



Evolution of sustainable energy policies in India since 1947: A review

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Abstract

India's Intended Nationally Determined Contributions in 2015 towards the Two-Degree Celsius climate change goal has endorsed 15% of renewable integration in the primary energy mix by 2020. The energy space is strategic to meet the target, without affecting its immediate sustainable development goals. This study documents this strategic effort by tracking the historical trajectory of energy policy planning since its independence in 1947. An objective ontological approach was adopted in reviewing the evolution of energy policy into five distinct phases. Phase I (1947–70), focused on supply adequacy with the overall thrust on infrastructure development as the pillar of Indian economy. In Phase II (the 1970s) the focus shifted in addressing the energy access crisis. Phase III (the 1980s) was based on increment, diversification and streamlining on supplies for energy security purposes. Phase IV (the 1990s) is the period of modernisation of the overall Indian electricity system. Phase V (the 2000s) is the present phase of market transformation and climate change mitigation energy policies. A co-assessment of India's policy to the international climate negotiations showed that India remained responsive to international climate goals. It became reactive in the planning for sustainable energy policy after its ratification of Kyoto Protocol in 2001. Since then, India has been instrumental in administering strict emission reduction norms and efficiency measures. This review concludes that the country needs to upgrade its inefficient transmission and distribution networks, which was broadly neglected. The subsidy allocations in domestic energy resources should be well-adjusted without compromising on its social costs.

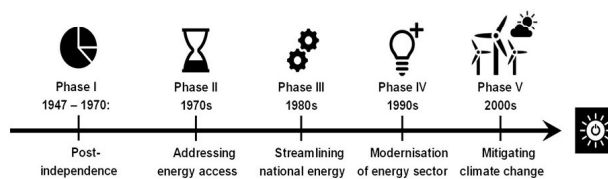


Fig. Chronology of energy policy phases in India since 1947

Five-Year Plans of India

- First FYP (1951–1956)**
Set up the objectives for national planning with high priority given to irrigation and energy, agriculture and community development, transport and communication, and industry.
Target growth rate was 2.1%, achieved growth rate was 3.6%
- Second FYP (1956–1961)**
Set up the objectives particularly for the development of the public sector and 'rapid industrialisation'. Hydroelectric power projects with the help of Russia was set up. The Atomic Energy Commission (AEC) was established.
Target growth rate was 4.5%, actual growth rate was 4.27%
- Third FYP (1961–1966)**
Stressed on agricultural growth and improvement of wheat production. The economy was weakened by the Sino-Indian War of 1962 and Indo-Pak war of 1956–6. State Electricity Boards (SEBs) were formed.
Target growth rate was 5.6%, actual growth rate was 2.4%
- Fourth and Fifth FYP (1969–1979)**
The government nationalised 14 major Indian banks and the Green Revolution advanced agriculture in India. The Indo-Pak war of 1971 and the Bangladesh Liberation War slowed down the growth. The Electricity Supply Act was amended in 1975, which allowed the central government to enter power generation and transmission sector.
Target growth rate was 4.4%, actual growth rate was 4.8%
- Sixth FYP (1980–1985)**
Economic liberalisation was initiated with a decentralised approach to increase resource availability in the rural areas. Emphasised the importance on oil conservation, renewable resources and environmental impact of energy use.
Target growth rate was 5.2%, actual growth rate was 5.7%
- Seventh and Eighth FYP (1985–1997)**
Stressed more on energy conservation through optimal resource utilisation and efficiency improvement of the existing energy system. The environmental dimensions of technology were given high significance in the eighth FYP.
Target growth rate was 5.0%, actual growth rate was 6.01%
- Ninth and Tenth FYP (1997–2007)**
Special emphasis on the end-use energy conservation measures and rapid investment in the five energy sectors of the country. Price deregulation of the power industry boosted its growth. Integrated Energy Policy development became critical.
Target growth rate was 8.0%, actual growth rate was 7.7%
- Eleventh and Twelfth FYP (2007–2017)**
Laid down the principle of the National Action Plan for Climate Change (NAPCC) that covered pan India mission for energy efficiency under the National Energy Policy (NEP). NITI Aayog formulated the Indian Energy Security Scenario – 2047 for the Intended Nationally Determined Contribution (INDC) for COP-21, Paris.
Target growth rate was 8.0%, actual growth rate was 6.8%

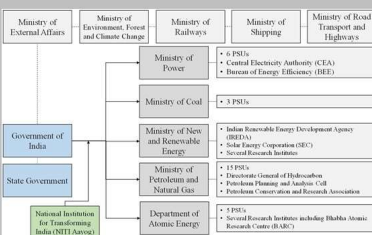


Fig. Main institutions in India with influence on energy policy (Source: Planning Commission of India, 2015)

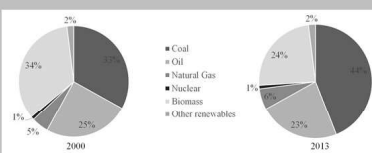
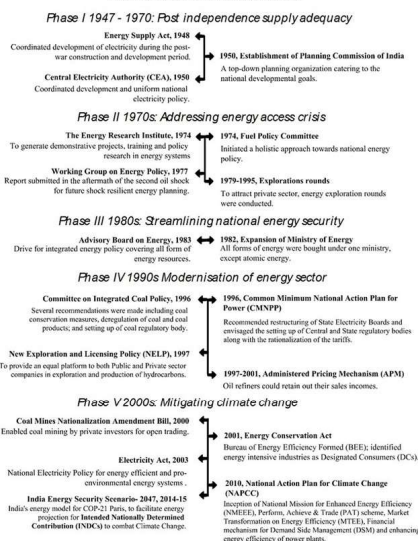


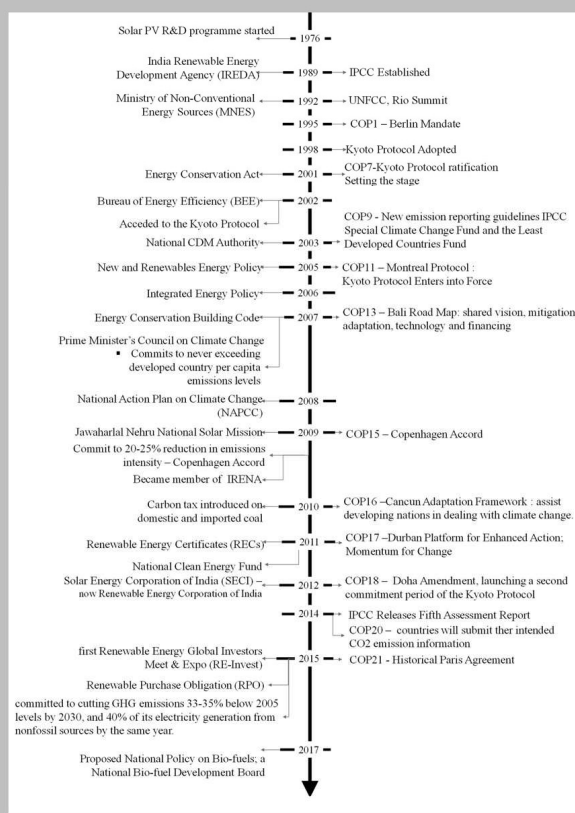
Fig. Primary energy mix of India (in million tonnes of oil equivalent) (Source: IEA, 2015)

Evolution of Energy Policy in India since 1947

Major milestones and their impact/ functions



India's energy policies with respect to international climate change negotiations



This work is published as:

Bardhan R, Debnath R, Jana A. Evolution of sustainable energy policies in India since 1947: A review. *WIREs Energy Environ.* 2019; doi: 10.1002/wene.340

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