India’s Total Renewable Energy Capacity Crosses 200 GW Mark

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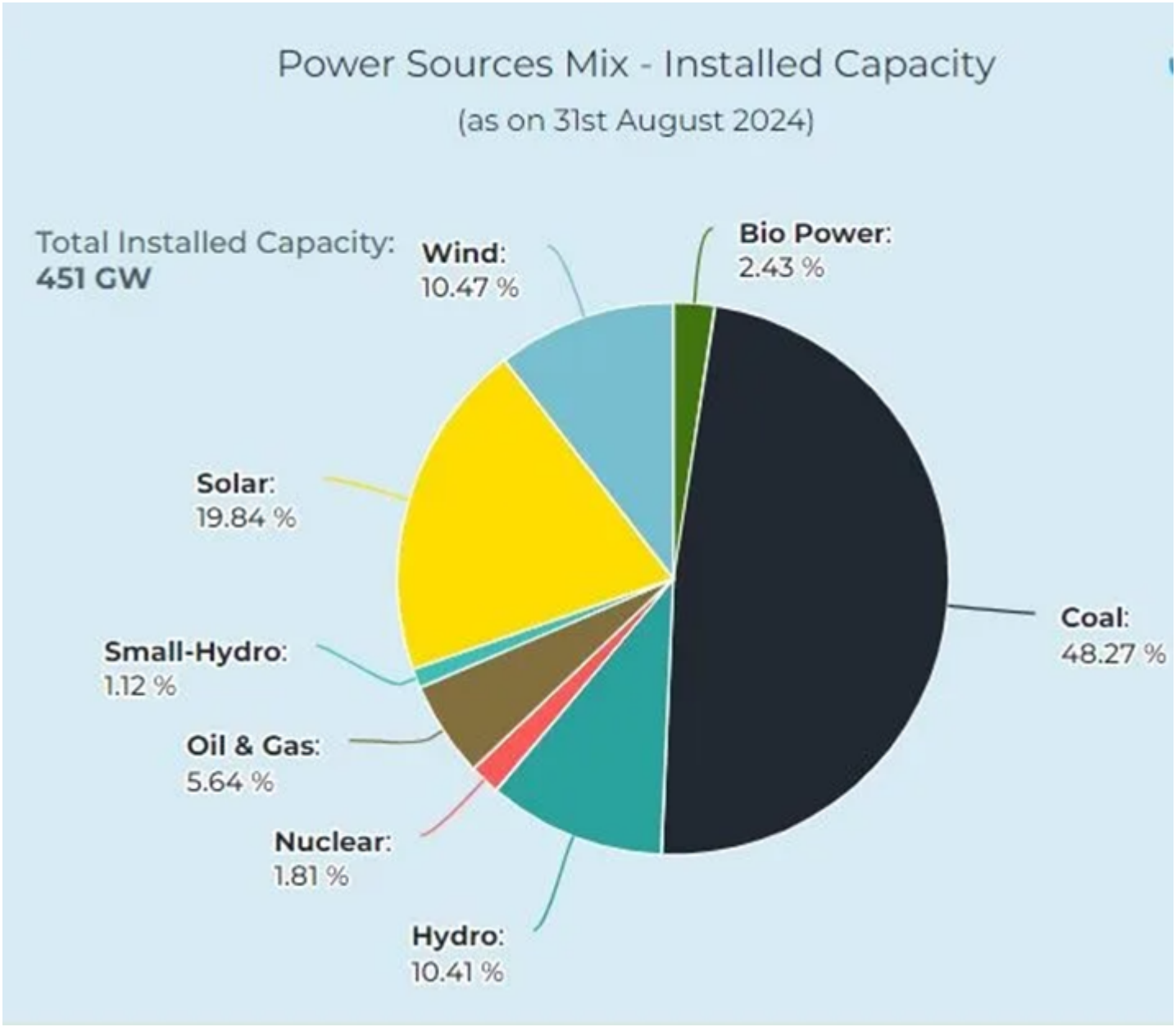
Context

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

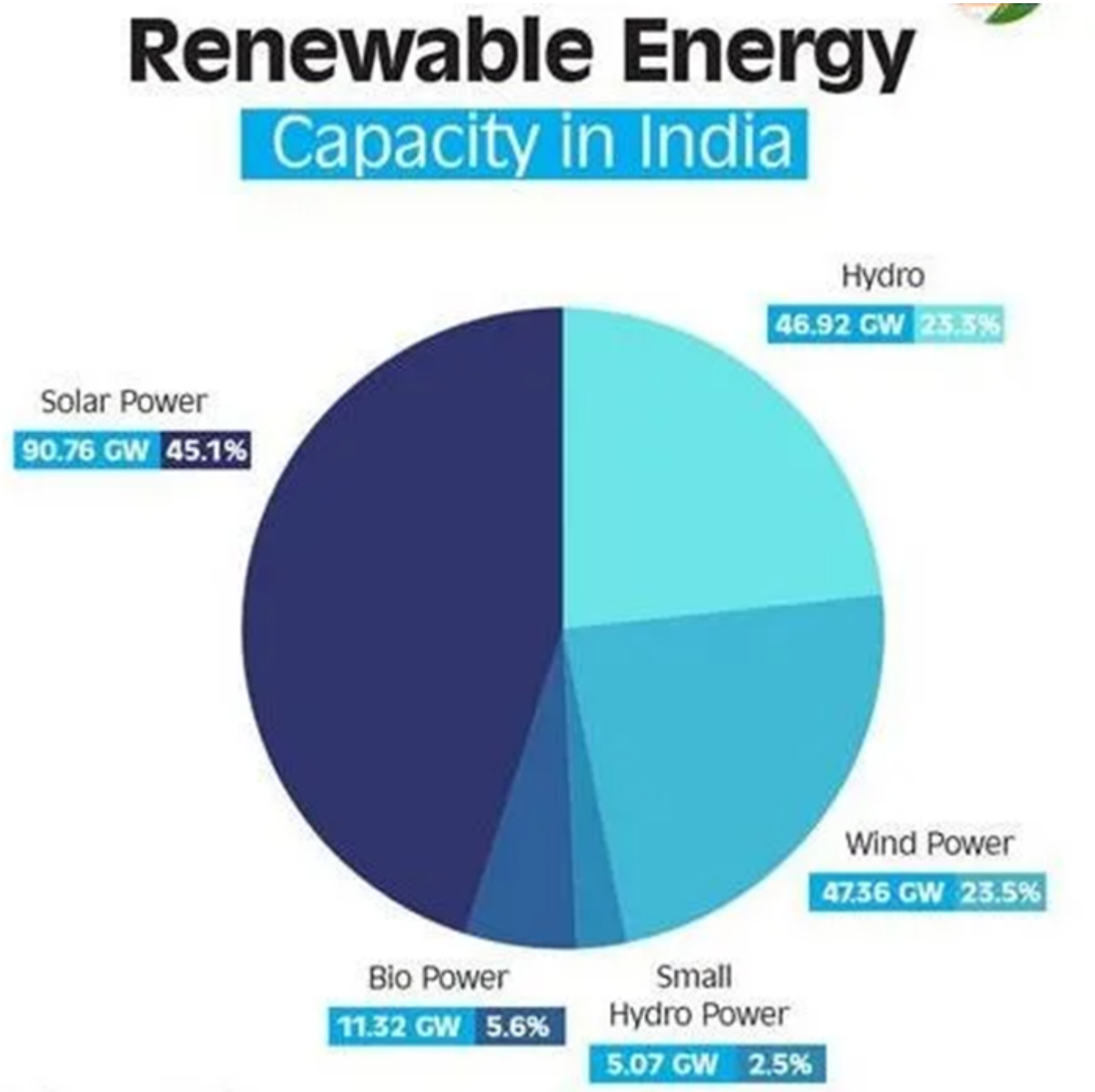
India’s Energy Basket:



Kamaraj IAS Academy
Plot A P.127, AF block, 6 th street, 11th Main Rd, Shanthi Colony, Anna Nagar, Chennai, Tamil Nadu 600040
Phone: **044 4353 9988 / 98403 94477** / Whatsapp : **09710729833**

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**, h**ydroelectric 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**



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:

- 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 waslaunched 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.