拟研究的环境技术纵览

贾峰 2008年2月21日

环境技术市场化的背景

- 环境污染
- 气候变化
- 能源短缺

能源短缺

- 2006年底,全国石油剩余经济可采储量 20.43亿吨 (人民网-人民日报海外版, 20070330)
- 2006年中国煤炭消费增长占全球消费增长的72%
- 2006年,煤炭储量总计1145亿吨,占世界煤炭总储量的12.6%,目前的储量只够中国用48年 (BP世界能源统计2007)

World Oil Supply: Peak or Not Peak?

- 2006—Sadad Al Husseini, 2007
- 2015—Jeroen van der Veer
- 2030—World Oil Outlook 2007 (U.S. Geological Survey)
- 2010—Association for the Study of Peak Oil and Gas (ASPO), 2008
- ENN World Oil Supply Peak or Not Peak.htm

Google to help green technologies amass scale

- INDIAN WELLS, California (Reuters) –Google Inc is prepared to invest hundreds of millions of dollars in big commercial alternative-energy projects that traditionally have had trouble getting financing.
- The Internet search giant, which has said it will invest in researching green technologies and renewable-energy companies, is eager to help promising technologies amass scale to help drive the cost of alternative energy below the cost of coal.

Which Technologies?

- It is also looking closely at several companies with enhanced geothermal, Reicher said. Enhanced geothermal systems, or EGS, create power by pumping water into hot rocks in the ground rather than harvesting hot water already there.
- "We arrived at these three technologies because we think they have real promise to move down the cost curve and to be competitive with coal and to get to very large scale," Reicher said.
- Google said in November it planned to spend hundreds of millions of dollars to help drive the cost of electricity made from renewable sources below the price of power generated from dirty coal-fired plants.
- The company has pledged \$10 million to Pasadena, California-based eSolar Inc to support research and development on solar thermal power, which concentrates heat from the sun to create steam and spin turbines. It has invested \$10 million in Alameda, California-based Makani Power Inc, which is developing high-altitude wind technologies.

环境技术纵览

- 生物质能
- 风力发电
- 太阳能发电
- 氢气燃料的制备与应用
- 电动汽车
- 碳捕获与封存
- 打印帶逆制造(Remanufacture)
- 公平贸易茶叶
- 节能合同管理
- 清洁发展机制
- 碳交易

生物质能

生物质是讨论能源时常用的一个术语,是指由光合作用而产生的各种有 机体。生物能是太阳能以化学能形式贮存在生物中的一种能量形式, 种以生物质为载体的能量,它直接或间接地来源于植物的光合作用,在 各种可再生能源中,生物质是独特的,它是贮存的太阳能,更是一种唯 一可再生的碳源,可转化成常规的固态、液态和气态燃料。据估计地球 上每年植物光合作用固定的碳达2x1011t,含能量达3x1021J,因此每年 通过光合作用贮存在植物的枝、茎、叶中的太阳能,相当于全世界每年 耗能量的10倍。生物能是第四大能源,生物质遍布世界各地,其蕴藏量 极大。世界上生物质资源数量庞大,形式繁多,其中包括薪柴,农林作 物,尤其是为了生产能源而种植的能源作物,农业和林业残剩物,食品 加工和林产品加工的下脚料,城市固体废弃物,生活污水和水生植物等 等(中国生物质资源主要是农业废弃物及农林产品加工业废弃物、薪 柴、人畜粪便、城镇生活垃圾等四个方面)。

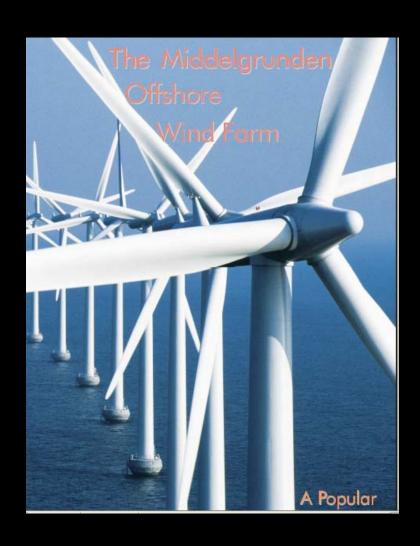
生物质能(研究对象: 生物柴油)







风力发电



太阳能发电

- 光热利用
- 光伏发电
- 光热发电

氢气燃料的制备与应用

- 二次能源是联系一次能源和能源用户的中间纽带。
- 二次能源又可分为"过程性能源"和"合能体能源"。当今电能就是应用最广的"过程性能源",柴油、汽油则是应用最广的"合能体能源"。
- 过程性能源和含能体能源是不能互相替代的,各有自己的应用范围。作为二次能源的电能,可从各种一次能源中生产出来,例如煤炭、石油、天然气、太阳能、风能、水力、潮汐能、地热能、核燃料等均可直接生产电能。
- 煤炭、石油、天然气等化石能源的的枯竭,需要寻求可再生能源的发电方式
- 以煤炭、石油、天然气等化石能源为基础的汽油。柴油将要退出历史舞台
- 寻找一种不依赖化石燃料的、储量丰富的新的合能体能源。氢能正是一种理想的新的含能体能源。

1874年之《神秘岛》

- 易燃的空气与维持生命的空气(卡文迪什1776)
- 易燃的空气=氢气维持生命的空气=氧气 (拉瓦锡1785)
- 脱碳与能源革命
 木头(10: 1)、煤炭(1或2: 1)、
 石油(1: 2)、天然气(1: 4)
- 氢气燃料的制备与应用蒸汽重整(天然气)、煤气化、电解(水、电)
- 氢气燃料的应用:燃料电池、分布式发电(DG)

与戈尔一起喝早茶

08中国冰雪灾害

电动汽车的开发与营销

(挪威Think案例)



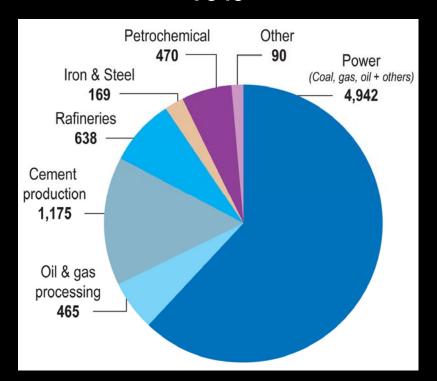


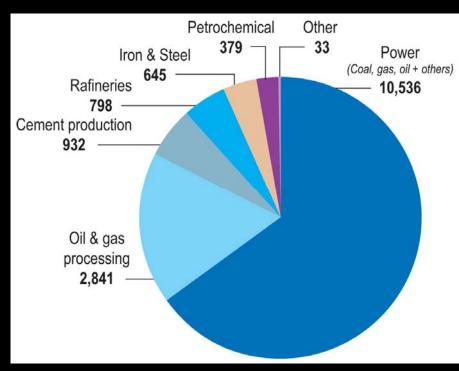


Global stationary sources of CO₂

Number of Facilities: 7949

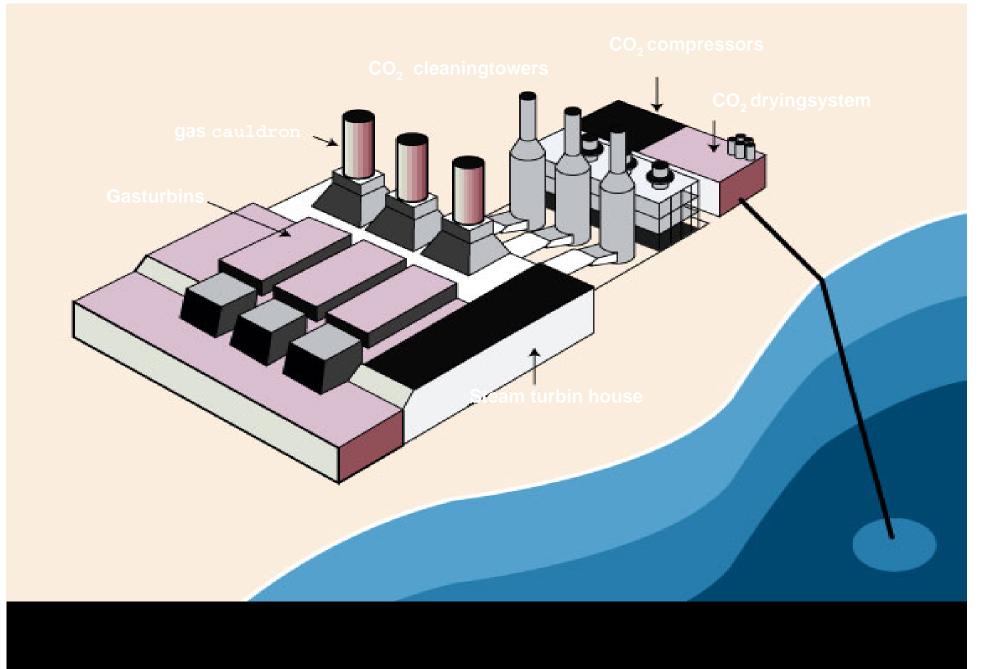
Total 16164 Mt CO₂/yr:



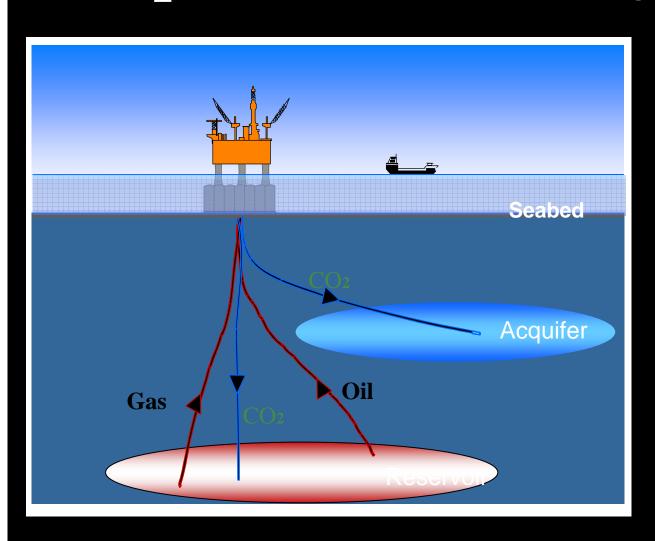


- •Global emission :CO2/yr: 24 000 Mt
- •Stationary sources: CO2/yr 16100 Mt
- •Number of Facilities: 8000
- Average emission from each facility: 2 Mt
- •Stationary sources more than 60 % of all CO2 emissions

Source: IPCC, 2005



CO₂ Capture and Storage



North Sea:

500 bill. ton CO₂ storage capacity

Huge potential for Enhanced Oil Recovery

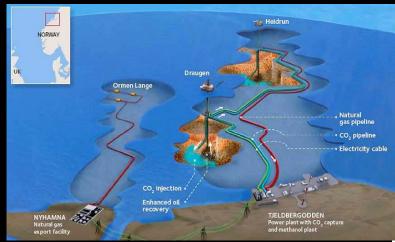
Norwegian CO₂ challenges & opportunities



Mondstad

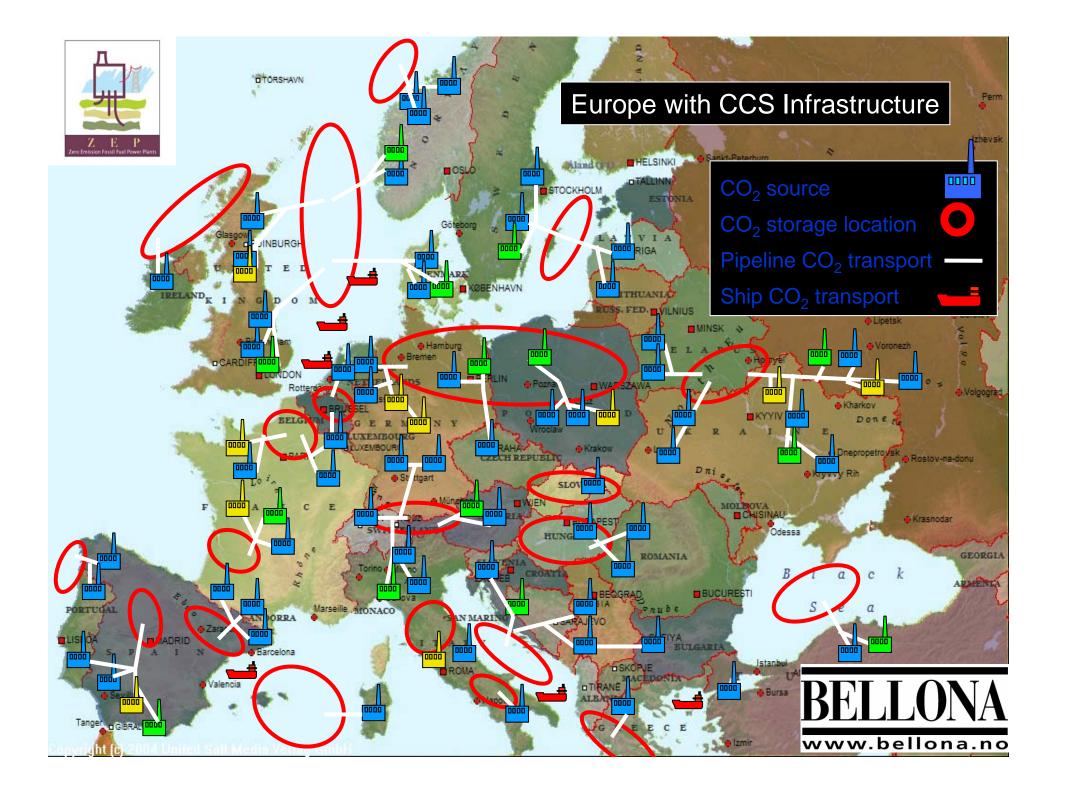
3 large CO₂ capture projects in development.

Halten





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Värtan Stockholm





Sargas demo plant

Purpose:

- **1.** Demonstrate CO₂ capture from a coal fired power plant.
- 2. Demonstrate cleaning of flue-gas and process to avoid settlement of particles
- **3.** Process fine-tuning for modular fabrication on global scale



Q4 2007 at Värtan, Stockholm





400 MW Clean Coal power plant

At Husnes, Norway



Investment Decision 2008 = Ready 2011

- 4x100 MW Coal fired with CO2-capture
- Location: Next to SørAl Aluminum Works
- Industrial Ownership:
 - SørAl 50/50 Alcan-Hydro Aluminium
 - Eramet Norway
 - Tinfos Group
 - Sargas
- Target COE 6 US cents/kwh –incl. capture
- Output per annum:
 - 3,000 GWh Electricity
 - 2.5 mill. ton CO₂



Green Tanker





打印带逆制造(Remanufacture)





- 我国热转印碳带主要应用在以下行业:
- (1) 运输物流业4.1亿元;
- (2) 娱乐业旅游业1亿元;
- (3) 零售业6.9亿元;
- (3) 生产制造业7.9亿元;
- (4) 办公设备4.1亿元;
- (5) 邮电、通信1.7亿元;
- (6) 金融1.7亿元;
- 合计: 27.4亿元
- 根据资料统计,仅中国铁路系统每年使用通用标准规格碳带约25万卷,合775万平方米,中国各个行业使用的各种规格碳带约合12亿平方米,而且每年以25%的速度递增。

- 产量、用量和废弃量巨大
- 填埋
- 可否再生利用
- 如何市场化?
- 可否利用CDM增收?

公平贸易茶叶(Fair Trade Tea)



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Fair Trade from COO Dave
Rochlin.

RECENT NEWS AND ANNOUNCEMENTS

- FLO International Raises Fairtrade Price for Coffee Farmers
- Fair Trade in Bloom (The New York Times)
- Bill Clinton talks about Fair Trade Certified coffee with Martha Stewart (The Martha Stewart Show)
- A little more at Tully's for a cup that composts (The Seattle Times)



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公平贸易概述



Fair Trade Overview

Fair Trade Overview

Fair Trade Certification

Basic FAQ

Advanced FAQ

Environmental Benefits

Social Benefits

History of Fair Trade

Testimonials

Flash Presentation

Fair Trade Certification empowers farmers and farm workers to lift themselves out of poverty by investing in their farms and communities, protecting the environment, and developing the business skills necessary to compete in the global marketplace.

Fair Trade is much more than a fair price! Fair Trade principles include:

- Fair price: Democratically organized farmer groups receive a guaranteed minimum floor price and an additional premium for certified organic products. Farmer organizations are also eligible for pre-harvest credit.
- Fair labor conditions: Workers on Fair Trade farms enjoy freedom of association, safe working conditions, and living wages. Forced child labor is strictly prohibited.
- Direct trade: With Fair Trade, importers purchase from Fair Trade producer groups as directly as possible, eliminating unnecessary middlemen and empowering farmers to develop the business capacity necessary to compete in the global marketplace.
- Democratic and transparent organizations: Fair Trade farmers and farm workers decide democratically how to invest Fair Trade revenues.
- Community development: Fair Trade farmers and farm workers invest Fair Trade premiums in social and business development projects like scholarship programs, quality improvement trainings, and organic certification.
- Environmental sustainability: Harmful agrochemicals and GMOs are strictly prohibited in favor of environmentally sustainable farming methods that protect farmers' health and preserve valuable ecosystems for future generations.

The Impact of Fair Trade

Fair Trade helps farming families across Latin America, Africa and Asia to improve the quality of life in their communities.

Learn More >

公平贸易与西部脱贫

(贵州遵义凤冈有机茶、沼气利用)







节能合同管理

- 是一种基于市场的、全新的节能管理机制,亦被称为"企业零投资"的能源管理模式。在北美、西欧等发达国家中十分流行。
- 基于这种节能新机制运作的专业化公司称谓"节能管理公司"(国外简称ESCO,国内简称EMC)





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Economic Prosperity.

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WEBCAST

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1

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ECHNOLOGIES



Everything is going green. From ecological initiatives in the home to recycling in the office and more ecologically ...Read more

NEWS & EVENTS

February 19, 2008
First Clinton Climate Initiative Project
Signed With Johnson Controls"
Largest Mall in Mumbai, India to Benefit from
Energy Efficiency Building "...Read More

February 19, 2008
Johnson Controls Named One of
America's Most Shareholder-Friendly

清洁发展机制

- 根据共同但有区别的责任原则,《京都议定书》为发达国家和经济转型国家规定了具体的、具有法律约束力的温室气体减排目标,要求这些国家在2008-2012年间总体上要比1990年排放水平平均减少5.2%。中国作为发展中国家在第一阶段不承担二氧化碳减排任务。
- 三大灵活机制,即清洁发展机制(CDM)、联合履约(JI)和排放贸易(ET)。
- 清洁发展机制,简称CDM (Clean Development Mechanism),是《京都议定书》中引入的灵活履约机制之一。CDM允许附件1缔约方与非附件1缔约方联合开展二氧化碳等温室气体减排项目。这些项目产生的减排数额可以被附件1缔约方作为履行他们所承诺的限排或减排量。对发达国家而言,CDM提供了一种灵活的履约机制;而对于发展中国家,通过CDM项目可以获得部分资金援助和先进技术。

- 清洁发展机制允许附件 国家在非附件 国家的领土上实施能够减少温室气体排放或者通过碳封存或碳汇作用从大气中消除温室气体的项目,并据此获得"经核证的减排量",即通常所说的CER。附件 国家可以利用项目产生的CER抵减本国的温室气体减排义务。
- CDM项目必须满足: (1)获得项目涉及到的所有成员国的正式批准; (2)促进项目东道国的可持续发展; (3) 在缓解气候变化方面产生实在的、可测量的、长期的效益。 CDM项目产生的减排量还必须是任何"无此CDM项目"条件下产生的减排量的额外部分。
- 参与CDM的国家必须满足一定的资格标准。所有的CDM 参与成员国必须符合三个基本要求:自愿参与CDM;建立国家级,CDM主管机构;批准《京都议定书》。此外,工业化国家还必须满足几个更严格的规定:完成《京都议定书》第3条规定的分配排放数量;建立国家级的温室气体排放评估体系;建立国家级的CDM项目注册机构;提交年度清单报告;为温室气体减排量的买卖交易建立一个账户管理系统。

- 1 改善终端能源利用效率;
 - 2 改善供应方能源效率;
 - 3可再生能源;
 - 4替代燃料;
 - 5 农业(甲烷和氧化亚氮减排项目);
 - 6 工业过程
 - (水泥生产等减排二氧化碳项目,减排氢氟碳化物、全氧化碳或六氟化硫的项目);
 - 7碳汇项目(仅适用于造林和再造林项目)

中国清洁发展机制项目

- 截至2007年11月8日,NDRC共批准932个CDM 项目
- 截至到2007年11月20日,已成功注册的中国 CDM项目有133个
- 截止到2007年11月20日,已获得CERs签发的中国CDM项目有26个
- NDRC最新CDM项目
- 截止到2007年3月26日,中国正在实施的279个 CDM项目总交易量90亿美元,占世界的1/2

CDM 项目操作流程

项目开发

项目设计

分析师

政府批准函

项目核定

项目实施

UNFCCC注册

排放检测

减排认证额

正式颁发CERS

碳交易

总部设在挪威奥斯陆的点碳公司(Point Carbon)称,2006年上半年全球碳交易量又创新高,为6.84亿吨二氧化碳当量,超过去年同期的5倍,约占2005年碳交易总量的85%。上半年的碳交易额度约为 欧盟配额的价格走低,欧盟 显低于他们的预计额度。都议定书相关的碳交易量与 碳当量,总价值19.76亿欧元。截至2006年6月,清 碳交易量为1.93亿吨,总交易额约为15.45亿欧元。 Chicago Climate Exchange)和澳大利亚新南威尔士排放交易方案今年的交易量和交易额也都为2005年的5倍。 点碳公司预计,2006年,全球碳交易总量可达到13.82亿吨,交易额约为220亿欧元。这 将远远超过去年的8亿吨,即94亿欧元。

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The World's First and North America's Only Greenhouse Gas Emissions Registry, Reduction, & Trading System



Exchange Overview

Welcome to CCX: We are a financial institution whose objectives are to apply financial innovation and incentives to advance social, environmental and economic goals through the following platforms.



Chicago Climate Exchange (CCX) is North America's only and the world's first global marketplace for integrating voluntary legally binding emissions reductions with emissions trading and offsets for all six greenhouse gases. (learn more)



Chicago Climate Futures Exchange (CCFE) is a landmark derivatives exchange that currently offers standardized and cleared futures and options contracts on emission allowances and other environmental products. CCFE is a wholly owned subsidiary of CCX. (Visit CCFE's website)

Market Overview

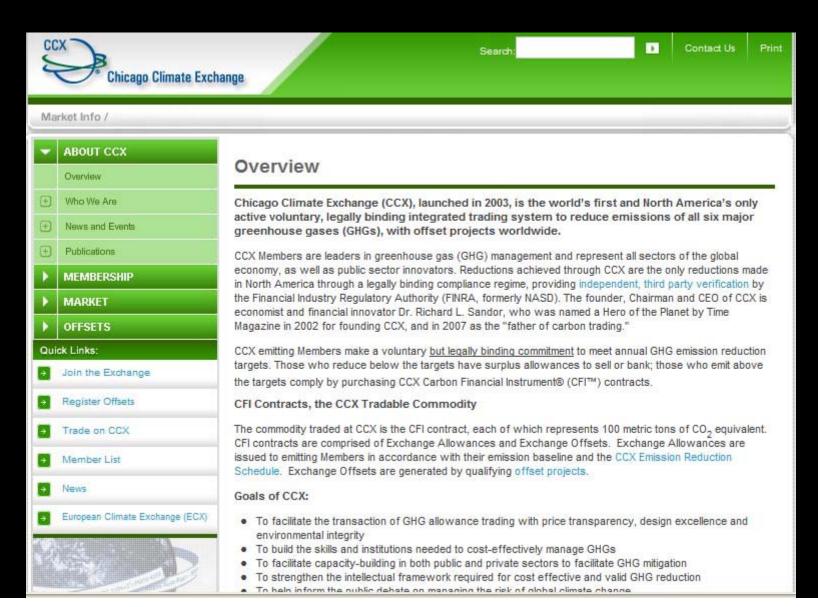
| CCX | CCFE ECX | |
|--------|-------------|---------------------|
| Februa | rv 20. 2008 | Updated end of day. |

| CCX CFI | CLOSE | CHANGE |
|--------------|--------|--------|
| CCX CFI 2003 | \$4.50 | \$0.20 |
| CCX CFI 2008 | \$4.50 | \$0.20 |
| CCX CFI 2010 | \$4.50 | \$0.20 |

To view all listed contracts click here.



中国能成立气候交易所吗?



评论

- Google to help green technologies amass scale
- http://www.enn.com/business/article/30759
- Nothing simple about nature
- http://www.davidsuzuki.org/about_us/Dr_David_Suzuki/Article_Archives/weekly02270401.asp
- Messing up a planet is easy, fixing it takes time
- http://www.davidsuzuki.org/about_us/Dr David Suzuki/Article Archives/weekly01300401.asp



分析





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FOR ORDERS



Friday, February 15, 2008

News of Note

"Green Economics": Turning Mainstream Thinking on Its Head

A few years ago, a homeowner in Las Vegas—a place that gets maybe five inches of rainfall a year—was confronted by a water district inspector for running an illegal sprinkler in the middle of the day. The man became very angry. He said, "You people and all your stupid rules—you're trying to turn this place into a desert!" Ideas about how the world works that don't accord with reality can be unhelpful. That's especially true about mainstream economics, which is based in part on ideas that made a lot of sense at some point in the last 250 years but that have outlived their time and usefulness

Top Stories

Energy taxes in Italy seen falling as CO2 rises

ROME (Reuters) - Taxes on energy in Italy have fallen by almost a quarter in the last decade while greenhouse gas emissions have soared, environmental group Legambiente said on Friday, calling for greater action against climate change.

ENN Spotlight

ENN Weekly Review: Feb 11th-15th, 2008



This week on ENN: Leading Brands call for climate change, Green Economics going mainstream, CSR: It's all about attitude, Consumers

fret over food packaging, Sumatran Tigers in serious danger, Bloomberg slams U.S. over ethanol and much much more.

More Top Stories

Investors pledge \$10 billion for renewable energy



UNITED NATIONS (Reuters) - U.S. institutional investors pledged at a U.N. summit on Thursday to invest \$10 billion over two years in

technologies that aim to reduce greenhouse gas emissions and to pressure companies to disclose their risks associated with climate change. What could be wrong with buying green?



Many Americans today rightly fear that they are exposed to toxins in their environment.

Andrew Szasz examines why we have responded

分析

- Sony, others to step up fight against global warming
- http://www.enn.com/top_stories/article/31260
- Leading brands call for action on climate change
- http://www.enn.com/pollution/article/31225

翻译

- "Green Economics": Turning Mainstream Thinking on Its Head
- http://www.enn.com/pollution/article/31256
- Could an "Age of Green Economics" Be on the Horizon?
- http://www.enn.com/top_stories/article/31098
- Investors pledge \$10 billion for renewable energy
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