Approaches to Consider Socioeconomic Aspects in the LTES for China Energy Transition

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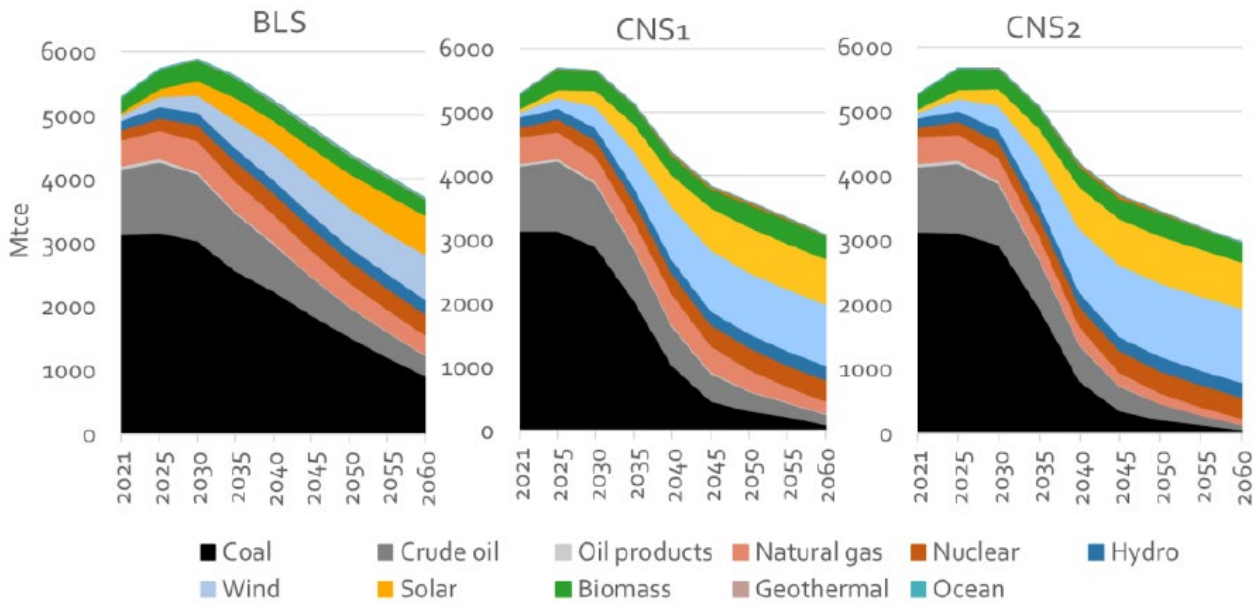
Fifth International Forum on Long-Term Energy Scenarios (LTES) for the Clean Energy Transition

Necessary to include socioeconomic aspects in scenario analysis

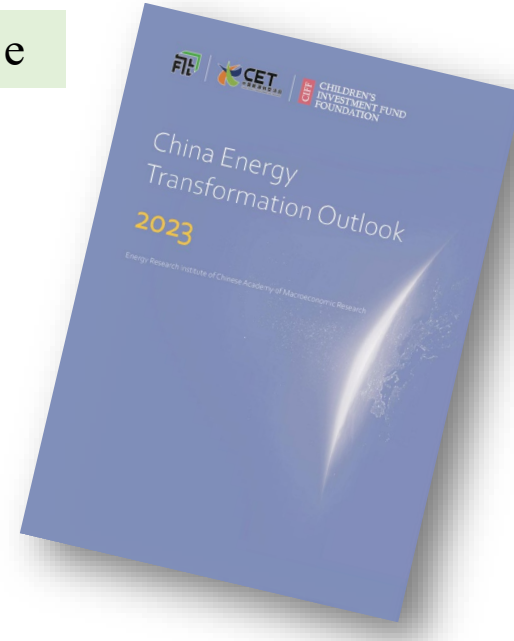
Total primary energy demand



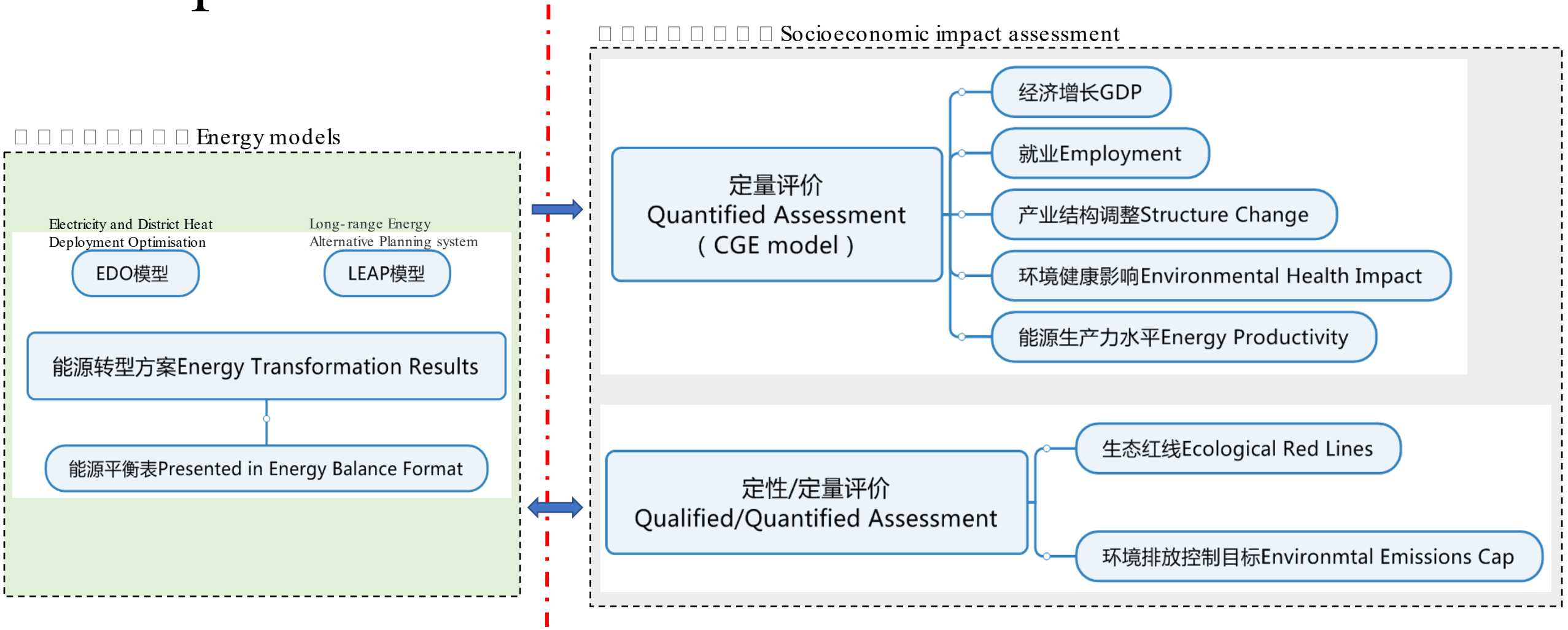
Source: *China Energy Transformation Outlook 2023*
Available at WWW.CET.ENERGY

Socioeconomic impacts of energy transition

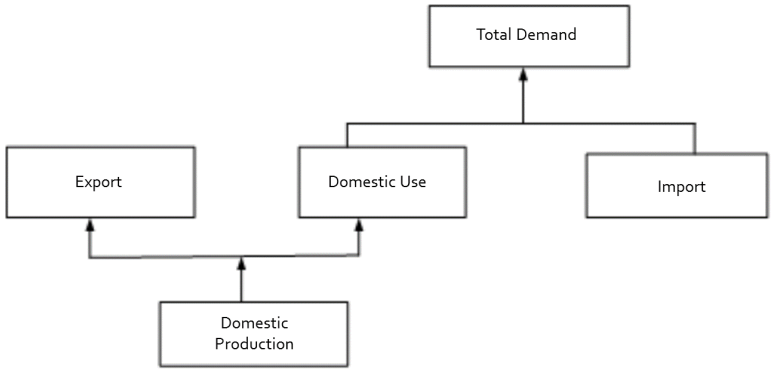
- Employment
- GDP contributions
- Industrial structure change
- Environmental impacts
- .....

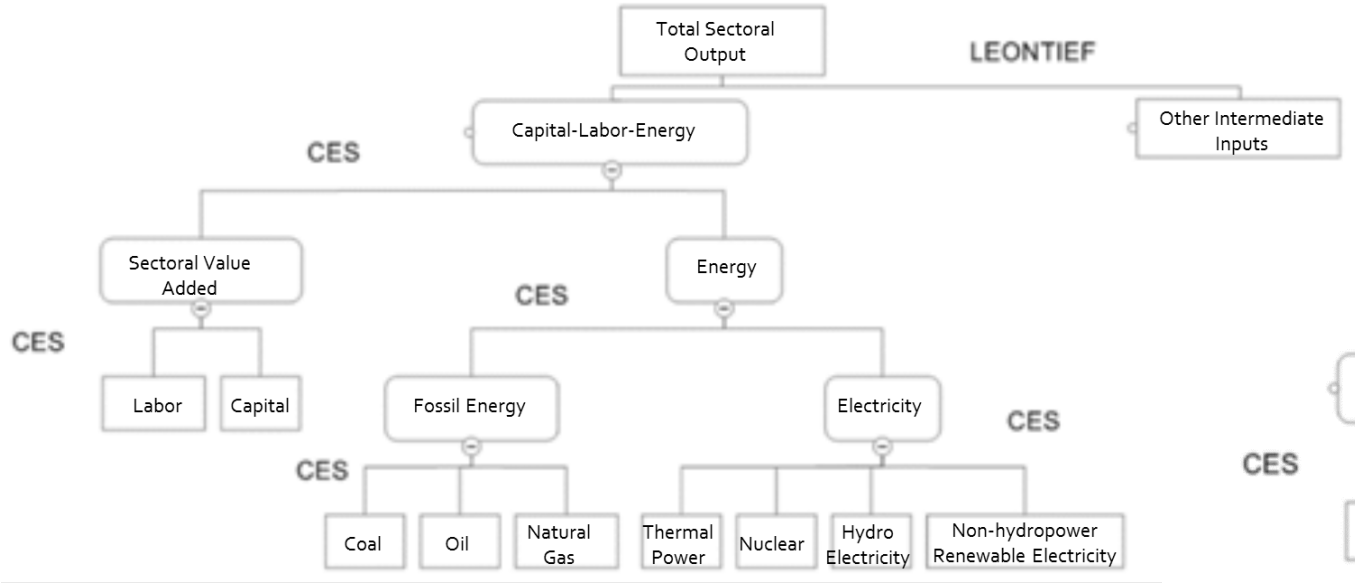


Approaches to address the socioeconomic impacts in the LTES

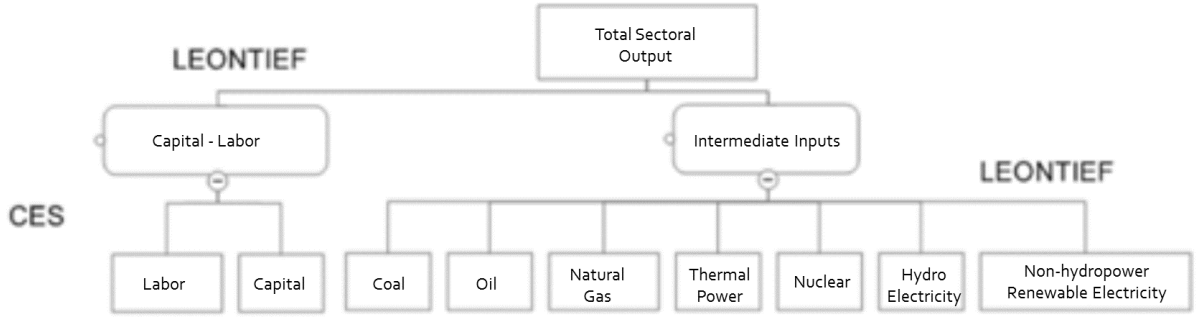


CETPA (China Energy Transformation Policy Assessment) model
- one-country dynamic CGE model
- with highlight on energy sectors
- capable of featuring energy sectors in macroeconomic analysis





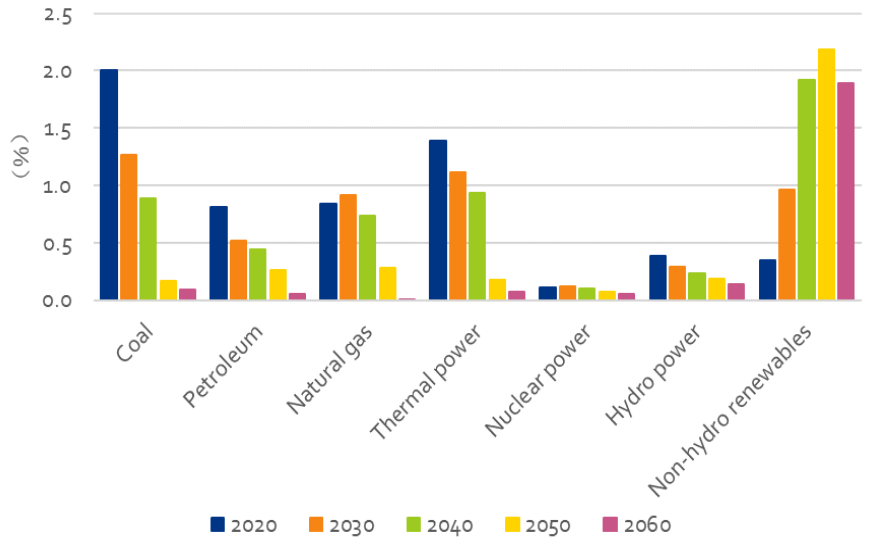
Production Structure Nesting of the CETPA model



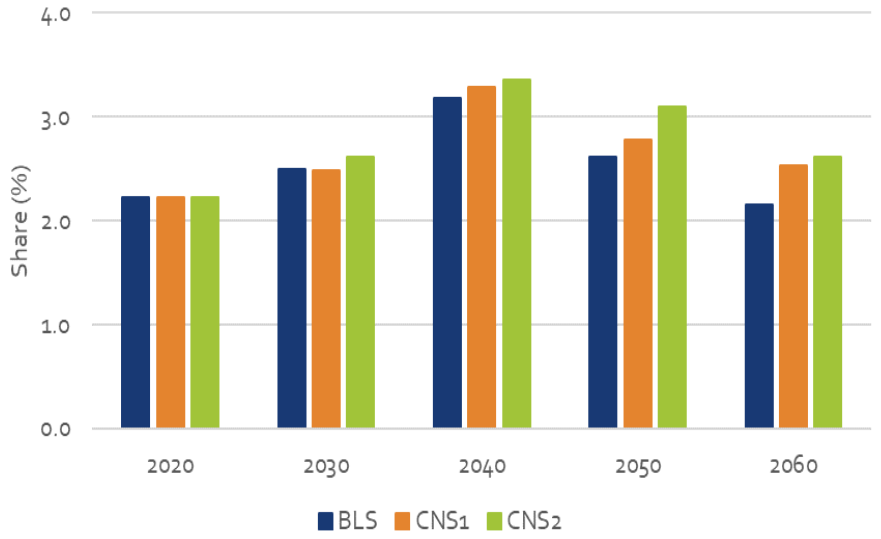
Energy Structure Nesting of the CETPA model

Under BLS, the proportions of coal, oil, natural gas, thermal power, hydropower and other sectors in total GDP gradually decrease, while the proportions of non-hydro renewables increase as a contrast.

Power sectors have higher proportions of GDP under CNS1 and CNS2 than BLS, suggesting that energy transition pushes higher contribution to the economic development by electricity --- a relatively higher quality energy commodity.



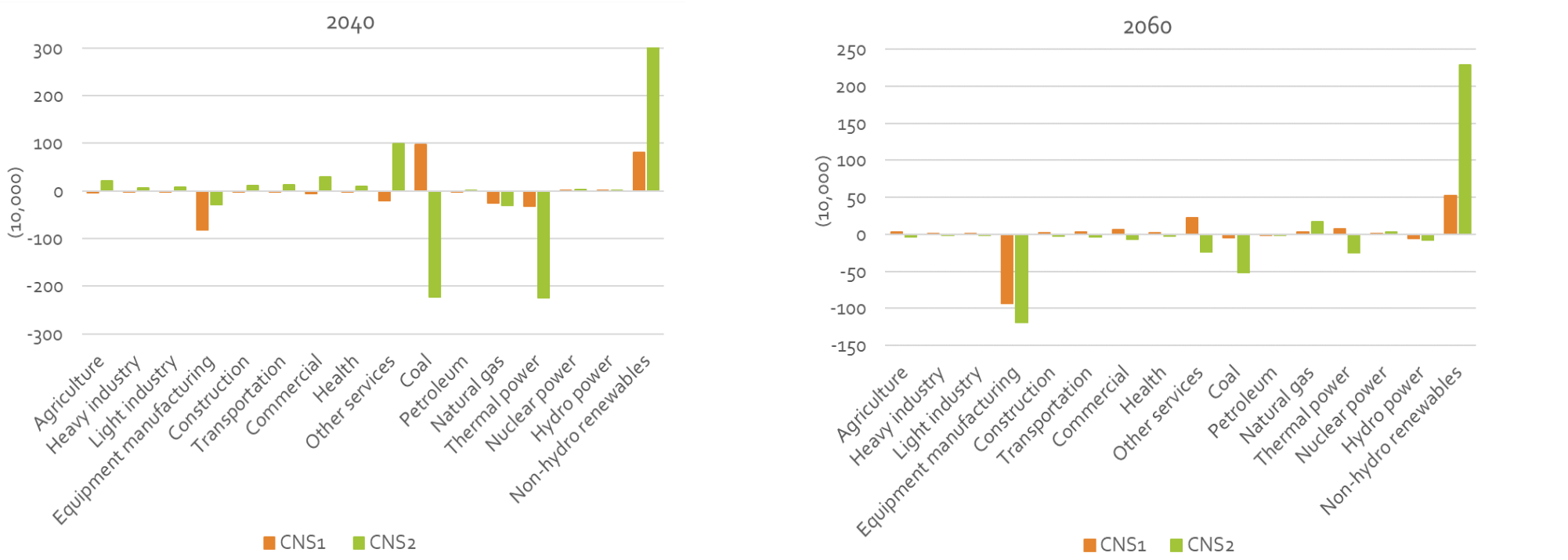
Changes in the proportion of value added by energy industry under the BLS scenario



Trends of changes in the proportions of GDP of the power sectors

Source: *China Energy Transformation Outlook 2023*

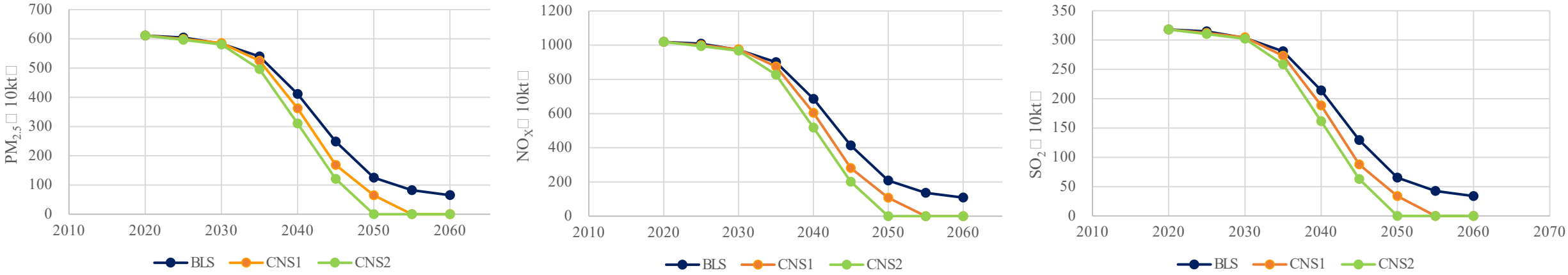
Under CNS1 and CNS2, non-hydro renewable sectors generates more job opportunities compared to the BLS scenario.These new employment opportunities offset the job losses in traditional industries such as coal and thermal power sectors caused by energy transition.



Comparison of changes in employment by sector between carbon neutrality scenarios and BLS scenario

Source: *China Energy Transformation Outlook 2023*

Emissions of major atmospheric pollutants such as $PM_{2.5}$, NO_X, and SO_2 significantly decrease with energy transition, as energy transition helps to achieve source reduction of air pollutants. This pivotal development provides essential support for enhancing air quality and contributing to the target of "constructing a beautiful China".



PM2.5, Nox and SO2 emissions

Source: *China Energy Transformation Outlook 2023*

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