

## AN INTRODUCTION TO PÖYRY'S CARBON SERVICES

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Pöyry Energy Consulting is Europe's leading energy consultancy providing strategic, commercial, regulatory and policy advice to Europe's energy markets. Pöyry Energy Consulting merges the expertise of ILEX Energy Consulting, ECON and Convergence Utility Consultants with the management consulting arms of Electrowatt-Ekono and Verbundplan. Our team of 250 energy specialists includes 40 people who work on carbon issues. We are located across 15 European offices in 12 countries and offer unparalleled expertise in the rapidly changing energy sector.

Pöyry Energy Consulting is part of Pöyry Plc, a client and technology orientated consulting and engineering firm with local offices in 45 countries around the world.

Pöyry's management and engineering consulting expertise enable us to offer a one-stop-shop for carbon projects covering renewables, CCS and JI/CDM.



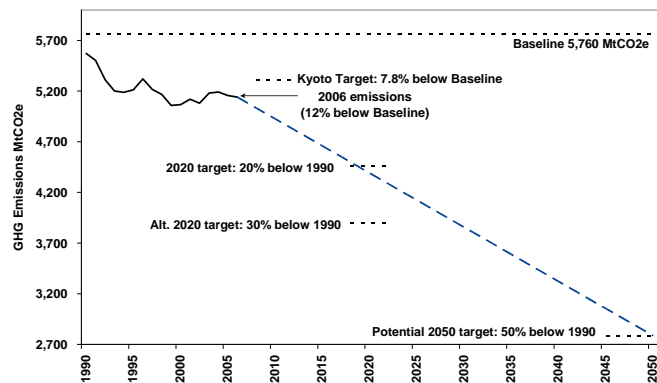
### Our carbon services

We provide detailed analysis and advice on how the carbon market operates and how organisations can respond to its challenges and opportunities. Going forward, we see these challenges increasing, and companies that face them and develop suitable responses now will be better placed than those that do not.

During 2007 the EU Commission committed itself to reduce greenhouse gases by 20% compared to 1990 levels, which will rise to 30% if there is a strong international agreement. In addition, at the UN Conference in Bali in December 2007, the EU proposed a 50% reduction target by 2050.

The chart on the right compares the trend in European greenhouse gas emissions with the Kyoto target, the 2020 20% and 30% targets and the possible 2050 50% target.

The message is that to hit long term targets, the EU needs to reduce GHG emissions by 1.3% a year, which is higher than the annual reduction of 0.8% achieved since 1990.



Note : Baseline and Kyoto Target excludes Cyprus and Malta  
Source: EEA GHG Inventory 2008 and Pöyry Energy Consulting

Furthermore, the future effort will not benefit from the one off effects such as the collapse in heavy industry in Eastern Europe during the early 1990's.

To help organisations address these issues, we have developed expertise in forecasting the price of carbon allowances, developing carbon strategies, carbon capture and storage, renewables and developing Joint Implementation (JI) and Clean Development Mechanism (CDM) projects.

**Carbon price modelling**

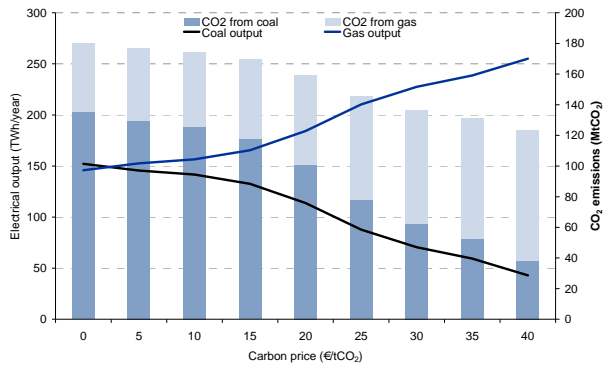
The basis of our carbon price forecasts is a comparison of:

- supply driven by abatement from the power and non power sectors as the carbon price increases and inflow of JI/CDM project credits; and
- demand for allowances set by the gap between the number of allowances allocated and expected CO<sub>2</sub> emissions.

The power sector is the most important source of abatement, and we use our electricity model, EurECa, to simultaneously model all 27 EU electricity markets including outputs and emissions from every medium to large non-hydro genset in Europe.

Through running EurECa with increasing values for carbon, we measure the switch from coal to gas and the corresponding reduction in CO<sub>2</sub> emissions to form a pan EU abatement curve for the power sector.

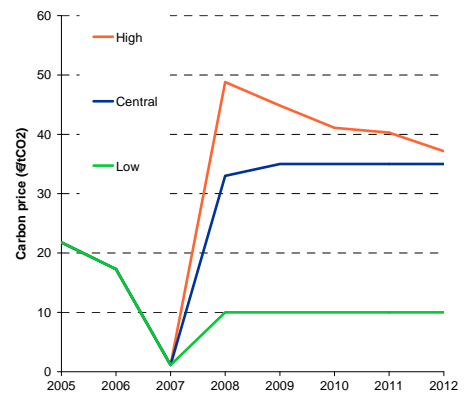
The chart on the right shows how fuel switching reduces overall emissions in the UK as the carbon price increase.



Source: Pöyry Energy Consulting

Our model is very flexible and can project carbon prices for different:

- fuel prices, take up of technology or growth in demand;
- inflow of carbon credits from JI and CDM projects;
- banking and borrowing behaviour;
- weather patterns; and
- sectors and/or gasses covered.



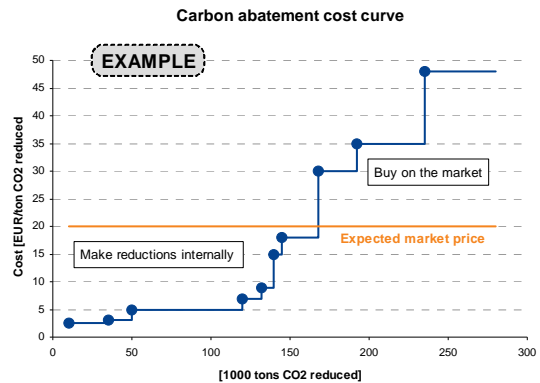
Source: Pöyry Energy Consulting

**Carbon strategy**

We have applied our understanding of carbon energy markets to help companies develop their carbon strategies. Our aim is to identify the most suitable opportunities, say through energy efficiency, renewables, carbon capture and storage, JI/CDM projects and trading, rather than focus on compliance obligations.

Our approach in helping companies develop their carbon strategy is to:

- run a training workshop on carbon markets;
- identify and rank options for internal abatement;
- evaluate opportunities for external abatement, say through JI/CDM projects; and
- develop carbon strategy as part of the overall company strategy.



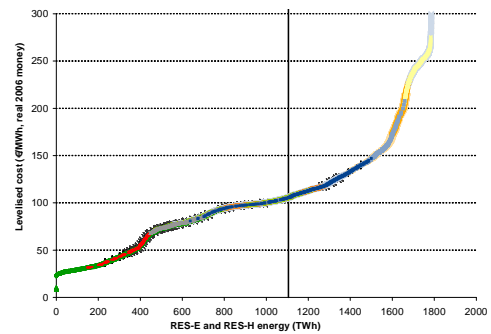
Source: Pöyry Energy Consulting

**Renewables**

One option for reducing emissions is to use renewable energy. We have a strong track record in advising companies on entering, or expanding within, the renewables markets, covering regulatory and policy developments, relationships with suppliers, distribution and transmission companies, off-take contracting, trading strategies, valuations and due diligence. We also advise Governments on renewable support mechanisms.

Recently we modelled the costs of renewable electricity and heat in each EU Member State and developed supply curves for individual countries, see right. These can be used to:

- identify the most attractive technologies by country; and
- assess options in relation to countries existing renewable capacity, targets for 2020 and support mechanisms.



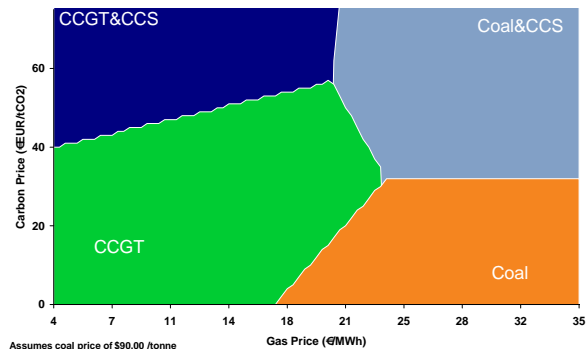
Source: Pöyry Energy Consulting

**Carbon capture and storage**

Another option for abatement is capturing CO2 at source and storing it in reservoirs. We are a leading advisor to Governments and companies on strategic, commercial and regulatory aspects of CCS. For example we can identify which technology generates at the lowest cost over a range of fuel and carbon prices.

This gives us the ability to assess:

- the impact of changes in drivers such as discount rates and load factors;
- how CCS will impact on the merit order and consequently number of operating hours; and
- risks to profitability over the lifetime of a generating asset.



Source: Pöyry Energy Consulting

**JI and CDM project credits**

We have extensive experience with JI/CDM projects and are able to offer advice on:

- participating in JI and/or CDM project; and
- developing a trading strategy using JI/CDM project credits.

We can help companies assess the relevant risks and opportunities and provide advice on local regulatory regimes for investment. For those seeking to participate in a JI/CDM project, we offer the following services:

- Project Identification and Definition;
- Initial Project Analysis, including pre-feasibility studies and risk assessment;
- Project Development and preparation of technical documentation;
- Project Validation/Determination and registration; and
- matching the carbon credit sellers and buyers and advising on carbon market options and commercial conditions to optimise project benefits.

We have supported JI/CDM projects in a wide range of countries, including preparing 30 Project Design Documents for different projects to date. Examples include electricity, district heating, exploration and production of oil and gas, refining, transport of oil and gas, chemicals, mining, landfill and wastewater. The map below shows the countries in which we have undertaken projects, and the location of our local offices that support our work on JI/CDM projects and put us in direct contact with local stakeholders.



Source: Pöyry Energy Consulting

For those seeking to acquire JI/CDM credits from project developers, we can provide project and investment appraisals, technical and feasibility studies and due diligence.

**Contacts**

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