

Financing Energy Efficiency in China

- Roles of Government and Market

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Energy Efficiency in China: A Glance

- The biggest energy producer and consumer in the world
- Account for 46% of global incremental energy demand and half of global energy saving in the past decade
- Second biggest economy, shift from world factory to market
- Leading in industrial capacities, building floor area, vehicle sales, etc.

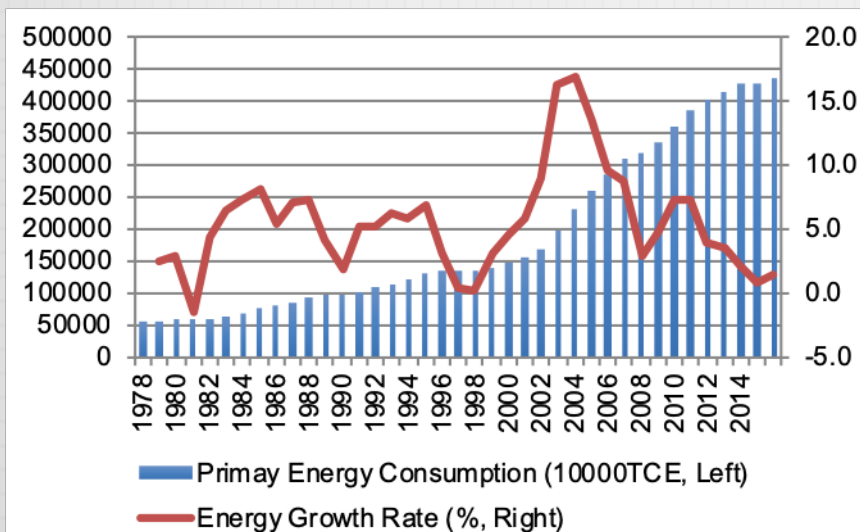
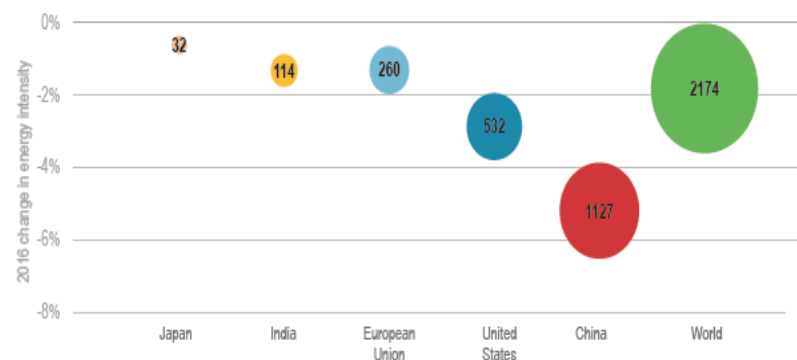


Figure 1.5 Energy productivity bonus from energy intensity gains, USD billion (PPP), 2016

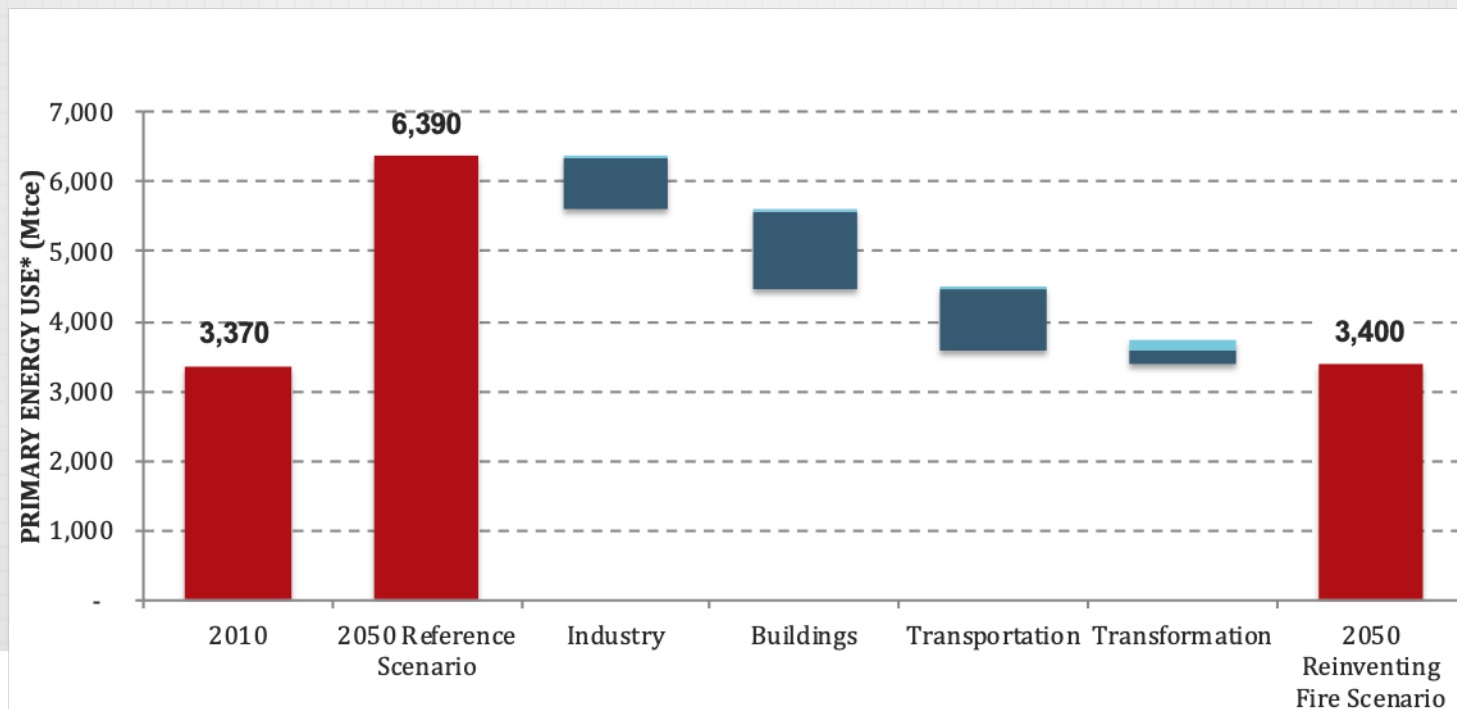


Notes: The energy-productivity bonus is the difference between actual GDP (in PPP terms) and the notional level of GDP that would have been generated had energy intensity stayed at the level of the previous year. Bubble size represents the magnitude of the value.

Source: Adapted from IEA (2016a), World Energy Outlook 2016.

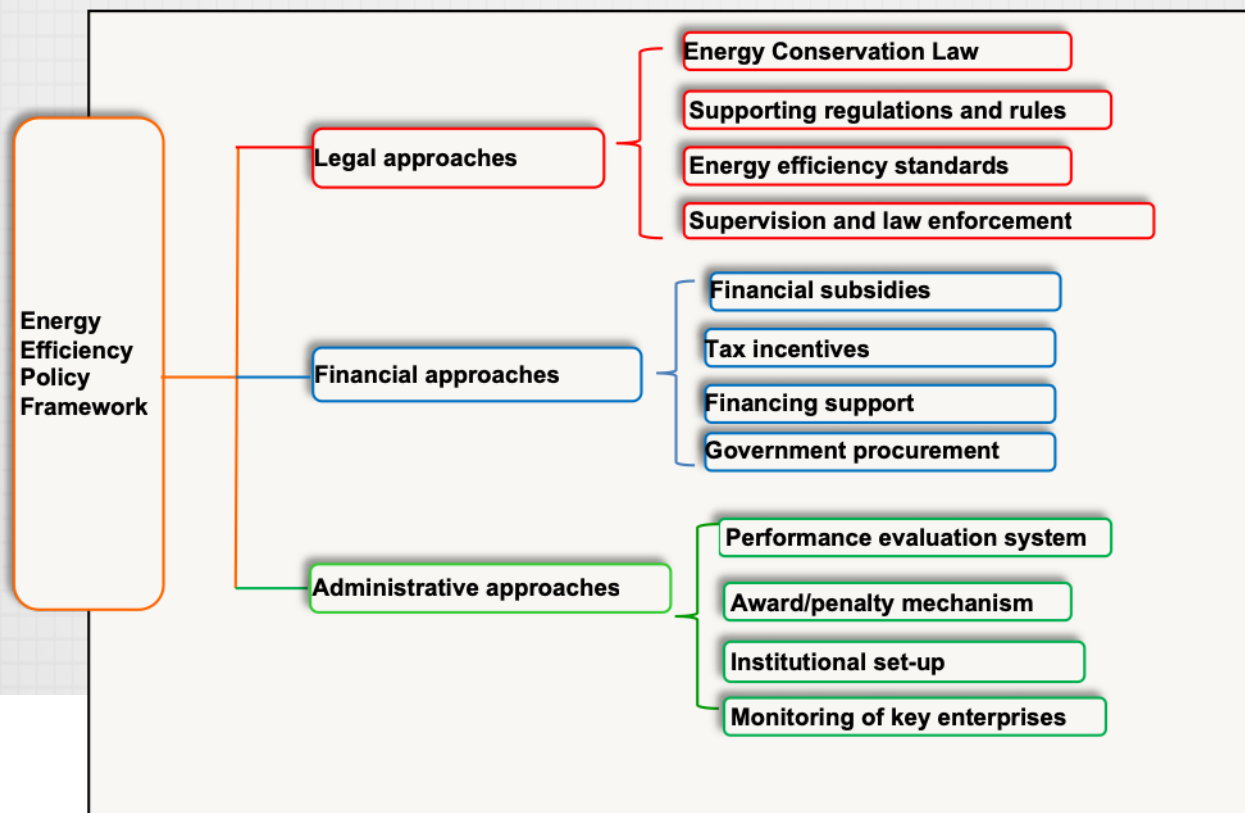
2050 Vision: Decoupling through energy efficiency improvement

- **Prioritize energy efficiency in China's national development targets, and energy revolution strategy of energy production and consumption Aim to decouple economic growth from energy consumption**
- **Contributor and leader on global energy efficiency advancement**



Framework of Energy Efficiency Policies

- Shift to market-based measures, with government playing pivotal role
- Allocate mandatory targets allocated to local industries, industries and enterprises, with annual examination
- Make incentives right not only give direct orders



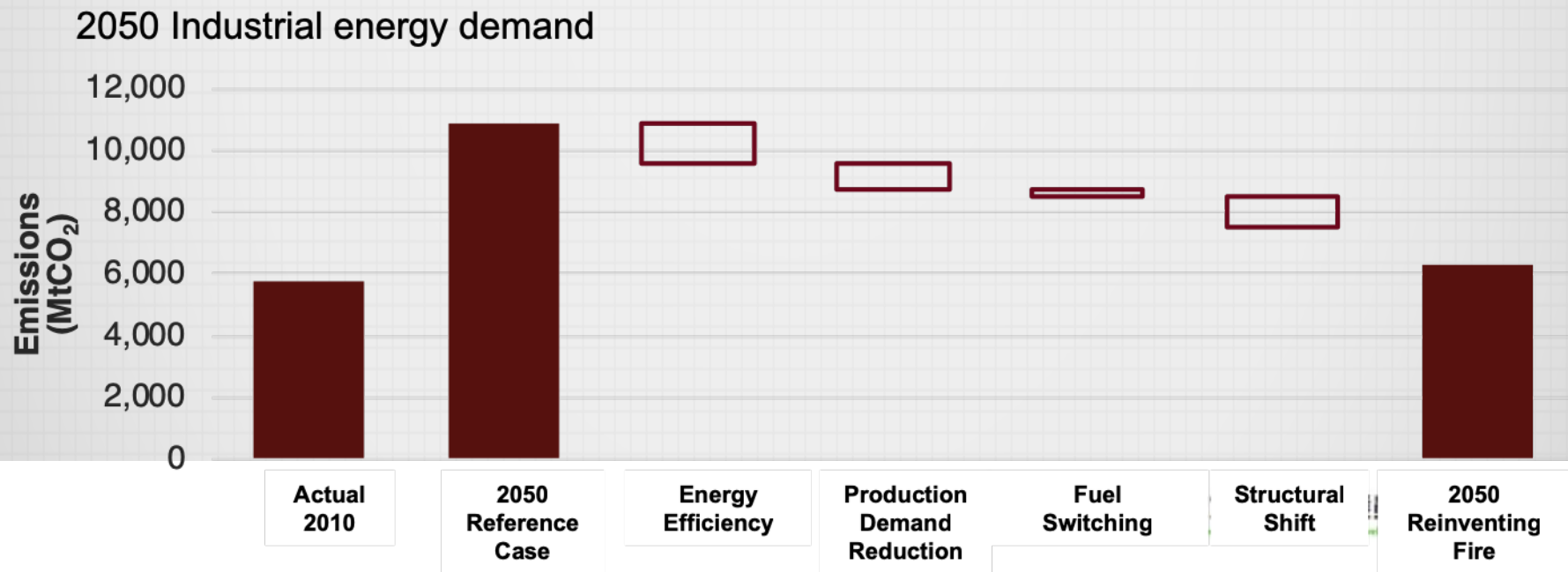
Explore technical and structural potentials in industries through financing scheme

Technical potentials:

- Technical retrofits
- Promote high-efficient equipment
- Energy audits and benchmarking

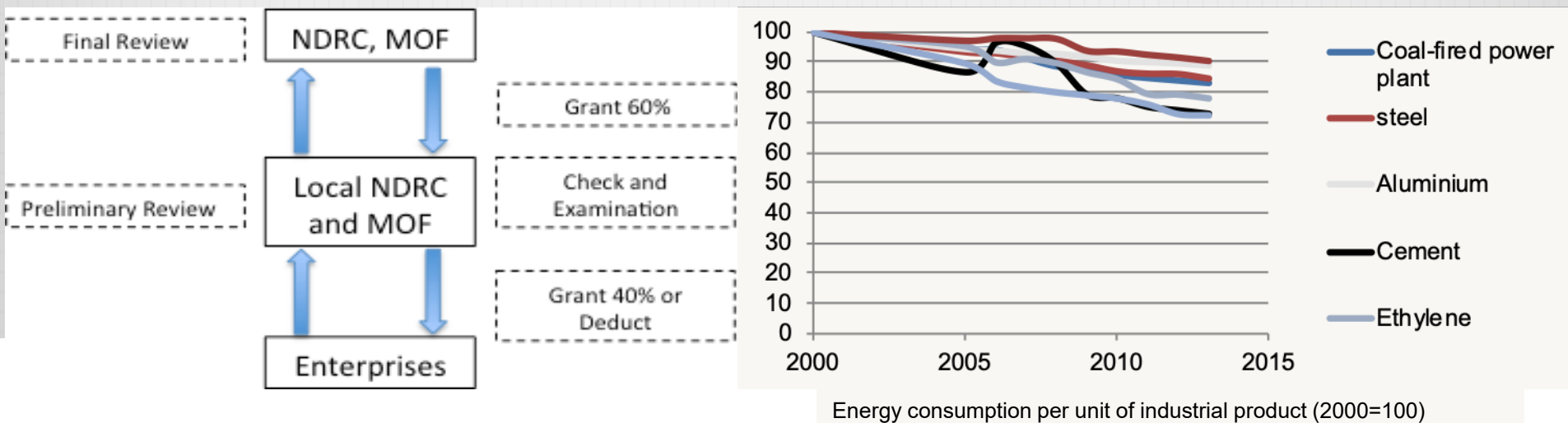
Structural opportunities:

- Eliminate backward capacity
- Merge acquisition and consolidation
- Shift to high-value added products
- Fuel switching
- Develop service based sectors



Financial supports from governments

- **Special fiscal funds for energy efficiency**
 - Grants for retrofitting projects in industries, and pilots of new technology and equipment
 - Aim to Top-10000 enterprises, in line with key Ten Energy Saving Projects
 - Fiscal supports from central and local government in separate
 - Direct subsidy, subsidized loan interest, reward
- **Speedup technical advancement in energy intensive sectors**
 - 10%-30% reduction of energy consumption per unit of industry products since 2000



Financial supports from governments

- **Special funds for eliminating backward capacity and industrial upgrade**
 - Subsidy and reward for decommissioning capacity in iron& steel, coal, power sectors
 - Grants for energy efficiency advancement in manufacturing sectors
- **Improving financial supports from government**
 - Aligned with higher energy efficient target such as Top-runners
 - Reward based on performance examination
 - Co-benefits requirement such as pollutant reduction
 - Efficiency improvement to absolute reduction of coal
 - Direct fiscal support to investment funds such as national energy efficiency fund, investment guiding fund

Green financing practices in China

- **Green loans**
 - Discounted government loan, re-lending, development loan
 - Accounting for 10% of total amount of loan
 - Non-performing loan rate is 0.37% in 2018
- **Green bonds**
 - Over \$ 30 billion green bonds in 2018
 - Adjusted loan deposits ratios and risk weightings
- **Need scale up in industries**
 - Dominated by central and local SOEs, more than 85% in green bonds
 - Need simplify the review and approval process
 - Need clear criteria for classifying green industries, and verifying energy efficiency performance

Progress from international collaboration

- **International collaboration on energy efficiency financing**
 - **WB/GEF, AFD, KfW**
- **China energy efficiency financing project**
 - **Three phases project carried out by the World bank and GEF**
 - **IBRD US\$ 300 million, GEF US\$ 13.4 million in CHEEF III (eight years)**
- **Key components of CHEEF III**
 - **Assistance to develop EE financing business in the domestic banking sector**
 - **Energy conservation investment lending program, including debt financing and equity financing**
 - **Strengthen government capabilities to implement energy efficiency policies**
 - **Project implementation support, MRV**

Benefits for industrial enterprises and local domestic banks

- **Persistent attention and regulatory improvement in highest level of governments**
- **Benefits for industrial energy efficiency financing**
 - **Low interest rate, up to 10 years, Performance based loans**
 - **Tax deduction of tariffs and VATs for imports**
- **Interest, capacity and confidence in local banks increased significantly**
 - **Various EE financing products developed**
 - **Incorporated into day-to-day operation**

Economic and financial performance of CHEEF project

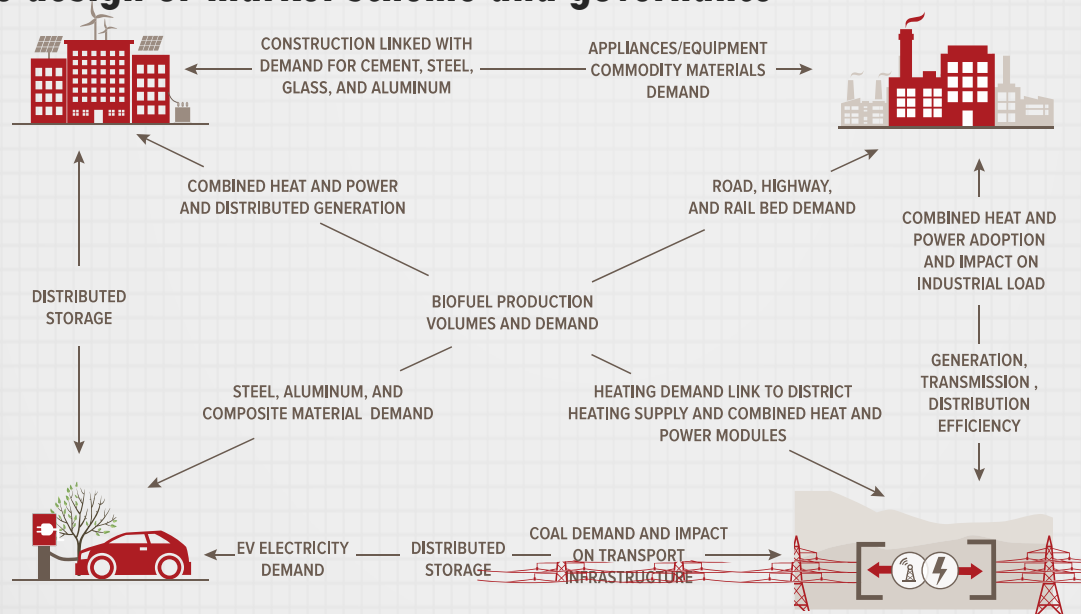
Parameter	Unit	4 Sample Subprojects at Appraisal	9 Subprojects at Completion
Total lending investment in subprojects	US\$, millions	48	505
Average unit investment cost of annual energy savings	US\$/ (tce/year)	379	792
Average emissions intensity of energy savings	tCO ₂ /tce	2.46	3.02
Financial Internal Rate of Return (FIRR) (including tax)	%/year	22	16
Payback period (including tax)	years	3.9	5.9
Economic Internal Rate of Return (EIRR) (including CO ₂ benefit, excluding local pollutants)	%/year	40	35

Barriers and Challenges

- **Tap energy efficiency potentials in industries**
 - Limited low hang fruits
 - Difficult to secure bank loans for energy intensive sectors, especially in macro-deleveraging circumstance
 - Lack of capacity in R&D and transformative development
- **Market environment**
 - Energy pricing system is not advantageous for energy efficiency
 - Lack of awareness and capacity in financing sectors
- **Insufficient institutional capacities**
 - A SOEs dominated energy market
 - Lack of rules in terms of energy saving verification, accounting, tax rules, law enforcement, etc

Financing energy efficiency through demand-supply integration

- **Energy efficiency gains from integrative design and circular economy**
 - Industrial waste heat for building use
 - Distributed solar and wind in factories
 - Hydrogen for vehicles
- **Innovative design of market scheme and governance**



Align energy efficiency with industrial upgrade and energy revolution

- **Fiscal supports for energy substitution**
 - Shift from coal to low carbon sources
 - Increase electrification in industrial end-users
 - Innovation for post fossil fuel era
- **Pilots of various market mechanism**
 - Green financing such as green loan, green bond
 - Cap and trade scheme of capacity, emission, energy
- **Avoid stranded assets and promote industrial upgrade**
 - Tackle overcapacity in energy intensive sectors
 - International collaboration in financing schemes, R&D of next-generation technologies

Thank you for your attention

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