

THE EVOLUTION OF JAPAN'S FOREST POLICY SINCE THE KYOTO PROTOCOL: CLIMATE CHANGE MITIGATION AND ADAPTATION STRATEGIES AND ITS CHALLENGES

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ABSTRACT

This study investigates the evolution of Japan's forest policy since the Kyoto Protocol (1997), focusing on its dual role in climate change mitigation and adaptation. Using a systematic literature review (SLR) guided by the PRISMA 2020 protocol, 60 peer-reviewed articles and policy documents were analyzed to identify policy developments, assess their impacts, and evaluate implementation challenges. The research applies bibliometric and thematic analyses to trace how international climate frameworks such as the Kyoto Protocol and the Paris Agreement influenced domestic reforms, while also highlighting the socio-economic and ecological pressures shaping Japan's forestry sector.

Findings reveal a clear trajectory from compliance-oriented sink maximization under Kyoto to integrated, multi-level governance in the net-zero era. Major milestones include the Basic Law on Forest and Forestry (2001), the Special Forest Thinning Program (2007–2012), the New Forest Management System (2019), and the Forest Environment Transfer Tax (2019). Together, these instruments redefined forestry from a timber-production model into a multifunctional strategy that emphasizes carbon sequestration, biodiversity conservation, disaster risk reduction, and rural revitalization. Empirical evidence shows that while Japan has maintained stable forest cover (~25 million ha), doubled forest stock since 1980, and raised timber self-sufficiency from 18% (2002) to over 40% (2020), persistent challenges remain. These include fragmented landownership, underuse forests, aging plantations, declining profitability of domestic timber, and limited local implementation capacity.

The study concludes that Japan's forestry sector exemplifies how advanced economies can integrate climate objectives with socio-economic development through adaptive, multi-level governance. However, sustaining long-term effectiveness requires continuous policy innovation, local empowerment, and diversification of forest functions, including non-timber forest products and ecosystem services. Lessons from Japan's experience provide valuable insights for other forest-rich nations, particularly in balancing global climate commitments with domestic socio-ecological realities.

Keywords: *forest policy, climate change mitigation, climate adaptation, governance, Japan*

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EVOLUSI KEBIJAKAN KEHUTANAN JEPANG SEJAK PROTOKOL KYOTO: STRATEGI MITIGASI DAN ADAPTASI PERUBAHAN IKLIM DAN TANTANGANNYA

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INTISARI

Penelitian ini mengkaji evolusi kebijakan kehutanan Jepang sejak *Kyoto Protocol* 1997 dengan menekankan peran ganda kehutanan dalam mitigasi dan adaptasi perubahan iklim. Kajian dilakukan melalui tinjauan literatur sistematis (*Systematic Literature Review/SLR*) yang dipandu protokol *PRISMA 2020*. Sebanyak 60 artikel ilmiah dan dokumen kebijakan dianalisis untuk menilai perkembangan kebijakan, dampaknya, serta tantangan implementasi. Analisis bibliometrik dan tematik digunakan untuk menelusuri pengaruh kerangka iklim global seperti *Kyoto Protocol* dan *Paris Agreement* terhadap reformasi domestik, sekaligus mempertimbangkan tekanan sosial-ekonomi dan ekologis dalam sektor kehutanan Jepang.

Hasil penelitian menunjukkan pergeseran dari orientasi kepatuhan berbasis maksimisasi serapan karbon menuju tata kelola hutan yang lebih terintegrasi dan *multi-level* pada era netral karbon. Beberapa tonggak penting menandai transformasi ini, yaitu *Basic Law on Forest and Forestry* (2001), *Special Forest Thinning Program* (2007–2012), *New Forest Management System* (2019), dan *Forest Environment Transfer Tax* (2019). Instrumen tersebut mendefinisikan ulang fungsi kehutanan dari produksi kayu menjadi strategi multifungsi yang mencakup sekuestrasi karbon, konservasi keanekaragaman hayati, pengurangan risiko bencana, dan revitalisasi pedesaan.

Secara empiris, Jepang berhasil mempertahankan tutupan hutan sekitar 25 juta hektare, menggandakan stok hutan sejak 1980, serta meningkatkan swasembada kayu dari 18% pada 2002 menjadi lebih dari 40% pada 2020. Namun, tantangan tetap ada, termasuk fragmentasi kepemilikan lahan, hutan yang kurang dimanfaatkan, usia tegakan menua, rendahnya profitabilitas kayu domestik, dan keterbatasan kapasitas implementasi lokal.

Kesimpulannya, sektor kehutanan Jepang memperlihatkan bagaimana negara maju dapat mengintegrasikan tujuan iklim dengan pembangunan sosial-ekonomi melalui tata kelola adaptif dan *multi-level*. Untuk keberlanjutan jangka panjang, diperlukan inovasi kebijakan, pemberdayaan lokal, serta diversifikasi fungsi hutan. Pengalaman Jepang menawarkan pelajaran penting bagi negara kaya hutan lain dalam menyeimbangkan komitmen iklim global dengan realitas domestik.

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