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Tiger Conservation Roadmap (2026): From Increasing Tiger Numbers to Building Sustainable Tiger Landscapes

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Recent Developments:

- On the **18th anniversary of tiger reintroduction at Sariska Tiger Reserve**, the **Government of India** released two major assessment documents outlining the future direction of tiger conservation.
- The first document presents a **Tiger Conservation Roadmap** for strengthening tiger populations across India, while the second compiles lessons from **12 tiger reintroduction initiatives** undertaken in different landscapes.
- The new conservation strategy shifts the focus from merely increasing tiger numbers to **restoring underperforming tiger reserves, improving habitat quality, strengthening prey populations and enhancing landscape connectivity**.
- With India's tiger population reaching **3,682 (2022)**, the Government has identified **25 priority tiger reserves** requiring targeted ecological interventions and scientific management.

India's Tiger Conservation Status:

Growth in Tiger Population:

- India's tiger population has increased from **1,411 in 2006** to **3,682 in 2022**, reflecting sustained conservation efforts.
- The country currently has **58 Tiger Reserves** covering nearly **85,000 sq km** of protected landscapes.
- India continues to support the world's largest wild tiger population.

Uneven Distribution of Tigers:

- Tiger populations remain highly concentrated, with only **10–12 Tiger Reserves** supporting nearly **36%** of the total tiger population.
- Around **12 Tiger Reserves** contain fewer than **3 tigers**, indicating weak breeding populations.
- **Kawal Tiger Reserve**, **Kamlang Tiger Reserve** and **Dampa Tiger Reserve** currently have **no resident tigers**.
- Uneven distribution increases ecological imbalance and reduces the long-term resilience of tiger conservation.

Need for a New Conservation Approach:

Challenges in High-Density Tiger Reserves:

- High tiger densities force dispersing tigers to move towards forest fringes, agricultural lands and human-dominated landscapes.

- Increased movement outside protected areas leads to greater **human-wildlife conflict**, livestock depredation and retaliatory killings.
- Expanding tiger movement also raises mortality risks from roads, railways, canals and other infrastructure.

Challenges in Low-Tiger Tiger Reserves:

- Several reserves possess suitable forests but lack sufficient prey populations to sustain breeding tigers.
- Poor habitat connectivity prevents natural dispersal from neighbouring source populations.
- Low breeding density increases the possibility of local population decline or extinction.

Source and Sink Population Concept:

Source Populations:

- **Source populations** occur in Tiger Reserves possessing healthy habitats, abundant prey and stable breeding tiger populations.
- These landscapes continuously produce dispersing tigers capable of naturally colonising adjoining forests.
- Examples include **Corbett Tiger Reserve**, **Bandipur Tiger Reserve** and **Kaziranga Tiger Reserve**.

Sink Populations:

- **Sink populations** exist in landscapes where tiger breeding is absent or extremely limited because of poor habitat quality, inadequate prey or fragmented connectivity.
- Such landscapes depend upon continuous immigration from neighbouring source populations for long-term survival.

Importance of the Source-Sink Framework:

- The roadmap recommends strengthening **13 major source populations** to ensure long-term ecological stability.
- Scientific interventions have been prioritised in **25 Tiger Reserves**, including carefully planned tiger reintroductions wherever populations remain below **5 tigers**.
- Managing source and sink populations together improves overall landscape-level conservation rather than isolated reserve management.

Landscape-Based Conservation Strategy:

Importance of Landscape Connectivity:

- Forest fragmentation and barriers to tiger dispersal reduce gene flow between isolated populations.
- Restoring ecological connectivity enables natural movement of tigers across protected areas, territorial forests and multiple-use landscapes.
- Better connectivity reduces inbreeding and strengthens long-term population viability.

Development of Metapopulations:

- The roadmap promotes the creation of a **metapopulation**, where several interconnected tiger populations exchange individuals through ecological corridors.
- Genetic exchange among connected populations lowers extinction risk and improves adaptive resilience.
- Landscape-level conservation distributes tiger populations more evenly across suitable habitats.

Identification of Priority Tiger Reserves:

Scientific Assessment Framework:

- The **National Tiger Conservation Authority (NTCA)** and the **Wildlife Institute of India (WII)** developed a scientific index for evaluating all **58 Tiger Reserves**.
- The assessment considered three major ecological parameters:
- **Habitat quality.**
- **Prey availability.**
- **Tiger population status.**
- Based on these indicators, **25 Tiger Reserves** requiring focused conservation action were identified.

Priority Landscapes:

- The **Central Indian and Eastern Ghats Landscape** contains the highest number of reserves requiring ecological intervention.
- The **North Eastern Hills and Brahmaputra Floodplains Landscape** possesses significant recovery potential if habitat protection, prey restoration and landscape connectivity improve.

Tiger Reintroduction as a Conservation Tool:

Concept of Tiger Reintroduction:

- Tiger reintroduction involves translocating tigers into landscapes where local populations have disappeared or become ecologically non-viable.
- Reintroduction is considered only after scientific assessment confirms habitat suitability, prey abundance, protection measures and ecological feasibility.

Major Experiences from Tiger Reintroductions:

- **Sariska Tiger Reserve** became India's first tiger reintroduction programme in **2008**, with the first successful litter recorded in **2012**.
- **Panna Tiger Reserve** successfully restored its tiger population following local extinction, with the first litter born in **2010**, and **10 translocations** undertaken since **2009**.
- **Satkosia Tiger Reserve** experienced significant setbacks because of local community opposition, livestock depredation concerns and poaching incidents.
- **Mukundara Hills Tiger Reserve** recorded slow population recovery owing to limited breeding success.

Lessons from Reintroduction Programmes:

Ecological Lessons:

- Habitat restoration should precede tiger translocation to ensure adequate ecological carrying capacity.
- Strong prey populations are essential for long-term breeding success.
- Effective protection against poaching remains a prerequisite for successful reintroduction.

Socio-Economic Lessons:

- Local community participation is critical for the long-term acceptance of conservation programmes.
- Livelihood concerns, livestock losses and social acceptance directly influence project success.
- Reintroduction should remain a carefully evaluated last-resort conservation strategy rather than a routine management tool.

Way Forward:

Priority Conservation Measures:

- Strengthen degraded tiger habitats through ecological restoration and scientific habitat management.

- Improve prey populations using habitat improvement and protection measures.
- Maintain ecological corridors connecting Tiger Reserves with adjoining forest landscapes.
- Reduce human-wildlife conflict through community-based conservation, compensation mechanisms and conflict mitigation strategies.
- Expand scientific monitoring using modern technologies and adaptive management practices.
- Promote greater participation of local communities in long-term wildlife conservation programmes.

Conclusion:

- India's tiger conservation programme has entered a new phase where improving **population distribution, habitat quality and ecological connectivity** has become more important than simply increasing tiger numbers.
- A landscape-based conservation approach supported by healthy source populations, functional ecological corridors and scientifically managed reintroductions offers a sustainable pathway for long-term tiger conservation.
- Experiences from **Sariska**, **Panna**, **Satkosia** and **Mukundara Hills** demonstrate that successful conservation requires both sound ecological science and active community participation.

Value Addition for UPSC:

Important Conservation Concepts:

- **Source Population:** A breeding population producing surplus individuals capable of naturally dispersing into surrounding landscapes.
- **Sink Population:** A population unable to sustain itself without immigration because of poor habitat quality or ecological limitations.
- **Metapopulation:** A network of spatially separated but interconnected wildlife populations linked through dispersal and genetic exchange.
- **Habitat Connectivity:** Ecological linkages that facilitate safe movement of wildlife between fragmented habitats.
- **Ecological Corridor:** A natural landscape feature connecting isolated habitats and enabling migration, dispersal and gene flow.

Important Institutions:

- **National Tiger Conservation Authority (NTCA):** Statutory body responsible for planning, funding and monitoring tiger conservation under **Project Tiger**.
- **Wildlife Institute of India (WII):** National institution engaged in wildlife research, ecological assessment and conservation planning.
- **Project Tiger:** Flagship species conservation programme launched in **1973** for the protection and recovery of wild tiger populations.
- **All India Tiger Estimation:** Periodic nationwide scientific assessment of tiger populations using modern monitoring techniques such as camera trapping and spatial analysis