



加快经济发展与降低能源消耗的 双赢之路

A proposal for reducing energy
consumption & CO₂ emissions while
ensuring economic development

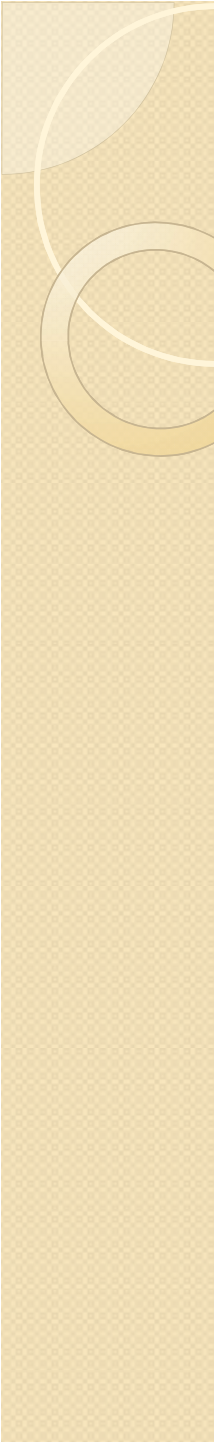
Group D



Can changes in UK and China's
policies/development strategy
positively impact on energy
consumption whilst also enabling
growth

?

The answer is YES!

- 
- We believe a greener economy both for the UK & China can best be achieved by not directly dictating how and where energy should be generated but by ensuring policy is open enough to allow flexible solutions to be found within a low carbon framework.
 - 在这份报告中，我们没有赘述一些细节，例如能源如何产生的等等，我们相信，中国与英国都能在一个低碳框架内，通过开放的政策和灵活的措施来实现绿色经济。

Reducing energy consumption while ensuring economic development

- China's development strategy can positively impact on energy consumption whilst also enabling growth
- China's economic & energy policies must be based on China's current situation.
- We will propose public policies to resolve these energy issues

加快经济发展与降低能源消耗的双赢之路

- 加快经济发展与降低能源消耗能够实现双赢
- 中国的经济与能源政策必须立足于中国现实国情
- 应对能源问题的公共政策选择

I. China's development strategy can positively impact on energy consumption whilst also enabling growth

- Long term, economic growth and emission reductions don't contradict each other as reducing energy consumption can aid economic development.
- Short term, economic growth and emission reductions might contradict each other, therefore, we need efficient policies to resolve the issues.

一、加快经济发展与降低能源消耗能够实现双赢

- 长期来看，经济增长与节能减排的目标是一致的，降低能源消耗可以提高经济增长效率
- 短期来看，经济增长与能源消耗是矛盾的，需要有效的政策措施来解决

2. China's economic & energy policies must be based on China's current situation.

- Economic development is China's priority in order to eliminate poverty and improve living standards. China is still in the process of industrialisation so large amounts of consumption is seen as unavoidable.
- Though China's CO₂ emissions are ranked No. 1 in the world, per capita it is much lower than developed countries.
- It is a huge and gradual process to readjust the development strategy to solve the energy issues.

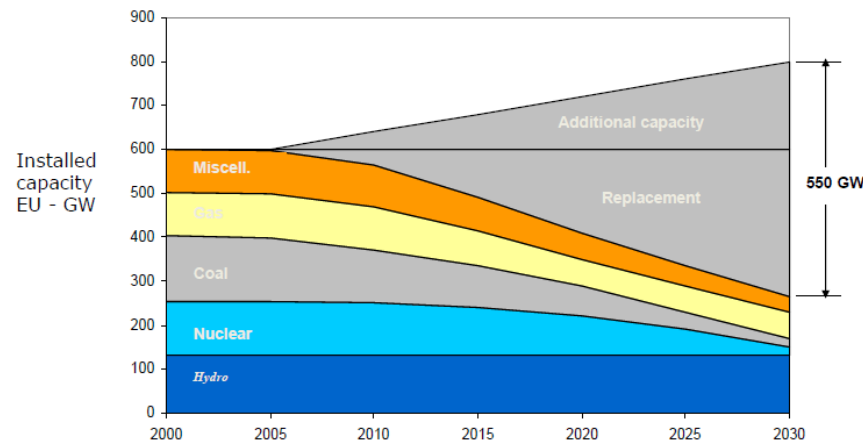
二、中国的经济与能源政策必须立足于中国现实国情

- 调整发展战略以应对能源问题是一项艰巨的任务，也是一个长期的渐进的过程
- 发展经济是中国消除贫困和提高人民生活水平的迫切需要，中国正处于工业化城市化的加速发展过程中，大量消耗能源在所难免。
- 中国的温室气体排放量虽然已列世界第一，但人均排放量远于发达国家

The U.K. Situation

- Need to reduce CO₂ emissions
- Need to meet growing energy demands
 - Closing down of old coal and nuclear power stations
 - Growing demand
- Need for security of supply
 - Coal and nuclear power provide controllable generation and spare capacity
 - Uncontrollability of wind power
- Public opposition to coal and nuclear power

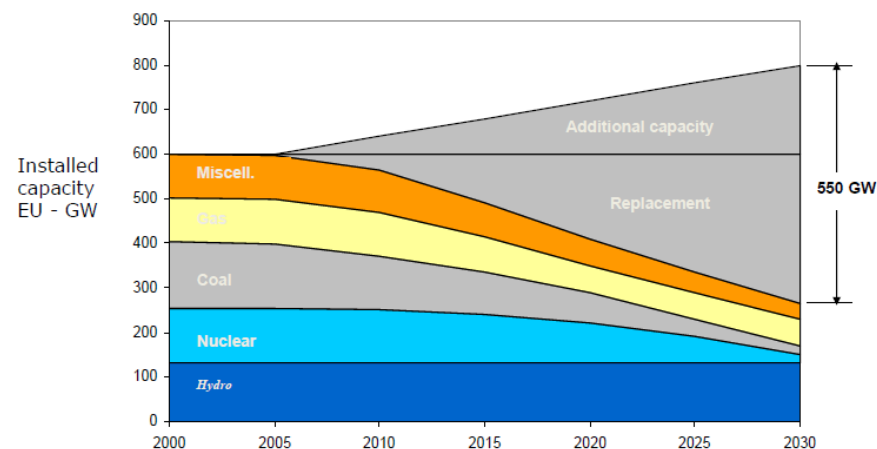
New generating capacity required in Europe - keeping the lights on!



英国能源现状

- 需减少二氧化碳排放
- 应满足日渐增长的能源需求
 - 一些老旧煤电站和核电站已被关闭
 - 持续增长的能源需求
- 需要安全的能源供应
 - 煤电站和核电站提供可控制的发电以及备用容量
 - 不可控制的风能
- 公众反对煤电与核电

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3. public policies to resolve the energy issues

- Basic policy target: Realise the transformation from a carbon intensive economy to a low carbon economy
 - Improve Energy mix
 - Improve Efficiency of use
 - Construct less energy intensive infrastructure

三、应对能源问题的公共政策选择

基本政策目标

实现经济发展方式由粗放型向集约型转变，促进我国能源生产与消费结构的持续改善

Economic Incentives

- Government provides tax cuts and green schemes to encourage clean energy generation
 - Micro generation
 - Waste to energy generation
- Raising taxes on landfill, SO_x , NO_x and CO_2 emissions encourages companies to invest in cleaner technology
- Renewable energy Obligation Certificates provide incentives for energy generators to invest in clean energy
- Include Carbon reduction technologies in 'renewable' incentives, i.e. CCS and Nuclear to ensure supply security through an energy mix.

发挥市场机制特别是价格机制作用，对能源价格进行必要的干预与调控

- 政府对清洁能源发电提供减税政策并制定绿色计划
 - 为小型发电厂提供减税优惠
 - 支持生活垃圾向能源转换
- 对垃圾场、 SO_x , NO_x 和 CO_2 提高税收，鼓励公司投资清洁能源。
- 可再生能源责任证书(ROCs) 鼓励电力企业投资清洁能源
- 通过混合能源，鼓励减排技术，例如，将碳捕捉与核电相结合来保证安全持久的能源供应。

发挥市场机制特别是价格机制作用，对能源价格进行必要的干预与调控



regulations

- Set regulations that govern SO_x and NO_x emissions.
- Environmental Agency enforces regulations and fines for not meeting emissions levels
- Need for a future regulation on CO₂ emissions
- Tie in regulation to economic incentives to ensure cost effectiveness of moving to green technologies

对高能耗高排放行业采取更严格的技术准入措施

- 对高能耗产业如钢铁、水泥、电力等淘汰落后产能，关停“小火电”，“小钢厂”，“小水泥”

例如，对于钢厂，淘汰容积**300**立方米及以下高炉（专业铸铁管厂除外）、公称容量**20**吨及以下转炉、公称容量**20**吨及以下电炉 等落后产能（摘自钢铁产业政策）

Regulations

- Instigate regulations to tackle some of China's highest and most inefficient polluters
- For example the many small scale blast furnaces and converters located around China which produce small quantities of material for relatively large amounts of energy.

对高能耗高排放行业采取更严格的技术准入措施

- 对于电厂，针对相关污染物，制定排放标准
 - SO₂: 自2015年1月1日起，控制在400mg/m³ (GB13223-2003 火电厂大气污染物排放标准)
- 如果排放超标，环境署依照相关法规对其进行处罚
- 将准入措施与经济鼓励政策相结合，进而保证利用绿色技术的成本效率

Regulations

- By 2015 to control the emissions of SO_2 emitted from all power stations to below 400mg/m^3
- The environmental protection bureau should enforce regulations & fines for not meeting emissions levels
- Tie in regulation to economic incentives to ensure cost effectiveness of moving to green technologies



鼓励新能源技术的开发与应用

- 企业正在开发风能及天然气电站，然而并没有投入新的火电站或核电站
 - 这样就导致了能源的安全问题
- 欧盟在大范围开展碳捕集及封存计划
 - **15** 个示范电站
 - **100**亿欧元的投资
- 英国对未来**3**个新建电站有相似计划
- 发展碳捕集和封存技术的迫切性

Encourage Development & Application Of New Technologies

- Companies are developing wind and gas generation however, there are no new coal or nuclear plants coming online
 - raises issues of supply security
- EU scheme to prove CCS at large scale
 - 15 demonstration plants
 - \$10 billion euro investment
- U.K has a similar scheme for three further U.K plants
- Propose immediate increase in investment in bridging technologies i.e. CCS and Energy Storage systems, and future technologies such as Fast Breeder Reactors.

提高能效，鼓励新能源技术的 开发与应用

- **IGCC**（整体煤气化联合循环）
 - 高发电效率：净效率可达**43%~45%**
 - 环保：污染物的排放量仅为常规燃煤电站的
1/10
- 新能源的开发利用
 - 生物质能
 - 太阳能
 - 风能、水电等



Encourage Development & Application Of New Technologies

- IGCC
 - High efficiency: net efficiency can reach up to 43%~45%
 - Environmental protection: the pollution emissions will be 1/10 of conventional coal fired power plants.
- To develop new energies
 - Biomass
 - Solar energy
 - Wind & hydroelectric power

提高能效，鼓励新能源技术的 开发与应用



Government Involvement

- Investment in future technology research to help ensure the development of long term sustainability
- Closer co-operation between industry and government to help correctly direct future market.

政府参与

- 大力投资技术研发工作，保证长期可持续发展
- 建立企业和政府的长效合作机制，引导市场发展

Assessing the local governmental responsibility to meet targets

- To clarify local governmental responsibility
 - To introduce Green GDP calculation
- To establish professional supervision organisations



Social Education

- Important for the government to educate the population on clean coal and nuclear technology and the need for these technologies.
- Important to change public demand, end use and electricity efficiency.
- Increase/improve public consultation



加强对节能减排理念的宣传

- 政府有必要加强洁净煤、核电及相关技术的公共教育和宣传工作
- 有必要培养公众合理的能源消费习惯，倡导节能生活方式
- 改善公共咨询

Social Education

- The government should distribute energy saving light bulbs to the nation
 - Pilot scheme is currently just in Beijing
- Raise society's awareness of environmental protection
 - Promote a low carbon lifestyle
 - Plant trees
 - Build awareness from an early age



加强对节能减排理念的宣传

- 采取有效措施
 - 北京节能灯泡的推广使用
- 提高全社会节能减排意识
 - 低碳生活方式
 - 植树
 - 从娃娃抓起



A scenic photograph of a forested mountain. In the foreground, several trees with bright yellow-green foliage are visible, suggesting early autumn. The middle ground is filled with a dense forest of darker green trees. In the background, a mountain peak is partially obscured by thick, white mist or smoke that rises from the forest. The overall atmosphere is serene and natural.

Thank you!