# Impacts of Invasive Alien Species

## Why in news?

India, with its largest land area in the group of seven countries in South Asia, tops the list with 185 invasive alien plants.

| Status of invasive plant species |
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| • **Integrated inventory of invasive alien flora of South Asia**- It is first time the scientists from India and 6other countries have come up with an inventory of 241 plants, which were introduced in south Asian countries and have over the years become Invasive Alien Species (IAS).<br>• India, with its largest land area in the group of seven countries, tops the list with 185 invasive alien plants listed by the team, it is followed by Bhutan (53), Sri Lanka (45), Bangladesh (39), Nepal (30), and Pakistan (29).<br>• Maldives has the *lowest invasive plants* with just 15 species.<br>• **Major contributor of invasive species**<br>- Southern America<br>- Northern America<br>- Africa and Europe<br>• **Introduction of alien species**<br>- Escape pathway (40%)<br>- Stowaway such as in ballast water of ships (24%)<br>- Released into environment (21%)<br>• **Lantana camara**- It is a native of south and central America and was introduced by the British in this part, is now invasive in all the seven countries in South Asia.<br>• At least 150 plant species of the 241 identified were still restricted to a single country. |

## What is invasive species?

- Invasive alien species (IAS) are species introduced into places outside their natural range that have negative impacts on native biodiversity.
- **Terrestrial invasive species**- It refer to non-native plants, animals, fungi, or microorganisms that have been introduced to and established in terrestrial ecosystems, which include land-based environments such as forests, grasslands, deserts, and urban areas.
- **Aquatic invasive species-** They are non-native plants, animals, microbes, and pathogens that have been introduced into aquatic ecosystems, including freshwater and marine environments.

*Not all non-native species are invasive.*

- To be invasive, a species must adapt to the new area easily, it must reproduce quickly,

it must harm property, the economy, or the native plants and animals of the region.

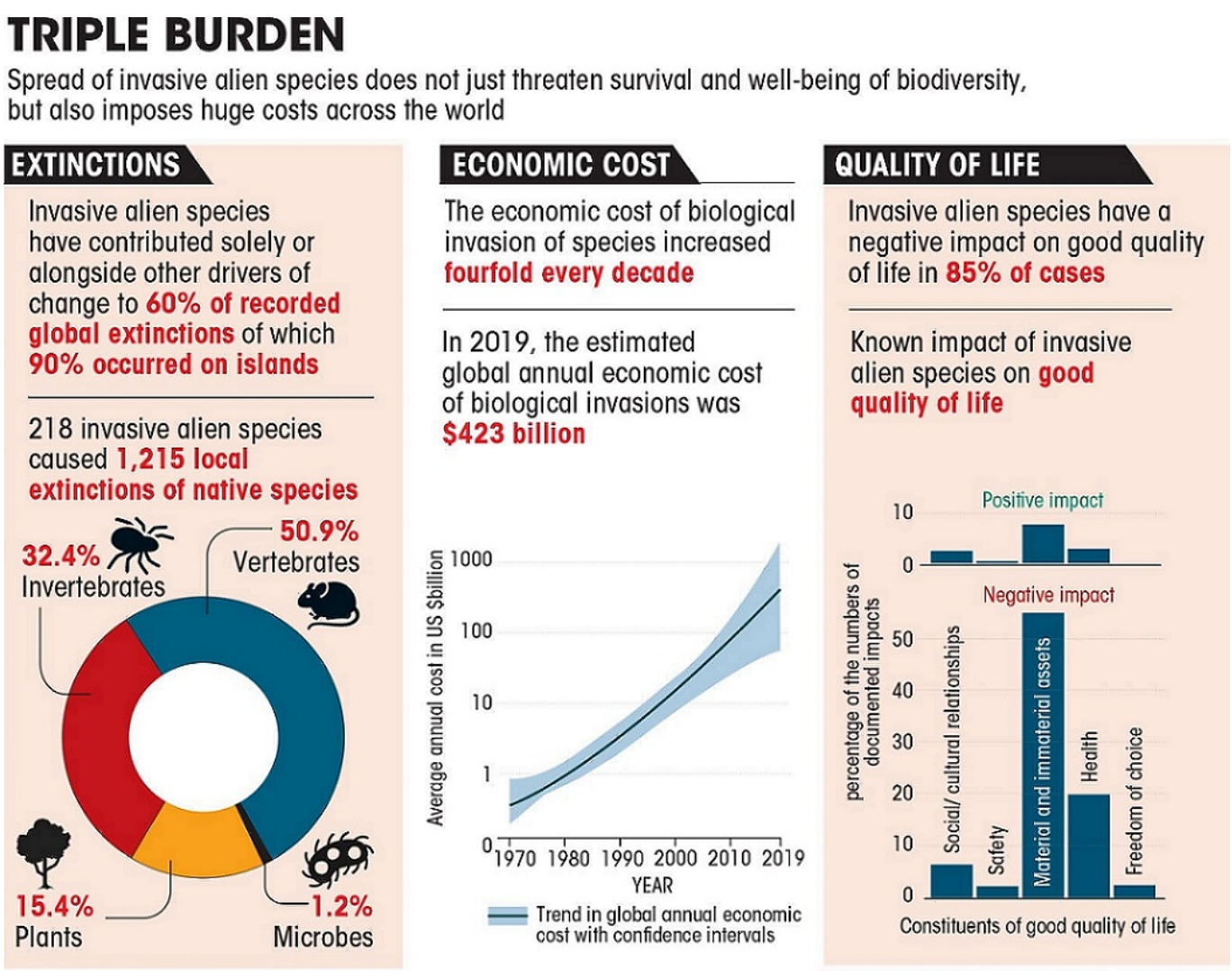
- **Historical propagation**-Due to the increase in the movement of people and goods around the world, and with new trade routes opening and enhanced transportation, the number of species being introduced into new areas is rising.

*A 2017 study found that over one third of all introductions in the past 200 years occurred after 1970*

- **Human modifications**- It refers to alterations made by humans to natural landscapes, ecosystems, or habitats through activities such as urbanization, deforestation, agricultural expansion which creates new opportunities for invasive species to thrive.
- **Shifting soil moisture regimes-** Invasive species may have a competitive advantage in altered soil moisture conditions, species adapted to drier or wetter soils may thrive when these conditions change allowing them to outcompete native species.
- **Altered cycle of natural disturbances-** If the frequency or intensity of wildfires changes, it may favor invasive species that are adapted to such disturbances, allowing them to outcompete native species.

## What are the impact of invasive species?

- **Loss of biodiversity-** According to IUCN Red List of Threatened Species, IAS are one of the top causes of biodiversity loss and the second most common cause of species extinctions.

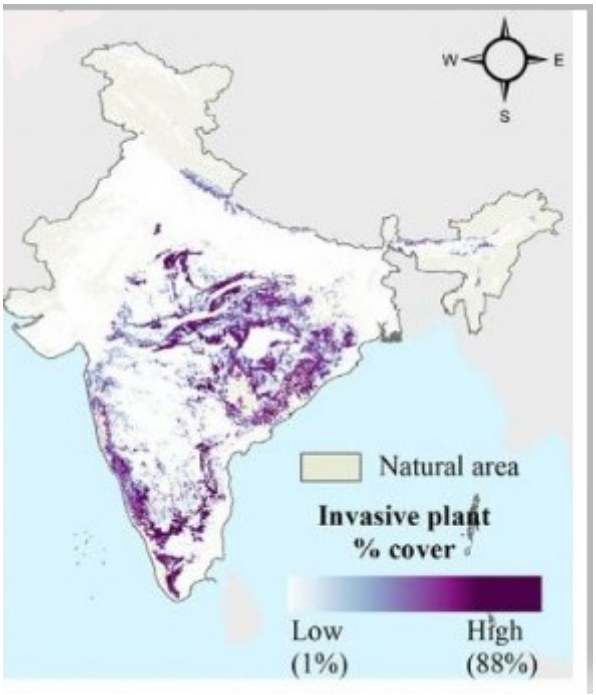



Source: "Summary for policymakers of the thematic assessment of invasive alien species and their control", Intergovernmental Platform on Biodiversity and Ecosystem Services, September 2023

- **Species extinction-** IAS alone have contributed either solely or alongside other drivers, to 60% of recorded global extinctions. Islands are particularly vulnerable as 90% of global animal and plant extinctions are occurring here.
- **Economic impact-** They have substantial economic costs, affecting not only local ecosystems but also water, biology and security.

*The estimated global cost of invasive species was 423 billion dollars with costs increasing fourfold every decade since 1970.*

- **Impact on vulnerable population**- The economic costs are disproportionately borne by poor and disadvantaged populations living in degraded environments heavily infested by alien species.
- **Impact on India**- A study indicates that about 66% of India's natural systems are threatened by invasive species, they negatively impact ecosystems crucial for survival of apex predators like tigers.




- **Impact human health**- IAS pose threat to human health directly or indirectly.
  - The *Asian tiger mosquito* (Aedes albopictus), native to South-East Asia, is a vector of a number of human diseases such as Dengue fever and West Nile virus.
- **Reduced navigation**- *Water hyacinth* native to South America, has been intentionally introduced around the world for ornamental purposes and as animal food, but it has rapidly invaded water ways, irrigation channels, lakes and rice paddies.
  - Under the right conditions it can double in biomass within two weeks forming dense mats, with potentially disastrous consequences.
  - In Africa's Lake Victoria, water hyacinth infestations covering 12,000 hectares have blocked shipping trade and access to ports, and halted fishing activities.
- **Impact on food security**- Agriculture and fisheries are particularly vulnerable to the impacts of IAS, placing food security at risk.
  - The *fall armyworm* was introduced to sub-Saharan Africa, it is spreading rapidly across the continent causing yield losses of over 40% for smallholder maize farms in some countries.
- **Climate change-** The resilience of natural habitats can also be reduced by IAS, making them more vulnerable to the impacts of climate change.
  - Introduced grasses and trees may alter fire regimes, particularly in areas that are becoming warmer and drier due to climate change, putting habitats and human life at risk

## What can be done?

- The most cost effective measure to address the impact of invasive alien species is to prevent their introduction.
- A collaborative approach involving various sectors such as environment, health, agriculture, fisheries, customs, transport, private sector, and civil society is essential.
- Governments, donors, and agencies need to understand the impacts of IAS to integrate prevention and management measures into projects, including those supporting the

Sustainable Development Goals (SDGs).

- ***Kunming-Montreal Global Biodiversity Framework***, agreed at COP-15 to UN Convention on Biological Diversity, speaks of reducing the impacts of IAS on biodiversity and ecosystem by at least 50%, by 2030.

## References


1. Down to Earth- Rise of invaders
2. Hindustan Times- India tops list in invasive plant species