

India: Transforming to a net-zero emissions energy system report

March 27, 2021

In news: Recently, TERI & Shell released the India: Transforming to a net-zero emissions energy system report

Key highlights of the report

- **The report says that Net-zero emissions in India's energy systems by 2050 is possible yet challenging**
- **Suitable policy:** As per the report, in order to reach a net-zero emissions energy system by 2050, India needs a suitable policy and innovation driven context to deploy clean energy technologies on a massive scale
- The report says, India requires more and faster **deployment of large-scale solar, wind and hydro power** to enable greater electrification across the country.
- It also requires the **development of new fuels, such as liquid biofuels and biogas**, as well as hydrogen produced from electrolysis.
- Energy efficiency must improve significantly, and carbon removals (from technology and nature-based solutions) will have a critical role in moving towards zero emissions.
- These are the key insights from a new scenario sketch by TERI and Shell, that has assessed India's technology and policy options if it were to accelerate its transition to a net zero emissions energy system by 2050.

Areas of action suggested by the report

India: Transforming to a net-zero emissions energy system indicates that the transformations needed over the next thirty years for India, in pursuit of this goal by mid-century would

consist of the following areas of action:

Accelerate clean technologies:

- Grow the power sector by a factor of more than four in 30 years, dominated by renewables (around 90%)
- Target 13% hydrogen in final energy, including as a fuel for industry and transport
- Transform bioenergy, with liquid biofuels surpassing petroleum products by 2040 to fuel industry and transport, including hard-to-abate sectors such as aviation

Support energy-efficient and lower-carbon choices:

- Invest in processes, technologies and end uses to improve energy intensity per unit of GDP by almost 60% by 2050, a rate of improvement nearly twice historical levels
- Adopt economic mechanisms, such as carbon trading and/or pricing to facilitate reallocation of capital and resources to support commercialization of new fuels and technologies

Remove carbon emissions:

Resort to carbon sequestration to an extent of around 1.3 Gt CO₂, using nature-based solutions and /or carbon capture and storage (CCS) to achieve net zero emissions by 2050

Other suggestions

- The report adds that success in achieving the net zero emissions goal will depend on clear and coherent policies at the national and sub national level.
- It suggests that the economic and social impact of the transition will need to be understood and managed, and a well-designed policy framework will be required to contain the overall macroeconomic costs; address

transition impacts and ensure more resilient and environmentally just outcomes for the most vulnerable and underserved communities.

India's commitment

It has pledged a 33-35% reduction in the “emissions intensity” of its economy by 2030, compared to 2005 levels.

What is net-zero emission?

Put simply, net zero means we are not adding new emissions to the atmosphere. Emissions will continue, but will be balanced by absorbing an equivalent amount from the atmosphere. It is achieved when any remaining human-caused GHG emissions are balanced out by removing GHGs from the atmosphere in a process known as carbon removal. Recently, TERI & Shell released the India: Transforming to a net-zero emissions energy system report

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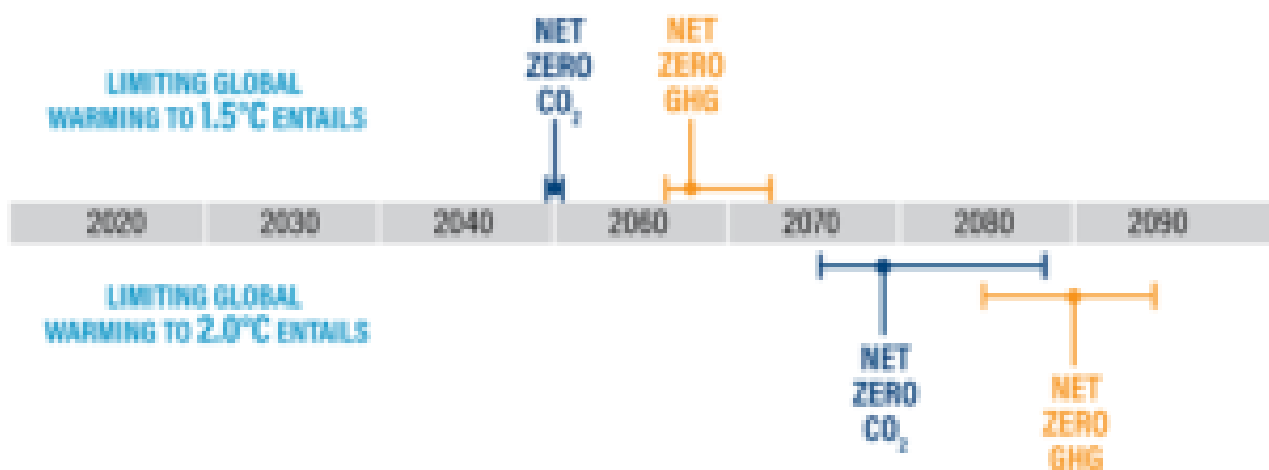
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Global timeline to reach net-zero emissions



About TERI

- The Energy and Resources Institute (TERI) is an independent, multi-dimensional organisation, with capabilities in research, policy, consultancy and implementation.
- It has pioneered conversations and action in the energy, environment, climate change, and sustainability space for over four decades.
- Headquartered in New Delhi, it has regional centres and campuses in Gurugram, Bengaluru, Guwahati, Mumbai, Panaji, and Nainital

About Shell

Shell is one of the most diversified international energy company in India with over 9500 employees and presence across upstream, integrated gas, downstream, renewable energy, and deep capabilities in R&D, digitalization, and business operations. It has retail presence across six states – Karnataka, Tamil Nadu, Telangana, Maharashtra, Gujarat, and Assam