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## Impact of low-carbon electricity development on carbon emissions in China

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## PROPOSITIONS

Thesis:

IMPACT OF LOW-CARBON ELECTRICITY DEVELOPMENT ON CARBON EMISSIONS IN CHINA

By Rong Yuan

1. The production of electricity emits large amounts of carbon emissions which are stimulated by demand from other sectors (Chapter 2).
2. Electricity transmission and supply-chain effects enable the development of low-carbon electricity (LE) in China's central and western regions, reducing the carbon emissions embodied in exports (Chapter 3).
3. The carbon impact of LE investments in developing regions (e.g. the central and western regions) was significantly greater than those of the developed regions (e.g. eastern region) (Chapter 4).
4. The expansion of LE infrastructure in the future will have limited effects on China's overall carbon emissions, hence LE expansion will contribute to declining carbon emissions (Chapter 5).
5. Modelling the carbon impact of LE development is a complex problem which requires combining energy data in physical units with non-energy production processes in monetary units (Guevara and Rodrigues, 2016).
6. The carbon impact of LE investments is transferred from the developed regions to the developing regions through inter-regional spillover effects (Feng et al., 2014).
7. A more detailed disaggregation is required to further assess the carbon impact of LE investments, as the effect of sectoral aggregation in the MRIO framework may influence the accuracy of results (Su et al., 2010).
8. Extrapolations of the carbon impact from expanding LE infrastructure are subject to uncertainties underlying the derivation of experience curves (Fukui et al., 2017)
9. When analyzing the carbon emissions embodied in China's exports, the impact of LE development on specific carbon leakage between China and its major trading partners is a subject that deserves further exploration.
10. Linking detailed process-specific information to an MRIO model is useful in improving the reliability of the estimated carbon impact of LE investments.
11. Although the carbon intensity of electricity generation has become relatively stable in recent years, the ex-ante projections of operational impact from LE development is useful to improve the accuracy of the projected expansion of LE infrastructure.