

Energy Infrastructure and Markets Database: Global Emissions Module

Critical information to identify opportunities
and formulate strategies in the emerging
carbon market



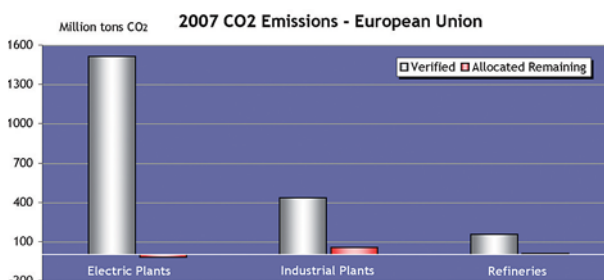
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As climate change has become a major concern to the general public and governments worldwide, greenhouse gas emissions have become a primary factor to fuel selection and new plant investment decisions for electric power and other energy intensive industries. Legislation has been imposed or is under development in most of the developed countries of the world to reduce greenhouse gas emissions.

Under the Kyoto Protocol which is now in effect, Annex I countries that ratified the treaty committed to cap their greenhouse gas emissions at a certain level compared to that in 1990 for the 2008-2012 period. The European Union committed to an average 8% reduction through 2012 under the Kyoto Treaty. With a government change, Australia also became a signatory, and prospects that a new United States administration will implement measures to control greenhouse gas emissions have greatly increased over the past year.

The European Union has taken a lead role in tackling climate change issues. As a successor to its Kyoto commitments, a legislative package is advancing which contains provisions for the third phase of the European Emission Trading Scheme (EU ETS) beginning in 2013 with the goal of reducing greenhouse gas emissions by 20% by 2020.

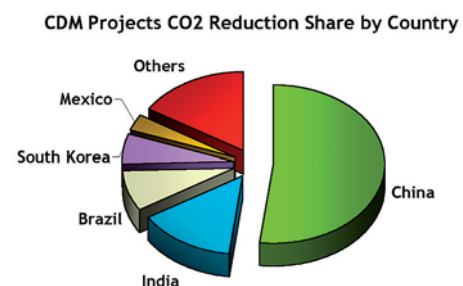


Sector comparison of CO₂ emissions in 2007 with allocations for European Union (emissions in excess of allocation is negative "allocated remaining")

Through National Allocation Plans, governments have set limits on emissions from individual facilities. To comply companies are facing major decisions which will impact the profitability of current operations as well as frame expansion plans. Short term compliance options include fuel switching, efficiency improvements, shifts in operating rates among plants, purchasing of carbon credits from other facilities or paying a penalty. Longer term plant relocation may be considered as well. In formulating investment plans, new plant siting must consider fuel supply options and associated

infrastructure as well as local emissions legislation regimes and compliance alternatives.

Buying and selling of carbon credits have become important options, and carbon credits trading is considered by many as the most cost effective approach, at least from a global perspective. Extending the impact of carbon reduction legislation beyond the boundaries of the Kyoto Annex I signatory countries, the Clean Development Mechanism (CDM) project based mechanism allows Kyoto signatories to invest in carbon-reduction initiatives in developing countries (non-Annex I) that have not agreed to an emission reduction target.



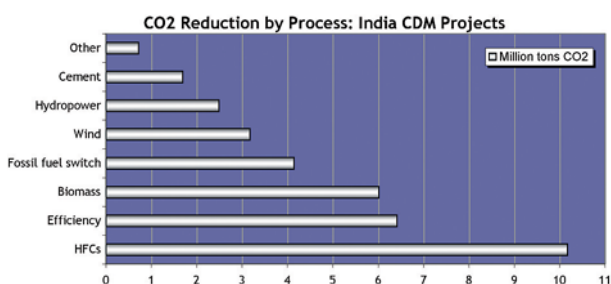
Approved CDM projects generate carbon reduction credits that can be used to meet Kyoto allocation commitments in the Annex I countries. Another option is a Joint Implementation (JI) Project, which allows two Annex I Kyoto signatory countries to invest in carbon-reduction initiatives and share carbon reduction credits.

Thousands of CDM and JI projects are in various stages of development and will play an important role in reducing greenhouse gas emissions while maintaining economic growth. Thus carbon reduction legislation provides opportunities to develop carbon reduction revenue generating projects as well as compliance challenges.

In order to properly formulate emission compliance and carbon market strategies whether operating on a regional or global basis, key issues must be addressed. These include:

- What is the position of a specific power plant or industrial facility with respect to its greenhouse gas emissions allocation? How has this changed in recent years? What are the options for compliance?
- Which areas have the largest concentration of facilities which are emitting in excess of their allocation? Which areas are under? How does this compare with their fuel supply options and infrastructure?

- Where are the CDM and JI projects and what type?
What is the current stage of each project? Which have been granted a Certified Emission Reduction (CER for CDM projects) or Emission Reduction Unit (ERU for JI projects) and what volume? Which companies are active in developing CDM projects?
- Where are there facilities that are likely candidates for a CDM or JI project based on the type of facility and size? Who is the plant owner?



Analysis of current Clean Development Mechanism (CDM) projects in India by type of process

As greenhouse gas emission levels have become a critical variable to operating and investment decisions, IHS has expanded the scope of its Energy Infrastructure and Markets suite of database products to include the Global Emissions Module.

Global Emissions Module Data Content Summary

Common Data for all Facilities

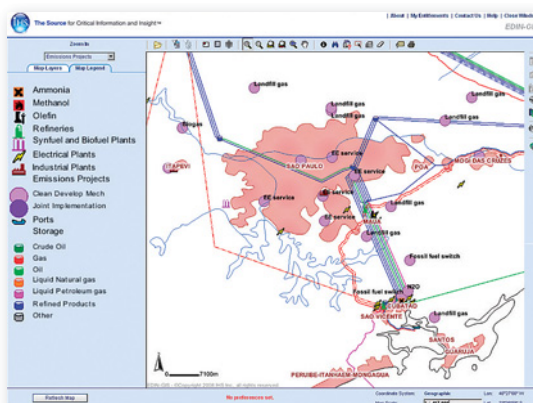
- Name
- Country, Political Province, City
- Geographical co-ordinates
- Owner/operator
- Emissions
 - Type
 - Allocated
 - Surrendered
 - Verified

Clean Development Mechanism (CDM)/ Joint Implementation Projects (JI)

- Host Country
- Host Country Company
- Other Country
- Other Country Company
- Project Name
- Project Type (CDM or JI)
- SRC Reference Number

- Category
- Project Status
- Registration Date
- Project Details
- Emission Reduction
 - GHG Emission Type
 - Reduction Type
 - Credit Issuance Date
 - Amount of Credits
 - Credit Period Type
 - Crediting Period Start & End Date
- Developer Name
- Fees
- Plant Name
- Plant Type
- Plant Owner/operator

With the IHS GIS tools, you can query and map the power plant and industrial facilities meeting specified criteria regarding emissions position, location and ownership. The module can be seamlessly integrated with the IHS Midstream Essentials, European Gas & Power and E&P Essentials databases, allowing users to evaluate fuel selection options and developments all along the oil and gas chain.



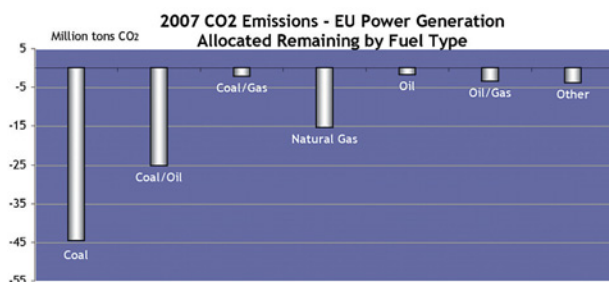
Clean Development Mechanism (CDM) projects mapped in Sao Paulo, Brazil with Edin-GIS

The integrated database provides key information needed to support:

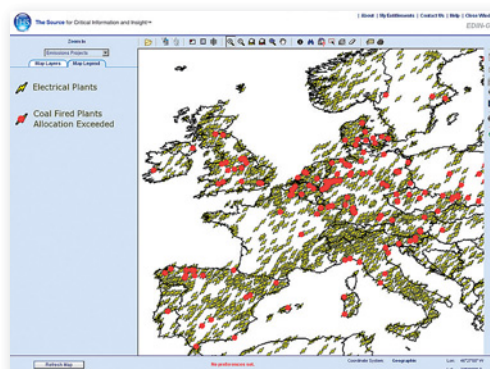
- Fuel supply planning – Is switching to natural gas an option? Where are the new fields located? What is the current development program? What is the status of pipeline or LNG infrastructure projects to deliver gas or increase availability to the market?
- Competitor analysis – A company's emission's position, in excess or under allocations, can be examined in aggregate and on a regional basis. What fuel switching options do they have at present? Will this change with new infrastructure projects?

- Investment decisions – What location provides the best opportunity to access additional gas supplies at the present and how is will this change in the future? Based on existing facilities and their emission allocation position as well as planned additional facilities, how tight is the market likely to be?
- Gas marketing – Which areas face the greatest challenge in meeting their emissions allocation?

The electric power sector will likely continue to play a central role in National Allocation Plans to achieve emissions reduction targets. Fuel selection and investment decisions will impact regional trends in electricity prices and thus impact the economics of all companies operating in the area. Unit specific data on electric power generation capacity by fuel type and plant operating rates can be accessed through the Midstream Essentials and European Gas and Power modules.



Allocation position of European Union electric power generation plants by fuel type (emissions in excess of allocation is negative "allocated remaining")



Identifying coal fired electric power plants exceeding their allocation in 2007 (highlighted in red)

Modules available in the Energy Infrastructure and Markets Database suite of products include:

Midstream Essentials – Oil and gas chain transportation, processing and market infrastructure worldwide

European Gas & Power – Electric power plant capacity by unit, gas markets and gas supply infrastructure in Europe

Global Gas Storage – Storage capacity details, ownership and historic trends in storage levels

Global Refining – Trends in capacity by processing unit and product yields by refinery based on announced additions

E&P Essentials – Oil & gas fields, associated reserves and development status

All infrastructure data is mappable and accessible through IHS GIS products.



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