ECGA

EUROPEAN CARBON AND GRAPHITE ASSOCIATION

2005

ANNUAL REPORT

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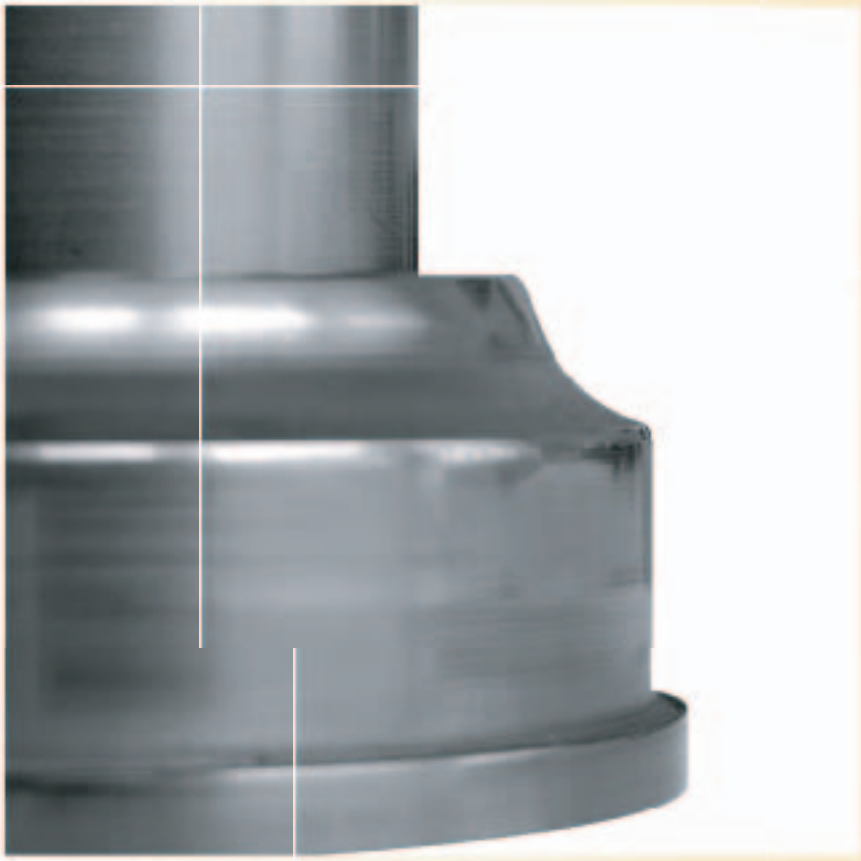


Foreword by the President

The positive economic development for the sector's key customer industries did not materialise in Europe, but in other parts of the world.

The star in crude steel production in 2005 was, once again, China, with an increase year on year (2005/2004) of more than 25%. On the contrary, in the enlarged European Union, the total crude and Electric Arc Furnace steel production went back to levels similar to those achieved during the past decade.

The steel industry is facing both globalisation and consolidation moves, as shown, for example, by what is still a pending issue at the time of printing this report, i.e. whether or not Mittal Steel will be able to acquire the Arcelor Group. Such consolidation moves would certainly impact the behaviour, including the pricing policies, of the whole of the steel industry.
The members of our Association have been facing sharp increases in their manufacturing costs during the whole of last year as a consequence of increased oil prices, and the pressures are continuing in 2006. As a countermeasure, some manufacturers are relentlessly increasing productivity, improving processes and rationalising production facilities. On top of the increases in manufacturing costs (only partially offset by price adjustments), the vagaries of exchange rates are compounding the unpredictability.

Similar developments are happening in the aluminium industry worldwide where, due to high and uncompetitive energy prices in Europe, the industry is increasingly relocating, and this is one of the reasons why the Association decided in 2005 to set up a special Energy Committee.
On the other hand, the industry is developing innovative products including a series of carbon fibre applications, thus showing the versatility of the material and the growth potential for other markets.

The economic development is additionally burdened by the continuous stream of EU EHS regulation, closely monitored by our Association. Apart from the standard discussions on air, water, and waste legislation, the sector is currently concerned with the risk assessment of coal tar pitch, a vital raw material component, where work is approaching conclusion and needs to be accompanied by the expertise of our members. The upcoming EU's chemical policy REACH could also have a major impact on the raw material supply for the sector.

Let me conclude by extending my thanks to all working committees of our association, to our Secretary General, Dr Corina Hebestreit, and Ms Marleen Bellen as well as to all our members who are vital in keeping the association a living organisation.

Dr B Toniolo, President

I. The carbon and graphite industry welcomes a shift in the EU's Industrial Policy

Commissioner Verheugen's initiative on Competitiveness, Energy and the Environment

The industry welcomed Commissioner Verheugen's initiative in 2005 to set up a High Level Group to develop a new strategy on the competitiveness of the EU industry and how this could be reconciled with the EU's energy and environmental policies. This concerted effort between Commission, Parliament, Member States, NGOs and industry is perceived as a major signal that industry should be encouraged and enabled to stay in Europe and that finally the European policy makers are seriously debating how this can be achieved.
The threats of globalisation have already taken their tolls and it has become more and more difficult for European enterprises to stay competitive. If it had not been for the developments of the Chinese economy in 2005 and a subsequently massively rising demand for products such as steel, also the carbon and graphite industry in Europe would have had a very difficult time.

The sector therefore very much welcomes the setting up of the **6 working groups**:

- **4 on energy and related issues (2006)**
- **1 on RTD and innovation (2007)**
- **1 on access to resources (2007)**

The sector is seeking to contribute to the debate and the conclusions which will hopefully boost European industry again.
In the same way the sector is looking with the expectation at the revision of the EU's Dual Use regulation.

The European Commission is currently reviewing its regime on export controls of dual use items. The ECGA has been actively involved in providing input on the situation of the carbon and graphite industry, particularly in comparison to the US situation, in order to obtain a better and more adapted legislation.

The Commission's intentions are to make amendments to the regulation with regard to the

- full harmonisation of the **General Export Authorisation** (Annex II to the Regulation);
- conditions of use of the **Global Export Authorizations** (Article 6-5 of the Regulation in conjunction with ICPs (internal compliance programmes) in particular for IT transfers;
- possibly replacing National **General Export Authorisations** with new Community Authorisations;
- transit controls (Resolution 1540 of the UNSC);
- catch all clauses (Article 4 of the Regulation);
- the sanctioning of illicit brokering for dual use items (Resolution 1540 of the UNSC).

The ECGA members are in dialogue with the Commission about the best possible amendment to the regulation in order to facilitate European exports whilst maintaining the principle objectives of the Dual Use regulation.

II Chairman's Report on the Aluminium Committee 2005

Dr D John,
Vesuvius UK Ltd,
Chairman

Participating members: Dr R Becker (Aluminium Rheinfelden GmbH), Mr J A Johansen (Elkem ASA Carbon), Mr H Nawrocki (ERFTCARBON GmbH), Mrs J Schull (SGL Carbon)

Primary Aluminium

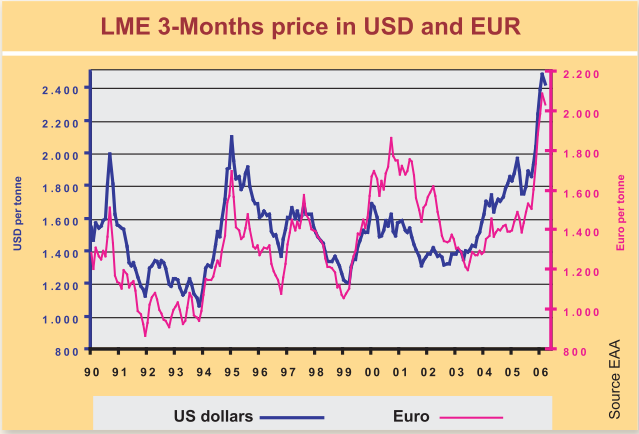
One of the major global markets for carbon and graphite products is the primary aluminium industry.

The electrolytic reduction cells in which aluminium is produced are lined with cathode blocks that form the floor, plus smaller pieces in the surrounding sidewalls. Both types of block are manufactured in a number of different fired qualities. Carbon ramming pastes are used to seal the joints between the fired blocks.

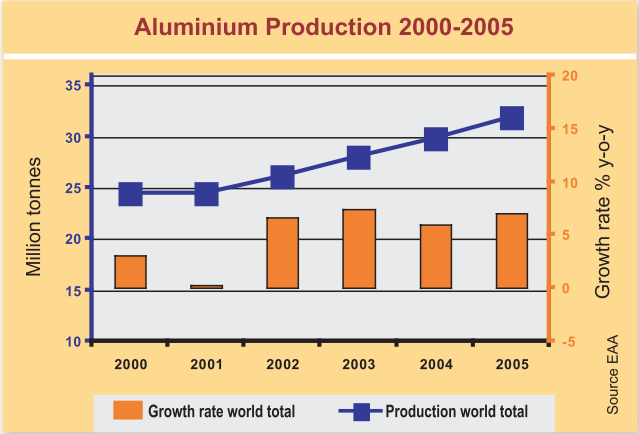
Demand is created by the relining of cells when they fail and by projects for the start-up of new smelters or the extension of existing plants. Data collated by the committee predicts that maintenance demand will be stable over the next five years. Demand created by new projects is expected to increase.

Global demand for aluminium has continued to grow in 2005, as was widely predicted. Consumption of primary aluminium rose to approximately 32 million tonnes in 2005. This follows growth at 7.0 to 7.5% in previous years. Consumption in China continues to grow strongly. Worldwide growth is expected to continue and production will rise to meet the increased demand for the metal.

The strength of demand has been reflected in both the aluminium metal price and the alumina price.



It is widely appreciated that primary aluminium is an energy intensive industry. Smelters require a constant supply of electricity at low and stable prices in order to remain competitive. Increased power tariffs are evident in several parts of the world, including Europe and North America, and a number of primary smelters have either closed or face the prospect of doing so. There have also been increases in the prices for two important raw materials, namely alumina and petroleum coke.



The aluminium industry database has been updated with details of metal production and capacity, consumption and stocks, green-field and brown-field project activity plus shut-down, idled and restarted capacity.

Aluminium Smelting Technology

Whilst the reduction cell has been in use for over 120 years and has seen developments that have provided greater production levels and higher efficiency, there is still no effective and economically viable alternative available on an industrial scale. The committee monitors the development of new technologies and can report that there have been no significant developments in the last year.

Raw Materials

The committee does not foresee major changes in the immediate availability of the raw materials that are required for cathode and cold paste manufacture.

The Aluminium Committee members are Aluminium Rheinfelden, Deza, SGL Carbon and Vesuvius. Elkem ASA Carbon and Erft Carbon resigned from the committee during 2005. Conoco and Graftech will join for 2006.

III. Chairman's Report on the Steel Committee

Mr St Paege,
GrafTech,
Chairman

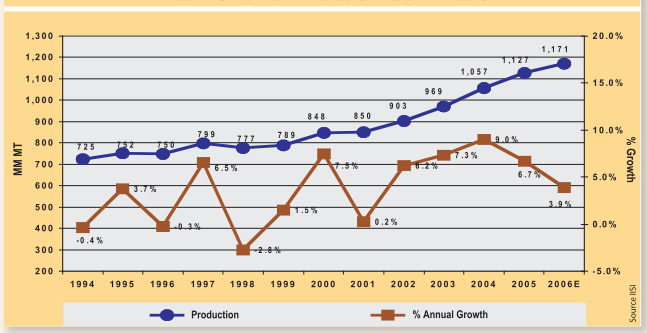
Participating members: Mr G Baust (ERFTCARBON GmbH), Dr Th Doege (ERFTCARBON GmbH), Mr P Heinrich (SGL Carbon Group), Mr P N Higgins (ConocoPhilips Ltd.), Dr J Köhler (SGL Carbon)

Steel business was widely regarded a lost cause during the 1990's, albeit its status as the number two in man-made goods concerning tonnages produced. Profits were low, shareholder returns poor - selling prices for steel reached a low point in early 2002. Since then the industry experienced a dramatic rebound, product prices have more than doubled and shares in the sector have nearly quadrupled. The largest factor for this is the influence of China, its share of the world steel consumption has risen to 30% in 2005, up from 18% five years ago.
The output of the world's steel industry reached new heights in the last years, the growth rate between 1994 and 2001 was appr. 17% since then this accelerated to 32,6% for the period 2002 to 2005. Each production figure of the last years was a new world record, 2005 was no exception with 1,127 billion tons of crude steel production, but chances are that this will only be the record for this year, as the predicted trend goes further upwards.

The main reasons for these bullish prognoses are expectations of a further rise in per capita steel consumptions in China (currently 250 kg) and especially India (currently a meager 30 kg and this is the second most populous country in the world). The per person consumptions of steel in the EU and the USA are at 400 kg, top of the list is Singapore with 600 kg.
Additionally, there is a growing acceptance that steel's unparalleled, wide variation of properties and its constant innovations (there is a 50% increase in new steel grades today compared to 10 years ago) make it suitable for an array of applications no other metal can provide. Due to its excellent recycling qualities, the increasing consciousness for ecological concerns also helps steel in regaining lost markets and becoming a cost-effective material of choice for a multitude of utilisations.

Especially optimistic projections already point out that the period of approximately 2000 - 2015 could become the third longest period of abiding growth in steel consumption in history, comparable to the industrialisation in Europe and North America (1875 - 1900) and the reconstruction after WW II (1950 - 1970).
China increased its own steel production by 176% over the period 2000 to 2005, making 348 million tons last year, well ahead of Japan with 112 million tons, the C.I.S with 111 million tons and the USA with 94 million tons. The EU 15 or EU 25 were at 164 and 186 million tons respectively in 2005. For the first time ever, China became a net steel exporter in 2005, admittedly only by a symbolic amount of 0,5 million tons.

Global Crude Steel Production
Annual Growth Rates 1994-2006 E



Graphite electrode consumption fot EAF steel melting
Western Europe*

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
(kg/t)	5,18	5,04	4,68	4,41	4,02	3,84	3,65	3,32	3,13	2,94	2,87	2,76	2,53	2,35	2,22	2,13	2,08	2,00	1,93	1,83	1,78	1,74
(%)		2,7	7,1	5,8	8,8	4,5	4,9	9,0	5,7	6,1	2,4	3,8	8,3	7,1	5,5	4,1	2,3	3,8	3,5	5,2	2,7	2,2
(%)		2,7	9,7	14,9	22,4	25,9	29,5	35,9	39,6	43,2	44,6	46,7	51,2	54,6	57,1	58,9	59,8	61,4	56,2	58,5	55,7	54,7

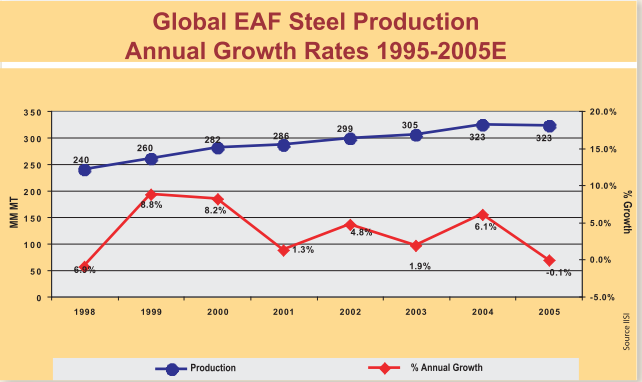
* incl. Poland & w/o Yugoslavia

Source : IISI & SGL

The extraordinary growth rates in Asia (especially China) helped the steel industry worldwide to make good turnovers and to increase the price of steel in general over the last years. On top of that the industry was even able to elevate the profit margins to healthy regions - the significant increase in prices of raw materials such as iron ore, coke and scrap additionally pushed steelmakers towards efficiency increases. It seems as if all this made the industry in Europe and North America much more optimistic about their chances of survival in the face of a stronger Asian market presence. "Paradigm change" may be too grand a word but a partial shift towards higher-value products of more use to customers is visible. That in return may lessen the reliance on mass production commodity steelgrades and focus more on complexer, end-user oriented grades that will have their place in the future, providing profits.

An interesting trend in the steel industry, the creation of bigger companies by acquisition & mergers, continued in 2005 - we are now in a situation were the five biggest steelmakers in the world are responsible for 19% of the output, compared to only 14% in 2000. This tendency to form large groups, thus having a better leverage on the market, may have an impact on profit margins as could be seen last spring when, as global demand showed signs of weakness, the steel industry acted in concord in reducing output and annealing prices.

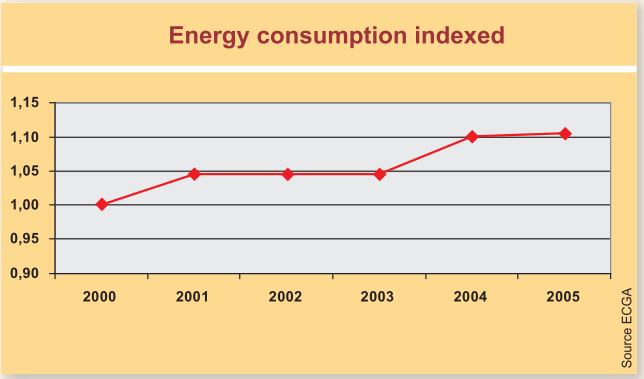
The growth rates of global EAF steel production for the last years were not as steep as the increase in crude steel production, in fact they stagnated in 2005.



The main reason is China's focus on the blast furnace route to produce steel, also most of the new capacities there were not EAFs and in order to focus more on modern steel plants they shut down some obsolete EAF capacity. Additionally the above mentioned reduced output of some larger groups in the face of market weaknesses - if given the choice, it is easier to cut down production on an EAF compared to slow down a blast furnace - and a slight decline in stainless steel production in 2005 (these grades are mainly done via the arc furnace route) contributed to said stagnation. This seems not to be an ongoing trend, so a moderate but steady increase of steel production in EAFs is expected.

IV. EU energy and climate change policies as a serious threat to the competitiveness of the EU carbon and graphite industry

Parts of the carbon and graphite industry can be considered energy intensive due to the fact that for example the graphite electrode which is an integral part of all types of steel making requires substantial amounts of energy in order to achieve higher longevity of the electrode in the steel furnace.
Hence, whilst the specific consumption of electrodes in furnaces per ton of steel has decreased over the past decades and continues to decrease, the improved quality of the graphite electrode and the abatement techniques for the environmental protection overall have increased the energy consumption per t of product.

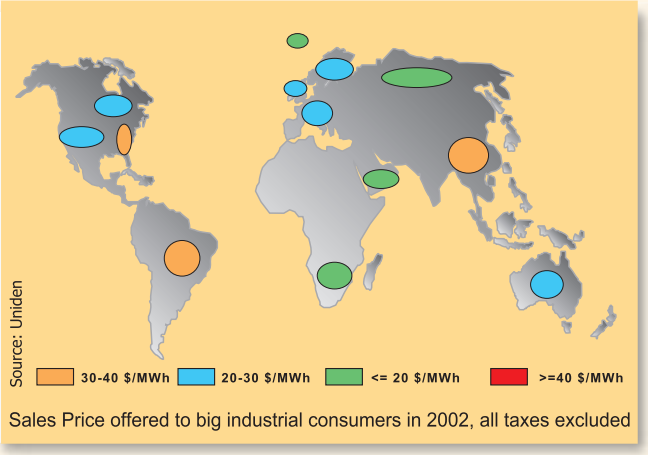


The carbon and graphite industry's concern is therefore what happens with energy and raw material supply and energy prices in Europe. It is a key factor of the competitiveness of the sector.

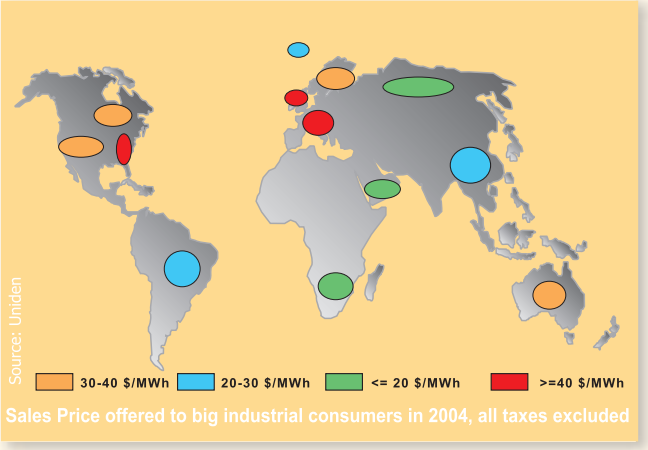
The general price development - the lack of liberalisation

Background

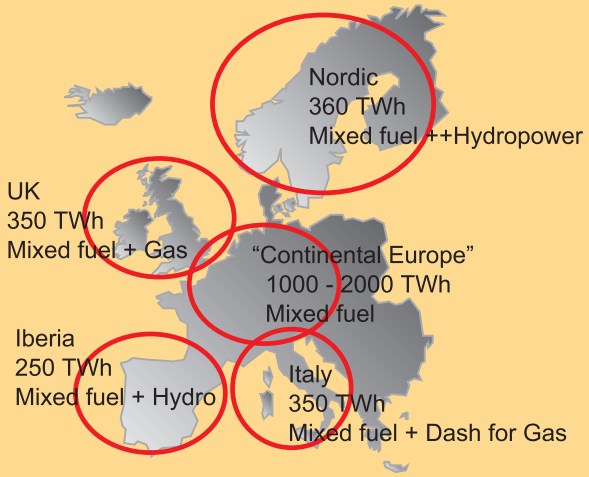
There is no structural reason for the EU power markets to be uncompetitive as Europe has a favourable primary energy mix, including hydro, nuclear and coal. However, the recognition of market failures and plans for future improvements is essential. The prices for commodities are set globally, and therefore regional costs cannot be passed on to customers.
In 2002 Europe still had reasonably competitive prices.



Two years late (2004) the prices are at the highest levels in comparrison to the rest of the world. This trend has continued in 2005.



The electricity market liberalisation is not working for energy consuming industries.
Within two years the prices for energy have become uncompetitive. In addition of one market Europe has 5 different markets.



The Continental European power market is the most significant market with potential for optimisation and synergies.

The challenge is the harmonisation and a common approach across national borders.

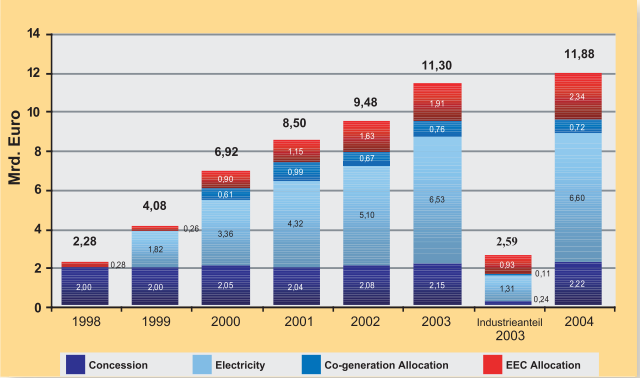
There is a serious concern about the security of supply which could also result from

- prices are not competitive,
- prices are not market related,
- insufficient investment signals,
- no real freedom of supplier choice.

The market is unfair:

- Producers set the price for all users based on peak load; there is no correct valuation of the advantage of off-peak demand, hence the base load is priced too high.
- Prices don't reflect current production costs. The price evolution cannot be explained by increases of primary energy commodities, oil & gas.
- No new long-term contracts have been signed.
- There is very limited improvement in interconnection of the markets.

In addition, a number of burdens are added to the electricity price in Europe:



Industry's position

Many energy-intensive industries established energy committees in 2005 and expressed what they expect from the European Commission and that is serious intervention if the EU does not want to lose all its processing and fabricating industry.
As appropriate actions the industry would consider:

- The implementation of the current Directives alone will not solve the problems: a 3rd package with recommendations is needed without delay;
- A dual market should be established, enabling large users to buy stable, long-term competitively priced power;
- The replacement of the current commercial market organisation, including power trading platforms, by appropriate market mechanisms for power-intensive users;
- The monitoring of prices and establishment of fair trading practices;
- The unbundling of producers and traders;
- Capacity release and the political support for investment in new capacity;
- The encouragement and support for building of new infrastructure and interconnection;
- Facilitating investment for new entrants into the business;
- Stimulation of the discussion on nuclear energy.

V. EU Emissions Trading System and National Allocation Plans

Background

On 1 January 2005 the European CO_2 Emissions Cap and Trade System (hereinafter described as EU-ETS) commenced. Its objective is to reduce CO_2 emissions from some industries in the European Union, representing about 45 % of man-made CO_2 emissions in the EU, at lowest cost to industry and society. The industrial installations of eight industry sectors were allocated a certain quantity of emission rights (EU allowances) by the competent authority of the relevant Member State according to the National Allocation Plan (NAP). Installations that reduce emissions below the allocated cap may sell excess allowances; installations with a shortfall must make additional reductions or buy allowances on the emissions trading market.

In total around 2 billion tons of CO_2 allowances have been allocated for each year, from which around 60% have been to installations for the production of electric power and heat, around 12% each to the cement and steel industries, and 8% to the oil and gas industry.

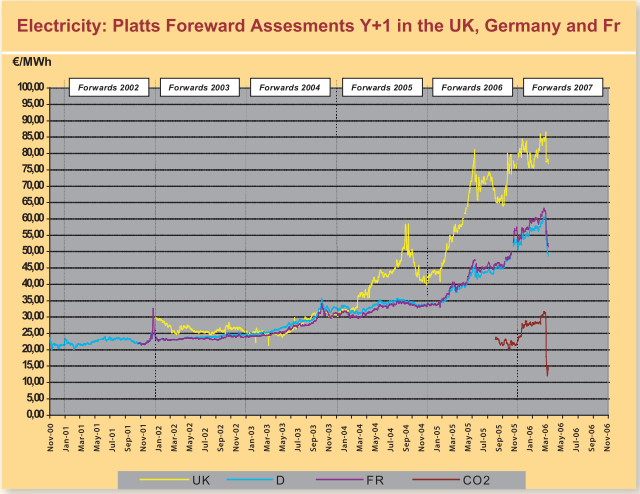
National Allocation Plans: The allocation of CO_2 emissions under the National Emission Ceilings Directive

The national allocation schemes is some places have created market distortion in the way that some producers have fallen under the schemes in some countries and the same type of installation in another countries has not. In some cases the allocation of CO_2 emission allowances are seriously threatening the existence and survival of the installations, not to speak of any growth.

The Commission's intention to harmonise the allocation plans of the Member States in the future is a step in the right direction. However industry is disappointed by the "Further guidance on allocation plans for the 2008 to 2012 trading period of the EU Emission Trading Scheme", as it does not take into account the lessons learned from the first trading period and does not address major deficiencies identified during Phase I of the EU Emissions Trading Scheme.

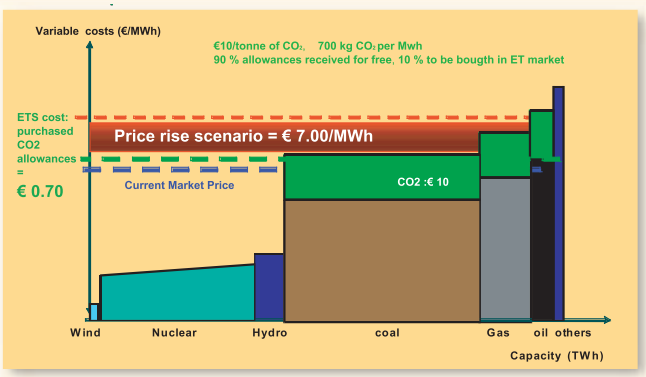
It is very important that the National Allocation Plans for 2008-2012, the first Kyoto commitment period, include the lessons from the 2005-2007 'learning by doing' period.

Furthermore it should be recognized that sectors such as the carbon and graphite industry that are currently under severe pressure from non-EU competitors, such as India, should not be additionally burdened in the future with allocations that jeopardize their competitiveness even more than EU legislation does already.



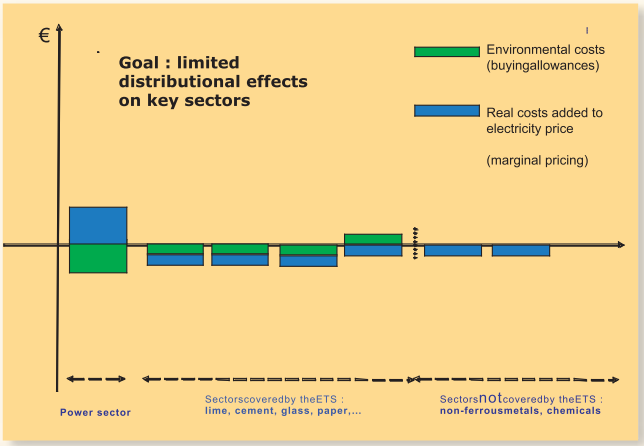
Now on top come the indirect ETS costs.

It should be noted that the ETS has added indirect costs to different degrees on the various forms of energy.



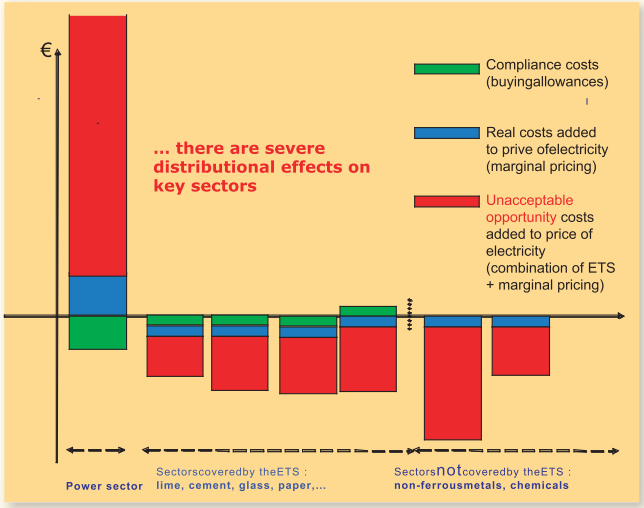
ETS: What was supposed to happen ?

The ETS was supposed to internalise certain environemental costs and to provide incentives.



What happened ?

However, in reality the cost structure for energy has developed in a very unfair and inacceptable way for down-stream uses.



In addition the following comments have been made on the ETS scheme:

- **Missing Stimulation of Investment into CO_2 Emissions Reduction Measures**
  - Negative consequences from reduction measures in the form of less allowances granted in future;
  - polluter-earns-principle consequence of the current ET regime;
  - EU ETS reason for inactivity regarding climate change measures within industry;
- **Freezing Market Shares - Conflict with Competition Rules**
  - Guidance Note: "having new entrants buy all allowances would be in accordance with equal treatment";
  - Significant disadvantages for potential "winners" and significant advantages for potential "losers" in a already today critically concentrated market .

Conclusion

The EU ETS is not working properly, and is a serious threat to EU's internal market cohesion and the industry's competitiveness and survival.

The Member States' reaction at the Energy Council (Dec 05) was:
„The Commission should review this scheme and should table as soon as possible proposals, as appropriate, to make this scheme more effective while taking into account the need for promoting competitiveness and an affordable energy supply".

The European Commission should review its guidance so as to ensure that it addresses the deficiencies of the scheme in order to achieve cost-efficient emission reductions if technically possible, taking this into consideration when assessing the National Allocation Plans.

All decision-makers involved in ETS, particularly at national level, should consider ways of improving the workability of the system and to take into effective consideration its impact on the competitiveness of the EU industry, and the energy intensive industries in particular, when drawing up their second National Allocation Plan.

The industry is reassured that also the High-Level Group on Competitiveness, Environment and Energy will re-assess the real impact of the ETS on energy intensive industries and will work on pragmatic solutions in the light of its achievements compared to the efforts made on climate change in the rest of the world and develop an **urgent change to an alternative approach:**

1. Option of an output related CO_2 emissions regime, granting allowances ex post adjusted, i.e. only depending on actual production based on a relevant performance standard with the results of:
   - opportunity cost principle avoided,
   - incentivising efficiency improvements,
   - no freezing of market chare.
2. Distortion of market competition needs to be corrected where certain producers which are not under the EU directive should not be in the national allocation plans and should not be in the ETS trading scheme.
3. The extension of the ETS to other sectors whilst being substantially flawed is unacceptable.
4. Under no circumstances is the extension of such a flawed ETS to other substances acceptable.

VI: Chairman's Report on the Environment Committee

Dr R Neuert,
SGL Carbon,
Chairman

Participating members: Mr T Akyel (Erftcarbon GmbH), Dr E G Astrup (Elkem Carbon/ Elkem ASA SS), Mr P Chauffert-Yvart (Carbon Lorraine), Mr M Rouy (GrafTech International)

Protecting the environment has been a matter of course for our member companies for many years. ECGA member companies are focused on environmental protection and safety improvements on a continuous basis.

Since ECGA members operate manufacturing sites across and outside of Europe their performance improvement is based on a global approach and very often international standards whilst respecting the local legislative requirements.

Examples of actions

Over the last ten years the association has been collecting and aggregating environmental performance data of the member companies according to established confidentiality rules.

Amongst the performance highlights are:

- ECGA members have reduced CO_2 emissions per produced ton of material from their factories by 20% since 1996;
- the emission of non-hazardous wastes was reduced by 20% over a ten-year period;
- the reduction of cooling water consumption per ton of produced material over ten years amounted to 45%;
- dust emissions were reduced by 50% over the same period of ten years.

To protect the environment and meet future legal requirements based on EU directives, the carbon and graphite industry will have to invest significantly in environmental protection installations to prevent air pollution in the coming years.
The capital expenditure of ECGA members for environmental protection will amount to more than 50 million € within the next few years.
We understand that our long-term success as an industrial branch in Europe is linked to the responsibility for the environment and the communities in which the member companies operate.

The Environement Committee has continuously monitored the EU and national EHS legislation.
The main areas are:

- Risk Assessment on Coal Tar Pitch high temperature,
- REACH and
- Climate change issues and CO_2 reduction.

An important part for the ECGA members is the Risk Assessment on Coal Pitch, to be followed by the requirements under REACH.
The newly proposed classification for PAHs (Poly Aromatic Hydrocarbons) by RIVM would lead to additionally required investment costs for carbon and graphite production sites, the aluminium industry, the road construction industry, and pitch producers in Europe, just to name the most important ones.
We need to insure that the "pitch using" industries in Europe with actually more than 200.000 employees remain competitive and innovative also in future. Additional administrative conditions and high investment costs could put Europe's ability to compete with the industry in North America and Asia at risk.
There is still a high risk that manufacturers will close down production sites because of new legislation. The risk assessment on Coal Tar Pitch and REACH are one of those examples of legislation which might very well lead to a competitive disadvantage for the European industry.
ECGA supports reasonable legislative proposals for the European industry which should be implemented in all European Countries and in the case of REACH also for the importers.

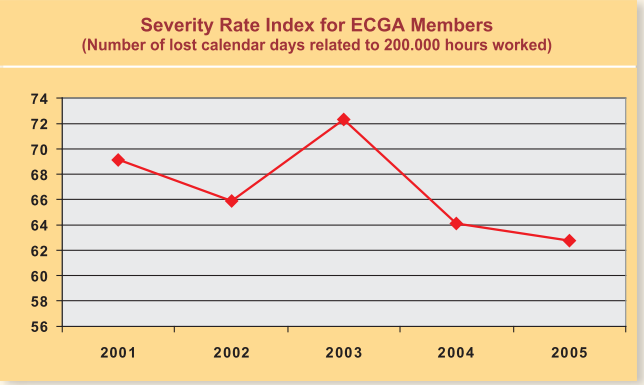
VII. Chairman's Report on the Health and Safety Committee

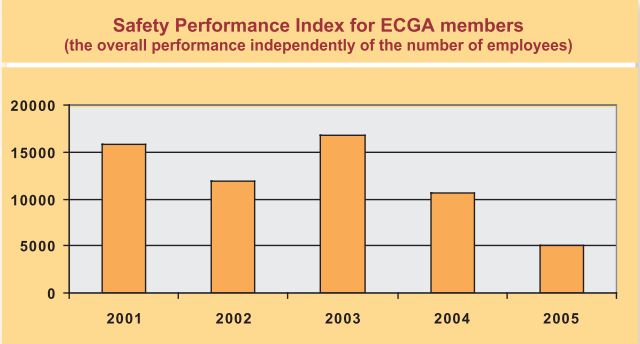
Mr T Akyel,
Erftcarbon GmbH,
Chairman

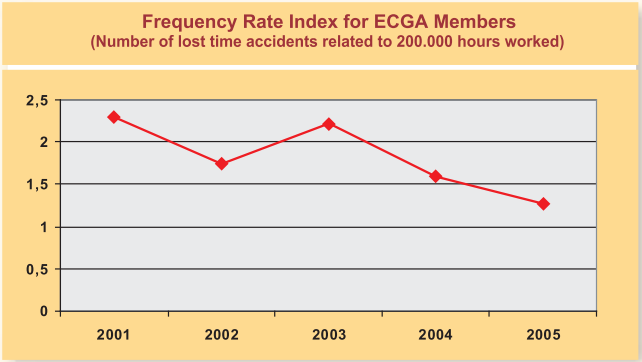
Participating members: Dr E G Astrup (Elkem Carbon/ Elkem ASA SS), Mr P Chauffert-Yvart (Carbone Lorraine), Mr A Martinez (GrafTech/Ucar), Dr R Neuert (SGL Carbon)

Safety Performance

Thanks to the continuous and sustainable application of highly developed health and safety practices by the ECGA members in the last years a successful improvement of the Safety Performance Index could be attained.
By means of specific process instructions, consistent internal auditing and detailed accident and incident investigations this improvement was made possible. As it can be seen in the presented charts not only the number of accidents (frequency rate) declined, but also the absenteeism (severity rate) caused by accidents.







Other safety topics

During the year 2005 the Health & Safety Committee continued to monitor the development of EU and national H&S regulations and to obtain information on new technologies and implementation issues related to such new technologies.
Several meetings and telephone conferences were held by the H&S committee members in order to evaluate and verify the contents of the draft and to discuss the possible implications of its requirements.
Additional data from measurements by the different companies was provided and exchanged in order to synchronise practical and theoretical key figures.
The CTPHT RAR draft currently sets up a new stringent classification that refers to scientifical and toxicological studies, experiences and investigations.
According to the opinion of the H&S Committee the evaluation of the existing draft considers the critical effects of special components of pitch but not pitch as a whole. The determined effects and impacts by the pitch producers and users are theoretical but to a certain extend not realistic, background impacts by traffic or domestic fuel have not been taken into account.
This classification might lead to highly complicated operating conditions that would negatively influence the economical balance between the European and other foreign industries and discriminate our European sites.
Thus the activities by the H&S members to achieve a realistic and proper report will be intensively continued in the next year.

VIII. The European Union's RTD programme

The EU is currently revising its programme for EU funded research, the so-called FP7. The European Commission has changed its approach and is putting substantial effort in getting industry as leaders for the future research involved. It has called upon the setting up of so-called European Technology Platforms in order to define industry driven research programmes and is now establishing its work programme taking into consideration the strategic research agendas defined by the various Platforms and its general objectives for EU funded research.

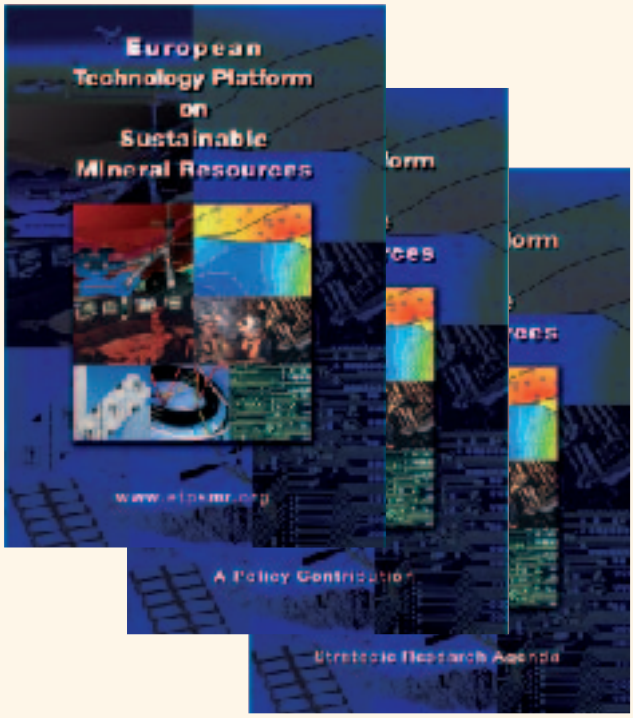
The carbon and graphite industry is actively involved in several platforms that are of relevance for its processes and products, one of them is the

European Platform on Sustainable Mineral Resources.

The platform's objectives are :

- Securing the future supply of /access to European raw materials;
- Supporting the continued exploration of Europe's mineral potential;
- Developing innovative and sustainable production technologies;
  Implementing best practices;
- Reuse, recovery and recycling as well as new product applications;
- Creating European added value through R&D-based technology leadership, education and training.

Having been set up in March 2005 the participants developed throughout 2005 their Strategic Research Agenda which was officially presented in the presence of the former Polish Prime Minister and current MEP Mr Buzec and several Commission officials in March 2006.
The industry is looking forward now to the adoption of the Commission's work programme, expected for the summer. In 2007 the first calls for projects will be placed and the concrete proposals will then be tabled by industry and relevant partners.



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