Fiscal Policies to Promote Energy Efficiency Improvement in the PRC

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Agenda

1. Current Status and Development Trends of Energy Efficiency
2. Challenges to Maintain a Balance between Economic Growth and Energy Efficiency Improvement
3. Major Fiscal Policies to Support Energy Efficiency Improvement

Energy Efficiency Roadmap

- **Long-term: Toward 2050**:
  - **Balanced Sustainable Development**: Building a resource-saving, environmentally–friendly, and harmonized society through structural adjustment and technologic enhancement
  - **Environmental Conservation:** Significant Contribution to reduction of greenhouse gas emission and control of global climate change
  - **Energy Security**: Energy efficiency advanced to the level in developed countries and diversification of supply sources to clean and renewable energy.
- **Medium-term: By 2020**:
  - Quadrupling GDP while only Doubling Energy Use
  - Urbanization to 65% from 35% now
  - Renewable energy accounting for 16% of the total energy supply and more than 30% in the total electricity generation capacity
- **Short-term: China's 11th 5-Year Plan** by 2010
  - **Energy Intensity** per GDP to be reduced by 20%
  - **Main Pollutants** to be cut by 10%

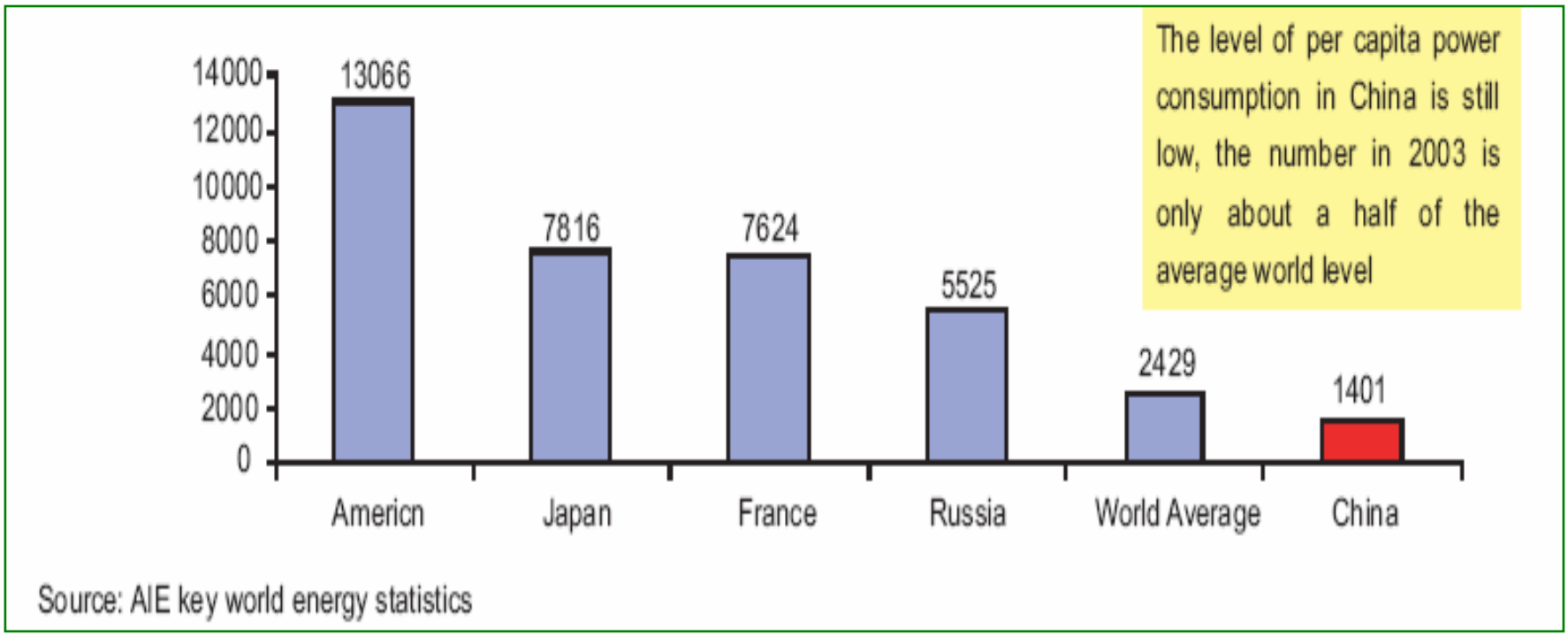
Challenges Ahead

- **Tremendous increase in demand:** Driven by income growth and rapid urbanization
  - energy consumption per capita was 1.2 tons of standard coal in 2003, and will be 2.0 tons in 2020 and 3.0 tons in 2050
  - The total electricity generation capacity will double within the next 15 years from 508 GW in 2005 to 1,050 GW in 2020 ("building another China" in power generation capacity)
- **Coal as most important primary energy:**
  - 70% of the total energy supply in 2005, reduced to 54% in 2020, and to 40% in 2050
  - Annual production stabilizing at around 3 billion tons after 2020
  - Related environmental pollution

Challenges Ahead

- **Ensuring oil supply is the key to energy security:**
  - 2005 imported oil accounting for 35% of total oil consumption
  - Annual domestic oil production stabilizing at around 0.18 billion tons
  - Imported oil expected to reaching a higher shares in 2020 and 2050
- **Large scale development of renewable energy** :
  - **Exhaustible fossil fuels:** China's per-capita reserves as compared to the world average level : Oil - 1/10 and natural gas1/22
  - **Renewable energy**: reaching 16% in the total energy supply in 2020, rising to 30% in 2050

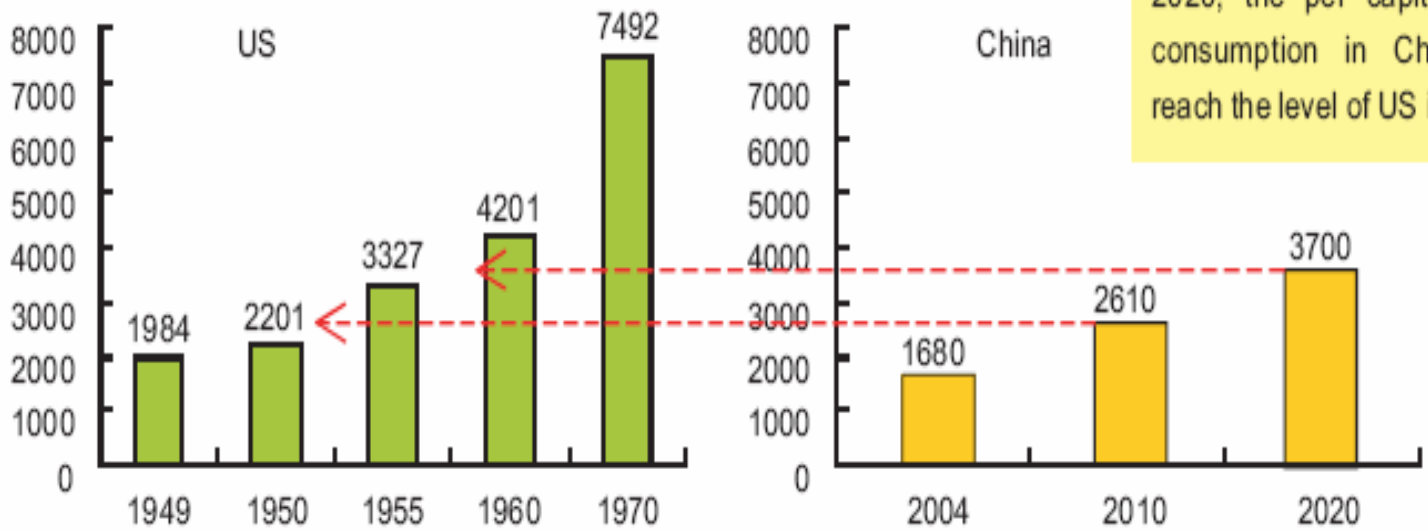
Comparison of per-capita Electricity Consumption



- **Low per-capita level**
- **Growing fast**
- **Huge impact due to the large population base.**

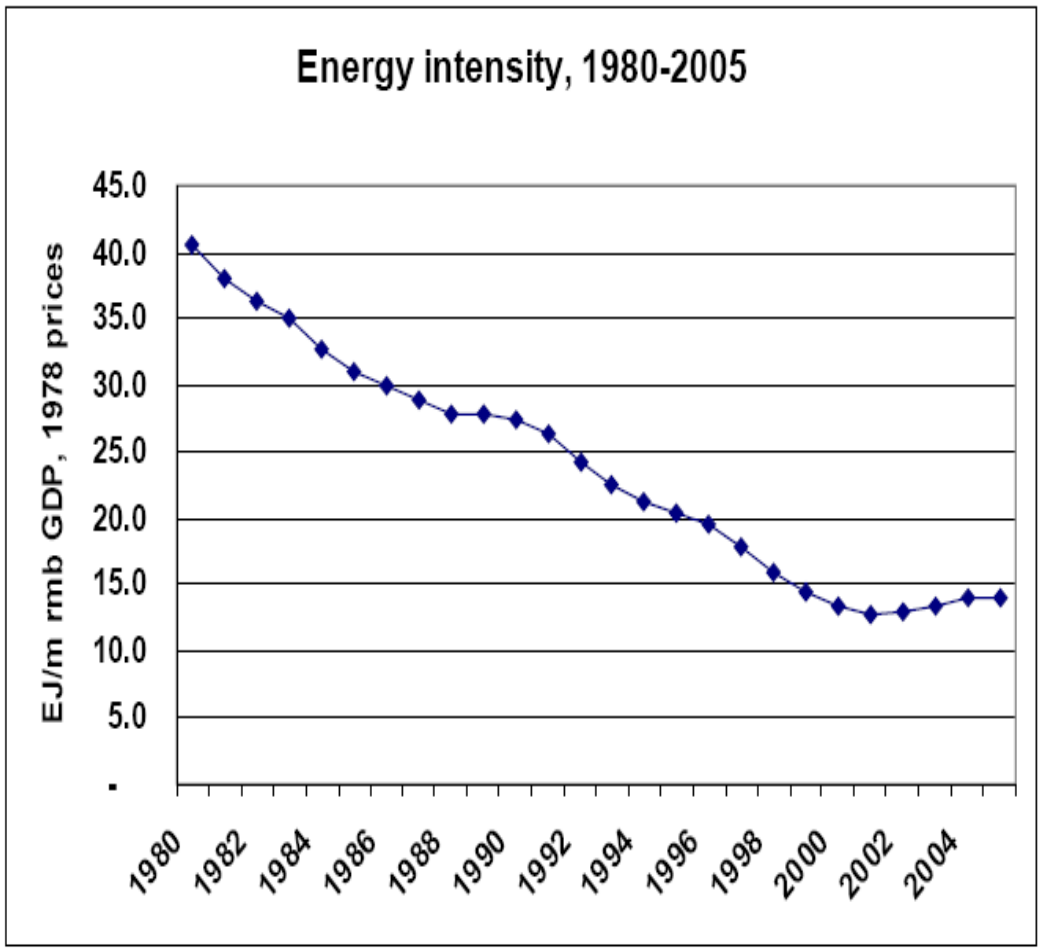
Comparison of per-capita Electricity Consumption

- **70 years lag:** Even with rapid growth till 2020, per-capita electricity consumption in China will only reach the level of the USA in 1950s.



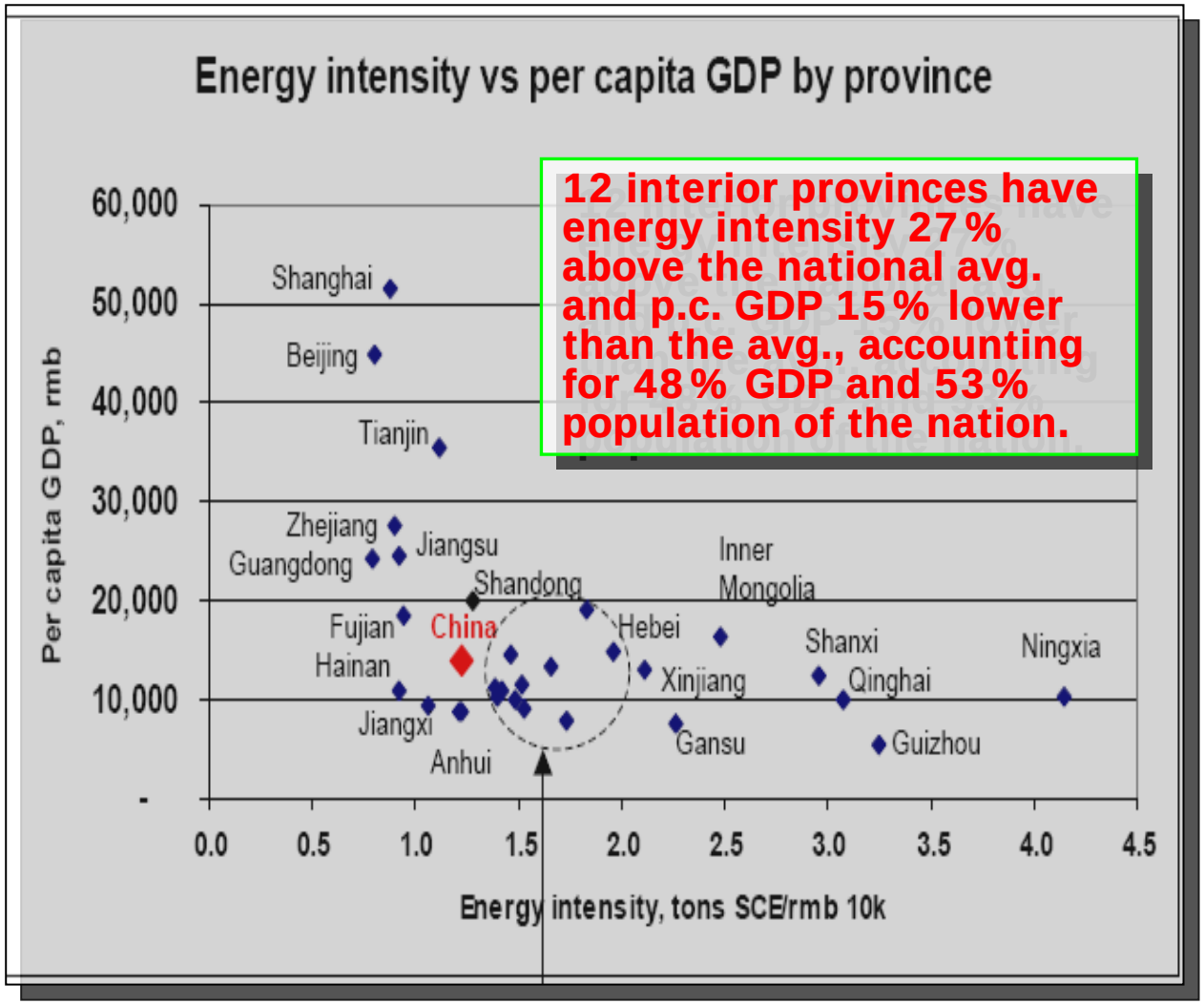
Source: EIA, Capgemini analysis

Energy Efficiency Improvement in the Last 25 Years



- **Sharp Decline from 1980 to 2000**: energy intensity decreased by 4.5% a year, higher than the OECD average.
- **Flat after 2000**
  - Shifting of heavy industries to China

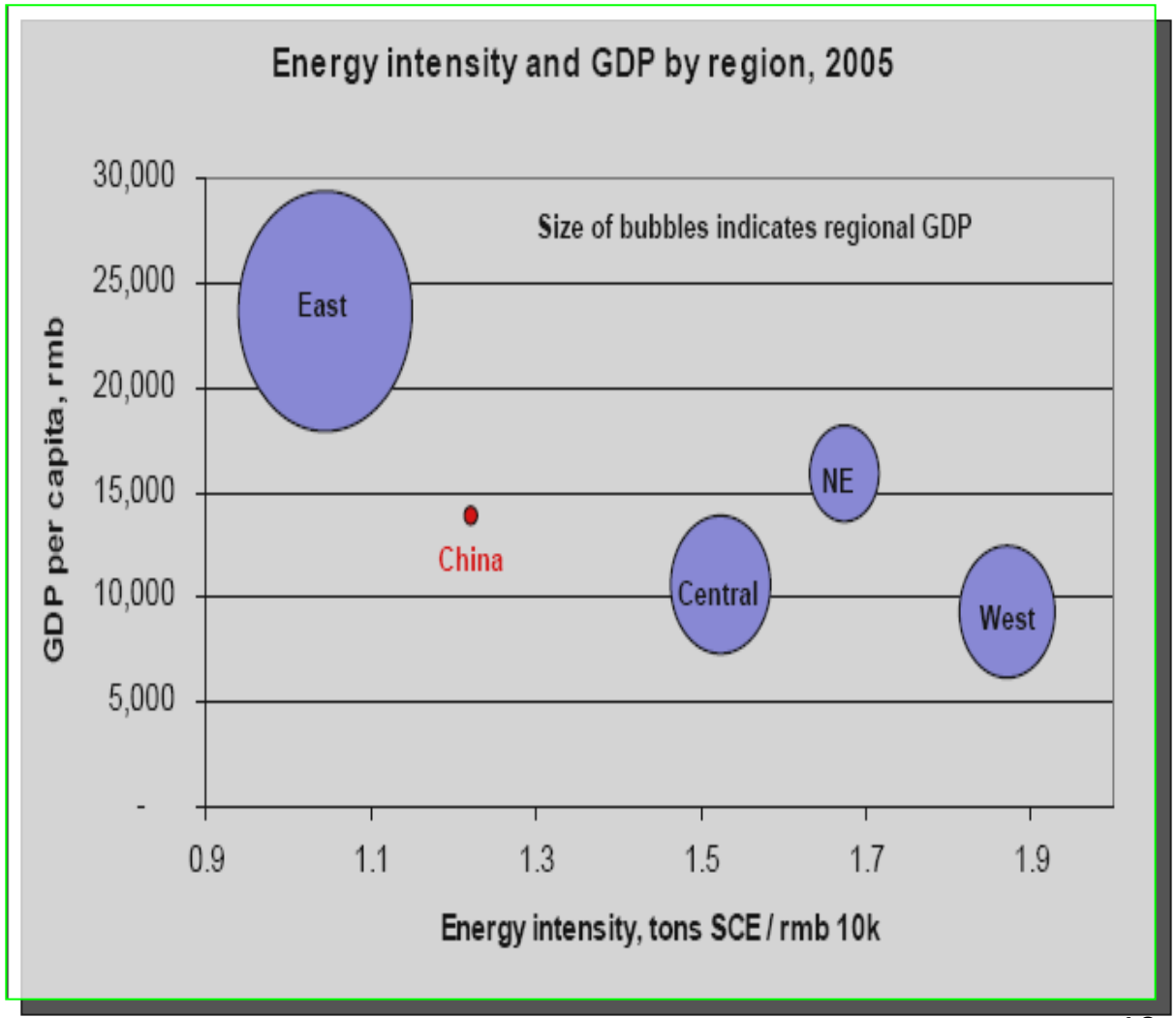
Energy Efficiency & Poverty Reduction



- **Energy intensity is inversely correlated to wealth**
  - poorer provinces have lower energy efficiency
- **Economic growth**
  - reduces energy intensity in poor provinces
  - substantially increase overall energy demand even if energy intensity drops

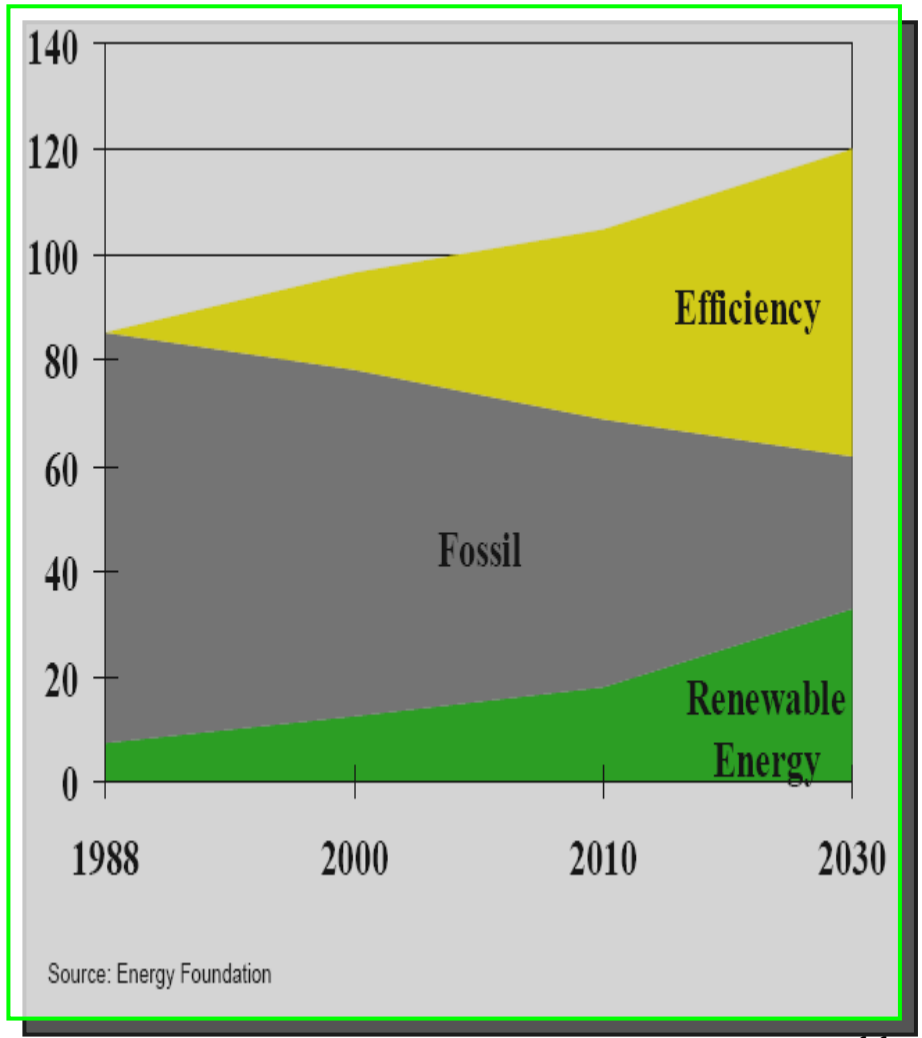
Energy Efficiency & Economic Growth

- Energy intensity is highest in the regions most in need of growth
- Increased reliance on industry to create jobs and wealth increases overall energy intensity



Meet the Challenges

- **Demand-side Management**:
  - Highest priority to energy saving
  - Gains in energy efficiency
- **Supply-side Solutions**:
  - Displacing fossil fuels
  - Boosting renewable energy



Main Channels for Energy Efficiency Improvement

- **Accelerating Structural Adjustments**
  - Re-orientation of economic growth paradigm, from GDP-centered to a balanced approach
- **Developing Market Mechanisms for energy efficiency**
  - Removing distortions in market signals
  - Nurturing energy efficiency services providers, (e.g., ESCos)
- **Improving Technology and Productivity**
  - Investing in R&D
  - Stimulating indigenous innovations
  - Technology transfer and adaptation
  - Human resource accumulation for energy efficiency
- **Strengthening the Legal and Regulatory Framework**
  - Energy law, Energy-saving law, Renewable energy law, Electricity Law, Environmental Protection Law…
  - e.g., Building codes, fuel efficiency standards
- **Implementing Policy Measures**
  - Including fiscal policies

Effective Measures

- **Linking performance evaluation to the results of energy efficiency improvements**
  - Ten key areas for EE
  - 1,000 largest energy consuming enterprises

Major Fiscal Policies for Improving Energy Efficiency

- **Fundamental Roles of Fiscal Policies**
  - Optimizing resource allocation through markets
  - Stimulating “public-private partnership
  - Redistributing resources (including energy) to achieve equity and to mitigate impacts of market failure
  - Supporting sustainable social/economic development through re-orienting growth paradigm
  - Promoting international energy cooperation
- **Major Channels of Fiscal Policies**
  - Tax reforms: Both incentive and restrictive measures
  - Public expenditure
  - Public procurement

Removing Market Distortions

- **Energy Prices have been relatively low**
  - Not reflecting full energy costs and resource scarcity
  - Encouraging overuse or misuse of energy
  - Irrational support to energy-intensive industries
- **Fiscal policies to rationalize energy prices**
  - **Resource Costs**: compensation for resource property rights and mining licenses through competitive bidding
  - **Safety Costs**: Compulsory requirements for mining safety (mostly coal)
  - **Costs for Environmental Conservation and Ecologic Restoration**
  - **Full Human Resource Costs:** Full salary, benefits and retirement support to miners
  - **Pollution Charges** for emissions
- **Re-adjust the price ratios** between coal, oil, and electricity to encourage energy savings

Tax Reforms for Energy Efficiency

- **Consumption taxes** to discourage energy-intensive products, e.g., fuel taxes and taxes on luxury cars
- **Differentiated resource taxes** to control over-exploitation, and raising resource taxes on fossil fuels (coal, oil and natural gas) and mineral deposits
- **Tax privileges for producing and utilizing energy saving equipment**, while the corporate income tax rate reduced from 33% to 25%.
- **VAT exemption or reduction** to encourage waste-to-energy, clean energy development, and energy-efficient construction materials
- **Canceling export duty refunding** for highly-polluting, highly energy intensive, and resource-based products
- **Special tax policies to promote renewable energy development**: small hydro, wind, bio-mass, ocean waves, solar..

Adjusting Public Expenditure for Energy Efficiency

- **Public investment**
  - Direct investment for resource-saving and development of reduction-reuse-recycle projects, including optimizing energy systems and treating residential/industrial residuals
  - Interest rate subsidies
  - Partial risk guarantees
- **Funding R&D** for improving energy efficiency and diversifying energy supply sources
- **Facilitating introduction/commercialization** of new energy-saving technologies and domesticalization of energy-saving products and equipment
- **Catalyzing private-sector participation** in energy conservation

Adjusting Public Expenditure for Energy Efficiency

- **Enhancing capacities of public institutions** for strategizing and implementing energy efficiency improvement programs
  - Establishing national standards on energy uses
  - Energy conservation entry-requirements for industries
  - Enforcement abilities for energy saving and environment protection
  - Information dissemination and promotion
- **Supporting key energy efficiency projects**
  - Such as “green lighting” and “boiler efficiency enhancement” to generate demonstration effects for scaling up.
- **Establishing special funds**
  - Developing renewable energy and liquidizing coal
  - CDM promotion

Improving Energy Efficiency in Public Procurement

- **Energy efficiency enhancement in budget-supported public buildings**
  - including government offices
  - for construction, operation, maintenance and repairs
- **Equipment procurement**
- **Vehicle for official uses**

Thank you!

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