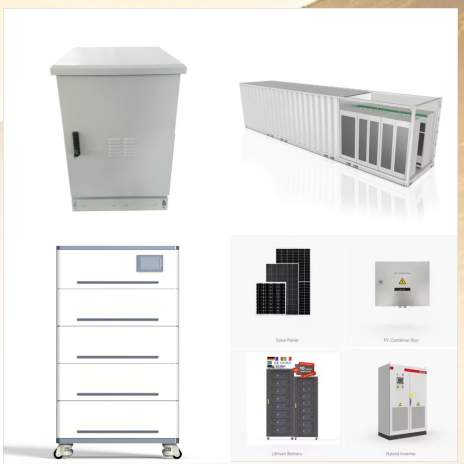
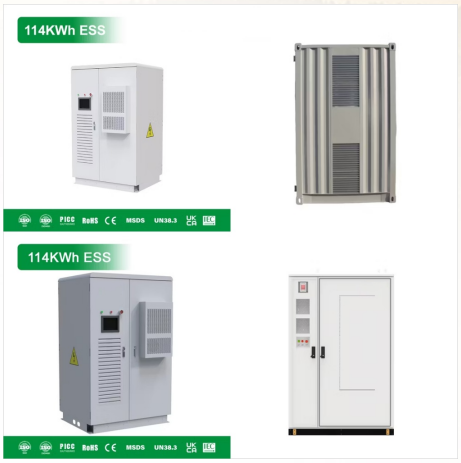
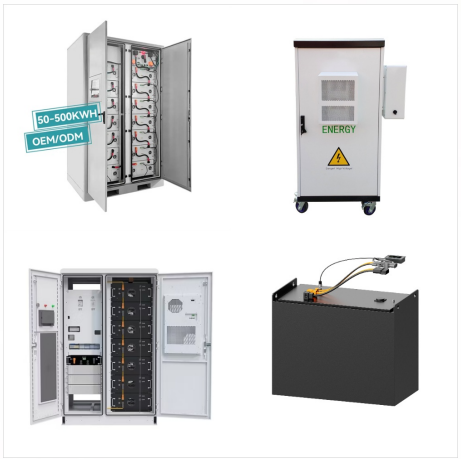


Why in News. India has achieved its target of achieving 40% of its installed electricity capacity from non-fossil energy sources by 2030 in November 2021.. India had committed to this target at COP 21 (UNFCCC), as part of its Nationally Determined Contributions (NDCs) (Paris Agreement).; Key Points. Renewable Energy (RE) Capacity of India:

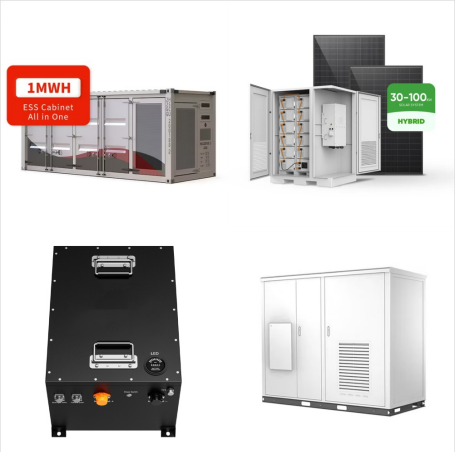


New Delhi: India's renewable energy capacity has surpassed 200 GW, now standing at 201.45 GW as of October 10, 2024, according to the Central Electricity Authority (CEA). Renewable energy accounts for 46.3% of the country's total installed power generation capacity, which has reached 452.69 GW. Solar energy leads the contribution with 90.76 GW, ???

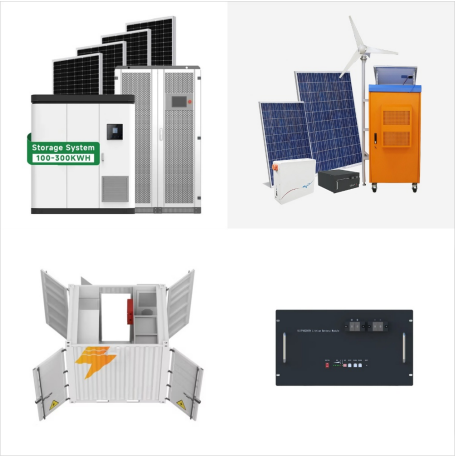


transition to renewable energy technologies to achieve sustainable growth and avoid catastrophic climate change. Renewable energy sources play a vital role in securing sustainable energy with lower emissions [10]. It is already accepted that renewable energy technologies might significantly cover the electricity demand and re-duce emissions.

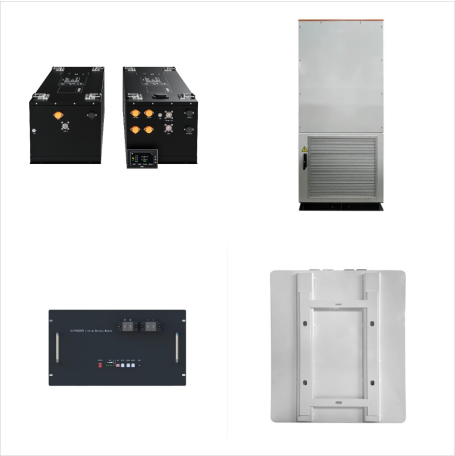
ALTERNATIVE RENEWABLE ENERGY SOURCES IN INDIA



Energy is one of the major inputs for the economic development of the country. Any sustainable energy source that comes from the natural environment is a renewable energy source. Renewable energy is inexhaustible and a clean alternative to fossil fuels. In this article, we will learn about the types and sources of renewable energy.

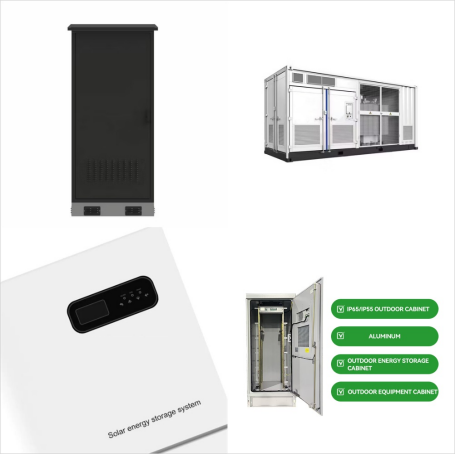


India's goal is to increase the share of renewable energy in the national energy mix to 40% by 2030, which will require 300 gigawatts of fresh renewables capacity. Conversely, it will limit additional conventional energy capacity to 75 gigawatts in the coming decade. New ???

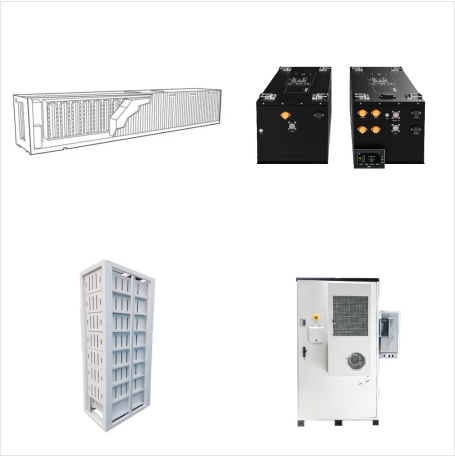


Renewable energy resources are the ultimate option to fulfil ever-growing energy demand. In India, solar and wind power are the best renewable energy resources due to 300 clear sunny days, over a dozen perennial rivers and a coastline of more than 7500 km with its territorial waters extending up to 12 nautical miles into the sea.

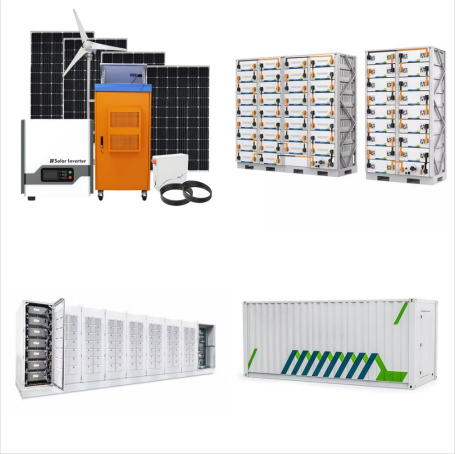
ALTERNATIVE RENEWABLE ENERGY SOURCES IN INDIA



India is the third largest energy-consuming country in the world. It has become one of the largest sources of energy demand growth globally and has made significant progress towards its universal electrification target for residential users, with 100 million people gaining access in 2018 alone. Renewable energy penetration is highly

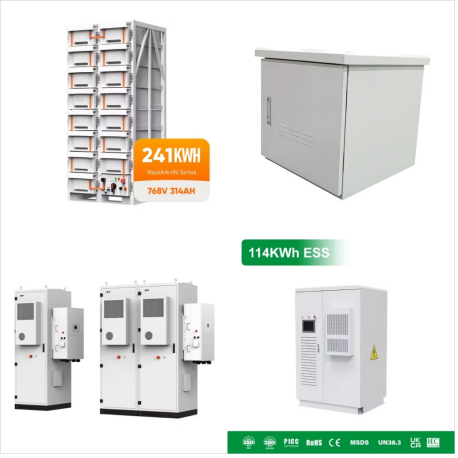


Renewable energy (RE) is the key element of sustainable, environmentally friendly, and cost-effective electricity generation. An official report by International Energy Agency (IEA) states that the demand on fossil fuel usage to generate electricity has started to decrease since year 2019, along with the rise of RE usage to supply global energy demands.

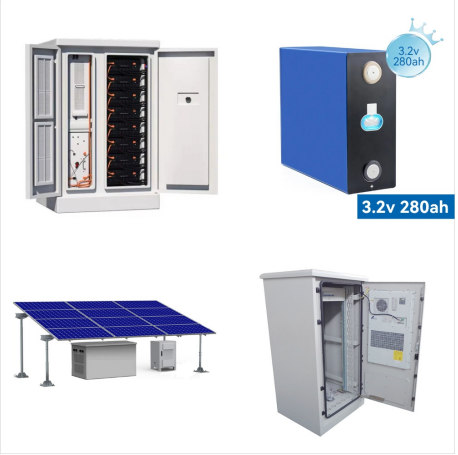


access to natural energy resources like LPG, electricity as there is no facilitation of grid erection. Hence it becomes imperative for country like India to go for renewable energy resources as alternative to conventional energy resources. This paper evaluations the potential of different sources of renewable energy in India.

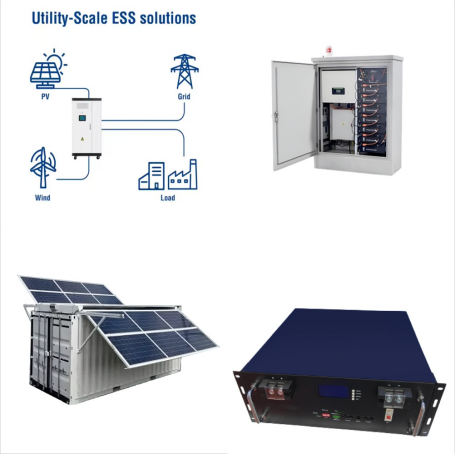
ALTERNATIVE RENEWABLE ENERGY SOURCES IN INDIA



*Ministry of New and Renewable Energy targets 500 GW non-fossil-based electricity generation by 2030, as per the Prime Minister's COP26 announcement, with an added installation of 13.5 GW renewable energy capacity in 2023, corresponding to an investment of around Rs. 74,000 crores (US$ 8.90 billion).

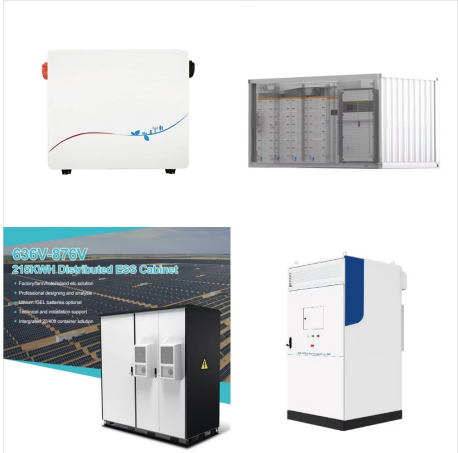


A new study assesses the feasibility of a fully renewable based power system by 2050 across India, finding this option to be cost competitive with the status quo and with zero GHG emissions.

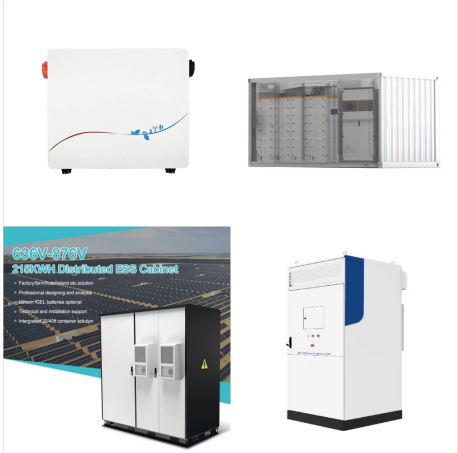


India's progress in renewable energy production, coupled with its potential in sustainable energy storage and growing battery recycling & reuse industry, positions it to facilitate the world

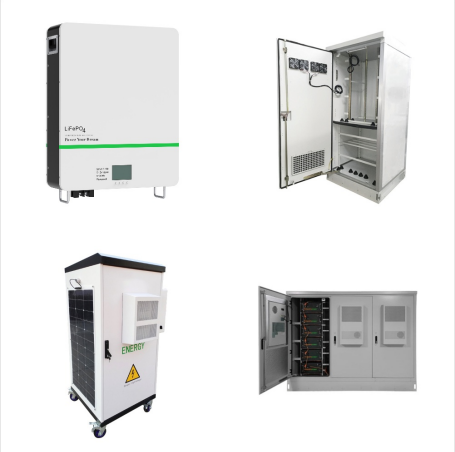
ALTERNATIVE RENEWABLE ENERGY SOURCES IN INDIA



f energy to renewable sources. The financial year 2021-22 has witnessed a growth of 16.4% over last year in the installed capacity of RES (Renewable Energy Sources, other than Hydro) under utility; while that of ther. 8%) and Northern Region (26%). Northern Region also accounted for the.

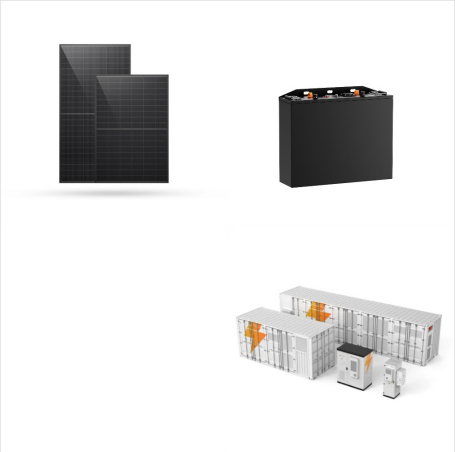


India's goal is to increase the share of renewable energy in the national energy mix to 40% by 2030, which will require 300 gigawatts of fresh renewables capacity. Conversely, it will limit additional conventional energy capacity to 75 gigawatts in the coming decade. New technologies like floating solar, offshore wind, wind???solar hybrid and



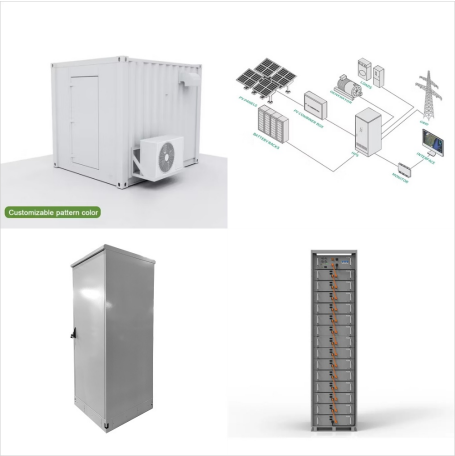
The usage of renewable energy resources is a promising prospect for the future as an alternative to conventional energy. Therefore, an attempt has been made through this paper to review the availability of renewable energy options in India, and provides information about the current status of renewable, future potentials of their uses, major

ALTERNATIVE RENEWABLE ENERGY SOURCES IN INDIA



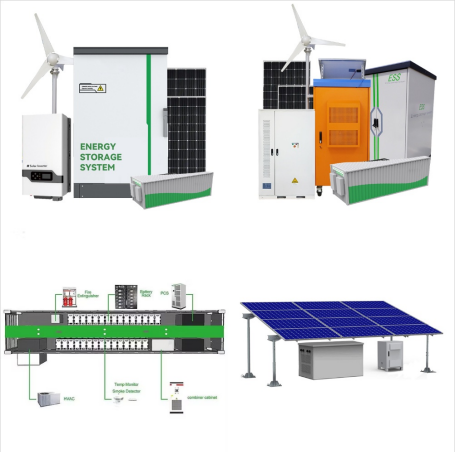
Assuming the present-day growth rate of 6.5% on the energy demand in India as on date, the 80% renewable energy scenario model indicates a capital investment requirement of 6,50,000 crore INR on wind energy, 2,27,000 crore INR on solar energy, 98,000 crore INR on energy storage and 2,25,000 crore INR on coal and gas fired plants by 2040.

Renewable energy sources that meet domestic energy requirements have the potential to provide energy services with almost zero emissions of both air pollutants and greenhouse gases. The power ministry report shows that India generated 122.10 TWh and out of the total electricity produced, renewables generated 16.30 TWh as on the August 31, 2018.

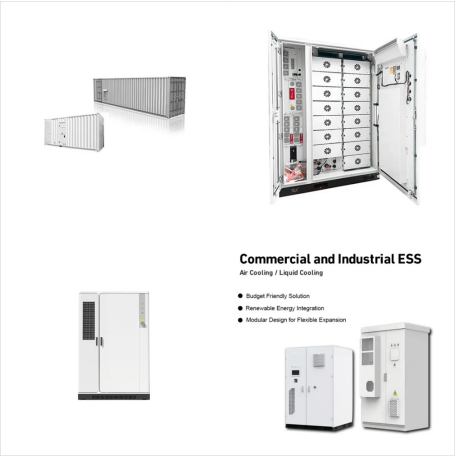


Current Market Needs. India's power consumption is increasing daily due to the increase in demand for power and growing population. The government's interest in deploying new renewable energy source is being drive is to advance economic growth, as well as improve access to reliable, affordable and sustainable energy for Indian consumers.

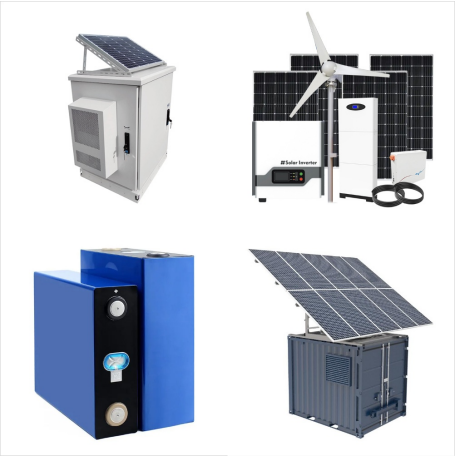
ALTERNATIVE RENEWABLE ENERGY SOURCES IN INDIA



Hydropower is one of the oldest sources of energy used for electricity generation, and until 2019, according to the EIA, it was the largest source of total annual US renewable electricity

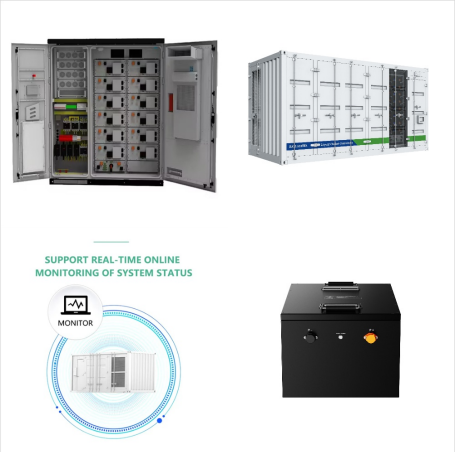


Renewable energy comes from unlimited, naturally replenished resources, such as the sun, tides, and wind. Renewable energy can be used for electricity generation, space and water heating and cooling, and transportation. Non-renewable energy, in contrast, comes from finite sources, such as coal, natural gas, and oil.

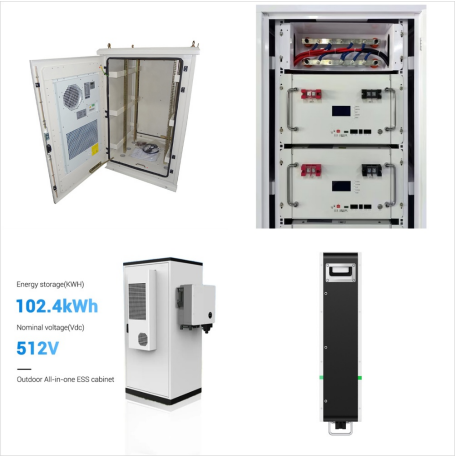


Sankey Diagram Overall Energy Balance of India 2019-20(P) in KToe 80 . Sankey Diagram Final Consumption by sectors 2019-20(P) in KToe 81 82 Energy resources refer to "all non-renewable energy resources of both inorganic and organic origins discovered in the earth's crust in solid, liquid and gaseous form." Energy

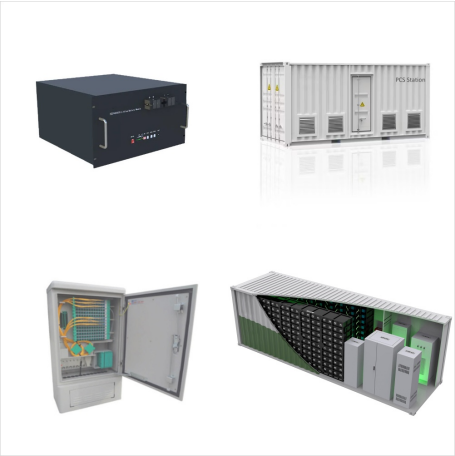
ALTERNATIVE RENEWABLE ENERGY SOURCES IN INDIA



Renewable Non-Conventional Sources Of Energy - Biomass, Petro crops (Plants), Geothermal, Hydrogen, Fuel Cell Technology, Solar Energy, Tidal, Hydropower In India abundant coal bed methane sources exist, but so far ???

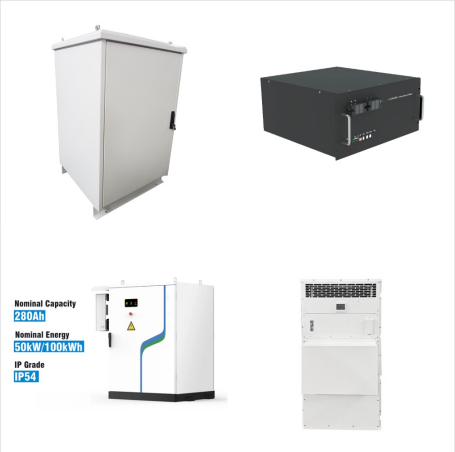


Based on the assumptions of this study, we show that a renewables-based power system by 2050 is lower in cost than the current coal dominated system, has zero greenhouse gas emissions and provides

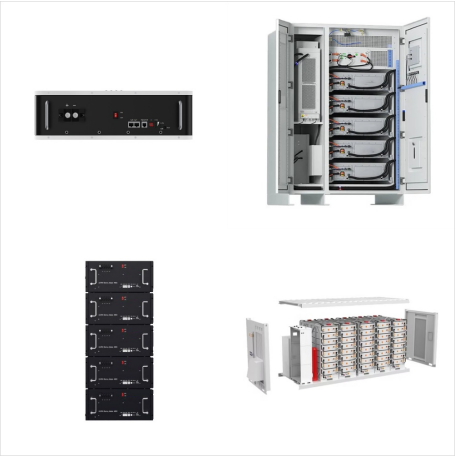


In recent years, India has brought electricity connections to hundreds of millions of its citizens; promoted the adoption of highly-efficient LED lighting by most households; and prompted a massive expansion in renewable sources of energy, led by solar power.

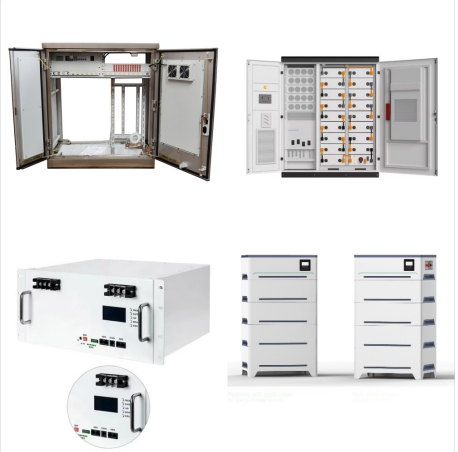
ALTERNATIVE RENEWABLE ENERGY SOURCES IN INDIA



The status of off-grid renewable energy sources in India is depicted in Table 2. They both RES can utilize as the alternative energy source to the conventional source of energy to accomplish the requirement of energy in the country. The potential of solar power and wind power of the country is 749 and 695 GW (at 120 m above from ground



Analysis based on the IEA India Regional Power System Model suggests that additional power trading across states is an effective renewables integration solution that could reduce curtailment by around 2.5% in the STEPS in 2030. However, significant barriers remain to reach this potential.



In the Base Scenario, which presumably operates under current or traditional energy patterns, the energy intensity factor stands at 2.34%. When delving into specific energy components, Renewable Heating Sources and Green Energy Production each contribute an identical percentage of 0.13%.