

PRESS RELEASE

National Council of Applied Economic Research (NCAER) Unveils Groundbreaking Report on Low Carbon Pathway for Odisha

Bhubaneswar (January 23, 2024) – The National Council of Applied Economic Research (NCAER) today released a comprehensive report highlighting the challenges and policy implications of a low carbon transition for Odisha. Employing an Integrated Assessment Modelling Approach, the study sheds light on the unique economic and environmental dynamics of Odisha and proposes strategic policy interventions for sustainable development.

Per capita net state domestic product (at constant prices with 2011-12 base) in Odisha is Rs 79,607 in 2021-22, which is lower than the national average (Rs 91,481), and as per the Multi-Dimensional Poverty Index (2023), the state had a poverty rating of 15.68 per cent as compared with the national average of 14.96 per cent.

But in per capita terms, net emission from Odisha (6.15 tCO_{2e}) is higher than the national average (2.24 tCO_{2e}). Despite comprising 3.47 per cent of India's population, the net greenhouse gas (GHG) emissions from the state accounted for 9.3 per cent of the country in 2018.

The report, released by Shri Vishal Kumar Dev, Principal Secretary, Energy Department, Govt of Odisha; Dr. Satya Priya Rath, IAS, Director (Budget), GoO; Professor H. N. Ghosh, Director NISER; Professor Akhilesh Gupta, DST, Secretary, SERB and Senior Adviser & Head, DST; Professor R. B. Grover, Member Atomic Energy Council, GoI; Dr. Pranay Kumar Swain, Chairperson, SHSS, says Odisha will remain on a path of high emission in the 'business-as-usual' scenario unless corrective policy interventions are undertaken.

The study underscores the importance of a coordinated effort involving government policies, market mechanisms, and technological innovation to achieve lower carbon footprint. It calls for strategic investments in green technologies to ensure a resilient energy future for the state.

Dr. Poonam Gupta, Director General, NCAER, says *“This study by the National Council of Applied Economic Research (NCAER) is an attempt to fill the above gap by assessing feasible policy choices and the financial implications by Odisha in transitioning towards a low-carbon pathway. I hope the findings of the report will be of immense value to the policymakers in achieving the best possible pathways for achieving net zero emissions at both the State and national levels by the targeted decade of the 2070s.”*

The study says in 'business-as-usual' (BAU) scenario, Odisha's economy will hover around 6 per cent per annum growth over the model run period (2022–2050) and per capita emissions will rise from 6.69 tons CO_{2e} in 2030 to 31.41 tons CO_{2e} in 2050. It estimates an investment of US \$ 467 billion in the energy sector during 2025–2050, amounting to 7.3 per cent of cumulative SDP for the period.

Dr. Sanjib Pohit, Professor, NCAER, who is the Project Leader of the Report said that, *“This study is different from similar studies in this direction as it incorporates price in energy modelling framework as optimal price plays a crucial role in determining choices of the feasible technologies depending on the supply/ demand situation. Only by understanding*

the combined forces of behavioural realities, markets and prices, and technological innovation and infrastructure together, coherent responses can be built to facilitate transition of energy systems.”

Considering coal mining and coal electricity sectors as still major providers of employment in the state, the study estimates that the effect of energy transition on direct employment generated from operation and maintenance of power plants would lead to 83,000 less direct employment in the energy sector by 2050 in the alternative policy scenario (market-based approach with taxes/subsidies on fossil fuel-based electricity facilitating the growth of renewable electricity, with increased energy efficiency) as compared to BAU scenario. But it stresses that interlinkage of renewable energy with other sectors of the economy will prevent employment shrinkage because of the transition to green energy. Total employment from operation and maintenance of power plants, which captures direct, indirect and induced employment generated from all sectors, including the energy sector, is expected to be 8.6 million more in 2050 in the policy scenario as compared to BAU scenario.

The report calls for triggering the energy transition by dampening the growth of fossil electricity through taxation which, it suggests, should be distributed to the renewable electricity as a revenue neutral subsidy. Concomitantly, it says, energy efficiency in all energy sectors should be increased to 1.5 per cent per annum.

Among the mitigation strategies, the study suggests shift to renewable energy, particularly solar power, from coal as the mineral-rich state is home to energy-intensive industries; adoption of battery or solar-based electric vehicles; construction of green buildings; and adoption of green technology in agriculture among other things.

“There is a need for the government to play a key role in effecting the change. Also, it is pragmatic to augment the capacity of renewable capacity. Since Odisha has high coal deposits, fossil fuel will continue to be high in the energy/fuel mix. Carbon capture and storage is a technology that Odisha needs to invest in. The investment in green hydrogen makes sense,” says the study.

It says that energy transition may be a “win-win situation as growth and employment creation may be positive with suitable policy intervention”.

Key findings from the report:

1) Carbon Emission Statistics:

- In 2018, Odisha's net emissions were 274.54 Mt CO₂e, with a per capita emission of 6.15 tCO₂e, higher than the national average.
- The overall emission in Odisha increased at a compound annual growth rate (CAGR) of 7.85 per cent from 2005 to 2018.

2) Integrated Modelling Approach:

- The report highlights the use of an integrated assessment modelling (IAM) tool, a pioneering effort at the subnational level in India.
- The IAM framework involves soft linking of a macroeconomic CGE model and a bottom-up MESSAGEix energy model.

3) Policy Recommendations:

- The study emphasises the necessity for government intervention and support policies for a successful transition to renewable energy.
- A market-based approach with taxes/subsidies is suggested for facilitating the growth of renewable electricity in Odisha. This works better if combined with efforts on improvement of energy efficiency.

4) Energy Efficiency and Productivity:

- Increased energy efficiency coupled with productivity growth is identified as a crucial factor for successful energy transition.
- The report suggests a combination of 1.5 per cent energy efficiency and 1 per cent productivity growth per annum.

5) Employment Implications:

- The transition to green energy is expected to impact direct employment in coal-related sectors, but the overall employment in Odisha is not anticipated to shrink.
- Total employment generation from operation, maintenance of power plants is expected to be 8.6 million higher in policy scenario as compared to BAU scenario in 2050 while energy transition is estimated to lead to 83,000 less direct employment in alternative policy scenario as compared to BAU.

For more information or to access the full report, please visit <https://www.ncaer.org/>

About NCAER:

The National Council of Applied Economic Research (NCAER) is a premier economic research organization in India, committed to providing high-quality research for informed policy decisions. NCAER contributes significantly to shaping the economic and social development of India.

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