1. Introduction to Energy Policy

DEFINITION 1: Energy policy is the scheme in which the government (or any organization) addresses issues related to energy growth and usage including energy production, distribution, and consumption.

or

DEFINITION 2: **Energy policy** *is the manner in which a given entity (often governmental) has decided to address issues of energy development including energy conversion, distribution, and use. The attributes of energy policy may include legislation, international treaties, incentives to investment, guidelines for energy conservation, taxation, and other public policy techniques.*

National Energy policy of India:

The energy policy of India is to increase energy in India and reduce energy poverty with more focus on developing alternative sources of energy, particularly nuclear, solar and wind energy.

Need for energy policy:

In relation to its population, India is poorly endowed with energy resources. Its share in the world population is 17% but the shares in the world gas, oil and coal reserves are only 0.6%, 0.4% and 7%, respectively. This has meant heavy dependence on imports even at a rather low level of energy consumption. Therefore, national energy policy is employed in India.

The total primary energy consumption from coal (452.2 Mtoe (million tons of oil equivalent); 45.88%), crude oil (239.1 Mtoe; 29.55%), natural gas (49.9 Mtoe; 6.17%), nuclear energy (8.8 Mtoe; 1.09%), hydroelectricity (31.6 Mtoe; 3.91%) and renewable power (27.5 Mtoe; 3.40%) is 809.2 Mtoe (excluding traditional biomass use) in the year 2018.

*Mtoe is an acronym that stands for million tonnes of oil equivalent. The unit quantifies the amount of energy released when burning one mega tonne of crude oil.

*ENERGY IN 1 Mtoe = 4.1868x1016 Joules

India's net imports are nearly 205.3 million tons of crude oil and its products, 26.3 Mtoe of LNG (Liquefied natural gas) and 141.7 Mtoe coal which is equal to 46.13% of total primary energy consumption. India is largely dependent on fossil fuel imports to meet its energy demands – by 2030, India's dependence on energy imports is expected to exceed 53%

of the country's total energy consumption. About 80% of India's electricity generation is from fossil fuels. India is surplus in electricity generation and also marginal exporter of electricity in 2017.

National energy policy in the last plan periods:

There are four key objectives of National Energy Policy (NEP)::

1. Access of energy at affordable prices,
2. Improved security and Independence,
3. Greater Sustainability
4. Economic Growth

1. Considering poverty and deprivation in India, access to energy for all at affordable prices is of utmost importance. We are yet to provide electricity to nearly 304 million people, and clean cooking fuel to nearly 500 million people, which still depend on Biomass. The policy aims to ensure that electricity reaches every household by 2022 as promised in the Budget 2015-16 and proposes to provide clean cooking fuel to all within a reasonable time. While it is envisaged that financial support will be extended to ensure merit consumption to the vulnerable sections, competitive prices will drive affordability to meet the above aims.

2. Improved energy security, normally associated with reduced import dependence, is also an important goal of the policy. Today, India is heavily dependent on oil and gas imports while also importing coal. In so far as imports may be disrupted, they undermine energy security of the country. Energy security may be enhanced through both diversification of the sources of imports and increased domestic production and reduced requirement of energy. Given the availability of domestic reserves of oil, coal and gas and the prospects of their exploitation at competitive prices, there is a strong case for reduced dependence on imports. In due course, we may also consider building strategic reserves as insurance against imported supplies.

3. The goal of sustainability acquires added importance and urgency in view of the threat of catastrophic effects of climate change as well as the detrimental effects of fossil fuel usage on local air quality. In India, sustainability is also closely linked with energy security. Our fossil fuel requirements, which comprise nearly 90% of our commercial primary energy supply, are increasingly being met by imports. This means that cutting fossil fuel consumption would promote the twin goals of sustainability and security. Hence the policy lays heavy emphasis on de-carbonisation through the twin interventions of energy efficiency and renewable energy.

4. Finally, the energy policy must also support the goal of rapid economic growth. Efficient energy supplies promote growth in two ways. First, energy is the lifeblood of the economy. It is an important enabling factor of growth and its availability at competitive prices is critical to the competitiveness of energy-intensive sectors. Second, being a vast sector in itself, its growth can directly influence the overall growth in the economy. For example, petroleum products have been an important direct contributor to our growth in recent years by attracting large investments in refining/distribution, and also fuelling economic activity.

In general, these four goals may or may not move in harmony with one another. We noted above that energy security and sustainability are mutually reinforcing in our case since our energy imports are predominantly fossil fuel based. Reduction in imports and in emissions can both be achieved through an expansion of renewable energy consumption. On the other hand, as long as fossil fuels remain the cheapest source of energy, the goal of energy accessibility at affordable prices would come in conflict with the goal of sustainability and possibly energy security as well. Until such time as the costs of generating, transmitting and distributing renewable energy drop sufficiently to allow its delivery to the customer at lower cost than energy from fossil fuel sources, a conflict is likely to exist among the above three objectives. Energy efficiency is, however, one goal that reinforces all the four objectives.

Policy framework:

In general, India's strategy is the encouragement of the development of renewable sources of energy by the use of incentives by the central and state governments. With the abundant solar energy resource combined with adequate high head pumped hydroelectric energy storage potential, India is capable to meet its ultimate energy requirements of its peak population from its renewable energy sources alone.

In 2021, the government has upped India’s target to 500GW of renewable energy by 2030. A long-term energy policy perspective is provided by the Integrated Energy Policy Report 2006 which provides policy guidance on energy-sector growth. Increasing energy consumption associated primarily with activities in transport, mining, and manufacturing in India needs rethinking on India's energy production.

Measures used to produce an energy policy:

A national energy policy comprises a set of measures involving that country's laws, treaties and agency directives. The energy policy of a sovereign nation may include one or more of the following measures:

- statement of national policy regarding energy planning, energy generation, transmission and usage
- Legislation on commercial energy activities (trading, transport, storage, etc.)
- legislation affecting energy use, such as efficiency standards, emission standards
- instructions for state-owned energy sector assets and organizations
- active participation in, co-ordination of and incentives for mineral fuels exploration and other energy-related research and development policy command
- fiscal policies related to energy products and services (taxes, exemptions, subsidies ... **Fiscal policy** is the means by which a government adjusts its spending levels and tax rates to monitor and influence a nation's economy.
- energy security and international policy measures such as:
    - international energy sector treaties and alliances,
    - general international trade agreements,
    - special relations with energy-rich countries, including military presence and/or domination.
- Propose actions on the ground:

    (i) Energy Consumption by businesses, households, transportation and agriculture

    (ii) Energy Efficiency/de-carbonisation measures on the demand side

    (iii) Production and distribution of coal

    (iv) Electricity generation, transmission and distribution

    (v) Augmenting supply of oil and gas, both by domestic E&P, and through acquisition of overseas acreages

    (vi) Refining and distribution of oil and gas.

    (vii) Installation, generation and distribution of renewable energy