Introduction to the E3-India model

Topic: (5.6) Special Session: Shifting Scales of Macro-econometric Modelling to State-Level Economic, Energy and Environmental Policy Analysis for India(E3-India)
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Abstract: E3-India is a new state-level model of India, developed from the global E3ME macro-econometric model, linking the economic, energy and environmental emissions systems. The model is designed to assess energy and climate policy through a highly empirical structure, whereby historical data is used to feed in to econometric estimations of model interactions, forming a consistent modelling framework. Policies can be introduced into this framework at a state level, and the energy system and economic impacts assessed both within that state and (through trade) spillovers into other states.

The model is macro-econometric in nature, based on a post-Keynesian framework within which optimisation is not assumed (i.e. it is not a general equilibrium model). Through accounting identities, demand must equal supply, but demand can be less than or equal to total potential supply; the implication of this framework is that, under the right conditions, it is possible for regulation to increase output and employment.

E3-India also includes explicit treatment of technology, using the Future Technology Transitions (FTT) modelling framework for the power sector. This approach is qualitatively different from the optimisation tools that are used in other analyses and draws on theories from post-Keynesian and evolutionary economics. Instead of trying to find least-cost pathways, the model simulates the responses to policy inputs (including both regulation and market-based instruments) and is parameterized on real-world time-series data.