LABOUR/MANAGEMENT PROGRAMME

JOINT MEETING OF MANAGEMENT AND TRADE UNION EXPERTS ON CLIMATE CHANGE AND EMPLOYMENT

to be held inParis on Friday 12 October 2001
at the OECD, 2 rue André Pascal, Paris 16ème

CASE STUDIES PRESENTED BY BIAC AND TUAC

- **Economy-Wide Employment Impacts**

- **Sector-Specific Case Studies**

CONTENTS

JOINT MEETING OF MANAGEMENT AND TRADE UNION EXPERTS ON CLIMATE CHANGE AND EMPLOYMENT

The Impact of Climate Change Policy on U.S. Economic and Energy Security and Employment Growth

Presentation by Margo THORNING, Ph.D.
Senior Vice President and Chief Economist
American Council for Capital Formation Center for Policy Research

Summary

- **Macroeconomic Effects of Caps on CO_2 Emissions Are Significant.** A wide range of economic models predict that capping U.S. carbon dioxide (CO_2) emissions at the Kyoto target (7 percent below 1990 levels) would reduce U.S. GDP and slow employment and wage growth significantly, worsen the distribution of income, and reduce growth in living standards. Estimates of the impact of the Kyoto Protocol predict job losses ranging from 1.5 million to almost 5 million in 2010. Proposed future CO_2 reductions of 60 percent below 1990 levels by 2050 have not been modeled, but would have extremely serious consequences for all economies dependent on fossil fuels.

- **U.S. Budget Surplus Is Reduced Sharply.** Slower economic growth means that federal tax receipts would be reduced. If implementation of the Kyoto Protocol reduces annual GDP by 3 percent per year, for example, the projected budget surplus in 2010 falls from $507 billion to only $345 billion, making it more difficult to fund outlays for Social Security, for example.

- **International Emissions Trading Issues Are Major.** Major obstacles remain to trading, including securing developing country participation, allocating CO_2 emission rights, and distributing the resulting revenue.

- **European Union Unable to Meet Targets.** Even though several EU members continue to support ratification of the Kyoto Protocol, a number of recent studies document that the EU will not be able to achieve its targets; in fact by 2010 the EU countries will be 10 to 25 percent above their targets.

- **Science of Climate Change Needs to Be Better Understood Before Costly Policies Are Implemented.** Despite the United States' intensive investment in climate change science, numerous gaps remain in our knowledge, including conflict between global atmospheric and "surface" temperature measurement, and uncertainty about the amount of carbon sequestered in the oceans and soil and about the feedbacks in the climate system that determine the magnitude and rate of temperature increase.

Conclusion. A U.S. strategy for a productive climate policy providing economic and energy security should include: revising the U.S. tax code to reduce the cost of capital for energy efficient and pollution control equipment; expanding nuclear energy; expanding bilateral cooperation with developing countries; expanding incentives for use of landfill methane and biomass including ethanol from cellulose; implementing a multi-year plan for improvement of coal technology; removing regulatory barriers; avoiding caps on CO_2 emissions by U.S. industry; and avoiding setting targets for global CO_2 concentrations.

JOINT MEETING OF MANAGEMENT AND TRADE UNION EXPERTS ON CLIMATE CHANGE AND EMPLOYMENT

Presentation by J. Andrew HOERNER, Centre for a Sustainable Economy

Summary

This presentation will be based primarily on two of my papers, "Good Business: A Market Analysis of Energy Efficiency Policy", co-authored with Jan Mutl of CSE, and Climate Policy and Jobs: A Comprehensive Approach," [forthcoming] co-authored with Jim Barrett of the Economic Policy Institute.

These two papers address the issue of competitiveness and employment impacts in two ways. The first uses a 498-sector input-output model to estimate the impact of an environmental tax reform, together with a package of energy-efficiency measures, on the price of services and manufactured goods. It concludes that a substantial majority of industries would see net cuts in their total production costs; but that a small percentage of the economy (energy industries and energy-intensive industries) would see significant price increases. We conclude that targeted policies, such as border tax adjustment, are necessary to preserve the competitiveness of industries in these sectors.

The second paper uses LIFT, a 97-sector macroeconomic model constructed at the University of Maryland, to model a comprehensive climate and energy policy package, including a carbon/energy tax, a cut in the payroll tax, border tax adjustments on fuels and energy-intensive product, a package of measures to promote new energy-efficiency and clean energy technologies, and transitional assistance for negatively affected workers and communities. We estimate that the policy package would have the following results:

- U.S. carbon emissions would decline by 27% in 2010 and by 50% in 2020. Other greenhouse gasses and pollutants would also decline.
- GDP would increase by a modest 0.24% in 2010 and by 0.6% in 2020.
- An additional 660,000 jobs would be created in 2010, 1.4 million in 2020. This would increase employment in the service sector and reduce the rate of decline in employment in manufacturing.
- Unemployment would fall and real after-tax wages would rise.
- Oil imports in 2020 would fall by an amount slightly higher than total current U.S. purchases of oil from OPEC.
- Household energy bills would fall in every year, by a steadily rising amount.
- The effect on income distribution would be slightly progressive.

In addition, the policy package provides every worker in an energy-producing or energy-intensive industry who loses his or her job with two years of full income replacement, including health and retirement benefits. It also provides up to four years of college education or other professional training and up to two additional years of income support for those who take more than two years of training or education. For some older workers, it provides the alternative of additional benefits as a bridge to retirement in lieu of education or training. For heavily affected communities, the package includes development assistance of $US 10,000 per job lost. We have estimated the number of layoffs that would result from the policy package and the cost of providing economic compensation and transition assistance to affected workers and communities. These benefits can be fully funded by the carbon/energy tax without substantially reducing the national economic benefit.

Overall, the results of this modeling effort suggest four conclusions. First, the economic costs and benefits of a climate and energy policy depend critically on elements of the policy design. Specifically, costs are reduced and benefits enhanced by returning the revenue from carbon/energy charges through cuts in other taxes, and through more rapid introduction of new energy technologies. These two policies together can yield a net economic benefit. Second, the combination of technology promotion and well-designed policies to offset competitive burdens can reduce the harm to most energy-intensive industries to low or negative levels. Third, consumers and income distribution need not be harmed and can even benefit. Finally, substantial compensation can be provided to affected workers and industries without negating the general economic benefit.

JOINT MEETING OF MANAGEMENT AND TRADE UNION EXPERTS ON CLIMATE CHANGE AND EMPLOYMENT

Climate change policies in the Netherlands: a more market-based approach?

Presentation by Paul J.G. TANG,
CPB Netherlands Bureau for Economic Policy Analysis

Summary

Since the early nineties the Netherlands has tried to economise on energy use and to curb emissions of greenhouse gasses. For example, a system of energy taxes is already in place. The system distinguishes among firms and households according to energy use (more specifically, gas and electricity). Typically, heavy users pay energy taxes but not in the margin. On the other hand, small users face the highest marginal rates but are refunded a large part of the taxes (in a lump-sum fashion).

The current tax rates are not enough to ensure that the Netherlands will reach the emission targets. Besides, voluntary measures by industries and subsidies on energy-efficient technologies do not seem to effectively reduce the CO_2 emissions. Therefore, a more market-based approach is studied. This approach could include broadening and raising energy taxes and introducing some form of emission trade. The CPB Netherlands Bureau for Economic Policy Analysis plays a central role in the studies into these two instruments. The presentation will focus on the current discussion about these instruments in the Netherlands.

distributional concerns
Policy makers are not only concerned with the burden of climate change policies but also with distribution of this burden. Very likely equal marginal rates would minimise the burden, but distributional concerns leads to differentiation. There are several proposals to mitigate the effects for energy-intensive industries:
energy tax
- higher marginal than average tax rates for firms;
- refunding higher energy taxes through lower corporate taxes;

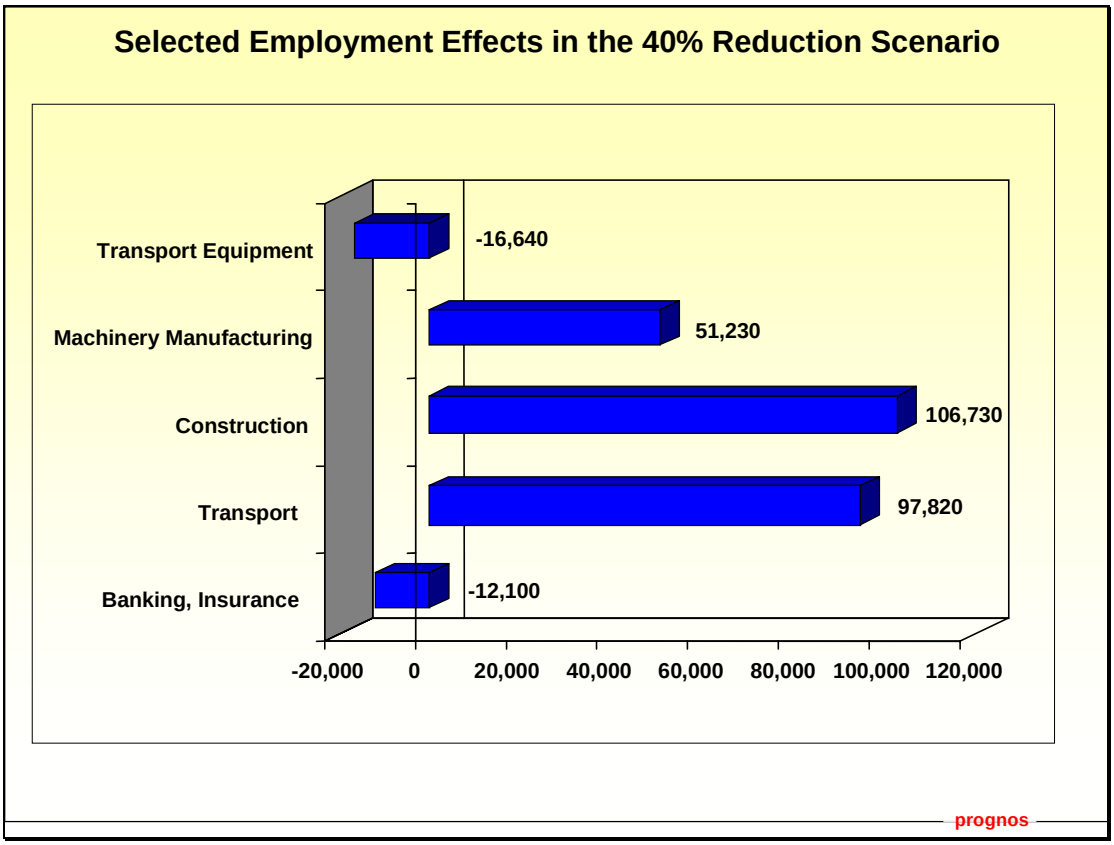
emission trade
- grandfathering part of the emission rights;
- benchmarking within a system of emission trade such that firms that are energy-efficient and operate on international markets do not – on average – have higher costs for energy;
- buying emission rights on the international markets for permits.

efficiency and employment
Industries that produce fertilisers and aluminium are expected to loose substantially or even to disappear when more stringent climate policies are pursued. Other energy-intensive industries will also face difficulties to maintain (the growth of) production and employment. To what degree depends largely on the way in which the climate change policies will be implemented. It also depends on the opportunities to outsource emission reductions in Eastern Europe and Russia.
For any proposal, the overall effect on national income is not expected be large. This partly reflects that expenditure on energy is a small fraction of national income and partly reflects that to a large extent households carry the burden of adjustment (which does not show up in traditional measures for economic welfare). The long-run effect on total employment is negligible. The situation on the labour market could even improve since the proceeds of energy taxes and permit auctions can be used to lower distortionary taxes on (low-skilled) labour.

uncertainties
The studies of the various proposals have to deal several major uncertainties. They include among others: the differential impact of marginal and average rates; transaction costs of emission trade; the distortionary impact of labour and corporate taxes; opportunities to outsource emissions reductions. Apart from the distributional concerns, these uncertainties makes it difficult for researchers to arrive at specific recommendations.

JOINT MEETING OF MANAGEMENT AND TRADE UNION EXPERTS ON CLIMATE CHANGE AND EMPLOYMENT

Presentation by Dr. Janina SCHEELHAAS, The European Centre for Economic Research and Strategy Consulting on Employment of Climate Protection Policy – Germany



Employment Effects in the 40% Reduction Scenario

2005	
Agriculture	-1,580
Mining	-20,020
Basic Metals	4,320
Transport Equipment	490
Electrotechnical Products	3,270
Machinery Manufacturing	40,400
Other Metal Products	3,500
Food, Beverages, Tobacco	-2,340
Textiles, Footwear, Clothing	-610
Chemicals	530
Non-Metallic Mineral Products	5,790
Wood and Wood Products	2,160
Paper and Paper Products	750
Other Manufacturing	-160
Construction	91,700
Electricity, Gas, Water	400
Transport	20,360
Wholesale, Retail Trade	-5,940
Restaurants and Hotels	-2,110
Banking, Insurance	-2,360
Public Authorities	-3,560
Other Services	20,310
Total	**155,300**

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Employment Effects in the 40% Reduction Scenario

2010	
Agriculture	-1,080
Mining	-18,580
Basic Metals	3,470
Transport Equipment	-6,120
Electrotechnical Products	2,120
Machinery Manufacturing	34,500
Other Metal Products	3,690
Food, Beverages, Tobacco	-1,710
Textiles, Footwear, Clothing	-400
Chemicals	-2,380
Non-Metallic Mineral Products	5,540
Wood and Wood Products	2,290
Paper and Paper Products	420
Other Manufacturing	-170
Construction	86,570
Electricity, Gas, Water	330
Transport	73,410
Wholesale, Retail Trade	-39,560
Restaurants and Hotels	-2,320
Banking, Insurance	-8,930
Public Authorities	-8,110
Other Services	9,880
Total	**132,860**

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Employment Effects in the 40% Reduction Scenario

2020	
Agriculture	1,280
Mining	-15,180
Basic Metals	4,320
Transport Equipment	-16,640
Electrotechnical Products	3,360
Machinery Manufacturing	51,230
Other Metal Products	6,120
Food, Beverages, Tobacco	2,400
Textiles, Footwear, Clothing	840
Chemicals	-5,750
Non-Metallic Mineral Products	8,160
Wood and Wood Products	4,850
Paper and Paper Products	1,180
Other Manufacturing	230
Construction	106,730
Electricity, Gas, Water	670
Transport	97,820
Wholesale, Retail Trade	-57,540
Restaurants and Hotels	-140
Banking, Insurance	-12,100
Public Authorities	-10,880
Other Services	23,070
Total	**194,030**

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THE EMPLOYMENT IMPACT OF CLIMATE PROTECTION POLICIES

MAIN FINDINGS OF A STUDY ON BEHALF OF THE GERMAN FEDERAL MINISTRY FOR THE ENVIRONMENT

DR. JANINA SCHEELHAASE
HEAD OF MACROECONOMICS

PROGNOS AG, COLOGNE

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ASSUMED REDUCTION TARGETS

- **25% REDUCTION OF CO_2 EMISSIONS BY THE YEAR 2005 AND 40% BY THE YEAR 2020 („40% REDUCTION SCENARIO“)**

- **20% REDUCTION OF CO_2 EMISSIONS BY THE YEAR 2005 AND 30% BY THE YEAR 2020 („30% REDUCTION SCENARIO“)**

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Conclusions

- **AMBITIOUS CLIMATE PROTECTION GOALS CAN BE MET WITHOUT LOSS OF JOBS**

- **POSITIVE SYNERGY EFFECTS RESULT BETWEEN BOTH ENVIRONMENTAL AND EMPLOYMENT POLICY GOALS**

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JOINT MEETING OF MANAGEMENT AND TRADE UNION EXPERTS ON CLIMATE CHANGE AND EMPLOYMENT

Presentation by Hubert DAVID, European Insulation Manufacturers Association (EURIMA)

Summary

The CO2 emissions caused by energy use for heating of commercial and residential buildings (in Western Europe) is roughly 600-million t/year (1). The possible reduction by applying state of the art insulation in 310 million t/year, or roughly half of it. The state of the art is nothing else but applying present building regulations: it is not technology to be developed. It is just what is on the market to-day, products available at every building merchant or building contractor.
The building sector ought to be the first sector when tackling the climate problem, if only because it is a prime example of *no regret policy*. Indeed, saving energy in building is very well possible, it is justified in its own right of long-term *energy supply*, and it improves both the comfort for the building users and the sales value of the edifice.

SOME FIGURES

Work submitted by the Belgian building research institute leading to the Declaration of Madrid (16-18 March 1996) concluded (for the then Community of 12): *There are about 160.000.000 dwellings in the Member States: 1% of the existing stock is renovated each year , the largest part of this renovated houses can be properly insulated to present day standards. On an average of 1 month of work for each dwelling, this would create 150.000 man/years (manufacture, and in particular installation*)
Actually, the renovation rate is higher in Europe (nearing 3%); so the real potential is considerably higher.

A study (1995) by the General Workers Union in Denmark (SiD) concluded that 2700 new and additional jobs can be created by proper energy conservation works in the Danish housing stock. The study also concluded that insulation of roofs; cavity wall insulation and pipe insulation are amongst the best job creators per DKK invested

Our sister organization for the glass sector CPIV asked the FIZ (Fachinformationzentrum Karlsruhe) to run a computer program on the replacement of current single- and double glazed windows in all dwellings in the EU by high-performance double glazed windows in a time frame of 10 years. The direct employment over the 10 years period over all the EU countries is 126.000 additional jobs.

HOW TO GET THERE?

The performance of a dwelling is, all too often, a well-guarded secret! This lack of market transparency is one of the major reasons why the building sector remains so energy intensive. So a system of energy performance measuring and labeling for all buildings (dwellings, offices and industrial buildings) is urgently needed. The audit and reporting ought to be done for new buildings and for existing buildings at the moment of change of occupancy (either rental sector of sales of the building).

Secondly, insulation performance standards for both new construction and (major) refurbishment ought to be severe. Whenever a permit is needed (new building, major refurbishment) the most advanced and newest insulation standards ought to be imposed by the permitting (local) authority. Above all, these standards have to be policed and implemented. One of the possibilities to improve the implementation is to make the architects responsible and liable for the implementation of the insulation standards.

(1) The figures come from an EURIMA publication (1990). The European Commission in reply to a Parliamentary Question of U Schleicher and A Kuhn (E-1218/97) has confirmed the figures in 1997. All other figures come from various EURIMA publications since 1992.

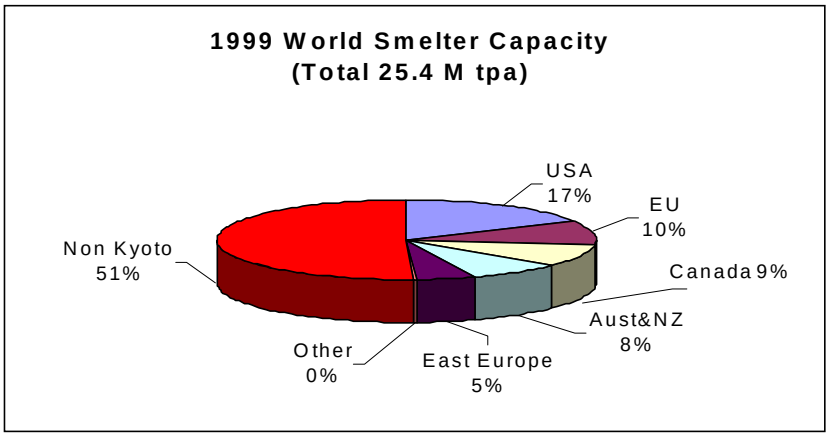
JOINT MEETING OF MANAGEMENT AND TRADE UNION EXPERTS ON CLIMATE CHANGE AND EMPLOYMENT

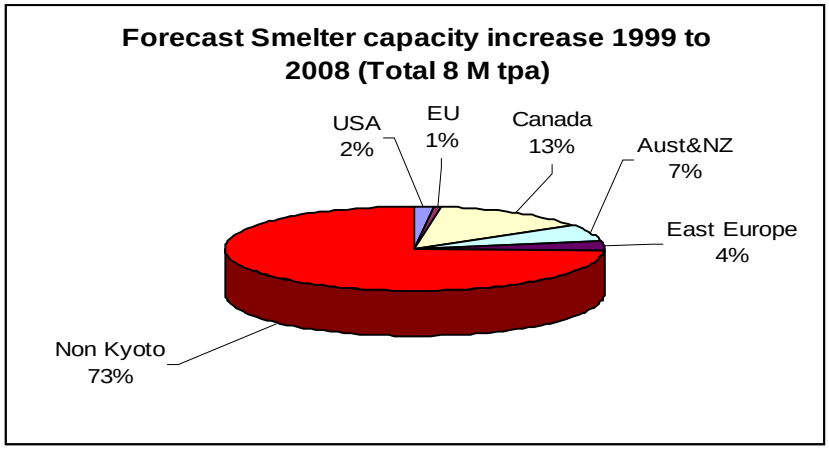
Climate Change and Employment in the International Aluminium Industry

Presentation by Willy BJERKE, International Aluminium Institute

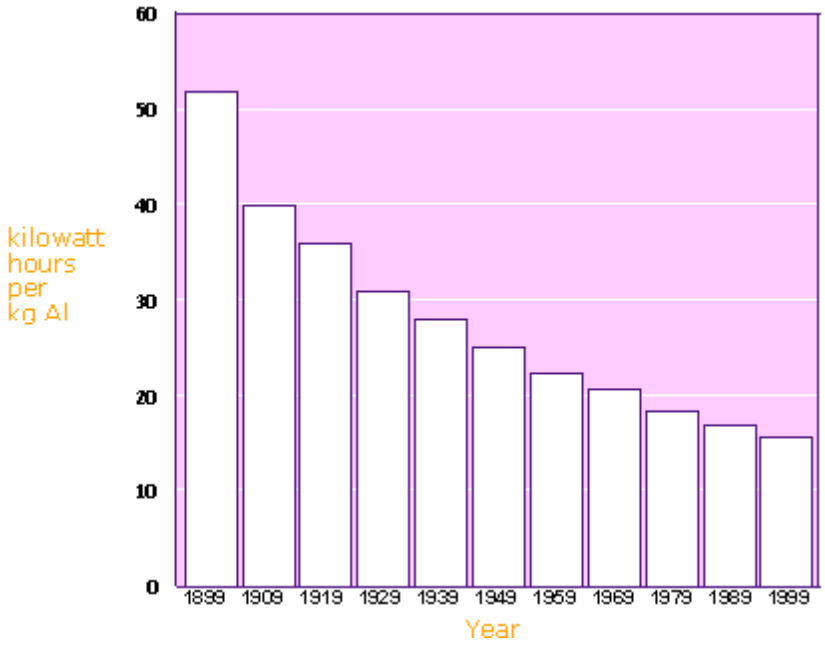
The risk of significant Climate Change is a major global issue and a critical one for the aluminium industry, because the production of aluminium from bauxite is energy intensive, while its use and reuse saves energy and natural resources. Hence , policies and measures to address climate change concerns can have negative cost impacts on the early stages of the aluminium life cycle without necessarily taking account of the positive role of aluminium in the later life cycle stages of use, recycle and reuse. In addition, emissions associated with aluminium production and the emission savings from its use and reuse frequently occur in different countries around the world, further underlining the need for a global approach that takes account of the full life cycle impacts. Aluminium is a commodity product whose price is determined on global basis by the London Metal Exchange, so there is little scope for regional variation beyond that resulting from tariffs.

The biggest single cost for the primary aluminium producers is energy, around 25% of the total, so there is and always has been a great market pressure on companies to keep their energy consumption down. The present thrust of the Kyoto Protocol negotiations could be having an effect on investment flows. To be effective, international climate change measures must have a truly global coverage rather than be confined to OECD countries. Regionally limited measures encourage investment patterns to ensure future growth, which favour regions not subject to the Kyoto Protocol limits. According to CRU, nearly three-quarters of new and planned aluminium production capacity investment will occur in "non-Kyoto" countries.





The importance of energy in the cost of production has resulted in the industry's reducing its energy consumption over the past thirty years by a third and by more than 70% over the last hundred years.



However, this reduction seems to be beginning to level off and given the nature of the current electrolysis process, there may only be limited scope for further improvement. The most efficient plants can now produce aluminium for as little as 12.8 kWh per kg of metal, which is less than one fourth the energy requirement to make the first commercial aluminium 112 years ago. Even the planned introduction of inert anodes to replace carbon anodes, whilst almost completely eliminating green house gas emissions directly related to the reduction process is unlikely to lead to a reduction in electrical energy consumption.

Aluminium is produced in every continent except Antarctica. The industry's investment in new capacity tends to go where there is guaranteed plentiful reliable and low cost energy and raw material supplies for the foreseeable future, which is mainly outside the OECD. In such circumstances any energy tax, carbon tax or other measure, which increases energy costs in an OECD country, but not in others, will further disadvantage that country's aluminium producers in the face of global competition. Any such climate change measures need therefore to be mitigated in the case of energy intensive industries like, for example, the UK primary aluminium producers.

UK CASE STUDY

Following the election of the Labour Party in 1997 the new government published proposals for "Green Tax Reform" signalling a shift from taxes on employment towards taxes on pollution. In 1997 the UK Government assumed a target of a 20% reduction in CO_2 emissions on 1990 levels by 2010, considerably greater than the 12.5% reduction subsequently agreed for the UK within the EU Kyoto commitment.

Government announced, in March 1999 in the Budget, proposals for a tax on the business use of energy. A subsequent consultation paper defined the rates of tax to be applied, coal and gas, 0.21 pence per kilowatt hour, and electricity 0.6 pence per kilowatt hour (regardless of whether generated using coal, gas or nuclear energy). The tax, to be known as the Climate Change Levy would be revenue neutral, estimated proceeds of £1.75 billion would be used to achieve a reduction of 0.5% in employers national insurance contributions. A discount of 50% of the tax could be available to energy intensive industries. At this stage, at the full rate of the Levy, the UK aluminium industry was facing an additional annual tax of £40 million with a reduction in National Insurance Contribution worth £2 million. Its competitiveness would have been destroyed.

At a ministerial meeting involving ten energy intensive sectors, steel, glass, paper, cement, plastics, aluminium, non ferrous metals, chemicals, food and drink, who collectively were seen to represent some 60% of total energy consumption used by manufacturing industry, all sectors rejected the Government's proposals on the grounds that;

- Burden of taxation would damage the competitiveness of manufacturing industry
- Whilst it might be tax neutral overall to business, the burden of the tax would fall on the capital intensive manufacturing sector, whereas the service sector of UK business being highly labour intensive would gain from reduction in insurance contributions.

In May 1999 Anglesey (Rio Tinto/Kaiser) and the Alcan Smelters condemned the proposed tax. They estimated that the unrelieved cost to be of the order of £28 million. This would have led to the early termination of primary aluminium production in the UK.

On 25 July 1999 the Treasury announced that energy used for electrolysis in the primary production of aluminium would be exempt from the levy. Further announcements followed confirming exemption on thirty-two processes covering many basic raw materials feedstocks used by manufacturing industry. The Government in November 1999 announced in a Pre-Budget Statement that in response to consultations with industry the basic rates of tax on energy would be reduced by one third, and the discount to be available to the sectors entering into negotiated agreements would be increased to 80%. The off setting employers National Insurance contribution to be reduced from 0.5% to 0.3%. Further the Government confirmed that enabling legislation would be brought forward to introduce the new tax with effect from April 2001.

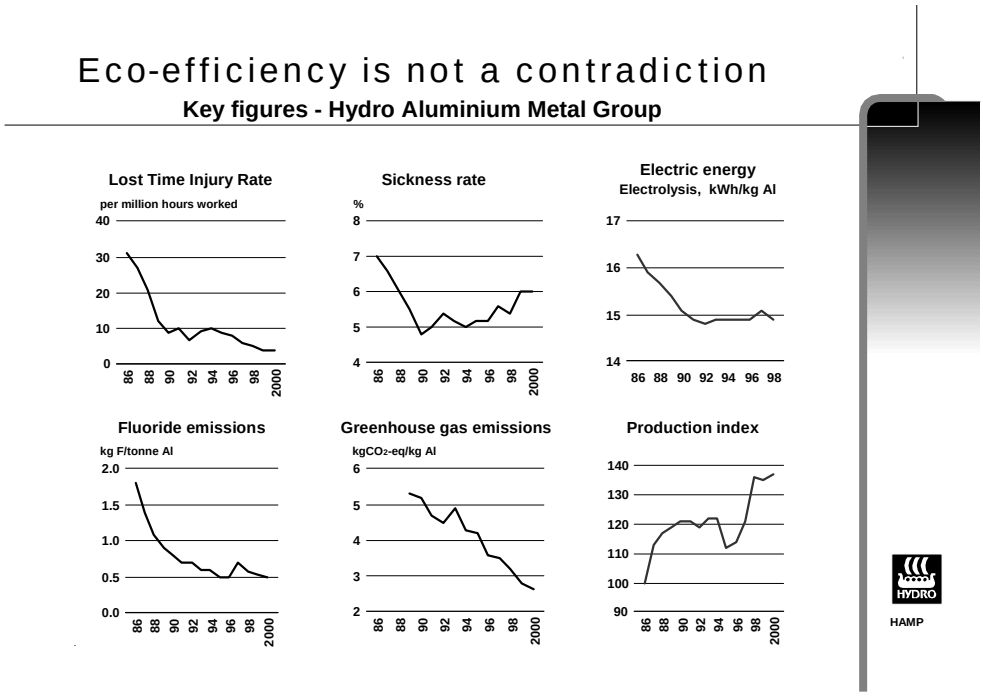
In December 1999 although the Aluminium Federation (ALFED) in common with the other Energy Intensive Sectors continued to oppose the tax, the general consensus was that the November concessions were as far as the Ministry was willing to move to provide relief to industry. ALFED along with the nine other Energy Intensive Sectors signed a Memorandum of Understanding with the Ministry committing both parties to work together to develop negotiated agreements in order to secure the benefit of the reduced rates of levy. In total for the aluminium sector the MOU envisaged a reduction in specific (i.e. per tonne of output) carbon dioxide emissions of 41% from 1990 to 2010.

The proposed arrangements for the climate change levy included provision for an 80% discount for energy intensive sectors of industry, which enter into an agreement with the Government. For each sector the participating companies must elect to be measured either by energy or emissions targets. Further each sector must elect either an absolute reduction target or a relative efficiency target per unit of output. The agreements will run from 2001 until 2013. Targets would be agreed and performance measured at two yearly intervals from 2002 up to 2010, with 2000 as the base year for reference.

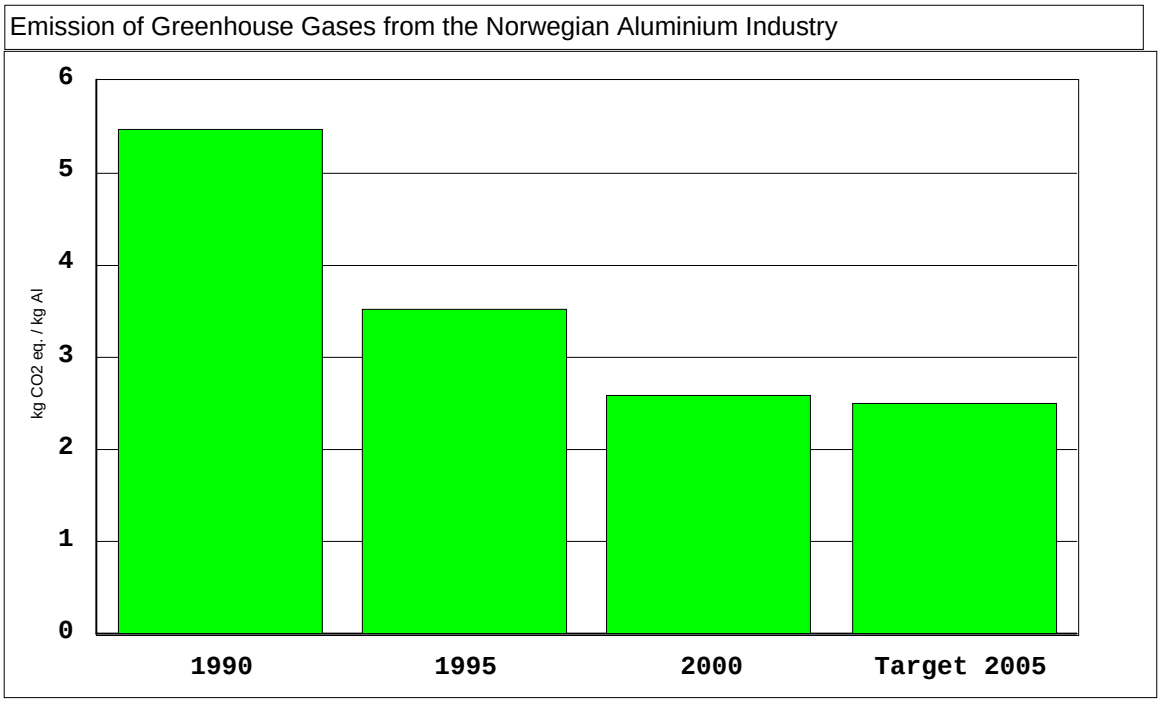
The aluminium industry has been one of the first industrial sectors voluntarily to reduce significant amounts of greenhouse gas emissions from its internal operations. According to preliminary results of a draft US EPA Survey entitled "International Efforts to Reduce Perfluorocarbons (PFC) Emissions from Aluminium Smelting", aluminium producers in 10 countries have agreed with their respective governments, on a voluntary basis, to reduce greenhouse gas emissions from aluminium smelting. In Australia, Bahrain, Brazil, Canada, France, Germany, New Zealand, Norway and the U.K. and the U.S, they achieved reductions ranging from 23-78% and for nine out of the ten programmes the base year was 1990.

It has recently been reported that Germany's five primary aluminium smelters have reduced their emissions of the greenhouse gases tetrafluormethane (CF_4) and hexafluorethane (C_2F_6) by 85 percent since 1990. In terms of CO_2 equivalent, this means that, in the year 2000 alone, there was an emissions reduction from the smelters of two million tonnes compared with 1990. "The German aluminium industry is thus making a significant contribution towards meeting the climate protection targets Germany has undertaken to achieve within the scope of the Kyoto Protocol". "Current data from the primary aluminium smelters prove that voluntary agreements can be a very successful alternative to legislation." The significant reduction of climate change gases in German primary smelters, is mainly attributable to investment in the latest production technology and improved process management. Another example of a successful partnership agreement is the "Greenhouse Challenge Programme" under which the Australian aluminium industry has achieved similar levels of emissions reduction.

One concrete example of the aluminium industry's achievements by focusing on continuous improvement and eco-efficiency, is given by the figure below showing eco-indicators used in a Norwegian company.



The aluminium industry in Norway has entered a voluntary agreement with the Norwegian government to reduce greenhouse gas emissions from 1990 to 2000 by 50% and by 55% in 2005. In fact by 2000 the reduction already amounted to around 53%.



The IAI second survey report of PFC emissions based on 65% of world production showed a 46% reduction per tonne between 1990 and 1997. The latest surveys of the years 1997, 1998 and 2000 shows the reduction trend has continued and the industry has reduced its PFC emissions per tonne by 58% in the decade 1990 to 2000. It has also confirmed that the total worldwide emissions, despite a significant increase in production, have now fallen below the total for 1990. The Industry's voluntary agreements and early action in reducing energy consumption and GHG emissions should be recognised as a valid and effective alternative to more burdens through taxes.

The introduction of mandatory renewable electricity targets in Germany and Australia, which involve compulsory subsidies to the renewable electricity producers, will significantly raise electricity costs relative to competitors for investment in the aluminium industry. In Australia at least, the measure is expected to be a very high cost way of reducing greenhouse gas emissions. Australia is expected to account for some 600,000 tonnes of new highly efficient production capacity by 2010. The competitors for this investment are mainly not covered by the Kyoto Protocol. Australia will not be able to carry out these expansions, if energy prices rise out of line with these competitors due to greenhouse policies in Australia. Commitments have been given by the Australian Government that the national greenhouse policy response will not adversely affect the international competitiveness of its export and import competing industries. It is not yet clear how these competing objectives will be resolved, but the Australian aluminium industry is currently discussing a negotiated sectoral agreement approach with the government. This will be based on a long term vision for the aluminium industry to grow in Australia.

The German aluminium industry is currently concerned about two government initiatives, which would significantly increase their energy costs. The KWK Law on co-generation could add 0.05 eurocent per kilowatt hour or some 8 million EURO for the German primary aluminium smelters a year. The renewable energy content requirement in their power mix under the EEG Law would add in 2010 around 1 eurocent (today around 0.25 eurocent) per kilowatt hour or between 70 million and 80 million EURO annually to their energy bill of the primary smelters. In addition there will be extra costs by this law for the aluminium fabrication plants. The German aluminium industry employs some 75,000 people.

Aluminium has a very important role in helping to reduce greenhouse gas emissions (as well as other emissions and resources), particularly, when the easy recyclability of the metal is taken into account. Already a third of the world demand for aluminium is met from recycled metal, which saves 95% of the emissions and 95% of the energy required for the production of aluminium from bauxite. The continuing increase in the use of aluminium in all forms of transportation is delivering better fuel performance efficiency in terms of kilometres travelled per litre of fuel and lower overall emissions for the transport sector. The manufacturers of the vehicles and their suppliers have accepted their responsibility to reduce the environmental impacts caused by transport. The aluminium industry helps to meet this challenge by its contribution to light-weighting, to improved safety and performance. Different life-cycle assessments have shown that 1 kg of aluminium in a car body, replacing 1,8 to 2 kg of steel in a conventional car body, saves during the life-time of the car about 20 kg of green-house gas emissions (in CO_2 equivalents).

The global use of aluminium in the automotive and light truck sector has increased from 2.5 million tonnes in 1991 to nearly 4.5 million tonnes in 1999. This use of aluminium for automobiles in 1999 alone has the potential over the lifespan of the vehicles to reduce overall GHG emissions to the environment by 90 million tonnes assuming that all this aluminium was used to replace denser materials. In addition since aluminium has a high strength to weight ratio and a high stiffness coefficient, vehicles designed to use aluminium components can achieve the benefits of lightweighting without sacrificing the safety of the passengers or the performance of the vehicle. The lighter vehicles can also contribute to the increased safety of passengers in other vehicles that might be involved in collisions with lighter, aluminium intensive vehicles.

Vehicles such as buses and long haul trucks, operate over much longer distances during their lifetimes, often five times longer than a typical passenger car. The use of 1 kg of aluminium replacing 1,5 kg of steel in a typical bus or a truck reduces the green-house gas

emission by about 40 kg over its lifetime, i.e. twice as much as for a car. Finally, a railroad train, during its lifetime, runs a distance of between 30 and 50 times the distance of a typical car. The use of 1 kg of aluminium replacing 1,6 kg of steel in a railway car reduces the green-house gas emission by more than 200 kg i.e. ten times as much as for a car. Thus, the benefits of using more aluminium for these applications is even higher.

Conclusion:

The environmental impacts for climate change have attracted a lot of attention, but more research needs to be conducted into the potential economic and social consequences of some of the measures being pursued by governments, particularly as regards future employment prospects in energy intensive industries in OECD countries.