



## Warming of Key Biodiversity Areas (KBAs)

**For Prelims:** [Key Biodiversity Areas \(KBAs\)](#), [Kunming-Montreal Global Biodiversity Framework](#), [Andes Mountains](#), [Tropical Forests](#), [BirdLife International](#), [Important Bird and Biodiversity Areas \(IBA\)](#), [World Conservation Congress](#), [International Union for Conservation of Nature \(IUCN\)](#), [Key Biodiversity Areas Partnership](#), [Rainforests](#), [Mangroves](#), [Carbon Sequestration](#), [Nutrient Cycling](#).

**For Mains:** Effect of global warming and climate change on Key Biodiversity Areas (KBAs) in tropical ecosystems, Measures need to halt tropical ecosystem degradation.

**Source:** [DTE](#)

### Why in News?

Recently, a study has shown that [key biodiversity areas \(KBAs\)](#) in tropical forests have transitioned to **new temperature regimes (higher temperature)** due to [global warming](#) and [climate change](#).

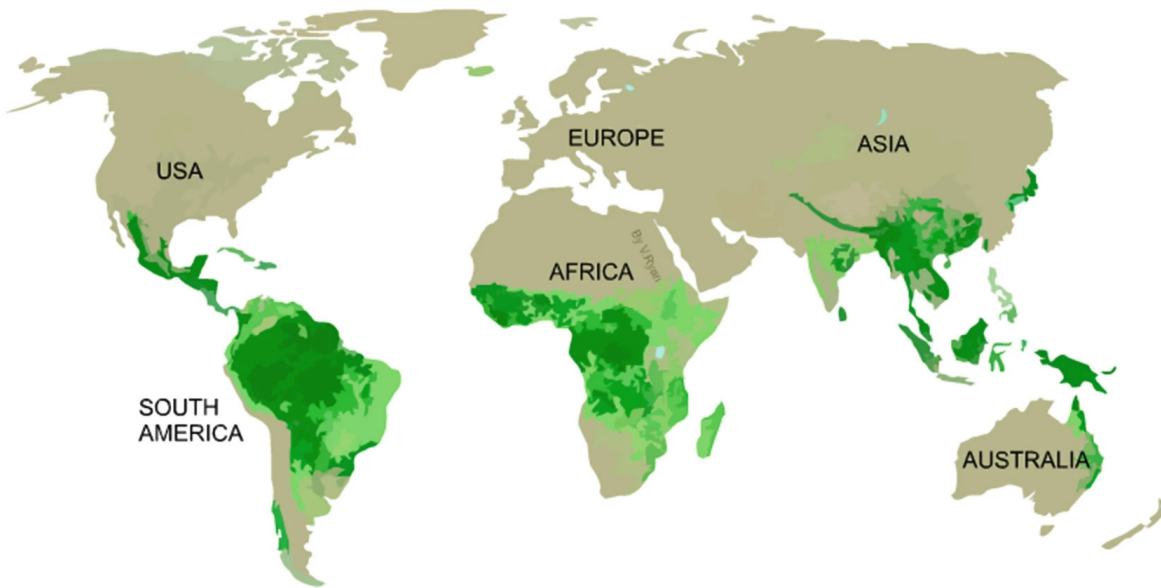
- The [Kunming-Montreal Global Biodiversity Framework](#) aims to conserve at least **30% of the world's land by 2030**, with **Key Biodiversity Areas (KBAs)** as a **core priority**.

### Note:

- Tropical rainforests are **dense and warm forests** typically found between **23.5 degrees to the north and south of the Equator**.

//

# Tropical Forests



## What is the Kunming-Montreal Global Biodiversity Framework (KMGBF)?

- **About:** It is a **multilateral treaty** aimed at halting and **reversing biodiversity loss globally by 2030**. It was adopted in December 2022 during the [15th meeting of the Conference of the Parties \(CoP\) of UN CBD](#).
- **Purpose and Goals:** It ensures that by 2030 at **least 30%** of areas of degraded **terrestrial, inland water, and marine and coastal ecosystems** are under effective restoration.
  - It has **23 action-oriented global targets** for urgent action over the decade to 2030 with **Key Biodiversity Areas (KBAs)** as a **core priority**.
- **Long-Term Vision:** The framework envisions that **by 2050**, there will be a collective commitment to living in **harmony with nature**, serving as a foundational guide for current actions and policies on biodiversity conservation and sustainable use.

## What are Key Highlights of the Study?

- **Temperature Changes in KBAs:** Up to 66% of tropical forest KBAs have entered a new phase characterised by new mean annual temperature regimes.
- **Regional Temperature Shifts:** The **percentage** of Key Biodiversity Areas (KBAs) experiencing temperature changes was **72% in Africa, 59% in Latin America, and 49% in Asia and Oceania**.
  - However, in Asia and Oceania, 12% of KBAs have not transitioned to the new temperature scenario though **23% of these are unprotected**.
- **Vertical Temperature Change:** The environment beneath the forest canopy is climatically stable, with less temperature variation than in open habitats.
- **Disproportionate Impact:** Some KBAs in **Latin America (2.9%) and Asia and Oceania (0.4%)** have shifted to nearly entirely **new temperature conditions**, with over **80%** of measurements falling outside their previous ranges.
  - These include areas in the tropical [Andes Mountains](#) in Ecuador, Colombia, Venezuela, and Panama.
- **Stable KBAs:** Around 34% of tropical forest KBAs have not yet experienced new temperature pattern, and over half of these are under some form of protection.
  - Northern Australia's [tropical forests](#) are among the least affected by novel temperature conditions.

## What are Key Biodiversity Areas (KBAs)?

- **Origin of the Concept:** [BirdLife International](#) initiated the idea by identifying [Important Bird and Biodiversity Areas \(IBA\)](#). The success of this model led to the inclusion of other taxonomic groups, such as **plants, butterflies, and freshwater and marine biodiversity**.
  - At the [World Conservation Congress in Bangkok in 2004](#), the [International Union for Conservation of Nature \(IUCN\)](#) recognized the need for a unified framework, which culminated in the **2016 global KBA Standard**.
- **About KBAs:** KBAs are **sites contributing significantly to the global persistence of biodiversity**.
  - They may contain **unique species or species found only in limited areas**, and are **critical** for the planet's health.
- **Criteria for Recognition:** There are **11 criteria** grouped under **five categories** that a site must meet to qualify as a KBA. These categories are:
  - **Threatened biodiversity**
  - **Geographically restricted biodiversity**
  - **Ecological integrity**
  - **Biological processes**
  - **Irreplaceability**
- **Global KBA Presence:** To date, more than **16,000 KBAs** have been mapped worldwide.
  - The [Key Biodiversity Areas Partnership](#), comprising **13 global conservation organisations**, is working to identify, map, and conserve KBAs across the globe.
    - India has **862 Key Biodiversity Areas (KBAs)**, which are crucial for the conservation of biodiversity E.g., **Western Ghats**.



## What are the Impacts of Rising Temperatures on Tropical Forests and KBAs?

- **Disruption of Stable Microclimates:** Sudden changes can exceed their **thermal tolerance**, leading to stress or mortality. Species that occupy **specific niches** within stable microclimates may face **habitat loss or degradation**.
- **Threat to Biodiversity:** Increased temperatures can lead to **habitat degradation**, particularly in sensitive ecosystems like [rainforests](#), [mangroves](#), and [coral reefs](#).

- **Alteration of Ecosystem Services:** Rising temperatures can impair ecosystem services such as **carbon sequestration, water regulation, and nutrient cycling.**
- **Threat of Invasive Species:** Warmer temperatures may allow **invasive species** to thrive and outcompete native species.
- **Deforestation and Degradation:** Higher temperatures may exacerbate **deforestation and forest degradation** by making ecosystems more vulnerable to **fires, pests, and diseases.**
- **Shifts in Species Composition:** Many species may migrate towards **higher altitudes or latitudes** in search of cooler conditions leading to **local extinction of species.**
- **Impacts on Human Communities:** Rising temperatures can affect **forest productivity** threatening the livelihood of indigenous and local communities dependent on tropical forests for **food, medicine, and shelter.**

## How to Protect Key Biodiversity Areas from Rising Temperatures?

<b>Develop and Scale Up Nature-based Solutions</b>	Leverage ecosystems to mitigate climate change effects while avoiding maladaptive practices like <b>monoculture plantations</b> and focusing on diverse, resilient ecosystems.
<b>Restore Ecosystems</b>	Prioritise the protection and restoration of forests, <b>wetlands</b> , peatlands, and mangroves to enhance carbon sequestration and biodiversity.
<b>Rewilding Initiatives</b>	Explore rewilding strategies, including the <b>reintroduction of native species</b> , to restore ecosystems.
<b>Habitat Connectivity Initiatives</b>	Create corridors to connect <b>fragmented habitats</b> , allowing species to migrate and adapt to changing climatic conditions.
<b>Invasive Species Management</b>	Monitor and inspect goods (plants, animals, soil) at borders to prevent the introduction of invasive species and introduce <b>natural predators</b> that specifically target the invasive species.

### Drishhti Mains Question:

What are Key Biodiversity Areas (KBAs)? How are they impacted by global warming and climate change?

## UPSC Civil Services Examination Previous Year Question (PYQ)

### Prelims

**Q. "Momentum for Change: Climate Neutral Now" is an initiative launched by (2018)**

- (a) The Intergovernmental Panel on Climate Change
- (b) The UNEP Secretariat
- (c) The UNFCCC Secretariat
- (d) The World Meteorological Organisation

**Ans: (c)**

**Q. With reference to 'Global Environment Facility', which of the following statements is/are correct?(2014)**

- (a) It serves as financial mechanism for 'Convention on Biological Diversity' and 'United Nations Framework Convention on Climate Change'

**(b)** It undertakes scientific research environmental issues at global level

**(c)** It is an agency under OECD to facilitate the transfer of technology and funds underdeveloped countries with specific aim to protect their environment

**(d)** Both (a) and (b)

**Ans: (a)**

---

**Mains**

**Q.** How is the Government of India protecting traditional knowledge of medicine from patenting by pharmaceutical companies? **(2019)**

PDF Refernece URL: <https://www.drishtias.com/printpdf/warming-of-key-biodiversity-areas-kbas>

