

Supplementary information for

Cross-cutting scenarios and strategies for designing decarbonization pathways in the transport sector toward carbon neutrality

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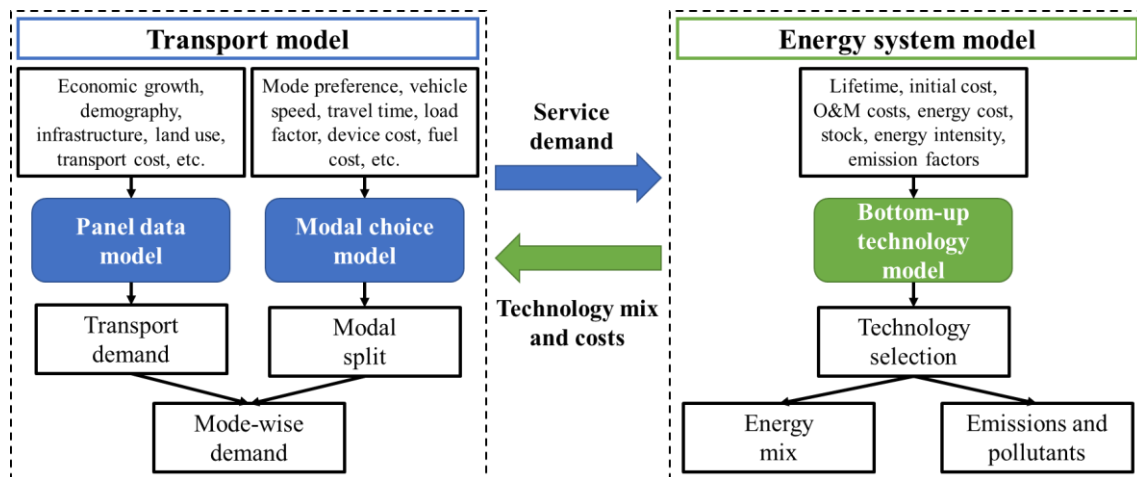
Supplementary Table 1. Transport mode and technology options.

Category	Technology options
Car	Gasoline cars (emission standards 1-6), gasoline hybrid electric cars, gasoline plug-in hybrid electric cars, diesel cars (emission standards 1-6), diesel hybrid electric cars, diesel plug-in hybrid electric cars, natural gas cars, battery electric cars, fuel cell cars
Bus	Diesel buses (stock, flow, high-efficient), hybrid electric buses, natural gas buses, battery electric buses
Two-wheeler	Gasoline two-wheelers (stock, flow, high-efficient), electric two-wheelers
Passenger rail	Diesel trains (stock, flow, high-efficient), electric trains (stock, flow, high-efficient)
Small truck	Diesel trucks (emission standards 1-6), hybrid electric trucks, battery electric trucks
Large truck	Diesel trucks (emission standards 1-6), hybrid electric trucks, fuel cell trucks
Freight rail	Diesel trains (stock, flow, high-efficient), electric trains (stock, flow, high-efficient)

Supplementary Table 2. Estimation results of the panel data model. We performed a two-sided t-test and derived P values with 95% confidence intervals.

Variables	Pooled model		Fixed effects model		Random effect model	
	$TD_{passenger}$	$TD_{freight}$	$TD_{passenger}$	$TD_{freight}$	$TD_{passenger}$	$TD_{freight}$
<i>GDPCAP</i>	-0.097 (0.480)	1.589*** (0.000)	0.820*** (0.000)	0.734*** (0.000)	0.767*** (0.000)	0.830*** (0.000)
<i>ROADCAP</i>	0.090*** (0.000)	0.317*** (0.000)	0.027 (0.302)	0.050* (0.054)	0.028 (0.204)	0.113*** (0.000)
<i>LANDCAP</i>	0.470*** (0.000)	0.375*** (0.000)	0.380*** (0.000)	0.146** (0.021)	0.385*** (0.000)	0.214*** (0.001)
<i>COST</i>	0.818*** (0.000)	-2.268*** (0.000)	-0.576*** (0.002)	-0.263** (0.048)	-0.492*** (0.006)	-0.572*** (0.000)
Constant	7.754*** (0.000)	-9.658*** (0.000)	-0.497 (0.328)	0.076 (0.833)	-0.624 (0.583)	-0.100 (0.188)
Observations	434	434	434	434	434	434
R ² Adjusted	0.824	0.759	0.879	0.883	0.883	0.867
F test			46.492***	91.823***		
Hausman test					10.031**	253.26***

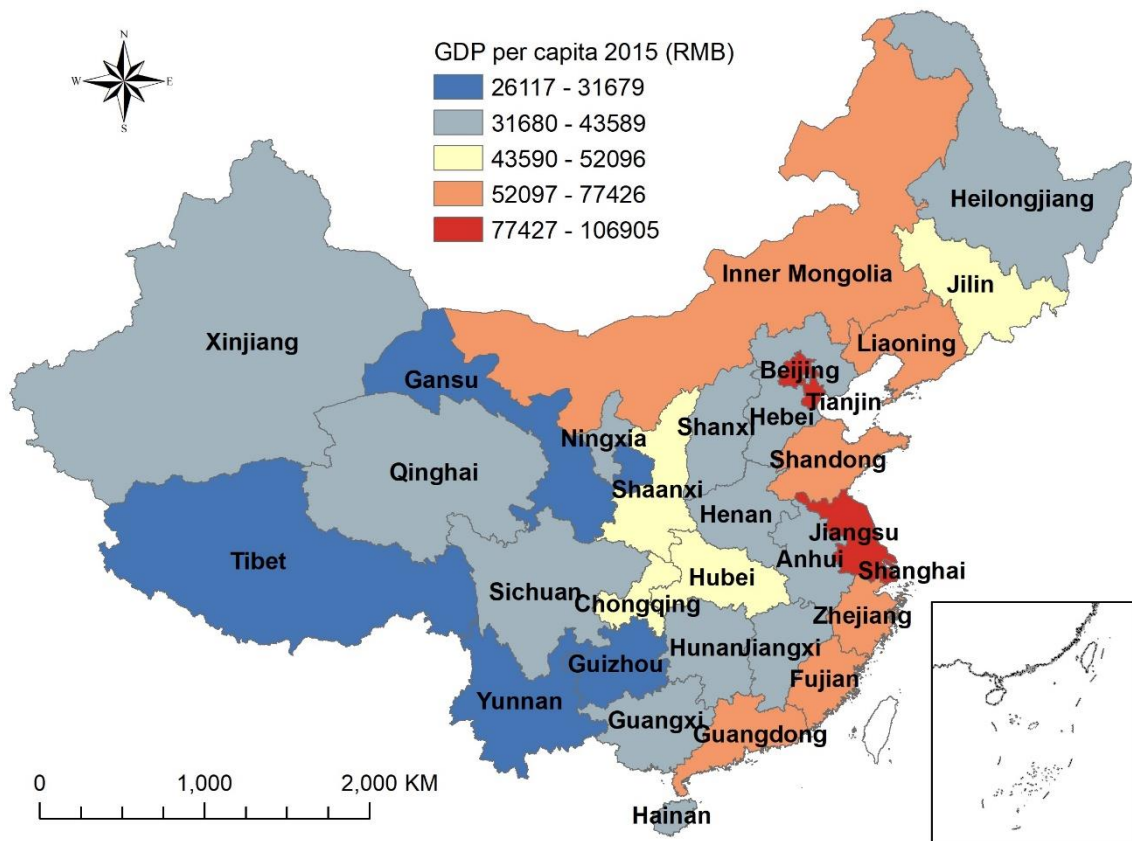
*p<0.1; **p<0.05; ***p<0.01



Supplementary Figure 1. Model structure.



Supplementary Figure 2. The 31 provinces of mainland China.



Supplementary Figure 3. GDP per capita 2015 in 31 provinces.