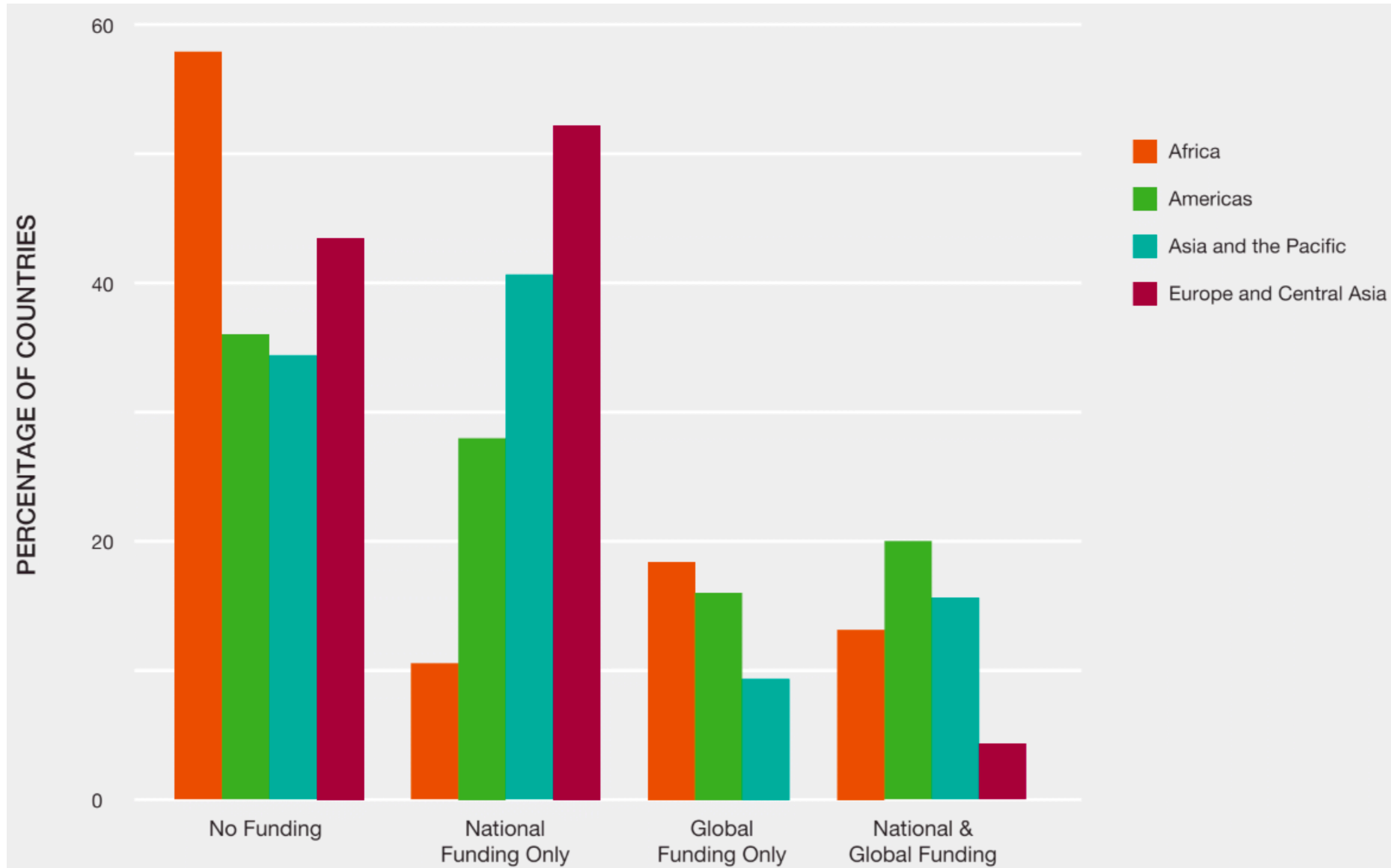
How many countries allocate financial resources to the prevention and control of invasive alien species?



Source: Pagad et al. (2020)

# A score card on the IAS governance?

How many countries have access to different financial resources to prevent and control invasive alien species?



Source: Pagad et al. (2020)

# Why is so hard to address the IAS issue

## IAS and the tragedy of the commons

- The tragedy of the commons:
  - Self-interest can end up destroying a resource upon which many depend.
  - Collective or individual actions that fail to consider long-term ecological balance.
    - In invasion ecology, this typically the introduction and spread of alien species into ecosystems where they become invasive, often due to human activities.

# Why is so hard to address the IAS issue

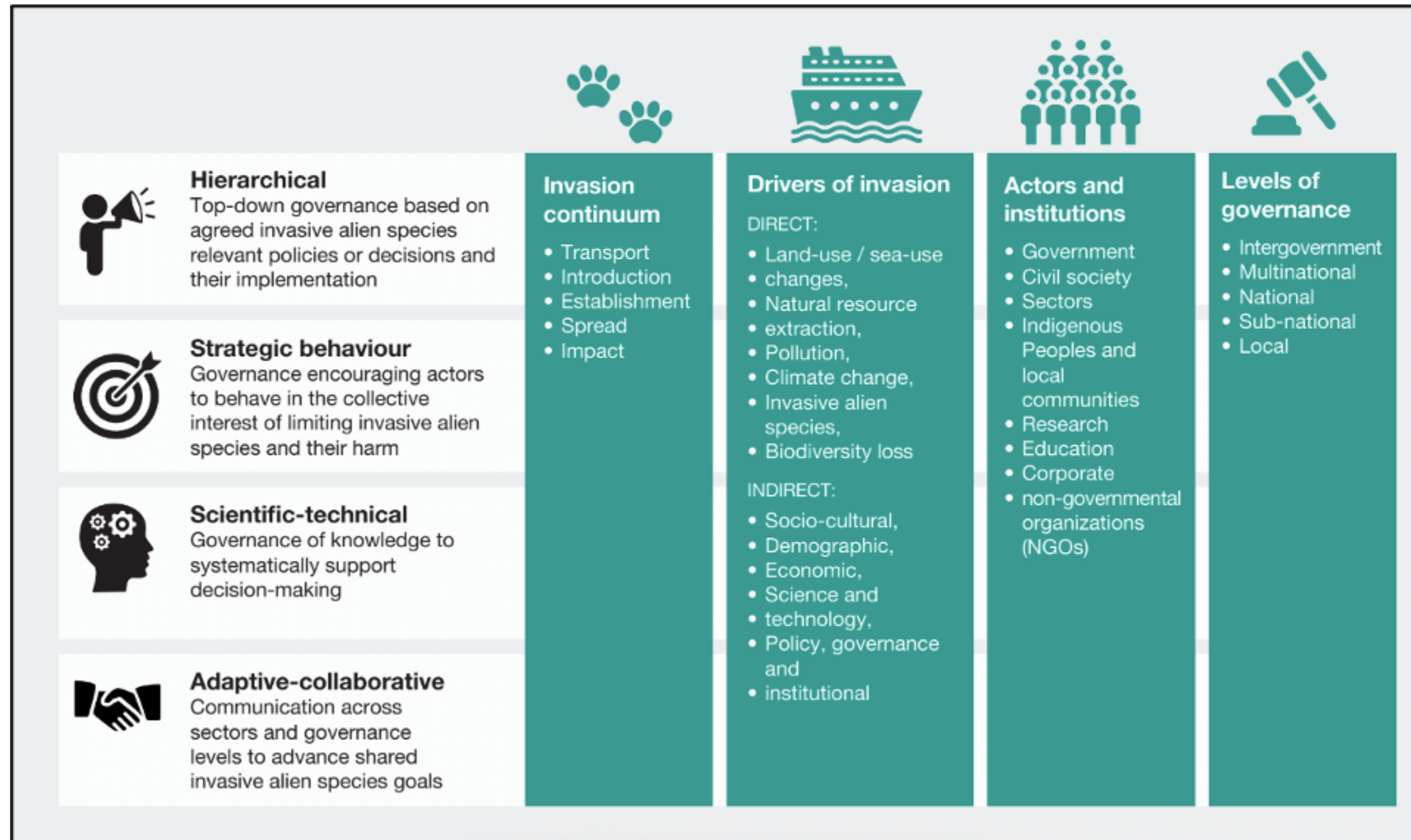
## Main Governance challenges

- Information disparity/uncertainty
- interactions with other global environmental problems
- Perverse incentives of other policies
- Impact disparity
- Technological advancement
- Economic synergies
- Engagement with Indigenous Peoples and local communities
- Gaps in knowledge of governance



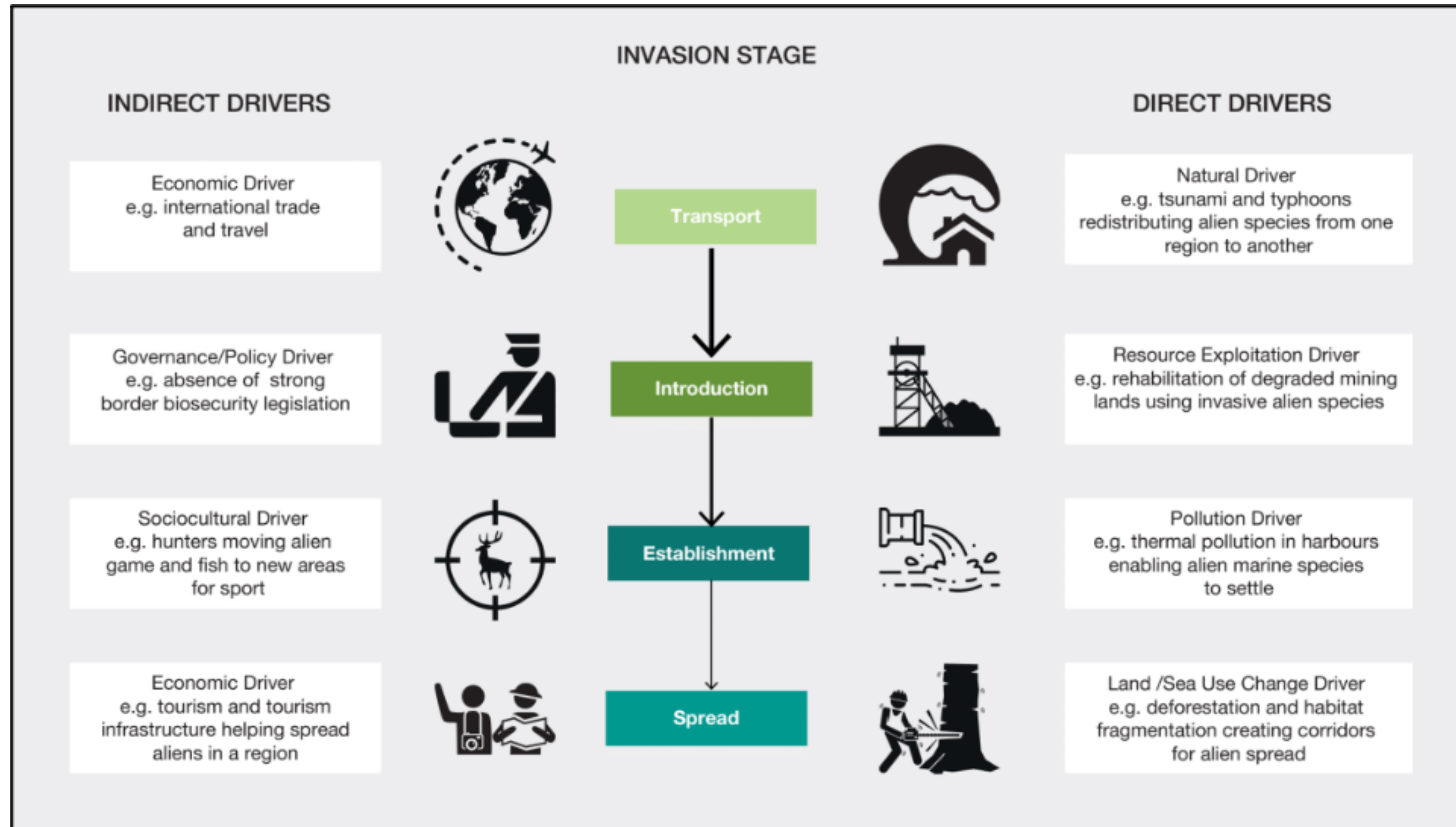
# In short....

## Management of IAS is a very complex issue



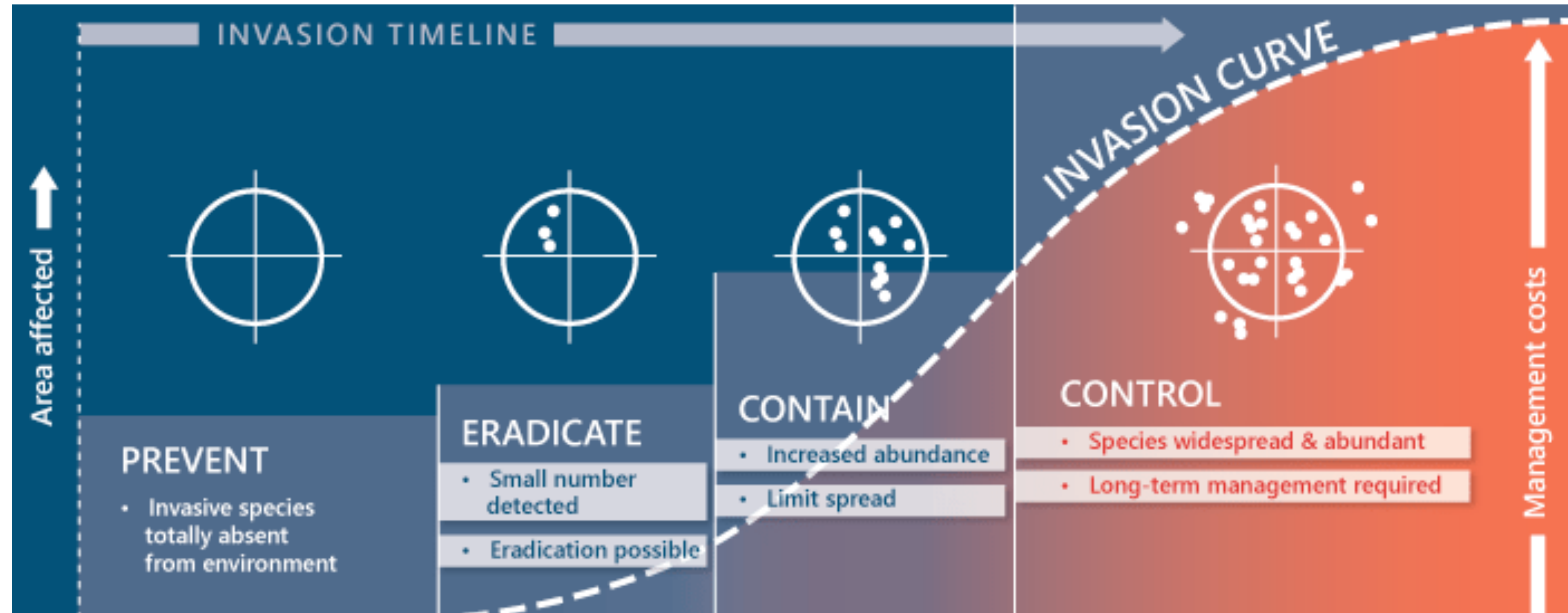
Source: McGeoch, Ordonez et al. (2023)

# People at the heart of the problem...



Source: Hulme et al. (2023)

# ... People at the heart of the solution



# How do we address this complexity?

## Integrated Environmental Governance as a tool

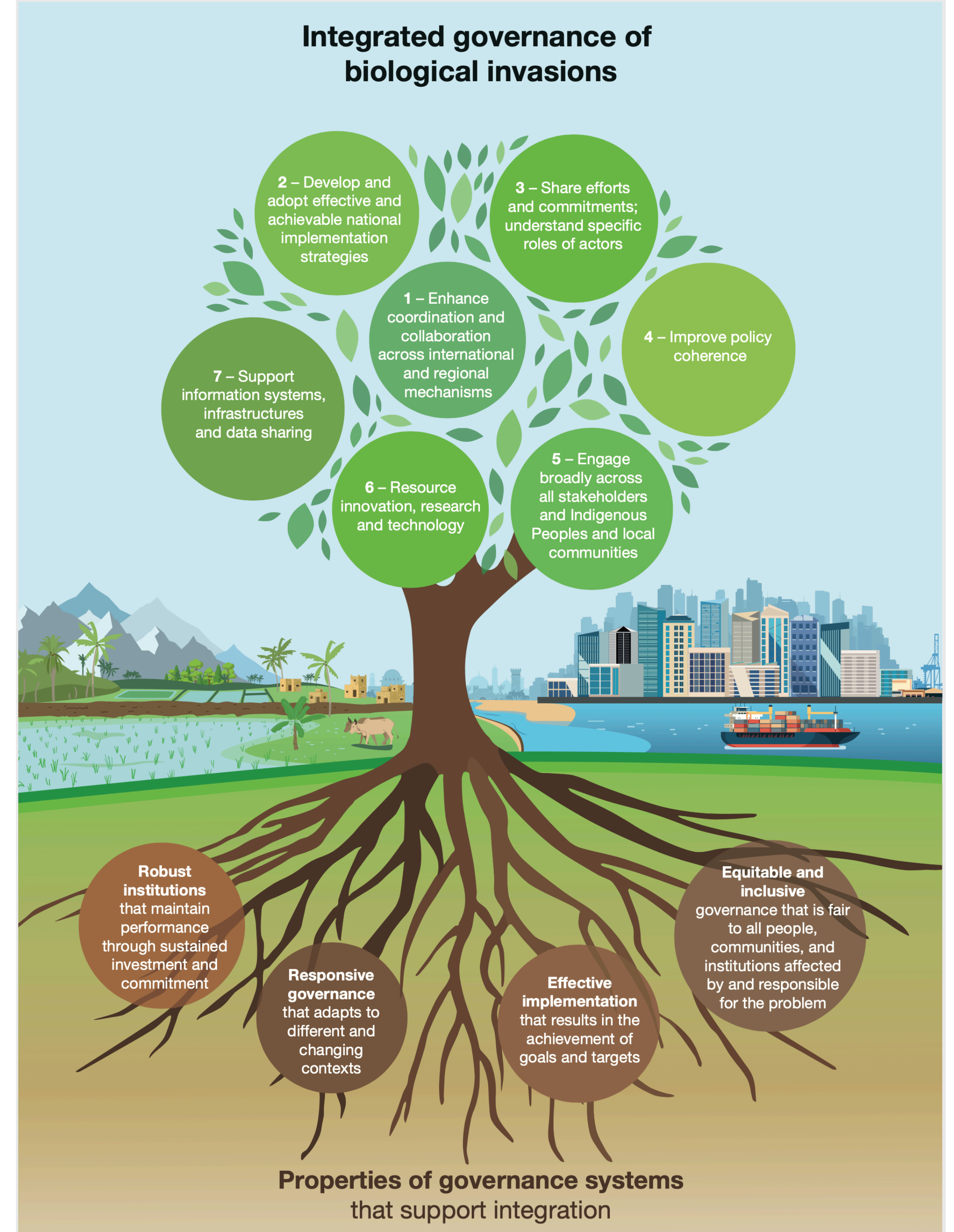
- What is an Integrated environmental governance of biological invasions:
  - **establishing the relationships** between the roles of actors, institutions and instruments...
  - **involving** as appropriate **all** those **elements** of the socioecological system that characterise biological invasion and its management...
  - to **identify the strategic interventions** needed to improve invasive alien species prevention and control outcomes.

# The tree of Integrated Governance

A governance framework is a plan that outlines how people, organisations, and tools should work together to manage biological invasions.

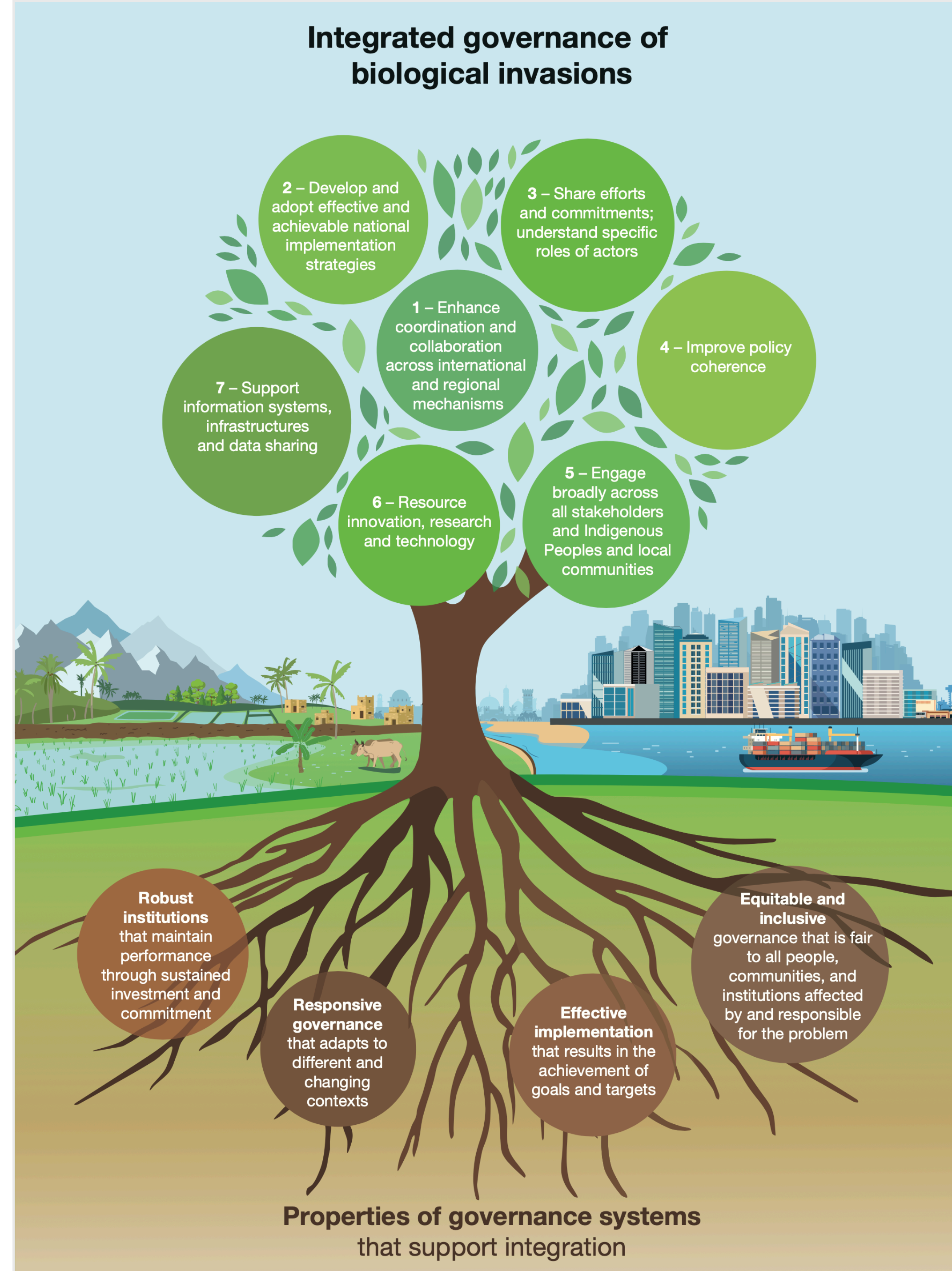
This framework involves all those affected by invasive species or involved in their introduction to determine prevention and control methods.

Source: Roy et al. (2023)



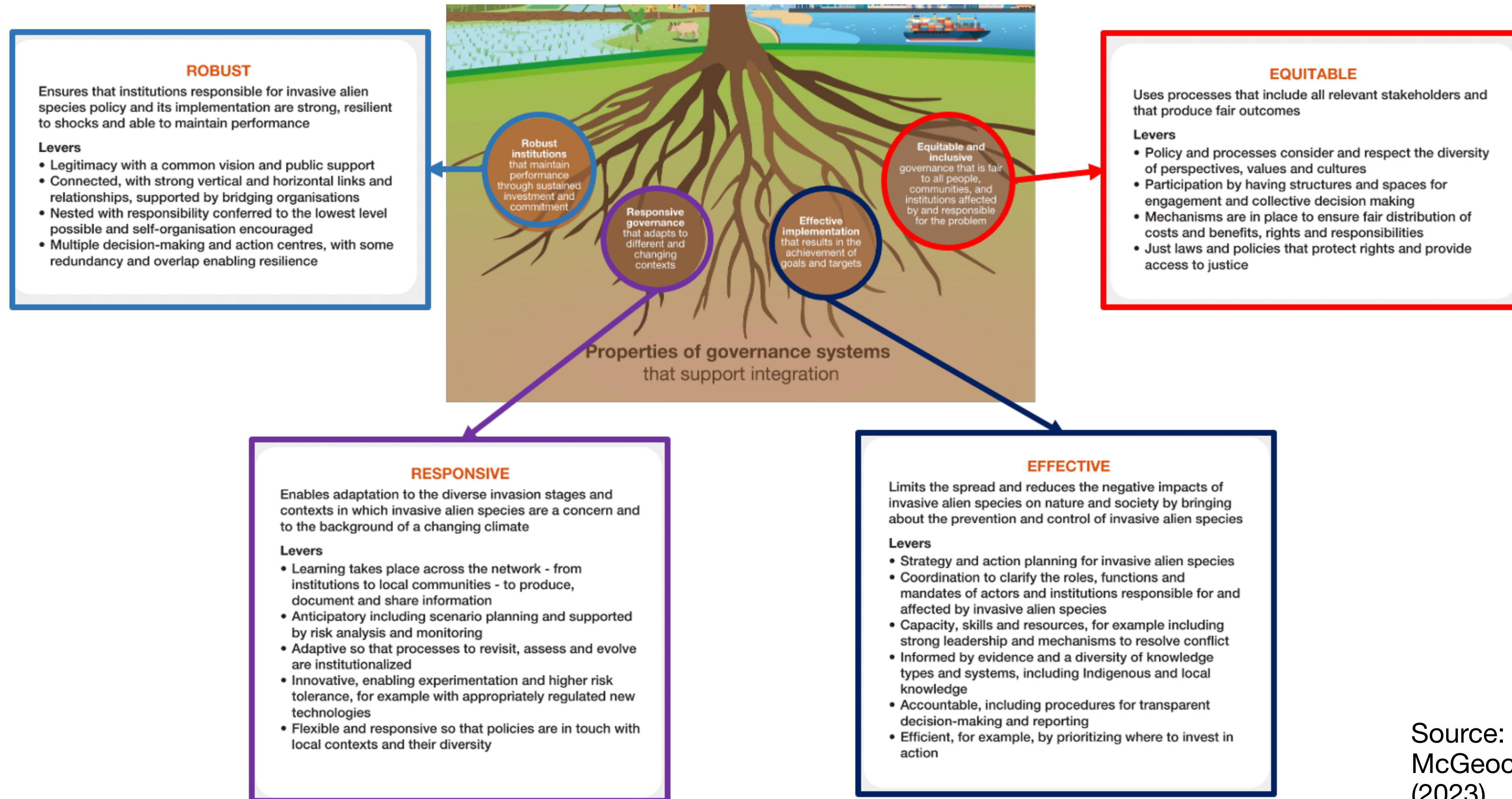
# The tree of Integrated Governance

The effectiveness of governance depends on the presence of certain fundamental qualities.



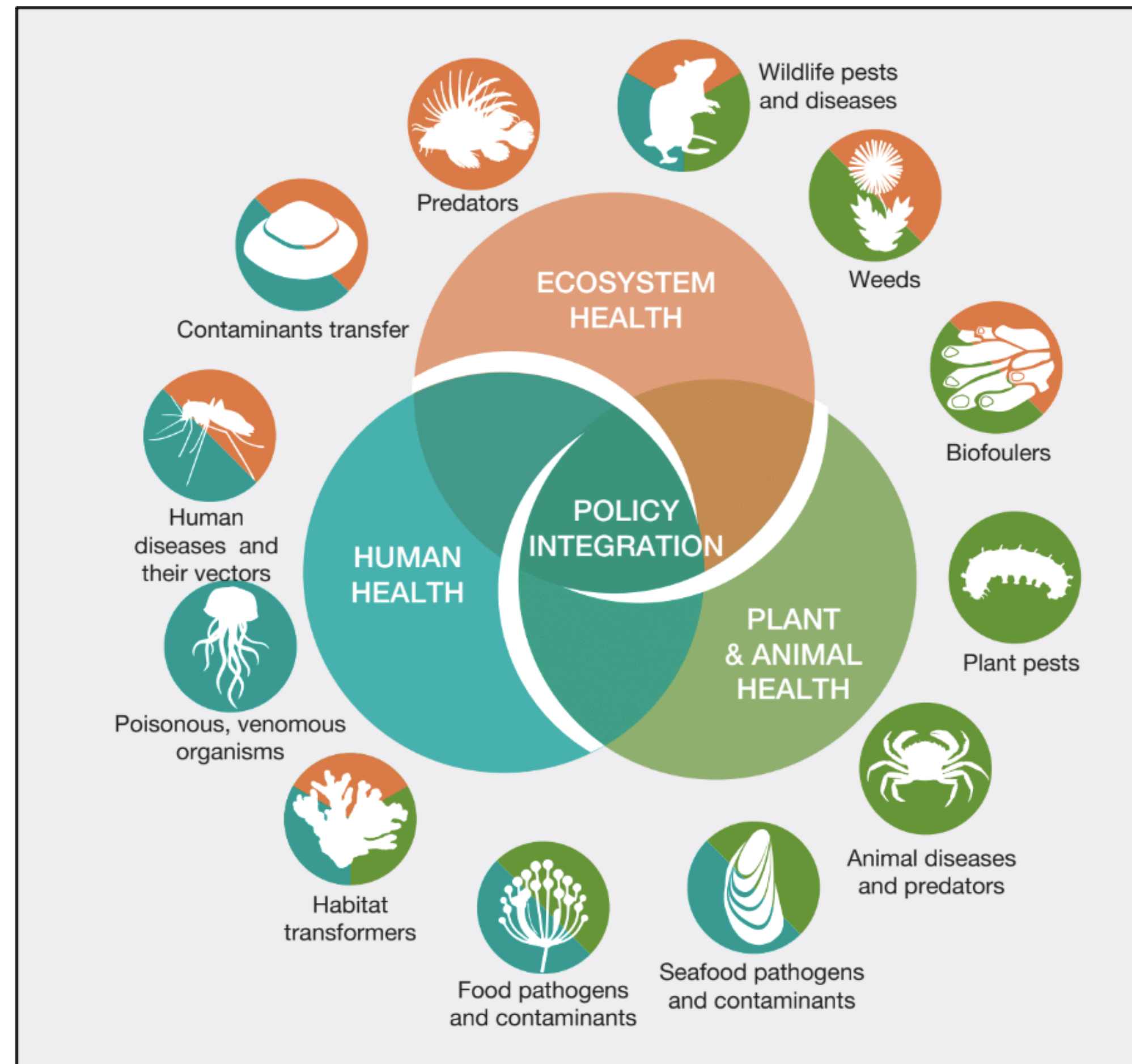
Some key strategic actions are required to address the problem of biological invasions

# What is needed for good governance



Source: Roy et al. (2023) & McGeoch, Ordonez et al. (2023)

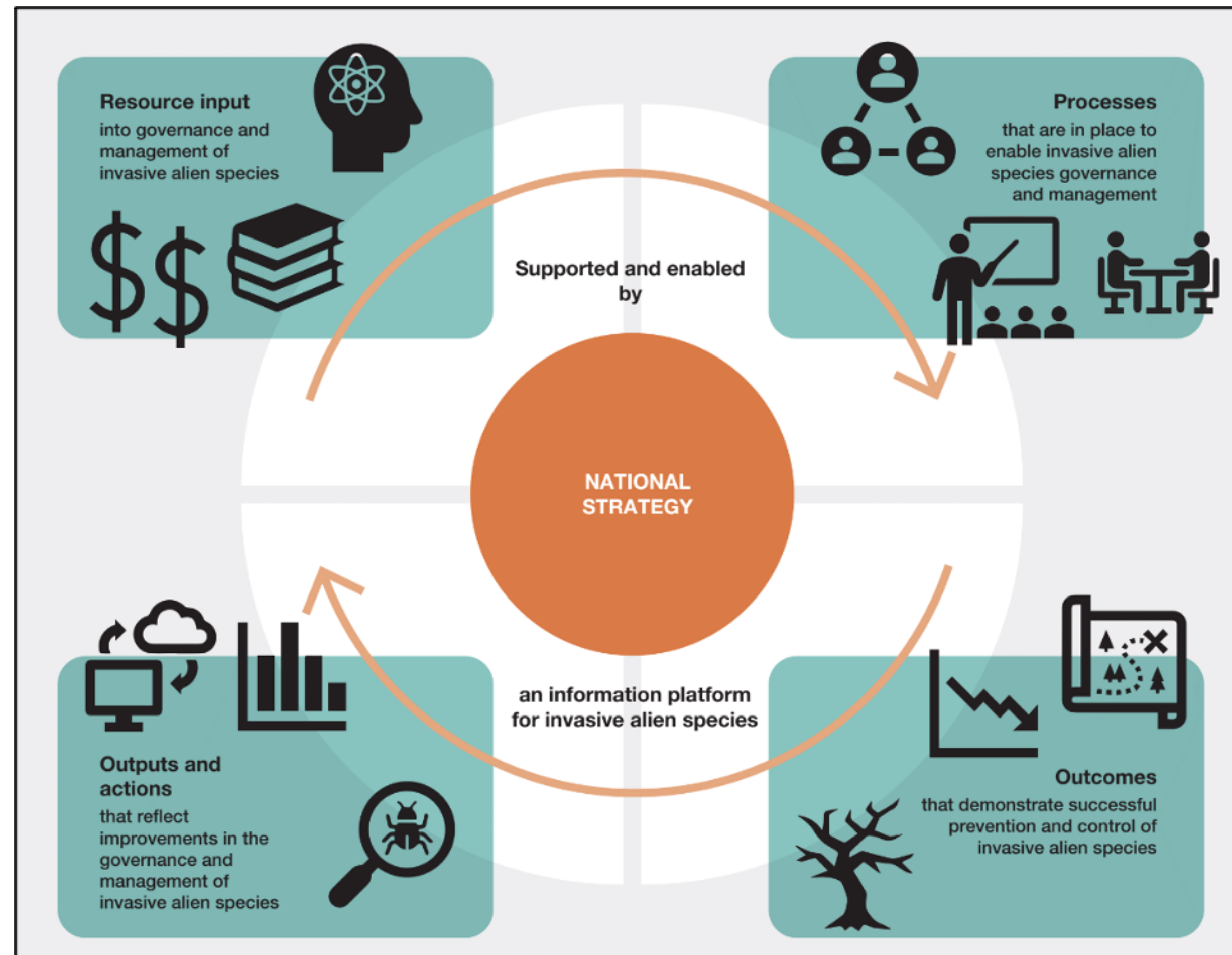
# Enhance coordination and collaboration across international and regional mechanisms



Source: McGeoch, Ordonez et al. (2023)

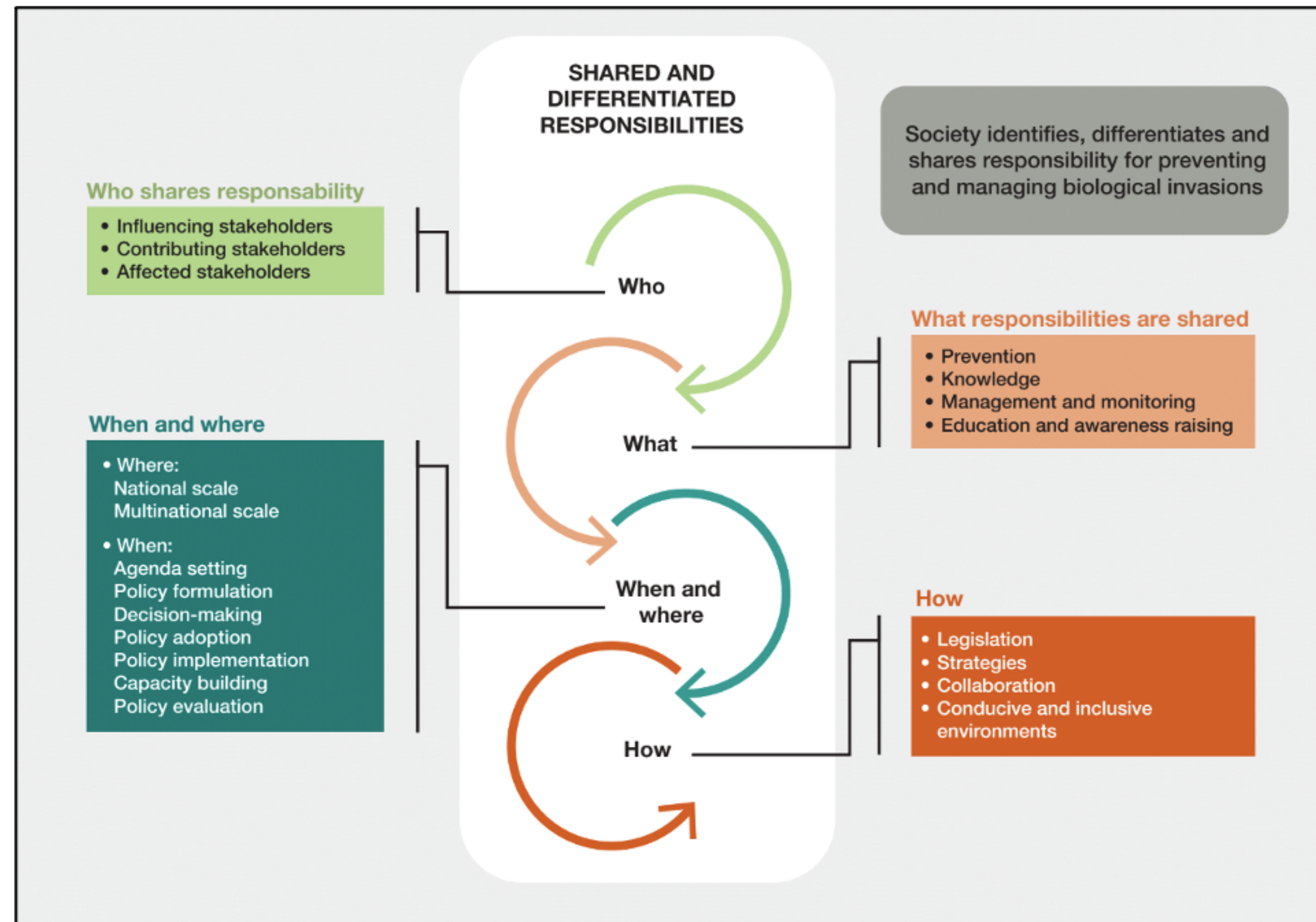


# Develop and adopt effective and achievable national implementation strategies



Source: McGeoch,  
Ordonez et al. (2023)

# Share efforts and commitments and understanding of the specific roles of all actors



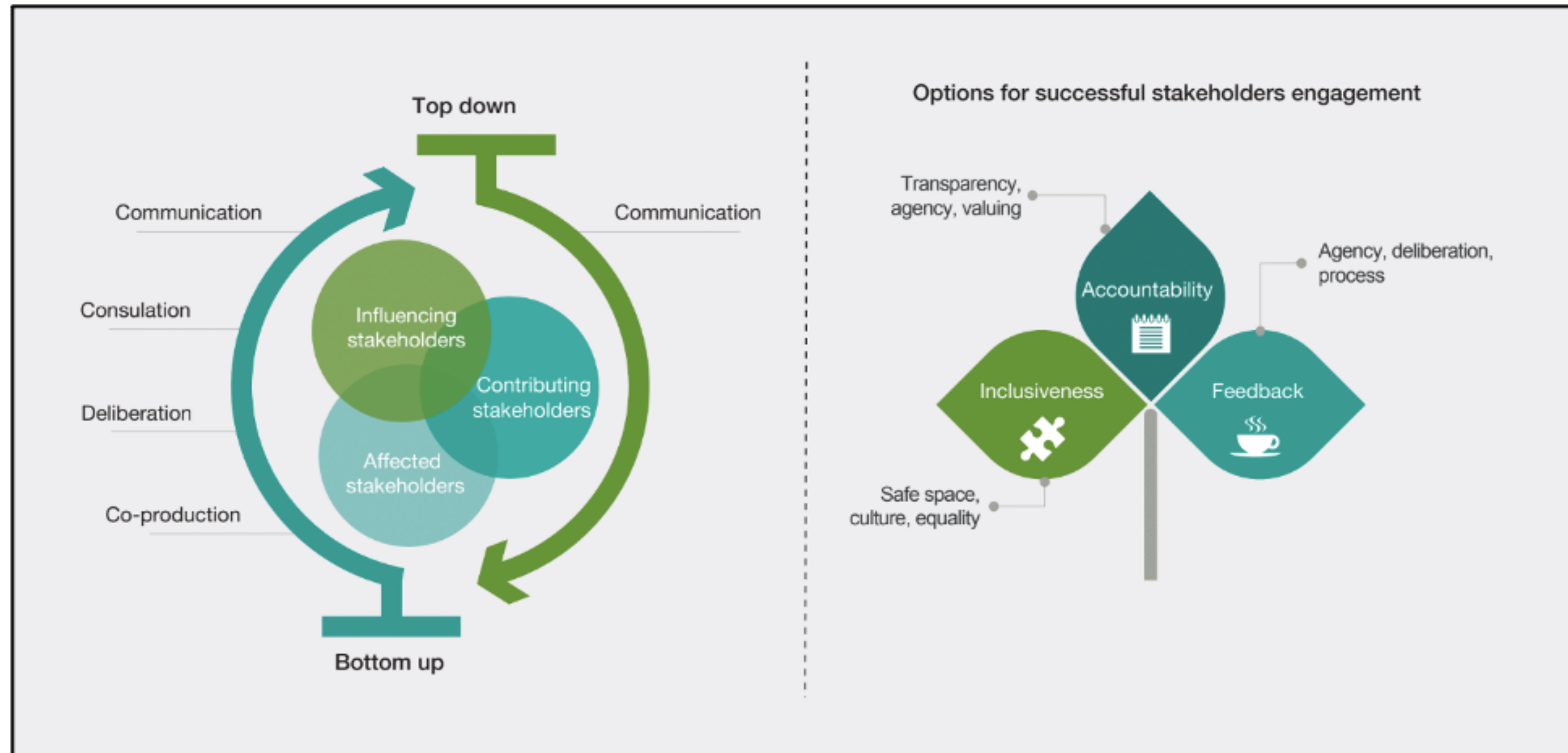
Source: McGeoch, Ordóñez et al. (2023)

# Improve policy coherence

|  |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|
| <p><b>(E) Infrastructure management</b></p> <p>Road construction and roadside maintenance have often fostered invasion by non-native plants. Increasing establishment of mobile and immobile artificial structures (e.g. ships, barges, coastal defences, artificial reefs, offshore platforms) and canals play major roles in transmission, establishment and spread of aquatic non-native species.</p> |    | <p><b>(F) Military facilities</b></p> <p>Midway Atoll was the site of a U.S. Naval Air Station from 1940 through 1996. The invasive plant <i>Verbesina encellooides</i> (golden crownbeard) was first observed in 1955 but was maintained at low abundance by intensive road and landscape maintenance. A shift in the 1990s to greatly reduced mowing and herbicide use triggered massive growth of this plant to the detriment of nesting seabirds, especially albatrosses.</p> |    | <p><b>(A) Agriculture</b></p> <p>Chemical control of alien agricultural pests has generated great concern by virtue of its non-target impacts on species of conservation concern. Carson (1962) raised this issue in her book that helped launch the environmental movement, and use of other broad-spectrum insecticides has led to similar impacts.</p> |    | <p><b>(B) Aquaculture</b></p> <p>There are several instances where unintentional introductions may be associated with cultured target species; one of these being introduction of <i>Sargassum muticum</i> (wire weed) with oyster imports.</p> |    |
|    | <p><b>(G) Tourism</b></p> <p>National actions to promote local tourism (e.g., artificial reefs) in marine protected areas. Brazil's Tourism Ministry launched a plan to sink 1200 scrapped ships, trains, and airplanes, most of them inside marine protected areas, supposing that they will promote diving tourism business. Artificial reefs, such as those that would be created by sinking those vehicles, are used by invasive alien species (e.g., <i>Tubastraea</i> spp. (sun corals)) as stepping-stones to natural reefs, causing ecological, social, and economic deterioration.</p> |    | <p><b>(H) Biomass</b></p> <p><i>Prosopis</i> spp. (mesquite) are a group of species native to Central and South America which have been introduced in Australia, Asia, and Dryland Africa for fuel wood, fodder, to improve soils and reduce erosion. After the demand for <i>Prosopis</i> crashed, many plantation were abandoned without management or eradication. As a result <i>Prosopis</i> has become a major problem, particularly in Africa. It has severely impacted traditional livelihoods of pastoral communities.</p> |   | <p><b>(C) Public health</b></p> <p>The use of broad-spectrum insecticides to control introduced mosquitoes that vector human diseases, such as DDT, affected many bird species, including those of conservation concern, through eggshell-thinning. It also exacerbates pesticide resistance.</p> |   | <p><b>(D) Forestry</b></p> <p>The forest-based industries and/or the energy production sector can be impacted by biological invasions. An example is <i>Eucalyptus globulus</i> (Tasmanian blue gum), which has invaded many forestry adjacent sites in North-West Spain.</p> |

Source: McGeoch, Ordóñez et al. (2023)

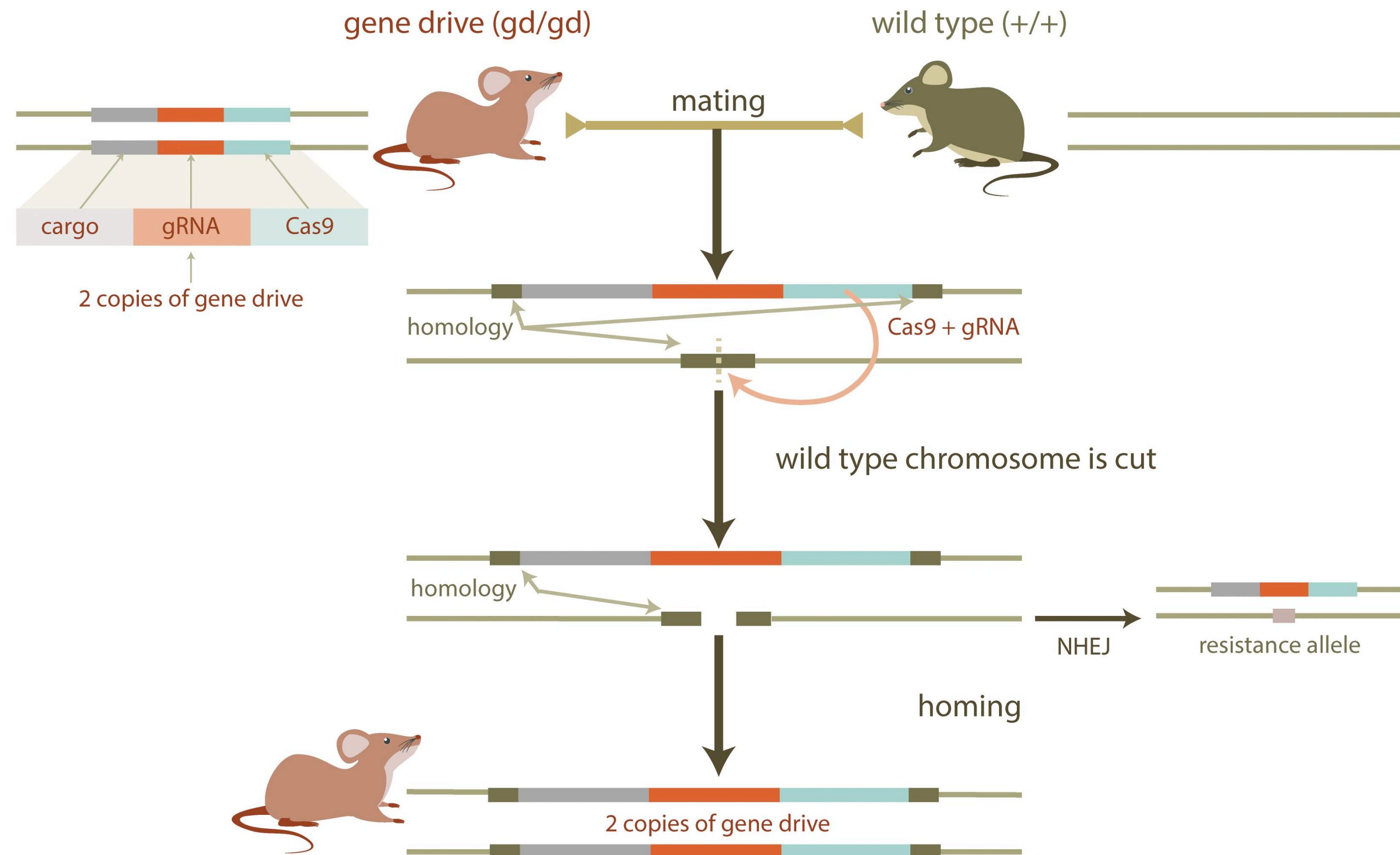
# Broad involvement with all components of the socio-ecological system affected by biological invasions."



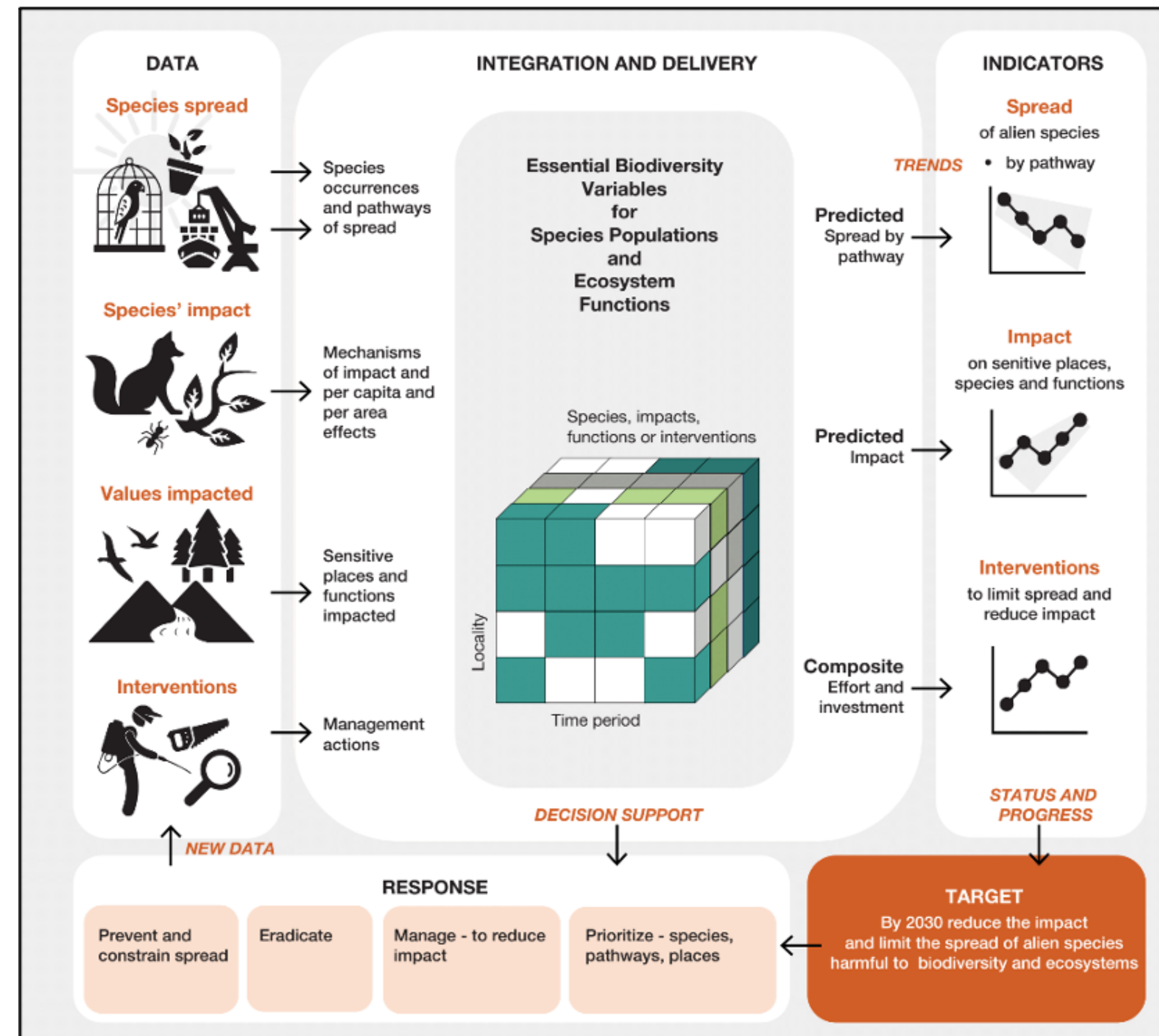
Source: McGeoch, Ordonez et al. (2023)

# Support, fund and mobilise resources for innovation, research and environmentally sound technology

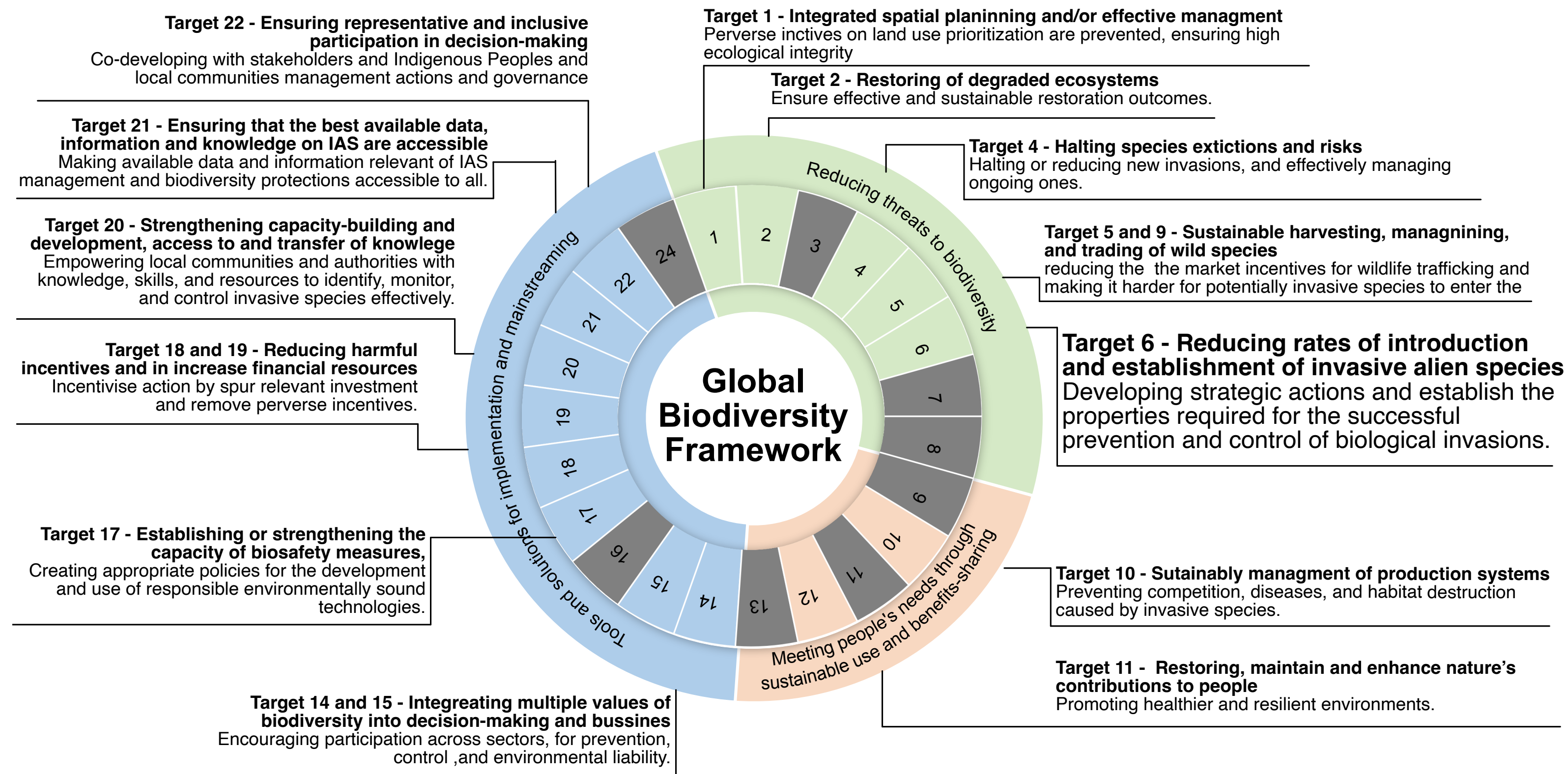
## A. CRISPR-Cas9 Gene Drive



# Support information systems, infrastructures and data sharing



# What can be achieved through the implementation of an Integrated Governance Approach to biological invasions?



# The G7 Summit

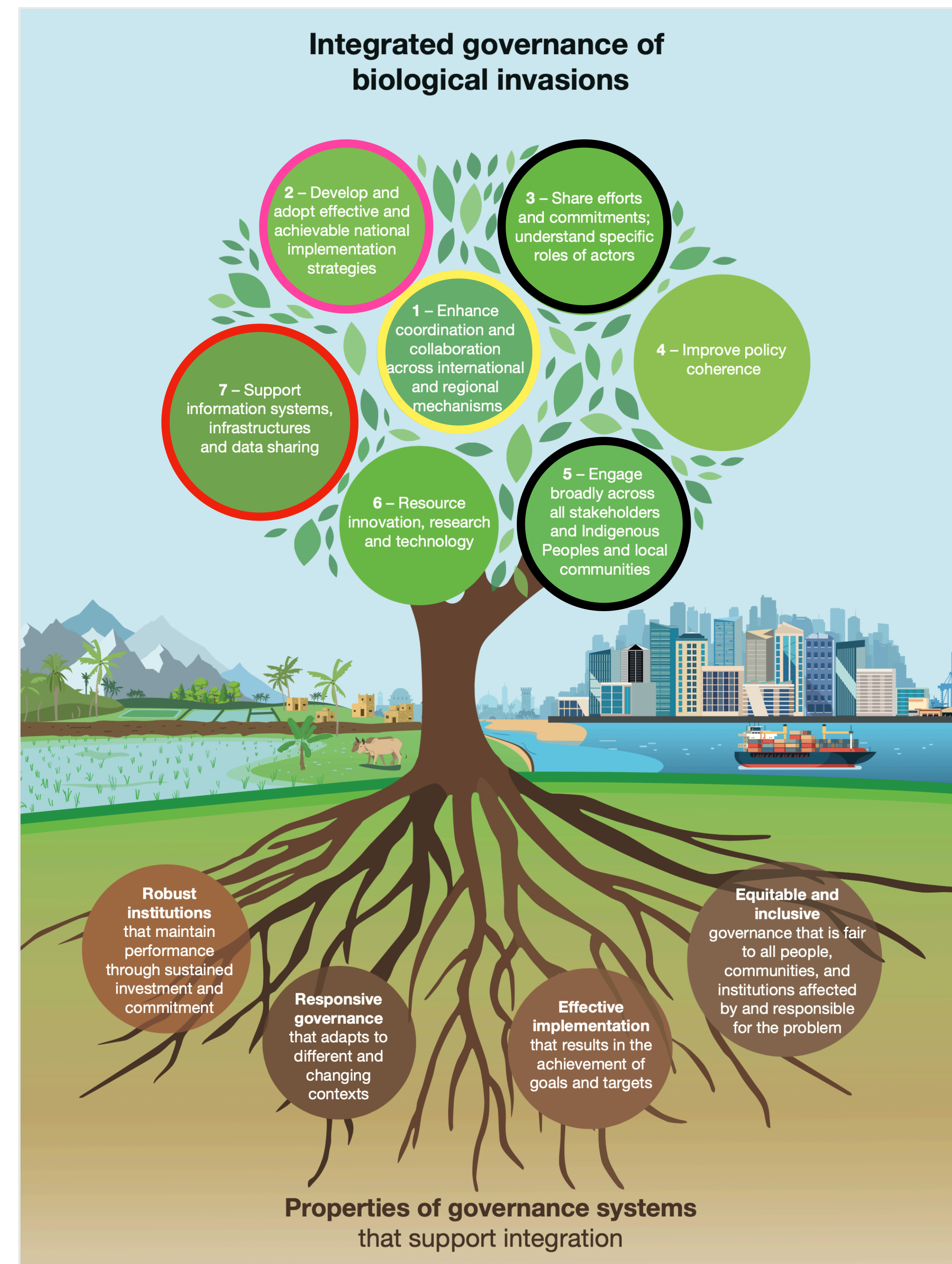
There is a need for international cooperation to address the threats from IAS

Promoting global, regional, and bilateral collaborations.

Strengthening scientific research, global databases and information systems.

Outreach and mainstreaming can be achieved through a whole-of-government and whole-of-society approach.

Capacity building.





#InvasiveAlienSpecies



**The cost of inaction is too high....**

[www.ipbes.net](http://www.ipbes.net)

#InvasiveAlienSpecies



[www.ipbes.net](http://www.ipbes.net)

Thanks for your attention