

Government Policies for Renewable Energy Sources

¹Prof.Gadhav Ashabai Shivaji, ²Mr.Chougule Satish Ganpa,t ³Mr.Salunkhe Suraj Hanumant,
⁴Ms.Deshmukh Aakanksha Hanumant, ⁵Mr.Magar Navnath Kantilal

Department of Electrical Engineering,

Faculty of Shriram Institute of engineering and technology (Poly), Paniv, Maharashtra, India

Shriram Institute of engineering and technology (Poly),

Faculty of Shriram Institute of engineering and technology (Poly), Paniv, Maharashtra, India

Faculty of Shriram Institute of engineering and technology (Poly), Paniv, Maharashtra, India

Faculty of Shriram Institute of engineering and technology (Poly), Paniv, Maharashtra, India

Faculty of Shriram Institute of engineering and technology (Poly), Paniv, Maharashtra, India

Abstract:

Renewable energy is essential for meeting increasing energy demand while reducing environmental pollution and dependence on fossil fuels. Governments worldwide have introduced policies to promote renewable energy sources such as solar, wind, biomass, and small hydro. These policies include subsidies, tax incentives, feed-in tariffs, and renewable purchase obligations. In India, initiatives like the National Solar Mission and rooftop solar schemes have significantly boosted renewable capacity. [1]. Government support encourages private investment, technological advancement, energy security, and sustainable development

Renewable energy Definition: Renewable energy is energy obtained from natural sources that are continuously replenished and do not get exhausted, such as solar, wind, water (hydro), biomass, and geothermal energy. [6].

Introduction to Renewable Energy

Sources Policies:

Renewable energy sources policies are the rules and schemes made by the government to encourage the use of energy from solar, wind, water, and biomass. These policies help to reduce pollution, save fossil fuels, and promote clean and sustainable energy. [2] They also provide support and incentives to increase the use of renewable energy.

Types of Renewable Energy Sources (Available Sources)

There new able energy source available are:

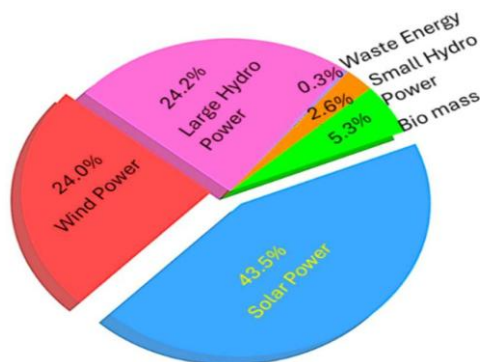
Solar energy– energy from sun light

1. **Wind energy** –energy from moving air
2. **Hydroelectric energy** –energy from flowing water
3. **Biomass energy** – energy from plants and animal Waste

1. **Geothermal energy**–energy from heat in side the

Tidal energy–energy from ocean tides

Renewable Energy Contribution in India (GW):20:



Renewable Energy Contribution in India (GW): 2024

The above the energy production map of India proves that coal has been dominating the Indian energy map across regions, as well as in the ownership domains. However, there is a plan to transition towards the usage of RE, especially in the private sector, which plays a huge part in the influx of hydro and other types of renewable sources. It also has regional differences, with the Western and Northern regions dominating total production. Nuclear energy, though confined only to some areas, such as the Southern and Northern regions, forms a small portion of the total energy support.

Government policies:

Pradhan Mantri Surya Ghar Muft Bijli Yojana – National scheme for solar rooftop deployment with subsidy and capacity targets.

1. Pradhan Mantri Surya Ghar Muft Bijli Yojana

Type: Roof top Solar Scheme

Launch:2024

Purpose: Support installation of rooftop solar systems for 1 crore households; provide 300 units of free solar electricity per month to beneficiaries.

Mechanism: Direct subsidies to households; implemented by Ministry of New & Renewable Energy (MNRE).

2. PM-KUSUM Scheme (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan)

- **Type:** Solar &Renewable for Agriculture
- **Purpose:** Promote solar pumps and small grid-connected renewable plants on farmers' land.
- **Components:**
 - Solar power plants up to 2MW
 - Standalone solar agricultural pumps
 - Solar ization of existing grid-connected pumps
- **Impact:** Reduces farmers' diesel costs, increases clean energy generation, and provides additional income.

3.National Green Hydrogen Mission

Type: **Hydro genenergy policy**

- Launch:2023(Cabinet approved)
- Purpose: Make India a global hub for green hydrogen and derivatives (like green ammonia).
- Targets &Tools:
- Incentives for electrolyser manufacturing and green hydrogen

production [5].

- Open access and grid connectivity support for renewable energy used in hydrogen production
- Demand aggregation & certification frameworks
- Goal: 5+ million tonnes per year production by 2030; deep decarbonization of hard-to-abate sectors.

4. Production Linked Incentive (PLI) Scheme for Solar PV Modules

Type: Manufacturing support

Purpose: Boost domestic manufacturing of high-efficiency solar photovoltaic (PV) modules.

Mechanism: Financial incentives to companies scaling solar PV production (cells & modules).

Outcome: Reduces import dependence and strengthens India's clean energy supply chain.

Various Wind Energy Policies

- Includes off shore wind policy, repowering, and data sharing policies to enhance wind energy deployment.

Akshay Urja Diwas (Awareness Campaign)

- National annual event (20 Aug) to raise public awareness about renewable energy benefits.

Why These Policies Matter

- Help India reduce fossil fuel dependency and Carbon emissions
- Promote clean tech manufacturing and energy security

Name of the companies

Leading Renewable Energy Companies in India

Utility-Scale Renewable Power

5. Renewable Purchase Obligations (RPO)

Type: Regulatory requirement

Purpose: Mandate electricity distribution companies and large consumers to source a minimum % from renewable sources.

- **Policy Implication:** Guides all renewable programmes and national climate commitments.

Other Supporting Frameworks

National Solar Mission (NSM)

- Launched in 2010 to build a strong solar policy ecosystem and scale solar power generation nationwide.

Adani Green Energy Limited (AGEL) – one of India's largest renewable power firms focusing on solar & wind projects.

ReNew Energy Global (Re New Power) – major independent power producer with large wind and solar capacity.

Tata Power Renewable Energy Ltd.

(TPREL) – renewable arm of Tata Power with solar, hybrid & storage projects.

JSW Energy (Green Segment) – renewable projects under the larger JSW Energy portfolio.

Greenko Energy Holdings – integrated renewable energy developer including pumped storage.

Azure Power – independent solar power

producer across India.

NTPC Renewable Energy Ltd. – renewable division of NTPC focusing on solar, wind & hybrid power.

SJVN Green Energy Ltd. – renewable arm of SJVN focusing on solar & wind.

Solar Project & EPC (Engineering-Procurement-Construction) Companies

Onix Renewable Ltd. – solar modules, hybrid systems, EPC projects.

Mahindra Susten – solar EPC solutions & project development.

Sterling and Wilson Renewable Energy – global solar EPC services.

Waaree Energies – solar tech, panels & power infrastructure (also expanding grid services).

KPI Green Energy Ltd. – solar project developer.

Wind-Focused Companies

- **Suzlon Energy Ltd.** – major Indian wind turbine manufacturer and wind power developer.
- **InoxWind Ltd.** – wind turbines and wind farm development.[3].

Other Renewable & Hybrid Energy Players

Avaada Group – solar, wind, and green fuels projects.

- **Hero Future Energies** – wind & solar projects plus storage .Budget of india government in 2026

1.Total Renewable Energy Allocation

Energy(MNRE) received a budget of ₹32,914.7 crore for FY 2026–27, up about 30% from the previous year's revised estimates.

This reflects a strong fiscal push to scaleup India's renewable energy deployment, manufacturing, storage and grid integration

2.SolarEnergyGetsMajorFunding

₹30,539.36crorewasallocated specifically for solar power initiatives, a ~32% increase over previous estimates.

Within this, ₹22,000crore was earmarked for the Pradhan Mantri Surya Ghar:

3.Battery Storage &Manufacturing

Support The budget introduced **customs duty exemptions** on capital goods used for **lithium-ion battery cell manufacturing** and **Battery Energy Storage Systems (BESS)** to help lower costs and boost roduction.

Exemption swere also provided for sodium anti (used in solar glass production), **4.Green Hydrogen and Emerging Clean Tech.** The National Green Hydrogen Mission continued to receive focused support. Although specific number svary by source, [4]

Conclusions :-

Government policies play a crucial role in the growth and adoption of renewable energy sources. Supportive initiatives such as subsidies, incentives, regulatory frameworks, and national missions have accelerated the deployment of clean energy technologies. These policies help reduce ependence on fossil fuels

References

- [1] IEA. (2007), "China & India - Insights", World Energy Outlook, IEA.
- [2] R. M. Elavarasan *et al.*, "A Comprehensive Review on Renewable Energy Development, Challenges, and Policies of Leading Indian States With an International Perspective," *IEEE Access*, vol. 8, pp. 74432–74457, 2020.
- [3] "National Electric Mobility Mission Plan." [Online]. Available: <https://pib.gov.in/PressReleasePage.aspx?PRID=1576607>
- [4] A. Roy, S. Pramanik, K. Mitra, and M. Chakraborty, "A Novel Approach Towards Gas Turbine Emission Reduction by Using Neural Networks," in *2023 International Conference on Sustainable Communication Networks and Application (ICSCNA)*, IEEE, Nov. 2023, pp. 1060–1066.
- [5] A. Dutt and D. S. Krishnan, "Mapping the Impacts of Solar Water Pumps on Farmers' Lives: Building a Results Framework for Components A and C of Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan (PM Kusum)," Jul. 2023.
- [6] T. Kataray *et al.*, "Integration of smart grid with renewable energy sources: Opportunities and challenges – A comprehensive review," *Sustainable Energy Technologies and Assessments*, vol. 58, p. 103363, Aug. 2023.