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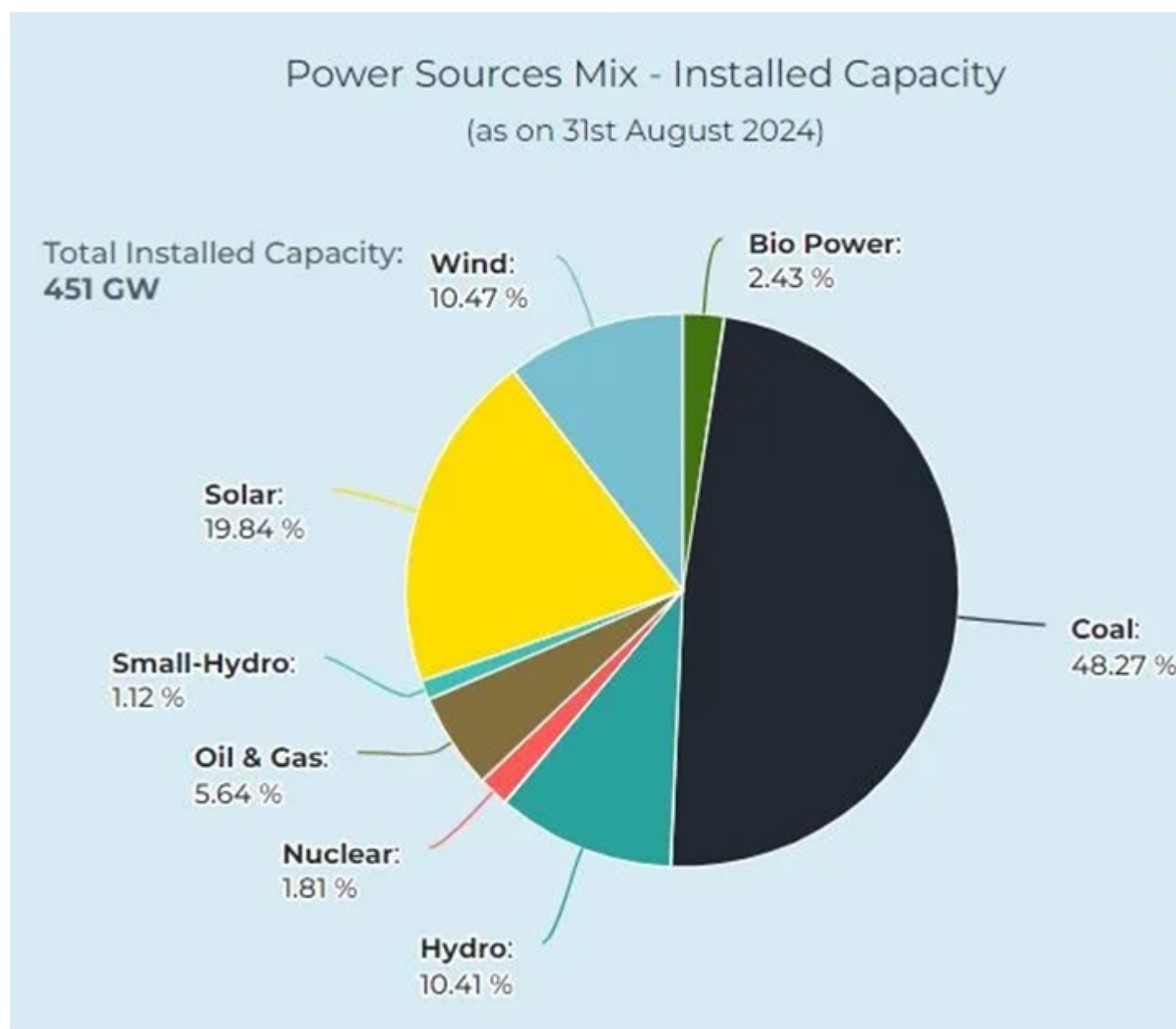
India's Total Renewable Energy Capacity Crosses 200 GW Mark

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Context

- India has reached a **significant milestone** as the country's **total renewable energy capacity** crosses the **200 GW (gigawatt)** mark in 2024.

India's Energy Basket:



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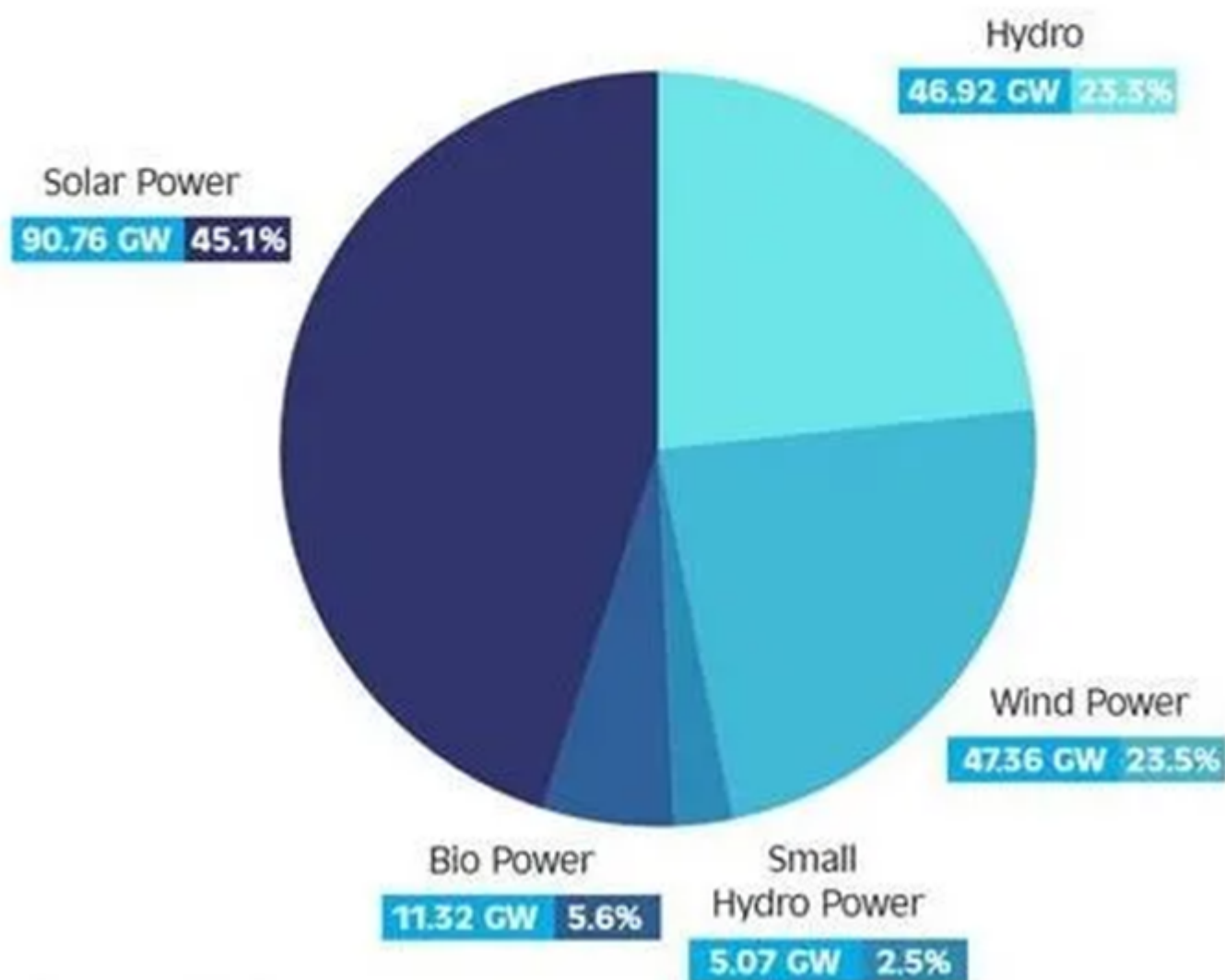
Plot A P.127, AF block, 6 th street, 11th Main Rd, Shanthi Colony, Anna Nagar, Chennai, Tamil Nadu 600040

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India's Renewable Energy Capacity

- India's total electricity generation capacity has reached **452.69 GW**
- Having the **8,180 MW (megawatt) of nuclear capacity**, the **total non-fossil fuel-based power** now accounts for **almost half** of the country's installed electricity generation capacity
- As of 2024, **renewable energy-based electricity generation capacity** stands at **201.45 GW**, accounting for **46.3 percent** of the country's total installed capacity.
- **Solar power** contributes towards **90.76 GW**, **wind power** follows closely with **47.36 GW**, **hydroelectric power** generating **46.92 GW** and small hydro power adding **5.07 GW**, and **biopower**, including biomass and biogas energy, adds another **11.32 GW**

Renewable Energy Capacity in India



India's Targets

- India has a vision is to achieve **Net Zero Emissions by 2070**, in addition to attaining the short-term targets which include:

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- Increasing renewables capacity to **500 GW by 2030**,
- Meeting **50% of energy requirements** from renewables,
- Reducing cumulative emissions by **one billion tonnes by 2030**, and
- Reducing emissions intensity of India's gross domestic product (GDP) by **45% by 2030 from 2005 levels**

Challenges in Renewable Energy

- **High Upfront Costs:** The **initial investment** for renewable energy infrastructure, such as solar panels and wind turbines, is significant, which can be a barrier for many regions and investors.
- **Geographical Disparities:** **Renewable resources are unevenly distributed**, with some regions having limited access to wind or sunlight. This geographical imbalance can limit the feasibility of renewable energy adoption in certain areas.
- **Governance Issue:** **Inconsistent government policies, regulatory challenges, and bureaucratic delays** can slow down project approval and implementation, creating uncertainty for investors and developers.
- **Infrastructure Development:** The transition to renewable energy requires significant infrastructure development.
- The speed and scale of this infrastructure development can be a challenge for a country as large and diverse as India.
- **Grid Integration:** **Integrating renewable energy into the existing power grid** is a complex task.
- The grid must be flexible and capable of handling fluctuations in supply.

Steps Taken by Government for Transition to Renewable Energy Sources

- **National Solar Mission (NSM):** It was launched in **2010**, it has set ambitious targets for solar capacity installation, including grid-connected and off-grid solar power projects
- **Green Energy Corridors:** **The Green Energy Corridor project** focuses on enhancing the transmission infrastructure to facilitate the integration of renewable energy into the national grid
- **National Wind Energy Mission:** Focuses on the development and expansion of wind energy in India. The target for **wind energy capacity is set at 140 GW by 2030**.
- **National Clean Energy Fund (NCEF):** It was established to support research and innovation in clean energy technologies and projects that help in reducing greenhouse gas emissions.
- **Renewable Purchase Obligation (RPO):** This requires power distribution companies and large electricity consumers to procure a certain percentage of their power from renewable sources, encouraging the demand for renewable energy.
- **Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM):** It includes the installation of solar pumps, solarization of existing grid-connected agricultural pumps, and the establishment of solar power plants on barren or fallow land.
- **International Solar Alliance (ISA):** India played a key role in establishing the International Solar Alliance, a coalition of solar-resource-rich countries to address their energy needs through the promotion of solar energy

Way forward:

- This accomplishment is a testament to the nation's **commitment to a sustainable energy future** including solar, wind, hydro, and bioenergy
- With ambitious targets set for the future, India is well-positioned to emerge as a **global leader in renewable energy**, contributing to environmental sustainability and energy security
- These ongoing efforts reflect a holistic approach to building a greener economy, ensuring that India not only meets its energy needs but also addresses the pressing challenges of climate change and resource conservation.