

节能型社会和可持续发展
**An Energy-Conserving Society
and Sustainable Development**

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高能源和资源强度的发展

Energy- and Resource-Intensive Development

- GDP增长率加快
- 工业化进程加快，高能耗产业快速发展
- 基础设施建设规模巨大
- 城市化进程加快
- 城乡出现新的消费模式
- 参与全球化进程，出口导向型增长

- **GDP growth rate accelerating**
- **Industrialization accelerating, with energy-intensive sectors growing quickly**
- **Massive scale of infrastructure construction**
- **Urbanization process accelerating**
- **New consumption patterns in cities and rural areas**
- **Joining in globalization process; export driven growth**

我国能源消费变化情况

Changes in Energy Consumption

时间 Period	GDP 年均增长率 Annual GDP Growth Rate (%)	能源消费 年均增长率 Annual Energy Consumption Growth Rate (%)	能源消费 弹性系数 Energy Elasticity
“六五”期间 1980-1985	10.7	4.9	0.46
“七五”期间 1986-1990	7.9	5.2	0.66
“八五”期间 1991-1995	12.0	5.9	0.49
“九五”期间 1996-2000	8.3	0.6	0.07
“十五”前 4 年 2001-2004	8.8	9.6	1.09
其中 2001	7.5	4.3	0.57
2002	8.3	7.4	0.89
2003	9.3	13.0	1.39
2004	9.5	15.2	1.60

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能源供需矛盾仍然严峻

Severe Energy Supply and Demand Imbalance

- 去年24省市电力短缺，今年有所缓解，但仍有10多个省份出现短缺
- 煤炭超能力生产，恶性事故不断
- 由于价格问题，汽油等出现紧张
- 北京天然气短缺，其他地方也有出现

- **Severe black outs last year; still some black outs this year**
- **Over-exploitation of coal, resulting in accidents**
- **Gasoline shortages due to price problems**
- **Natural gas shortages in Beijing and other places**

对外依存度迅速提高

Dependence on Foreign Energy Rapidly Increasing

- 我国石油进口量有波动但仍将持续增加
 - 石油消费占全球总量中7.7%左右
 - 石油进口依存度达到45%
 - 2010年前我国石油消费的一半即将依靠进口，2020年油气的进口依存度还将进一步提高
- **Oil imports steadily increasing**
 - **China accounts for about 7.7% of world oil consumption**
 - **Oil import dependency has reached 45%**
 - **50% of oil consumed in China is imported; from 2010 to 2020 this percentage will increase**

一次能源的紧张将成为长期挑战

Tight Energy Supply is a Long-Term Challenge

- 部分地区煤炭生产能力迅速扩张
- 煤炭生产运输瓶颈和短缺将长期存在
- 国内石油增产速度和总量有限，主要依靠进口调剂
- 天然气的供应保障问题逐渐显露，天然气需求扩大趋势明显

- **Coal production capacity rapidly expanding in some areas**
- **Coal production and transport capacity poses a long-term problem**
- **Reliance on oil imports due to limited domestic supply and production capacity**
- **Increased demand for natural gas**

长期性挑战

Long Term Challenge

- 电力短缺可能在近年得到解决
 - 由于能源部门高速扩张
 - 去年电力新增装机50.5 Gw，今年超过70 Gw
 - 近三年煤炭年增产量2亿吨以上
 - 这种趋势难以持续
- **Electricity shortage can be eliminated in coming years**
 - **Rapid expansion of energy sectors**
 - **50.5 GW of power generators added last year; more than 70 GW this year**
 - **Coal output increased by more than 200 million tons each year for the past three years**
 - **Tendency is unsustainable**

环境问题严峻

Severe Environmental Impact

- 过分倚重煤炭
 - 环境污染变得更为严重
 - 燃煤排放的二氧化硫大幅增加
 - 污染从城市向农村扩展
 - 温室气体排放剧增
 - 土地、水资源、其他自然资源负荷过重
- **Heavy dependence on coal**
 - **Environmental pollution becoming more severe**
 - **Sulfur emissions increasing**
 - **Pollution expanding from cities to rural areas**
 - **GHG emissions significantly increasing**
 - **Land, water, and natural resources are overloaded**

建设现代化煤炭工业难度很大

Modernizing China's Coal Industry is Difficult

- 96%以上依靠井工开采
- 年产量300万吨以上的大型、特大型矿井产量仅能达到10亿吨以下
- 许多煤矿不能达到现有安全生产条件
- **More than 96% of coal mines are underground**
- **Modern, large-scale (over 3 million tons each) coal mines contribute only less than 1 billion tons of coal**
- **Many mines do not meet safety standards**

建设现代化煤炭工业难度很大 **Modernizing China's Coal Industry is Difficult**

- 采煤的环境外部性很高
 - 煤炭利用数量的进一步增加将面临较大的困难
 - 面临能源安全的挑战
- **Environmental costs of coal mining are very high**
 - **Ceiling to future coal output**
 - **Energy security challenge**

中央建议要点

Guidelines from CCP's Five-Year Plan

- “保持经济平稳较快发展”。 “更要注重提高增长的质量和效益，加快经济结构的战略性调整”。
- 明确转变经济增长方式的主要含意：“加快转变经济增长方式。我国土地、淡水、能源、矿产资源和环境状况对经济发展已构成严重制约”。
- **“Maintain stable and rapid economic growth... While focusing more on the quality and effectiveness of growth, speed up strategic structural adjustment.”**
- **Identified the implications of changing economic growth patterns: “the state of land, fresh water, energy, and mineral resources and the environment have already seriously constrained economic growth.”**

中央建议要点

Guidelines from CCP's Five-Year Plan

- “要把节约资源作为基本国策”，“加快建设资源节约型、环境友好型社会”
- “切实走新型工业化道路，坚持节约发展、清洁发展、安全发展，实现可持续发展”。
- “Energy conservation should become fundamental national policy...Accelerate the building of a energy-conserving, environmentally-friendly society”
- “Take a new approach to industrialization; insist on developing in an energy-saving, clean, safe, and sustainable way.”

中央建议要点

Guidelines from CCP's Five-Year Plan

- 只提了两个数量目标
 - “十一五”时期经济社会发展的主要目标是：“在优化结构、提高效益和降低消耗的基础上，实现二〇一〇年人均国内生产总值比二〇〇〇年翻一番；
 - 资源利用效率显著提高，单位国内生产总值能源消耗比“十五”期末降低20%左右，
 - 生态环境恶化趋势基本遏制
- **Only 2 numerical targets for economic and social development:**
 - **By optimizing economic structure, improving economic returns, and decreasing resource intensity, double per capita GDP from 2000 to 2010.**
 - **Improve resource utilization efficiency; decrease energy intensity per unit GDP by 20%.**
 - **Reverse trends of environmental destruction**

中央建议影响深远

CCP Guidelines to have Far-reaching Effects

- 直接指导国家和各地的十一五规划方向
- 已经推动各地十一五规划的重新思考和修改
- 需要对十一五发展成绩和问题进行反思
- 十一五不能延续现在的增长方式
- **Directly guide national and local development plans**
- **Already encouraged the review and adjustment of national and local plans**
- **Re-evaluate progress made during current five-year period**
- **Current growth pattern must be adjusted**

建设节约型社会

Building a Resource-Efficient Society

- 节能优先不是单纯技术问题，而是涉及整个社会经济各方面目标的系统问题
 - 20%的GDP能耗下降，要求能源强度年下降率达到4.4%，是一个艰巨的任务
 - 改变片面追求速度和产业结构重化化
 - 重新审视相关政策（形象工程，城市功能，交通政策，消费方式等等）
- **Increasing energy-efficiency is not just a technology problem, it is a problem that relates to social and economic systems as a whole**
 - **To decrease per capita energy intensity by 20% over 5 years, must decrease 4.4% each year, a very ambitious target**
 - **Alter single-minded pursuit of rapid heavy industrialization**
 - **Systematically review policies (i.e., civil engineering projects, land use planning, transportation policies, consumption style, etc.)**

为中国和世界开发新型工业化道路 A New Approach to Industrialization for China and the World

- 发达国家现在的人均能源消费水平过高，
 - 中国有13亿人口，难以照搬人均能耗水平
 - 能效提高率相当低，平均只有年均1.2%
 - 长期目标是用显著低于目前发达国家的人均能源消费量，实现我国的现代化
- **Developed countries have high per capita energy consumption**
 - **China has 1.3 billion people; it would be difficult to match such high per capita energy consumption.**
 - **The rate of energy efficiency improvement is rather slow, averaging 1.2% per year.**
 - **Lower per capita energy consumption is a long-term goal.**

制定促进节能的综合政策

Integrated Policies to Encourage Energy Savings

- 建立全社会能源消费的社会目标，使能效改进成为国家，地方和重点企业的业绩考核指标
 - 需要为政府和会议发展相应指标体系
 - 要把20%能效目标分解到每个省市和部门
 - 改进能源统计体系
 - 建立政府和企业的能源消费报告系统
- **Establish energy consumption targets for the whole nation. Make energy efficiency improvement an performance indicator for the national government, local governments, and key enterprises**
 - **Develop an indicator system for the use in the government**
 - **Allocate the 20% intensity target to provinces, cities, and sectors**
 - **Improve energy statistics system**
 - **Set up a government and enterprise energy consumption reporting system**

促进节能的价格和税收系统

Pricing and Taxation Systems to Promote Energy Savings

- 提供促进节能的正确市场信号
 - 改进能源定价系统，包括电、油、气、煤等价格
 - 资源价格，要反映稀缺性和资源的真实价值，包括国家的利益，主要通过资源税
 - 改进油价管制体系，和石油市场管理相关
 - 在进一步电力改革中考虑电价政策
 - 把煤炭和其他燃料在开采，加工和终端利用中的外部性内部化
- **Give market signals that promote energy savings**
 - **Improve energy pricing policies, including those for power, oil, gas, and coal**
 - **Natural resource prices (resource tax) should reflect their scarcity and true value**
 - **Improve oil price regulation**
 - **Reform power pricing policies**
 - **Internalize the external costs of the end use, processing, and extraction of coal and other fuels**

需要考虑的税收措施

Taxation Measures to be Considered

- 是税收系统的新课题，需要创造和改进
 - 首先实现燃油税，以后考虑能源税
 - 对奢侈消费实行分级税收，如汽车
 - 对采暖收费制度进行调整，包括对低效建筑罚款
 - 限制高能耗产品出口的税收政策
- **This is a new problem for the taxation system; must be created and improved**
 - **Fuel tax first; energy tax in the future?**
 - **Graduated luxury tax for cars**
 - **Adjust heating tariff collection system, including penalties for inefficient buildings**
 - **Taxation policies should limit the export of energy-intensive products**

标准（强制性和非强制性）

Standards (both mandatory and voluntary)

- 做为市场条件下非常重要的节能促进措施
- 对主要耗能产品，家电，主要工业工艺，耗能设备制定能效标准
- 重视建筑物能效，对不同气候带制定和实施能效标准，关键在实施
- 汽车的能效
- 标识系统
- **Very important for tool energy improving efficiency in a market system**
- **Develop standards and codes for energy-intensive products, home, appliances major industrial processes, and energy-intensive industrial equipment**
- **Develop and enforce building energy-efficiency standards in different climate zones; enforcement is the key**
- **Vehicle fuel economy standards**
- **Labeling systems**

对合理消费的引导

Lead the Way toward Reasonable Consumption

- 新的发展观要有相应的消费模式
 - 保障大多数人的合理能源服务
 - 对住房，交通，日常生活，技术发展，和投资都要制定引导政策
 - 注重教育，知识传播，媒体导向等等
 - 形成社会共识，改变习惯和传统
- **New development mode necessitates sustainable consumption pattern**
 - **Ensure appropriate energy service for most people**
 - **Housing, transportation, daily life, technological development, and investment all need guidance policies**
 - **Use education and the media**
 - **Form social consensus; change social customs**

需要真正，交通和巨大的努力

Need Real, Tremendous Efforts

- 能效目标不容易实现
- 市场力量不足以推动能效提高
- 地方政府仍然首先追求GDP高速增长
- 技术市场的分隔
- 新技术的交易成本较高
- 虽然节能潜力巨大，但也是可持续发展的新探索
- 需要逐步实现

- **Difficult goal to realize**
- **Laissez-faire will not yield satisfactory energy-efficiency improvements**
- **GDP growth is the priority for local governments**
- **Separated technology markets**
- **High transaction costs for new technologies**
- **Although there is great energy-savings potential, we must also explore other ways for sustainable development**
- **Must improve step-by-step**