



Hedging Against Climate Change An Energy Industry Perspective

Alaska Forum on the Environment

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BP Americas**

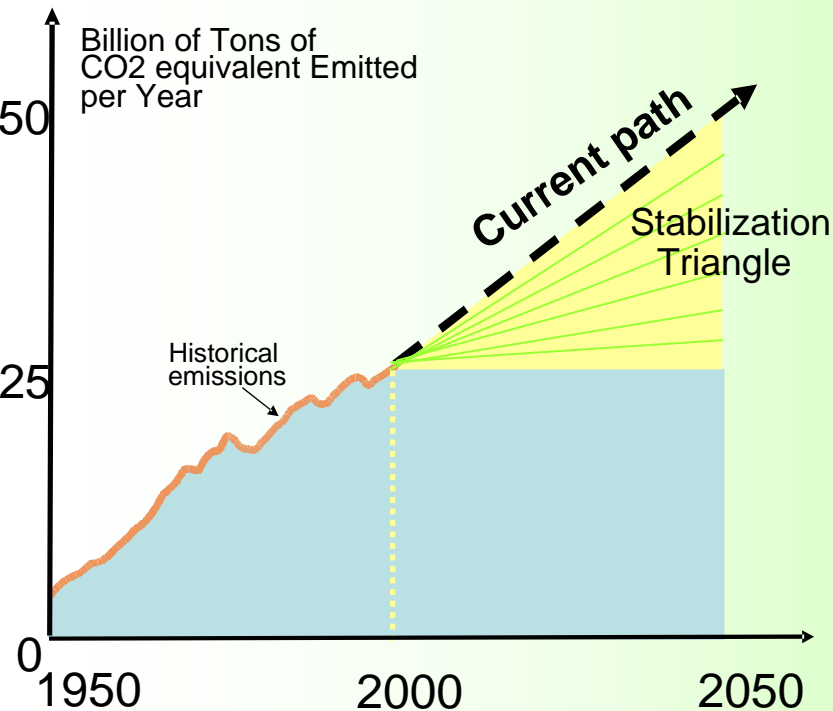
February 8, 2006



The Climate Challenge

BP Accepts the Science

But how should we move forward?



Stabilization Wedges

- Global emissions could double over next 50 years
- Challenge of stabilizing atmospheric levels of greenhouse gases
- Actions to reduce CO₂ emissions
- Examples:
 - doubling auto fuel efficiency
 - gas replacing coal
- Technologies are known



BP's Goals

- **Leading energy producer and supplier**
- **Minimize damage to the environment**
- **Helping lead on global transition to lower carbon energy**



The Bridges to a Sustainable Future

Fossil Fuel Based



- Emissions Reductions
- Energy Efficiency
- Alternative Energy

Renewables Based





BP's Internal Emissions Commitment

- 1998 - Targeted 10% reduction from 1990 levels
- 2002 - 10% target reached through energy efficiency and flaring reduction
- Committed to net emissions at reduced levels to 2012
- **Climate Change Leadership**



CO₂ Capture & Storage

In Salah - 1.1 mT/annum

CCS is an emerging technology suited to large stationary point sources of CO₂ from power generation, industry and H₂ production.

CO₂ Capture

- ✓ Post-Combustion
- Pre-Combustion
- Oxyfuels
- \$60-100+/Tonne CO₂

High Purity Sources

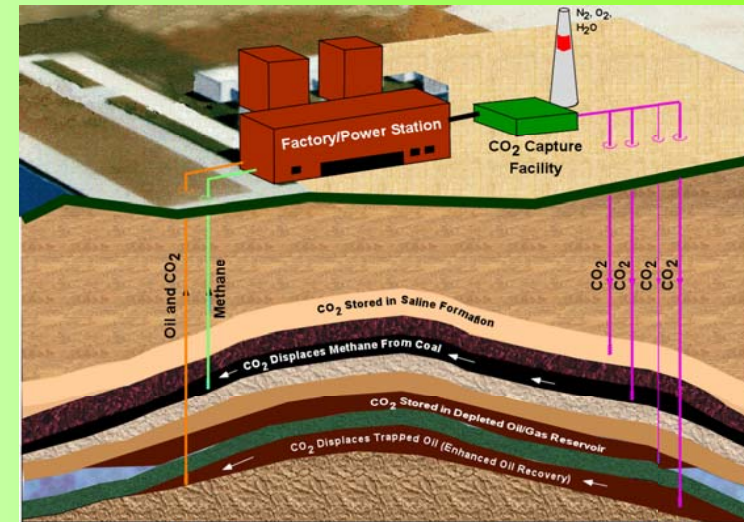
- Already separated
- Hi Concentration
- ✓ Amines, Membranes, H₂
- \$2-10/t CO₂

Transport

- ✓ Pipelines
- Ships
- \$ Depends distance

Geological Storage

- ✓ Enhanced Oil Recovery
- ✓ Saline Aquifer Formations
- ✓ Depleted Oil/Gas Reservoirs
- Enhanced Coal Bed Methane
- \$1-10/t CO₂





Efficiency gains and the “Wedges”

Princeton University and BP identified
approaches for carbon reductions

- Internal combustion engine efficiency
- Demand side reductions
- Buildings energy efficiency
- Industrial process efficiency
- Efficient baseload coal plant
- Gas for coal power
- Carbon capture & storage for power
- Carbon capture & storage for transport
- Nuclear
- Wind
- PV solar
- Biomass for transport & power
- Hydrogen from gas
- Zero emission hydrogen
- Forestation
- Tillage



Energy Efficiency - Identify key enablers

- Energy management
- Project management
- Coaching Skills
- Energy procurement
- Energy & Carbon demand forecasting



- Culture/ values
- Targets/ Measures
- Delivery model
- Accountabilities
- Cross group functions



- Corporate mngt info systems
- Business mngt info systems
- Operator M&T systems
- Collaboration tools
- Specialist tools & technologies

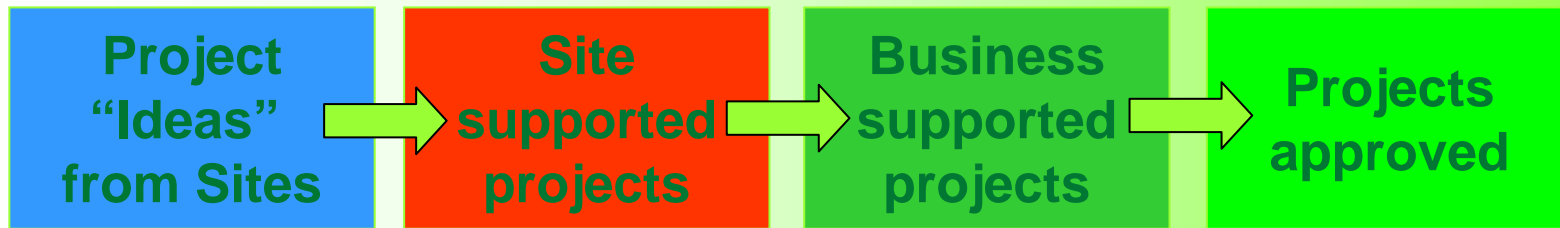
- Capital allocation
- Risk weighted criteria
- Hurdle rates
- Spend tracking



BP identified four key enablers



BP process to drive energy efficiency



- Web based tool open to BP employees
- 400 project ideas currently under development - \$350mm investments
- Shares ideas and successes on-line
- Aggregates investment and benefits

Energy and GHG Projects Database
Energy Efficiency and Flaring & Venting Investment Tracking

Home | Add New Project | My Projects | Reports | All Projects | Charting | My Administration | Site Admin

Filter & Export

Filter Options

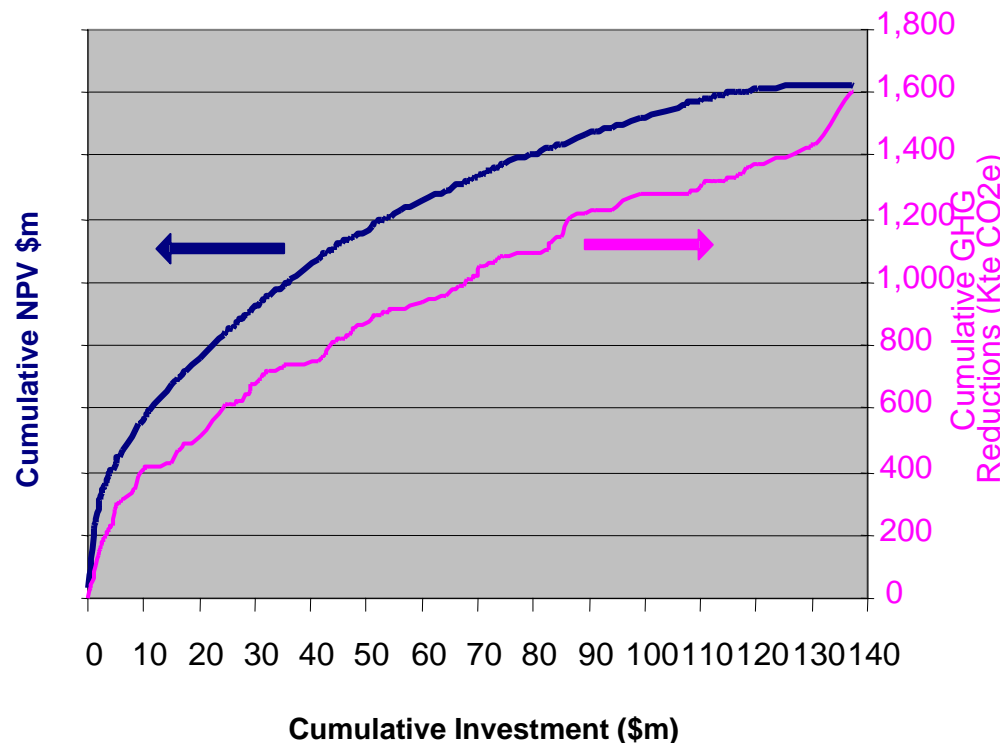
Project Name	SPU	Owner	Earliest Start Year	Plan Total Capex/Revin [\$Million]	Plan Total NPV [\$Million]	Plan Total GHG Reduction [KT CO ₂ e]	Simple Capital Efficiency	Status
Expand All								
Aromatics & Acetyls								
49 projects				87.44	192.40	324.18	2.20	
Lubricants & Services								
1 project				0.20	0.00	0.00	0.00	
Refining								
169 projects				129.85	313.83	1,466.28	2.42	
OVERALL TOTAL				217.49	506.23	1,790.46	2.33	
219 record(s) found								

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Results so far: Very good for business

2004 & 2005 Energy & GHG Programme
(Stacked by Capital Efficiency highest to lowest)



- Around 200 energy projects underway
- Projects prioritised by commercial attractiveness – GHG follows
- Portfolio IRR around 40-50%
- Group level numbers are becoming visible



Alternative Energy: Our Aim

- World's leading low-carbon power business
- \$8bn investment plan over next 10 years
- Annual operating profit of up to \$1 billion within next decade
- Cut projected GHG emissions by 24 million tonnes a year by 2015



Growing solar power



Currently

World's third largest solar manufacturing and marketing company - make around 100MW of solar panels each year

Our commitment

Doubling capacity by 2006 - new joint venture in China and new partnership in California; plan to increase solar sales 3x in 3 years



Growing wind power



Currently

Two wind farms in Netherlands, featuring some of Europe's largest wind turbines; large trader of wind power and renewable credits

Our commitment

Planning new large-scale wind farms in US and Europe; plan to grow BP's wind business from 30MW to 450MW in 2008

Leverage BP land bank as source of competitive advantage; market growing at more than 12% per annum



Growing gas power



Currently

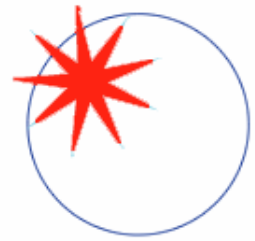
Participate in 13GW of gas-fired power plants in US, Vietnam, South Korea and Spain

Our commitment

Develop another 200MW of gas-fired power capacity by 2008 and be leading trader in clean power and CO₂ credits



Growing hydrogen power



Currently

World's first hydrogen power plant with Carbon Capture and Sequestration in Scotland (DF1)

Our commitment

Plan to build larger scale hydrogen power plant in the US and demonstrate technology works at scale



Concluding Remarks

- Risks are real
- Precautionary measures to significantly reduce emissions now
- No single solution capable of dealing with problem



Concluding Remarks (cont)

- Realistic transition can be made
- BP intends to be a very real force in driving that transition