



Renewable Energy in China: Towards a Sustainable Development

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Structure of the Presentation

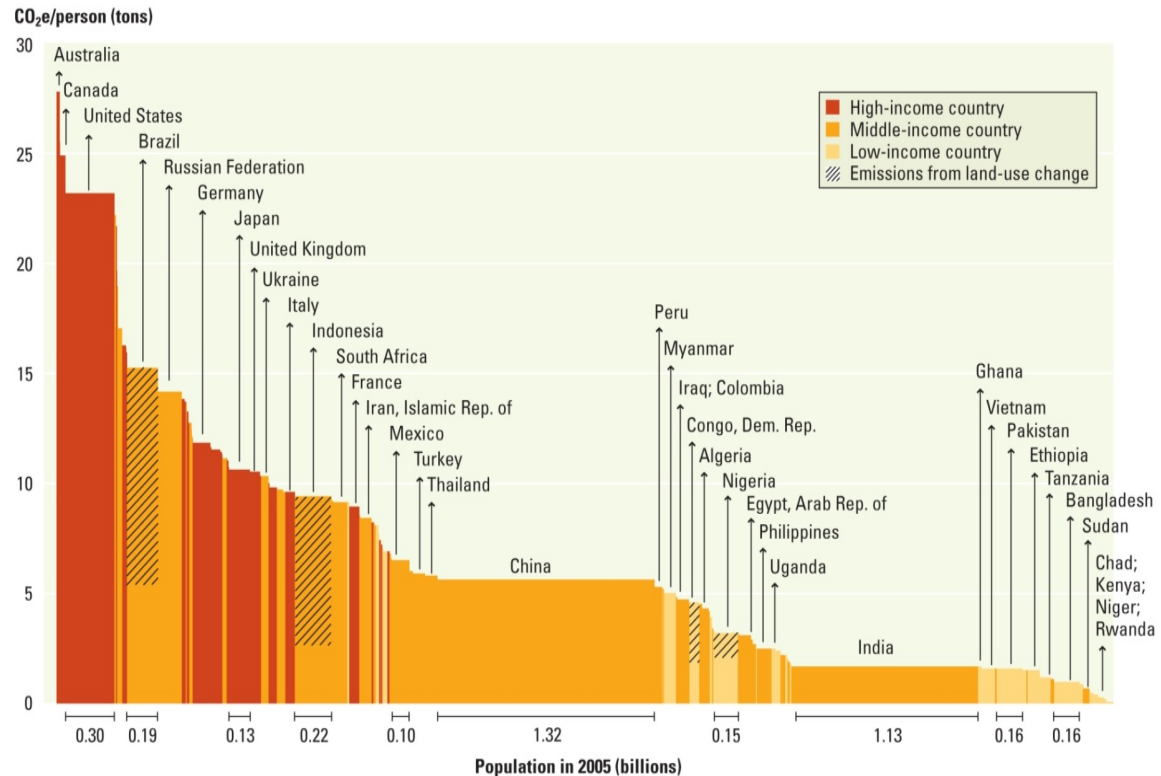
- **Context and challenges**
- **Outlook**
- **WBG role**
- **Lessons learned**
- **Towards sustainable development**



China is part of the solution to key global energy issues

■ Climate Change

- High energy consumption
- High carbon content of energy use
- Largest total CO₂ emissions
- Large population, low per capita CO₂
- Consumption to double 2005-2030

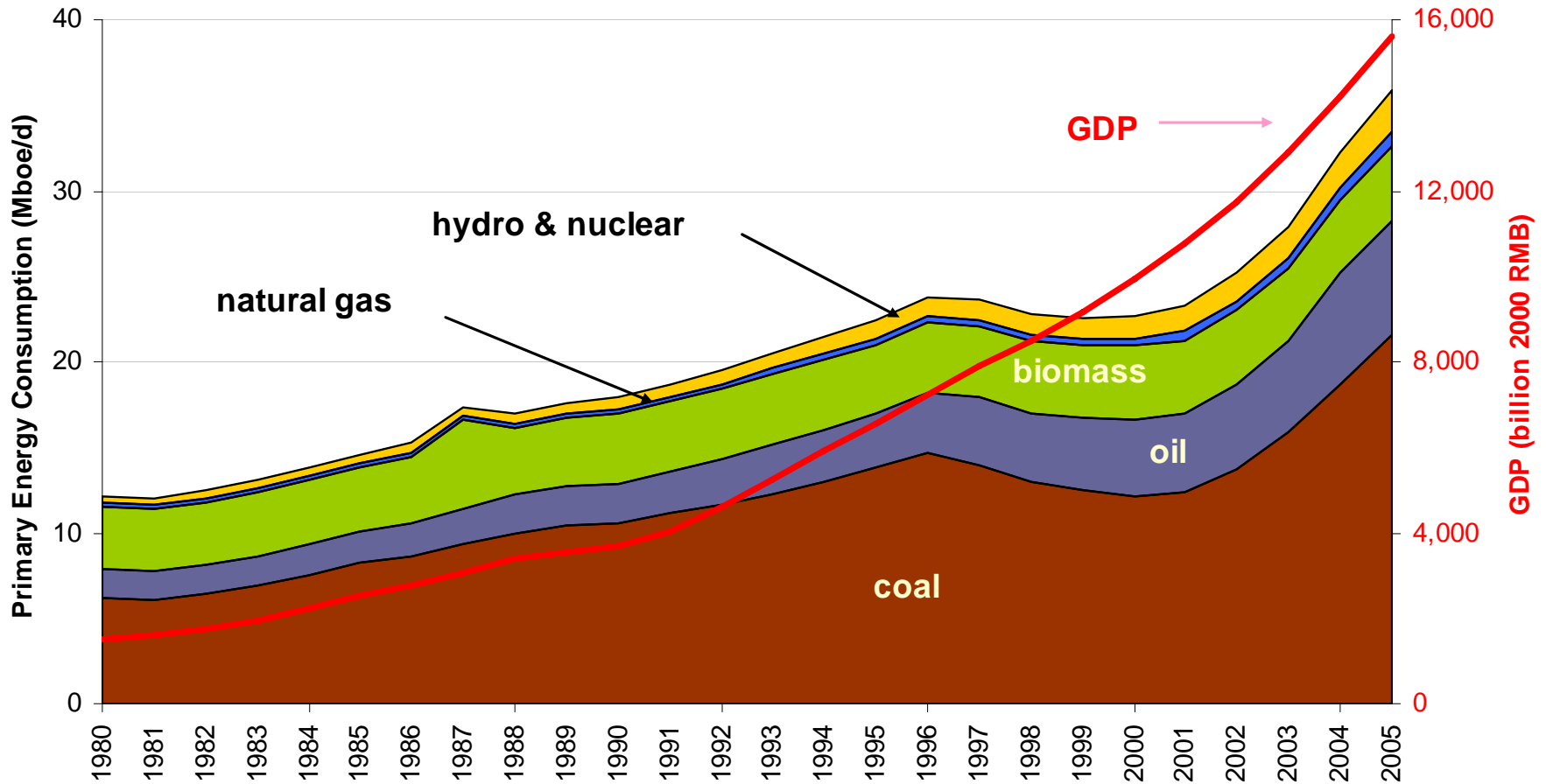


■ Energy Security

- Rapid increase in oil and gas imports

- **Rapid economic growth, urbanization, and improving quality of life while shifting to less energy- and carbon-intensive economy, cities, and lifestyle**

Primary energy consumption and GDP (1980-2005)



10x GDP, 3x Energy Consumption, but still a mixed result on energy intensity

Government Actions: 11th 5-Year Plan (2006-2010)

Government targets

- Energy intensity to be reduced by 20% between 2005 and 2010
- Non-fossil fuel share in energy mix to rise to 15% by 2020
- Carbon intensity to be reduced by 40–45% between 2005 and 2020

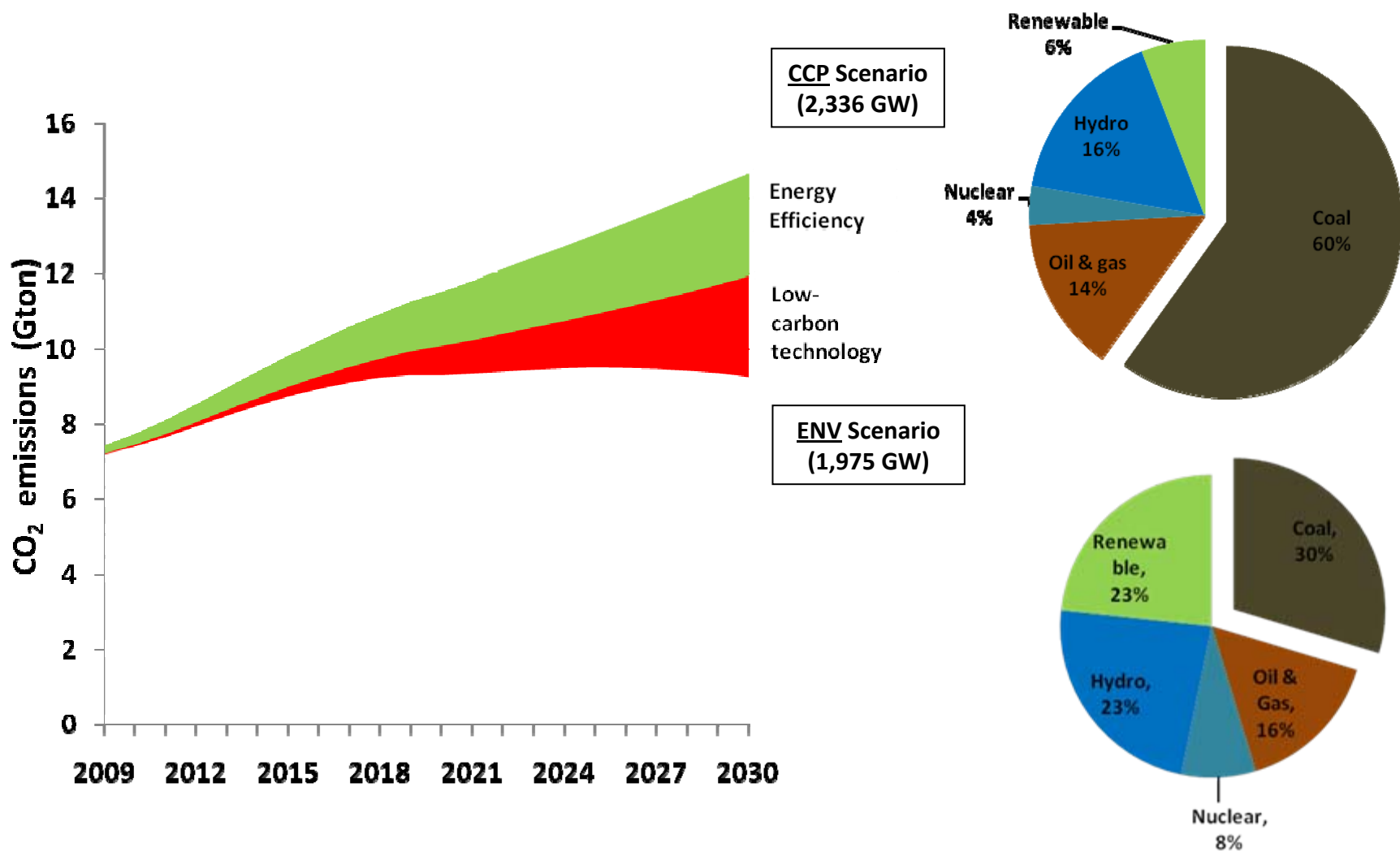
Recent performance

- Energy conservation key policy objective across all levels of government
- Upward trend in energy intensity reversed, energy intensity cut by 14.4% between 2006 and 2009 according to official statistics
- Doubling of installed wind capacity each year between 2005 and 2009

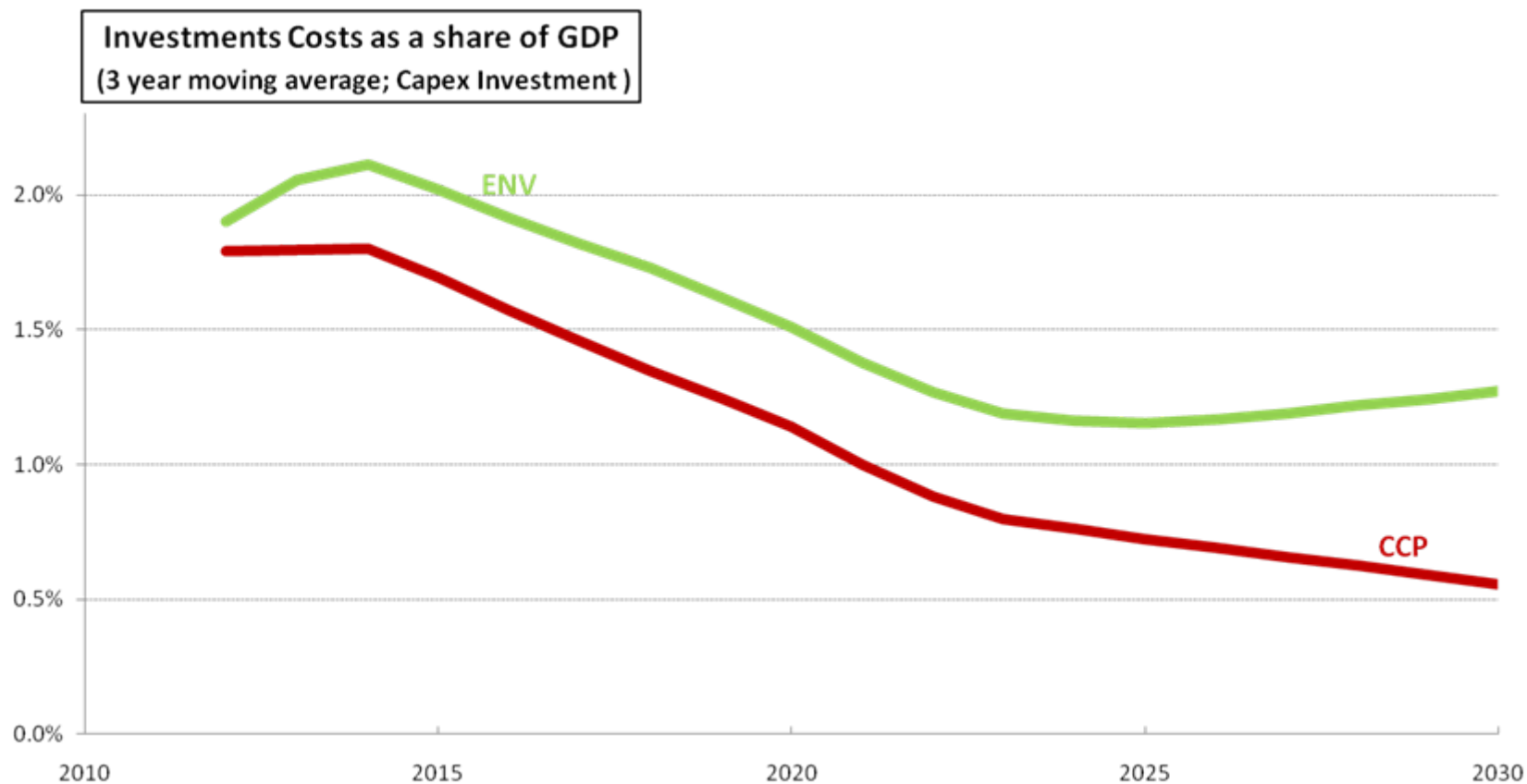
Remaining Challenges

- Industry's share in primary energy consumption still very high (70%), coal share in energy mix remains at 69%, and renewable energy use faces challenges (e.g. wind power connections to grid)

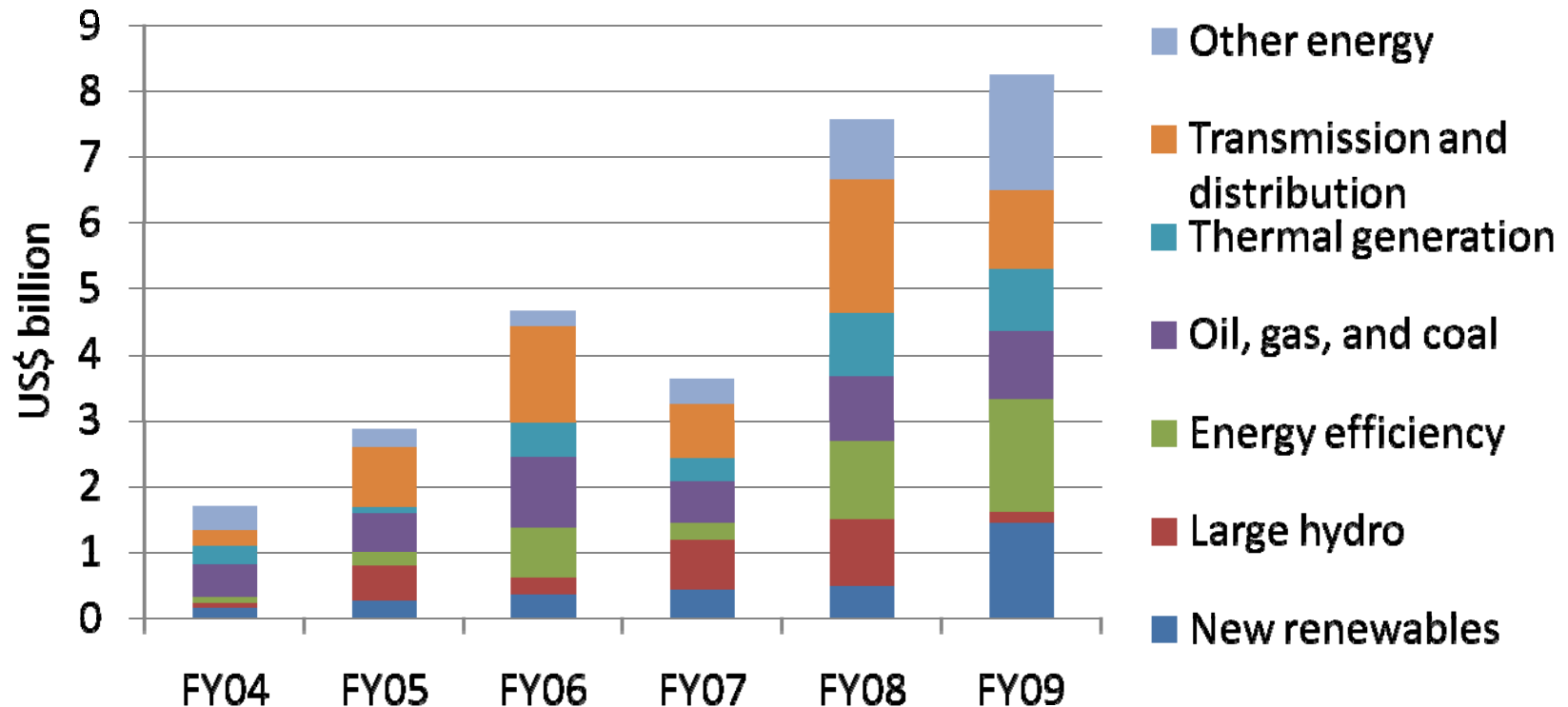
China needs to half its energy intensity and power generation would need to shift dramatically by 2030



ENV scenario is increasingly affordable as the economy continue to grow, but the incremental cost is large

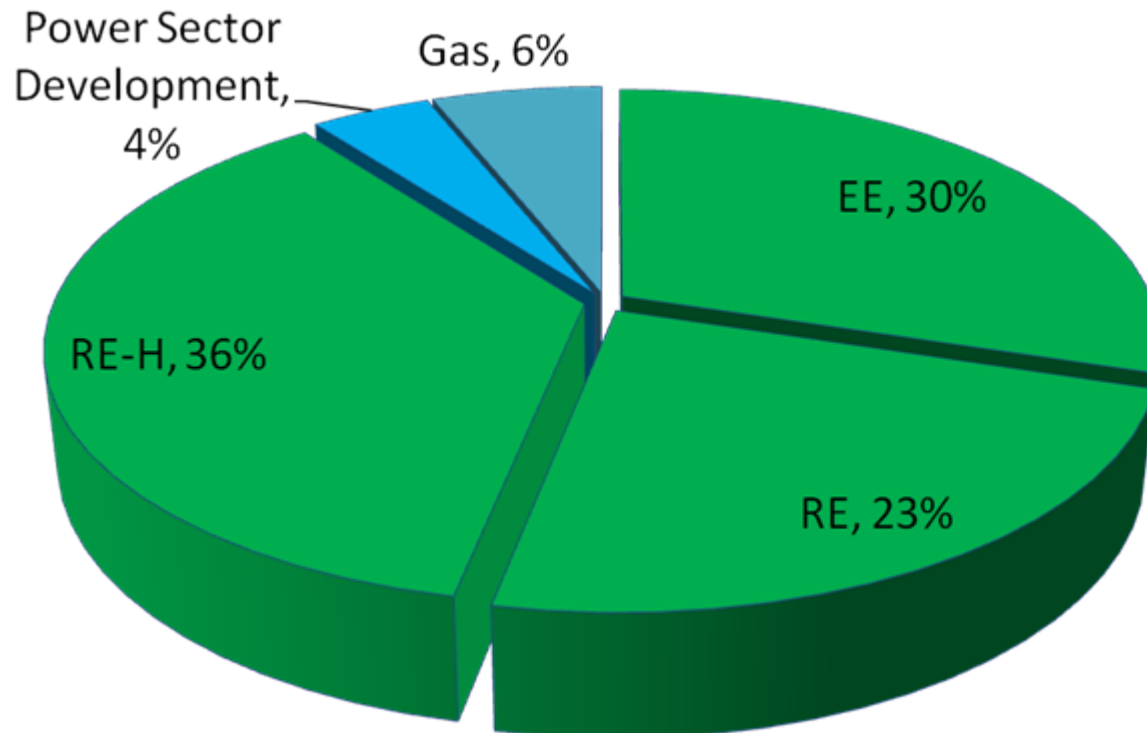


Sectoral Distribution (FY2004–09)



- **40%** energy lending was for RE/EE in FY09—a **24%** increase from FY08
- Nearly \$4.5 billion invested in programs directly dealing with energy access

China Portfolio 1999–2009



- IBRD, GEF, carbon finance – \$1.6 billion
- 90% renewable and energy efficiency, \$1.4 billion

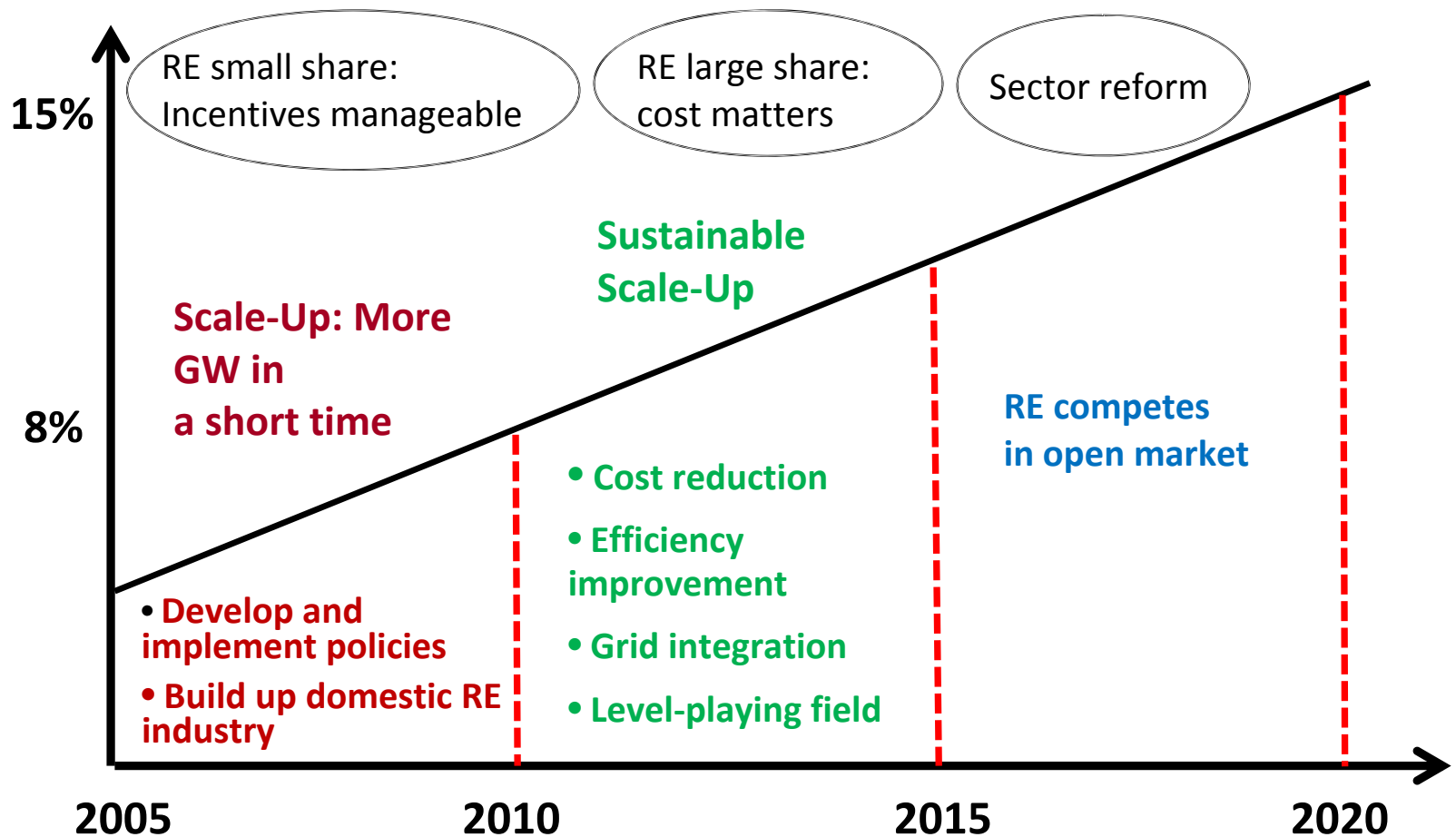
Highlights of Current Portfolio

- **China Renewable Scale Up Program:**
 - Wind, small hydropower, biomass demonstration (IBRD)
 - Policy studies (supporting regulations for renewable energy law), capacity building and wind/biomass/small hydro technology improvement (GEF)
- **Energy Efficiency (EE) Program:**
 - Industrial EE and Financial Intermediary Lending
 - Provincial Energy Efficiency Scale Up Program (ESCO)
- **New Technologies:**
 - Green Energy for Low Carbon Cities (EE, smart grids, distributed RE, EVs)
 - Off-shore Wind
 - Energy Storage and Carbon Capture and Storage

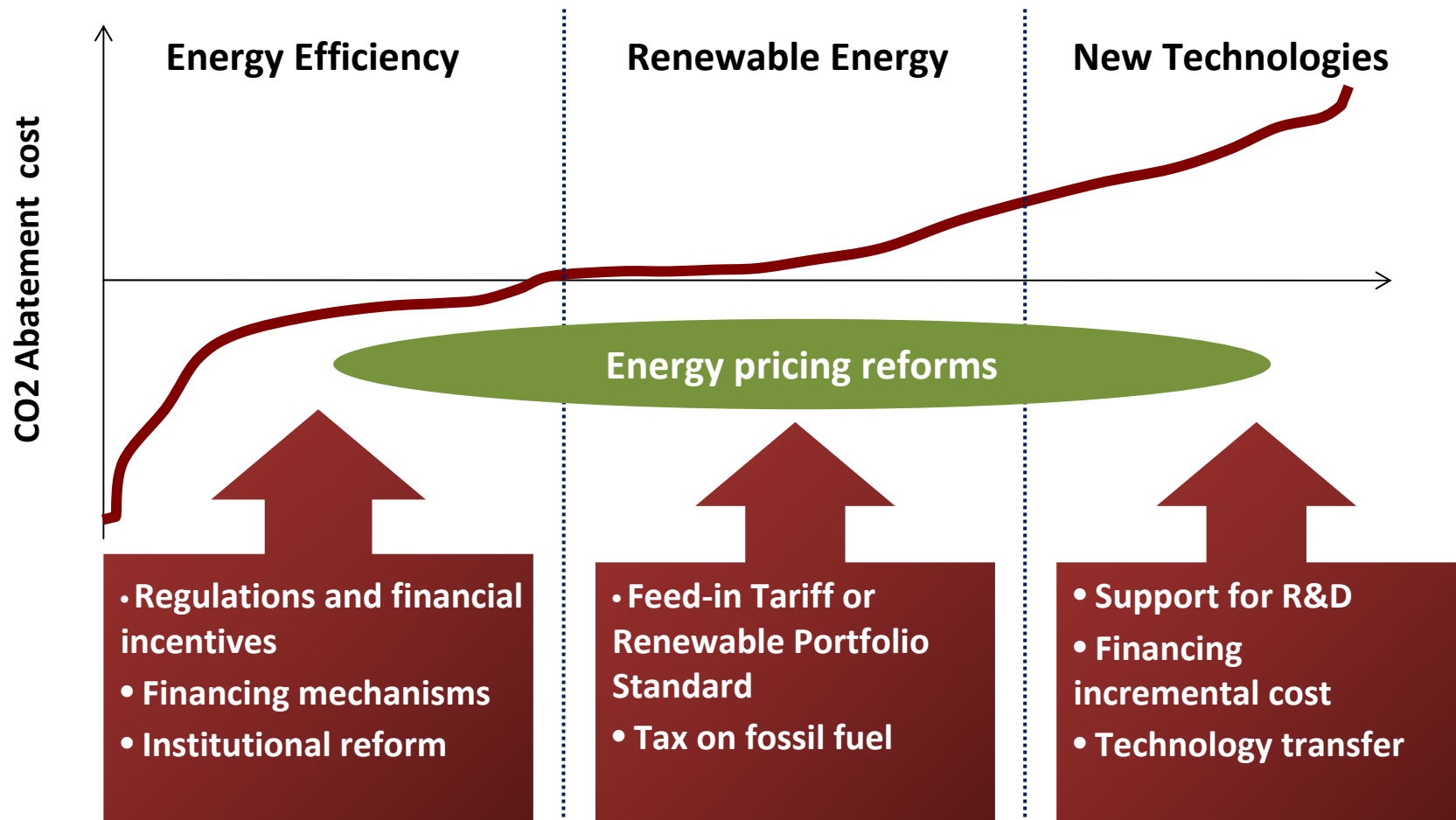
Lessons from China Renewable Energy Program

- **Effective policies are key success factor:**
 - **Mandatory access to grid**
 - **Tariffs covering incremental costs (0.06 cents/kWh in China)**
 - **Competitive tendering mechanisms**
- **Technology transfer and capacity building through cost-shared R&D (standards, testing and certification)**
- **Technical assistance and seed funding to entrepreneurs**
- **Help leverage local financing and improve capacity of local financial institutions to support renewable energy**

From Scale-up to Sustainable Growth



Energy pricing reforms are key for clean energy



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Thank you