



Clean energy innovation : Global frameworks and national policies

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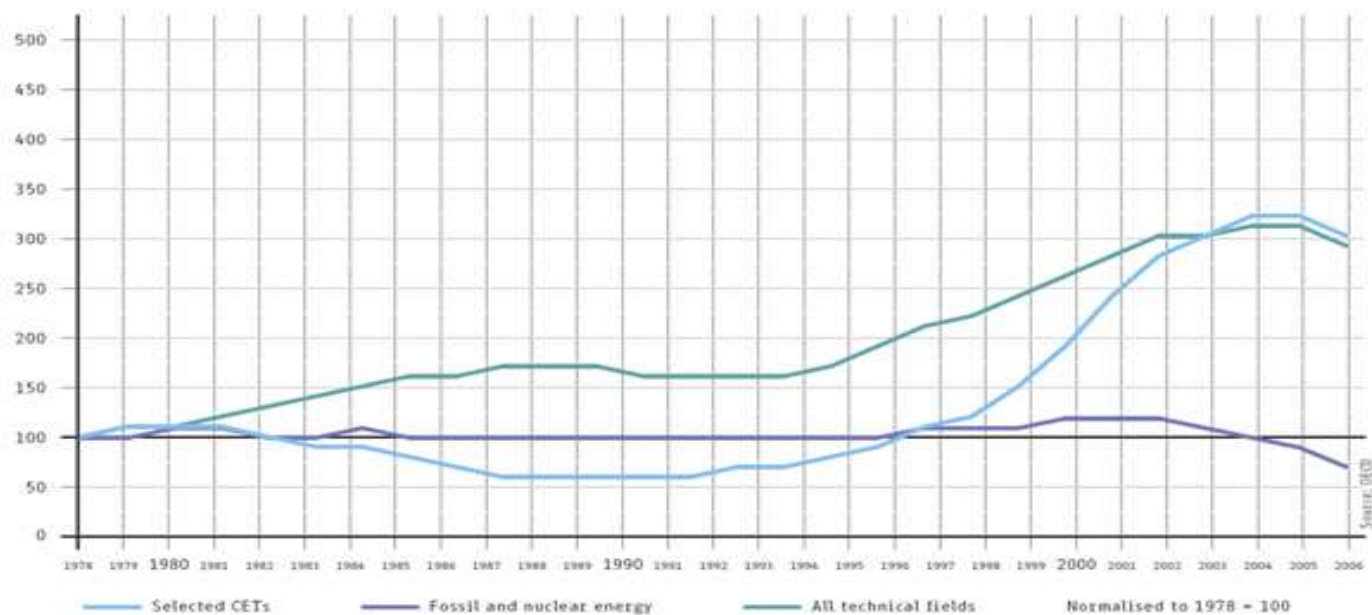
ICTSD side event

UNFCCC, Bonn- May 21, 2012

Kyoto Protocol effect on clean energy innovation

- Patenting rates (patent applications and granted patents) in selected clean energy technologies (CETs) have increased at roughly **20 per cent** per annum **since 1997**. In that period, patenting in CETs has outpaced the traditional energy sources of fossil fuels and nuclear energy.
- The surge of patenting activity in CETs coincided with the adoption of the **Kyoto Protocol in 1997**, which provides a strong signal that political decisions setting adequate frameworks are important for stimulating the development of clean energy technologies.
- The fields experiencing the most intensive growth include **solar PV, wind, carbon capture, hydro/marine and biofuels**.

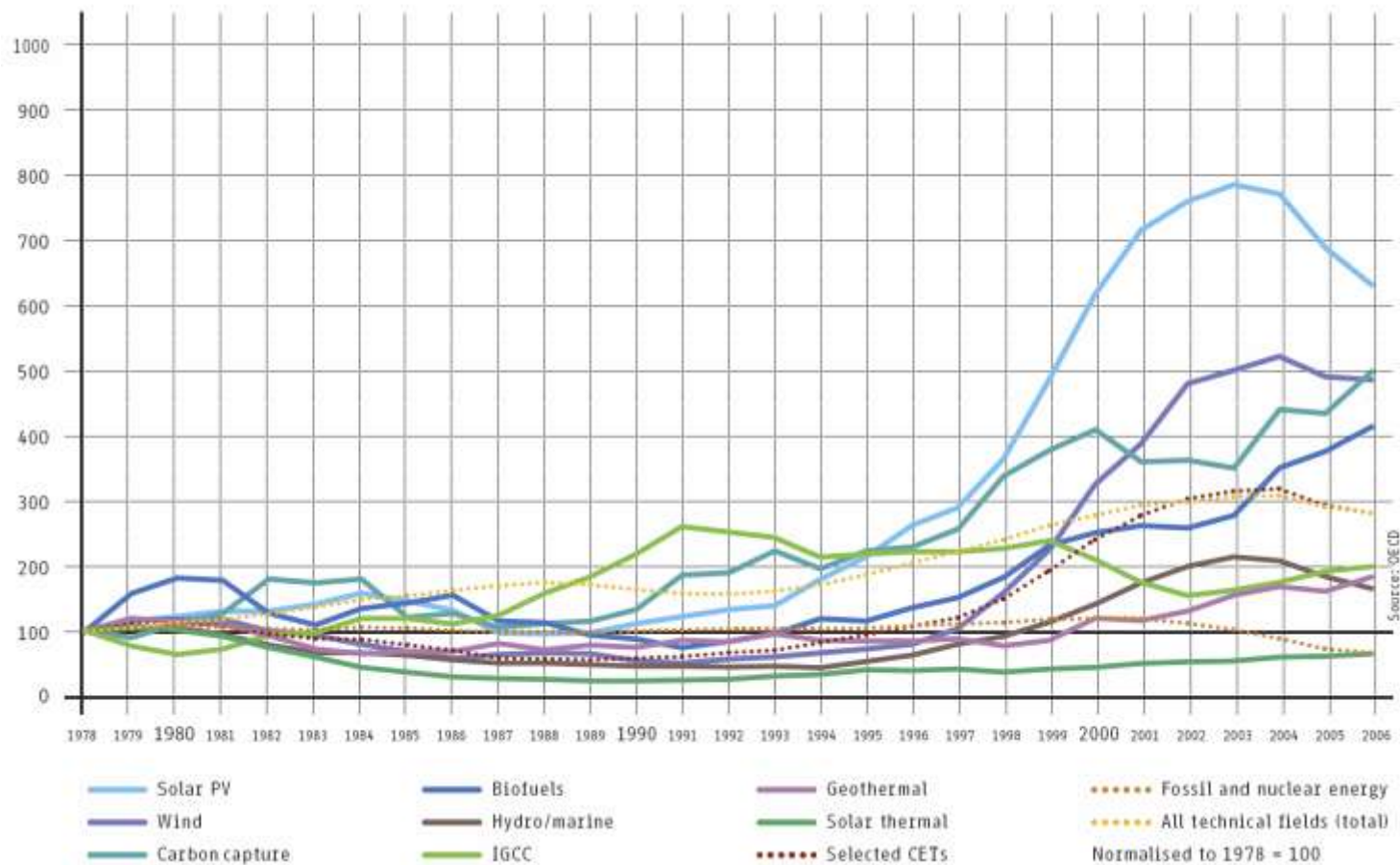
Growth rate of clean energy technology patenting



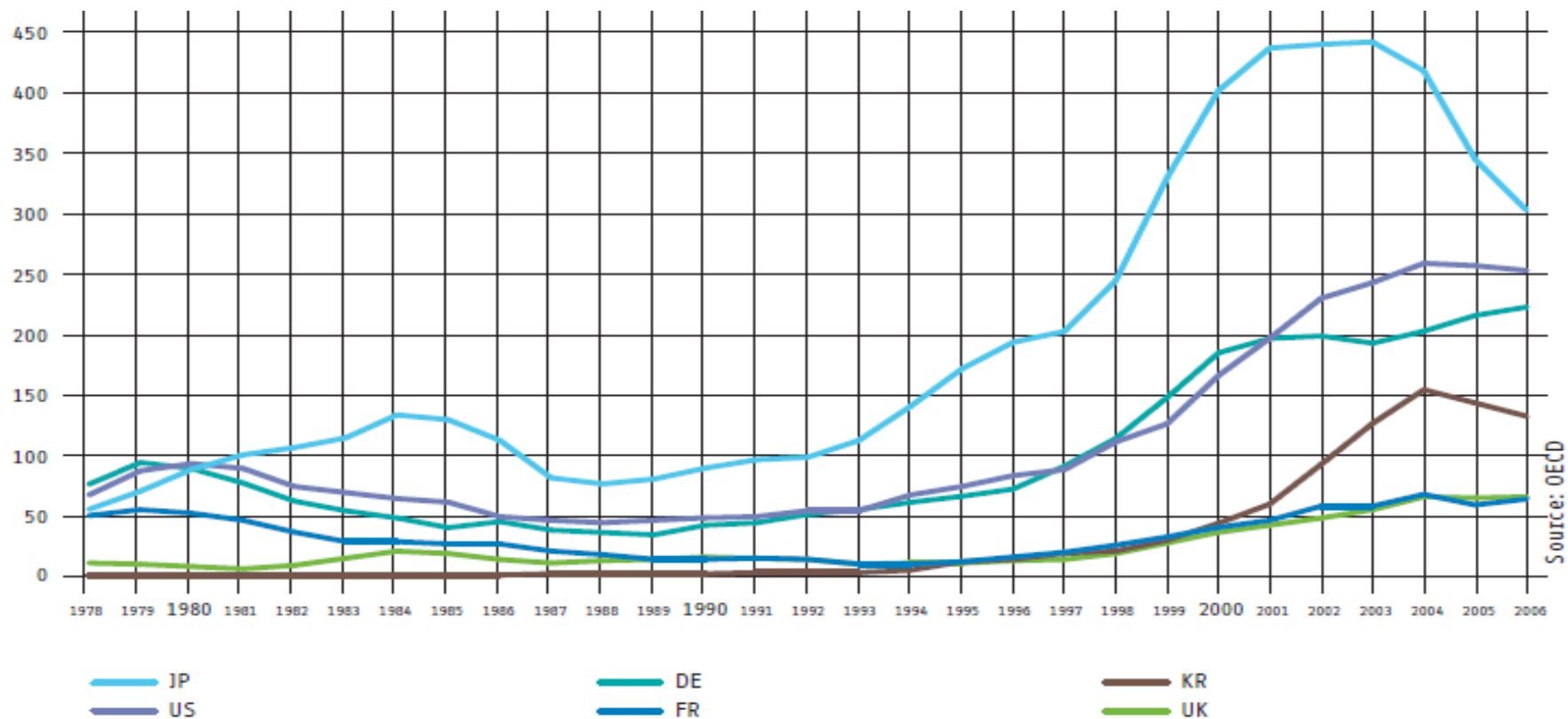
Figures refer to claimed priorities.



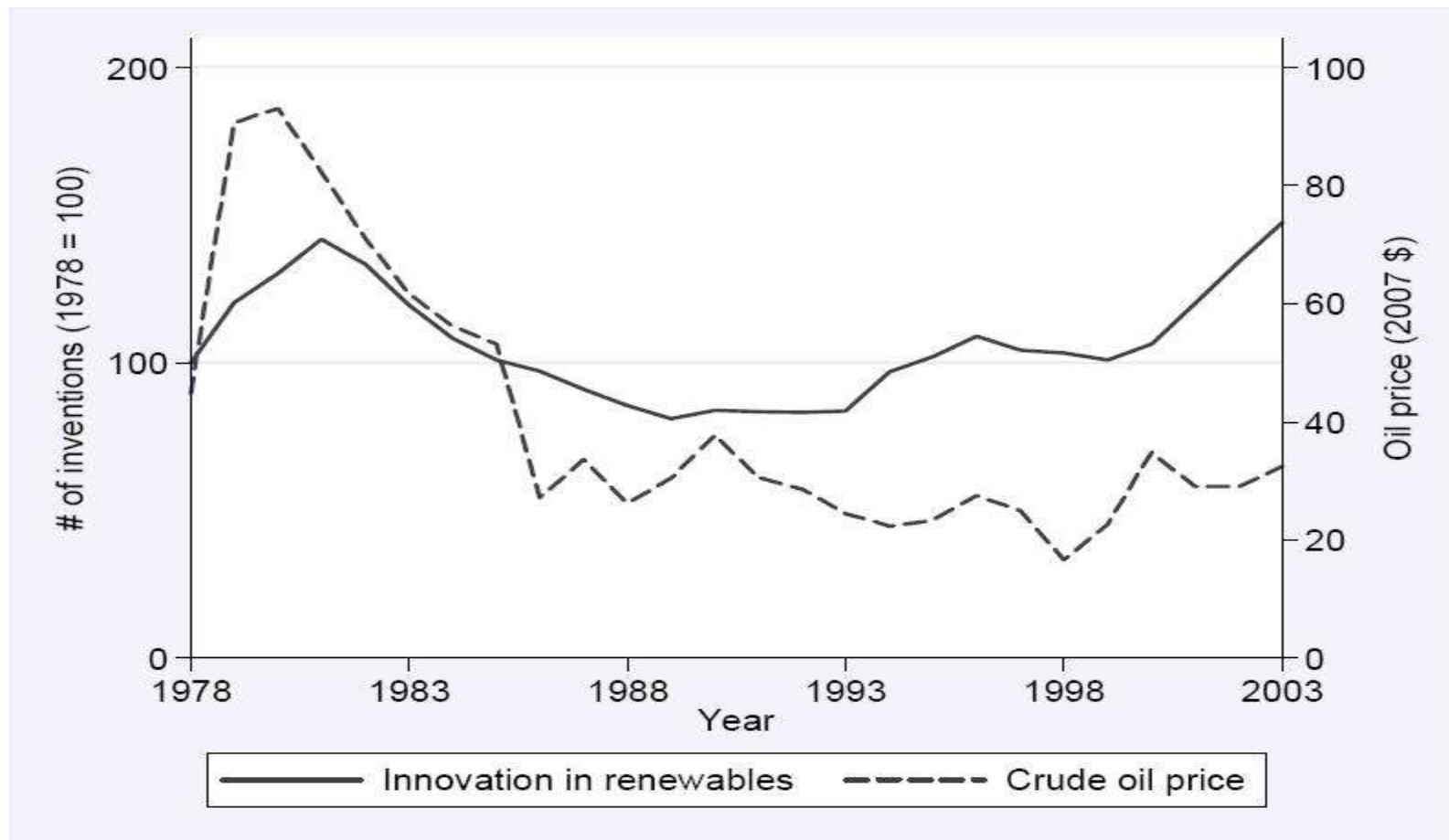
Relative growth rate for selected clean energy technologies



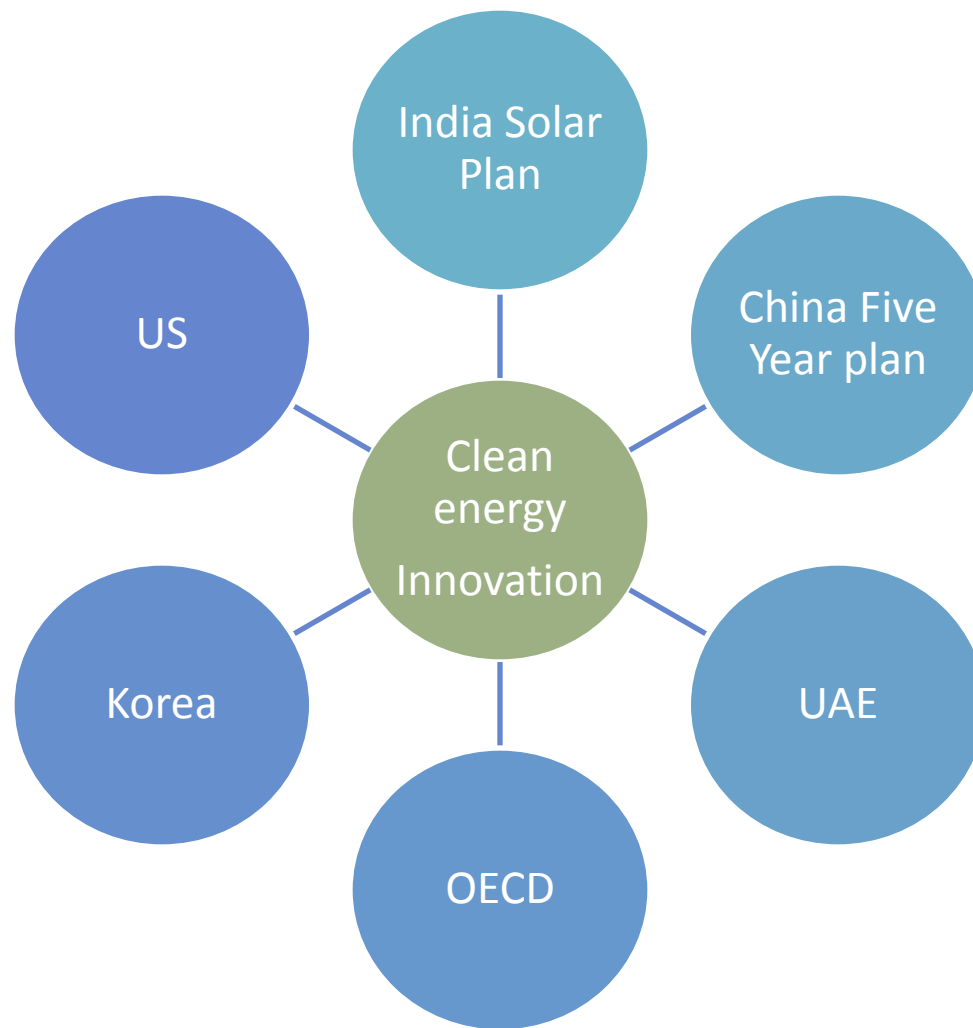
Countries leading patenting activity in clean energy technologies



Clean energy innovation and oil price



National policies to boost clean energy innovation

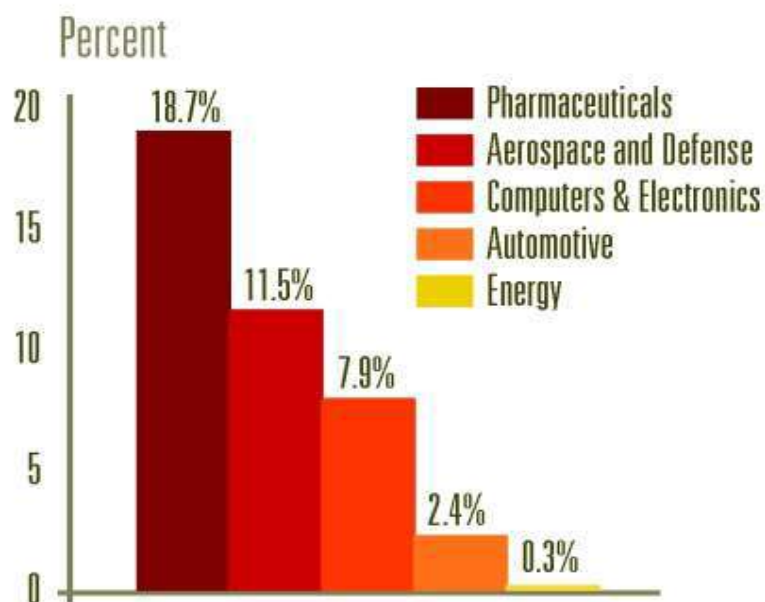


R&D expenditure and investments in clean energy

- Total public sector energy RD&D budgets for the OECD increased from **USD 12 bn in 2007 to 24 bn in 2009**.
- Investments in renewables around the world continues to surge, reaching **\$237.2 billion in 2011**, up almost 8 % from the previous year.
- Relative share of energy in total R&D in OECD has declined from 12% in 1981 to 4% in 2008.
- OECD countries have announced an intention to at least double energy R&D budgets as part of their commitment to climate change.

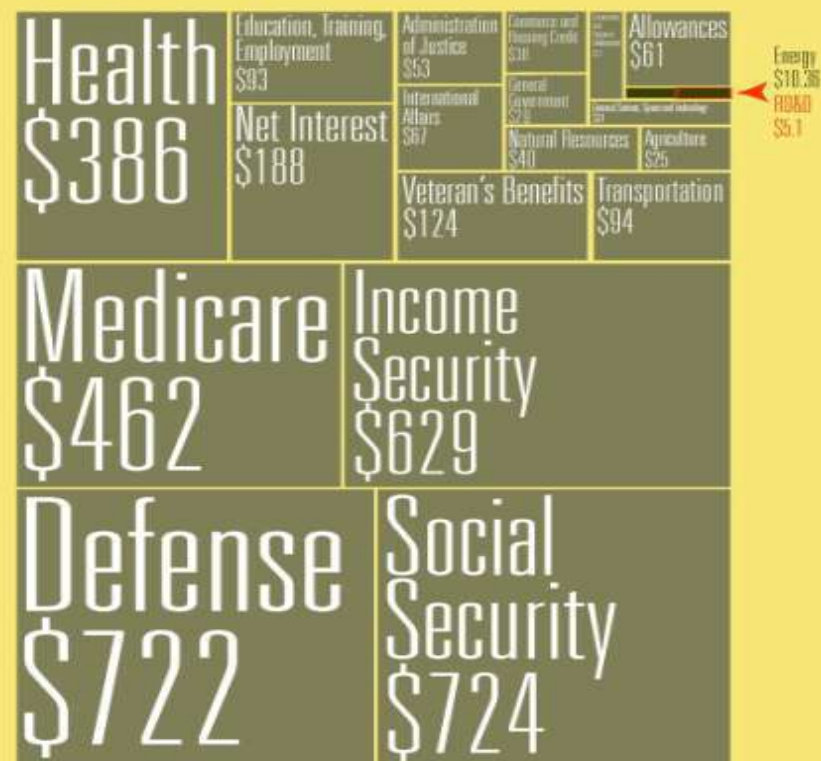
R&D expenditure on clean energy in the US

R&D Spending as a Share of Sales



Of all major technology-dependent sectors, the energy sector spends the smallest portion of its sales on research and development.¹

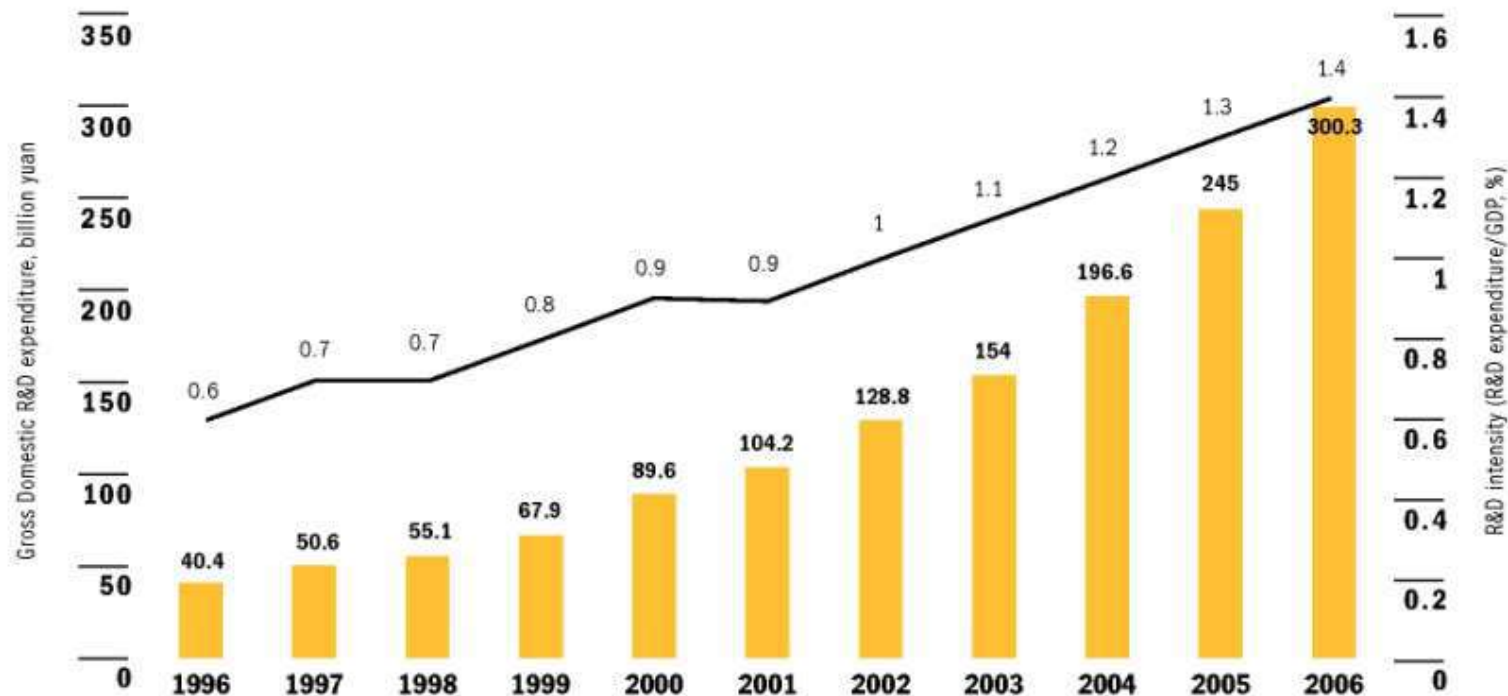
2010 Federal Budget \$3.60 Trillion (in billions)



Source: American Energy Innovation Council

R&D expenditure in China

Figure 1 | China's R&D Expenditure and Intensity, 1996–2006



Data source: China Science & Technology Statistics Data Book, 2007

Conclusions

- Global frameworks can be important for stimulating the development of clean energy technologies.
- However, domestic public policies can also play an essential role in encouraging clean energy innovation through:
 - Public R&D expenditures.
 - Fiscal reforms and tax incentives for private sector investment in R&D and capital investment.
 - Increasing demand for electricity generated from renewable sources through production quotas.
 - Energy efficiency standards.
- Tax-based measures, production quotas, as well as support for research and development, have played a significant role in encouraging innovation in renewable energies, in many countries, and particularly in OECD countries.

Thank you

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