



# The IEA's Technology Modelling and Project Objectives

国际能源署的技术模型和项目目标

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**International Energy Agency**

国际能源署

*Energy Technology Transitions in China*

中国的能源技术变迁

**PROJECT LAUNCH 项目启动**

**13 June 2009**

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# **Roles of Advanced Energy Technologies** 先进能源技术的作用

**Advanced energy technologies can help countries achieve/先进能源技术可以帮助国家达到发展目标:**

- **Economic Growth** 经济增长
- **Energy Security** 能源安全
- **Environmental Protection** 环境保护

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# Energy Technology Perspectives 2008

2008年的能源技术展望

# Energy Technology Perspectives Project 能源技术展望项目

- Examines role of energy technologies in meeting energy policy goals 检验达到能源政策目标的能源技术作用
- Uses a combination of engineering and economic analysis 利用经济分析和工程分析相结合
- Identifies coherent technology strategies through roadmaps 通过路线图确定一致的技术战略
- Complements the IEA's *World Energy Outlook* 补充国际能源署的世界能源展望



# Recent IEA / China activities on technology 当前国际能源署和中方就能源技术开展的活动

## Collaborative activities 2006-2007 合作活动 2006-2007:

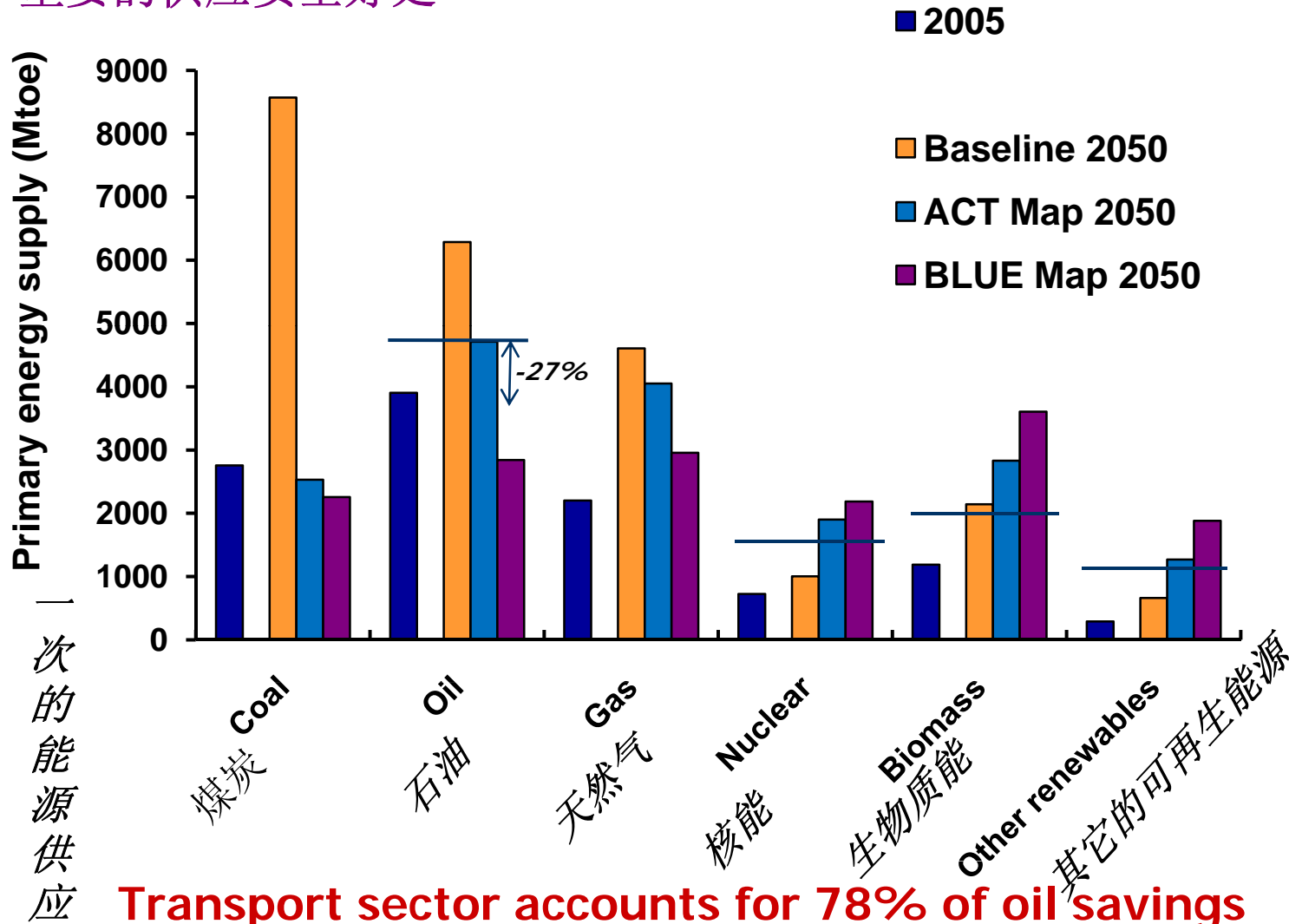
- **Development multi-regional models (ERI & Tsinghua University)** 多区域的模型开发（能源所和清华大学）
- **Collection of detailed efficiency data** 收集了详细的效率数据
  - **Industry sectors** 工业部门
  - **Provincial-level data** 省级数据
- **Industry energy efficiency workshop March 2008** 在2008年3月份进行了工业能源效率研讨



# Primary Energy Demand 一次能源需求

## Important supply security benefits

重要的供应安全好处



Transport sector accounts for 78% of oil savings

节油量中运输部门占78%

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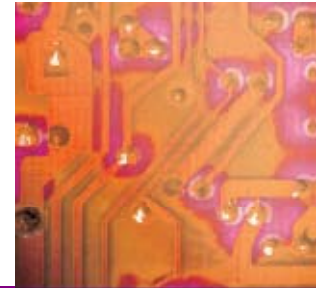
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# Technologies to reduce CO<sub>2</sub> emissions

## 二氧化碳减排技术



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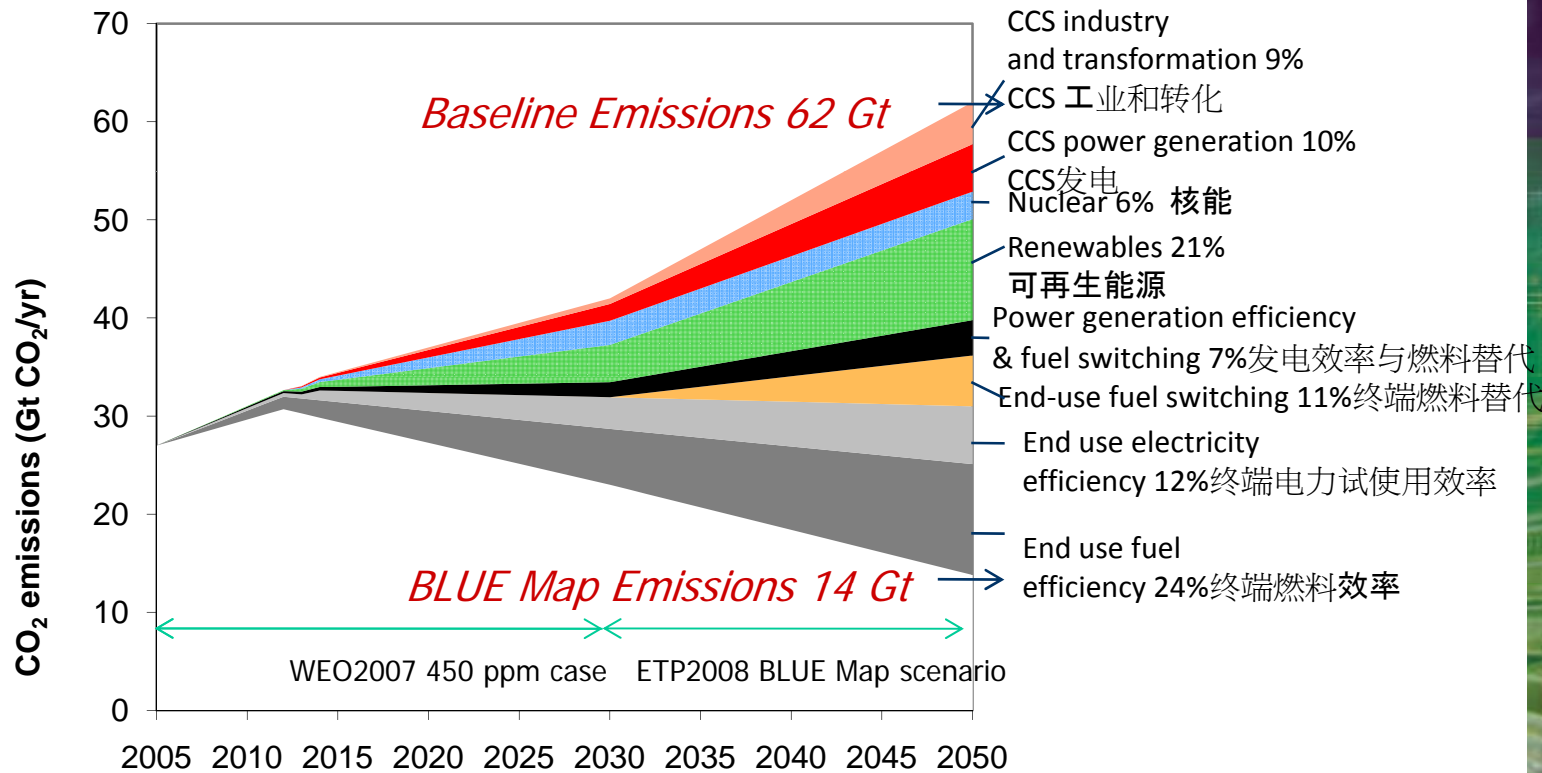
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# Key Technology Options (Roadmaps)

## 关键技术选择

### ● Supply side 供应方面

- **CCS power generation** CCS发电
- **Nuclear III + IV**核能 III+IV
- **Wind**风能
- **Biomass – IGCC & co-combustion**生物质能-IGCC 和共同燃烧
- **Solar – PV**太阳能-PV
- **Solar – CSP**太阳能-CSP
- **Coal – IGCC**煤炭-IGCC
- **Coal – USCSC**煤炭-USCSC
- **2<sup>nd</sup> generation biofuels**第二代生物燃料

### ● Demand side 需求方面

- **Energy efficiency in buildings**建筑能效
- **Heat pumps**热泵
- **Solar space and water heating**太阳能采暖和热水供应
- **Energy efficiency in transport**运输能源效率
- **Electric and plug-in vehicles**电动汽车
- **Fuel cell vehicles**燃料电池车辆
- **CCS in industry**工业CCS
- **Industrial motor systems**工业马达系统

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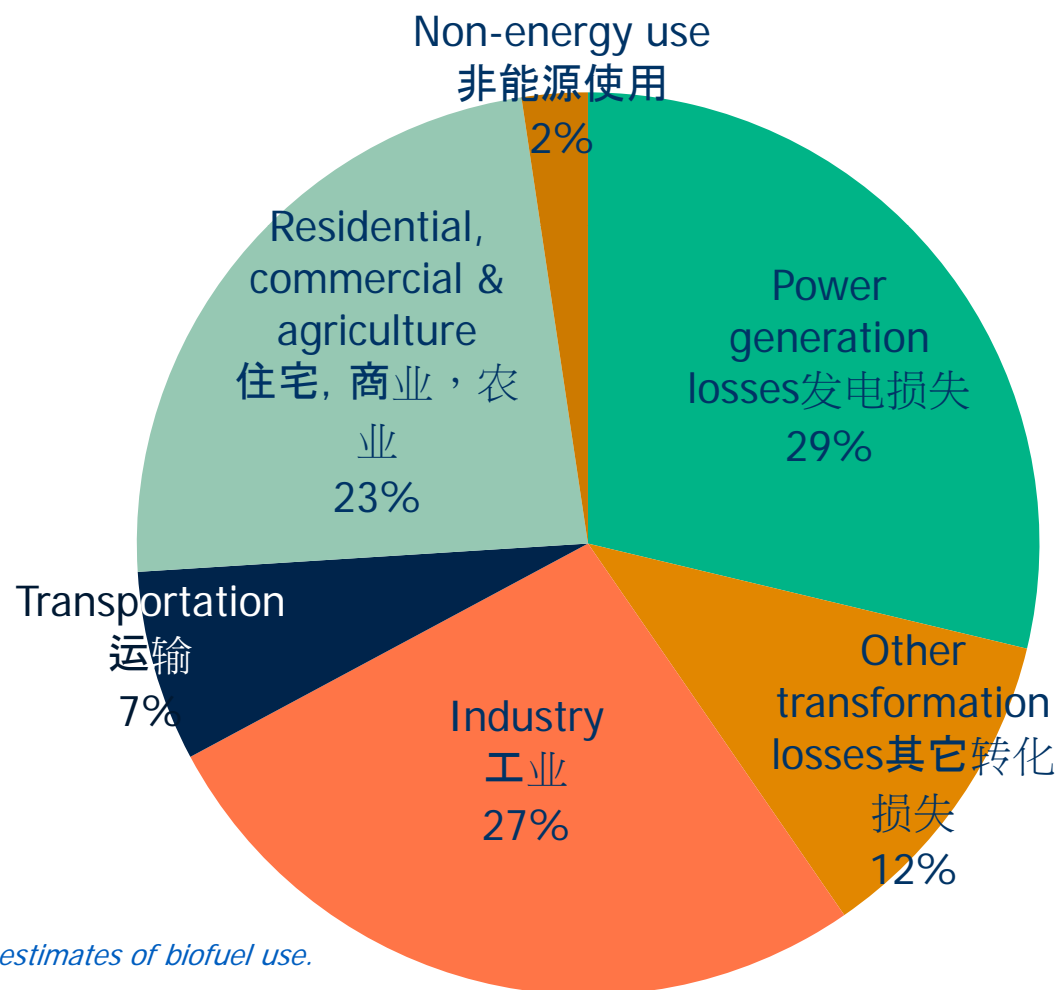
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# Chinese Sectoral Energy Use

Energy Consumption by Sector 1742 Mtoe (2489 Mtce) in 2005



*N.B. Includes estimates of biofuel use.*

In support of the G8 Plan of Action

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# China projections Baseline

## 2005-2050中国基准线2005至2050年

- **GDP (PPP-based)** 国内生产总值 **x 10**
- **Primary energy** 主要能源 **x 3**
  - **Important efficiency gains in Baseline** 主要效率提高 (2.7%/yr improvement in energy intensity 能源强度每年的提高2.7%)
- **Final energy demand** 最终能源需求 **x 3**
  - **Industry** 工业 **x 3**
  - **Transport** 运输 **x 7.5**
  - **Residential & commercial** 住宅和商业 **x 2**
- **Oil demand** 石油需求 **x 3.5**
- **Energy CO<sub>2</sub> emissions** 能源CO<sub>2</sub> 排放量 **x 3**

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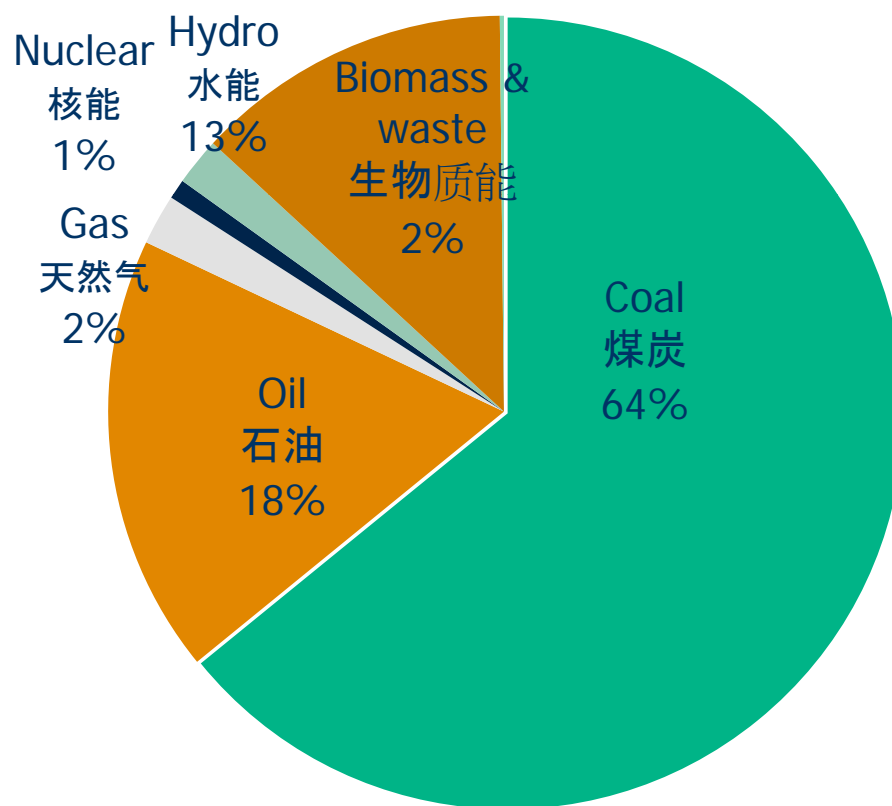
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# Chinese Primary Energy Consumption 中国一次能源消费

Primary Energy Consumption 1742 Mtoe (2489 Mtce) in 2005



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# China of Increasing Global Importance 中国的重要性

- **In 2005** 在2005年
  - **8% of oil demand** 8% 的石油
  - **19% of global CO<sub>2</sub>** 19% 的全国CO<sub>2</sub>排放量
- **In 2050 Baseline scenario** 在2050基线前景
  - **17% of oil demand** 17% 的石油需求
  - **27% of global CO<sub>2</sub>** 27% 的全国CO<sub>2</sub>排放量
- **China and other countries increasingly interdependent** 中国和其它国家更加相互依赖

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# Key Technology Areas for China

## 中国的关键技术领域

- **Enhance energy efficiency across all sectors**  
在每个部门提高能源效率
- **CO<sub>2</sub>-free electricity production (nuclear, renewables, fossil fuel with CCS)** 非CO<sub>2</sub>排放发电的生产能力（核能，可再生能源，化石燃料发电+CCS）
- **Further development of alternative transportation fuels & vehicles (batteries, biofuels, fuel cell vehicles)** 继续发展其它的运输燃料和车（电池，生物燃料，燃料电池汽车）





# *Energy Technology Transitions in China*

## *中国能源技术转型*

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# Project Objectives

## 项目目标

**Accelerate development and deployment of advanced energy technologies** 加快发展和部署先进的能源技术:

- **Ensure international roadmapping results are available to China** 保证国际路线图适合中国
- **Provide evidence to help IEA member countries and China to direct greater resources to advanced energy technologies** 提供证据以帮助国际能源署成员国和中国引导先进能源技术



# Project Activities

## 项目活动

- **Scenario modelling** 情景模型分析
- **Chinese participation in international roadmaps** 中国参与国际路线图
- **Development of selected national roadmaps** 所选国家路线图的开发



**Thank You!**  
**谢谢大家!**