# Impacts of Main Economic Sectors on Energy Efficiency in the Time Period 2015–2030 in China

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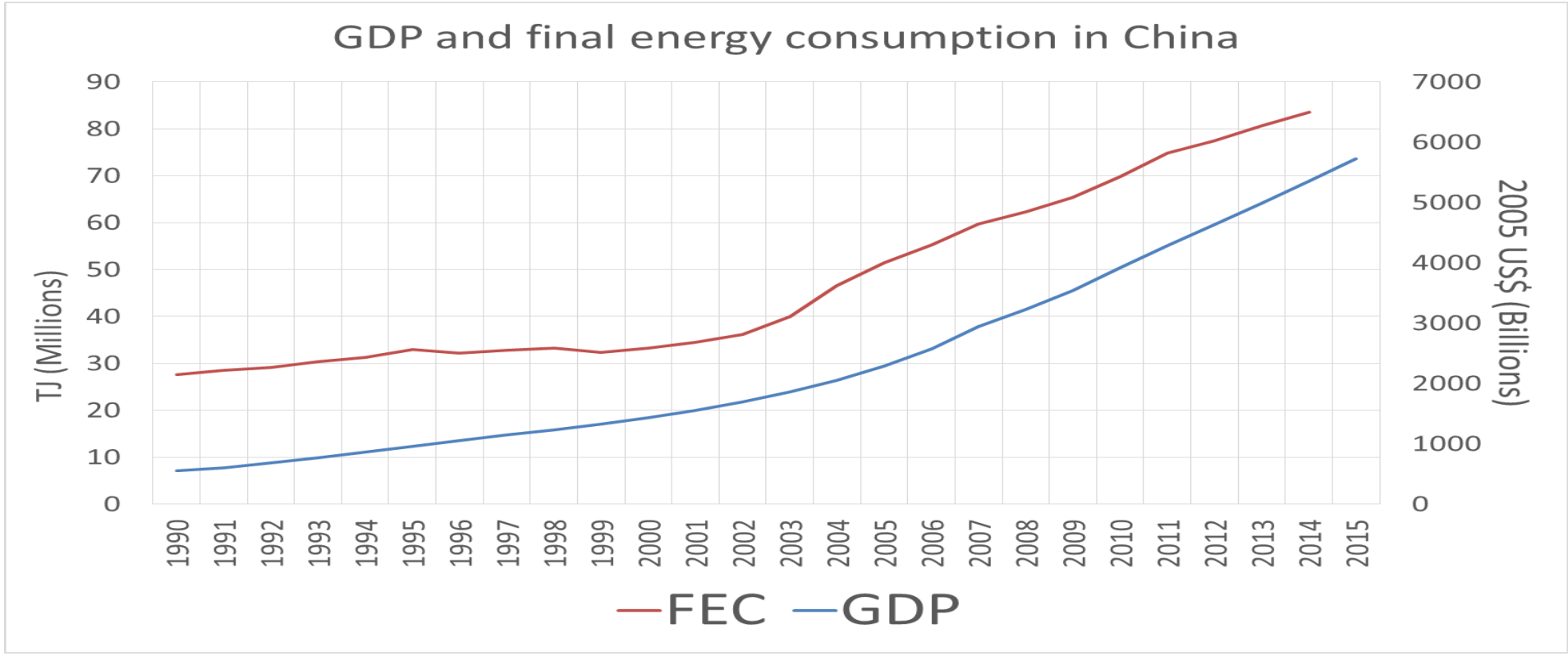
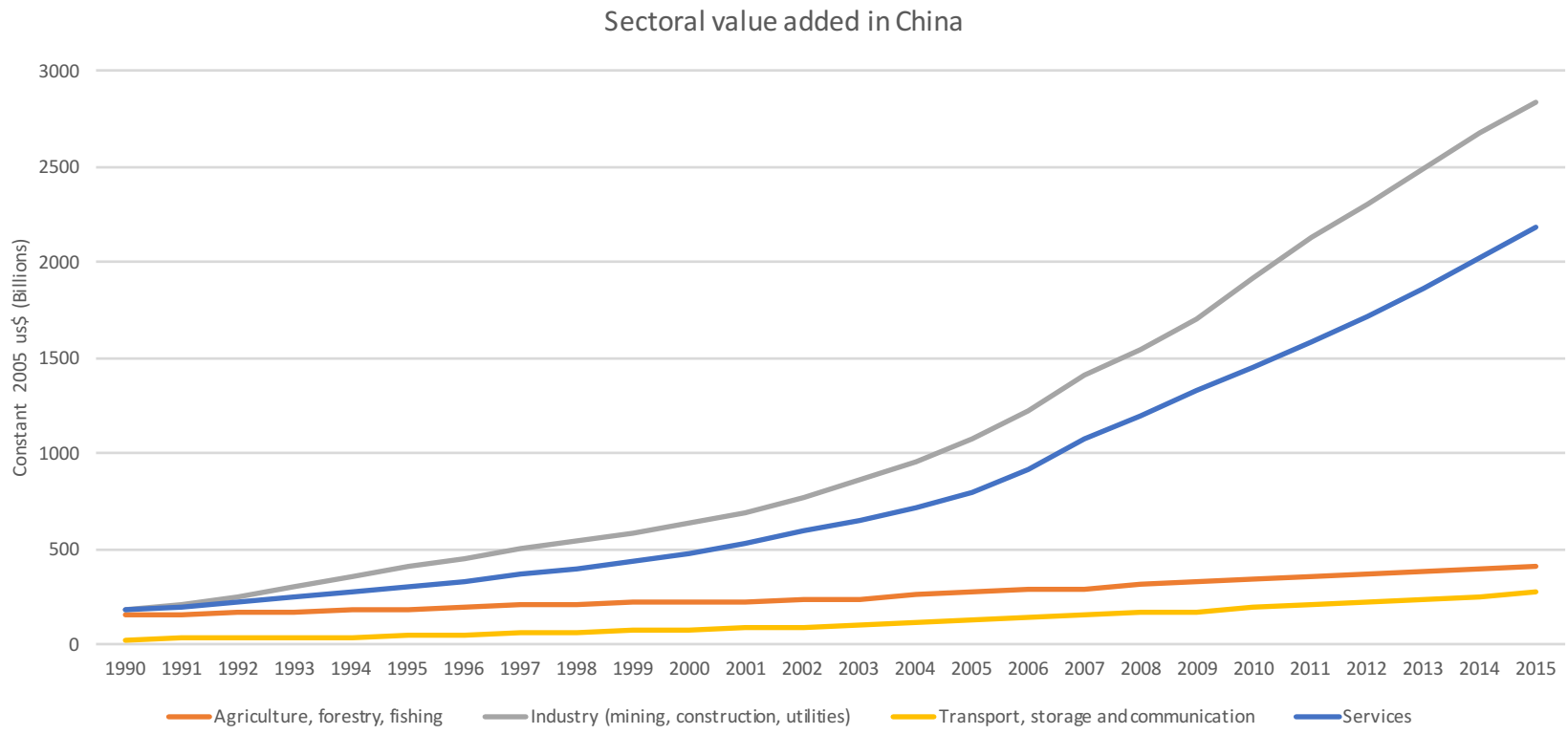
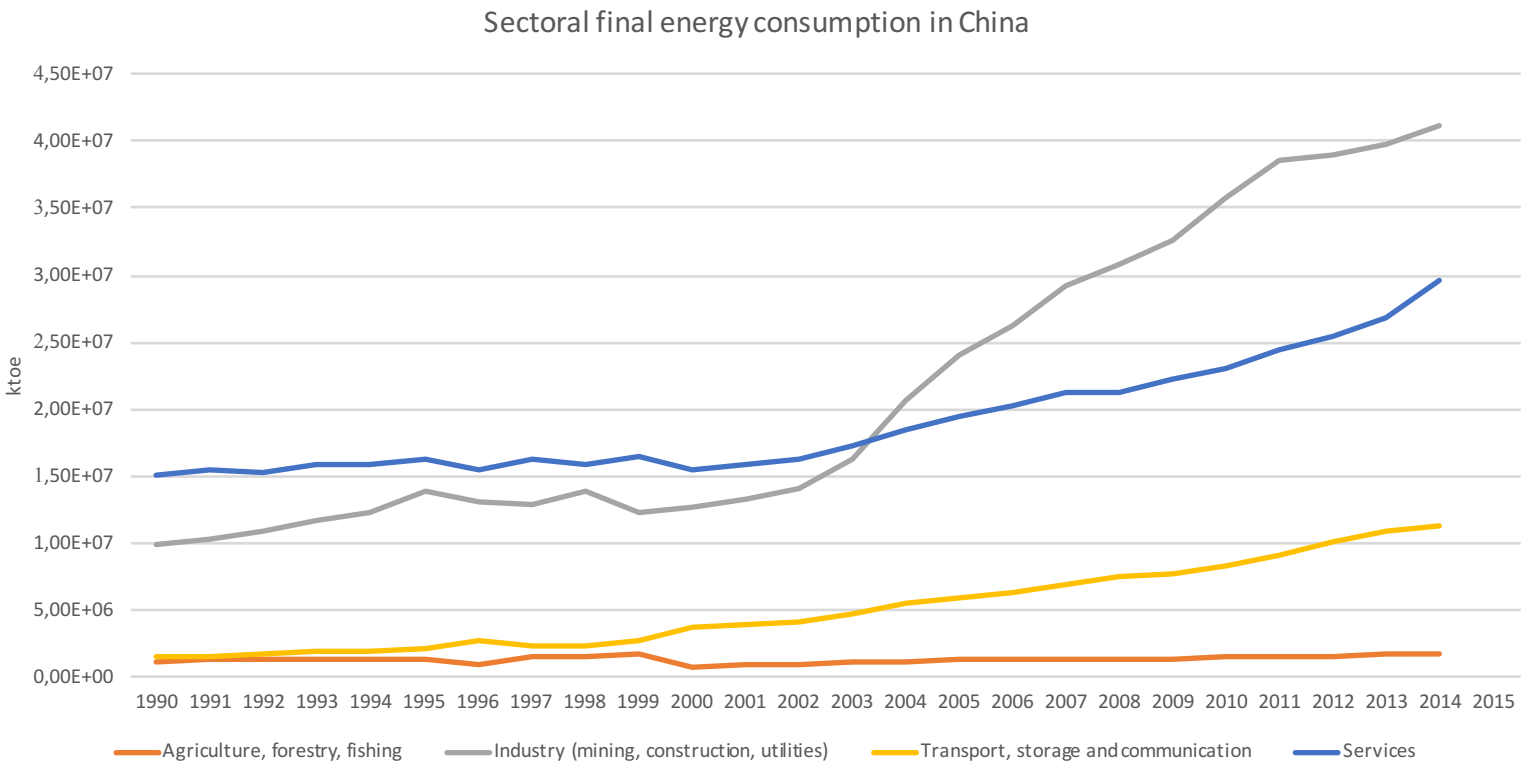
Gross domestic product and final energy consumption at national level in China. (World Bank: World Development Indicators [3]; International Energy Agency: Energy Balances [5]).



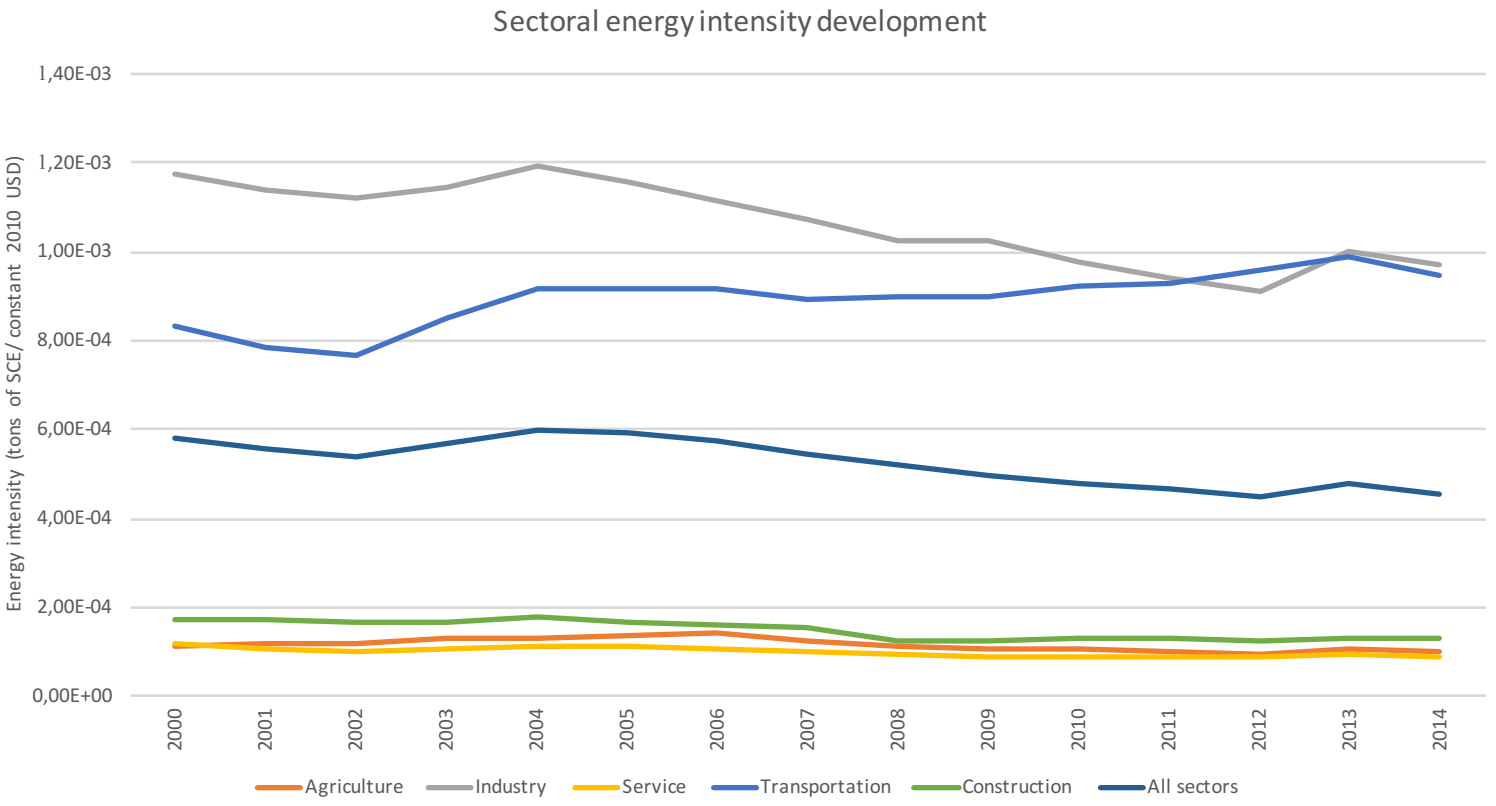
# Sectoral value added in China 1990-2015. (World Bank: World Development Indicators; International Energy Agency: Energy Balances).



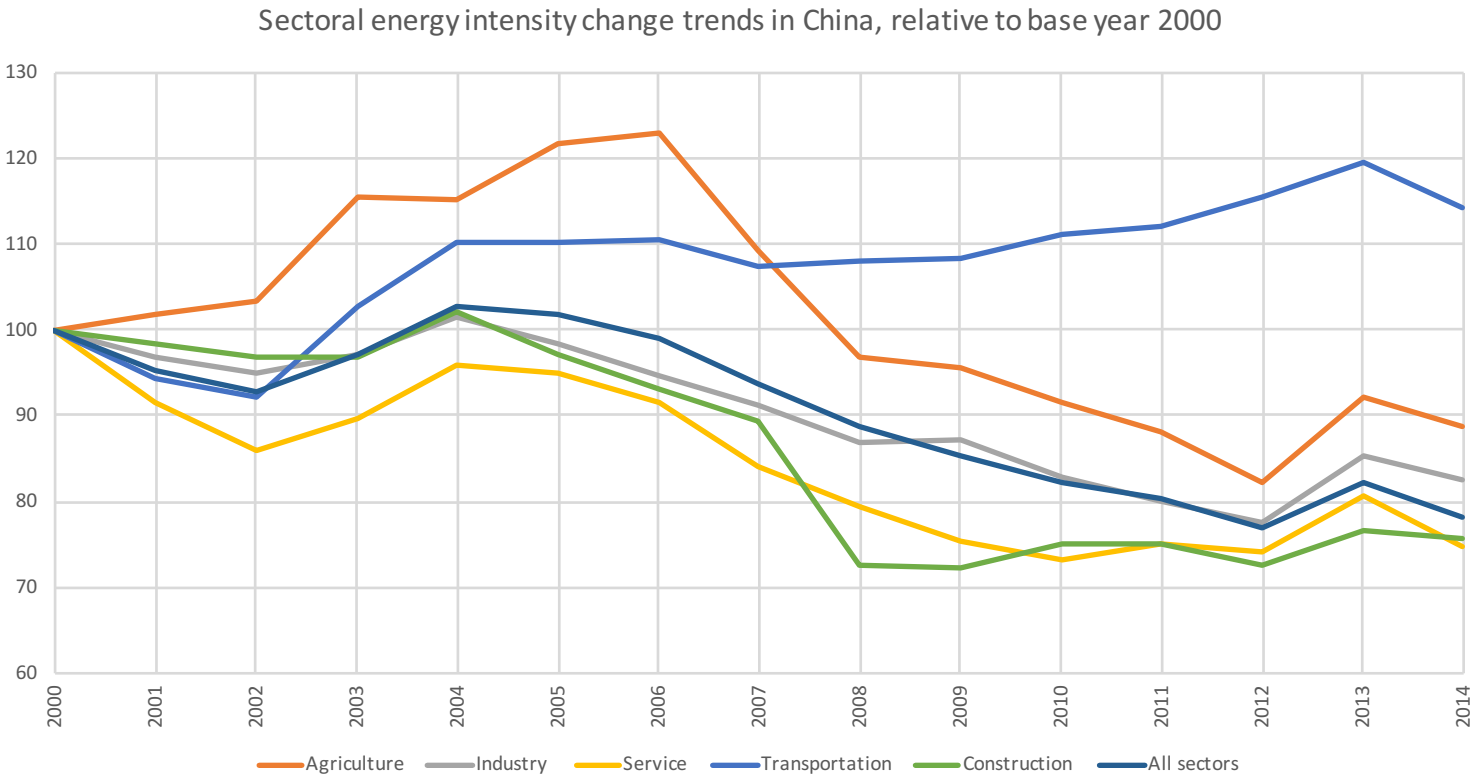
# Sectoral final energy consumption in China (World Bank: World Development Indicators; International Energy Agency: Energy Balances).



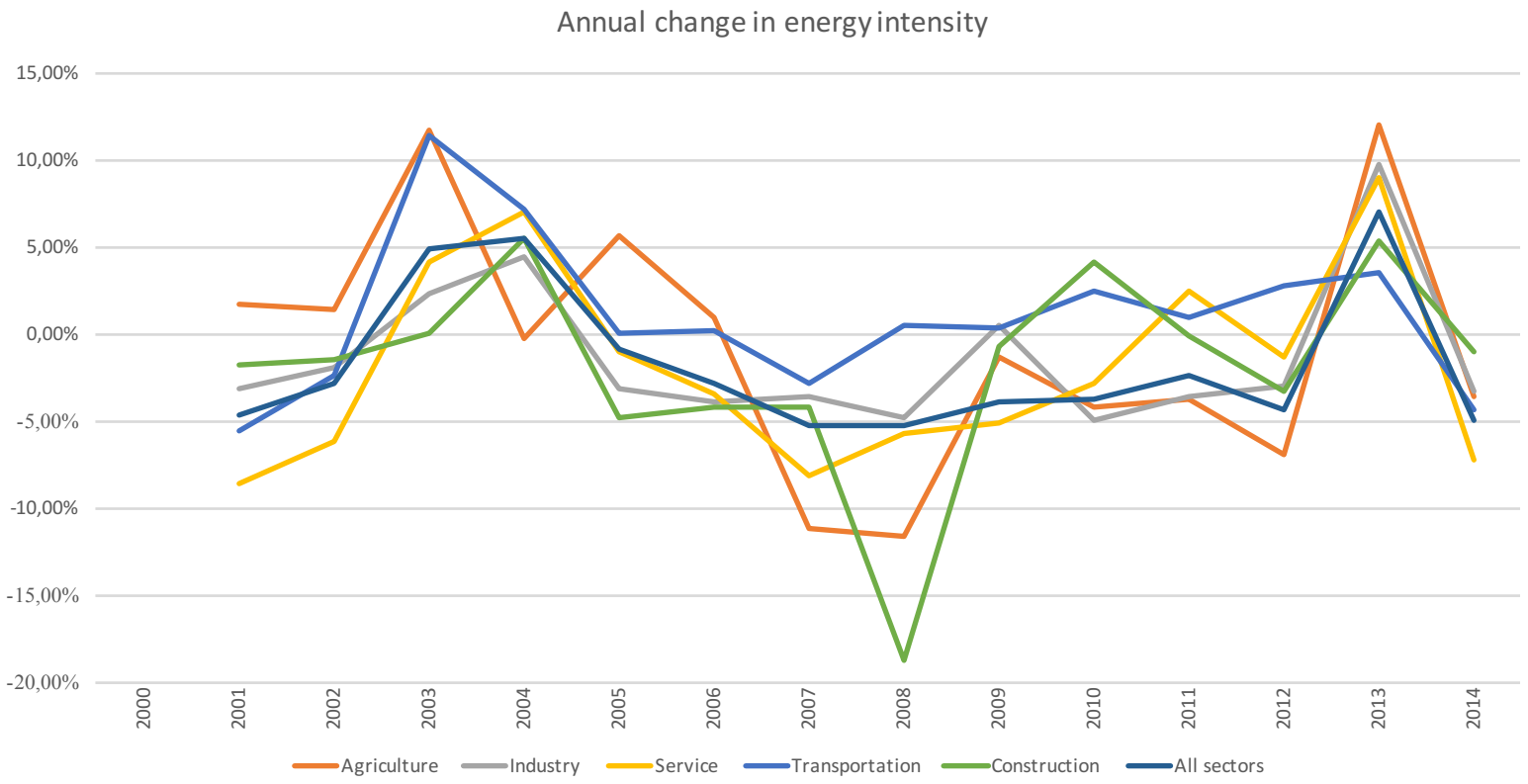
# Development of energy intensity in China, using a 5-sector division.



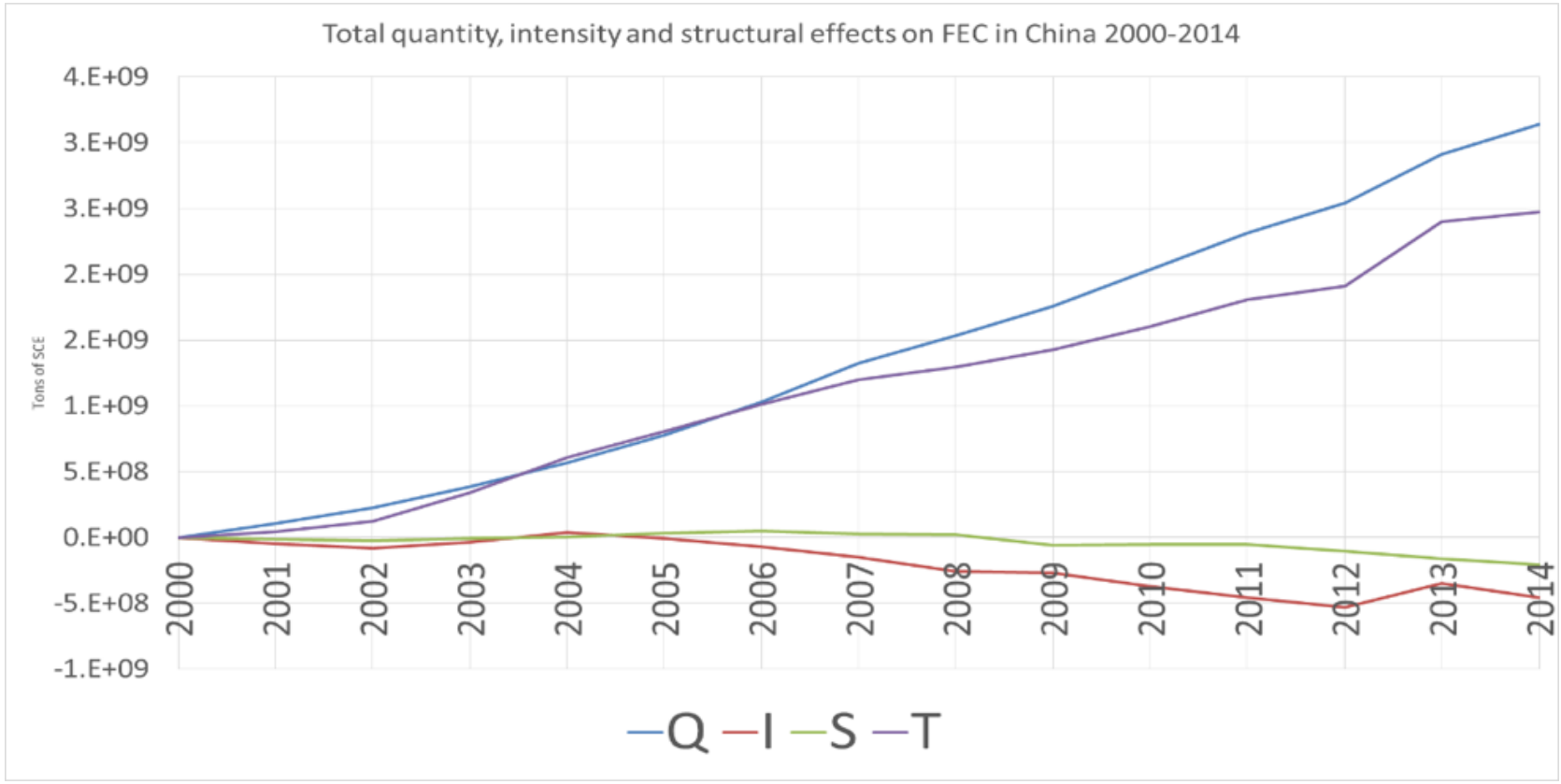
# Sectoral energy intensity change trends in 5 sectors. Values for each sector are relative to base year 1990 value for the sector in question.



# Annual change in the sectoral energy intensity in China.



# Total quantity, intensity and structural effects on FEC in China 1990-2014.



# Annual sectoral GDP growth rates assumed in the China-LINDA model projection (China)

| | 2014-20 | 2020-25 | 2025-30 |
|---|---|---|---|
| Agriculture | 4.0 % | 3.0 % | 3.0 % |
| Industry | 6.5 % | 6.0 % | 5.5 % |
| Transportation, communication | 6.0 % | 5.0 % | 5.0 % |
| Commercial | 8.0 % | 7.0 % | 6.0 % |
| Construction | 9.0 % | 8.5 % | 8.0 % |
| Others | 6.0 % | 5.0 % | 5.0 % |
| Total | 6.5 % | 5.9 % | 5.5 % |

# Energy intensity development compliant with the targets of the 13th FYP. China

| | 2014-20 | 2020-25 | 2025-30 |
|---|---|---|---|
| Agriculture | -3.0 % | -4.0 % | -5.0 % |
| Industry | -7.0 % | -9.0 % | -11.0 % |
| Commercial | -6.0 % | -7.0 % | -8.0 % |
| Transportation | -4.0 % | -5.0 % | -6.0 % |
| Construction | -12.0 % | -14.0 % | -16.0 % |

# Energy intensity development projection in line with observed trends, China

| | 2014-20 | 2020-25 | 2025-30 |
|---|---|---|---|
| Agriculture | -1.2 % | -1.6 % | -2.2 % |
| Industry | -1.4 % | -1.9 % | -2.6 % |
| Commercial | -1.6 % | -2.2 % | -2.9 % |
| Transportation | 1.7 % | 0.0 % | -1.8 % |
| Construction | -2.2 % | -3.0 % | -4.0 % |

# Projection of $CO_2$ emissions and final energy consumption under the policy scenario, China

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO2 (Mtons) | 8401 | 8630 | 8873 | 9131 | 9353 | 9557 | 9780 | 10023 | 10287 | 10506 | 10752 | 11026 | 11329 | 11662 |
| FEC (Mtoe) | 2594 | 2629 | 2667 | 2709 | 2741 | 2736 | 2736 | 2743 | 2756 | 2735 | 2724 | 2723 | 2731 | 2750 |

# Projection of $CO_2$ emissions and final energy consumption under the observed trend continuation scenario, China

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO2 (Mtons) | 9037 | 9499 | 9987 | 10502 | 11026 | 11521 | 12042 | 12588 | 13161 | 13683 | 14230 | 14803 | 15404 | 16032 |
| FEC (Mtoe) | 2970 | 3143 | 3327 | 3523 | 3693 | 3862 | 4039 | 4226 | 4423 | 4585 | 4754 | 4932 | 5119 | 5316 |

# Differences in $CO_2$ emissions and final energy consumption between the observed trend continuation scenario and the policy scenario, China

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO2 (Mtons) | +636 | +869 | +1114 | +1371 | +1673 | +1964 | +2262 | +2565 | +2874 | +3177 | +3478 | +3777 | +4075 | +4370 |
| FEC (Mtoe) | +376 | +514 | +660 | +814 | +952 | +1126 | +1303 | +1483 | +1667 | +1850 | +2030 | +2209 | +2388 | +2566 |

# Conclusions

- This article presents a summary of Chinese sectoral energy intensity trends and a decomposition analysis of Chinese economic sectors at different levels of aggregation to get an understanding of the energy efficiency development and measure the energy efficiency improvement performance of the different sectors.
- The observed energy efficiency trends are used as parameters of the China-LINDA model to create a projection of possible development of energy use and emissions in China, and compared to a projection where aspired energy efficiency targets of the 13th five-year plan are reached.
- The analysis of the sectoral energy intensity developments and the structural decomposition analysis bring forth a number of sectors with low performance of energy efficiency improvements in relation to the average trend of development in the Chinese economy and possibly, have potential for greater energy savings through efficiency improvements.