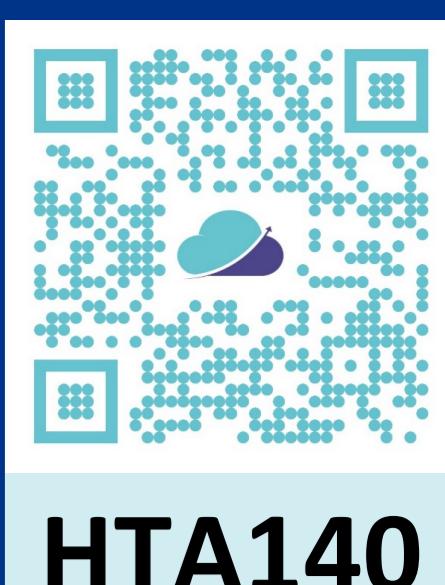


Evolution of Health Technology Assessment (HTA) in India: A Scoping Review and Thematic Analysis



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Background and Objectives

- Health Technology Assessment (HTA) provides a globally accepted, evidence-based framework for healthcare decision-making and priority setting, which is being increasingly adopted worldwide, including in developing countries¹
- Health Technology Assessment in India (HTAIn) has evolved significantly since its establishment under the Department of Health Research (DHR) in 2017
- This scoping review evaluates the current status of HTAIn, implementation and the challenges encountered. Additionally, a comparative analysis of HTA practices in six other Asia-Pacific countries with India is also presented

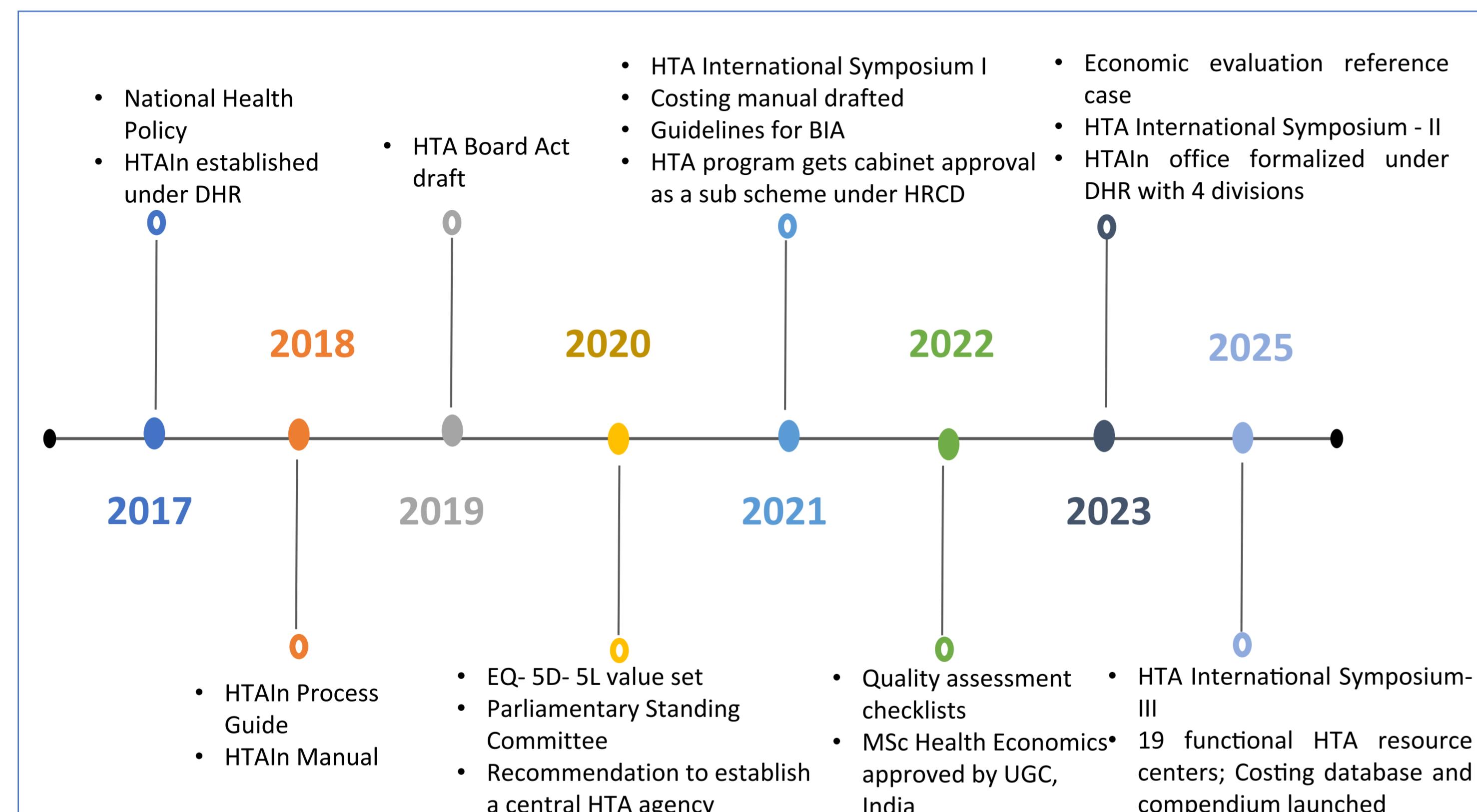
METHODS

- A literature search was conducted using databases such as PubMed, Google Scholar, and official government websites
- The search focused on identifying published studies and government policy documents related to HTA implementation and governance
- Further, this was supplemented by a review of regional HTA agencies and Health Ministry websites of six other Asia-Pacific countries (China, Japan, Taiwan, Thailand, South Korea, and Singapore)

RESULTS

- Established in 2017, HTAIn aims to promote equitable, efficient, and high-quality health systems through evidence-based decision-making²
- Since its inception, it has evolved into a well-institutionalized body under the DHR, with robust national capacity including cost databases, research hubs, and technical partners (Figure 1)^{1,4}

Figure 1: Milestones in HTAIn Progress



Abbreviations: HTAIn, Health Technology Assessment India; HTA, Health Technology Assessment; DHR, Department of Health Research; BIA, Budget Impact analysis; HRCD, Human Resource and Capacity Development; EQ-5D-5L, European Quality of Life 5 Dimensions 5 Level Version; UGC, University Grants Commission.

- HTAIn functions as an attached office under the DHR, governed by a Board chaired by a NITI Aayog Member, supported by Technical Appraisal Committees, a secretariat, and resource centers across India for study implementation¹
- Over the years, HTAIn has undergone significant restructuring, leading to a substantial progress, with 98 reports completed and 71 ongoing HTA evaluations, reflecting its expanding role in evidence-based health policymaking (Figure 2)^{1,3}
- Compared with the six APAC countries, India prioritises clinical benefit and cost-effectiveness, while equity, patient perspectives, and societal values are less consistently applied (Table 1)^{1,13-16}

Table 1: HTA Evaluation Criteria Across Countries

Evaluation criteria	India	China	Japan	Singapore	South Korea	Taiwan	Thailand
Clinical benefits	✓	✓	✓	✓	✓	✓	✓
Cost-effectiveness	✓	✓	✓	✓	✓	✓	✓
Budget impact analysis	⚠	✓	⚠	✓	⚠	✓	✓
Quality of life	⚠	✓	✓	✓	✓	✓	⚠
HCPs and Patient opinion	✗	✓	✗	✓	⚠	✓	⚠
Equity	⚠	✓	✗	-	⚠	✓	⚠
Focus on societal values	✗	✗	⚠	✓	⚠	✗	⚠

✓ Strongly included

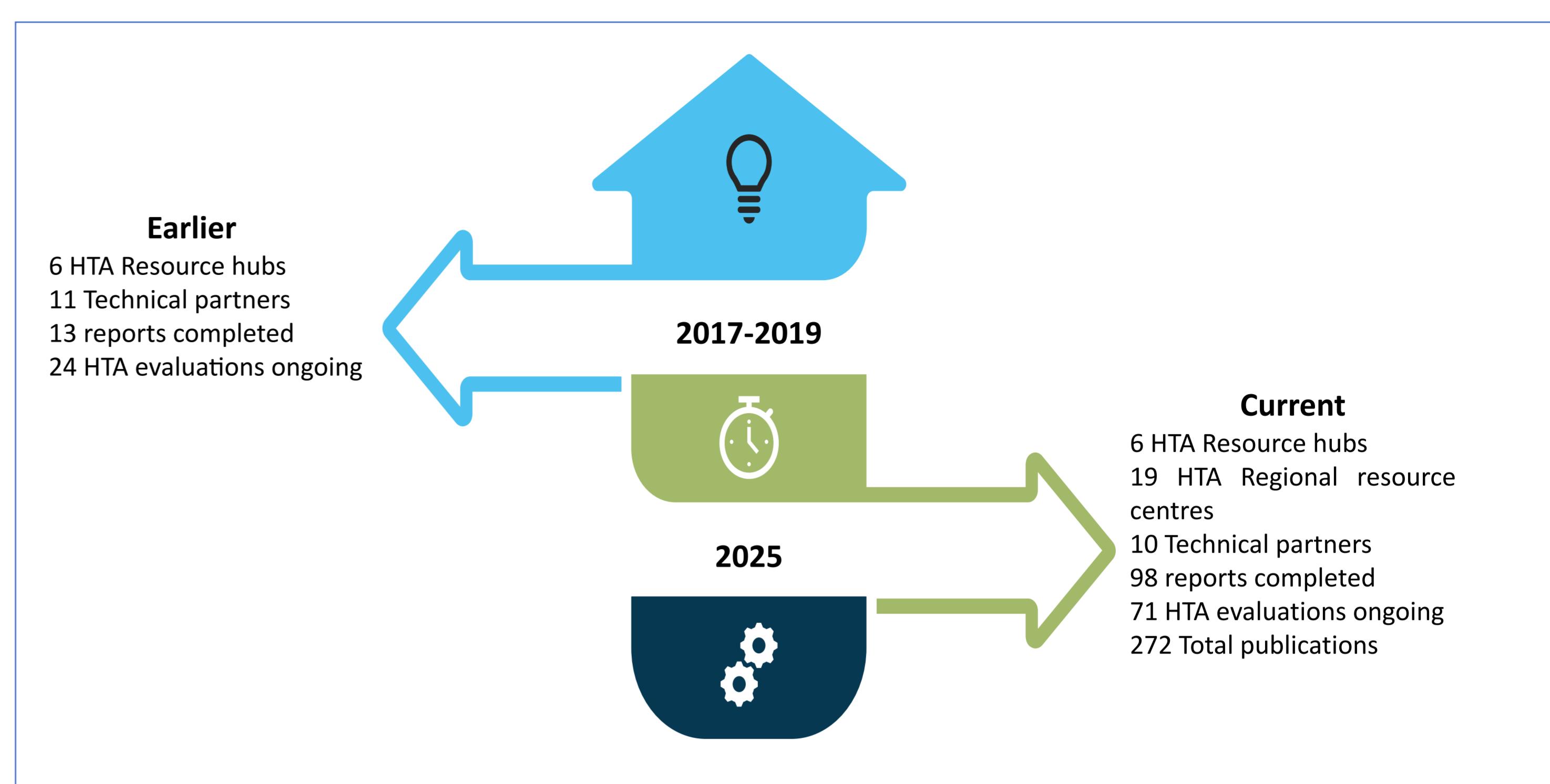
⚠ Limited/partially addressed

✗ Not addressed

Abbreviation: HCPs, Health care professionals.

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Figure 2: Comparative progress of HTAIn activities over the years



Abbreviations: HTA, Health Technology Assessment.

- The challenges encountered by the HTAIn to perform its activities, as reported in the literature, were thematically grouped into four domains: institutional and governance barriers, technical capacity and digital health governance, economic and financial considerations, and ethical, equity and social considerations (Table 2)
- Overall, HTAIn is hindered by limited institutional capacity, weak digital systems, financial constraints, and insufficient integration of equity
- Addressing these barriers requires strengthened governance, digital and human resource investment, sustainable funding, and equity-oriented assessment frameworks

Table 2: Challenges and Recommended Strategies – A Thematic Overview

Domains	Challenges	Recommendations
1. Institutional and Governance Barriers	1.1 Private sector dominance and resistance from policymakers and interest groups hinder effective HTA implementation by the government ^{2,4} 1.2 Weak public healthcare sector and ineffective regulation hinder HTA adoption ^{2,5,6} 1.3 Limited government HTA capacity could cause delays in approvals ⁶ 1.4 Unclear regulatory pathway for private HTA reports ⁶ 1.5 Limited integration of HTA into state-level decision-making ⁷	Strengthen public-private collaboration, create a legislative framework for HTA, and ensure transparency in decision-making ^{2,5} Need for legislative support and transparency in decision-making, and HTA should be mandatory for pharmaceuticals and medical devices ^{2,5,6} Expanding the HTA infrastructure in India, HTA committee should include experts from diverse domains and all regions of India ⁶ Public-private partnership model ⁶ HTA should be linked to formal policy-making for greater impact ⁵
2. Technical Capacity and Digital Health Governance	2.1 Limited human resource and expertise ^{2,6,8-9} 2.2 India's digital health ecosystem lacks proper infrastructure and governance ^{4,7,9} 2.3 Data security and privacy ^{7,12}	Expand systematic competency-based training programs and academic curriculum, Regional collaboration and capacity building can strengthen HTA in Asia ^{5,8-9} Invest in digital health infrastructure and create national databases ¹⁰ Promote data anonymization and transparency to safeguard privacy ¹²
3. Economic and Financial Considerations	3.1 Uncertain Funding for HTA Programs ⁹ 3.2 Reliance on outdated GDP-based thresholds limits effective value-for-money assessment ¹¹	Secure dedicated funding through government budgets and strategic partnerships ⁵ Use alternative approaches such as budget impact analysis, league tables, and affordability assessments ¹¹
4. Ethical, Equity and Social Considerations	4.1 Existing HTA methodologies do not fully incorporate social determinants ² 4.2 Influence of caste, religion, and geography on healthcare access ²	Develop context-specific frameworks for equity-based HTA ¹⁰

Abbreviations: HTA, Health Technology Assessment.

CONCLUSIONS

- To ensure, HTAIn effectively and equitably informs national decisions, sustained efforts are required to overcome barriers, strengthen collaboration, and align processes with health priorities, thereby guaranteeing its long-term impact and sustainability
- Future priorities include integrating real-world evidence, enhancing transparency, and embedding societal values into HTA assessments

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