Energy Issues in China
and the Policy Challenges Ahead
中国的能源问题及未来的政策挑战

Presented at the Energy Foundation Workshop on
Fiscal and Tax Policies in Industry
May, 2005
辛顿 代表林江的发言
美国劳伦斯•伯克利国家实验室

Presented by Jonathan Sinton for
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Summary 摘要

- **China faces a serious new energy issues**
  - Most Chinese see the energy shortage as the challenge
  - The real challenge is in *energy policy*
- ***Key issue*: how can investment be attracted to energy efficiency?**
- **Unless this problem is solved, China may not achieve its economic goals for 2020**
- **The environmental consequences of energy policy failure are truly frightening**

- 中国正面临严重的能源问题

  能源短缺是一个问题但真正的挑战在于能源政策
- 关键是如何吸引能效投资
- 只有解决这个问题，中国才可能实现2020年的发展目标
- 能源政策失败导致的环境后果才真正可怕

China's Energy and Development Goals for 2020
中国2020 年的能源和发展目标

Goals (compared with 2000)
- GDP – Quadrupling
- Urbanization – 65% vs 35% now
- Energy Use – Doubling

But energy demand is now growing so rapidly that the development goals are in jeopardy

发展目标（与2000年相比）
- 国民经济——翻二番
- 城市化——从目前的35%提高到65%
- 能源消费——翻一番

目前能源需求增长迅速，对2020年发展目标造成威胁

Current Energy Issues
当前的能源问题

- In 2004, widespread power shortage (24 of 31 provinces)
- Electric power generators facing squeeze in profit margins
- Soaring coal prices
- Transportation bottlenecks for coal
- Significant economic losses
- Potential for loss of investor confidence in China

- 2004年大面积电力短缺（24个省）
- 电力生产商利润空间缩小
- 煤炭价格不断上涨
- 煤炭运输瓶颈
- 巨大的经济损失
- 有可能影响投资商的信心

China's Response: Fast and Furious
中国的反应：快速且强劲

Boom in power plant construction

- 40+ GW added each year
- Mostly coal-fired
- Installed capacity at 400 GW in mid-2004
- Another ~200 GW under construction

This has not been accompanied by an increased investment in energy efficiency, and this is the cause of long-term energy imbalances

新建大量电厂

－每年新增4千万千瓦以上

－大多是燃煤发电

－2004年夏季装机容量达40万兆瓦

－另有在建电厂20万兆瓦

但是能效投资并没有增加，

这将导致长期的能源失衡

Environmental Energy Technologies

Why Invest in Energy Efficiency?
为什麽投资于能源效率？

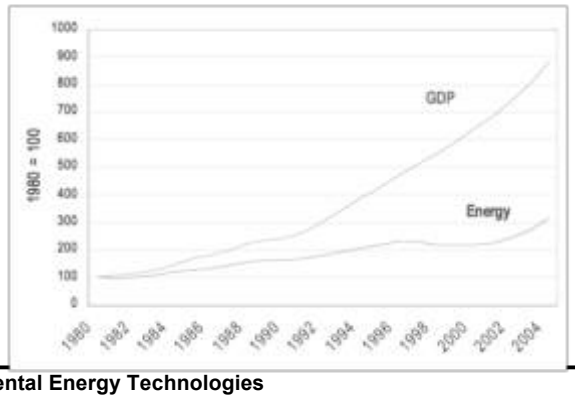
- ***Economic Rationale***
- ***Cost to conserve energy is 1/3 to 1/2 that of producing energy***
  - ***Improving energy efficiency reduce waste and operating cost***
- ***Energy Security Rationale***
  - ***Increasing energy efficiency would reduce dependency on foreign sources of energy (mid-east oil)***
- ***Environmental Rationale***
  - ***resources is finite***
  - ***environment capacity is limited***
  - ***physical space is limited***

- *经济学原因*
- *节能的成本仅为能源生产成本的1/3到1/2*
  - 提高能效可以减少浪费和运行成本
- *能源安全的考虑*
  - 提高能效可以减少对外国能源资源（如中东石油）的依赖
- *环境的原因*
  - 资源是有限的
  - 环境的承载能力是有限的
  - 人类生存空间是有限的

Environmental Energy Technologies

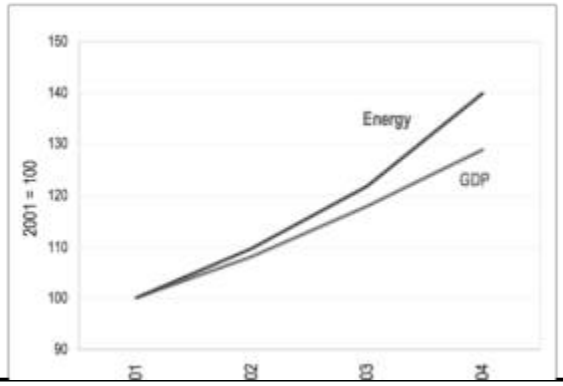
China has shown that a rapidly developing nation can decouple energy and GDP growth, through bold policies initiated in 1980

中国80年代的经验表明，以较低能耗水平实现经济快速增长是可能的



But, since 2001, policies have been far from achieving energy growth of half the rate of GDP

然而2001年以后的政策实践，与经济翻二番、能源翻一番的目标相距甚远



China's National Energy Strategy
中国国家能源战略

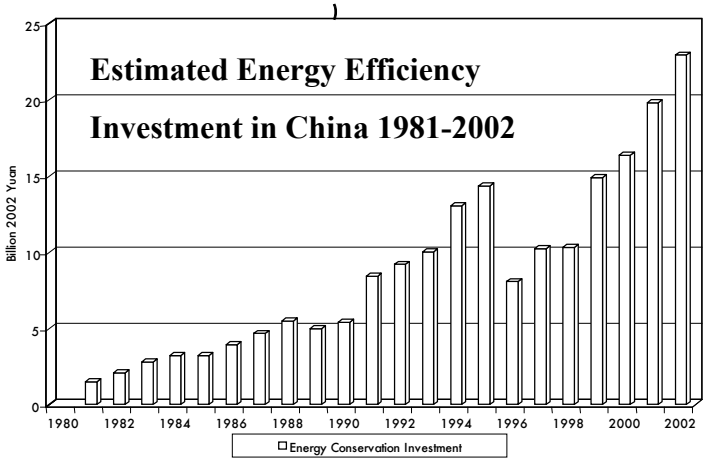
Energy Development and Efficiency have Equal Role (Emphasis on Efficiency)

- But supply investment was ***RMB 424 billion*** while energy conservation investment was ***RMB 23 billion*** in 2002

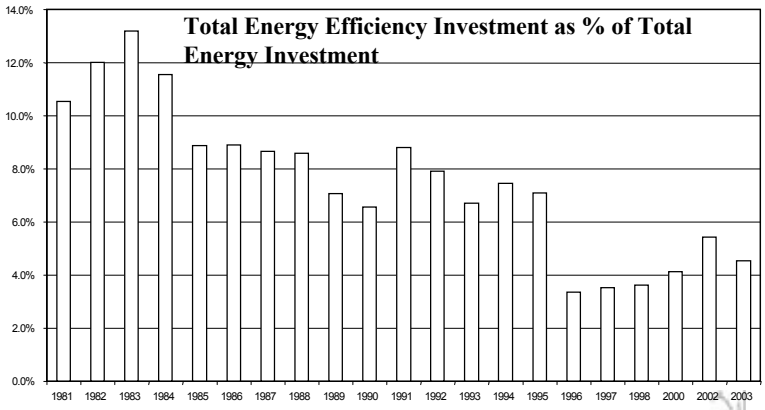
能源开发与节约并重（节能优先）

- 然而2002年发电投资4240亿元，节能投资只有230亿元

Energy Efficiency Investment Continues to Grow
能效投资呈增长趋势



Energy Efficiency Investment has Declined as a Proportion of Total Energy Investment
相对于能源部门总投资额，能效投资所占的比重却在不断下降



What is to be Done: Increase Energy Efficiency Investment Substantially
需要采取什么行动：大力增加能效投资

- Restoring energy efficiency investment to early 1980s level (10%-15% of supply investment) would require RMB 40-60 billion/year, 2 to 3 times current levels
- How? Many possibilities:
  - Electricity **systems benefits charges** (wires charges) are one way
  - Efficiency in **rate base** is similar
  - Special need for energy efficiency investments in **industry** to match best international practices

• 使能效投资恢复到80年代的水平(占发电投资的10-15%)需要 年投资400-600亿元，相当于目前水平的2-3倍

• 实现的途径包括：

－系统效益收费

－以电价为基础收取一定比例的能效基金

－大力推动工业部门能效投资

Increase Energy Efficiency Investment: How much is needed?
增加能效投资—需要多少？

$15-18B/yr investment in energy efficiency is needed to cut energy demand growth in half*

- This assumes a (1) 2-yr payback on efficiency investment and (2) 'natural' energy demand growth in China at this time is at the rate of economic growth

Actual investment is ~$3B/yr

* This will grow at 3.5 percent/yr (assuming economic growth of 7 percent/yr) to ~$30B/yr in 2020.

每年需要150至180亿美元的能效投资，才能削减能源需求增长的50%*

- 假定是（1）能效投资的回收期是2年（2）中国目前正常的能源需求增长与经济增长同步

- 实际投资每年大约只有30亿美元。

* 年增长率将是3.5%（假设年经济增长率是7%），至2020年投资为300亿元人民币。

What Policies are Necessary to Stimulate Investment in Improving Energy Efficiency?
鼓励和促进能效投资需要什么政策？

- **Energy Efficiency Policies**
  - targets for energy efficiency for industries
  - building energy standards
  - appliance efficiency standards
  - auto fuel economy standards, and
  - infrastructure investment to enable non-automotive transport.
- **Supporting Programs and Policies**
  - technical guidance (local energy conservation service provider network)
  - good economic signals (prices)
- **Investment Incentives**
  - for whatever is not paid for by consumers (tax credits)

- 能效政策
  - 设定工业能效目标
  - 建筑物能效标准
  - 电器的能效标准
  - 机动车燃油经济性标准，以及
  - 基础设施投资以促进非机动车运输
- 支持性项目与政策
  - 技术指导（地方节能服务网络）
  - 有利的经济信号（如价格）
- 投资激励
  - 用于消费者所不愿支付的（税收减免部分）

Financial Incentives: Lessons from the Past
财政激励政策：过去的教训(1)

- **Interest subsidies**
  - ½ of interest rates for energy conservation technical renovation projects is covered by Treasury Bonds proceeds
  - Program still exists, but implementation process unclear after 1998
  - *Cost*: typically about 5% of the project costs
  - Need to increase coverage and extend term of loan

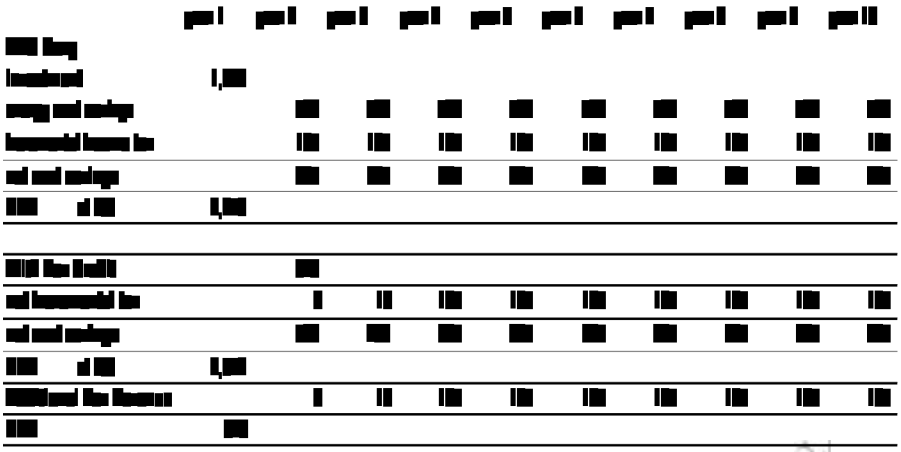
- 利息补贴
  - 节能技术改造项目（贷款）利率的1/2 由国债补贴
  - 这种项目还有，但1998年后实施过程不清楚
  - 成本：项目成本的5%
  - 需要增加覆盖面、延长贷款期限

Financial Incentives: Lessons from the Past
财政激励政策：过去的教训(2)

- **Tax Credit**
  - 40% of "fixed asset investment" for energy conservation technical renovation projects can be used to reduce incremental income tax
  - Program still exists, but implementation process unclear after 1998
  - *Cost*: zero if future income tax remains the same, and could lead to increase in future tax revenue
  - Need to increase coverage

- 税收减免
  - 节能技改项目40% 的"固定资产投资"以后可以在所得税增加的部分中扣除
  - 这一计划还在继续，然而，1998年以后实施的过程不清楚
  - 成本为零，如果以后所得税保持不变，并可以导致税收收入的增加
  - 需要增大覆盖面

Impact of Tax Credit
减税的影响



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Overview of International Experience with Industrial Sector Tax and Fiscal Policies to Promote Energy Efficiency

促进工业部门节能的财税政策国际经验

北京

2005年5月24日

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劳伦斯伯克利国家实验室

Fiscal and Tax Policies For Energy Efficiency Promotion
提高能效的财政税收政策

- 有两类基本途径

  Two general approaches:

  - 提高与能源使用有关的成本以刺激能效投资

    Increase costs associated with energy use in order to stimulate investments in energy efficiency

  - 降低在能效投资方面的成本投入

    Reduce costs associated with energy efficiency investments

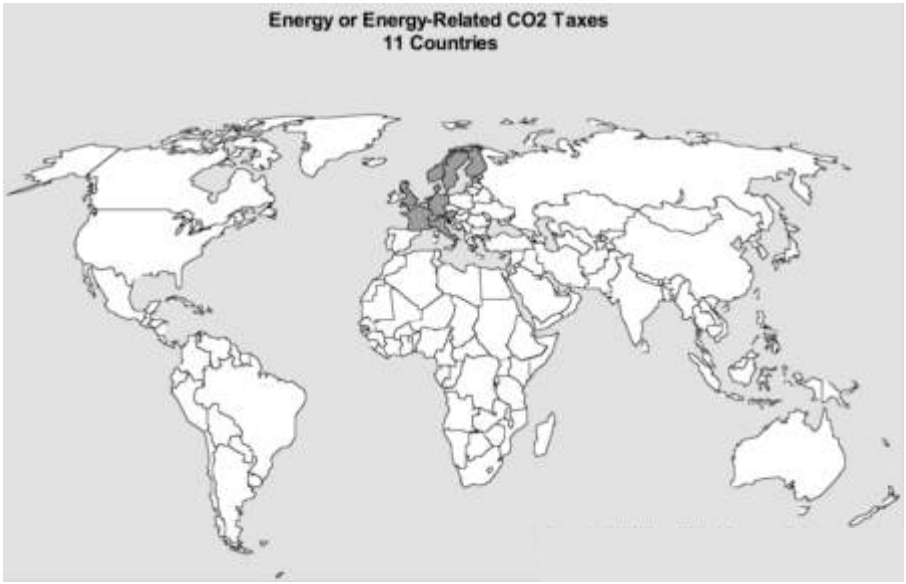
- 过去20-30年间，这两大类方法有各种不同的实施方式，并在世界各国广泛尝试

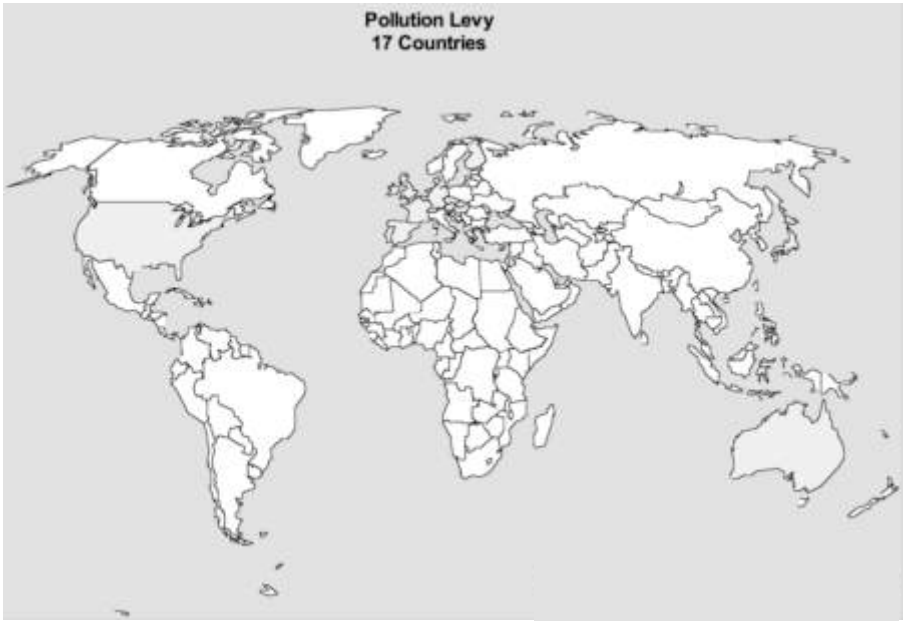
  Various forms of these two approaches have been tried in numerous countries over the last 2-3 decades

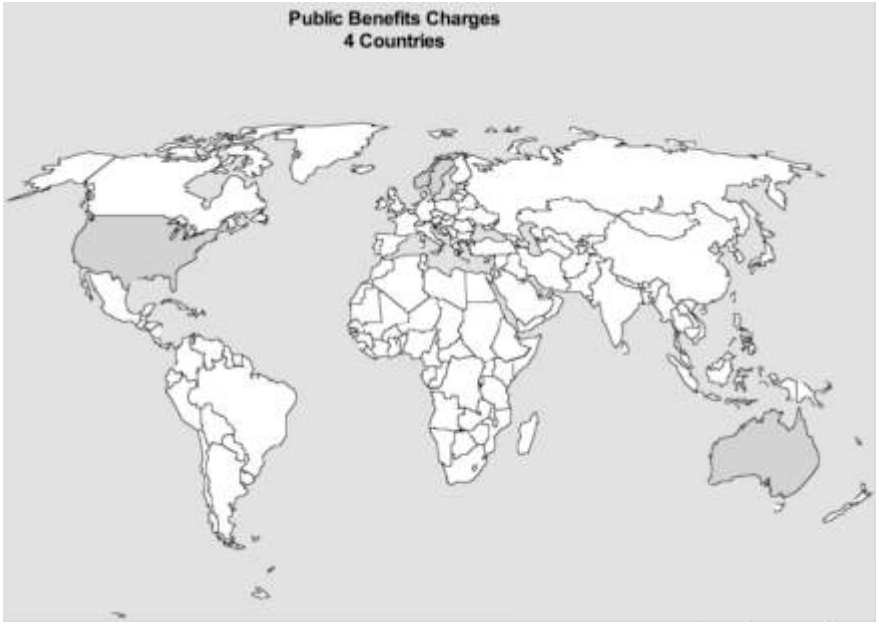
Fiscal and Tax Policies For Energy Efficiency Promotion
提高能效的财政税收政策

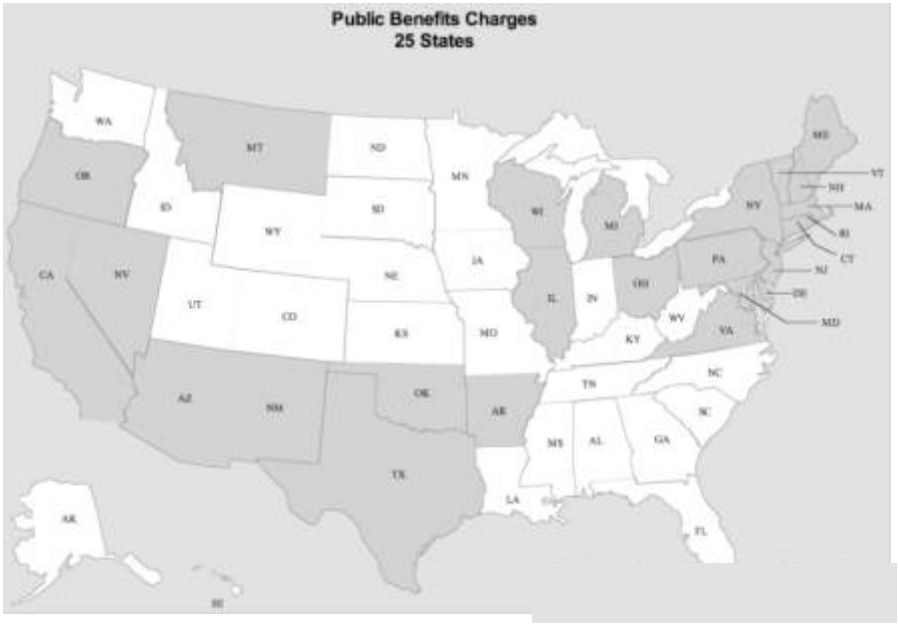
- 增加与能源使用有关的成本

  Increase costs associated with energy use
  - 能源及与能源有关的碳税 **Energy or energy-related carbon dioxide taxes**
  - 污染收费 **Pollution levies**
  - 公共受益项目 **Public benefit programs (also called system benefit charges or line charges)**




Pollution Levy
17 Countries


Public Benefits Charges
4 Countries



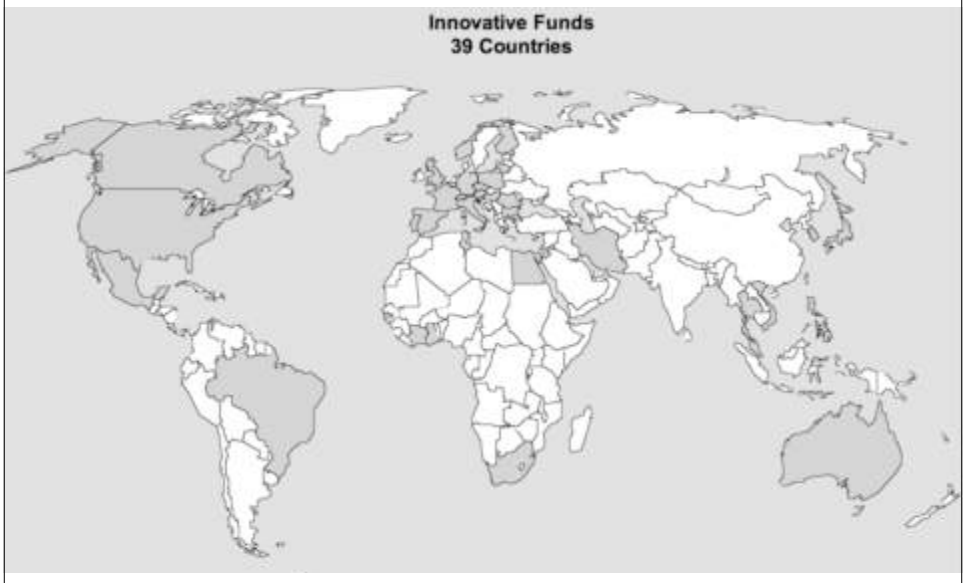
Fiscal and Tax Policies For Energy Efficiency Promotion
提高能效的财政税收政策

- 降低与能效投资相关的投资成本
  Reduce costs associated with energy efficiency investments
  - 赠款和补贴 **Grants and subsidies**
  - 补贴审计 **Subsidized audits**
  - 贷款 **Loans**
    - 软贷 **Public loans**
    - 创新基金 **Innovative funds**
      - 通过能源服务公司进行股本投资 **Equity participation through Energy Service Companies (ESCOs)**
      - 担保基金 **Guarantee funds**
      - 周转基金 **Revolving funds**
      - 风险基金 **Venture capital**


Grants or Subsidies
28 Countries

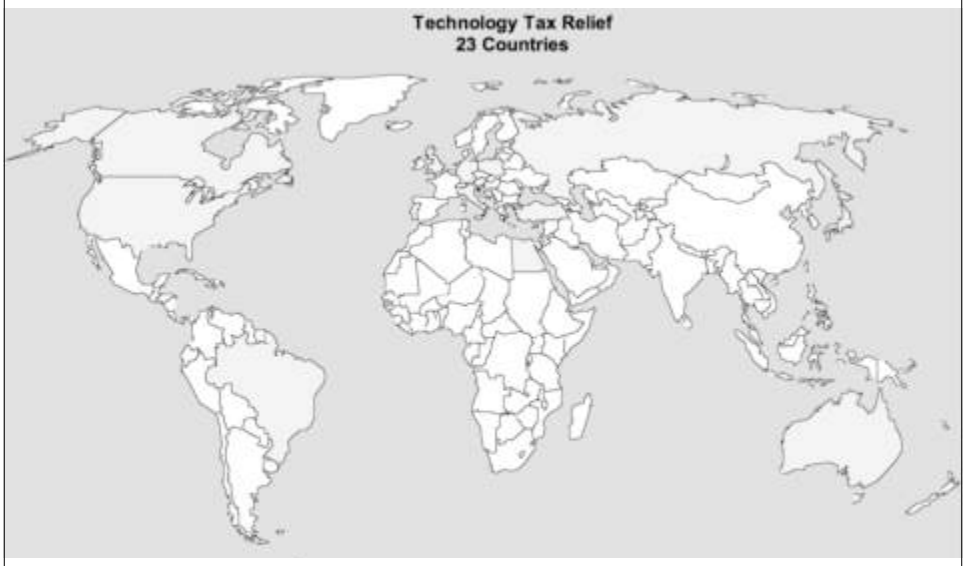

Subsidized Audits
40 Countries


Public Sector Loans
21 Countries


Innovative Funds
39 Countries

Fiscal and Tax Policies For Energy Efficiency Promotion
提高能效的财政税收政策

- 降低与能效投资相关的投资成本
  Reduce costs associated with energy efficiency investments
  - 减少特殊能效技术的税收负担
    Tax relief for specific energy-efficient technologies
    - 加速折旧 **Accelerated depreciation**
    - 减税 **Tax reduction**
    - 免税 **Tax exemption**
  - 对达到能效目标的工业行业减免税
    Tax relief for industries that meet energy-efficiency targets



Fiscal and Tax Policies For Energy Efficiency Promotion
提高能效的财政税收政策

- 综合政策 **Integrated Policies**
  - 丹麦：二氧化碳税 **Carbon Dioxide Tax**
    - 与能效自愿协议、补贴、补贴审计、及减税相结合

      Combined with voluntary energy efficiency agreements, subsidies, subsidized audits, and tax reductions
    - 与欧盟排放贸易计划相结合

      Integrated with European Union Emissions Trading Scheme

Fiscal and Tax Policies For Energy Efficiency Promotion
提高能效的财政税收政策

- 综合政策
  - 英国: 气候变化征税
    - 结合气候变化协议，对特殊的能效技术免税，对达到能效目标的行业减税

      Combined with climate change agreements, tax exemptions for specific energy-efficient technologies, and tax relief for industries that meet energy efficiency targets
    - 包括利用国内的排放贸易体制

      Includes use of domestic emissions trading scheme

Fiscal and Tax Policies For Energy Efficiency Promotion
提高能效的财政税收政策

- 综合政策
  - 排放贸易 **Emissions Trading**
    - 限额与贸易 **Cap and Trade**
      - 欧盟排放贸易计划

        European Union Emissions Trading Scheme
      - 英国排放贸易计划 **UK Emissions Trading Scheme**
      - 加拿大清除、减少排放以及学习行动的示范项目

        Canadian Pilot Emissions Removals, Reductions, and Learning Initiative
    - 基准线和排放额度 **Baseline and Credit**
      - 联合履行京都议定书和清洁发展机制

        Kyoto Protocol's Joint Implementation and Clean Development Mechanism

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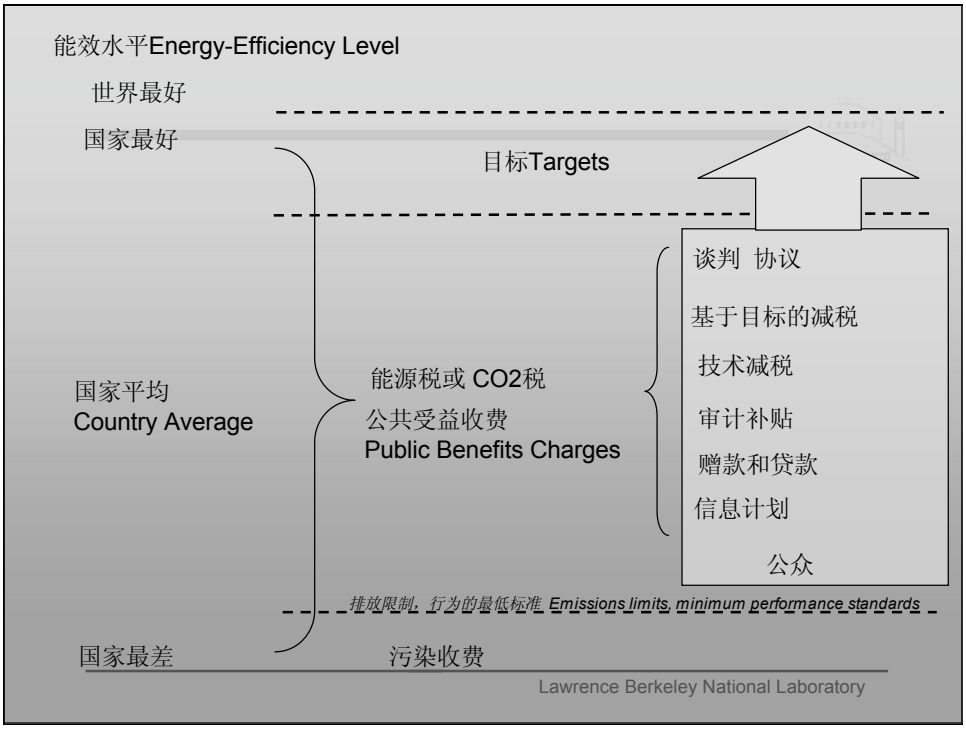

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激励工业能源效益的税收和税收减免
Taxes and Tax Relief for Stimulating Industrial Energy Efficiency

在促进工业能效财税政策研讨会上的发言

Presentation at the Workshop on Industrial Tax and Fiscal Policies to Promote Energy Efficiency

北京

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环境能源技术部能源分析组
劳伦斯伯克利国家实验室

Beijing

24 May 2005

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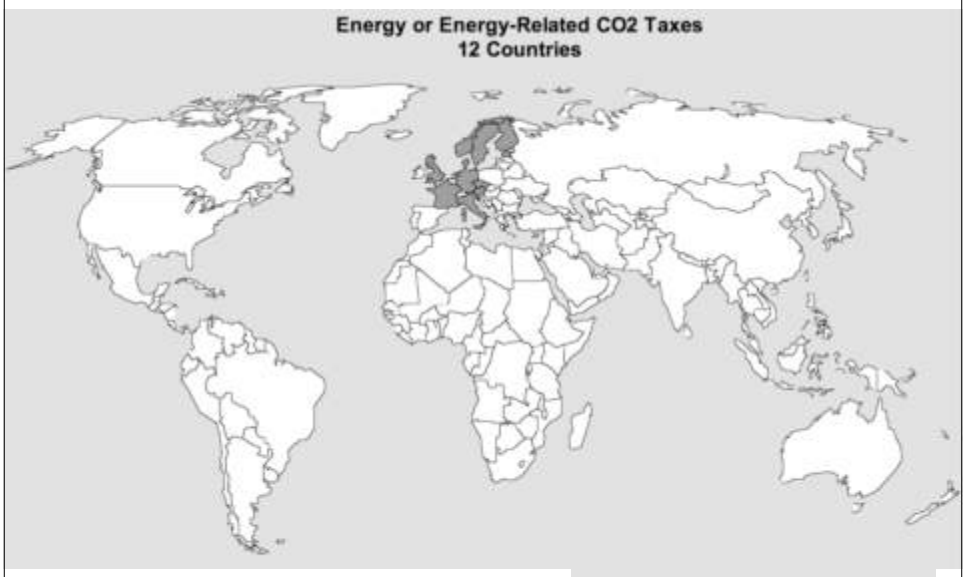
能源税或与能源相关的 CO_2税
Energy or Energy-Related CO_2 Taxes

- 增加能源使用成本以激励在能源效率上的投资

  Increase costs associated with energy use in order to stimulate investments in energy efficiency

  – 能源税或者与能源相关的二氧化碳(CO_2)税已在欧洲12个国家创立

  Energy or energy-related carbon dioxide (CO_2) taxes found in 12 European countries



能源税或与能源相关的 CO_2税
Energy or Energy-Related CO_2 Taxes

- 种类广泛的与环境有关的或“绿色”的税种在理论上被认为优于其他政策手段，因为它们使环境成本和消费内在地联系起来。

  Broad category of environmental or “green” taxes is considered theoretically superior to other policy instruments because they internalize the environmental costs associated with consumption

- 自从20世纪90年代以来，该税种在欧洲就非常普遍

  Common in Europe since the early 1990s

- 作为一种用于降低能源消费或者CO_2 排放的政策，此税被用于特别燃料或电力

  As a policy to reduce energy consumption or associated CO_2 emissions, taxes are applied to specific fuels or electricity

能源税或二氧化碳(CO_2)税：优势
Energy or CO_2 Taxes: Advantages

- 目标是降低对征税产品的需求
  Aims to reduce demand for the product taxed
- 增加税收可用来调整工业其他方面的成本（例如与劳动力相关的税），结果成为了税收中立的税种
  Raises revenues, which can be used to offset other costs to industry (such as labor-related taxes), resulting in a revenue-neutral tax
- 对降低污染以及健康与劳动者生产力危害的影响
  Reduces pollution and related detrimental health and labor productivity impacts

能源税或二氧化碳(CO_2)税：缺点
Energy or CO_2 Taxes: Disadvantages

- 很可能产生非预期的不良效应，例如在社会的某些特定阶层中（如贫困家庭）或者在竞争的工业部门中，产生不均衡效应。
  Possible undesirable effects such as disproportional impact on certain sectors of society (e.g. poor households) or on the competitiveness of industrial sectors
- 税收的控制与审批相对于政府而言成本高昂
  Controlling and sanctioning related to taxes can be expensive for governments
- 可能遭到强烈的反对，同时，政策的制定也会陷入政治争论中
  Can result in strong opposition and enactment can become mired in political debate

能源税或者与能源相关的（CO_2）税
Energy or Energy-Related CO_2 Taxes

- 12个欧洲国家有能源税或者与能源相关的（CO_2）税, 奥地利、捷克共和国、丹麦、爱沙尼亚、芬兰、法国、德国、意大利、荷兰、挪威、瑞典和英国

  12 European countries have energy or energy-related CO_2 taxes: Austria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Italy, Netherlands, Norway, Sweden, and the UK.

- 我们将重点关注挪威、瑞典、荷兰、德国

  Will focus on Norway, Sweden, Netherlands, Germany

- 其他的重点案例来自丹麦和英国 —— 这两个国家将会被分别介绍

  Other key examples are Denmark and 英国 – there will be separate presentations on these two countries

挪威: 二氧化碳（烟尘）排放税
Norway: Carbon Taxes

- 1991年引入二氧化碳（烟尘）排放税

  Carbon tax introduced in 1991

- 应用于所有CO2排放的65%

  Applies to about 65% of all CO_2 emissions

- 在所有的工业中应用了电力税

  Electricity tax applies to all industries

- 水泥、纸浆/纸和鱼粉工业中施行特殊的免税

  Specific exemptions for cement, pulp/paper, and fishmeal industries

- 能源税务系统由于那些进入能源效率协议工业的免税，正在变成一个“单一的”电力税务系统。

  Energy taxation system is changing to be just an electricity taxation system with exemptions for industries that enter into energy efficiency agreements

瑞典：二氧化碳（烟尘）排放税
Sweden: Carbon Tax

- 瑞典于1991年引入二氧化碳（烟尘）排放税
  Swedish carbon tax introduced in 1991
- 大多数工业用户获准50%-70%的免税来保护竞争；一些用户获准全额免税（商用园艺业、采矿业、制造业、和纸浆/纸业）
  Most industrial users granted a 50%-70% exemption to protect competitiveness; some were granted full exemptions (commercial horticulture, mining, manufacturing, and the pulp and paper)
- 批评针对于瑞典的税制并未能反应出燃料中碳的实际排放水平；低排放的柴油燃料和高排放的柴油燃料税收是相同的
  Criticism is that the Swedish tax does not reflect the actual level of carbon emitted from fuels: low emission diesel fuel and high-emission diesel fuel have the same tax

瑞典：实行结果
Sweden: Program Results

- 在1987年和1994年间，碳的排放减少600-800万吨，排放水平降低了13%
  Between 1987 and 1994 carbon emissions decreased 6-8 Mtonne, a 13% decrease in emission levels
- 一个关于瑞典二氧化碳（烟尘）排放税的评估研究发现，该税有助于减少二氧化碳的排放，符合瑞典的环境政策
  An evaluation study of the Swedish CO_2 tax found that it has helped to reduce emissions of CO_2 in line with Swedish environmental policy

荷兰：调节能源税
Netherlands: Regulating Energy Tax

- 1996年引入调节能源税
  Regulating Energy Tax introduced in 1996
- 燃料油税、柴油税、液化石油税、天然气税与电力税
  Tax on fuel oil, gas oil, LPG, natural gas and electricity
- 税收主要是直接针对家庭及小型能源消费者；降低工业能源消费的努力主要是通过一个自愿协议计划来引导
  Tax is mainly directed towards households and small energy consumers; efforts to reduce industrial energy consumption were conducted primarily through a voluntary agreement program
- 税务通过能源账单支付
  Tax is paid through energy bill
- 本税是税收中立税种：会通过减少税收收入的方法来平衡负面影响
  Tax is revenue-neutral: income tax was reduced to off-set impact

荷兰：计划评估
Netherlands: Program Evaluation

- 2000年期望的结果是CO2排放量每年减少170-270万吨（这是荷兰CO2排放总量的1.5%）
  CO2 emission reductions of 1.7-2.7 MtCO2 per year in the year 2000 were expected as a result of the tax (1.5% of total CO2 emissions in the Netherlands)
- 三年中（从1999年开始）税收上升了15.4亿欧元，期望在2010年CO2减少360-380万吨，2020年减少460-510万吨
  The raise in the tax by €1.54 billion in three years (starting in 1999) is expected to generate a CO2 reduction of 3.6-3.8 MtCO2 in the year 2010 and 4.6-5.1 MtCO2 in 2020
- 工业的自愿协议计划到2012年减少460万吨CO2排放
  Voluntary agreements with industry are projected to save 4.6 MtCO2 by 2012

德国: 生态税改革
Germany: Ecological Tax Reform

- 1999年引入 生态税改革
  Ecological Tax Reform introduced in 1999
- 发动机燃料税、轻质民用燃料油税、 重质民用燃料油税、天然气税和电力税
  Taxes on motor fuel, light heating oil, heavy heating oil, natural gas, and electricity
- 税收循环入员工养老基金中
  Revenues recycled into employee pension funds
  - 降低了员工和雇主必需分摊的税费
    Lowered the required employee and employer contributions
  - 导致了工资的净增长
    Resulted in a net increase in wages

德国: 计划评估
Germany: Program Evaluation

- 在2002年底，减少了超过700万吨的二氧化碳排放，同时创造了60,000个新的就业机会
  At the end of 2002, more than 7 million tonnes of CO_2 emissions avoided and 60,000 new jobs created
- “期望的生态效益的清洁标记”包括
  “Clear signs of the desired ecological effects” including:
  - 能源消费的降低
    decrease in energy consumption
  - 期望到2005年CO_2的排放将会减少2-3%
    expectation that CO_2 emissions will be reduced by 2-3% by 2005
  - 创造250,000个新的就业机会
    250,000 new jobs created

能源税和与能源相关的CO_2 税
Energy or Energy-Related CO_2 Taxes

- 对二氧化碳（烟尘）排放税效应的评估显示出，它们大体上达到了它们的降低排放的目标

  Evaluations of the effectiveness of carbon taxes show that they generally achieve their objective of reducing emissions

- 美国一个有关中小工业公司的研究发现，短期来看，对于产生效益，降低效益投资前期成本的政策（例如补贴和减免税收）比提高能源价格更为有效。

  A study of small and medium industrial firms in the U.S. found that, in the short term, policies to reduce the up-front costs of efficiency investments (e.g. subsidies and tax relief) are more effective at inducing efficiency than higher energy prices

促进能源效率的税务和财政政策
Tax and Fiscal Policies to Promote Energy Efficiency

- 降低和能源效益投资有关的成本

  Reduce costs associated with energy efficiency investments

  – 特定的能源-生效技术的税务减免

  Tax relief for specific energy-efficient technologies

  - 加速折旧

    Accelerated depreciation

  - 税务减低

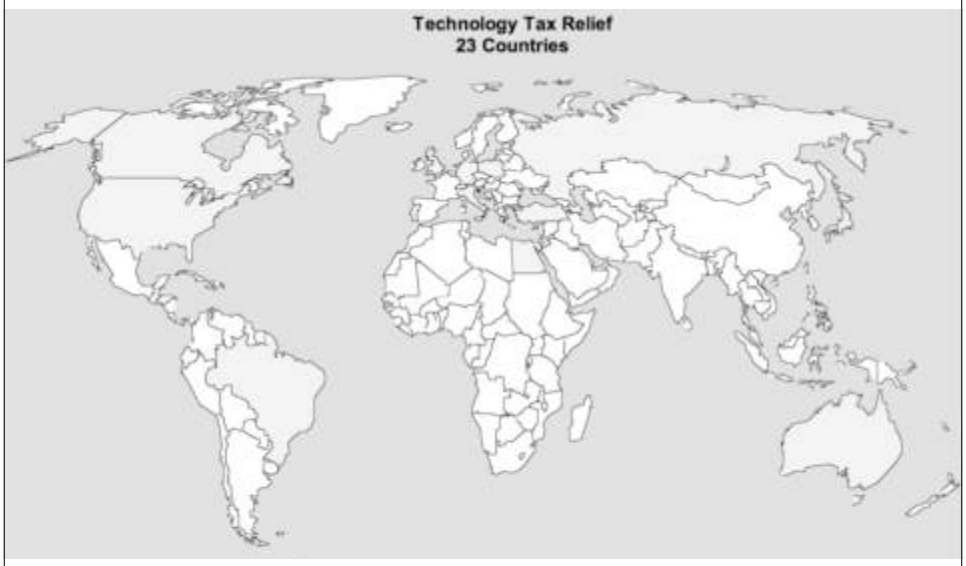
    Tax reduction

  - 免税

    Tax exemption

  – 以能源效益为目标的工业的税务减免

  Tax relief for industries that meet energy-efficiency targets



特定能源-效率技术的税务减免
Tax Relief for Specific Energy-Efficient Technologies

- *加速折旧*：有资质的设备购买方能进行比标准设备更快的设备成本折旧
  ***Accelerated depreciation*: purchasers of qualifying equipment can depreciate the equipment cost more rapidly than standard equipment**

- *税收降低*，买方能从年度收益中扣除一定的和设备有关的投资成本百分比
  ***Tax reduction* where purchasers can deduct a percentage of the investment cost associated with the equipment from annual profits**

- *免税*，买方在进口能源-效益设备的进口税支付上免税。
  ***Tax exemptions* where purchasers are exempt from paying customs taxes on imported energy-efficient equipment**

加速折旧
Accelerated Depreciation

- 加拿大：加速资本成本补贴
  Canada: Accelerated Capital Cost Allowance
  - 以30%的速度加速对特定的能源效益和可更新能源设备的注销
    Accelerated write-off at a rate of 30% for specified energy efficiency and renewable energy equipment
  - 包括预先可行性和可行性研究成本、流通成本、场地批准成本
    Includes costs associated pre-feasibility and feasibility studies, negotiation costs, site approval costs

加速折旧
Accelerated Depreciation

- 加拿大：加速资本成本补贴
  Canada: Accelerated Capital Cost Allowance

  - 从1996年开始，投资于：协同生产和特定废燃料（燃料渣）发电系统、活动太阳能系统、小规模水电安装、热回收系统、风能源转换系统、光电式发电系统，地热电发电系统和特定废燃料（燃料渣）生热设备等。
    Started in 1996 with investments in co-generation and specified waste-fueled electrical generation systems, active solar systems, small-scale hydroelectric installations, heat recovery systems, wind energy conversion systems, photovoltaic electrical generation systems, geothermal electrical generation systems and specified waste-fueled heat production equipment
  - 2001年，扩大到包括与钢厂高炉瓦斯发电系统相关的投资
    In 2001, expanded to include investments related to generation of electricity from blast furnace gas produced at steel mills

Lawrence Berkeley National Laboratory

加速折旧
Accelerated Depreciation

- 瑞典：环境投资项目中的加速折旧

  Netherlands: Accelerated Depreciation on Environmental Investment Program

  - 允许投资者更快的加速合乎环境友好的机器投资的折旧，降低营业利润和税款支出

    Allows investors to more rapidly depreciate investments in environmentally-friendly machinery, reducing operating profits and tax payments

  - 包括减少那些使用水资源、污染土壤和空气、制造噪音、使用废次产品与能源的设备

    Includes equipment that reduces water use, soil and air pollution, noise emissions, waste production and energy use

  - 包括获得针对所购机器的建议的相关成本

    Costs associated with obtaining advice on the purchased machinery are included

加速折旧
Accelerated Depreciation

- 日本：节能和循环补贴法

  Japan: Energy Conservation and Recycling Assistance Law

  - 加速相当于下列投资购置成本30%的折旧补贴：热泵、地龙式加热器、CHP系统、区域制热和冷却系统、高效电力机车、低排放机动车、能源-效益纺织品制造设备、太阳能系统、中小水力发电机、再生纸和塑料生产设备

    Accelerated depreciation allowance equal to 30% of the acquisition cost for investments in heat pumps, floor heaters, CHP systems, district heating and cooling systems, high efficiency electric trains, low emission vehicles, energy-efficient textile manufacturing equipment, solar power systems, small- and medium-size hydro generators, and equipment for producing recycled paper and plastics

加速折旧
Accelerated Depreciation

- 新加坡：所得税法案

  Singapore: Income Tax Act

  - 在有资质的能源-效益设备上的投资可以一年折旧取代三年

    Investments in qualifying energy-efficient equipment can be depreciated in one year instead of three

  - 不包括获取为了确定和分析装备购买所需的信息或顾问费等相关费用 **Does not include expenses related to acquiring information or consultant fees for identifying and analyzing the equipment purchase**

  - 包括替换装备(新的空调系统、锅炉 和抽水机) 和能源-存储装备(高效发动机，变速驱动发动机或可计算能源管理系统)项目

    Program includes replacement equipment (new air-conditioning systems, boilers, and water pumps) and energy-saving equipment (high efficiency motors, variable speed drive motors, or computerized energy management systems)

税收降低
Tax Reduction

- 日本：节能和循环补贴法为中小型公司的能源-效益设备购买时，提供了一个共同的7%的税务折扣

  Japan: Energy Conservation and Recycling Assistance Law provides a corporate tax rebate of 7% of the purchase price of energy-efficient equipment for small and medium-sized firms

- 韩国：5%的税收用于能源-效益投资，例如旧工业窑的替换、锅炉和熔炉；节能设备的安装、联合生产设备、供热设备或节能装备;可替换能源使用设备；和其他降低能源达10%的设备投资等

  Republic of Korea: 5% income tax credit for energy-efficiency investments such as replacement of old industrial kilns, boilers, and furnaces; installation of energy-saving facilities, co-generation facilities, heat supply facilities, or energy-saving equipment; alternative fuel using-facilities; and other facilities that reduce energy by 10%

税收降低
Tax Reduction

- 荷兰：能源投资扣除项目允许每年能源保持设备投资的55%从财政收入中被扣除，最多大10700万欧元。“能源列表”中提供了有效的设备，并且包含了购买设备时和相关意见有关的成本。

Netherlands: Energy Investment Deduction program allows for 55% of the annual investment costs of energy-saving equipment to be deducted from the fiscal profit, up to a maximum of 107M €. Qualifying equipment is provided on an “Energy List” and the costs associated with obtaining advice for purchased equipment can also be included.

- 英国：加强资本补贴方案允许一个商业要求第一年资本补贴的100%花费在有用的技术上

UK: Enhanced Capital Allowance Scheme allows a business to claim 100% first-year capital allowances on their spending on qualifying technologies

免税
Tax Exemption

- 德国：为高效的热量和能量（CHP或者联合产生）的联合设备免除石油税，它们月利用率或者年利用率达到70% 或者更高。

Germany: Full exemption from petroleum tax is provided for highly efficient combined heat and power (CHP or cogeneration) facilities that have monthly or annual utilization rates of 70% or greater

- 罗马尼亚：进口能源-效益技术的进口税全免，同时公司收入和与能源效益投资直接相关的收入所得税全免

Romania: imported energy-efficient technologies are exempt from customs taxes and the share of company income directed for energy efficiency investments is exempt from income tax

技术税务减免：评估
Tax Relief for Technologies: Evaluation

- 有代表性的特定能源效益技术的税务减免项目有大量的参与者

  Programs that provide tax relief for specific energy-efficiency technologies typically have a large number of participants

  - 荷兰：从1997到1999，几乎46个工业部门的14，000个实体利用15种不同的技术从荷兰项目中获益。在2001年，超过28，000应用有超过10亿欧元 的进账

    Netherlands: 1997 to 1999, almost 14,000 entities in 46 industrial sectors took advantage of the Dutch program for 15 different technologies. In 2001, over 28,000 applications representing over 1B € were filed

  - 日本：从1996年到1998年，每年大约有25，000种设备加速折旧

    Japan: 1996 through 1998, accelerated depreciation of approximately 25,000 pieces of equipment each year

技术税务减免：评估
Tax Relief for Technologies: Evaluation

- 缺点

  Disadvantages

  - 没有提供减少能源使用的激励措施

    Does not provide incentive to reduce energy use

  - 需要大量的公共基金支出

    Can require large expenditures of public funds

  - 有大量的“没有受益的人员”-那些人同样购买设备，但甚至没有税收减免

    Can have large number of “free riders” – people who would have purchased the equipment even without the tax relief

技术税务减免：评估
Tax Relief for Technologies: Evaluation

- 优点

  Advantages

  – 减轻资本限制

  Alleviates capital constraints

  – 关于能源-效益技术购买的决定更多地是基于设备的成本而不是驱动设备的能源的期望成本

  Decisions regarding the purchase of energy-efficient technologies are typically based more on the cost of the equipment than on the expected cost of energy used to power the equipment

  – 能源-效益技术的税收减免比能源征税更为有效

  Tax relief for energy-efficient technologies may be more effective than taxing energy

税务减免相关协议
Tax Relief Associated with Agreements

- 达到协议的能源效率目标或者CO2减少目标的工业可以减免国家能源税或者与能源相关的碳税

  Industries that meet negotiated energy efficiency or CO2 reduction targets are granted tax relief from national energy or energy-related carbon taxes

- 爱尔兰：碳税/能源税与自愿协议相结合的可行性测试试点项目–达到国际最佳实践标准的公司可以享受减免税

  Ireland: pilot program that tested the feasibility of a carbon/energy tax combined with voluntary agreements – tax offsets to be offered to companies that achieve best international practice

税务减免相关协议
Tax Relief Associated with Agreements

- 新西兰：公司必须加入协议来达到世界最佳实践水平，作为回报，他们将得到二氧化碳排放的完全或部分免税，并将于2007年前实施。

  New Zealand: firms must enter into agreements to reach world best practice levels; in return, they will receive full or partial exemption of carbon dioxide emissions charge that will start no later than 2007

- 瑞士：企业可以通过签订CO2排放削减/消除的捆绑协议来避免支付即将征收的CO2税

  Switzerland: enterprises can enter binding agreements on CO2 emissions cuts/abatements to avoid an impending CO2 tax

税务减免相关协议
Tax Relief Associated with Agreements

- **丹麦：签署了能源效率协议的公司可以降低CO2税的缴纳**
  Denmark: firms with energy efficiency agreements have a reduced CO2 tax

- **英国：达到协议能源效率目标的公司将获得一个80%能源税务折扣**
  UK: firms that meet negotiated energy efficiency targets receive an 80% energy tax rebate

谢谢！
Thank You!

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污染收费和公共收益基金
Pollution Levies and Public Benefit Funds

在促进工业能效财税政策会议上的发言

Presentation at the Workshop on Industrial Tax and Fiscal Policies to Promote Energy Efficiency

北京

24 May 2005

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污染收费---概览
Pollution Levies Overview

- *污染收费是环境保护的一种工具，用于对排放标准违反者的处罚*

  Pollution levies are a tool of environmental enforcement, used to punish violators of emissions standards.
- *尚未用于能源政策的实施。。。*

  They have not been used to implement energy policy…
- *但会与能源政策相协调以促进清洁能源的使用*

  …but they could be coordinated with energy policy to promote clean energy choices.

污染收费–---处罚的方式
Types of Penalties

- *司法处罚 Criminal*
  - 司法处罚需要冗长的司法程序以证明个人或法人公司有罪或无罪
    Criminal penalties require lengthy judicial proceedings to prove criminal intent or negligence on the part of individuals or corporations
  - 应用起来困难，将产生对抗性的关系
    Can be difficult to apply, create adversarial relationship
- *民事处罚*
  Civil
  - 可以通过司法或行政程序解决
    Can be applied through judicial or administrative proceedings
  - 只要证明违反（环境）法规的事实存在
    Only necessary to show that a violation of regulations has occurred
  - 正在被越来越多地使用
    Use has grown

污染收费–---审理的方式
Types of Proceedings

- *司法的方式 Judicial*
  - 用于司法处罚案件
    Used for applying criminal penalties
- *行政方式*
  Administrative
  - 比法庭审理成本低
    Less costly than court proceedings
  - 可能仍要受到司法检查的影响
    May still be subject to judicial review
  - 并非所有国家都有行政处罚条例
    Not all countries have provision for administrative procedures
  - 一些国家只有司法管束来处理环境侵害事件
    Some have in place only criminal statutes governing environmental violations

污染收费—收费（处罚）的基础

- *以每天的排放量设定基线*
  Daily rates to set baseline
  - 要设定污染者污染排放每天最大的处罚力度
    Typically rates for maximum penalties are set per day in which an emitter is in violation
  - 通常要设定每个行政处罚或每个司法案件的最大罚款额
    Often cap for maximum fine per administrative action or per criminal case
- *根据不同情况做调整*
  Modifications based on circumstances
  - 行政和司法当局通常根据下列情况对罚款做相应调整
    Administrative and judicial authorities usually adjust fines based on considerations including
    - 环境侵害的严重程度
      seriousness of offence
    - 侵害的内容
      intent of violator
    - 侵害者支付罚款的能力
      ability to pay of the violator
    - 侵害者行为给社区带来的益处
      benefit to community of violator's activities

国家	行政/民事处罚		司法处罚		
	罚款数额	*备注*	*罚款数额*	*拘禁 /关押*	*备注*
澳大利亚	最高对个人每笔55万澳元, 对企业法人550万澳元	讨论民事/行政处罚以澄清与司法处罚的区别			
奥地利	最高从 €7 欧元到 €36,400欧元不等	可拘禁最长 2 个月	每天€2 to €327 , 总计€4到 €117,720	最高判决 6 个月至 3年监禁	罚款金额根据触犯者的收入情况决定，最高可达日罚款额的 360 倍
法国 France			对个人最高 €1,500 到 €150,000，对公司法人 €7,500 to €750,000	最高判决1至 3年监禁	对 再次违法的，罚款额可以加倍
德国 Germany	最高到 €500,000		以每天为单位计算罚金，最高从5,000欧元到100,000欧元不等	最高判决 6 个月至10年监禁	对企业法人，只有管理者有被监禁的风险
荷兰 Netherlands		正在考虑民事/行政处罚	€2 到 €450,000	最少1 天到最高 6 年 监禁	
英国 United Kingdom		正在考虑民事/行政处罚	最大罚款从£5,000 到 £20,000不等；对环境控告，罚款没有限制	一般最多监禁 3- 6 个月，对起诉和控告最高可达5 年	苏格兰、威尔士和爱尔兰，不同的法令具有类似的处罚
美国 United States	每天最高$650 – $1,000 ; 最高罚金 $1,200 to $1,000,000	依据法令不同而变化, 如 CAA 框架下最高罚款为 $32,500 每天每次侵害，270,000 美元/每次侵害行为; 对附加环境项目可以减轻罚款	对个人罚金最高从每天5,000美元到50,000美元不等，对公司法人最高可达100万美元	行为不端：最高1 年监禁; 情节严重的最高可处以5 年监禁	罚款和监禁的期限依法令不同而不同，均可因再次犯法而遭到双倍的处罚和监禁

污染收费
通常超过法定最大罚款额

- *许多国家，罚款的指南通常都被超越*

  In many countries, guidelines for fines can be exceeded based on the judgment of competent authorities
- *协商或法庭裁定的解决方案可能比列出的最大罚款额高出数倍*
  Negotiated or court-ordered settlements can be many times higher than maximum fines listed in schedules.
  - 在美国清洁空气法框架下，每次行政处罚的金额最高可达22万美元　　Under US Clean Air Act, maximum penalty per administrative action is $220,000
  - 如果美国环保局长和司法部长批准，可以进行更高金额的处罚 With permission of USEPA Administrator and Attorney General, larger fines can be sought
  - 考虑对新技术投资的承诺和公开排污数据，处罚的（实际）金额可达数千万美元（甚至十亿美元）　Penalties can be tens of millions of dollars (and up to a billion dollars), plus commitments to invest in new technology and to publicize effluent monitoring data

污染收费
美国清洁空气法案例

- *概述*

  Dynergy
  - 2005 年，伊利诺斯电力公司(Dynergy)由于在一个发电厂项目中违反了《新污染源审查条款》而被罚款900万美元，同时同意安装价值数亿美元的排放控制器。

    In 2005, Illinois Power (Dynergy) fined $9 million for new source review violations at a power plant, and agreed to install emission controls worth hundreds of millions of dollars.
- *柴油机制造商*

  Diesel engine manufacturers
  - 2004 年，七家厂商因为安装 “欺骗芯片” 以允许在实际运行中排放量超标的发动机通过实验室检查而被罚款十亿美元。

    In 2004, seven manufacturers were fined $1 billion for installing “cheat chips” that allowed their engines to pass laboratory inspections but to exceed emissions standards in actual operation.

污染收费
美国清洁空气法案例

- *2002事件　2002 cases*
  - Boise Cascade公司支付了435万美元的民事处罚并且承诺投资1800万美元用于排放控制的支出
    Boise Cascade paid $4.35 million in civil penalties and committed to $18 million in emission control expenditures
  - Conoco公司支付了155万美元的民事处罚，花费500万美元用于追加的环境规划方案上，并且承诺 支付1亿美元用于污染控制。
    Conoco paid $1.5 million civil penalty, spent $5 million on supplemental,environmental projects, and commited to spend $100 million for pollution controls.
  - Murphy炼油集团支付了550万美元的民事处罚。
    Murphy Oil refinery operations paid $5.5 million civil penalty.
  - 2002 全年美国环保署重新获得民事处罚和民用航空管理局行政处罚中近4000万美元, 并确保支付3300万美元用于追加的环境规划方案中。
    Overall in 2002, EPA recovered nearly $40 million in civil and administrative CAA penalties, and secured commitments of $33 million in supplemental environmental projects.

污染收费—趋势

- *多数国家正逐渐扩大管理处罚的体系。*
  More countries are moving to or expanding systems of administrative penalties.
- *系统在平衡违规者行为的社会经济利益和减少违规害处方面变得更加复杂。*
  Systems have become more sophisticated in balancing social and economic benefits of violators' activities against harm of offences.
- *行政司法主管在决定处罚方面拥有广泛的决定权。*
  Administrative and judicial authorities have wide discretionary powers in determining penalties.
- *无论管理体系类型，各国的在环境污染的处罚程度都在不断提高。 Levels of penalties for environmental offences have been rising across countries, regardless of the type of regulatory system.*
- *更高处罚将随着环境管理力度的加大和管理服从行为一起记入信用。 Higher penalties are credited with increasing the effectiveness of environmental enforcement and with motivating regulatory compliance.*

公益基金概述
Public Benefit Funds
Overview

- *在美国和其他国家（例如, 英国、澳洲、挪威和瑞典）公益基金已经被解除管制使用*

  Public benefits funds have been used in the US and other countries (e.g., UK, Australia, Norway, and Sweden) with deregulated utilities

- *RD&D公益基金资助那些可更新的、有效率的计划、面向穷人的计划和新的供应与终端应用技术的研究、开发及示范 类项目*

  RD&D PBFs fund programs supporting renewables, efficiency, programs for the poor, RD&D for new supply and end-use technologies

- *方案服务于多种客户，而不仅限于工业客户*

  Programs serve a variety of customers, not just industrial customers

- *低费用*

  Charges are low

PBF：公益基金
PBF Public Benefits Funds
公益基金的别名…
A PBF by any other name

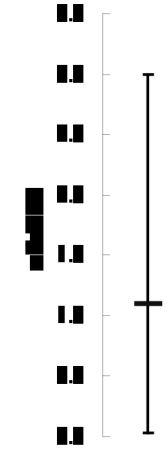
- *仍将会为公众利益筹措经费…*

  would still finance public goods
  - 公益费用 public benefits charges
  - 公益费用 public goods charges
  - 公益体系费用 system benefits charges
  - 直线费用 line charges
  - 网络费用 wires charges
- *费用类型*

  Types of charges
  - 每千瓦时(最常用的) per kWh (most common)
  - 内部(嵌入式)费用 embedded charges
  - 统一费用 flat rates

公益基金Public Benefits Funds
美国已拥有较多的经验
Most experience has been in US

- *25 个州拥有公益基金 25 states have PBFs*
- *这些州的能效项目费用范围从 0.03 到 3个密尔/千瓦时(1密尔 = 0.001美元），中间值为 1.1个密尔/千瓦时。*
  Charges for efficiency programs in these states range from 0.03 to 3 mills/kWh (1 mill = US$0.001), with a median of 1.1 mills/kWh
- *2003 年通过这些州的公益基金筹措的用于能效率计划的资金超过9亿美元*
  Collective spending on efficiency programs financed through PBFs in these states was over US$900 million in 2003
- *授权期数延长（从 3-5 年到 5-10 年或无限期）*
  Periods of authorization have lengthened (from 3-5 years to 5-10 years or open-ended)



公益基金 Public Benefit Funds
因地制宜的管理方式
Administration varies by region

- *过去，美国各州主要依赖于公共利益管理效率方案的使用*
  In the past, US states relied mainly on utilities to administer public benefits efficiency programs
- *现在更多的州依靠州立机构和非营利组织*
  *Now more states are relying on **state agencies** and **nonprofit organizations***
- *没有一种方式能最佳地适用于所有情况*
  No single approach appears to be best in all situations
- *这三种方式都曾获得成功运用*
  All three have been used with some success

公益基金 Public Benefit Funds
公益基金资助活动的管理 Administration of PBF-funded activities

Administrative structure of energy-efficiency programs in five US states/regions

	Pacific Northwest[a,b]	California[c,d,e]	New York[e,f,g]	Vermont[e,h]	Connecticut[e,i,j]
Administrator	Northwest energy efficiency alliance	Pacific Gas & Electric, Southern California Edison, Southern California Gas Company, and San Diego Gas and Electric	New York Energy Research and Development Authority (NYSERDA)	Efficiency Vermont	Connecticut light and power, united illuminating
Organization type	Regional non-profit	Investor Owned Utilities	State Authority	Energy Efficiency Utility	Investor Owned Utilities
Governance	Board of Directors	Oversight by California Public Utilities Commission	MOU with New York Public Service Commission; input from advisory board	Contract with Vermont Public Service Board	Oversight by Connecticut Public Utilities Commission with input by ECMB advisory board
Funding Source	Ratepayer funding or public benefits funding from BPA and utilities in each state	Public Benefits Fund through surcharge of 1.3 mills/kWh	Public Benefits Fund through surcharge of 0.83 mills/kWh	Public Benefits Fund through surcharge	Public Benefits Fund through surcharge of 3.0 mills/kWh
Duration	Indefinite	Through 2012	Through June 2006	No sunset in legislation; three-year contract with Administrator	Indefinite
Annual budget (approx.)	$20 million (NEEA only)	$275 million	$74 million (EE only)	$13 million	$89 million

公益基金 Public Benefits Funds
积极成效 Positive outcomes

- *州计划使每年的电力消耗减少了全年电力需求的0.1% 到 0.8%，中间值为 0.4%*

  State programs have led to reductions in electricity use equivalent to 0.1% to 0.8% of annual power demand, with a mean of 0.4%
- *总共减少了超过 1,000 兆瓦 的电力需求*

  Combined reductions in electricity demand of over 1,000 MW
- *能量守衡计划中的全生命周期成本范围为每千瓦时 0.023 到 0.044 美元*

  Lifecycle costs of conserved energy from programs ranged from $0.023 to $0.044 per kWh
- *额外的好处是电力工厂减少了空气污染物的排放*

  Additional benefits in terms of reduced emissions of air pollutants from power plants
- *…但也有批评指出公益基金是间接税…*

  but some criticize PBFs as hidden taxes

公益基金 ***Public Benefits Funds***
工业计划 Industrial programs

- *在绝大多数的州中，工业公司使用PBC 收益参与到计划中*

  In most states, industrial firms participate in programs run with PBC proceeds
- *在极少数情况下，工业客户由于感到不利而选择放弃参与*

  In a very few cases, industrial customers have opted out of participation due to perceived disadvantages

公益基金 ***Public Benefits Funds***
工业计划 Industrial programs

- *纽约能源研究发展局 (NYSERDA) 通过公益基金为工业提供服务*

  New York's Energy and Research Development Authority (NYSERDA) provides services to industry through PBF
  - 50% 费用用于 Flex/ Tech 技术支持研究 (结果是保护措施的优先目录）

    50% cost-shared Flex/Tech Technical Assistance Study (results in priority list of conservation measures）
  - 在能源服务公司改良照明、发动机和空间制冷却方面的商业/ 工业执行计划

    Commercial/industrial performance program in which ESCOs improve performance of lighting, motors, and space cooling
  - 降低了能源效率和回报期低于十年的再生能源项目的利润率的借贷投资

    Loan fund that reduces interest rate on energy efficiency and renewable energy projects with paybacks ≤10 years

谢谢！Thank you!

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财政政策：
赠款、补贴、审计和贷款
Fiscal Policies:
Grants, Subsidies, Audits and Loans

在促进工业能效财税政策研讨会上的发言
Presentation at the Workshop on Industrial Tax and Fiscal Policies to Promote Energy Efficiency
北京
2005年5月24日

能源分析部
环境能量技术分部
劳伦斯伯克利国家实验室

Beijing
24 May 2005
Christina Galitsky
Energy Analysis Department
Environmental Energy Technologies Division
Lawrence Berkeley National Laboratory

概要大纲：降低能源效率投资成本
Outline: Reducing costs for Energy Efficiency Investments

- *赠款与补贴*
  Grants and Subsides
- *补贴审计*
  Subsidized audits
- *贷款*
  Loans
  - 低利率贷款　Soft loans
  - 创新基金　Innovative funds
    - 通过能源服务公司公平参与
      Equity participation through Energy Service Companies
    - 担保基金
      Guarantee funds
    - 循环基金
      Revolving funds
    - 风险资本
      Venture capital

赠款和补贴 Grants and Subsidies
概述 Overview

- *首先实施的政策措施*
  Among the first policy measures implemented
- *仍被最广泛使用的财政激励手段*
  Still most widespread fiscal incentives used
- *定义:公共基金直接地给予企业实施能源效率项目*
  Definition: Public funds given directly to party implementing energy efficiency project
  - 给予固定总量, 如投资百分比或与总节约量成比例的总数
    Given as fixed amount, as a % of investment or as a sum proportional to amount saved
  - 无经济回报给投资赠款者
    No financial return on investment to grantor

赠款和补贴 Grants and Subsidies
好处 Benefits

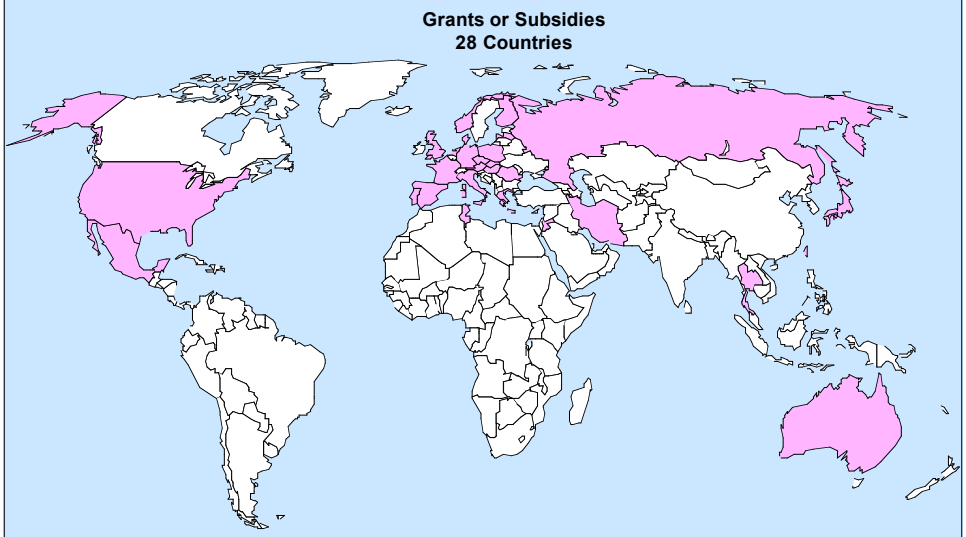
- *能源效率项目对于个体消费者来说是不经济的，但从社会/国家总体来说在财政上是有好处的。*
  Energy efficiency project is uneconomic for individual consumer but financially benefits community/country as a whole
- *特定案例下的优良选择:*
  Good option in certain cases:
  - 投资的高度风险市场环境
    High risk market environments for investments
  - 与更多的如基础设施扩建等传统投资太多的竞争
    Too much competition with more traditional investments like infrastructure expansion
  - 认识到基于资产的投资相比风险太高
    Perceived as too risky compared to asset based investments
  - 能源效率项目太小而无法吸引投资者
    Energy efficiency projects are too small to attract investors
  - 能源价格不能真正地反映能源成本
    Energy prices do not reflect real costs of energy

赠款和补贴 Grants and Subsidies
潜在的缺点 Potential Drawbacks

- *免费搭车*
  Free-riders
- *缺乏知识让目标消费者无法理解*
  Lack of knowledge by target consumers preventing uptake
- *受限的事务成本或手续*
  Prohibitive transaction costs or procedures

赠款和补贴 Grants and Subsidies
例子与解决方案 Examples and Solutions

- *目标方法 Targeted approach*
  - 聚焦于小的或中等规模企业的荷兰最佳项目计划
    The Netherlands' BSET Program focuses on small or medium sized enterprises
  - 聚焦大企业的挪威工业能源效率网络(IEEN) 和澳洲温室气体消除计划
    Norway's Industrial Energy Efficiency Network (IEEN) and Australia's Greenhouse Gas Abatement Program focus on large enterprises
- *见多识广的消费者 Informed customers*
  - 丹麦将补贴按优先顺序该给到参与志愿协议的公司
    Denmark prioritizes subsidies to companies involved in a voluntary agreement
- *成本-效率准则 Cost-effectiveness Criteria*
  - 泰国能源保存计划基金需要每个能源效率测量，实现超过9%的内部回报率。Thailand's Energy Conservation Program Fund requires each energy efficiency measure achieves an internal rate of return above 9%
  - 挪威工业能源效率网络(IEEN)需要一个在7%到30%之间的回报率
    Norway's IEEN requires a rate of return between 7 to 30%



补贴审计 *Subsidized Audits*

概述 Overview

- *定义：一个关于带有关于能用来提高效率的措施的技术信息团体的能源效率的评估*

  Definition: An assessment of the energy efficiency of a facility along with technical information about measures that can be taken to increase efficiency

  - 能由政府或公用事业部分地或完全地投资

    Can be partially or fully funded by the government or public utilities
  - 总量通常基于公司规模、能源消耗总量或职工人数

    Amount usually based on company size, amount of energy consumed or number of employees

补贴审计 *Subsidized Audits*
好处 Benefits

- *为希望更加高效的公司降低事务成本*
  Reduces transaction costs for company wishing to become more efficient
- *能够作为参与自愿协议的一种好处*
  Can be provided as a benefit for participation in voluntary agreements
- *仅有400万美元的公共基金和235万美元来自工业，澳洲企业能源审计计划 (EEAP) 得到了600万美元的存款！*
  With only $4 million in public funding and $3.25 million from industry, Australia's Enterprise Energy Audit Programme (EEAP) achieved >$60 million in savings!!
  - 成功依靠于能源价格和其他可提供的财务激励。
    Success depends on energy prices and other financial incentives available

补贴审计 *Subsidized Audits*
潜在的缺点 Potential drawbacks

- *免费搭车者*
  Free-riders
- *缺乏关于审计程序的知识*
  Lack of knowledge about the audit programs
- *审计员必须熟悉产品和操作，能够熟练审计*
  Auditors must be knowledgeable of production and operation at facility audited

补贴审计 *Subsidized Audits*

例子与解决方案

Examples and Solutions

- *目标消费者*

  Targeted customers
  - 丹麦，瑞典和荷兰作为自愿协议参与的好处提供审计

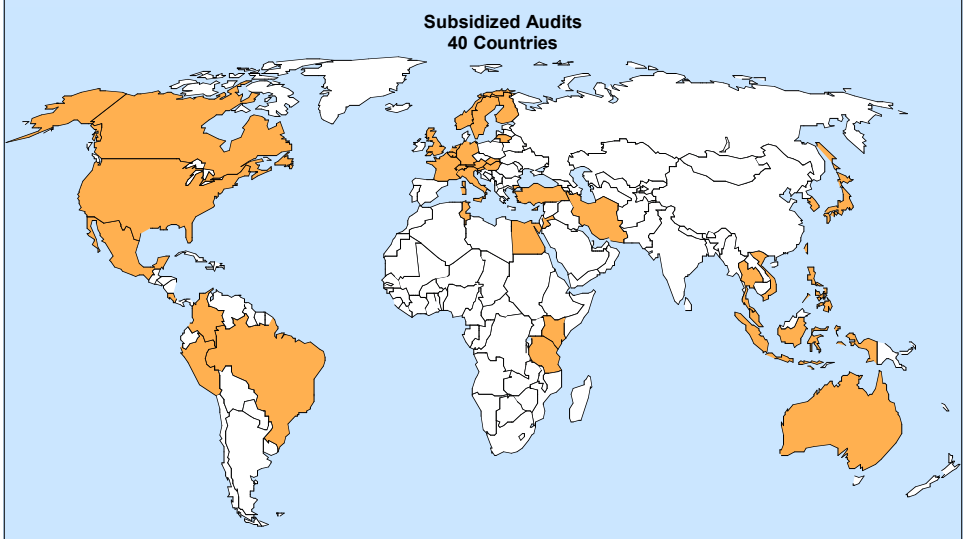
    Denmark, Sweden and the Netherlands provide audits as a benefit to voluntary agreement participants
- *提供有资格的审计员*

  Provide qualified auditors
  - 澳洲企业能源审计计划 (EEAP), 挪威的IEEN和Enova计划提供了可信任的审计员名单

    Australia's Enterprise Energy Audit Programme (EEAP), Norway's IEEN and Enova Programs provide a directory of accredited auditors
  - 美国工业技术最佳实践项目办公室向公司寻求帮助去寻找有潜质的审计员
  - U.S. Office of Industrial Technologies BestPractices Program asks companies for help in identifying potential auditors
- *评估/跟踪帮助记录和实现效率*

  Evaluations/follow-ups help document and achieve effectiveness
  - 英国的碳基金会（Carbon Trust）通过电话和行动计划去帮助消费者实施措施

    The UK's Carbon Trust follows up via phone calls and action plans to help customers implement measures



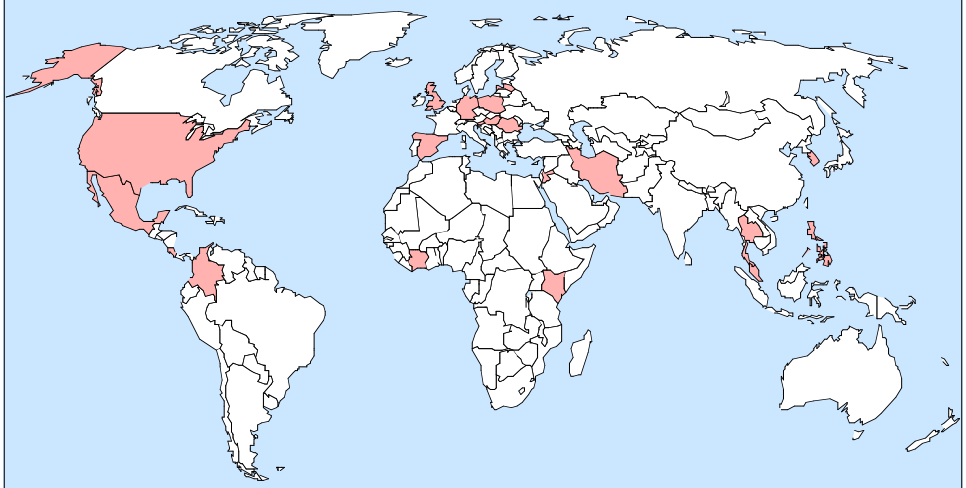
公共与创新贷款 Public and Innovative Loans

概述 Overview

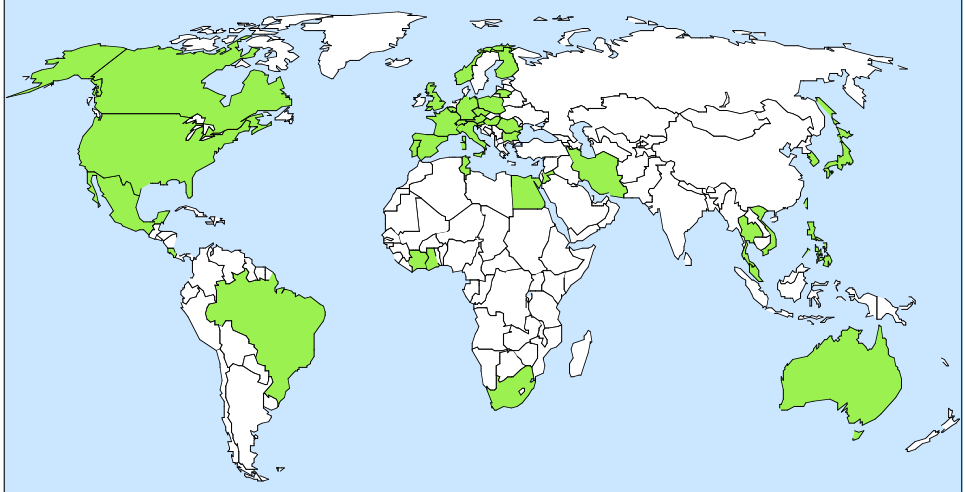
- *低利率贷款: 贷款为能源效率投资提供了比市场利率低的利率。*
  Soft Loans: loans offered at interest rates below market rates for investments in energy efficiency
  - 由公共基金投资
    Funded by public funds
  - 比补贴用的少
    Fewer used than subsidies
  - 公共贷款通常由创新基金部分地投资
    Public loans often partially fund innovative funds

- *创新基金: 包括想从贷款中获取利润的私营部门(例如, 银行)*
  Innovative funds: involve private sector (e.g., banks) who seek profits from the loans
  - 引入私营部分以从能源效率项目上获取利益
    Introduce private sector to profits from energy efficiency projects
  - 希望发展长期的自我可持续的市场， 但是又有良好的短期快速投资回报
    Hope to develop self-sustaining market in the long term, but a good return on investment in the short run

Public Sector Loans
21 Countries



Innovative Funds
39 Countries

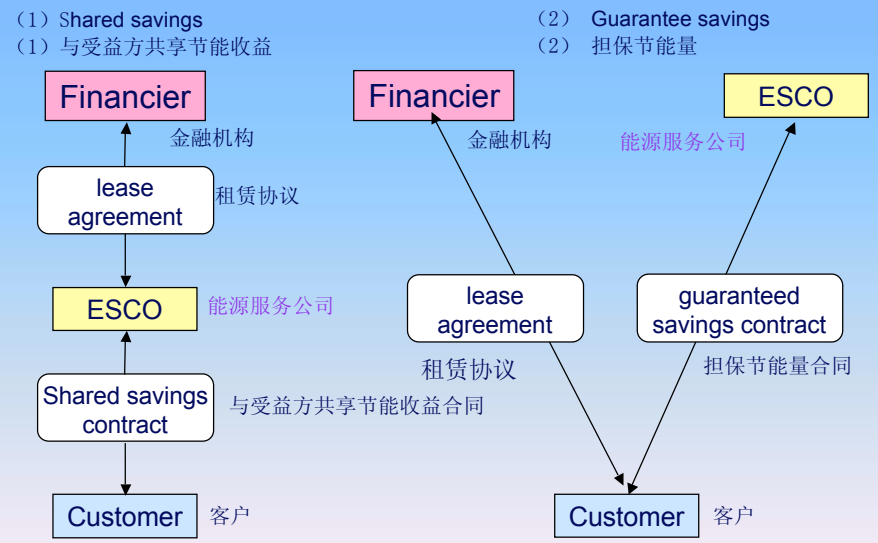


通过参股节能公司参与节能
Equity Participation through Energy Service Companies (ESCOs)
概述 Overview

- *定义：有助于获取、管理和实施聚焦于能源效率项目的私营公司*
  Definition: Private companies that help to acquire, manage and implement projects focusing on energy efficiency
- *能源服务公司提供：*
  ESCOs provide:
  - 方案、工程化、设计和安装 Project identification, engineering, design and installation
  - 正在进行的服务和维护 Ongoing servicing and maintenance
  - 存款的监测和确认Monitoring and verification of savings
  - 融资 Financing:
    - 通常分享业绩风险
      Usually share the performance risks
    - 有时分享融资风险
      Sometimes share the financing risks

通过参股节能公司参与节能 Equity Participation through ESCOs

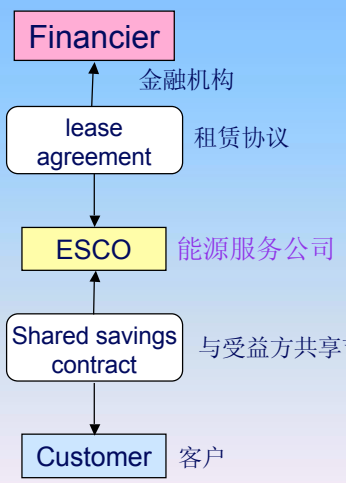
签定合同的两种方式* Two models for contracting*



*来源 Source:劳伦斯伯克利国家实验室 LBNL-55002

通过参股节能公司参与节能 Equity Participation through ESCOs

与受益方共享节能收益合同签定 Shared savings contracting



在合同履行中，能源服务公司与客户共享节能收益并保证前面财务操作的安全。

In performance contracting, ESCOs share savings with the customer and secure up-front financing.

客户避免预先融资需求

Customers avoid needing any up-front funding.

来源 Source:劳伦斯伯克利国家实验室 LBNL-55002

通过参股节能公司参与节能 Equity Participation through ESCOs

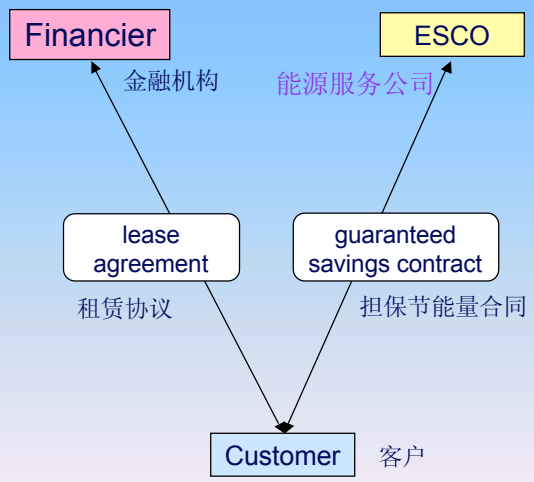
担保节能量合同签定 Guarantee savings contracting

在担保节能量合同中，能源服务公司保证了一定的储蓄水平

In guaranteed savings contracts, ESCOs guarantee a certain level of savings

客户可以放心自己的金融业务

Customers may secure own financing



来源 Source:劳伦斯伯克利国家实验室 LBNL-55002

通过参股节能公司参与节能 Equity Participation through ESCOs

风险管理 Managing Risks

		Financing Risk	
		ESCO	Customer
e	Performance Contracting	Shared savings	
Risk	Guarantee Savings	ESCO-financed guaranteed savings	Guaranteed savings
	customer		Design/build

来源 Source:劳伦斯伯克利国家实验室 LBNL-55002

通过参股节能公司参与节能 Equity Participation through ESCOs

通向能源服务公司支持市场的步骤
Steps to an ESCO assisted market

- *基金必须首先为早期少数计划提供 100% 的净资产*
  A fund must first provide 100% of the equity for the first few projects
- *当其显示成功时, 银行将开始给新的计划提供贷款, 也为能源服务公司创造了一个市场*
  When shown successful, banks will begin to lend money to new projects, creating a market for ESCOs
- *能源服务公司管理基金 并为基金寻找新的计划*
  ESCOs come in to manage the fund(s) and acquire new projects for the fund(s)
- *能源服务公司和客户一起担保或共享分享了来自能源效率的存储*
  ESCOs guarantee or share the savings from energy efficiency with the customer

通过参股节能公司参与节能 Equity Participation through ESCOs

潜在的挑战 Potential Challenges

- *产生利润并为能源效率基金获取融资*
  Generating interest and acquiring funding for energy efficiency funds
- *需求*
  Requirements
  - 完善制订的合同法
    Well-established contract law
  - 通过合理的利息率和合同条款获得地方资金
    Access to local financing with reasonable interest rates and contract terms
  - 良好的客户关系
    Good relationships with customers
- *在履行合同/ 分享收益的过程中，只能采取成本-效益最大和风险最低的方式*
  In performance contracting/shared savings, only the most cost-effective and least risky measures may be undertaken

通过参股节能公司参与节能 Equity Participation through ESCOs

例1： 使用能源服务公司的Dexia-Fondelec基金

Example 1: Dexia-Fondelec Fund using ESCOs

- *Fondelec带来的金融机构投资者的资金*

  Fondelec brings in capital from institutional investors

- *项目直接地或通过能源服务公司获得支持，能源服务公司为公司提供了财经和技术的专门知识*

  Projects supported either directly or through ESCOs who provide capital and technical expertise to companies

- *成功的关键： Keys to its success:*
  - 具有国际经验的管理团队

    Internationally experienced management team
  - 聚焦于限制同大投资者(例如, 世界银行)竞争与风险扩散的中小型企业

    Focus on small/medium enterprises which limits competition with large investors (e.g., World Bank) and spreads out risk
  - 投资者预检查项目（增加检查）
  - Pre-review of the projects by investors (added screening)

通过参股节能公司参与节能 Equity Participation through ESCOs

例2：能源服务公司在德国柏林使用能源性能合同

Example 2: ESCOs using energy performance contracting in Berlin, Germany

- *能源服务公司和保证节能并不需要预先融资的消费者（工业领域）签署合同（共享存储模式）enters into contract with consumer (industrial site) which guarantee energy savings and require no up front capital (Shared savings model)*

- *能源服务公司从存储中支付报酬 ESCO is paid from savings*

- *成功的关键 Keys to its success:*
  - 无法律障碍 No legal barriers
  - 建立签约指南 Established contracting guidelines
  - 竞争市场 Competitive market
  - 可找到的高级专家顾问提供建议Reachable, highly expert consultants for advice
  - 较低的能源价格和利率波动Low fluctuation in energy prices and interest rates

担保基金 Guarantee Funds

概述 Overview

- *为长期的能源效率计划的银行贷款提供中介担保*
  A guarantee provided to banks lending in the medium to long term for energy efficiency projects
- *担保涵盖了与能源效率融资有关的信用风险*
  Guarantees cover the credit risks associated with financing energy efficiency
- *成功的关键:*
  Key to success:
  - 资金管理者应该有能源效率方面的经验
    Fund managers should have experience with energy efficiency
  - 资金管理者应该选择高质量的并可由银行担保的项目
    Fund managers should select high quality and bankable projects

担保基金 Guarantee Funds

例：法国的节能担保基金（FOGIME）Example: France's FOGIME

- *由法国环境能源管理署（ ADEME ）与法国中小企业开发银行（BDPME）合作建立*
  Established by ADEME in partnership with the Bank for the Development of SMEs (BDPME)
- *法国环境能源管理署在国家提供的40%担保基金之上提供附加的 30% 担保*
  ADEME provides an additional 30% guarantee on top of the 40% provided by the National guarantee fund
- *选择标准：在受资助的30个项目中，已经有10个经过效率审计（=比较可靠的项目）*
  Selection Criteria: of 30 projects funded, 10 already had an efficiency audit (= more reliable projects)

循环基金 Revolving Funds
概述 Overview

- *偿还的贷款重新循环进入基金以支持新的项目*
  Reimbursement of loans are recycled back into the fund to support new projects
- *通常需要公共部门或国家干预去补贴利率或资本投资*
  Generally require public or national intervention to subsidize interest rates or principal investments
- *可包括商业金融机构(或不可包括)*
  Can involve commercial financial institutions (or not)
- *成功的关键:*
  Keys to success:
  - 资金管理者兼具金融和能源方面的能力
    Fund manager competent in both financing and energy issues
  - 简单、明晰的程序和明确定义的基金
    Simple, transparent process and a clearly defined fund

循环基金 Revolving Funds
优点 Advantages

- *成本-效率:很少的成本(管理的)可以通过股份投资*
  Cost effective: few costs (administrative) can be funded through interest
- *鼓励公众/私人合作*
  Encourages public/private cooperation

循环基金 Revolving Funds

例1: 加拿大的绿色市政投资基金 (GMIF)

Example 1: Canada's Green Municipal Investment Fund (GMIF)

- *以高于政府公债 1.5% 的利率提供超过占项目资本25%的贷款*

  Provides loans up to 25% of the capital costs of projects at a rate 1.5% above the government bond rate

- *利润用于有限的成本和赠款(针对高创新项目)*

  Interest pays for limited costs and grants (for highly innovative projects)

- *成功的关键:*

  Keys to success:

  - 具有良好声誉的金融和环境经历的职员

    Financially and environmentally experienced staff with good reputation

  - 极低的利率

    Very low interest rates

循环基金 Revolving Funds

例2: 泰国的能源保护基金

Example 2: Thailand's Energy Conservation Fund

- *基金由可替代能源发展和能源效率部(DEDE)管理*

  Fund managed by the Department of Alternative Energy Development and Energy Efficiency (DEDE)

  - *可替代能源发展和能源效率部提供培训和技术援助*

    DEDE provides training and technical assistance

- *建立了六个金融机构, 但是更多的机构已经提出申请成为项目成员*

  Funds six financial institutions, but more are already applying to become part of the scheme

  - *银行处理贷款、簿记、信用检查和客户选择的风险*

    Banks handle risk of the loans, bookkeeping, credit checking and customer selection

- *利率设定为4%* *Interest rate set at 4%*

- *根据6个月一次的评估结果重新分配到每个银行的基金*

  Evaluations every 6 months redistribute funds to each bank

风险资本 Venture Capital
概述 Overview

- 用于带有不可预知的现金流和很少的固定资产的初期的、不成熟的起步企业的资金
  Funds for young and unproven start-up companies with unpredictable cash flow and few fixed assets
- 非常有限因为可感知的风险感到风险 –目前还没有关于能源效率基金的私营风险资本
  Very limited because of perceived risk – no private VC energy efficiency funds to date
- 存在公共和联合的风险资本基金
  Public and joint VC funds exist
- 碳风险资本基金以"收集"二氧化碳排放减少作为回报，而费现金形式不以现金形式
  Carbon VC funds collect returns in CO_2 emission reductions, not cash

风险资本 Venture Capital
举例：英国碳基金会（Carbon Trust） Example: UK Carbon Trust

- 英国碳基金会（Carbon Trust）拥有一支风险投资团队，它的每笔交易额在与私营投资机构相当的25万到150万欧元之间。
  Carbon Trust has a venture capital team that invests between £250,000 to £1.5 million per deal alongside private sector investors
- 投资于减碳技术的早期阶段并提供低碳技术的经营团队
  Invest in early stage carbon reduction technologies as well as management teams that deliver low carbon technologies

总 结
Summary

- *有限的交易成本，简单明晰的过程是所有政策的基本要素*
  Simple, transparent processes with limited transaction costs are essential for all policies
- *目标受众将限定于未受益者以及告知有意的消费者。*
  Targeting audiences will limit free-ridership and inform intended customers
  - 连接到自愿协议
    Links to voluntary agreements

总结（续）
Summary, continued

- *审计人员需要有关于生产过程和能源效率的高水平专业知识*
  Auditors need high level of expertise in production processes and energy efficiency
- *贷款*
  Loans
  - *低利率*
    Low interest rates
  - *对私营机构来说最小的可感知风险*
    Minimization of perceived risk to private institutions
- *创新基金*
  Innovative Funds
  - *基金的管理者既需要能源/环境问题与金融问题的专业知识，同时还需要国际经验*
    Fund managers need expertise in both energy/environmental issues and financial issues, as well as international experience
  - *项目应该是高质量的，并能被银行所接受（一个高资格门槛值）*
    Projects should be high quality and bankable (a high threshold for qualification)

谢谢！
Thank you!

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英国气候变化收费和相关项目
UK Climate Change Levy and Related Programs

在促进工业能效财税政策会议上的发言

Presentation at the Workshop on Industrial Tax and Fiscal Policies to Promote Energy Efficiency

北京

24 May 2005

Marie Pender

英国环境，食物及农村事务部

United Kingdom

Department for Environment, Food and Rural Affairs

能源效率为可持续发展通过以下方式作出贡献：
Energy Efficiency Contributes to Sustainable Development Through:

- Helping the poor to afford adequate heating
- 帮助贫困户支付足够的供热费
- Reducing dependence on natural resources
- 减少对自然资源的依赖
- Reducing industrial costs
- 降低工业成本

英国各部门的碳排放量

Carbon Emissions by Sector in UK

Business – 27%

Households – 27%

Services – 13%

Transport – 33%

商业– 27%

家庭– 27%

服务行业– 13%

运输业– 33%

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英国气候变化项目

UK Climate Change Program

• Established in 2000

• Kyoto Protocol commitment of a 12.5% reduction in greenhouse gas emissions by 2008-2012 relative to 1990

• Domestic goal of a 20% CO2 emissions reduction relative to 1990 by 2010

• 建立于2000年

•根据京都议定书，2008-2012年的温室效应相对于1990年将减少12.5%

•国内目标则为，到2010年CO2的排放量相对于1990年减少20%

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英国气候变化项目

UK Climate Change Program

• Over the last 30 years, UK output has doubled, but energy use has hardly risen.

• Average rate of energy efficiency improvement 1990 - 2000 was 1.4% a year

• Aim to have average rate of energy efficiency improvement 2000-2010 of 2.4% a year

• 在过去的30年中，英国的产出增加了一倍，但是能源的使用几乎没有增长。

• 1990-2000年的能源效率平均增长速度达到每年1.4%

• 目标是2000到2010年能源效率平均增长速度达到2.4%

英国气候变化项目

UK Climate Change Program

• UK emissions of carbon dioxide were 156MtC in 2003

• Aim to cut emissions by 12.1MtC which equals 7.7% of the total UK emissions

- 7.4MtC from business sector
- 4.2MtC from households
- 0.5MtC from public sector

• 2003年英国的二氧化碳的排放量是15600万吨。

• 目标是降低1210万吨的排放量，相当于英国总排放量的7.7%

- 商业部门740万吨二氧化碳
- 家庭420万吨二氧化碳
- 公共部门50万吨二氧化碳

工业和商业部门
Industry and Business Sector

• In 2003, industry and business emitted 40% of UK CO2

• Industry and businesses waste an estimated 30% of their energy

• **2003年，工业和商业排放CO2占全英国的40%。**

• **工业和商业浪费了他们估计为30% 的能源**

针对工业和商业的项目
Programs Aimed at Industry and Business

• Climate Change Levy and Agreements

• Carbon Trust

•Enhanced Capital Allowances

• EU Emissions Trading Scheme

• **气候变化征税和协议**

• **碳基金**

• **加强资本补贴**

• **能量排放贸易方案**

气候变化征税
Climate Change Levy

- Introduced in 2001
- Adds about 10-15% to fuel bills
- "revenue neutral" – receipts recycled to business
- Exemptions for renewable sources and CHP

- **2001**年引入
- 增加了大约**10-15%** 的燃料费用
- **"**税收中立**"---**所得循环至商业企业
- 再生能源与热电联产免税

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气候变化征税
Climate Change Levy

- Energy tax applied to industry, commerce, agriculture, and the public sector
- Does not apply to domestic customers or charities
- Electricity produced through combined heat and power (cogeneration) units or with renewable sources is not taxed

- 能源税用在工业、商业、农业和公共部门
- 未应用于家庭消费者和慈善机构
- 使用热电联产或利用可再生资源的电力生产免除征税

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气候变化征税
Climate Change Levy

燃料Fuel	税率Tax Rate (£)	税率Tax Rate ($US)
汽油Gas	£0.0015/kWh	0.0028 $US/kWh
煤Coal	£0.0117/kg (£0.0015/kWh)	0.02202 $US/kg (0.0028 $US/kWh)
液化石油气Liquified Petroleum Gas	£0.0096/kg (£0.0007/kWh)	0.01807 $US/kg (0.001318 $US/kWh)
电力Electricity	£0.0043/kWh	0.008094 $US/kWh

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气候变化征税
Climate Change Levy

- 通过降低英国国民保险制度雇主保险交纳率0.3%而得到的征税收入，返回到税务部门

  Revenues from the levy are returned to the taxed sectors through a 0.3% reduction in the rate of employer's National Insurance Contributions

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碳基金
Carbon Trust

- Funded from Climate Change Levy receipts
- An independent body to promote carbon reductions in industry and commerce
- Advises industry e.g. through site visits
- Provides low costs loans for energy efficiency projects
- Provides venture capital for investments in early-stage carbon reduction technologies

- 从气候变化征税所得中获得资金
- 一个促进碳在工业和商业中减少的独立实体
- 给工业企业提出建议，例如，通过实地调查
- 为能源效率项目提供低成本贷款
- 为碳减排技术的早期阶段投资提供风险资本

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强化的资本补贴方案
Enhanced Capital Allowance Schem

- Part of the CCL "package"

- Business can claim 100% tax allowances on their capital spending on energy saving equipment (specified in a government list) against their taxable profits

- 气候变化税（CCL）部分"打包"

- 企业在它们的节能设备（由政府清单列明）资本开销中要求付税利润的100%的税务补贴

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气候变化协议
Climate Change Agreements

- Energy efficiency agreements
- 80% discount on Levy for meeting targets
- Duration: 2001 to 2013
- First assessment period: 2001-2001
- Projected carbon savings of 2.5MtC by 2010
- Ten times the estimated price effect of the levy alone

- **能源效率协议**
- **达到目标时，可以享受80%的征税折扣**
- **持续时间：2001年–2013年**
- **第一评估阶段：2001-2001年**
- **计划到2010年实现250万吨碳减排**
- **收益可为仅靠征税可获取的估计价格效益的10倍**

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2010年的原始目标（ KtC /年）
Original Targets for 2010 (KtC/year)

化学制品Chemicals	790	铝Aluminium	150
纸张Paper	430	有色金属Nonferrous metals	50
食物和饮料Food & drink	420	制陶业Ceramics	44
钢铁Steel	200	铸造业Foundries	20
水泥Cement	170	玻璃Glass	20

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2002年的实际Saving量（ KtC ）
Actual Savings in 2002 (KtC)

化学制品Chemicals	2500	铝 Aluminium	2600
纸张Paper	2600	不含铁的金属Nonferrous metals	140
食物和饮料Food and drink	620	制陶业Ceramics	112
钢铁Steel	(9,400)	铸造Foundries	16
水泥Cement	880	玻璃Glass	251

英国排放贸易方案
UK Emissions Trading Scheme

• Companies that do not meet their targets can purchase carbon allowances

• Companies that exceed their target savings can sell carbon on the emissions trading market or bank the carbon for future periods

• During the first assessment period, 0.16 MtC (0.58 MtCO2) was bought and used to help meet over 1000 of the CCA targets, while 1.3 MtC (4.7 MtCO2) was allocated or saved for future use

• 不能达到自己减排目标的公司可以购买碳补贴

• 超过自己减排目标的公司可以在排放贸易市场中，出售它们的碳或者将碳存入银行，以备将来使用

• 在第一评估阶段，买入0.16 MtC (0.58 MtCO2)，用来满足超过气候变化协议(CCA)目标1000，而1.3 MtC (4.7 MtCO2) 被分配或者为将来储存

2002年工业部门的成果
Overall in 2002 Industry Achieved

- 比预估的基线减少4.3MtC
  Reduction of 4.3MtC against estimated baselines
- 超过2002年的目标3倍
  Three times above target for 2002

气候变化征税和相关项目对工业的影响
Impact of the Climate Change Levy and Associated Programs on Industry

• Energy has become a high-level issue. Chief executives and finance directors are alert to the additional costs of their energy and to the importance of ensuring they meet their targets and maintain their levy reductions.

• Finance Directors make funds available to energy managers in order to get the tax back

• 能源已经成为重要问题。首席执行官和财务主管对于由于其能源使用而增加的成本以及确保达到他们目标的重要性并维持减税非常关注。

• 财务主管为能源管理者准备基金，以获得税务返还。

气候变化征税和相关项目对工业的影响
Impact of the Climate Change Levy and Associated Programs on Industry

• Industry is saving over £450 million ($832 M) a year on the energy it has not bought as a result of meeting the CCA targets, in addition to the savings on the Climate Change Levy itself.

•除了气候变化税所带来的收益，企业每年可以通过达到气候变化协议(CCA)目标而节约45亿欧元($832M)的能源费用

气候变化征税和相关项目对工业的影响
Impact of the Climate Change Levy and Associated Programs on Industry

• Energy management systems have been strengthened to allow for better reporting and control.

• Awareness of energy costs has spread more widely within the organisations.

•强化能源管理系统以实现更好的报告和控制。

• 能源成本意识已经在组织机构中广为传播。

气候变化征税和相关项目对工业的影响
Impact of the Climate Change Levy and Associated Programs on Industry

• In many cases the need for accurate accounting for energy has required a greater understanding of energy use within the companies

• The possibility of audit has brought a rigour to energy accounting that many companies did not previously have

• 许多情况下，能源精确计算的需求要求公司中对能源使用有更多的了解。

• 审计为许多公司带来了前所未有的对能源的严格计算。

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气候变化征税和相关项目对工业的影响
Impact of the Climate Change Levy and Associated Programs on Industry

- The overall effect of the agreements is that companies are saving energy by improving their understanding of their energy use and are better placed to meet the demands of their future targets
- Many companies are bringing forward additional energy efficiency initiatives and looking for new opportunities

- 协议总的影响是：公司通过加强对能源使用的理解而节约能源，并且更利于其实现未来的目标。
- 许多公司提出了附加的能源效率激励措施，并去寻找新的机会

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气候变化征税和相关项目对工业的影响
Impact of the Climate Change Levy and Associated Programs on Industry

- Reducing energy costs will enhance profit margins and almost all companies should be able to generate savings to offset the impact of the levy

- 降低能源成本将会加大边际收益，而且几乎所有的公司可以产生收益，从而消除收费所带来的影响。

气候变化协议(CCA)-目标类型
CCA - Types of target

- 相对目标-单位产品能耗
  Relative target – energy per unit of production
- 绝对目标-减少能源使用
  Absolute target – reduction of energy use

如何设定目标？
How were targets set?

1. 多数企业始于确定“一般情景”下的目标产出与“所有成本有效”情景下的可能产出。

   Starting point for the major industries was studies establishing what would be expected under “Business as Usual” and what could be achieved if “All Cost Effective” measures were adopted

如何设定目标？
How were targets set?

2. 这是基于近期的效率测量、技术使用率、期望增长率和投资计划等。

   This was based on recent history of efficiency measures, rates of technology uptake, expected growth rates and investment plans

如何设定目标？
How were targets set?

3. 与各个部门协商以做出各种情景（所有成本有效的方法没有考虑项目资金的能力）

   Negotiations with each sector to argue out the case (All Cost Effective Measures did not take account of availability of funding for projects)

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相关条款中的节省意味着如果在2002年的生产中使用了他们的基线效益，（也就是说，他们没有产生任何的效益节约），他们那就已经使用了太多的能源。

Savings in relative terms means that if they produced the 2002 production at baseline efficiency, (ie not made any efficiency savings) they would have used this much more energy.

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- 钢铁部门有一个绝对目标，而且在2002年是一个萧条的财政年度，所以他们拥有940万吨的大额碳节省。

  Steel sector has an absolute target, and in 2002 had a bad trading year, so they made large carbon savings of 9.4mt.
- 虽然产量仍在增长，但是效率也在改变，所以碳存储估计可达750万吨。

  Production is now growing again but efficiency has improved so carbon savings are estimated at 7.5Mt

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欧盟建筑能源性能指令
EU Energy Performance of Buildings Directive

- 新建筑和更新中的大型建筑的能源标准

  Energy standards for new buildings and large buildings undergoing renovation
- 当建筑被出售或者出租时的能源性能证明

  Energy performance Energy performance certificates when buildings are sold or rented

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目标评议
Review of Targets

2004年评议时，气候变化协议(CCA)的目标已上升高达20%，超过了2002年的预期目标。

CCA Targets have been reviewed in 2004 and in the light of the overachievement in 2002, been tightened by up to 20%.

英国气候变化项目
UK Climate Change Programme

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Department for Environment, Food and Rural Affairs

www.defra.gov.uk/environment/ccl/index.htm

丹麦的能源税和CO2税
Energy and CO2-taxation in Denmark

Past experiences and future developments

过去经验和未来发展

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北京 ,2005年5月

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介绍内容
Presentation contents

- 丹麦能源和CO2税收政策的历史
  History of Danish energy and CO2-tax policy
- 目前的计划构想
  Current design
- 评价与结果
  Evaluations and results
- 未来的发展
  Future developments

早期的发展
Early developments

- 1917年引入汽油税.
  A tax on petrol is introduced in 1917.
- 1977年对其他的矿物油和电征税.
  Taxes on other mineral oils and electricity are introduced in 1977.
- 1979年引入城市废气税.
  A tax on city gas is introduced in 1979.
- 1979年引入煤炭税.
  A tax on coal is introduced in 1982.
- 1986年税率增加(主要针对矿物油和城市废气）.
  Taxes are increased (mostly on mineral oils and city gas) in 1986.
- 1991 年在企业与家庭能源消费领域引入CO2税.
  A CO2-tax on business and household energy consumption is introduced in 1991.
- 1992采用欧盟矿物油指示，导致征收商用汽油税
  EU mineral oil directive adopted in 1992, leading to tax on business use of gas oil.
- 1992年提议征收欧盟CO2/能源税
  EU CO2/energy tax proposed in 1992.

绿色税改革
Green tax reform

- 1993年丹麦开始"绿色" 税收改革，目的在于通过消除税收负担来引导远离对环境有害的行为和对自然资源的使用
  In 1993 Denmark commence a "green" tax reform, aiming to shift the burden of taxation away from income towards environmentally harmful behaviour and the use of natural resources
  - 降低所得税的同时，提高煤电能源税
  - Energy taxes on coal and electricity are increased while income taxes are reduced
  - 引入新的绿色税（例如，水和塑料)
    New green taxes are introduced (e.g. water and plastic)
  - 为了"启动" 丹麦经济的消极税收效应
    Revenue effect negative in order to "kick-start" Danish economy
  - 企业活动未受影响
    Businesses are not effected
- 1994年欧盟CO2/能源税方案提议遭到失败
  The EU CO2/energy tax proposal fails in 1994

企业能源消费的绿色税
Green tax on business energy consumption

- 1996年引入新的企业能源和CO2税方案
  A new business energy and CO2-tax scheme is introduced in 1996
  - 针对天然气和SO2引入新税
    New taxes are introduced on natural gas and SO2.
  - 使所有家用能源和CO2税率同商用"空间采暖"能源产品处于同一水平（象办公室采暖一样覆盖家庭类型消费）.
    Introduction of full household energy and CO2-tax rate levels on business use of energy products for "space heating" (covering household type consumption like office space heating).
  - 生产过程中使用的能源产品的CO2税增加.
    CO2-tax on energy products used in production processes is increased.
  - 通过减少与劳动相关的税收和能源效率资助使新的税收收入全部循环到企业中.
    All new revenues are recycled back to businesses through reductions in labour related taxes and energy efficiency grants.

最新进展
Latest developments

- 1998提高了家用能源税(包括企业使用的"空间采暖") 和汽油税.
  Household energy taxes (including business use of "space heating") and petrol are increased in 1998.
- 2001年新的自由保守党政府作出强硬承诺遵从"税收冻结" 政策.
  New Liberal-Conservative Government makes strong commitment to follow a "tax freeze" policy in 2001.
- 2003年欧盟委员会采用新的全面的能源税指令.
  EU Council adopts new comprehensive energy tax directive in 2003.
- 2003年欧盟委员会采用新的温室气体排放贸易制度.
  EU Council adopts new greenhouse gas emission trading system in 2003.
- 2004年企业CO2税部分调整到新的欧盟排放贸易制度.
  Business CO2-taxes are partly adjusted to new EU emission trading system in 2004.

计划构想
The design

丹麦能源税系统包含括3 类税种:
The Danish energy tax system consist of 3 different taxes:

- 各产品能源含量平衡后的能源税（约为每十亿焦耳7 欧元)
  Energy taxes balanced after the energy content of each product (Approx. 7 EURO per GJ)

- 各产品CO2含量平衡后的CO2税（约为每吨二氧化碳12 欧元)
  A CO2-tax balanced after the CO2 content of each product (Approx. 12 EURO per ton CO2)

- SO2实际排放量的SO2税（约为每千克二氧化硫1,35欧元)
  A SO2-tax on the actual emissions of SO2 (Approx. 1,35 EURO per kg SO2)

能源税–税率
Energy taxes – The rates

- 电力税
  Electricity tax
  - 用于家庭供暖:每兆瓦小时69 欧元
    Household heating purposes: 69 EURO per MWh
  - 用于供暖以外的家庭能源消耗:每兆瓦小时78欧元
    Other than household heating purposes: 78 EURO per MWh
  - 用于发电的燃料可免除征税
    Fuels used for the generation of electricity are exempt

- 煤税
  Coal tax
  - 每十亿焦耳7 欧元
    7 EURO per GJ

能源税–税率
Energy taxes – The rates

- 天然气税
  Natural gas tax
  - 每立方米2,75 欧元
    2,75 EURO per Nm3

- 矿物油税
  Mineral oils tax
  - 气油/煤油供暖:每 1000升250 欧元。
    Heating gas oil/kerosene: 250 EURO per 1000 l.
  - 重燃料油:每 1000 千克281 欧元。
    Heavy fuel oil: 281 EURO per 1000 kg.

能源税–计税基数与退税
Energy taxes - Tax base and refunds

- 能源税是由注册为能源供应商的公司支付给有关部门。
  The energy taxes are paid to the authorities by companies that are registered as energy suppliers.
- 注册能源供应商将该税转嫁到最终用能企业或家庭。
  The registered energy suppliers pass over the tax to the final business or household energy consumer.
- 注册增值税的业务可获得全部已支付的生产过程中因使用能源产品的能源税的返还(小部分电力税除外)。用于"供暖"和交通目的的能源产品不予退税。
  VAT registered businesses obtain a full refund of all energy taxes (except small part of electricity tax) paid for energy products used in production processes. No refund is given for energy products used for "space heating" and for transport purposes.
- 能源税面向所有非增值税部门，除了家庭，还包括如公共组织、非政府组织以及财政部门等。
  The energy taxes fully burden all non-VAT registered sectors, which besides households covers e.g. public organisations, NGOs and the financial sector.

CO2税–税基与退税
CO2-tax – tax base and refunds

- CO2税由已注册的能源供应商支付,它们将此税转嫁给最终用能企业或家庭。
  The CO2-tax is paid by registered energy suppliers, who pass along the tax to the final business or household consumer.
- 签署能源效率协议的企业，有权获得部分CO2税退还的回报。
  Businesses are entitled to partial CO2-tax refunds in return for entering into energy efficiency agreements with the authorities.
- 企业可以因其高耗能生产流程而获得CO2附加税的退还。
  Businesses are entitled to additional CO2-tax refunds for energy intensive production processes.
- CO2税面向所有非增值税部门，除了家庭，还包括，例如，公共组织、非政府组织与财政部门等。
  The CO2-tax fully burdens all non-VAT registered sectors, which besides households cover e.g. public organisations, NGOs and the financial sector.

企业能源和二氧化碳税–税率
Business energy and CO2 tax – the rates

Space heating 供暖	Full energy taxes and CO2-tax (Euro 100 per ton CO2) 全部能源税和 CO2税(每吨二氧化碳100欧元)
Light process, no agreement 轻加工，无协议	Full CO2-tax(Euro 12,10 per ton CO2) 全部CO2税(每吨二氧化碳12 , 10欧元)
Light process, with agreement 轻加工，有协议	68 % of CO2-tax(Euro 9.20 per ton CO2) 68% 的 CO2税(每吨二氧化碳9.20欧元)
Heavy process, no agreement 重加工，无协议	27,78 % of CO2-tax(Euro 3.40 per ton CO2) 27,78% 的 CO2税(每吨二氧化碳3.40欧元)
Heavy process, with agreement 重加工，有协议	4,8 % of CO2-tax(Euro 0.40 per ton CO2) 4,8% 的 CO2税(每吨二氧化碳4,8欧元)

能源密集型过程
-临界价格
Energy intensive process
-threshold

- 至少每吨二氧化碳 6,7 欧元的税收负担:
  The burden of a tax of EURO 6,7 per ton CO2 shall amount to at least:
  - 相关单位产品附加值的3%
    3 % of value added created by a relevant production unit
  - 加工产品的销售额的1 %
    1 % percent of the sales value of the goods manufactured

能源密集型加工
-其它事项
Energy intensive process
– other considerations

- 国际竞争力
  International competitiveness
- 相对于国内非能源密集型公司的竞争力
  Competitiveness in relation to domestic non-energy-intensive companies
- 分支机构或公司不应在税收循环之后具有净收益
  No branches or companies should have a net benefit after the recycling of revenues
- 控制和管理方面
  Control and administrative aspects

企业范围
Business covered

- 注册的增值税企业总数是 421.000家。
  The total number of VAT registered businesses is 421.000.

- 必须将5000 家公司分为"空间供热"型和产品加工型。
  5000 companies have to differentiate between "space heating" and production processes.

- 其中，有1000 园艺公司和 4500 制造业公司，后者采用能源密集型加工方式，例如：水泥，金属，化工，塑胶/橡皮，纸/纸板，玻璃产品，制陶业，蔬菜和鱼油，糖，淀粉，杀虫剂，酶，奶粉和饲料等。
  Of these, 1000 horticultural companies and 4-500 manufacturing companies, the later using energy intensive processes to manufacture e.g: cement, metals, chemicals, plastics/rubber, paper/cardboard, glass products, ceramics, vegetable and fish oils, sugar, starch, pesticides, enzymes, milk powder and feeding stuff.

评价和结果
Evaluations and results

1999年，丹麦财政部 ：
The Danish Ministry of Finance 1999:

"企业能源和 CO2税真正考虑了国际竞争力，已经创造了一个重要的经济有效的环境效应。"
"The business energy and CO2-taxes have created a substantial environmental effect in an economically efficient way, while taking international competitiveness into proper consideration"

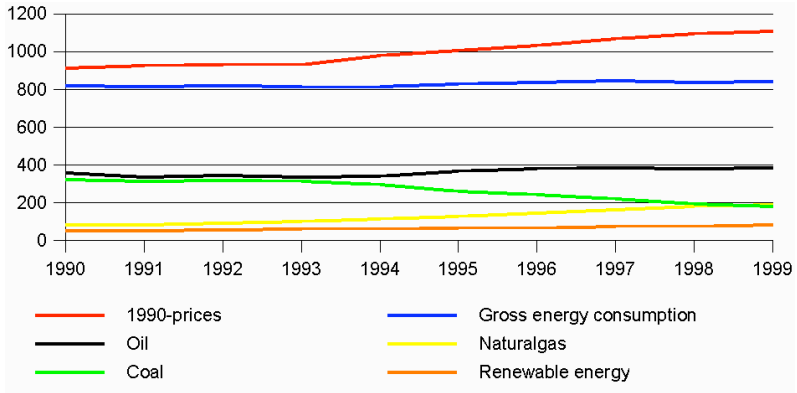
2000年， Bjørner和Jensen的独立研究:
Independent study by Bjørner and Jensen 2000:

"企业能源税对全部能源消费水平降低的贡献率达到10 %。仅能源效率协议一项就使能源消费降低了 9 %"
"Business energy taxes have contributed to overall reduction in energy consumption levels of 10 %. Alone, the energy efficiency agreements led to a reduction in energy consumption of 9 %"

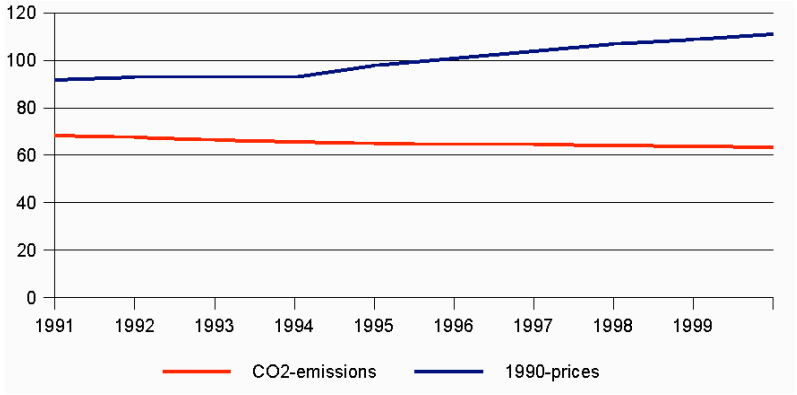
管理成本
Administrative costs

- 与能源税和 CO2税相关的公司管理成本占税收收入的1- 2%。
  Administrative costs for companies connected to the calculation of energy and CO2-taxes amount to 1 to 2 % of tax revenues.
- 用于补贴的管理成本据评估可达补贴总数的3-9% 。
  Administrative costs of applying for subsidies are estimated to about 3-9 % of the amount of the subsidies.
- 协议签署的管理成本据评估可达预期补贴总数的5-12%。
  The administrative cost of entering into agreements are estimated to amount to 5-12 % of the expected subsidies.

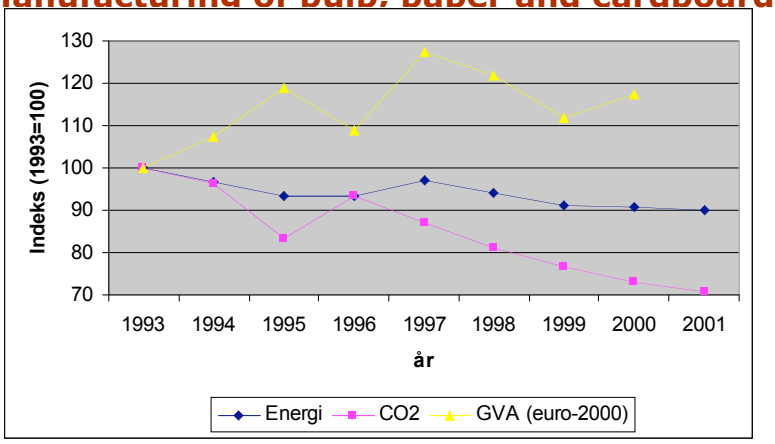
国内生产总值和能源消费总量
GDP and Total Energy Consumption



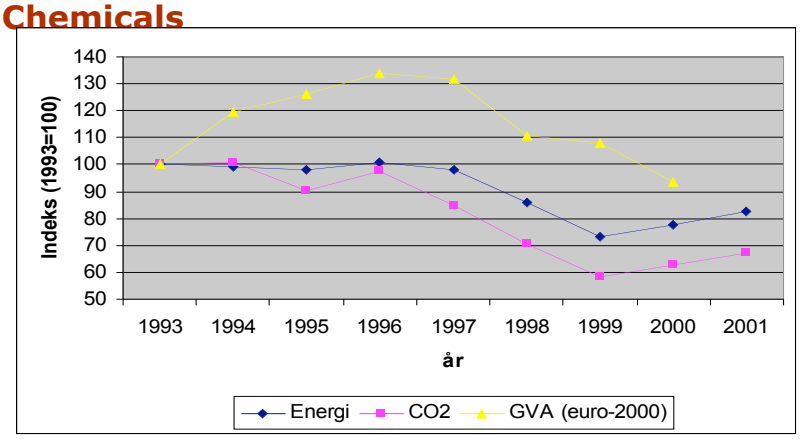
国内生产总值和CO2排放量
GDP and CO2-emission



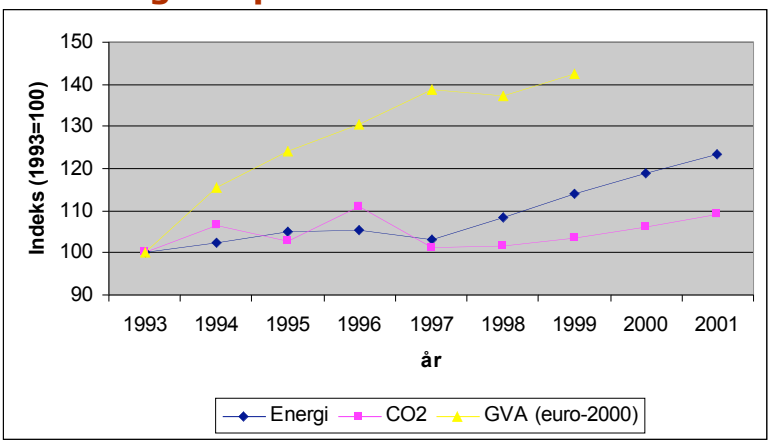
纸浆、纸张与纸板制造业
Manufacturing of pulp, paper and cardboard



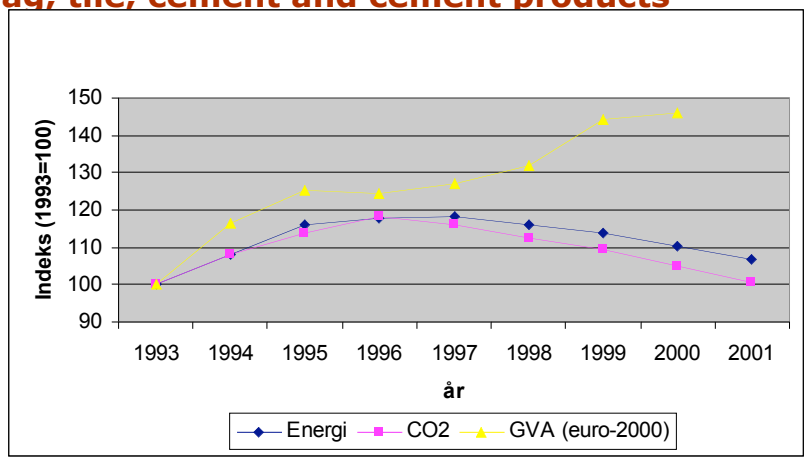
化工
Chemicals



玻璃与玻璃制品
Glass and glass products



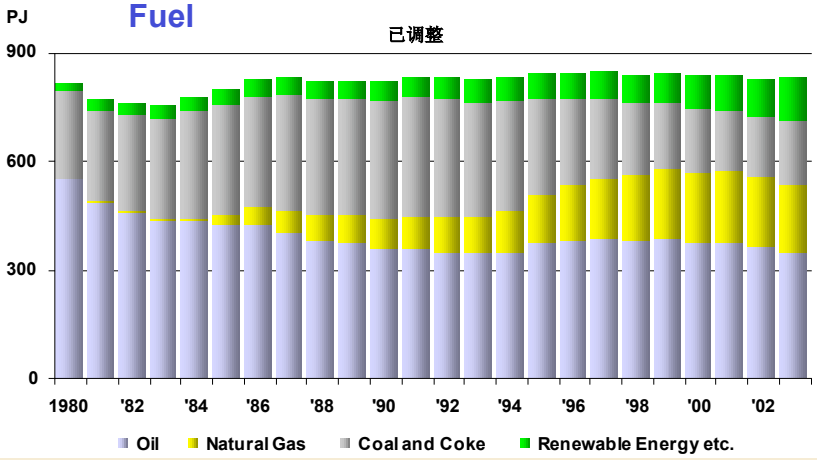
标块、瓷砖、水泥与水泥制品
Flag, tile, cement and cement products



税收发展
Revenue development

Million EURO百万欧元	1980年	1987年	2004年
Petrol and gas oil汽油和气油	604.84	1223.12	2809.14
Electricity电力	201.61	725.81	2647.85
Heating fuels供暖燃料	295.70	1075.27	1384.41
Total总计	1102.15	3024.19	6841.40
Pct. of BNP	1980	1987	2004
Petrol and gas oil汽油和气油	1.20	1.30	1.40
Electricity电力	0.40	0.80	1.40
Heating fuels采暖燃料	0.60	1.10	0.70
Total总计	2.20	3.20	3.50
Million EURO in 2004 prices百	1980	1987	2004
Petrol and gas oil汽油和气油	1438.17	1841.40	2809.14
Electricity电力	483.87	1088.71	2647.85
Heating fuels采暖燃料	698.92	1612.90	1384.41
Total总计	2620.97	4543.01	6841.40

燃料能源总消费量
Gross Energy Consumption by Fuel



企业二氧化碳税和能源税的总体经济影响效果
Overall economic effects of the business CO2 and energy taxes

- 由于税收减免与返还，企业纳税的整体经济影响是有限的。
  The macroeconomic effects of the business taxes are limited because of revenue recycling and tax reductions.
- 在1996年 到 2000年期间，附加税和循环到企业部门的税收总量保持平衡。2000年后，企业部门获得返回的部分高于他们的纳税部分。
  In the period 1996 to 2000 the amount of additional revenues and revenue recycled to business sectors has been in balance. After 2000 the business sectors get more back than what they are paying.
- 高能耗公司的CO2排放占CO2排放总量的 50% ， 所缴纳增值税及能源税分别占该税总量的10%和20%。
  The most energy intensive companies cause 50 % of business CO2-emissions, contribute with 10 % of total value added and pay 20 % of the total energy taxes.

未来发展
Future developments

- 税收冻结和简化
  Tax freeze and simplifications
- 欧盟能源税征收框架
  (国家支持的能源税指令和谈判规则)
  EU framework for the taxation of energy taxation
  (Energy tax directive and Treaty rules on state aid)
- 欧盟排放补贴交易
  EU emissions allowance trading

税收冻结和简化
Tax freeze and simplifications

- 税收冻结禁止任何税率百分比或面额数量的提升。为清洁环境目的的除外。
  Tax freeze entails abstaining from raising any tax or duty either as a percentage rate or as a nominal amount. Exception for taxes with clear environmental purpose.
- 二氧化碳税和能源税正随着通货膨胀而下跌。
  CO2 and energy tax burden is currently falling with inflation.
- 简化优先，但是由于不能提高或降低税收水平而难以达到。
  Simplification high priority, but difficult to pursue without being able to either raise or reduce tax levels.

欧盟能源税指令I
EU energy tax directive I

- 欧盟能源税指令意味着为欧盟成员国提供应用能源税去完成部署、环境、能源和运输目标的灵活性的改进空间，同时并没有歪曲内部市场。
  The EU energy tax directive is meant to provide EU Member States with improved room of manoeuvrability for applying energy taxes to fulfil employment, environment, energy and transport objectives, without at the same time distorting the Internal Market.

- 指令提供共同的：
  The directive provides common:

  - 全部能源类型的最小税率（油，煤，燃气和电力）。
    minimum rates on all energy types (oils, coal, gas and electricity)

  - 申请差异化、减少和免除的规则。
    rules for applying differentiations, reductions and exemptions

欧盟能源税指令II
EU energy tax directive II

- 持续了6年的欧盟委员会对共同体能源税框架的谈判相当松散，其影响是：
  Following 6 years of EU Council negotiations the Community energy tax framework ended up rather loose, as an effect of:
  - 最低能源税率低
    low minimum energy tax rates

  - 税基中排除了双重使用和矿物化加工。
    exclusion of dual use and mineralogical processes from tax base

  - 广泛的减免税收的可能性
    wide exemption and reduction possibilities

  - 国家支持的谈判规则实施的不确定性
    uncertainty about application of Treaty rules on state aid

欧盟排放补贴交易方案I
EU emissions allowance trading scheme I

- 欧盟排放许可交易系统意味着对欧盟的京都协定的贡献：在2008年 到 2012年期间，与1990年的水平相比减少8%的温室气体排放 (在欧盟共同承担协议之下，丹麦的目标是21%） The EU emission allowance trading system is meant to contribute to the fulfilment of EU's Kyoto commitment to reduce greenhouse gas emissions by 8 % compared to 1990 levels in the period 2008 to 2012 (Under the EU burden-sharing agreement, the Danish target is 21 %)

- 它是"总量管制和排放交易（cap-and-trade）"系统，基于：
  It is a 'cap-and-trade' system, based on:

  - 最初的对于已包括安装的 CO2排放许可的分配，由国家政府机构来完成， 符合一组共同体准则
    an initial allocation of CO2-emission allowances to the included installations, done by national Governments, in accordance with a set of Community criteria

  - 排放许可的流动性市场的建立，创造了CO2排放的价格，并因此成为了实现以最佳的成本-效果方式减少CO2排放的基础。
    the establishment of a liquid market for emission allowances , creating a price for CO2-emissions and thereby a basis for realising CO2-reductions in the most cost effective way.

欧盟排放补贴交易方案II
EU emissions allowance trading scheme II

- 欧盟排放交易方案是最初的和相对系统盟排放传统的安排是在最初的和相关地缺乏活力的阶段，意义在于:
  The EU emission trading scheme is at an initial and relatively feeble stage, meaning that:

  - 排放交易方案的覆盖范围限定于能量和加热部门以及能源密集型行业部门。 The coverage of the emission trading scheme is limited to large emitters in the power and heat sectors and some selected energy-intensive industrial sectors
  - 排放许可免费分发，而且相当慷慨（根据历史的排放）
    The emission allowances have been allocated free of charge and rather generously (according to historic emissions)
  - 关于承诺和控制的不确定
    Uncertainties about compliance and control

CO2税和 CO2排放交易
CO2-taxation and CO2-emission trading

- 两者都是基于市场的手段
  Both are market-based instruments
- 税收具有知名的价格效果但是数量结果未知，CO2排放许可具有可知的数量结果但价格结果未知。
  Taxes have a known price effect but an unknown quantitative effect and CO2-emission allowances have a known quantitative effect but an unknown price effect.
- 当分配免费时，结果就与具有较高的与历史水平的支付相符的能源税相似的基础减除额度。
  When allocations are allocated free of charge, the effect is similar to that of an energy tax, with a high basic deduction corresponding to what should have been paid for historic consumption levels.
- 如果将许可拍卖，其结果与一个正规的能源税相似，税收则被转入国库。
  If the allowances are auctioned, the effect is similar to a normal energy tax, where revenues goes to the treasury.

挑战
Challenges

- 有效的 CO2排放交易系统使能源税多余的makes environmentally motivated energy taxes
  An effective CO2-emission trading system makes environmentally motivated energy taxes redundant
- 欧盟 CO2排放交易系统仅有部分复盖
  The EU CO2-emission trading system has only partial coverage
- 能源税和欧盟 CO2排放交易系统的影响不同
  The impact of the energy taxes and the EU CO2-emission trading system are different
- 排放许可是免费分派，而公司需要向国家支付能源税
  The emission allowances are allocated free of charge, while companies need to pay energy taxes to the state
- 电力征税发生在输出方，当排放许可是与电力生产的输入方有关的
  The taxation of electricity occurs on the out-put side, while the emissions allowances are related to the in-put side of electricity generation

发展
Developments

- CO2税已经去除了由排放交易所覆盖的在产品加工中使用的供热燃料。
  CO2-tax has been eliminated for heating fuels used in production processes covered by emission trading
- 短期内，在由排放交易方案覆盖的活动中，进一步的工作可能就是应用最低的CO2税率。
  In the shorter term a further step might be to apply the lowest CO2-rate for activities covered by the emission trading scheme, while abolishing the demand for energy efficiency agreements

- 如果排放交易系统应该在某个时间证明是有效的，更进一步的改变应该做到满足：
  If the emission trading system should in the time prove to be effective further moves could entail:
- 废止电力税
  Abolishing the electricity tax
  - 根据CO2排放许可的国际价格，调整所有供热燃料的税收
    Aligning the taxes on all heating fuels with the international price of CO2-emission allowances

SO2税
SO2-tax

- SO2税基于使用所有能源产品的 SO2 排放
  The SO2-tax is based on the emissions of SO2 from use of all energy products
- SO2税是已注册的能源供应商支付，其他的愿意测量自己的排放量的企业也可以登记
  The SO2-tax is paid by the registered energy suppliers. Other firms who are willing to measure own emissions can also register.
- 能源供应商将税收分担至最终家庭用户或企业用户。
  The energy supplier pass the tax to the final household or business consumer.

分配机制
Allocation mechanism

- 在作为过渡期的从2005年–2007年配额许可方案的第一阶段，至少 95% 的配额许可将是免费分派，每个成员国必须决定它将分派的配额总量，并将其被分配给每个运营商。

  in the first period of the scheme of allowances from 2005-2007 which is a transitional period at least 95 % of the allowances shall be allocated free of charge and each Member State has to decide on the total quantity of allowances it will allocate and to the allocation to each operator
- 在从 2008年–2012年的第二阶段，至少 90%配额许可将是免费分派，每个成员国必须决定它将分派的配额总量， 并将其被分配给每个运营商。

  in the second period from 2008-2012 at least 90 % of the allowances shall be allocated free of charge and each Member State has to decide on the total quantity of allowances it will allocate and to the allocation to each operator.

国家分配计划的标准 1
Criteria for the national allocation plans I

- 相关阶段待分配的配额总量将同成员国的义务相一致，考虑未被配额方案所覆盖的资源排放，成员国被限制去遵从京都议定书来履行义务。

  The total quantity of allowances to be allocated for the relevant period shall be consistent with the Member State's obligation to limit its obligations pursuant to the Kyoto Protocol taking into account emissions from sources not covered by the scheme of allowances

- 待分配的配额总量必须与潜在的减少排放相一致，包括技术方面的潜在可能

  The total quantities to be allocated has to be consistent with the potential to reduce emissions, including the technological potential

- 该计划应与共同体的其它法律和政策保持一致

  The plan shall be consistent with other Community legislation and policy

国家分配计划的标准II
Criteria for the national allocation plans II

- 该计划不会以特定的企业具有不正当的特权这样的方式来歧视公司或部门

  The plan shall not discriminate between companies or sectors in such a way that certain undertakings are favoured unduly

- 该计划将以有利于新加入者能够参与配额方案制定的方式保存信息。

  The plan shall contain information on the manner in which new entrants will be able to participate in the allowance scheme

- 该计划将考虑尽早行动

  The plan shall take early action into account

- 该计划将告知清洁和能源效率技术受到重视

  The plan shall inform on the manner in which clean and energy efficient technologies are taken into account

- 该计划通知将可能考虑存在于国家或欧盟以外实体之间的竞争

  The plan may contain information on the manner in which the existence of competition from countries or entities outside the Union will be taken into account

Activities covered by the allowance scheme I
适用配额方案的行动 I

- 能源行动
  Energy activities
  - 燃烧安装 (热输入超过 20 兆瓦)
    Combustion installations (thermal input exceeding 20 MW)
  - 矿物油精炼厂
  - Mineral oil refineries
  - 燃煤炉
    Coke ovens
- 黑色金属生产与加工
  Production and processing of ferrous metals

适用配额方案的行动II
Activities covered by the allowance scheme II

- 矿业
  Mineral industry
  - 水泥和石灰产品
    Production of cement and lime
  - 玻璃包括玻璃纤维的制造
    Manufacture of glass including glass fibre
  - 陶瓷产品制造(特别是屋顶瓦片、砖、耐火砖、瓷砖、粗瓷器或精瓷器)
    Manufacture of ceramic products (in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain)
- 其他
  Other activities
  - 来从纸或其它纤维材料的纸浆
    Pulp from paper or other fibrous materials
  - 纸张与木材
    Paper and board

能源税指令- 范围以外I
Energy tax directive-outside the scope I

- 下列各项应用在欧盟能源税指令之外:
  The following uses are outside the scope of the directive:
  - 热、木头和泥煤的产量税
    Output taxation of heat, wood and peat
  - 用于不同于发动机燃料或热燃料目的能源产品
    energy products used for purposes other than as motor fuel or as heating fuels
  - 两用能源产品是指它们同时供热用和除发动机用和热用之外的其它用途使用。用于化学还原、电解或冶金加工的能源产品视为两用
    dual use of energy products which means that they are used both for heating fuel and for purposes other than as motor fuel and heating fuel. Energy products used for chemical reduction and in electrolytic and metallurgical processes shall be regarded as dual use

能源税指令- 范围以外II
Energy tax directive -outside the scope II

- 下列各项应用在欧盟能源税指令之外：
  The following uses are outside the scope of the directive:
  - 主要用于化学还原、电解或冶金加工的电力
    electricity used principally for the purposes of chemical reduction and in electrolytic and metallurgical processes
  - 电力成本投入超过50%的产品
    electricity when it accounts for more than 50% of a product
  - 在精练厂内部生产且在精练厂内部消耗的的能源产品免除征税。
    Refineries are exempted from taxes on the consumption of energy products produced within the curtilage of the refinery

能源税指令- 差异税率
Energy tax directive-differentiated rates

- 成员国可以申请差异税率：
  Member States may apply differentiated rates:
  - 税率直接与产品质量相连处
    here the rates are directly linked to product quality
  - 税率依靠量化消费水平
    when the rates depend on quantitative consumption levels
  - 用于本地公众乘客交通工具（包括出租车）、 废品收集、武装力量和公共管理、残疾人与救护车等
    uses in local public passenger transport (including Taxis) waste collection, armed forces and public administration, disabled people, and ambulances
  - 商用和非商用之间
    between business and non business use
  - 在作为推进器使用的商业和非商业柴油机之间，且商业柴油机的税率不低于force 1.1.03的税率水平。
    between commercial and non commercial diesel used as propellant and the rate for commercial diesel does not fall below the rate in force 1.1.03

能源税指令-特许减税可能I
Energy tax directive - Facultative reduction possibilities I

- 成员国可以：
  Member States may:
  - 为能源密集型企业降低税率，倘若它们遵从每个企业的平均最小税率的话
    reduce the rates for energy intensive business provided they respect the minimum rates on average for each business
  - 可以为与政府签署了协议或贸易许可计划或实施同等的安排的非能源密集型企业降低税率，倘若它们遵从每个企业的平均最小税率的话
    may reduce the rates for non energy-intensive business who enters into agreements with the State or where tradable permits schemes or equivalent arrangements are implemented provided they respect the minimum rates on average for each business
  - 能源密集型被定义为商业实体，当能源产品和电力的购入 总量至少在产品价值中3%，或者国家税收支付至少达产品附加值的0.5 %。可以应用销售值、流程与部门等更多的限定概念。
    an energy intensity is defined as a business entity where the purchase of energy products and electricity amounts to at least 3 % of the production value or the national tax payable amounts to at least 0,5 % of the value added. More restrictive concepts like sales value, process and sector definitions may be applied

能源税指令-特许减税可能II
Energy tax directive -Facultative reduction possibilities II

- 成员国可以：
  Member States may:
  - 将能源密集型企业税率降至零点，如果他们签署了关于节约能源的协议、交易许可计划或类似协定的话。这些协定必须带来环境目标的成功，或在使用最小税率的情况下，显著地等价于应得的能源密集增长程度。reduce the rates down to zero when used by energy-intensive business provided they enter into agreements about energy savings, tradable permits schemes or equivalent arrangements. These arrangements must lead to the achievement of environmental objectives or increased energy intensity broadly equivalent to what would have been achieved if the minimum rates had been used
  - 将已签署了协议或由包含在交易许可计划内的非能源密集型企业税率减至最低水平的50%
    reduce the rates down to 50% of the minimum levels for non-energy-intensive businesses who enters agreements or are covered by tradable permits schemes

能源税指令–特许减税可能III
Energy tax directive -Facultative reduction possibilities III

- 成员国可以因下列事项申请免税或减税：
  Member States may apply exemptions or reductions in taxation for
  - 从生物量中产生的生物燃料或产品
    bio fuels or products produced from biomass
  - 从生物量中产生的太阳能电力、风力电、生物量或产品electricity of solar, wind or generated biomass or products produced from biomass
  - 用于热用与动力组合的能源产品和电力
    energy products and electricity used for combined heat and power
  - 从热用与动力组合中产生的电力，如果该热用与动力组合是环境友好的话
    electricity produced from combined heat and power generation provided that the combined heat and power generators are environmental friendly.
  - 天然气10年减/免税期，如果在国家最终消费中天然气份额低于15%
    natural gas for 10 years if the national share of natural gas in final consumption is less than 15 %

The minimum rates in EURO for some energy products and electricity are as follows
对某些能源产品和电力的最小税率（欧元）如下所示：

	商用Business	商用Business		
含铅汽油leaded petrol (1000 l)	421			
无铅汽油unleaded petrol (1000 l)	359			
推进用燃料柴油gas oil used as propellant (1000 l)	302		(330 from 1.1.10)	
某些工业用发动机燃料柴油gas oil used as motor fuel for	21			
热用柴油gas oil for heating purposes (1000 l)	21			
重质燃料油heavy fuel oil (1000 kg)	15			
天然气natural gas(GJ)	0.15	0.3		
煤coal (GJ)	0.15	0.3		
电electricity(MWh)	0.5	1		

提高工业能效的财税政策最佳实践

Summary of Best Practices in Tax and Fiscal Policies for Promotion of Industrial Energy Efficiency

在促进工业能效财税政策研讨会上的发言

Presentation at the Workshop on Industrial Tax and Fiscal Policies to Promote Energy Efficiency

北京，2005年5月24日

Beijing, 24 May 2005

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与能源使用有关的成本增加
Increase Costs Associated with Energy Use

- 能源税或与能源相关的二氧化碳税
  Energy or energy-related CO2 taxes
- 污染征税
  Pollution levies
- 公益方案
  Public benefit programs

能源税或与能源相关的二氧化碳税
Energy or Energy-Related CO2 Taxes

- 能源税或二氧化碳税的最佳实践
  Best practice for energy or CO2 taxes
  - 高碳燃料应征收更高的税以利于减少高碳燃料使用及燃料转换
    Higher carbon fuels should have higher taxes to promote reduced use of high-carbon fuels and fuel-switching
  - 如果工业需要免税，那么应让其达到减少一些能源或二氧化碳使用的条件
    If exemptions for industry are needed, then make them conditional on achieving some sort of energy or CO2 reduction goal

污染征税
Pollution Levies

- 污染征税最佳实践
  Best practice for pollution levies
  - 行政管理与司法处罚相结合为处罚违规者提供了最有弹性的选择
    Combination of administrative and judicial penalties provides most flexibility in options to penalize violators
  - 高污染征税提高了环境保护的效力，并激励了对相关法规的遵守
    High pollution levies increase the effectiveness of environmental enforcement and motivate regulatory compliance

公益基金
Public Benefit Funds

- 公益基金的最佳实践
  Best practice for public benefit funds
  - 专有基金
    Non by-passable funds
  - 有效的公益基金监管体系
    Effective oversight of the public benefit fund administrative body

降低能源效率投资的成本
Reduce Costs of Energy Efficiency Investments

- 转让与补贴
  Grants and subsidies
- 补贴审计
  Subsidized audits
- 贷款
  Loans
- 减免特定能源效率技术的税收
  Tax relief for specific energy-efficient technologies
- 减免能够满足能源效率目标工业的税收
  Tax relief for industries that meet energy-efficiency targets

转让与补贴
Grants and Subsidies

- 转让与补贴的最佳实践
  Best practice for grants and subsidies
  - 面向特定的愿意接受的团体和见多识广的消费者
    Targeted to specific receptive groups and informed consumers
  - 需要投资以获取显著的利益
    Require investments to have significant benefits

补贴审计
Subsidized Audits

- 补贴审计的最佳实践
  Best practice for subsidized audits
  - 面向特定的愿意接受的团体和见多识广的消费者
    Targeted to specific receptive groups and informed consumers
  - 保证是有资质的审计员
    Ensure that auditors are qualified
  - 评估和后续工作以确保建议的可行性
    Evaluations and follow-ups to ensure recommendations are implemented

贷款
Loans

- 贷款的最佳实践
  Best practice for loans
  - 低利率
    Low interest rates
  - 创新贷款的基金管理者既需要能源与环境问题的专业知识，也需要金融方面的知识
    Fund managers for innovative loans need expertise in energy and environmental issues as well as financial issues
  - 寻求创新贷款支持的项目应该是高质量的和能被银行所接受的
    Projects seeking innovative loans should be high quality and bankable

减免能源效率技术的税收
Tax Relief for Energy-Efficient Technologies

- 减免能源效率技术的税收实践
  Best practice energy-efficient technology tax relief
  - 面向特定的能源效率技术清单，采用该技术需要另外的财政激励措施
    Targeted lists of specific energy-efficient technologies that need additional financial incentives in order to be adopted
  - 技术清单应该定期更新来去除那些正在使用而没有激励的技术，同时增加新兴技术
    Lists should be updated regularly to eliminate technologies that are being adopted without incentives and to add emerging technologies

减免与协议相关的税收
Tax Relief Associated with Agreements

- 减免与协议相关的税收的最佳实践
  Best practice for tax relief associated with agreements

  - 税收应足够高以鼓励工业参加协议以改进它们的能源效率
    Tax should be high enough to encourage industry to enter into agreements to improve their energy efficiency

  - 包括在协议内对工业提供支持(例如信息、审计等)
    Include provision of support to industries within agreements (e.g. information, audits)

  - 要求工业达到特定的能源效率目标以获取减免税务
    Require industries to reach specified energy efficiency targets in order to receive tax relief

谢谢!
Thank You!

如需更多信息，请联系：
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在“促进工业节能的若干财税政策研究”国际研讨会上的发言

Presentation at the International Workshop on Industrial Tax and Fiscal Policies to Promote Energy Efficiency

2005 年 5 月 24 日
吴效华
中国节能投资公司

MAY 24, 2005
WU Xiaohua
China Energy Conservation Interstment Co

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- 制定工业节能财税政策的意义
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- 项目研究的内容和范围
  The content and scope of the project
- 研究方法
  Study approach
- 项目产出
  Output of this project

引言——问题的提出
Introduction -----putting forward the question

- “可持续能源发展财政和经济政策研究”项目的一个专题研究

  A special topic of “ Study on finance and economy policy for sustainable development of energy “
  - 构建中国能源可持续发展财税政策的整体框架

    Construct the entire framework of finance and tax policies for sustainable development of energy
  - 本项目侧重工业节能

    Express on energy saving in industry
- 国内外经验表明财税政策对推动节能十分重要

  It has been made clear that finance and tax policies is very important to improve energy saving according the experiences both home and abroad.
- 财税激励政策是中国节能政策和措施中的薄弱环节

  The finance and tax policies is a weakness part of policies and measures for energy saving in China.
  - 缺乏财税政策支持是节能的主要障碍之一

    Lack the support of finance and tax policies is the key obstacle in energy saving issues.
  - 制定切实可行的节能财税政策是发展循环经济和建立节约型社会的客观要求

    It’s the real requirement of developing cycling economy and establish saving-type society to building up feasible finance and tax policies for energy saving .

引言——问题的提出
Introduction -----putting forward the question

- 工业节能对节能工作的意义

  Energy saving in industry to the whole energy saving program
  - 工业用能占全部终端能耗的 67%

    Energy consumption in industry account for 67% in the total final energy consumption
- 目前的社会经济环境是制定促进节能财税政策的良好时机

  It’s a inning to build up the building up the finance and tax policies for energy saving in industry under current environment of society and economy.
  - 能源供需形势紧张

    The situation of energy’s supply vs demand keeps intensity .
  - 国家已经和正在出台节能规划和相关促进政策

    China has proposed energy saving layouts and related hastening policies .
  - 国内外对环境保护和气候保护的呼声

    The advocacy for environment protection and climate protection,

制定工业节能财税政策的意义 (1)
The meaning of building up the finance and tax policies for energy saving in industry(1)

1. 工业能源消费在相当长时期都将是最大的耗能部门，研究实施促进中国工业节能的经济政策，对全社会的节能具有巨大推动作用

   The industry will be the largest energy consumption department in a long-term period. It will a great promotion to energy saving overall society through researching the economy policy's implement to promote energy saving in China industries.

   - ¬ 终端能源消费的总量由 1995 年的 982Mtce，增长到 2002 年的 1025Mtce。

     The final energy consumption amount has increased from 982 Mtce in 1992 to 1025 Mtce in 2002;
   - ¬ 交通能源消费在这期间从 5.3% 上升 9.7% ；

     The energy consumption has increased from 5.3% up to 9.7% during that period;
   - ¬ 工业部门比重从 72% 下降到 67.7% ，但仍占绝对比例；

     The energy consumption in industry has dropped down from 72% up to 67.7% during that period, however, it still occupy the absoluteness proportion in the whole consumption;
   - ¬ 居民生活能源消费比重从 13.2% 下降到 11.7% ；

     The energy consumption in household has dropped down from 13.2% up to 11.7% ;
   - ¬ 服务行业能源消费比重从 5.4% 上升到 6.5% ；

     The energy consumption in service industry has increased from 5.4% to 6.5% ;
   - ¬ 农业能源消费几乎没有变化维持在 4% 左右。

     The energy consumption in agriculture has kept a constant level at above 4%.

制定工业节能财税政策的意义 (2)
The meaning of building up the finance and tax policies for energy saving in industry(2)

2. 2004 年 11 月，国家发改委出台了"节能中长期专项规划"，有关财税政策的制定对规划的实施和规划目标的实现将起到积极的保障和促进作用

   The China National Development and Reform Commission had issued a "The Middle&long- term Special Plan on Energy Saving " In 2004,11,The constitution of finance and tax policies will play an active role of guarantee and promotion to implement those policies and archiving their goals.

   - ¬ 节能中长期专项规划目标

     The goal of the middle&long-term special plan on energy saving
     - ♣ 主要产品单位能耗指标

       Main product unit production energy consumption index
     - ♣ 主要耗能设备能效指标

       Main energy consumption device energy effective index
   - ¬ 重点工业领域

     Key industry fields
   - ¬ 电力、钢铁、有色金属、化工、建材、石油、石化、煤炭

     Electric power,Steel, Non-ferrous metal, Chemical industry, Building materials, Petroleum, Petrochemical,Coal

主要产品单位能耗指标
Main product unit production energy consumption index

	单位unit	2000	2005	2010	2020
火电供电煤耗 Standard coal consumption of power generation	克标准煤/千瓦时 g/kw•h	392	377	360	320
吨钢综合能耗 Steel eomprehensive energy consumption	千克标准煤/吨 Kg/ton	906	760	730	700
吨钢可比能耗 comprehensive energy consumption per comparable ton	千克标准煤/吨 Kg/ton	784	700	685	640
10 种有色金属综合能耗 Comprehensive energy consumption for 10 non-ferrous metal	吨标准煤/吨 ton /ton	4.809	4.665	4.595	4.45
铝综合能耗 Aluminium comprehensive energy consumption	吨标准煤/吨 ton /ton	9.923	9.595	9.471	9.22
铜综合能耗 Comprehensive energy consumption	吨标准煤/吨 ton /ton	4.707	4.388	4.256	4.000
炼油单位能量因数能耗 Oil refining unit energy factor consumption	千克标准油/吨?因数 Kg/ton factor	14	13	12	10
乙烯综合能耗 Ethylene comprehensive energy consumption	千克标准油/吨 Kg/ton	848	700	650	600
大型合成氨综合能耗 Large scale synthetic ammonia comprehensive energy consumption	千克标准煤/吨 Kg/ton	1372	1210	1140	1000
烧碱综合能耗 Caustic soda comprehensive energy consumption	千克标准煤/吨 Kg/ton	1553	1503	1400	1300
水泥综合能耗 Cement comprehensive energy consumption	千克标准煤/吨 Kg/ton	181	159	148	129
平板玻璃综合能耗 Flat glass comprehensive energy consumption	千克标准煤/重量箱 Kg/weight crate	30	26	24	20
建筑陶瓷综合能耗 Building ceramic comprehensive energy consumption	千克标准煤/平方米Kg/m2	10.04	9.9	9.2	7.2
铁路运输综合能耗Railage comprehensive energy consumption	吨标准煤/百万吨换算公里 Ton/mt Km	10.41	9.65	9.40	9.00

China Energy Conservation Investment Co.

主要耗能设备能效指标
Main energy consumption device energy effective index

	单位unit	2000	2010
燃煤工业锅炉（运行） Coal-burning industrial boiler (Running)	%	65	70-80
中小电动机（设计） Middle /small electromotor (Designed)	%	87	90-92
风机（设计） Turbine (Designed)	%	75	80-85
泵（设计） Pump(Designed)	%	75-80	83-87
气体压缩机（设计） Air compressor (Designed)	%	75	80-84
汽车（乘用车）平均油耗 Auto(for ride) Average Oil Consumption	升/百公里 l/100Km	9.5	8.2-6.7
房间空调器（能效比） Air condition(Energy effective rate)		2.4	3.2-4
电冰箱（能效指数） Refrigerator (Energy effective index)	%	80	62-50
家用燃气灶（热效率） Household gas cooker (Thermal efficiency)	%	55	60-65
家用燃气热水器（热效率） Household gas water heater (Thermal efficiency)	%	80	90-95

China Energy Conservation Investment Co.

制定工业节能财税政策的意义 (3)
The meaning of building up the finance and tax policies for energy saving in industry(3)

3.工业生产中能源成本是一个不可忽视的因素，对产业发展和国际竞争力的提高具有至关重要的影响

Energy cost is an inneglectable factor in industry process, which will play a vital role in industrial development and enhancement for international competition.

4.财税政策本身对其他节能政策和措施的推进和落实有着重要的影响

The finance and tax policies themselves have an important impact to carry out other energy saving policies and measures.

项目研究的内容和范围
The content and scope of the project

1) 中国目前能源消费与工业用能状况

Current energy consumption and energy use status in industry in China

2) 工业能效水平和节能潜力分析

The analysis of energy effective level and energy saving potential

3) 以往有关工业节能财经政策的总结和分析

Conclusion and analysis about past finance policy relating to energy saving in industry

4) 工业发达国家促进工业节能的成功经验，分析对我国工业节能的适用性和借鉴意义

The success experience of promotion energy saving in developed countries, analysis it's applicability and reference value for China

5) 建议支持的重点工业节能领域节能工作特点分析

The analysis on key industry energy saving fields' characteristics which were emphasized to be supported.

6) 促进工业节能的财税政策研究

Study on finance and tax policies which promote energy saving

- 政策建议及实施方法

  Policy advice and implement approach
- 有关政策实施的成本效益分析

  Cost-effective analysis of policies implement correlative to energy saving
- 与我国现行的财政、金融、税收等经济政策的适应性与相关性

  Applicability and pertinence to such existing economy policies as finance, revenue, and so on.

研究方法
Study approach

- 以“节能中长期专项规划”提出的 8 大工业行业为重点，选择钢铁、有色、建材、化工等基本原材料工业作为深入研究的对象。

  Taking top eight industries presented in “The Middle&long- term Special Plan on Energy Saving ” as emphases, select such raw materials industries as steel, non-ferrous metal, building materials and chemical industry etc.，as objects to be lucubrated.

- 结合基本材料工业节能管理、节能技术、节能奖惩等领域的特点，通过调研和数据采集，就实施经济激励政策的内容、可能性及具体实施办法，做典型分析。

  Combining the properties of the basic material industry, for example,energy saving management, energy saving technology and energy rewards & punishment, investigating and collecting data, analysis the typical situation aiming at the content,feasibility and implement way in detail of economy incentive .

- 国家统计体系所提供的数据反映了我国能源消费的基本特点，将作为本项研究的基础数据。

  The data provided by national statistical system can reflect the basic characteristics of energy consumption in China, so it will be taken as basic data of this project.

本项目的产出
Output of this project

- 我国主要工业行业用能形势及工业节能潜力分析报告

  A report on industrial energy use status and potential analysis for energy saving in China

  – 能源供需形势及工业用能形势基本分析

    A basical analysis of situation of energy’s supply vs demand and the form of energy used in industry.

  – 工业能效水平及节能潜力分析

    An analysis of energy effective level and energy saving potential

- 促进工业节能的财税政策国际经验总结

  An international experience summarizing of finance and tax policies for improving energy saving in industry

- 政策建议报告

  Report on proposed items for policy

  – 适合我国实际情况的具有一定操作性的工业节能财政、税收、金融政策的建议

    The proposed items about the finance and revenue policy on energy saving in industry which is easy to practise and fit for facts and figures in China now.

  – 适合企业和行业特点的有关政策的具体落实办法

    The implement method in details of the related policy suit for the certain business and industry.

  – 结合地方或行业特点，提出进行政策试点与示范的建议

    Bring up the advices about making experiments and demonstration of the policy while taking into account the local or industrial characteristics

促进工业节能的财税政策初步研究
PERFECTING FISCAL POLICIES TO SUPPORT ENERGY SAVING INDUSTRIAL DEVELOPMENT

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May 24, 2005

主要内容/Main Contents

- 总体思路和原则
- 税收激励政策
- 财政支持政策
- 近期研究的重点

- **Basic framework and general principles.**
- **Taxation incentive policies**
- **Fiscal supporting policies**
- **Areas calling for further studies**

1、总体思路和原则
I. Overall Framework and General Principles

- 财政税收政策是政府促进工业节能的重要工具
- 促进工业节能符合我国公共财政改革方向和政策选择

- Fiscal policy as an important instrument to promote energy-saving industrial development.
- Energy-saving industrial development is consistent with the trend of public finance reform and relevant policy options in China.

财税政策的作用重点
Key roles the fiscal policy plays

通过激励性政策手段，鼓励企业生产节能产品（设备），鼓励企业使用节能产品（设备），最终调动工业企业节能降低能耗的积极性。

- By means of incentive policy instruments, to encourage the production and utilization of energy-saving products (equipments) by enterprises, so as to eventually stimulate all industrial enterprises to save energy and minimize energy consumption.

应当遵循的原则
Principles to follow

- 市场导向与政府适当干预相结合
- 统筹兼顾，抓住重点（重点行业与重点产品）
- 既要有长远规划，又要立足当前面临的紧迫问题
- 综合运用各种财政税收政策工具
- 重视财税政策与其它政策措施和手段间的协调配合
- 注重财税政策的成本效益分析

- Combining both market orientation and modest government intervention.
- Overall planning with key industries and products highlighted.
- Long-term planning combined with priorities to be solved urgently .
- Synthetic use of various kinds of fiscal policy instruments.
- Stressing coordination and synergy between fiscal policies and other policies and instruments.
- Stressing cost-effectiveness analysis on fiscal policies

2、税收激励政策－－企业所得税
II. Taxation Incentive Policies – Corporate Income Tax

●直接优惠

低税率优惠

定期减免优惠

●间接优惠

加速折旧

加计扣除（研发费用）

- Direct tax incentives

Lower tax rate

Regular tax reduction and exemption

- Indirect incentives

Accelerated depreciation

Super deduction on R&D expenses

2、税收激励政策——增值税
II. Taxation Incentive Policies --- VAT

对关键性的、节能效益异常显著且价格因素制约其推广的重大节能设备和产品，国家可以在一定期限内实行一定的增值税减免优惠政策。对个别节能效果非常明显的产品，在一定期限内，可以实行增值税即征即退措施。

The State should allow for certain VAT preferences within a certain period to enterprises producing products with significant energy-saving effects whose popularization is limited due to price factor constraints. For products with extraordinary energy-saving effects, VAT should be returned right after collection.

2、税收激励政策——进口税收政策优惠
II. Taxation Incentive Policies --- Import Tax Incentives

对国内确实不能生产，将用于工业节能产品生产的、节能效益非常显著的重大设备，可以减免关税和进口环节增值税。

For important equipments with significant energy-saving effects that are not domestically producible, and are to be used for the production of industrial energy-saving products, tariff and import VAT reduction/exemption is recommended.

3、财政支持政策
III. Fiscal Supporting Policies

- 投资政策（整合国债投资和预算内投资，设立贴息贷款，支持节能技改）
- 政府预算支持（节能研发、宣传、示范、推广、监管）
- 政府采购（加大节能产品认证力度，扩大政府采购范围）

- Investment policy (integrating national debt investments and budgetary investments for the establishment of discount loans to support energy-saving scientific and technological innovations).
- Government budgetary support (R&D, promotion, demonstration, popularization and monitoring of energy-saving products)
- Government procurement (strengthening authentification work of energy-saving products and widening the scope of government procurement)

4、近期应当重点研究的政策措施
IV. Policy Measures Calling for Further Studies

- 在政府预算内设立工业节能专项资金的政策建议
- 鼓励工业企业签定“自愿协议”的政策措施
- 企业所得税节能优惠政策措施

- Policy suggestion of establishing a special fund for industrial energy-saving.
- Policy measure to encourage industrial enterprises to sign “voluntary contracts”.
- Policy measure of corporate income tax incentives.

企业所得税节能优惠政策设计的原则

Principles in Designing Incentives in Corporate Income Tax to Encourage Energy Saving

统筹考虑（放在整个节能政策体系中考虑）

抓住重点（重点产品、重要环节）

直接优惠与间接优惠相结合

简便易行，方便操作

- Overall planning (within the overall energy-saving policy framework)
- Highlighting key products and key sectors
- Combining direct and indirect incentives
- Ease and convenience in use and operation.

鼓励节能产品生产的企业所得税优惠措施

Corporate Income Tax Incentives to Encourage Production of Energy-saving Products

建议采取税率减半的直接优惠办法：

对专门从事节能产品生产的企业，减半征收企业所得税；

对非专门从事节能产品生产的企业，就其生产经营节能产品取得的所得，减半征收企业所得税。但要求企业分别核算节能产品生产经营所得和非节能产品生产经营所得，未分别核算或核算不清的不能享受税收优惠。

Direct incentive of halving the tax rate is recommended:

For enterprises fully engaged in the production of energy–saving products, corporate income tax rate should be halved;

For enterprises not fully engaged in the production of energy-saving products, their revenues deriving from the production and sales of energy-saving products can also enjoy half tax rate, but the prerequisite is that enterprises should separate their revenue accounts of energy-saving products and non-energy-saving products.

促进节能产品使用和消费的所得税优惠措施
Corporate Income Tax Incentives to Promote the Use and Consumption of Energy-saving Products

建议对企业为达到国家规定的能耗标准进行节能改造而购置的节能产品（设备），按其产品（设备）投资（购置）额的一定比例（如15%）从企业应纳所得税额中抵免，当年不足抵免的，可用以后年度应纳所得税额延续抵免，但最长不超过5年。对形成固定资产的节能设备，可适当缩短折旧年限或采取加速折旧的方法计提折旧。

It is recommended that for the products (equipments) purchased by enterprises to reach the energy-consumption standards set by the state, a certain percentage (e.g. 15%) of the purchase amount can be deducted from the taxable amount. If the taxable amount of the current year is not sufficient for the deduction, the taxable amount for the following years (a maximum of 4 successive years) can be accumulated for the deduction. For energy-saving equipments that become fixed assets for enterprises, shortened depreciation period or accelerated depreciation should be allowed.

企业所得税节能优惠目录
Catalogue for Energy-Saving Incentives in Corporate Income Tax

- 该项政策所指“节能产品（设备）”，是指已纳入《企业所得税节能优惠目录》的节能产品
- 《企业所得税节能优惠目录》由国家发改委、财政部和国家税务总局不定期发布
- 企业依据国家发改委、财政部和国家税务总局颁布的《企业所得税优惠节能产品认定管理办法》，向税务机关申请企业所得税优惠。

- The energy-saving products (equipments) refer to the energy-saving products already included into the *Catalogue*.
- The *Catalogue* is irregularly released by State Development and Reform Commission, Ministry of Finance and State Administration of Taxation.
- The enterprises can apply for preferential treatments in light of the *“Methods of Managing the Authentification of Energy-saving Products Eligible for Corporate Income Tax Incentives”* jointly issued by State Development and Reform Commission, Ministry of Finance and State Administration of Taxation.