



Making the Most of What You Have: Maximizing Carbon Abatement Potential

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May 19, 2011



Energy Planning Challenges

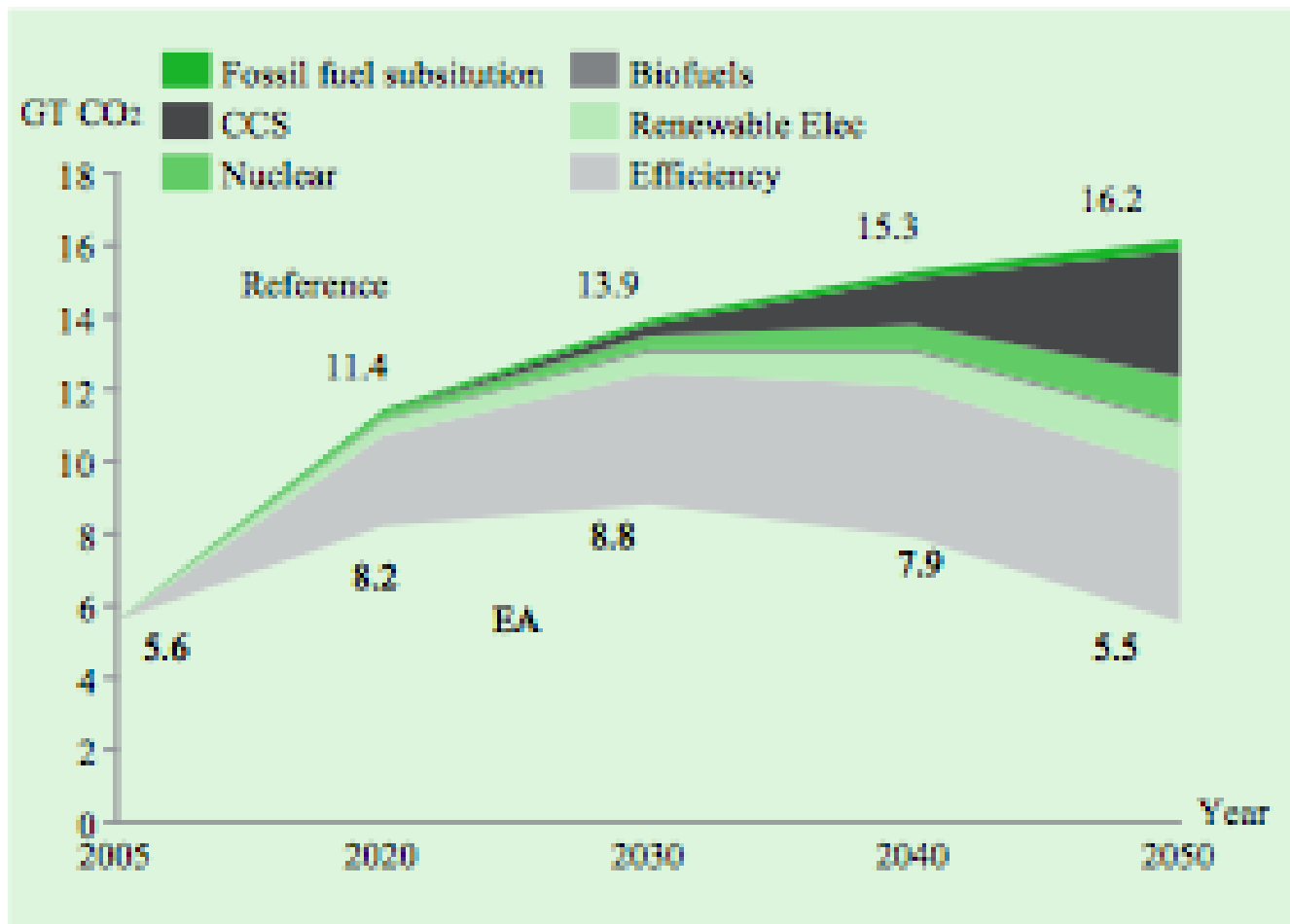
- Rapidly growing economy
- Power cuts, public opinion, business demand
- Targets for both energy intensity and carbon intensity
- Ambitious nuclear targets and new scrutiny

Carbon Challenge:

Where might additional savings be found?

Figure 3.4

Sector-wise emission reduction potential

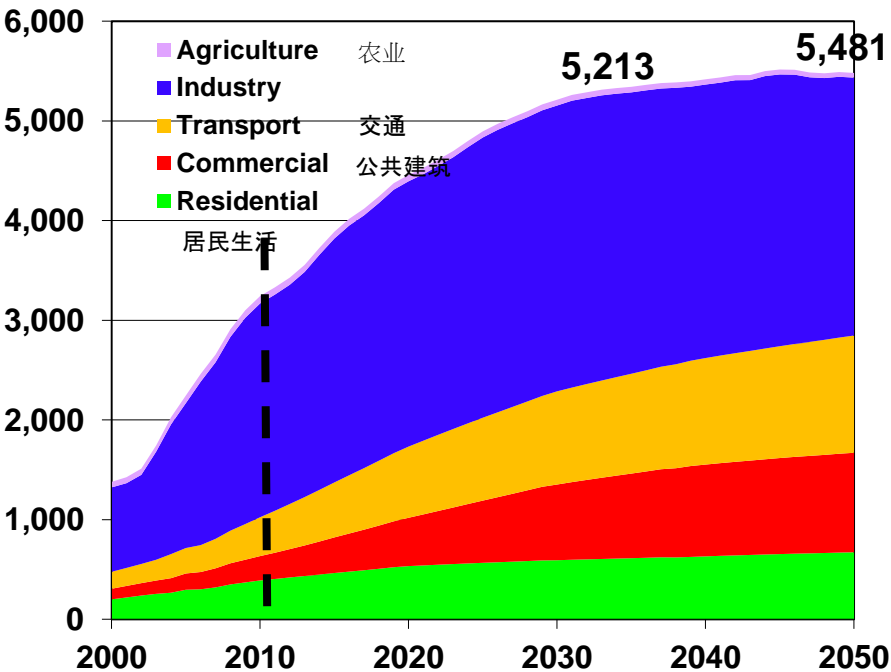


各行业一次能源消耗

Total Primary Energy Use by Sector

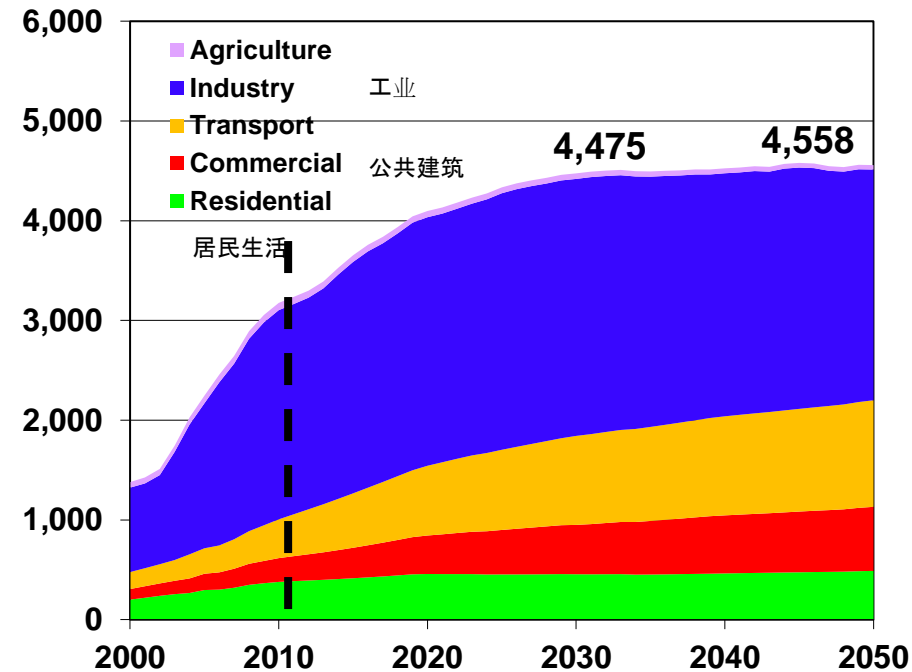
持续改进

Continued Improvement



加速改进

Accelerated Improvement



一次能源消耗 (百万吨标煤)
Primary Energy Use (Mtce)

Lawrence Berkeley
National Lab



One Approach – Look for What is Needed in the Accelerated Improvement Model

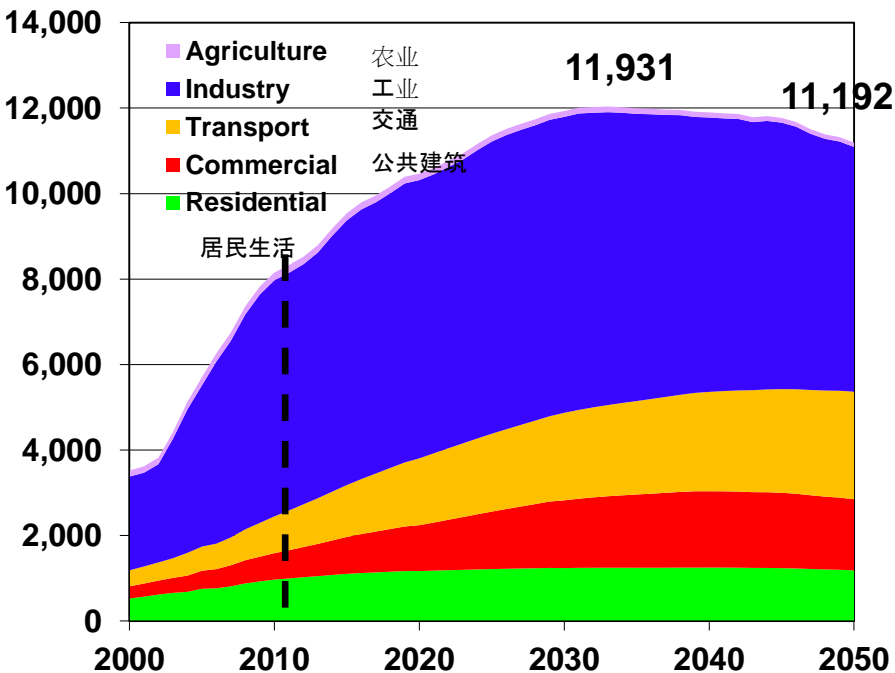
- Continuous Improvement Assumes Current Policy
- Both these models assume 300 GW of nuclear by 2050
- Both are useful in adding saturation points to make the models more realistic

两个情景下的碳排放预期 (不考虑碳捕获与存储)

Carbon Emissions Outlook for CIS and AIS Scenarios (without Carbon Capture and Storage)

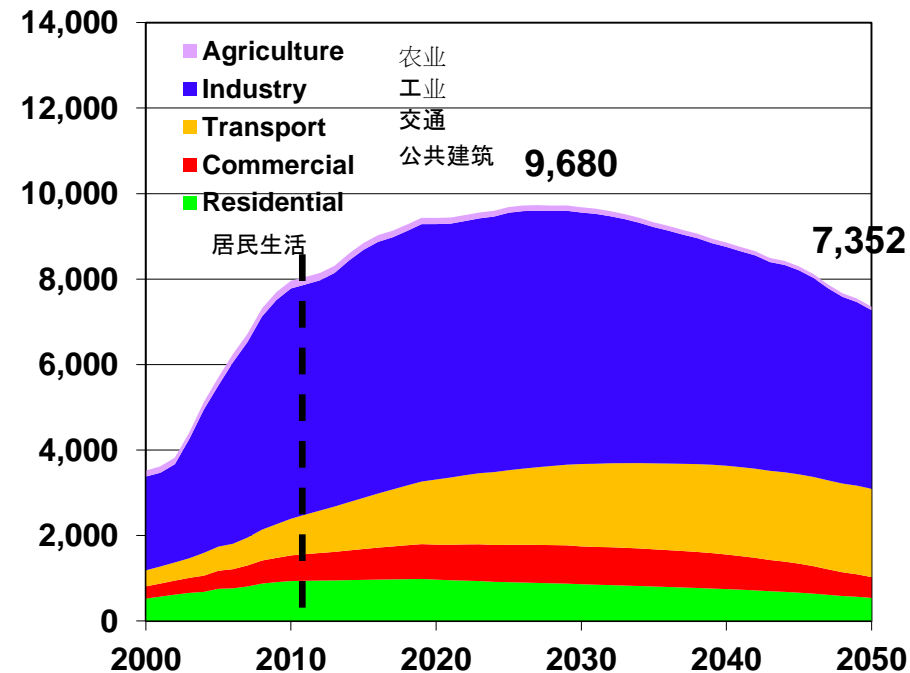
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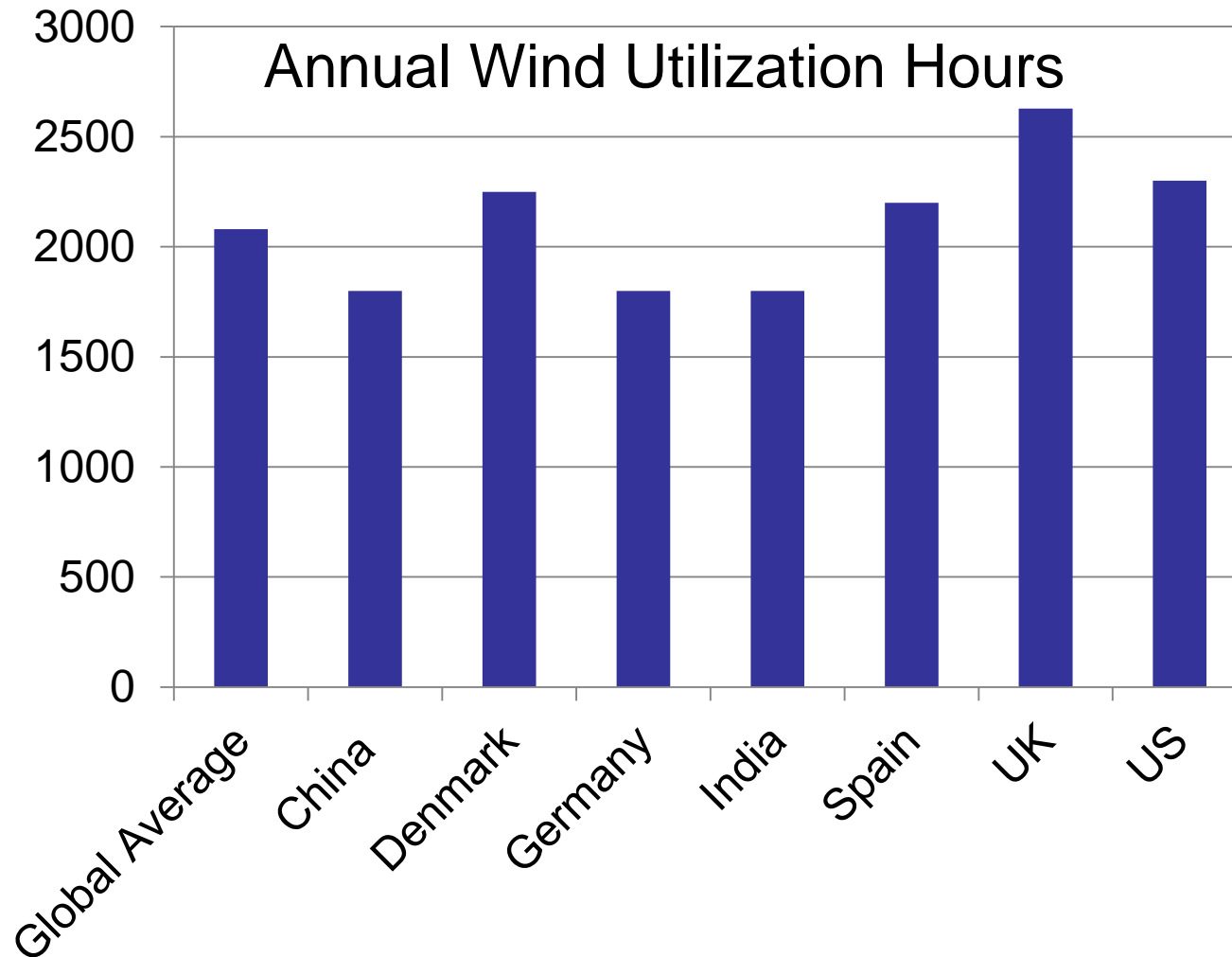
Energy Efficiency: Programs LBNL recommended to achieve greater savings in the 12th Five Year Plan

1. 采用提高气密性这类低成本能效措施
Reductions in air leakage as low-cost measure
2. 加快供热价格改革
Press much harder to achieve heat pricing reform
3. 大规模电气化控制试点
Large-scale pilots on electronic controls
4. 将节能改造奖励金额提高50%
Increase incentive payments by 50%
5. 对低收入家庭的节能改造提供支持
Weatherization for low-income families
6. 提高竞争度以鼓励低成本墙体保温材料的生产
Competition to spur manufacture of low-cost insulation
7. 像对待工业节能一样，给予供热公司提供资金奖励
Apply incentives for industry energy efficiency for heat supply companies
8. 数据收集
Data collection
9. 设立负责节能改造工作的独立机构，集中管理，强化实施
Empower single organization in localities to carry out mandate

Source: Mark Levine, LBNL



Increasing Renewables Utilization Rates



Sources: CLSA Asia-Pacific Markets, BTM Consulting



Low Cost CCS

- China has over 400 coal-to-chemicals plants, which emit over 270 million tons of CO₂ per year
- Many of these are as low as \$9-13 per ton, with the highest at \$21 per ton
- CCS at scale piloting could be part of a carbon abatement and technology advancement strategy
- These projects are worth considering as part of pilot cap-and-trade programs

Data from “Near-term mega-scale CO₂ capture and storage demonstration opportunities in China,” Zhong Zheng, et al