

# 能效投资是衡量目标实施效果的重要指标

## Investment in Energy Efficiency As An Indicator For Success

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## 背景Background

到2010年，中国单位国内生产总值能耗比“十五”末期降低20%左右。加快节能改造、淘汰落后的耗能设备、技术和工艺，提高企业节能技术水平，是实现“十一五”节能降耗目标的重要途径。经测算，“十一五”期间，全社会节能改造和提高能效投资需要4200亿元左右。必须加大政策扶持力度，拓宽资金渠道，形成有利于提高全社会节能水平的投入机制。

**China's 2010 goal: reduce specific GDP energy consumption by 20% while maintain rapid economic growth.**

**Means: include speeding energy saving renovation, eliminating outdated equipment, technology, and techniques, and improving the levels of energy savings technologies.**

**Total investment requirement: estimated at 420 billion RMB. Need to increase policy support, widen financing channels to facilitate energy saving investment from the whole society.**

## 节能改造和提高能效投资是实现技术节能的根本保障

**Energy saving innovation and energy efficiency improvement are fundamental to realizing technological energy savings**

1980~2000年期间中国GDP年均增长率高达9.7%，而相应的能源消费量年均仅增长4.6%，能源消费弹性系数仅为0.47，实现了中国经济增长所需能源一半靠开发，一半靠节约的目标。这一时期的节能成效有目共睹，这在很大程度上得益于中国政府在20世纪80年代至90年代中期制定和实施的一系列节能经济激励政策。

**1980-2000: average annual GDP growth 9.7%, while energy consumption growth 4.6% for an elasticity of 0.47; meeting the objective of quadrupling GDP by only doubling energy consumption.**

**Such success largely due to the formulation and implementation of economic incentive policies for energy conservation by the government in 1980s to the mid-1990s.**

## 节能改造和提高能效投资是实现技术节能的根本保障

Energy saving innovation and energy efficiency improvement are fundamental to realizing technological energy savings

以节能基建和节能技改资金为例，1981 ~1995年间国家用于节能基建和节能技改项目共投资343.2亿元，引导地方政府和企业投资560.3亿元，总投资903.5亿元，形成11820万吨标准煤的节能能力。见下表

Between 1982-1995, central government investment in the energy-saving infrastructure construction and energy-saving technological renovation was 34.32 billion RMB; investment from local government and enterprises 56.03 billion RMB for a total investment of 90.35 billion RMB; forming an energy-saving capacity of ~118.2million tce. See the following table.

节能基建energy saving infrastructure construction	426.5	187.2	239.3	4140
节能技改technology renovation	477	156	321	7680
总计total	903.5	343.2	560.3	11820

## 节能改造和提高能效投资不足已严重制约技术节能工作

Underinvestment in energy saving renovation and energy efficiency improvement has constrained energy saving efforts

伴随市场经济体制在中国逐步确立，能源投资向投资主体多元化、投资方式多样化和资金来源多渠道发展。能源基本建设投资规模迅速扩大。1998年后，节能基建和节能技改两个专项资金被取消，改由地方和企业自筹。在能源投资大幅度增长时，能效投资占能源总投资的比例却大幅度下降。

With the establishment of a market-based system, energy investment is developing through a diverse set of investment entities, forms, and financial sources and the level of investment grown quickly.

In 1998, special government funds for energy-saving infrastructure construction and technological improvement were cancelled. Though total investment in energy sector increased dramatically the share of energy saving in total investment decreased significantly.

**节能改造和提高能效投资不足已严重制约技术节能工作**  
**Underinvestment in energy saving innovation and energy efficiency**  
**improvement has constrained energy saving efforts**

1983年的节能投资最高约占能源总投资的13%，2003年已跌至4%左右，这表明中国在向市场经济转型过程中，由于对节能经济政策扶持力度的弱化，节能改造和提高能效的投资力度明显减弱，而在节能和提高能效方面的研发投入更是微不足道。占全国研发经费53.58%的工业企业研发经费中仅有2%用于节能和提高能效的研发。已经严重制约了技术节能工作的开展，从而推动了“十五”期间单位GDP能耗的持续上升。

Share of energy saving in total energy investment decreased from a high of 13% in 1983 to a low of 4% in 2003;

Investment in energy saving R&D only accounted for 2% of the total industrial R&D. the latter accounted for 53.58% of China's total R & D investment.

This greatly restricted the development of energy saving technology, and resulted in energy consumption per unit GDP increasing throughout the 10<sup>th</sup> Five-Year period.

**“十一五”节能改造和提高能效投资规模巨大**

**The 11<sup>th</sup> Five-Year Plan includes a large amount of investment in**  
**technological innovation and efficiency improvement**  
**for energy savings**

2005年中国单位GDP能耗为1.22吨标准煤/万元（2005年价），按照“十一五”规划确定的目标，2010年单位GDP能耗应该降到0.98吨标准煤/万元，形成了6.28亿吨标准煤的节能能力。

In 2005, the unit GDP energy consumption was 1.22 tce per 10 thousand RMB (at 2005 prices); according to the 11<sup>th</sup> Five-Year Plan, energy consumption per unit GDP should be 0.98 tce per RMB by 2010. The energy-saving potential is 628 million tce.

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主要依靠三个途径。一是结构节能，二是技术节能，三是管理节能。根据以往经验和近期研究成果，技术节能对全社会节能的贡献约为1/3，即“十一五”期间技术节能实现的节能能力要达2.1亿吨标准煤。要实现1吨标准煤的节能能力，预计节能改造和提高能效投资平均需要2000元左右，“十一五”期间总共需要4200亿元，平均每年需要840亿元。

Such potentials can be attained through three main ways: structure adjustment, technological advancement, and energy saving management. Past experiences and recent research results showed technological advancement contributed 1/3 to the total savings, or 210 million tce. At about 2000 RMB of investment per 1 tce energy saving, total investment required is 420 billion RMB during the 11<sup>th</sup> Five-Year period, or 84 billion per year.

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为抓好重点领域的节能工作，国家发改委制定并下发了《“十一五”十大重点节能工程实施意见》，今年已安排5.4亿元国债资金支持了98个重点节能项目，预计可带动近60亿元能效投资。但这仅仅是投资需求的7/100，可见要完成这样大规模的投资难度很大。

NDRC issued “Guidelines for implementing ten key energy savings programs in the 11<sup>th</sup> Five-Year Plan.” 540 million RMB have been allocated to 98 key energy saving projects, which could leverage an additional estimated 6 billion RMB of investment in energy efficiency. However, this is only 7% of the total needed investment; realizing total investment is very challenging.

### 加大节能改造和提高能效投资力度的建设

#### Increasing investment in energy saving innovation and energy efficiency

节能改造和提高能效可以带来广泛的经济效益和社会效益，是实施可持续发展能源战略不可忽缺的组成部分。但是，节能是高度分散的二次投资行为，即使在市场经济发达国家，节能市场失灵也客观存在。当前和今后相当长时间内我国将处于市场经济初级阶段，节能的推进面临投资、技术风险、信息等诸多市场障碍。由于市场失灵和市场障碍的客观存在，中国巨大的节能潜力难以自行实现，亟需政策干预和引导，特别是对节能投资的拉动需要有强有力的经济激励政策，促使各类投资主体扩大节能投资规模。

A sustainable energy strategy cannot ignore energy saving renovation and efficiency improvement; However, energy saving investment heavily impacted by market failure even in well developed market economies. Energy saving in China will for a long time face significant investment, technological, and information barriers. As a result, China needs policies to influence and guide energy-saving efforts, especially powerful market-based policies to expand the scale of energy saving investment.

### 加大节能改造和提高能效投资力度的建设

#### Increasing investment in energy saving innovation and energy efficiency

1.加大政府对节能的投资力度。一是在国家财政预算中单设节能科目，安排节能专项资金，地方财政建立相应的配套资金。主要使用方向是节能的研发投入、重大节能示范工程、重大节能技术产业化和节能服务体系的建设。二是节能产品建立节能专项基金，主要使用方向是节能成熟技术的推广应用，重点加强十大重点节能工程。

There are two ways to increase the energy saving investment:

1. Include energy saving projects in the national budget, including a special fund for energy saving, and establish matching funds by local governments. The main expenditure would be for R&D, engineering demonstrations, commercialization of energy savings technologies, service system construction;
2. A special energy saving fund, to spread mature energy saving technologies and strengthen the "ten key energy saving programs."

### 加大节能改造和提高能效投资力度的建设

#### Increasing investment in energy saving innovation and energy efficiency

2. 实行支持节能的税收政策。一是加大节能设备和产品技术研发费用的税前抵扣力度，研发费用按实际发生额的150%抵扣当年应纳税所得额。二是对企业购置节能产品设备，可按其产品设备投资购置额的30%从企业应纳税所得额中抵免。三是对生产节能产品设备的企业减半征收企业所得税。四是对企业用于生产节能产品的关键设备适当缩短折旧年限或索取加速折旧的方法计提折旧。五是对企业进口国内不能生产或技术达不到要求的国外先进节能设备和产品，享受免征关税和进口环节税的政策。

Taxation policies must support energy saving:

1. Increase R & D budgets for energy saving equipment and product technologies; 150% of R&D costs should be excluded from the total sum subject to income tax.
2. Enterprises that purchase energy saving equipment and products - 30% of these costs should be deducted from the income tax.
3. Enterprises that produce energy saving products - the income tax should be halved.
4. The depreciation years for energy saving products or for obtaining energy-saving methods should be shortened.
5. Fifth, all enterprises that import advanced equipment and products that cannot be produced by domestic technologies should be exempt from duties and import taxes.

### 加大节能改造和提高能效投资力度的建设

#### Increasing investment in energy saving innovation and energy efficiency

3. 加大金融支持力度。国家开发银行应适当调整对能源行业的贷款结构，向节能等可持续能源项目倾斜，加大对节能项目的贷款（会软贷款）支持力度；建立节能投资担保机制，充分发挥财政贴息作用，引导商业银行扩大节能项目贷款；充分利用企业建设债券发行和企业股票上市的批准权，应优先核准节能建设项目发行股票或企业债券。

To increase financial support: the national development bank should adjust the loan structure to give preferences to and increase the volume for energy saving;

build mechanisms to guarantee energy saving investment and use reduced interest loans to guide commercial banks to expand energy saving loans;

give preferences to energy saving projects in approving process for issuance of construction bonds and enterprises' shares.

**加大节能改造和提高能效投资力度的建设**  
**Increasing investment in energy saving innovation**  
**and energy efficiency**

**4.建立节能信息发布制度。要及时发布政策动态、节能投资导向。先进的节能技术、工艺和产品等，引导各类投资主体投向节能领域。**

**establish energy saving information dissemination system includes:**

**Policy trends;**

**Energy saving investment guidance; and**

**Advanced energy saving technologies, techniques, and products.**