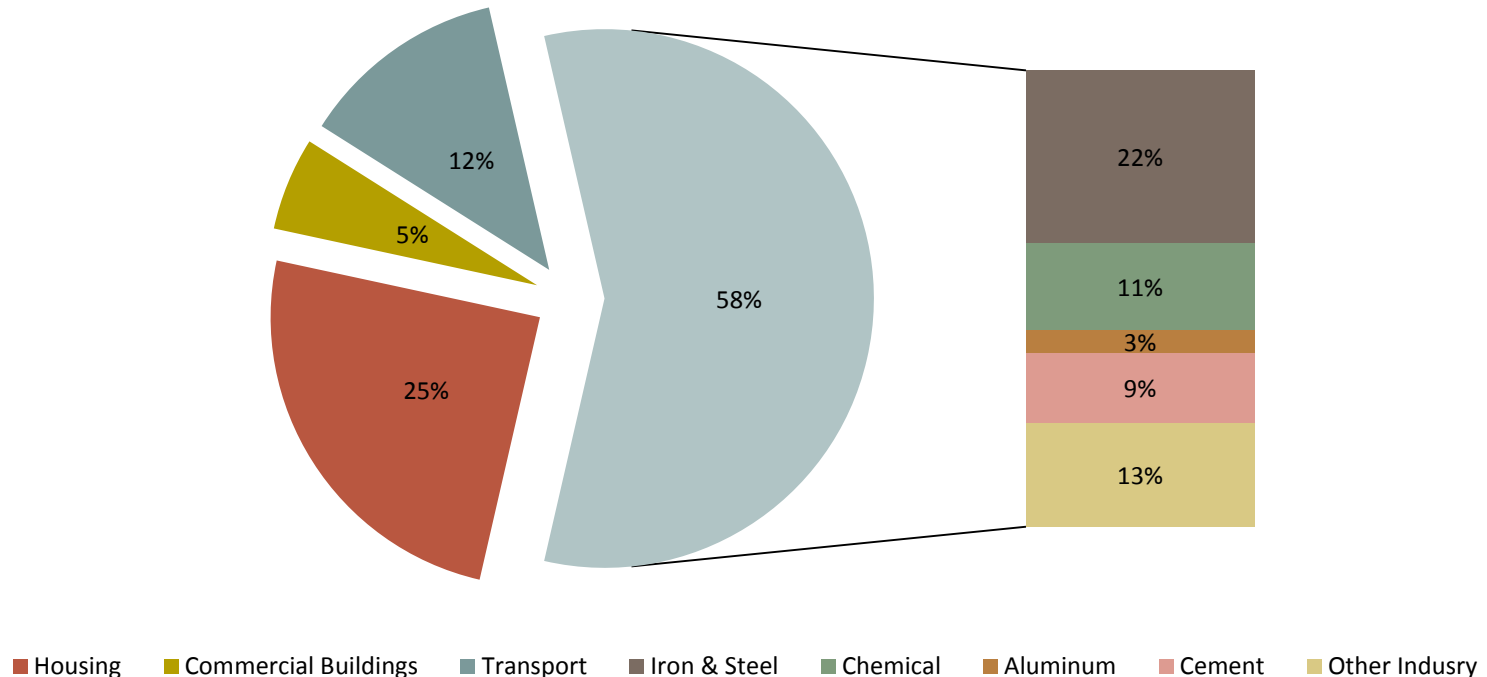


China's Energy Efficiency Policies

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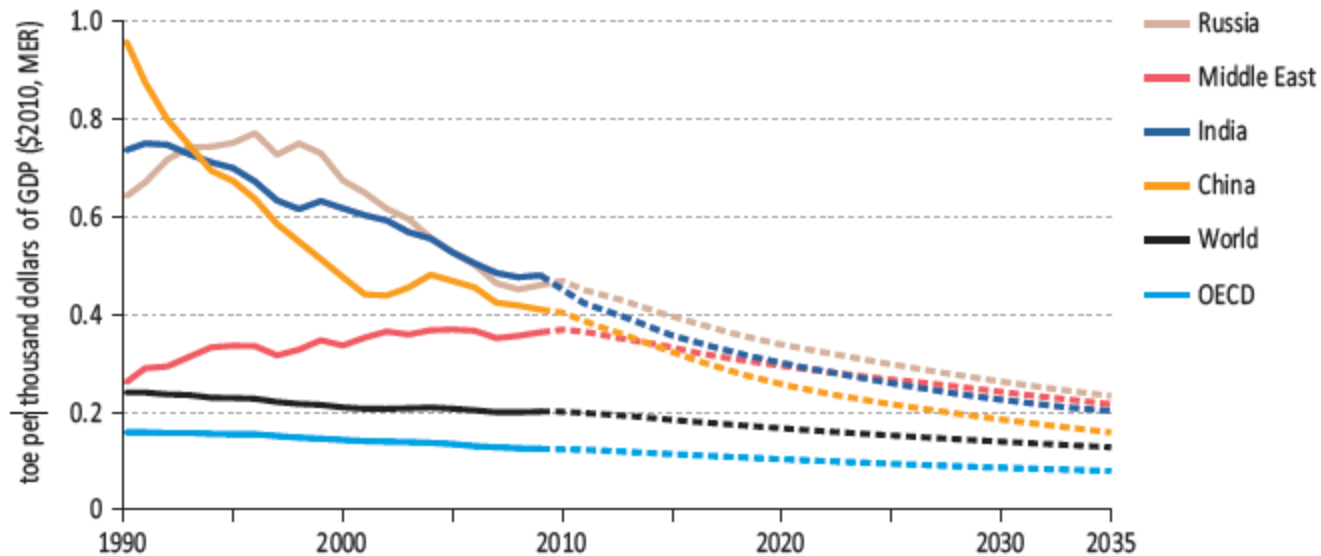


PRC's Energy Consumption Mix



- **Industries consume 58% of total energy; 3/4th of which is consumed in Iron& Steel, petro chemical, and cement industries**
- **Buildings consume about 1/3rd of the total energy consumption**

Energy Intensity Trend in the PRC and elsewhere



- PRC's energy intensity is more than double the world average and OECD average.
- PRC's energy intensity sharply declined by 60% since 1990
- There has been a sharp decline (1990 – 2000), moderate increase (2000 – 2005) and again decline since 2006.

Energy Efficiency Challenges

- **PRC is the largest energy consumer and GHG emitter in the world and energy consumption grew at 6.0% p.a 1990 – 2007.**
- **PRC is increasingly dependent on energy imports.**
- **Over 58 % of energy in PRC is consumed in the industrial sector.**
- **Poor urban air quality due industrial air pollution.**
- **The per capita energy consumption in PRC is less than 20% of OECD average.**
- **However, the energy consumption per unit of GDP in PRC is about twice the OECD average.**
- **Energy consumption per unit output in heavy industries in PRC is more 25% higher than OECD average.**

Achievements during 11th FYP(2006 – 2010)

- Energy intensity improvement target of 20% was set under 11th FYP and actual achievement was 19.1%.
- The growth in energy consumption was 6.6% p.a. compared to GDP growth of 11.2% during 11th FYP.
- The energy to GDP elasticity was reduced from 1.04 (10th FYP) to 0.59 during 11th FYP.
- However, China's energy consumption increased from 2,475 mtce in 2006 to excess of 3,100 mtce in 2010
- The energy savings achieved is in excess of 600 mtce compared to business as usual. (more than combined energy consumption of South East Asia)

Policy Initiatives under 11th FYP

- **1,000 key enterprise (over 100,000 tce) program targeting the largest energy consumers in the country.**
 - **Energy Saving responsibility contracts with quantified energy savings to be achieved and penalties for non compliance.**
 - **Establish corporate energy management units**
 - **Adapt energy audits and energy metering.**
 - **Establish dedicated energy management systems.**
 - **Increase investments in energy efficiency**
 - **Develop internal incentives and penalties.**
- **Provincial government expanded the program to include the second tier enterprises.**

Policy Initiatives under 11th FYP

- **Capital subsidies for energy efficiency investments. (RMB 200 – 250 per mtce saved). More than \$ 15 billion was allocated by government during 2007 – 2009.**
- **Provincial level monitoring and supervision systems were established.**
- **Regulations on phasing out and elimination of obsolete inefficient industrial capacity.**
- **Compensation for eliminating backward capacity**
- **Differential energy pricing and taxation for technologies earmarked for elimination.**
- **More stringent energy efficiency requirements on approval of new capacity.**

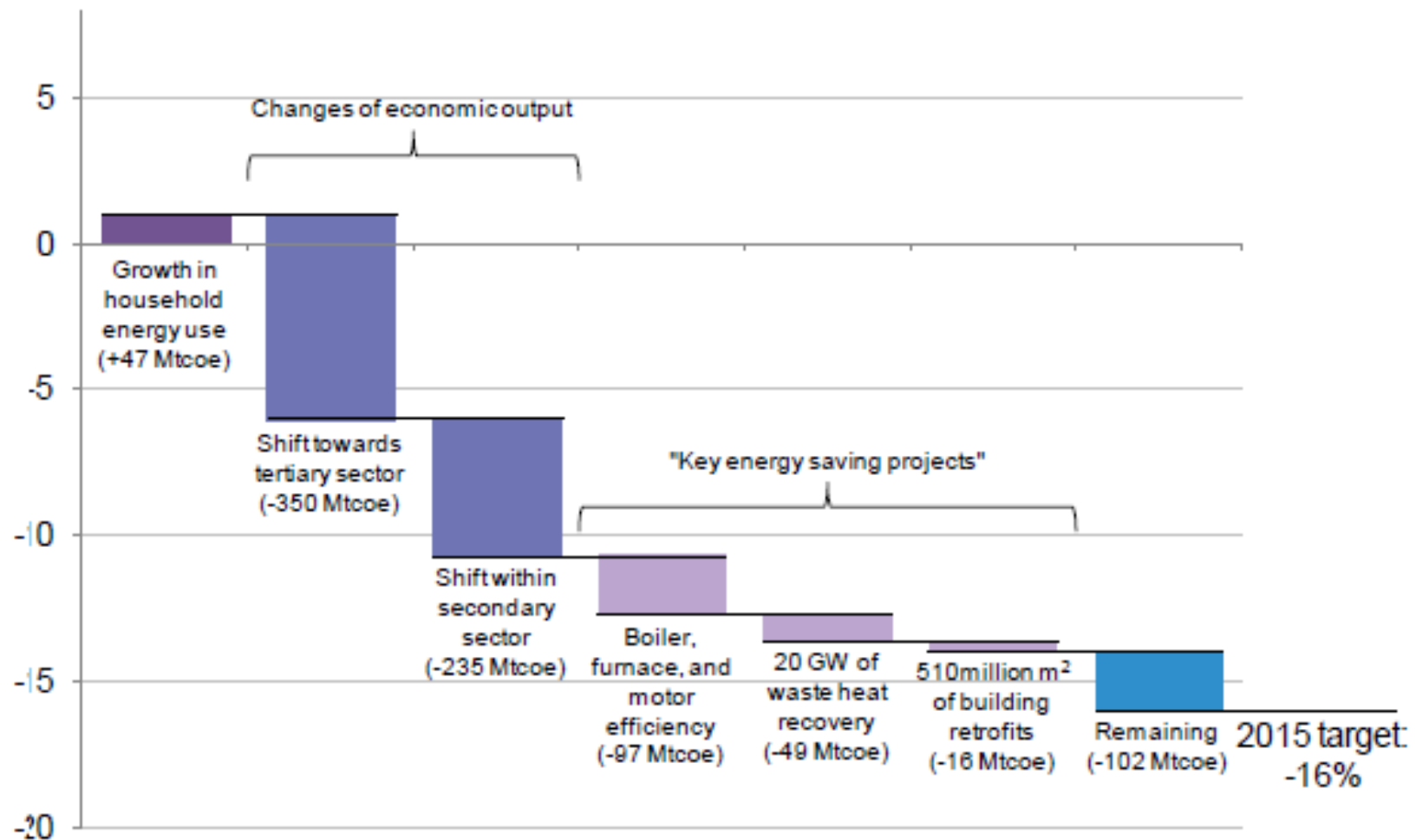
Energy Efficiency Improvement During 12th FYP (2011 – 2015)

- **National target of 16% improvement in energy intensity and 17% improvement in carbon intensity over 2010**
- **The measures initiated in the previous program was implemented with increased coverage.**
- **The scope of Key Enterprise program was expanded to include 10,000 enterprises consuming more than 5,000 tce.**
- **Supervision and Monitoring mechanisms to verify energy savings was strengthened.**
- **Development and promotion of new EE technologies.**
- **Further developing energy performance contracting.**
- **Instituting corporate energy management systems in key enterprises.**

Provincial Energy Intensity Improvement Targets under 12 FYP



Possible Strategy for Meeting Energy Intensity Targets



Source: Bloomberg New Energy Finance analysis. Note: Figures in brackets denote change in energy consumption relative to a scenario with economic growth to 2015 with 2010 energy intensity.

PRC Energy Saving Efforts under the 12th FYP (2011 – 2015)

- **PRC has achieved 18.2% reduction in energy intensity during 12th FYP.**
- **Subsidy program expanded to cover ESCOs and smaller projects. (>100 tce and < 10,000 tce) with additional local government top up.**
- **Subsidies cover 10 % – 15% of investment cost.**
- **Exemptions from income tax for eligible ESCOs**
- **US \$ 113 billion during 11th FYP to achieve energy savings of 379 million tce at an average cost of \$ 300) per tce.**
- **US \$ 200 billion during 12th FYP to achieve 400 million tce at an average cost of \$ 500) per tce.**

Key Initiatives 12th FYP

- **Allocation of responsibilities for achieving energy intensity reductions to local governments**
- **Improved energy consumption statistics and monitoring and piloting real time data collection.**
- **New capacity in energy intensive industries tightly controlled and subject to energy assessment.**
- **Speed up phasing out of backward capacity of energy intensive industries. Targets allocated to provinces.**
- **Provinces and enterprises failing to phase out backward capacity to be penalized.**
- **Promoting upgrading and retrofitting of traditional industries.**

Key Energy Saving Efforts Implemented under 12th FYP

- **Upgrading efficiency of industrial & heating boilers (2% - 5% improvement)**
- **Waste heat and back pressure recovery in industrial plants (20 GW of electricity generation)**
- **Variable frequency drive motors (2% - 3% improvement)**
- **Energy efficiency improvement in space heating (500 million sq. m with improved heat supply systems) with meters.**
- **Deploy automated Energy Management Systems in large industries.**
- **Promote advanced technologies in steel, petro chemical, chemical, cement and non ferrous industries.**
- **Install desulphurization systems in key industries.**

Conclusion and Summary

- **China has achieved improvement in energy intensity of 34% compared to 2005.**
- **The energy conservation efforts have avoided close to 750 mtce of energy consumption roughly equal to the energy consumption of India.**
- **More than half of energy intensity reduction is due to structural changes in the economy.**
- **The 13th FYP (2016 – 2020) set a target for further reduction of energy intensity by 15%.**