

India's Energy Strategy: Draft National Energy Policy (NEP) 2040



NITI Aayog
Government of India

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Presentation Structure

- Drivers behind the New Energy Policy
- Schematic of the Policy Proposals
- Proposals in the Supply sub-sectors (Oil & Gas, Coal, Renewable Energy, Electricity, Nuclear Energy)
- Energy Efficiency
- Governance
- India @ 2040

Drivers behind the New Energy Policy

India's Ambitious Energy Agenda

- Government's bold announcements for 2022:
 - ✓ Universal electrification and 24x7 power supply
 - ✓ Clean cooking for all
 - ✓ 175 GW of renewables electricity capacity
 - ✓ Raising the share of manufacturing in GDP to 25% (17% presently)
 - ✓ Reduction of oil imports by 10% points (82% presently)

National Energy Policy must lead to the achievement of these goals.

Other Motivators

- Developments in the global energy markets:
 - Sharp decline in the price of oil (50%), and gas (70%) over 2014
 - Maturity of solar and wind technologies: India has abundant sunshine and wind potential
 - Air quality concerns in cities
 - International commitments: Sustainable Development Goals (SDGs) and Nationally Determined Contributions (NDCs)
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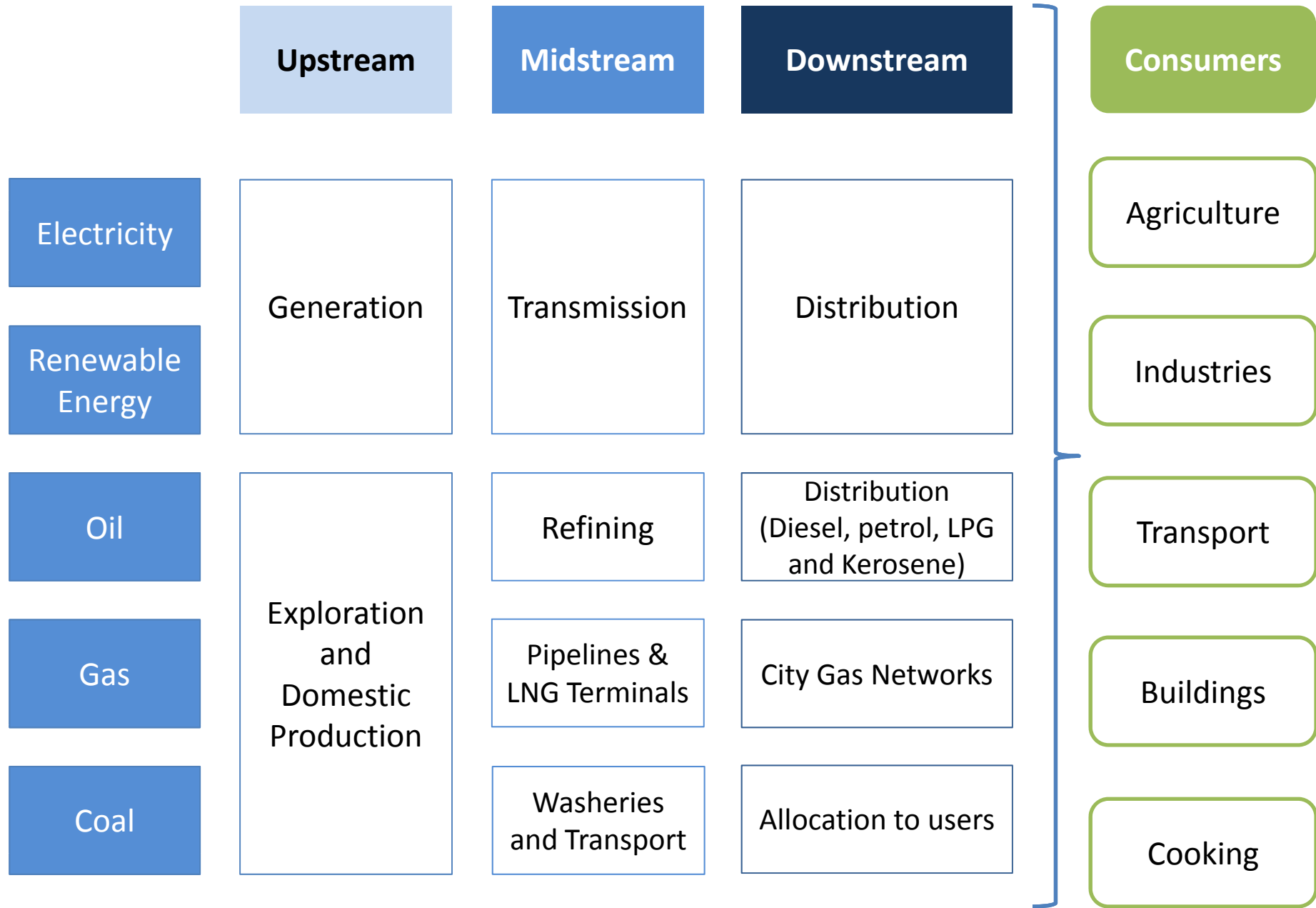
Identifies Energy Challenges

- Access and Affordability
- Import Dependence – High and Rising (82% for oil)
- Power Sector Transition – Towards Higher Share of Renewable Energy (RE): only 6% presently in generation
- Air Quality Concerns
- Attracting Investment in energy sector (\$150 billion per year until 2040)

NEP Proposes the Way Forward

- Offers the roadmap of an energy secure India in two timeframes – 2022 and 2040
 - Replaces the obsolete Integrated Energy Policy (2008)
 - Integrates Provincial Governments and Federal Ministries:
 - Demand side: Agriculture, Housing, Shipping, Road Transport, Rail, Civil Aviation, and Industries
 - Supply: Petroleum, Power, Coal, Renewable Energy, and Atomic Energy
 - Facilitators: Environment, and Finance
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Schematic of the Policy Proposals



7 Broad Areas of Intervention

Energy Efficiency

Increasing supply
of oil and gas

Refining and
distribution of oil
and gas

Installation,
generation, and
distribution of RE

Production and
distribution of coal

Generation,
transmission, and
distribution of
electricity

Governance

Oil and Gas

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Oil and Gas: Upstream (1/2)

Unexplored Blocks:

- **Expedite exploration:** Award full acreage for Exploration by 2022 (only 20% moderately to well explored; 50% poorly explored)
- **Initiate Exploration:** In 15 basins out of total of 26, exploration to be initiated for the first time
 - Allow a more attractive profit sharing regime - Uplift (multiple recovery of exploratory expenditure)
 - Public funding for collection of seismic data acquisition
 - Open up upstream data business to upgrade existing data and market it to global E&P companies

Oil and Gas: Upstream (2/2)

Existing Fields:

- **Monetize Discoveries:** Develop over 200 discoveries of NOCs/PSC contracts, or recycle acreage
- **Induct cutting-edge technology:** Formulate policy on contracts with global companies to raise production from fields of NOC on risk-sharing basis
- **Incentivize production:** Give market price for gas to upstream producers – transfer subsidy electronically to final consumers (Urea and power)
- **Approve infrastructure sharing policy:** Avoid duplication of infrastructure (platforms/pipelines/data) and fully utilize it in development of third party discoveries

Oil: Midstream and Downstream

- **Maintain India's export capability of petroleum products:** Resolve issues related to land and infrastructure, explore coastal locations
- **Develop Petroleum Industry hubs:** Create petrochemical complexes consisting of refineries and downstream industries for propylene, polypropylene and ethylene
- **Encourage the regime for marketing of petroleum products:** Declaration of large tankages and storages as 'common carrier' (with the tariff regulated by the Regulator) for reducing the cost of entry for new entrants

Gas: Midstream

- **Common Carrier:** Declare LNG terminals as 'Common Carriers' under Petroleum & Natural gas Regulatory Board Act, with tariff regulated by the Regulator
- **National Gas Grid:** Roll out a gas pipeline grid across the country – Public funding support to the stranded gas pipelines of nearly 10,000 Km
- **Gas Storages:** Develop a policy for conversion of depleted oil and gas fields into gas storages

Gas: Downstream

- **City Gas Distribution (CGD):** Incentivize the creation of CGD networks (this will free up LPG for distribution in rural areas)
- **Level Playing Field for Gas with Oil:** Eliminate import duty on LNG to level the playing field with respect to crude oil; also equalize taxes and subsidies
- **Gas Based Economy:** Formulate a comprehensive policy for promotion of Gas Economy by encouraging the use of gas across demand sectors (share of gas is 7% in primary energy)

Coal

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Coal Market and Pricing

- Beyond a small e-auction market, coal economy is run largely through administrative allocations
- Multiple prices prevail – fixed by the national coal company (Coal India Ltd. or CIL)
- Consumers allege that CIL charges higher prices of coal compared to the implicit cost of mining coal by Independent Power Producers (IPPs)
- No incentive to enhance efficiency due to the 'pass-through' of coal costs into electricity prices

Coal Sector: Recommendations

- Corporatize the 7 subsidiaries of CIL into independent companies to compete against one another
- Open up coal sector to commercial mining
- Increased efficiency, greater competition and enhanced investment to result in substantial decline in coal price
- User industries (including power intensive industries) to benefit and become globally more competitive
- Power consumers to be fully protected through Direct Benefit Transfer (DBT) subsidy

Renewable Energy (RE)

RE: Upstream (1/3)

- **Develop Appropriate Frameworks:** RE is growing rapidly leading a transformation of the Power sector. An appropriate policy framework needs to be developed.
- **Right Market Signals will be Given:** RE agenda is largely driven by private capital, which will require market signals for continued pace of growth
- **Balancing of the Grid :** Government has a vital role in the Integration and balancing of the variable energy (wind and solar)

RE: Upstream (2/3)

- **Promote Minor RE Sources:** Biomass-based power and Small Hydro to be encouraged, especially for balancing variable energy.
- **To Frame Bio-energy Policy:** Need to issue an all encompassing policy including all forms of biomass (going beyond biofuels)
- **Promote Hydro Projects:** Only one-third of India's hydro potential (45 GW out of 150 GW) developed so far. Need to tackle land and R&R issues.

RE: Upstream (3/3)

- **Future Growth to be Market Driven:** Beyond 2022, to ensure smooth integration, capacity growth will be market-driven without any targeting (target of 175 GW in 2022)
- **For Household Electrification:**
 1. Grid-based supply to be the first option
 2. Solar/micro grids - only for inaccessible areas
- **Promotion of RE use in Heating:** Heating applications in domestic and industrial sectors will be promoted

RE: Midstream and Downstream

- **Introduce a Scheme for Balancing Energy:** DISCOMS to be insulated against high cost of integrating RE by extending financial support to cost of balancing.
 - Existing gas based capacity can be harnessed for balancing RE
 - Similar support for Hydro and Biomass based power

- **Compliance of Renewable Purchase Obligations (RPOs) through Rooftop Solar:** Encourage DISCOMs to support rooftop solar through net metering and building bye-laws

Electricity

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Electricity: Health of DISCOMs

- **Healthy DISCOMs** most critical to the success of electricity sector
- Regime recommended in the longer term to ensure healthy DISCOMs:
 - Success of Debt restructuring (UDAY) crucial
 - Separation of wire and content
 - Entry to multiple sellers of electricity in each Circle as in India's Telecom sector
 - Consumers to be protected through DBT

Electricity: Further Recommendations

- **Strategy For Universal Electrification:** Roll out a strategy for universal electrification and 24X7 supply by 2022
- **Retire Expensive Generation Capacity:** Environmental regulations on emission treatment impose high cost
 - Over 20 GW thermal plants of below 250 MW and over 25 years age should be placed in 'reserve' category
- **Transfer Stranded PPAs to New Demanders:** Need of Power purchase agreement by new consumers may be met by transfer of capacity being backed down by DISCOMS

Nuclear Energy

Nuclear Energy

- **Endorsement of Nuclear Power:** Achievement of NDC target of 63 GW by 2032 (8 GW presently) recognized by the new Policy
- **Becoming Technology Neutral:** All technologies to be pursued. Expedite the development of indigenous thorium reactors
- **Also Pursue Commerciality:** Given high capital cost and over-supplied power market - technology and fuel suppliers should share market risk

Energy Efficiency

Demand Reduction: Opportunities for Interventions

Buildings

- Adoption of LED
- Efficient appliances
- Building codes

Transport

- Shift towards rail
- Public transport
- E-vehicles
- Transit-oriented Urban development

Industry

- Increase penetration of Perform Achieve Trade (PAT) with higher targets
- Shift towards efficient technologies & processes

Cooking

- Enhanced efficiency of cook stoves
- Shift to cleaner cooking fuels: LPG, PNG, biogas and electric cooking

Energy Efficiency

- **All Fuels to be Addressed:** Energy Efficiency and Conservation to be driven across fuels (not only electricity)
- **Market Price of Fuels:** Right price helps in getting better results from efficiency programs – vulnerable sections to be protected through DBT
- **Efficiency to be Built Into National Programs:** 100 Smart cities, 770 million LED bulbs scheme, Power for All, Housing for All, Make In India – LED, equipment/devices)
- **A More Comprehensive Mission:** Launch a revamped National Mission on Energy Efficiency with better linkages with demand sectors

Governance

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Higher Uptake of Technology and R&D

- **Support To Ministries:** A Chief Technology Officer to be posted in all Energy Ministries
- **Technology Inputs to Energy:** A separate 'Heat Strategy' is proposed for use of electricity and biomass (RE) in providing heat in industries (50% of energy use is as heat)
- **Raise Profile of Research Institutes:** All research institutions operated by national energy companies to become autonomous
- **Develop Appropriate Technology:** For development of Energy Efficiency interventions suited to our climatic conditions, a new technical institute will be created

Regulators: Interventions

- **Policy Directions:** Government may give policy directions to Regulators to meet its energy related welfare objectives
- **Other Issues:**
 - Amending selected energy-related statutes – Electricity Act, PNGRB Act (e.g. content and carriage and common carrier)
 - creating a competent cadre to have expertise on emerging technologies
 - Ensuring financial independence

Effective Institutional Mechanisms

- **Overarching Coordination across Energy Ministries:** Implementation of the NEP to be reviewed by a high-powered mechanism
- **Power Sector Coordination:** Federal Power Ministry to host a coordination mechanism to liaise between fuel supply and consumer Ministries.
- **Promotion of Indian Energy Strategy:** A coordination mechanism to be set up in the Foreign Ministry to effectively promote India's energy strategy internationally

Overseas Engagements

- **Support aggressive acquisition strategy:** Pursue natural resource assets, and domestic marketing of energy sourced from Indian overseas assets (LNG from GAIL and ONGC assets in US and Mozambique and other destinations)
- **Tap Indian Technical Diaspora:** Indian Missions to seek their assistance at leading energy centers to access technology and manpower
- **Exploit Opportunities in the Neighbourhood:** National energy companies to pursue commercial opportunities - cross country gas pipelines, power generation and transmission, hydro projects
- **Efficient Decision-Making:** Greater freedom to national oil companies in overseas investments

Investment-Related Interventions

- **Step-Up Investments:** Energy sector needs \$150 billion investment every year to address India's energy needs (LNG terminals, storages, battery, and EVs)
- **Develop Sector-Wise Projects:** NITI Aayog to undertake a study to determine sector-wise investment opportunities
- **Finance Ministry to Lead Initiative:** For attraction of domestic and overseas investors
- **Promote Rural and Decentralized Investment Proposals:** Energy Ministries to develop sectoral policies for distributed/small size rural energy infra (mini-grids, LPG distribution and cooking ecosystem)

Other Issues

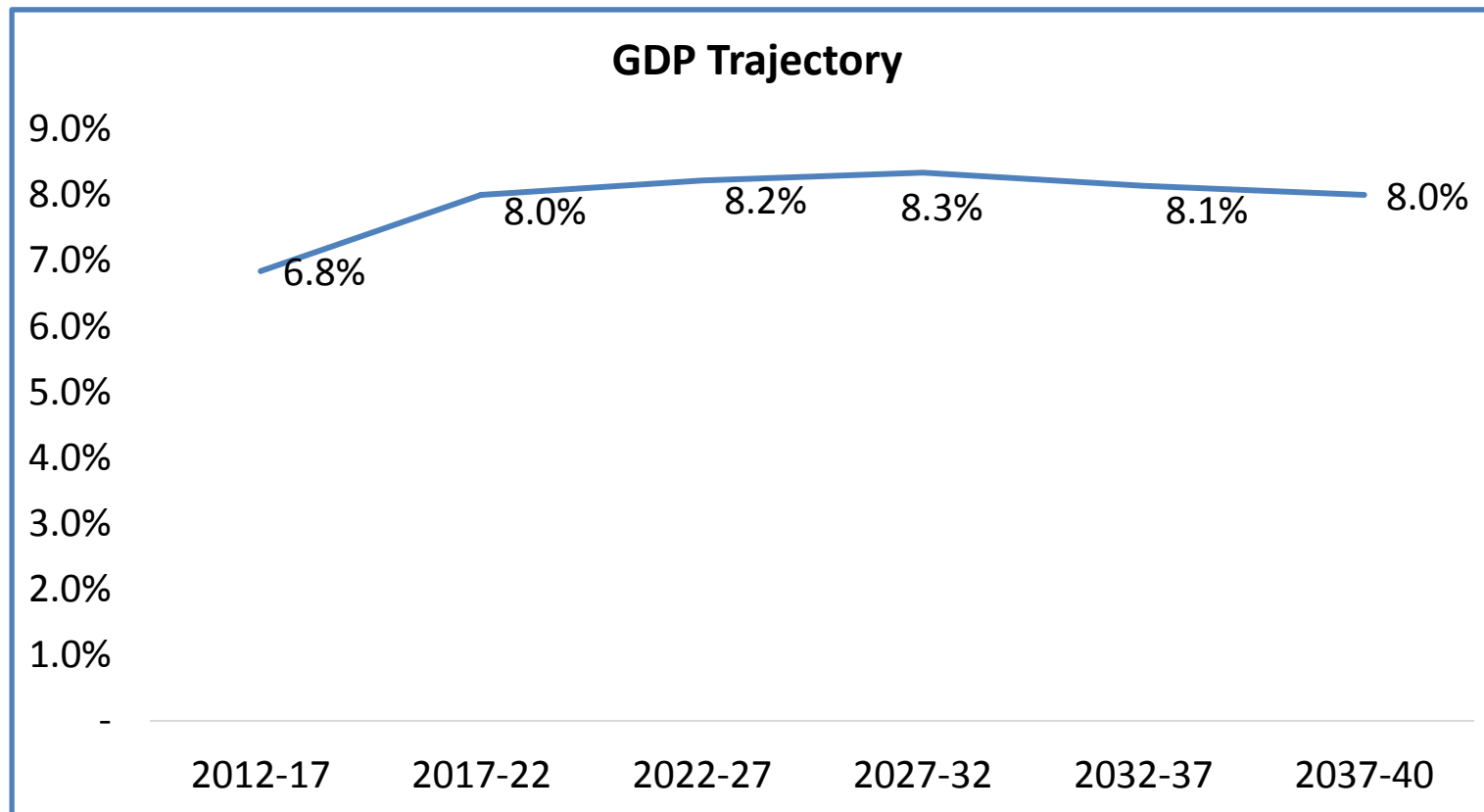
- **Joint Strategy in Academia:** Energy Industry and States to work closer to set up technical colleges/universities
- **A National Mission on Clean Cooking Fuel:** To offer wider choice to rural consumers: an aim of 100% clean cooking fuel coverage by 2022 (efficient cook stove for biomass, Induction cookers and biogas)

India@2040

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High Developmental Ambitions (2040)

- Population: 1.2 Billion (2014) → 1.6 Billion (2040)*
- Urbanization: 31% (2012) → 47% (2040)*



*Extrapolated from India's INDCs.

High Developmental Ambitions (2040)

Per capita
electricity of
3000 kWh

At 8% CAGR,
GDP at \$15
Trillion

Rural-Urban
energy divide
overcome by
2032

\$3.6 trillion
investment in
energy

Energy intensity
falls by 73-80%

Thank you

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