

## REMOVING MARKET DISTORTIONS: A PREREQUISITE FOR SUSTAINABLE DEVELOPMENT

JEAN-PHILIPPE BARDE\*

### I THE CONCEPT OF SUSTAINABLE DEVELOPMENT

Sustainable development ('SD') was defined by the World Commission on the Environment and Development in 1987 as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.<sup>1</sup> Whilst this general definition looks *a priori* simple, its practical implications for policy are complex and multidimensional, taking into account the three economic, social and environmental 'pillars' of SD. Meeting the needs of the current generation requires that the total *flow* of (current period) consumption possibilities, environmental protection, and social development be maximised. Meeting the needs of future generations requires that a non-degraded capital *stock* be passed on to them. This capital stock comprises four components: (1) the *man-made capital* (machinery, equipment structures, and all other forms of man-made assets), (2) the *natural capital* (renewable and non-renewable resources, biodiversity, all natural assets that enter the production process, provide amenity and life support), (3) the *human capital* (knowledge, skills, education and human health) and (4) the *social capital* (network of shared values and norms that facilitates cooperation and communication between human groups).

Sustainable development encompasses all four dimensions of capital, but the main focus and challenges are most often put on the *natural capital*. Sustainable development can be interpreted as non-declining welfare over time; in this context, a non-declining capital stock is a minimum requirement. The key issue is if, and how far, natural and man-made capital can substitute for each other at the margin, ie the depletion of one type of capital can be offset at the margin by another asset, while maintaining the same potential source of welfare.

---

\* Former Head of the National Policies Division, Organisation for Economic Cooperation and Development ('OECD') Environment Directorate. This paper is based on an earlier paper: Jean-Philippe Barde and Outi Honkatukia, 'Environmentally Harmful Subsidies' in Tom Tietenberg and Henk Folmer (eds), *The International Yearbook of Environmental and Resource Economics 2004/2005* (2005) 254 and OECD work.

<sup>1</sup> World Commission on Environment and Development, *Our Common Future* (1987) 254-8.

If all forms of substitutability are considered equivalent in terms of welfare, in particular if both man-made and natural capital are considered as substitutable, this corresponds to the concept of *weak sustainability*: whatever form of capital is bequeathed to future generations does not really matter, provided total welfare remains constant. If, however, it is considered that both forms of capital are not substitutable, then, specific policy rules need to be deployed for managing and transmitting to future generations the natural capital. This is the *strong sustainability* concept. Of course, there are many cases of *partial* substitutability, in particular when man-made assets replace natural ones; this is indeed one key feature of modern economies. But in a strong sustainability context, one must make sure that key natural resources are preserved and transmitted to future generations. This involves the maintenance of a 'critical stock' of natural capital.<sup>2</sup>

## II MARKET DISTORTIONS AND SUBSIDIES

Implementing sustainable development implies the deployment of a battery of complementary tools and policies. In particular, preserving natural capital requires that natural resources be adequately measured and accounted for. Economic theory shows that if all cost associated with human activities are properly accounted for (internalised), these activities would be set at an optimal level where all costs and benefits, including those related to the 'natural capital', are equal at the margin. Economic activity causes pollution, degradation and, in many instances, exhaustion of resources. Whether a weak or strong sustainability criterion will be applied is largely (but not exclusively) a function of the value attributed to the natural capital and how far this value is internalised in the market.

On figure 1, the marginal private cost curve ('MPC') intersects the demand curve ('D') so that a quantity ('Q0') is produced at price ('P0'). Accounting for the external cost associated with the production increases the cost so that the marginal social cost curve ('MSC') (including private plus external cost) intersects the demand curve at point B with a quantity  $Q^* < Q_0$  produced at price  $P^* > P_0$ . The difference in output  $Q - Q^*$  represents *the market failure*. Hence, the primary role of government is to ensure that externalities are properly internalised. This can be achieved through a variety of measures, like regulations, taxes and emission permits; for instance, a tax could be set at level  $P^*$ .

If polluting activities or the use of natural resources (e.g. water) are subsidised an additional distortion is introduced, resulting in more environmental deterioration. On figure 1, if a subsidy is paid to the producer, the marginal private cost curve is shifted down to MPC-Subs. The output level is increased to  $Q_1 > Q_0$  and a lower price  $P_1 < P_0$ . The excess production ( $Q_0 - Q_1$ ) represents a *policy failure*, i.e. a misconceived and distorting public intervention resulting in increased

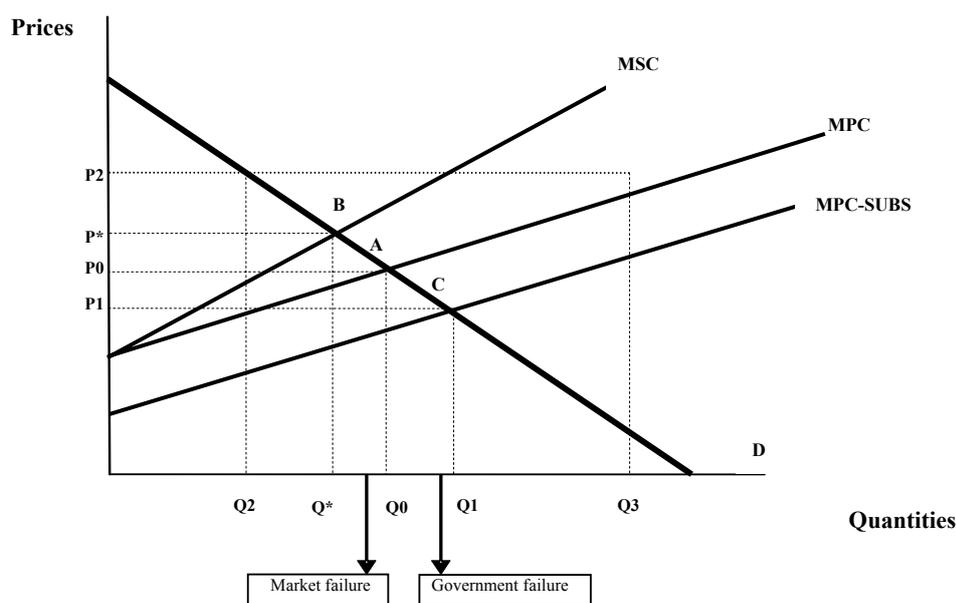
---

<sup>2</sup> See for instance David William Pearce, Anil Markandya and Edward B Barbier, *Blueprint for a Sustainable Economy* (1989).

environmental damage. In this particular case (other configurations can be conceived), the market and policy failures are added up.

Price support is another type of subsidy (widely used in agriculture in many countries). If for instance the government sets a price at  $P_2$  to support the producer's income, the output will increase (e.g. to  $Q_3$ ) and the government may need to take specific measures to guarantee the purchase of the quantity  $Q_3-Q_2$  which would otherwise not be purchased at price  $P_2$ .

FIGURE 1



### III WHAT ARE ENVIRONMENTALLY HARMFUL SUBSIDIES?

There are many forms of subsidies in OECD countries. A subsidy can be deemed as potentially harmful to the environment when it results in more environmental damage that would otherwise occur. For instance, support to polluting inputs (e.g. pesticides, coal) or support to environmentally sensitive sectors, particularly agriculture, the fishery industry, energy production, transport and heavy industries. Most of the support measures take the form of cost-reducing support (e.g. support to infrastructure, research and development, material and energy inputs, etc) or the form of revenue enhancing support (e.g. market price support for particular products). These support measures often lead to increased use of (possibly

polluting) inputs and increased production levels. Encouraging production augmentation through such support measures increases the risk of environmental damage from production and resource use.

#### *A Subsidies Take Many Forms*

The most obvious form of subsidy is direct payments (grants) or soft loans; but producers' price support (mainly in agricultural sector), pricing below marginal cost (e.g. in the area of transport), or tax exemptions are very widespread. Environmentally harmful tax provisions are a typical example. The OECD database on environmentally related taxes documents 1150 tax exemptions, in particular related to energy: energy intensive industries (e.g. cement, iron and steel) benefit from substantial energy tax exemptions.<sup>3</sup> Coal is also benefiting from very low taxation, if any (see figures 3 and 4). In the transport area, tax-free kerosene for international aviation is a case in point: the rapid growth of air and maritime transport which are virtually tax free; the growth forecast for air transport indicates predictable unsustainable trends.<sup>4</sup>

#### *B Subsidies Are Measured in Different Ways*

The concept of a subsidy, or more generally a 'support measure' is not simple, in particular when dealing with different sectors and practices. Table 1 summarises the main measurement approaches.

---

<sup>3</sup> See for instance the OECD /EEA database on environmentally related taxes, <<http://www2.oecd.org/ecoinst/queries/index.htm>> at 16 January 2007.

<sup>4</sup> See OECD, *Decoupling the Environmental Impacts of Transport from Economic Growth* (2006).

**Table 1. Overview of subsidy measurement approaches<sup>5</sup>**

<b>Approach/Description</b>	<b>Strengths</b>	<b>Limitations</b>
<b>Programme-aggregation:</b> Quantifies financial transfers associated with various government programmes. Aggregates programmes into overall level of support.	Captures transfers whether or not they affect prices. Can capture the overall cost (which is higher than the direct cost) of government lending and insurance.	Does not address questions of ultimate incidence of pricing distortions. Sensitive to decisions regarding inclusion of programmes. Requires programme-level data.
<b>Price-gap:</b> Evaluates positive or negative 'gaps' between the domestic and border prices. Also known as Market Price Support.	Can be estimated with relatively little data. Useful for multi-country studies. Good indicator of pricing and trade distortions.	Sensitive to assumptions regarding 'free market' and transport prices. Understates full value of support by ignoring transfers that do not affect end-market prices.
<b>Resource rent gap:</b> Estimates the difference between the full economic rent and the price paid for exploiting a natural resource.	Relevant for natural resource sectors such forest and water.	Data intensive. Sensitive to assumptions.
<b>Marginal social cost approach:</b> Estimates the difference between the marginal social cost (that internalises all externalities) and the price paid.	Most comprehensive approach. Used for transport.	Data intensive. Requires a significant amount of modeling. Sensitive to assumptions and has a wide range of uncertainty.
<b>Producer/consumer support estimate:</b> Systematic method to aggregate budgetary transfers and consumer transfers (through market price support calculation), to specific industries.	Integrates budgetary transfers with market price support into holistic measurement of support. Distinguishes between support to producers and consumers.	Data intensive. Currently calculated for agriculture and coal production, but not for other sectors.

<sup>5</sup> Based on Doug Koplou and John Dernbach, 'Federal Fossil Fuel Subsidies and Greenhouse Gas Emissions: A Case Study of Increasing Transparency for Fiscal Policy' (2001) 26 *Annual Review of Energy and Environment* 361.

### C Subsidies Are Pervasive

Available data indicates that subsidies are pervasive throughout OECD countries (with wide variations between countries) and worldwide. Every year, OECD countries give about US\$400 billion in subsidies to different economic and often environmentally sensitive sectors (due to the lack of data on energy subsidies and manufacturing, this figure is most probably an underestimate). Government subsidies to various economic activities are often designed to promote regional or rural development, employment and incomes, and in some cases, environmental protection. Protecting economic sectors from international competition and facilitating adjustment is also a frequent reason advanced for subsidies. While policies providing subsidies are introduced for various social or economic reasons, they can distort prices, affect resource allocation decisions and change the amount of goods or services produced and consumed in an economy. In turn, they can have unintended negative effects on the environment that are ignored, or other subsidies and measures are put in place to counteract those negative effects. These potentially harmful effects on the environment should be assessed through a careful analysis.

*Agriculture* is the sector for which an extensive and long-standing data-set has been developed, in particular by OECD. Agricultural subsidies are particularly high. In 2004, estimated total support to agriculture amounted to US\$377 billion which represents 1.11 per cent of GDP in OECD countries and of which US\$279 billion represented support to producers. Some of these support measures contribute to increasing agricultural production and thus the use of land and water resources. Ranking agricultural policy measures according to their potential impacts on commodity production shows that *market price support*, *output payments* (per output unit produced) and *input subsidies* (such as fertiliser, pesticide, water and energy subsidies) produce the greatest impact. In general, other things being equal, the more a policy measure provides an incentive to increase production of specific commodities, the greater is the incentive for monoculture, intensification (greater yields), or bringing environmentally sensitive land into production, and the higher is the pressure on the environment.<sup>6</sup>

During the 1990s, many OECD countries began to take steps to reduce and restructure their agricultural support policies in an effort to reduce overproduction and trade distortions, and to encourage more environmentally sound use of land, soil and water. The current reform of the European Union Common Agricultural Policy is an important step in this direction.<sup>7</sup> However, the pace of these developments has been modest and subsidies remain high in some OECD countries and for some commodities, which may cause adverse effects on the environment. The share of market price support, output payments and input subsidies, which are potentially the types of agricultural support exerting the greatest pressure on the

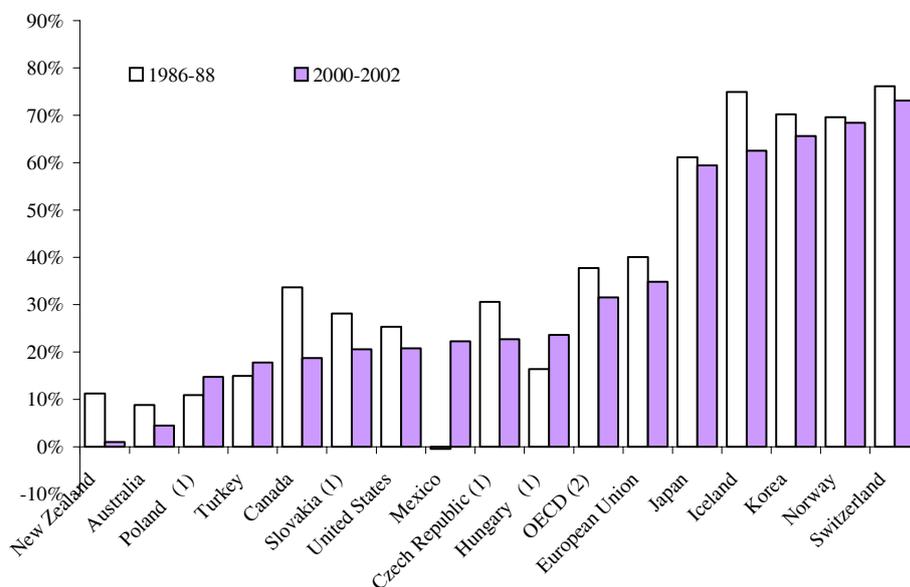
---

<sup>6</sup> See generally, OECD, *Environmentally Harmful Subsidies: Policy Issues and Challenges* (2003).

<sup>7</sup> See European Commission, 'The Common Agricultural Policy Explained' <[http://ec.europa.eu/agriculture/publi/capexplained/cap\\_en.pdf](http://ec.europa.eu/agriculture/publi/capexplained/cap_en.pdf)> at 16 January 2007.

environment, have decreased marginally since the mid-1980s, but they still account for nearly 80 per cent of the producer support in OECD countries. There are wide variations among countries. Australia and New Zealand have succeeded in almost entirely removing agricultural subsidies (figure 2).

**FIGURE 2. AGRICULTURAL PRODUCER SUPPORT ESTIMATES BY COUNTRY**  
(Percent of value of gross farm receipts)



Source: OECD, PSE/CSE data base, 2003

Available estimates indicate that *subsidies to fisheries* have slightly declined from US\$ 6.8 billion in 1996 to 6.3 billion in 2003, representing 19 per cent of the value of landing.<sup>8</sup> Some of these subsidies are paid for research and development, surveillance, and management services, which may contribute to the sustainable management of fish resources. Yet the remaining subsidies can help develop and sustain over-capacity in fishing fleets and the over-exploitation and eventual exhaustion of fish stocks. However, the relationship between subsidy removal and better conservation and management of the fish stock is not straightforward.

*Water use* is subsidised in many different forms such as: water abstraction charges below cost recovery, external costs and resource rents; subsidies to irrigation water (irrigation accounts for 75 per cent to 90 per cent of total water use in developing countries and more than one third in many OECD countries); subsidised water prices for households and industry. These support measures inflate demand for

<sup>8</sup> See OECD, *Subsidy Reform and Sustainable Development: Economic, Environmental and Social Aspects* (2006) 29, table 1.

water, undermine the financial viability of the sector and add to environmental pressures, *inter alia* the depletion of water resources, pollution and salinisation of soils. Here again, the potential harmful effects should be carefully analysed, *e.g.* using the OECD checklist.<sup>9</sup> In certain circumstances, appropriately designed support measures can provide positive externalities.

*Australia* went through a major reform of water subsidies in 1994 by introducing a water pricing reform based on full cost recovery and the introduction of water trading, thus moving away from free water entitlements and public provision of water infrastructures. This was further developed by the 2004 'Water Initiative', resulting in better conservation and more efficient use of water resources.<sup>10</sup>

**Table 2. Possible Effects of Subsidy Removal in the Water Sector<sup>11</sup>**

Category	Description of the Subsidy	Possible Effects of Subsidy Removal
<b>Water Abstraction</b>	<ul style="list-style-type: none"> <li>- Under-pricing</li> <li>- Substandard rates of return</li> <li>- Financial assistance for irrigation water abstraction</li> <li>- Indirect subsidy via tax exemption (eg groundwater abstraction tax)</li> <li>- Compensation payments for environmentally friendly farming practices</li> </ul>	<ul style="list-style-type: none"> <li>- Decreased cultivation of water intensive crops</li> <li>- Deterioration of abstraction infrastructure with adverse effects on the environment;</li> <li>- Elimination of technological lock-in effects;</li> </ul>

<sup>9</sup> See Jan Pieters, 'When Removing Subsidies Benefits the Environment: Developing a Checklist Based on the Conditionality of Subsidies' in OECD, *Environmentally Harmful Subsidies: Policy Issues and Challenges* (2003) 143; OECD, *Environmentally Harmful Subsidies: Challenges for Reform* (2005), 37, 88-98.

<sup>10</sup> Rolmand Pittar in OECD, *Subsidy Reform and Sustainable Development: Economic, Environmental and Social Aspects* (2006).

<sup>11</sup> Produced from R Andrea Kraemer and Britta Pielen, 'Environmentally Harmful Subsidies in the Water Sector' (Paper presented at the OECD Technical Expert Meeting on Environmentally Harmful Subsidies, Paris 3-4 November 2003); OECD, *Environmentally Harmful Subsidies: Challenges for Reform*, above n 9, 53-56.

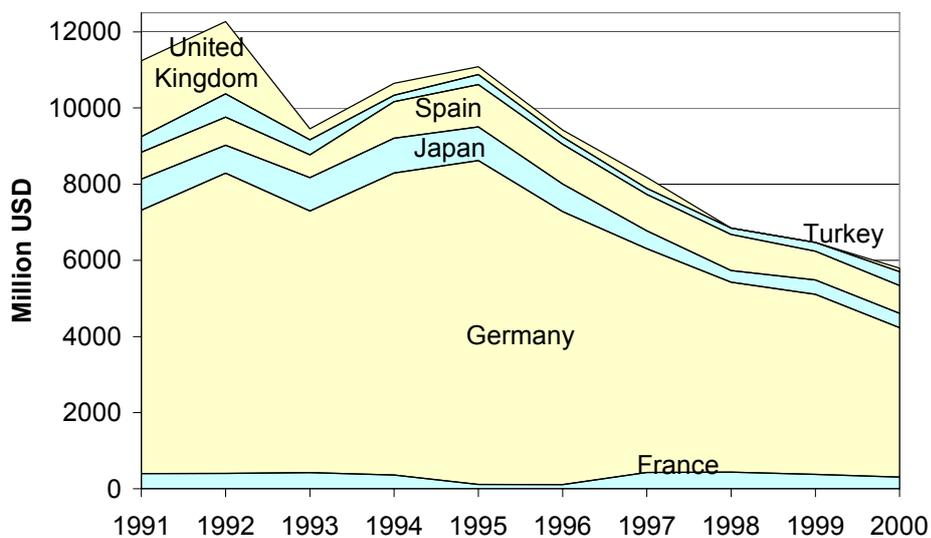
Category	Description of the Subsidy	Possible Effects of Subsidy Removal
<p><b>Water Storage, Supply &amp; Distribution</b></p>	<p><u>Network</u></p> <ul style="list-style-type: none"> <li>- Low interest loans or debt relief for investment in infrastructure</li> <li>- Substandard rate of return</li> <li>- Under-pricing</li> <li>- Tax exemptions (eg Value Added Tax)</li> <li>- Financial support to operation and maintenance</li> <li>- Subsidies for building new and upgrading existing water plants</li> </ul> <p><u>Agriculture</u></p> <ul style="list-style-type: none"> <li>- Irrigation water provision below costs</li> <li>- Financial supporting schemes for investments or maintenance and operation of irrigation systems</li> </ul> <p><u>Industry</u></p> <ul style="list-style-type: none"> <li>- Under-pricing</li> </ul> <p><u>Households</u></p> <ul style="list-style-type: none"> <li>- Prices below cost recovery</li> <li>- Low interest loans for constructing infrastructure for water supply to households</li> <li>- Financial support for investments in water works supplying households</li> <li>- Retrofitting of water-using installations (flush toilets or showers)</li> </ul>	<ul style="list-style-type: none"> <li>- Elimination of subsidy induced technological lock-in effects</li> <li>- Environmentally more benign techniques may loose out against environmentally less friendly but lower priced options</li> <li>- Reduced investment in irrigation infrastructure</li> <li>- Signaling function of prices both for water itself as for water-intensive products is restored</li> <li>- Decreased cultivation of water intensive crops</li> </ul>

Category	Description of the Subsidy	Possible Effects of Subsidy Removal
<b>Water Use</b>	<u>Agriculture</u> - Under-pricing - Cross-subsidisation - Tax exemptions <u>Industry</u> - Exempted from certain taxation schemes - Under-pricing <u>Households</u> - Cross-subsidisation - Under-pricing - Financial assistance for installing certain equipment like ie water saving appliances	- Adjustment of water use to change in prices - Removal of compensation payments for environmentally friendly farming practices may have negative environmental effects - Reduced installation of household water-saving appliances
<b>Waste Water Collection</b>	- Under-pricing - Financial assistance for investments	- Elimination of subsidy-induced technological lock-in effects - Decreased investment in waste water collection infrastructure - Deterioration of equipment; inefficient collection or increased leakage of waste water - Increased nutrient percolation into groundwater

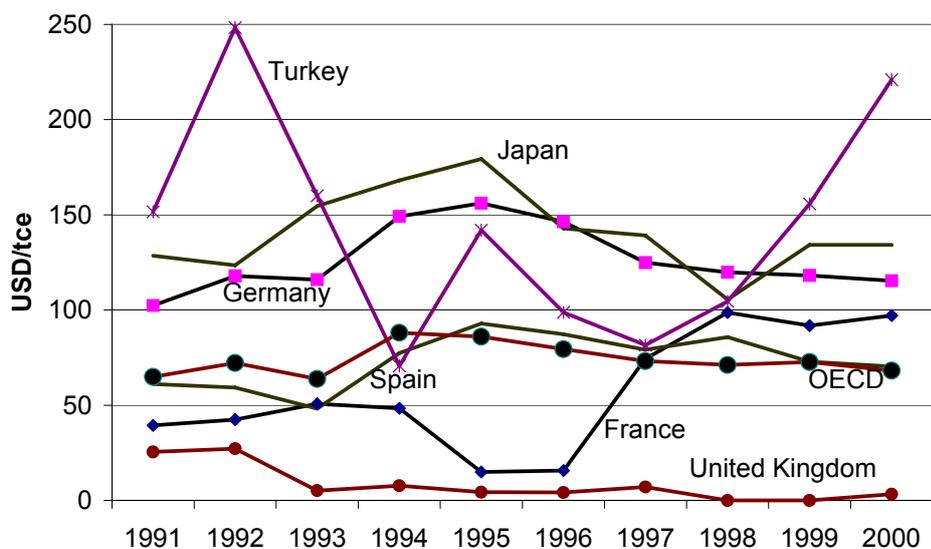
*Subsidies for energy production* in OECD countries are intended mainly to protect domestic producers and maintain employment in given sectors. Data is lacking and, according to various sources, estimates range between US\$20 billion and 82 billion per year. An important portion goes to support coal production, a polluting fuel. Whilst the total amount of support to coal production tends to decrease in several countries (figure 3), the trend is more nuanced if we look at support per ton produced (figure 4).

*Industry* is also subsidised, although it is difficult to obtain detailed data. Environmentally harmful effects can arise when subsidies increase production levels beyond the social optimum, encourage the use of certain raw materials and greater energy consumption or result in a lock-in of inefficient technologies. Here again, the environmental impacts need to be further assessed. Up-to-date and comprehensive data is lacking and not all industry subsidies are harmful (e.g. R&D subsidies for the development of 'clean' technologies).

**FIGURE 3. SUPPORT TO COAL IN SELECTED OECD COUNTRIES  
MILLION USD<sup>12</sup>**



**Figure 4. Support to coal in selected OECD countries  
USD/tons of coal equivalent<sup>13</sup>**



<sup>12</sup> International Energy Agency, *World Energy Outlook 1999 – Looking at Energy Subsidies: Getting the Prices Right* (1999).

<sup>13</sup> Ibid.

In the area of *transport*, the concept of a subsidy or support measure is more complex. One broad definition compares total revenue of the sector with the total social cost of each transport mode. According to this definition, in most European countries, revenue from fuel taxes and specific road user charges, roughly cover the cost of road infrastructure.<sup>14</sup> However, for countries in the lower end of the spectrum, spending on infrastructures exceeds revenue, thus resulting in a subsidy. Another approach compares the price paid for using transport infrastructure and the marginal social cost associated with a specific transport mode. Recent estimates indicate that, in urban areas, the prices for using cars and trucks are generally much too low: it is estimated that to cover social cost, prices should increase by up to 150 per cent in certain urban areas.<sup>15</sup> Another type of support measure is the widespread availability of tax exemptions and rebates for diesel fuel used in road transport, farming and fishing in many countries, or the tax exemption for kerosene used in *commercial aviation*. Forecasts indicate that the explosive growth of air transport and the corresponding CO<sub>2</sub> emissions may not be sustainable in the future.

#### *D Subsidies Are Perverse for Developing Countries*

Subsidies in OECD countries affect the development of non-OECD countries. For instance, agricultural subsidies create a barrier for the import of agricultural products of developing countries. Subsidies to fisheries result in over-fishing, not only in OECD countries, but also in developing countries; for instance, the European Union has agreements with a number of developing countries to fish in their coastal waters, with subsidised highly efficient, sophisticated fishing vessels.

*Tariffs barriers* can be taken as one form of subsidy, holding domestic producer prices above the level of world prices. Anderson *et al* have simulated the effects of removing the tariff and non-tariff barriers of OECD countries, affecting the developing world: the total income loss for developing countries is estimated at over US\$100 billion annually, ie almost twice the total Official Development Aid of OECD countries (US\$51.4 billion in 2001).<sup>16</sup>

*Water-related subsidies* can take several forms and cause a series of environmentally harmful consequences (see Table 3). According to Mona Sur *et al*, farmers across the world seldom pay more than 20 per cent of the full cost of water, thus encouraging wastage, groundwater depletion, pollution, soil salinisation and reappearance of virulent forms of malaria. They also claim that 'full (cost) recovery, to the best of our knowledge, including the recovery of the full investment cost, has not been practiced anywhere.'<sup>17</sup>

---

<sup>14</sup> Chris Nash et al, 'The Environmental Impact of Transport Subsidies' (Paper presented at the OECD Workshop on Environmentally Harmful Subsidies, Paris, 7-8 November 2002).

<sup>15</sup> European Conference of Ministers and Transport, *Efficient Transport Taxes and Charges* (2003).

<sup>16</sup> Kym Anderson et al, *Potential Gains from Trade Reform in the New Millennium* (2000).

<sup>17</sup> Mona Sur, Dina Umali-Deininger and Ariel Dinar, 'Water-Related Subsidies in Agriculture: Environmental and Equity Consequences' (Paper presented at the OECD Workshop on

**TABLE 3. SOME EXAMPLES OF POSSIBLE ENVIRONMENTALLY HARMFUL CONSEQUENCES OF WATER-RELATED SUBSIDIES<sup>18</sup>**

<b>Description of the subsidy</b>	<b>The mechanism through which it may harm the environment</b>	<b>How it may harm the environment</b>
Agricultural price support policies	Incentives for farmers to grow water-inefficient crops in unfavourable environments.	Salinisation, water-logging and/or decline in groundwater tables.
Surface water price	Overuse of water and cultivation of water-inefficient crops. Use of inefficient technologies.	Pollution and depletion of water bodies. Salinisation, elevated levels of water tables & drainage problems.
Electricity price	Substitution of surface water (SW) with groundwater (GW), especially in places where SW supply is inadequate or irregular. Overuse of groundwater due to excessive pumping.	GW levels are lowered, aquifers are depleted and contaminated via intrusion of low quality water from adjacent aquifers or sea water intrusion.
Pesticide prices	Overuse of pesticides and inefficient application management practices leading to high rates of pesticide leaching.	Pesticides contaminate GW aquifers and may create irreversible health damages.
Fertilizer prices	Overuse of fertilisers and inefficient application management practices leading to high rates of fertilizer leaching.	Fertilisers can increase soil salinity and contaminate GW aquifers. They may also adversely affect the development of infants.

*The social justification* of water subsidies can be questionable. In urban areas, subsidised water supply benefits primarily relatively wealthy families who have access to the urban water supply system, while poorer families in rural areas still lack access to potable water.<sup>19</sup> Subsidised irrigation water, often proportional to the surface of land owned, tends to benefit richer farmers. In fact, increasing water prices in developing countries is likely to generate social benefits. In practice, the prices of privately sold water on which poor people must rely are much higher than water supplied through proper supply infrastructures (up to 12 times higher).<sup>20</sup> A 1994 World Bank study shows that 80 to 90 per cent of the richest quintile of the

---

Environmentally Harmful Subsidies, Paris, 7-8 November 2002  
 <<http://www.oecd.org/dataoecd/39/49/35218016.pdf>>).

<sup>18</sup> Ibid 7.

<sup>19</sup> André de Moor and Peter Calamai, 'Subsidizing Unsustainable Development: Undermining the Earth with Public Funds' (1997) Institute for Research on Public Expenditure (IRPE), commissioned by the Earth Council, San José, Costa Rica.

<sup>20</sup> Food and Agriculture Organisation of the United Nations (FAO), 'Water Policies and Agriculture' in *The State of Food and Agriculture* (1994).

population in some developing countries had access to public water supply, while only 30 to 50 per cent of the lowest quintile had access.<sup>21</sup>

*Energy* subsidies in non-OECD countries are particularly high. The International Energy Agency ('IEA') has simulated the effects of removing energy subsidies in eight countries (China, Russia, India, Indonesia, Iran, South Africa, Venezuela and Kazakhstan), where the average subsidisation is 21 per cent. The results indicate on average: a 0.76 per cent increase in GDP, a 13 per cent decrease in energy consumption and a 16 per cent reduction of CO<sub>2</sub> emissions.<sup>22</sup>

The *social implications* of removing energy subsidies are not straightforward; higher energy prices can be *a priori* construed as socially regressive, but, in the case of motor vehicles, in developing countries car owners tend to be concentrated in the higher income segment of the population.

#### IV REMOVING AND REFORMING ENVIRONMENTALLY HARMFUL SUBSIDIES

##### A *Technical Challenge*

If one can suspect that a subsidy that increases polluting outputs or the use of polluting inputs is environmentally harmful, the causality is not straightforward. Complex interactions are involved, such as the structure of the production sector, the structure of the market, the type of environmental policy in place (the 'policy filter'), available technologies and 'autonomous changes' such as technical change and economic development. Figure 5 depicts the linkages and interactions involved with the introduction of subsidies.

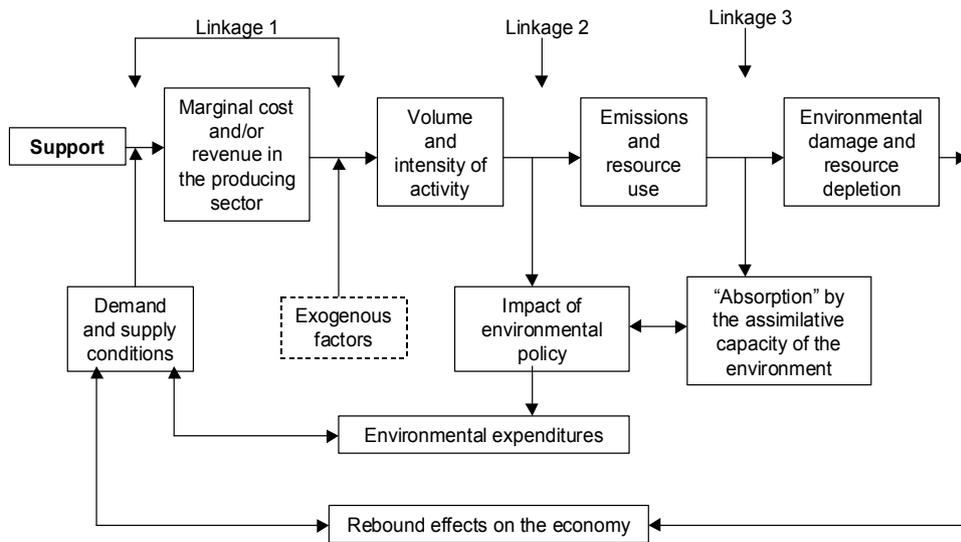
The OECD has developed a 'checklist' approach which helps identify where a subsidy can *a priori* be deemed as environmentally harmful (figure 6). However, this is not the end of the story: when a subsidy is identified as potentially harmful, specific *quantification methodologies* should be developed for each specific case (e.g. for transport or energy).

---

<sup>21</sup> Cited in de Moor and Calamai, above n 19.

<sup>22</sup> IEA, above n 12.

FIGURE 5<sup>23</sup>



<sup>23</sup> OECD, *Improving the Environment through Reducing Subsidies* (1998)



## *B A Political Challenge*

Reforming or removing environmentally harmful subsidies is a key precondition for sustainable development, but one faced with formidable political obstacles. Historically, subsidies have been introduced for a variety of ‘good’, or less good, reasons: protection of regions, segments of the population or economic sectors, employment, competitiveness etc. Reforming these subsidies is inevitably confronted with opposition from lobbies and vested interests. Subsidies also install technological lock-in barriers when promoting the use of certain technologies. The benefits of subsidies are concentrated among a limited number of beneficiaries, while the cost is spread across the multitude of taxpayers. Subsidies also create rent-seeking behaviours and an ‘addiction’ among the beneficiaries, who tend to claim a real ‘entitlement’ to subsidies as an acquired right. Subsidies are often opaque, with nobody having a global and clear picture of the subsidy network.

Removing subsidies inevitably raises social concerns, mainly linked with potential job losses.

## V CONCLUSION

Sustainable development cannot be achieved if the market keeps delivering signals in the opposite direction. Governments should ensure that markets internalise the true environmental and resource values. This involves not only appropriate pricing and tax structure, but also removing existing distortions resulting in environmental and resources degradation. In this context, the issue of environmentally harmful subsidies is central.

There are many ‘win-win’ opportunities linked with subsidy removal in terms of better environmental protection, and more efficient economic systems. Removing environmentally harmful subsidies can also have positive economic and social implications, increasing economic efficiency and removing support in certain instances accruing to the wealthiest part of the population (as in the case of water subsidies in developing countries).

This does not mean that markets are the ultimate solution to sustainable development. In a strong sustainability context, special measures will be necessary to conserve and transmit to future generations specific parts of the ‘natural capital’ which are not renewable and whose destruction would result in irreversible loss. This is a matter of ethical and political choice, even if it needs to be backed by sound economic analysis.