

# WORLD TRADE ORGANIZATION

WT/CTE/W/215  
TN/TE/W/9  
23 September 2002  
(02-5081)

Committee on Trade and Environment  
Committee on Trade and Environment Special Session

Original: English

## ENERGY TAXATION, SUBSIDIES AND INCENTIVES IN OECD COUNTRIES AND THEIR ECONOMIC AND TRADE IMPLICATIONS ON DEVELOPING COUNTRIES, IN PARTICULAR DEVELOPING OIL PRODUCING AND EXPORTING COUNTRIES

Submission by Saudi Arabia

### TABLE OF CONTENTS

<b>I.</b>	<b>INTRODUCTION .....</b>	<b>2</b>
<b>II.</b>	<b>WTO AND THE ENVIRONMENT.....</b>	<b>2</b>
A.	THE WTO.....	2
B.	TRADE AND ENVIRONMENT IN THE WTO .....	3
C.	THE DOHA ROUND .....	3
<b>III.</b>	<b>OECD COUNTRIES' ENERGY POLICIES .....</b>	<b>3</b>
A.	ENERGY – CARBON TAXATION .....	4
B.	COAL SUBSIDIES .....	6
C.	NUCLEAR SUBSIDIES .....	6
D.	RENEWABLE SUBSIDIES.....	7
E.	ENERGY EFFICIENCY MEASURES .....	7
<b>IV.</b>	<b>ECONOMIC IMPLICATIONS ON DEVELOPING COUNTRIES.....</b>	<b>8</b>
A.	IMPACTS ON DEVELOPING ENERGY PRODUCING COUNTRIES .....	9
B.	IMPACATIONS ON WELFARE.....	10
C.	DISTRIBUTIONAL IMPACTS .....	11
D.	SPILOVER EFFECTS .....	13
<b>V.</b>	<b>CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>15</b>
A.	MARKET IMPERFECTIONS AND MARKET INSTRUMENTS .....	15

## **I. INTRODUCTION**

1. In the light of the responsibility of the Committees on Trade and Environment (CTE) and Negotiating Group on Market Access, we present this initial contribution identifying the impact on energy producing and exporting countries as well as recommendations. The adoption of measures to mitigate the impact and alleviate the trade implications on developing countries, particularly energy producing and exporting among them, and improve their market access is at the heart of the Doha Work Programme that will be negotiated by WTO member countries. Given the nature of this issue, we are submitting this paper to both Committees on Trade and Environment (in Special and Regular sessions) and the Non-Agricultural Market Access Negotiating Group.

2. As both global trade and environmental policy become increasingly interrelated, under the auspices of the World Trade Organization (WTO), a Committee for Trade and Environment (CTE) has been established to deal with potential areas of disparity between trade and environmental policy. Following the Doha WTO round, a number of trade-related areas of relevance to both energy and the environment have subsequently been highlighted for further discussion and negotiation.

3. There are several areas in which the WTO trade and environment agenda can interact with energy exports and the interests of developing energy producing and exporting countries such as Saudi Arabia.

4. There are a number of ways in which environmental mitigating actions of one country may impact the economic interests of another country. However, there are a number of areas in which countries pursuing environmental objectives (such as climate change policy) may *contravene* their WTO obligations and seek to protect their domestic interests. As these actions may have significant implications for energy (and related) exports from developing countries.

5. This paper summarizes the current relationship between trade and environment. In particular, it examines the implications of the WTO trade and environment agenda for energy and oil and contemplates how developed countries' energy and environmental policies could affect developing countries by provisions relating to energy and environmental taxes, and domestic subsidies. The paper also covers the economic implications on developing countries, the spillover effects on developing countries and proposes actions to be taken by developed countries to minimize the impacts.

## **II. WTO AND THE ENVIRONMENT**

### **A. THE WTO**

6. The agreements govern trade in goods and services establishing legal responsibilities and rights of WTO member states and imposing consequences on members who are found to have acted in a manner inconsistent with WTO obligations.

7. Basic obligations include the duty to refrain from imposing quantitative restrictions on trade or raising tariffs beyond bound levels. Basic rights include the principle of non-discrimination, which is incorporated in the national treatment and most-favoured nation status.

## B. TRADE AND ENVIRONMENT IN THE WTO

8. In this context, it should be noted that the development and policing of trade-related environmental policies is not part of the WTO's remit. Such a task falls under the jurisdiction of other multilateral frameworks, such as the United Nations Framework Convention on Climate Change (UNFCCC). The WTO's involvement is limited to the settlement of disputes between contracting and non-contracting parties to multilateral environmental agreements (MEAs).

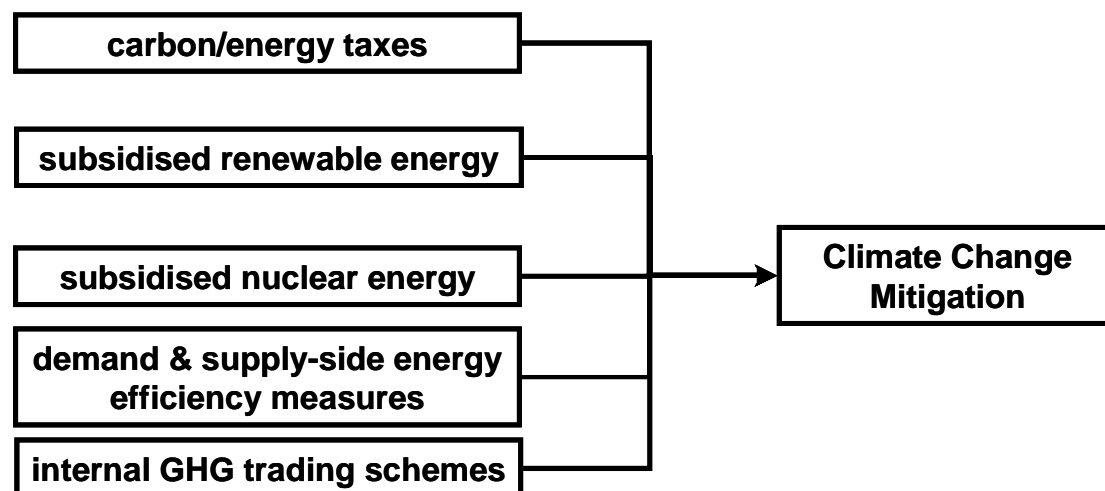
## C. THE DOHA ROUND

9. The WTO agreement reached in Doha in November 2001 at the 4<sup>th</sup> Ministerial Meeting reaffirmed a commitment to the protection of the environment (provided measures taken do not restrict trade or discriminate between countries) and stressed the need for trade and environmental policies to be mutually supportive. In the context of trade and environment, discussions at Doha centred on number of issues including:

- **Market access:** The CTE was advised to consider the effects of environmental measures on market access, in relation to developing countries, and consider the benefits of removing trade restrictions. The outcome of these discussions will have some bearing on the interests of developing countries including energy-exporting developing countries.

## III. OECD COUNTRIES' ENERGY POLICIES

10. OECD countries rely on a mixture of policy instruments in particular connection to reduction of CO<sub>2</sub> emissions that will have trade implication on developing oil-producing countries. The following schematic summarizes the major policies:

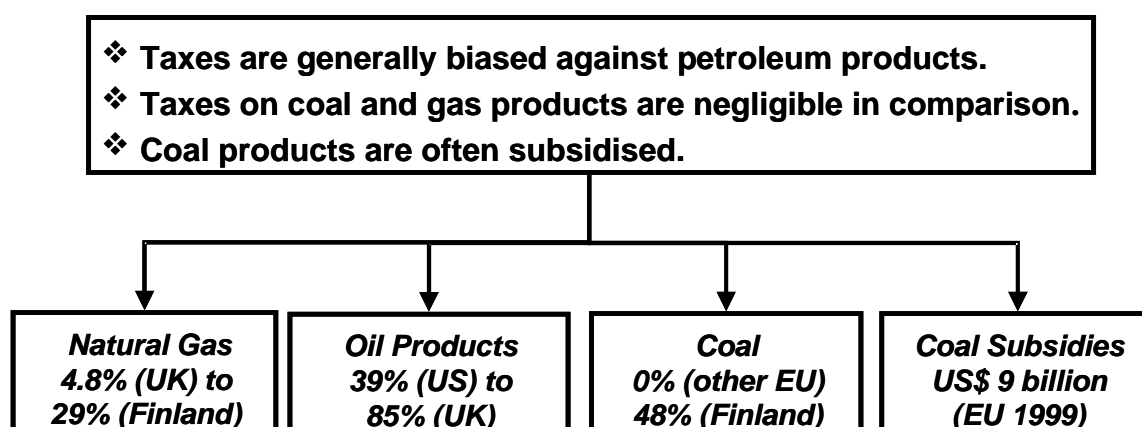


11. This section outlines the use of energy - carbon taxes and subsidies policies, and discusses the potential interaction (or conflict) between these domestic environmental policies and WTO rules. The UNFCCC is considered as the most relevant MEA to this paper and reference is made to direct trade-related impacts upon developing energy producers and exporters such as Saudi Arabia where necessary.

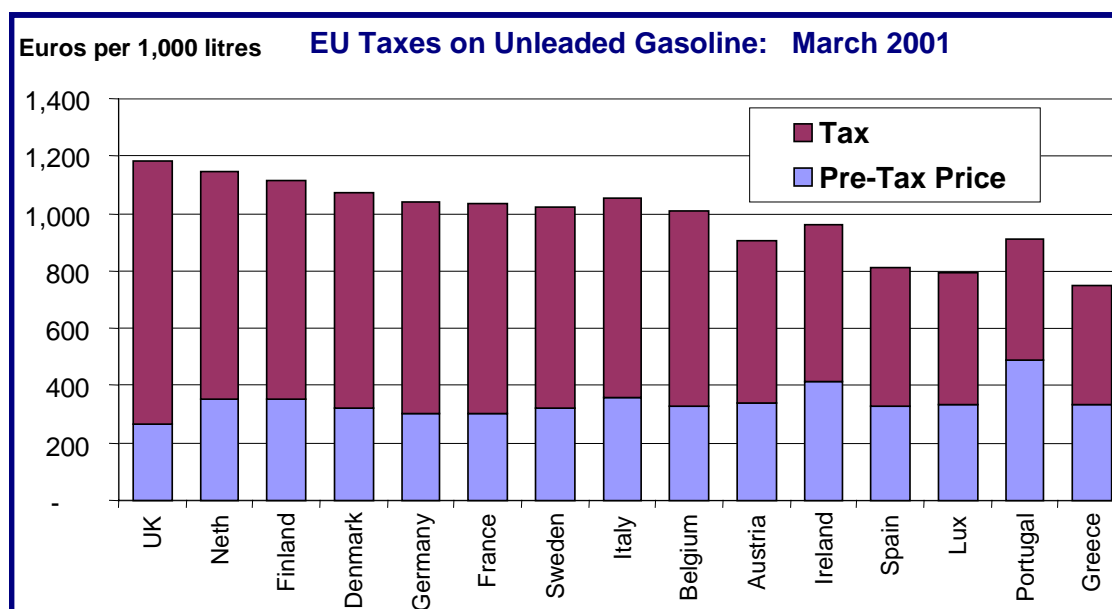
## A. ENERGY – CARBON TAXATION

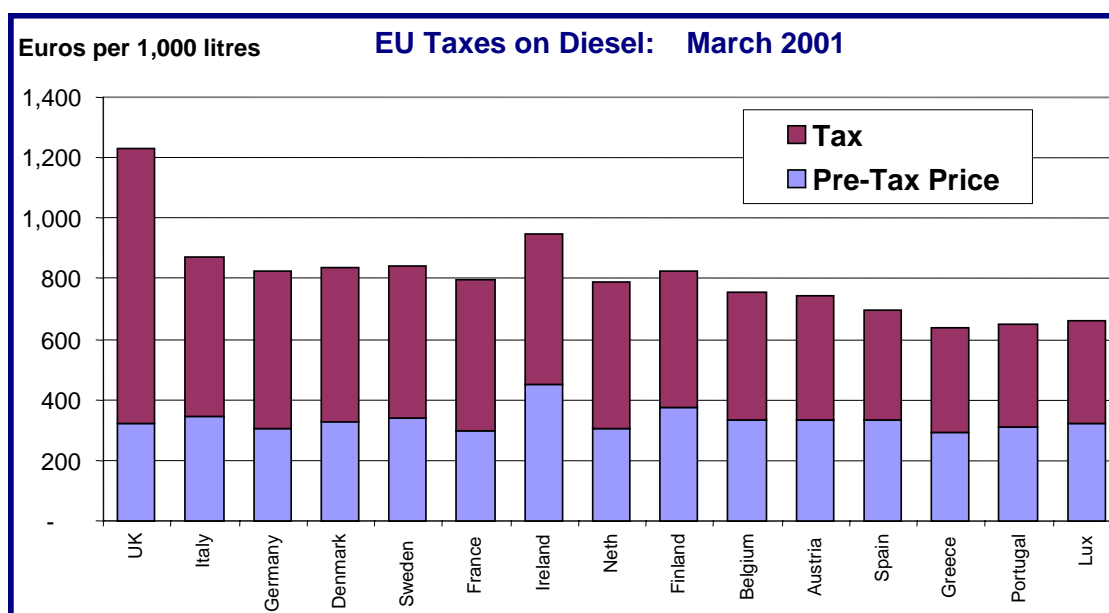
12. With carbon taxes, governments are able to tax goods in commerce based on how much those goods contribute to greenhouse gas emissions. The main thrust of this policy for OECD governments is to limit emissions at the same time creating additional and guaranteed government revenues. However, the introduction of such taxes has raised concerns over associated trade effects on developing countries.

13. At present, OECD countries apply different rates of tax on fossil fuels, with oil being heavily discriminated against compared to other fuels. The following schematic represents the different rates of taxation that are applied across fossil fuels:



14. The following graphs illustrate the high level of consumption taxes in the end-user prices for gasoline and automotive diesel within the EU. EU taxes on gasoline range from 66% of the end-use price to 81%, whilst EU taxes on automotive diesel range from 62% of the end-use price to 82%.





15. Furthermore, the following table indicates the different fossil fuel consumption tax percentages between the EU, USA and Japan. The range of taxes runs between 4.8% up to 82%.

**Fossil Fuel Consumption Taxes  
Percentage of End-Use Prices**

	EU	USA	JAPAN
<b>Gasoline</b>	66% - 81%	30.6%	55.8%
<b>Diesel</b>	62% - 82%	42.3%	42.7%
<b>HFO</b>	0% - 31.2%	0%	4.8%
<b>Nat. Gas</b>	0%	0%	4.8%

16. In addition to the use of consumption taxes, several EU members are currently employing carbon and energy taxes to lower their carbon emissions (for example, the UK climate levy). Although most of these taxes have the stated aim of reducing CO<sub>2</sub> emissions, they are generally biased against already highly taxed petroleum products. The only immediate impact of this approach has been to increase government revenues. It has not, as was intended, led to a decrease in overall emissions.

17. A better approach would be to reset overall tax levels based on carbon content rather than utilising additional or supplemental carbon taxes. Such approach might offer exporting countries an opportunity to increase their share of the rents from oil consumption while keeping the final consumer price unchanged. For most countries that apply such taxes, they provide a substantial share of the general revenue.

18. Most Annex B Parties also provide some form of incentive - either as investment credits or tax offset - for petroleum exploration and development. Removal of these policies would drive up

costs of producing oil in OECD countries, leaving a higher share of the demand to be supplied from lower cost fossil fuel exporters such Saudi Arabia.

## B. COAL SUBSIDIES

19. Another major existing market distortion within OECD countries energy markets is the continued subsidisation and tax-exemption of domestic coal. A paper prepared by the Annex I Experts Group in 1996 concluded that the removal of subsidies in coal and electricity could both substantially reduce CO<sub>2</sub> emissions - and stimulate economies with revenues that had previously been tied up in subsidies.

20. According to the IEA's 1998 publication Coal Information, approximately 5.5 % of the coal produced by IEA member countries received state aid, primarily in Japan, Germany, Turkey, Spain and France. Of these, only France is committed to end all subsidised production. Given that the primary use of coal is in power generation, removal of such subsidies would promote the use of other fuels (most likely natural gas), reducing the impacts on hydrocarbon-exporting countries such as Saudi Arabia. The table below indicates the total coal subsidies in different OECD countries whereby Germany ranks the highest and Japan the lowest.

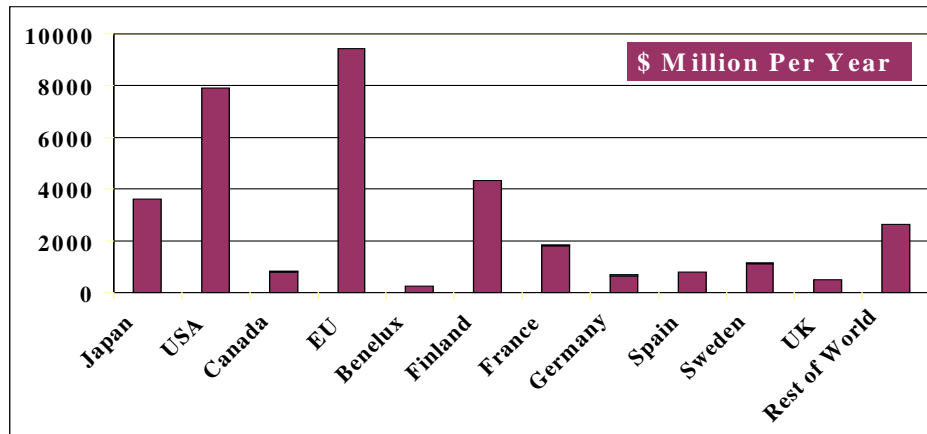
**Coal Subsidies**  
**US \$ Million**

	<b>Production</b>	<b>Other</b>	<b>Total</b>
Germany	5,579	467	6,046
Spain	798	413	1,211
France	100	671	771
UK	0	581	581
Japan	528	0	528
<b>Total</b>	<b>7,005</b>	<b>2,132</b>	<b>9,137</b>

## C. NUCLEAR SUBSIDIES

21. Significant subsidies for OECD nuclear power stations also remain (although are generally being phased out), despite the significant environmental and political problems associated with their operational safety and decommissioning. The figure below shows that number of OECD countries high implicit subsidies.

## IMPLICIT SUBSIDY FOR NUCLEAR



### D. RENEWABLE SUBSIDIES

22. The increased use of renewable energy has become a major aspect of most OECD countries as a climate change strategy. The EU and its member States are at the forefront of proposing policies and measures aimed at securing an increased place for renewable power production within liberalizing energy markets. For example, as part of its Climate Change Strategy the UK has set itself a goal of increasing renewable energy as a share of total energy consumption from around 2% to 10% by the year 2010. EU policies and measures aimed at promoting and developing renewable forms of energy include:

- Increased financial support for renewable projects
- Increased technological research and demonstration schemes
- National commitments to increasing renewable energy production
- Legislation to ensure a foothold for renewable energy in a liberalizing energy market (preferential grid access, guaranteed shares of supply etc.)

23. As technology improves, wind, solar, hydro and geothermal energy is predicted to rise as a share of global energy use. The IEA forecasts renewables share will reach 3% of total primary energy use by 2020 (World Energy Outlook 2000). However, financial supports are given at the expense of other energy forms and are discriminatory in nature.

### E. ENERGY EFFICIENCY MEASURES

24. Actions to increase energy efficiency have long been seen as perhaps the most obvious approach to reducing greenhouse gas emissions. Therefore, improvements in energy efficiency from power plant performance levels to household appliances have been a key focus in climate policy discussions.

25. OECD countries have adopted different approaches to the pursuit of energy efficiency policies and measures. The EU already has in place a number of existing policies, which address energy efficiency both at the EU and member-State level. These include:

- Regulation of industrial emission levels
- Taxation measures to encourage greater energy efficiency
- Energy efficiency and fuel standards for various vehicles and products
- Fuel-switching to gas and power plant improvements
- Financial support for efficiency improvements and R&D activities

26. Despite the EU adopting a wide-ranging and fairly strict regulatory approach to encouraging energy efficiency along with employing an extensive range of national carbon and energy taxes, sustained lobbying from industrial groups has resulted in a gradual shift towards more flexible policy forms.

27. The US approach to energy efficiency policies and measures is generally less regulatory, with a preference for voluntary, least-cost options. The US is continuing to invest in greater efficiency in power generation, and is seeking continued voluntary agreements with various energy-using groups.

28. A major issue is that many of the policies and measures suggested by the EU such as energy taxes and the use of optimal technology are aimed at reducing domestic energy use, rather than encouraging potential investors to invest in less-costly energy efficient projects in developing countries. This will have a significant effect on developing oil-producing countries and will reduce the opportunities for technology transfer and private investment in both oil producing and developing countries will be less than otherwise.

#### **IV. ECONOMIC IMPLICATIONS ON DEVELOPING COUNTRIES**

29. This section will highlight the assessment of the effects of environmental policies, in particular Climate Change, and measures upon oil exporting and developing countries in light of the WTO trade dimension.

30. Policy areas for existing and proposed policies and measures to mitigate for example, climate change, are given under Article 2 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC).

31. The section identifies two main areas of concern for developing oil-producing and exporting common to developing countries as well. These are:

- Reduction of global demand for developing energy producers; and
- adverse effects upon the economic development of developing countries.

32. The analysis finds that the following strategies are in the long-term interests of all:

- Removal of existing energy market distortions such as coal subsidisation and existing OECD taxation structures which discriminate against developing energy producers;
- encouragement of technology transfer, investment and research, especially in technologies that promise to improve the efficiency and emissions performance of oil products.

33. It is in the interest of both energy exporting and energy importing countries to pursue environmental policies, which minimise the adverse effects on producing countries' economies, and seek the least-cost flexible solutions.



## A. IMPACTS ON DEVELOPING ENERGY PRODUCING COUNTRIES

34. **Fossil fuels represent the major share of exports for developing oil producing countries' main source of revenue.** For example, in 1998, Saudi Arabia's energy exports were estimated to be worth approximately \$US 30 billion, whilst non-energy products amounted to less than \$US 3 billion (*Statistical Review of Energy*, 1999). Saudi Arabia's energy exports accounted for almost 40% of their GDP, compared to figures of less than 5% for most OECD energy-exporters such as Australia and Canada.

35. The main areas of impact of developing energy - oil producers are:

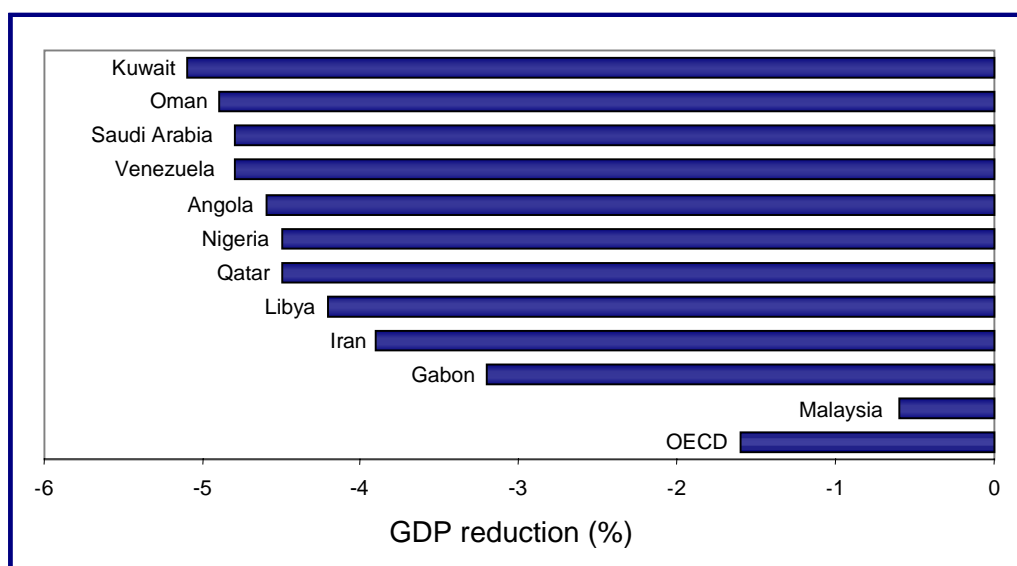
- Adverse tax policies leading to reduced demand for oil, and lower revenues;
- reduced global growth in industry and GDP;
- loss of trade by oil producers to other fuels; and
- replacement of fossil fuels by renewable and nuclear energy sources.

36. The degree to which developing countries affect depends on the exact package of measures adopted by each OECD country and the extent to which these countries rely on imports of oil.

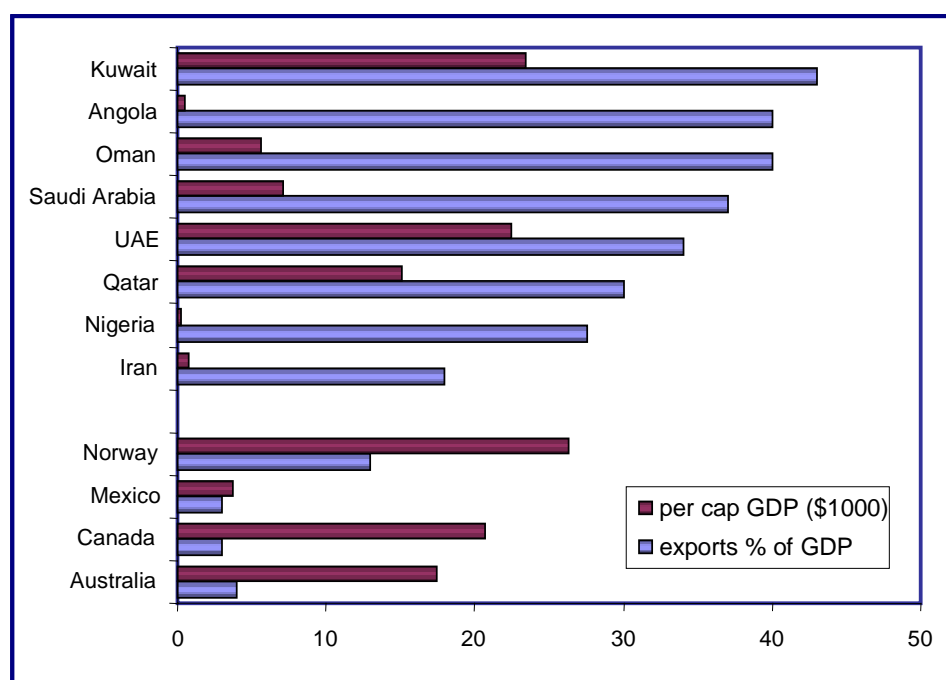
37. In this context, developing oil-producing countries suffer GDP losses of between 3% and 5.1% by 2010 (relative to 1990 levels): will significantly impact national development and social welfare aims.

38. This will be the cause since the dependence of these countries are higher than others in relation to the percentage of exports of GDP. The following figures highlight such dependency compared it to some developed countries.

### **GDP reduction under developed countries 10% CO<sub>2</sub> reduction case:**



## *Energy Export Dependence & National Wealth*

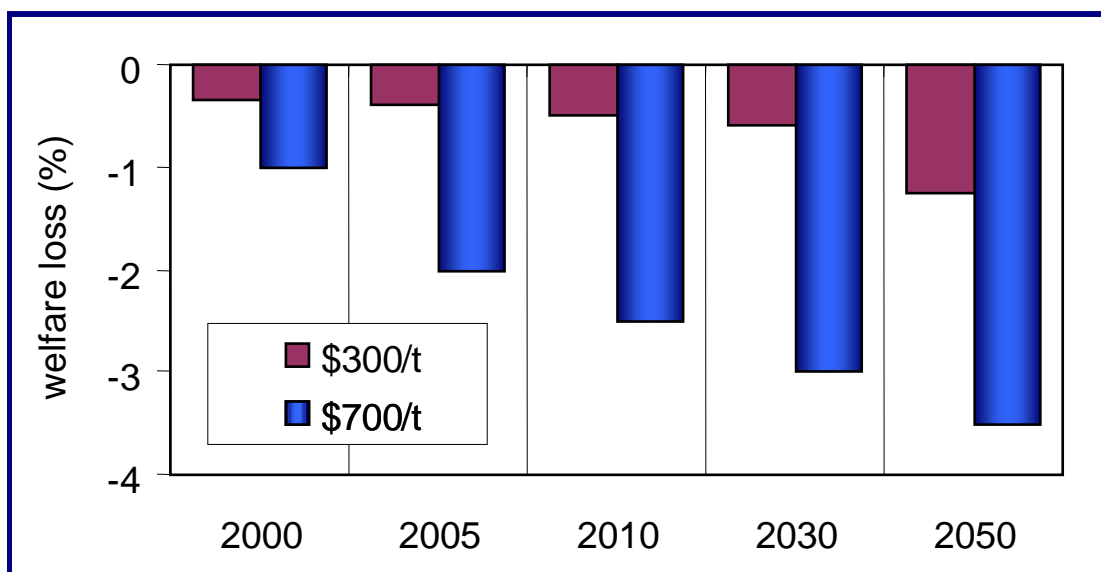


### B. IMPLICATIONS ON WELFARE

39. The rationale for carbon taxation is provided by the theoretical assumption that a cost-effective outcome in aggregate economic terms can be obtained if all countries equalize their marginal cost of emission reduction.

40. However, numerous studies on carbon taxation have shown that it can have significant macroeconomic effects and produce substantial welfare losses in practice.

41. The **GREEN** model, for example, considers the implications of imposing carbon taxes at rates of \$300/t and \$700/t (achieving, respectively, 1% and 2% per year global CO<sub>2</sub> emission reductions relative to a rising baseline). The model assumes global action, based on an equal global carbon tax introduced in all countries. The results are expressed in terms of welfare loss effects compared to a BAU scenario in which economic growth slows from 2.5% in 1990 in OECD countries to 1% in 2100 (and from 4% to 3% in developing countries). The Figure below depicts the global welfare losses sustained in each of the two tax scenarios. By the year 2010, they are shown to be 0.5% and 2.5% in the \$300/t and \$700/t tax case respectively (compared to the BAU base scenario).

**GREEN Model: global welfare loss**

42. The **OPEC** World Economic Model, specifically developed to examine the impacts of CO<sub>2</sub> abatement policies upon oil markets and OPEC members, provides insight into differences between a BAU reference case and various control scenarios. One scenario models the implications of the type of carbon taxes proposed in the early 1990s, such as the EU's \$10/bbl and the US Btu tax. According to the model, such taxes give rise to a 3% drop in average GDP growth for the world as a whole between 2000 and 2010 compared to the BAU case (from 2.98%/yr to 2.89%/yr).

43. Despite differences in model assumptions and parameters, an analysis of the modelling results offers some powerful indications of the impact of carbon taxation. The models essentially agree that in the short to medium-term; the introduction of carbon taxes will have economic implications and leading to global welfare losses and reduced GDP growth. This will result in negative trade to developing countries due to lower growth.

### C. DISTRIBUTIONAL IMPACTS

44. Any tax that is set at a level sufficient to generate sizeable revenue, as in the EU, or alter economic behaviour is likely to have impacts on the economic viability of certain activities, which are often concentrated in particular regions or countries.

45. A carbon tax could have the following distributional effects:

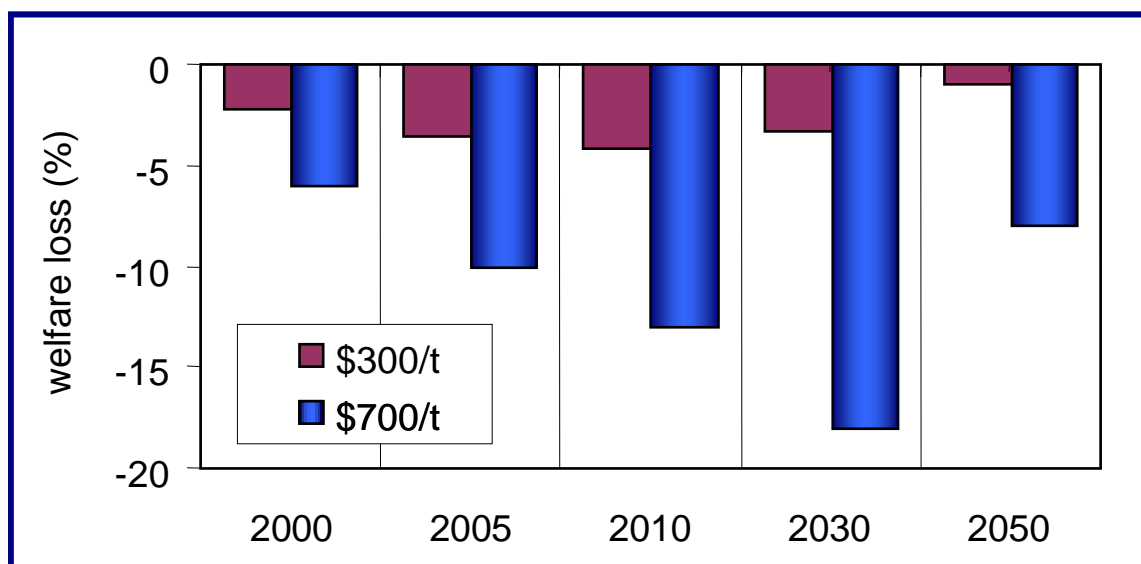
- A tax on CO<sub>2</sub> emissions will reduce demand for fossil fuels. This will tend to reduce both the overall volume of exports from energy producers and, by reducing pressure on reserves, the price that can be commanded on the world markets. For countries that have large fossil fuel reserves and are dependent on fossil fuel exports, this will lead to declining fossil fuel rents with resulting implications for their national economies.
- If domestic action taken in response to a carbon tax is sufficient to significantly depress overall economic consumption, this may lead to a decline in levels of imports. This is likely to be very country-specific and will particularly affect those developing countries whose economies are based upon a small range of exported commodities.

- Even with equal marginal costs of abatement, total costs of reducing emissions would differ from country to country. A large burden would fall on OECD countries and economies in transition in the early years, shifting to developing nations in later years.

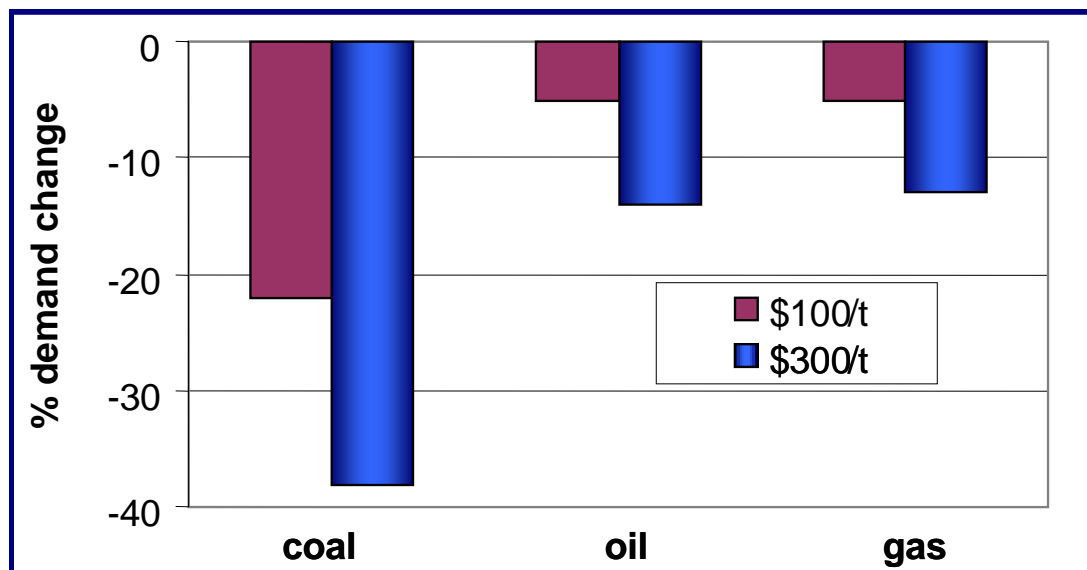
46. To quantify some of the effects that a carbon tax might have on the distribution of wealth across nations, we must turn to the results of economic modelling.

47. The **GREEN** model shows a marked difference between economic impacts on the world as a whole and energy-exporting developing country regions. Both tax rates modelled (\$300/t and \$700/t;) lead to substantial losses for the latter, amounting to 4.2% and 12.5% from the BAU base scenario by the year 2010, depending on the severity of the tax (see Figure below). This compares with welfare losses of 0.5% and 2.5% for the world as a whole.

**GREEN: welfare loss in energy-producing developing countries**



48. The **IEA** World Outlook Model was developed as a tool for examining energy market trends and modelling a large number of separate geographic regions. It simulates the effects of two different levels of carbon tax (\$100/t and \$300/t) applied to fossil fuels in proportion to their carbon content, but in addition to all existing taxes and duties. The underlying BAU energy scenario projects a world energy demand increase of 48% from 1990 to 2010. The projected demand reductions for the main fossil fuels are shown in Figure below. This graph makes evident the powerful theoretical impact of such taxes on fossil fuel consumption, and by association, on those economies that are dependent on their export.

**IEA Model: tax-induced demand reductions for the year 2010**

#### D. SPILLOVER EFFECTS

49. Damages to developing countries could be significantly reduced if developed countries phase out and eliminate existing energy and fuel taxes and subsidies. Spillover effects on developing countries would be reduced, and impacts on developing oil-exporting countries would be cut at least in half.

50. There are four important changes in the terms of trade that account for these spillover effects:

- Imports from developed countries will rise in price due to higher energy costs;
- energy exports will fall in price because of decreasing demand;
- exports of less energy-intensive goods to developed countries will fall in price because of a drop in demand for all imports by developed countries; and
- exports of energy-intensive goods from all countries will rise in price.

51. These changes in terms of trade lead to wealth transfers among countries, the largest of which are from developing oil-exporting countries to all others. Developed countries benefit from the lower price of oil on world markets, and also receive higher prices for their exports to developing countries. On balance, terms of trade effects are:

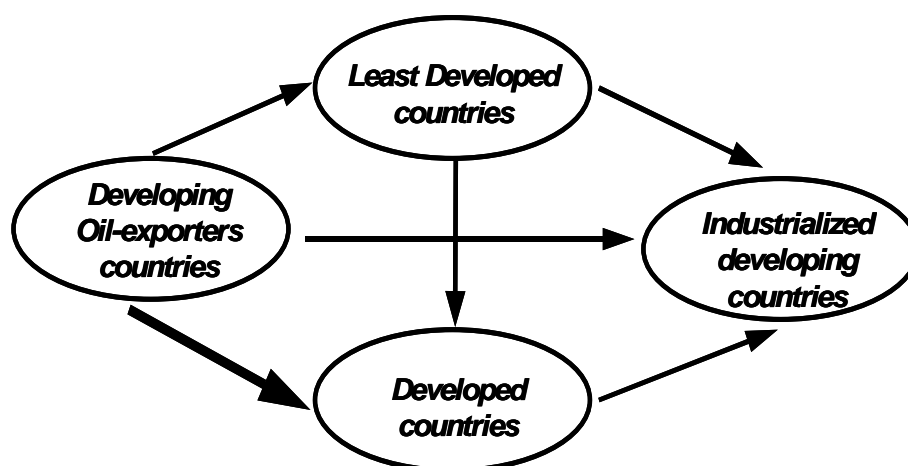
- Very harmful for developing oil producers;
- mostly harmful for poorer developing countries, whose lower oil import costs are offset by much higher prices for imports from developed and other developing countries and lower prices for exports; and
- beneficial for larger, developing oil-importing countries with infrastructure to expand production of energy-intensive goods for exports or domestic consumption;
- largely beneficial for developed countries energy importers, who benefit from lower prices for oil imports, higher prices from exports to developing countries, and lower prices from energy-intensive imports from developing countries, but suffer from higher prices for energy-intensive imports from developed countries.

52. Developing oil-exporting countries are disproportionately affected by actions of developed countries to limit their carbon emissions. The mechanism by which these impacts occurs is as follows:

- Oil demand from developed countries will fall due to limits on carbon emissions and (effectively) a higher tax on oil use.
- world oil prices will fall due to lower demand.
- oil production and exports will be reduced in response to lower prices.
- export earnings of developing oil-exporting countries will fall due to lower export volumes and prices.

53. Other trade spillovers will also harm developing oil-producing countries. A general reduction in levels of economic activity in developed countries, compared to baseline levels, will reduce demand for other exports. Oil-exporting countries will also face higher costs for imports from developed countries, especially energy-intensive imports. Specialized oil-exporting countries, such as Saudi Arabia, that are more heavily dependent on oil export revenues will be harmed the most through changes in oil prices.

54. Figure below illustrates how wealth is transferred among regions through changes in oil prices.



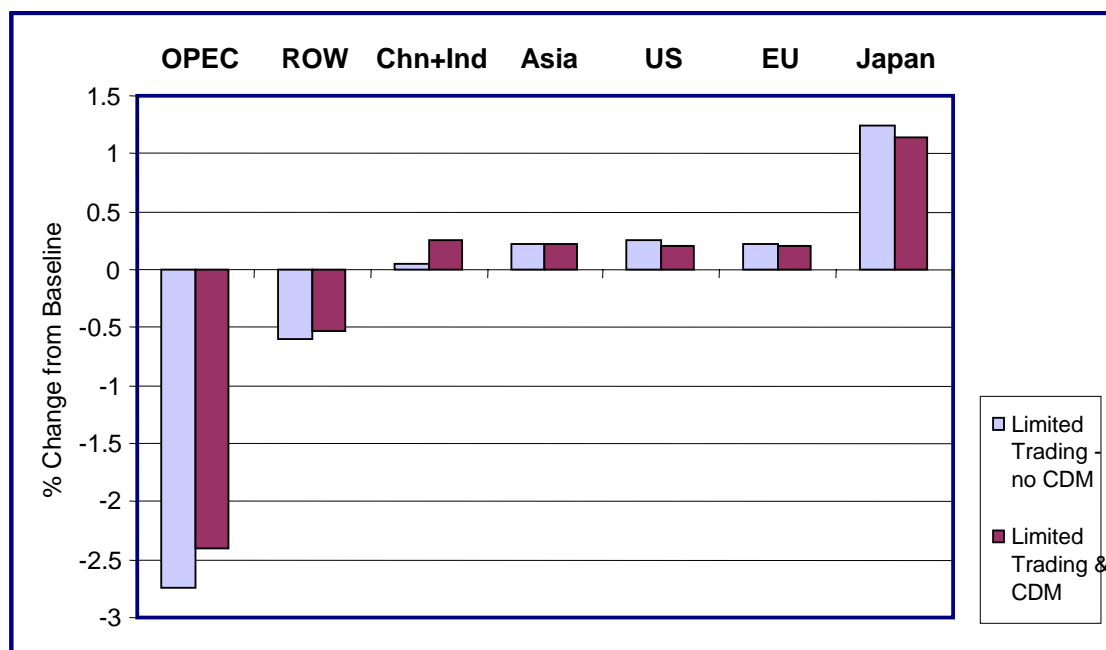
***Magnitude of wealth transfer depends on how Kyoto Protocol is implemented.***

**Wealth Transfer**

55. Terms of trade changes produce these spillover effects. Terms of trade move against developing oil producers and other poorer developing countries as oil prices fall and import prices rise (see Figure below). Developing oil-producing countries experience erosion in terms of trade as prices received for exports fall and prices paid for most imports rise. Other poorer developing countries must pay more to developed countries for imports and earn less for their exports of goods and services.

## Terms of Trade Move against Most Developing Countries

(Price of exports relative to price of imports)



## V. CONCLUSIONS AND RECOMMENDATIONS

56. There are several areas in which the WTO trade and environment agenda can interact with energy exports and the interests of developing energy producing and exporting countries such as Saudi Arabia. As both global trade and environmental policy become increasingly interrelated, under the auspices of the World Trade Organization (WTO) whereby the adoption of measures to mitigate the impact and alleviate the trade implications on developing countries, particularly energy producing and exporting among them, and improve their market access is of importance.

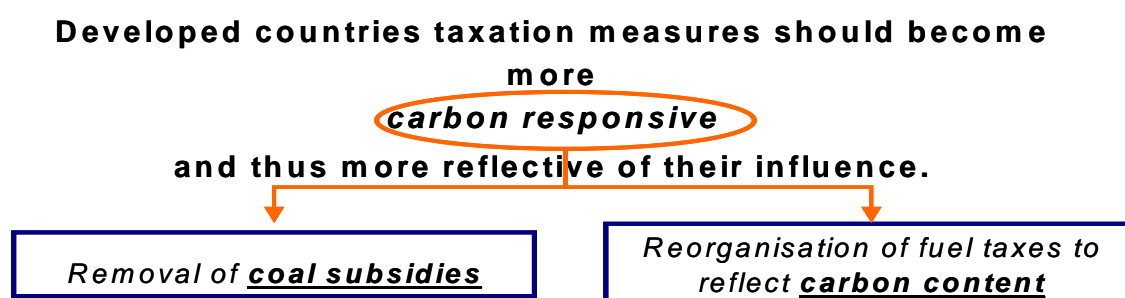
57. There are a number of ways in which environmental mitigating actions of one country may impact the economic interests of another country. However, there are a number of areas in which countries pursuing environmental objectives (such as climate change policy) may contravene their WTO obligations and seek to protect their domestic interests. As these actions may have significant implications for energy (and related) exports from developing countries.

### A. MARKET IMPERFECTIONS AND MARKET INSTRUMENTS

58. The reduction of market imperfections and distortions with regard to global and domestic energy markets would generally benefit developing countries, in particular oil producing. At present, the use of energy taxes within OECD countries discriminates unfairly against oil and petroleum products. A reform of these taxation policies should be considered based on carbon content would be less damaging to the developing oil producing and exporting economies. The extensive subsidization policies concerning both coal and nuclear energy should also be discouraged, as these protectionist approaches are inefficient, environmentally unsound. Also the financial support and incentives of other energy forms needs to be removed. Therefore, the main areas of market distortion in global and domestic energy markets are through the use of subsidies and the structure of existing and planned OECD country energy taxes, subsidies and incentives need to be addressed.

59. Policies and measures that aim to reduce energy market imperfections and distortions are important for developing oil producing countries and their fuel exports. A more cost-effective and environmentally effective taxation regime would reflect carbon content. At present, however, oil taxation is excessively high in many OECD countries whilst coal, a more polluting fuel, is often subsidised. This imbalance could be rectified by reforming taxation in OECD countries.

60. Having explored the economic implications and design problems, as well as some of the main international policy dilemmas associated with energy/carbon taxation, the main arguments against the introduction of such a tax can be summarised.



- **Economic impacts.** The introduction of carbon tax could depress the world economy further with important spillover consequences for developing countries (particularly those highly reliant on fossil fuel exports). Model results indicate that negative macroeconomic effects such as reduced GDP growth and welfare losses could result and retard the development of developing country economies. Reduced growth in highly taxed regions may reduce demand for imports from developing regions, whilst reduced demand for fossil fuels and resulting falling prices could most harm developing energy-exporting countries. Such outcomes would clearly be counterproductive to development policy.
- **Equity and distributional issues.** Carbon tax, clearly distribution issues constitute a major problem. Increasing taxation would particularly affect the fossil fuel sector (and at the international level, countries such as Saudi Arabia states whose national incomes rely upon fossil fuel exports), as well as energy intensive industries. In terms of effects on different income groups, a carbon tax without any compensating measures could be significantly regressive, with differences across countries coming from, among other factors, the reliance on personal vehicles, and the total mix in household energy consumption. A tax with severe distributional effects would contradict the policy aim of assisting development and sustainable growth in developing countries.
- **International trade issues.** Competitiveness concerns arising from differential tax, subsidy, and incentive levels could result in the imposition of trade barriers and prove regressive in terms of promoting the role of developing countries in global trade patterns.

61. Therefore, we request that this issue is to be included under the negotiations process as outlined in the introduction section.