

Global Challenges at the Intersection of Trade, Energy and the Environment

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Subsidies in the Traditional Energy Sector¹

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by Ronald Steenblik³

Introduction

Subsidies encouraging the production and use of energy, particularly fossil fuels, are a topic in urgent need for detailed enquiry and action. Only sporadic attention has been paid to the scale and pattern of subsidies to energy to date. With many governments now poised to devote even more resources to their energy sectors — both to reduce dependency on imported natural gas and oil, and to limit growth in carbon-dioxide (CO₂) emissions — it is essential that they have a clear picture of how much and what kind of support is currently being provided to energy production and consumption and in particular to those energy sources derived from fossil fuels. The recent declaration by the leaders of the Group of Twenty (G-20) nations, committing themselves to “[r]ationalize and phase out over the medium term inefficient fossil-fuel subsidies that encourage wasteful consumption”⁴ further underscores the need for a comprehensive picture of subsidies in the sector.

Regrettably, unlike subsidies to agriculture and fisheries, there is no single on-going monitoring process or consistent database that can be enlisted to serve that process. Nor is there an international, or even plurilateral, “Agreement on Energy” or “Agreement on Fossil Fuels” to provide a framework for negotiating subsidy reductions. What the world has, instead — at least until the announcement of the G-20 initiative, the details of which remain to be defined — is a patchwork of trade-related international subsidy disciplines and hortatory language in a few multilateral environmental agreements (MEA) that appear to have had only a limited degree of influence on subsidies to fossil fuels so far.

This paper discusses the nature and scale of subsidies to the fossil-fuel and nuclear sectors and their impacts on sustainable development, describes existing international agreements that are or could be used to discourage subsidization of fossil fuels, and suggests some prerequisites for international action in this area.

The problem of confusion over subsidies to fossil fuels

Unlike agricultural subsidies, which have been the subject of sustained scrutiny over a period of decades in the context of trade negotiations, the extent and distribution of subsidies to energy sources is less well understood, and information on them is certainly not as transparently available. A relative paucity of reliable data on the extent, nature and impact of these subsidies is a significant barrier to making the case for policy change. The International Energy Agency (IEA, 2006) has stated that:

One of the biggest barriers concerning energy subsidies in the OECD countries is a lack of up-to-date empirical data and analysis. Studies that have been

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⁴ G-20, “Leaders’ Statement”, The Pittsburgh Summit, 24-25 September 2009, available at www.g20.org/Documents/pittsburgh_summit_leaders_statement_250909.pdf

undertaken on energy subsidies in OECD countries show results with remarkably large variance, due to [the different] methodologies used and the variety of definitions of energy subsidy incorporated.

This problem is significantly more acute with respect to non-OECD economies, where high-quality data are generally much less readily available, except on energy prices. Low energy prices, which give rise to consumer subsidies, particularly in developing countries and countries in transition, are monitored by several organizations, including the IEA, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, the International Monetary Fund (IMF) and the World Bank. By comparison, nobody has yet assembled a time-series of data that can provide a sense of trends in production subsidies over time. And the various *ad hoc* estimates that are produced from time to time each use slightly different system boundaries and calculation methods.

Disagreement over the scale of energy subsidies, to a large extent due to a wide variance in the way they are defined and estimated, is not trivial. For instance, ten years ago a U.S. Government study (USEIA, 1999) estimated that the federal subsidies to the energy sector as a whole amounted to US\$ 6.2 billion in 1999. But an earlier analysis by Koplow and Martin (1998) had already estimated that federal subsidies to the oil industry alone fell within a range of US\$ 5.2-11.9 billion. With disagreements of this magnitude in information-rich economies, the level of uncertainty at the global level can only be described as being beyond even reasonable estimation.

The same applies, *a fortiori*, to the much more complex business of assessing the impact of these subsidies on economic and social development and the environment, both at a local and a global level.

A corollary of the lack of an international, standardized system for monitoring energy subsidies is that various analysts approach the task of measuring subsidies to energy differently. Standard international definitions of a subsidy, exist, of course. The WTO's definition, spelled out in Article I of its Agreement on Subsidies and Countervailing Measures (ASCM), should be adequate. Basically, the WTO defines a subsidy as a financial contribution by a government, or agent of a government, that confers a benefit on its recipients. GATT and WTO jurisprudence has helped provide clarity on what counts as a government financial contribution, and when a government action confers a benefit and when it does not.

Naturally, the WTO concerns itself only with subsidies that potentially can distort trade, and distort it in a mercantilist sense — i.e., those that discriminate against foreign suppliers. Subsidies that support consumption of goods in a non-discriminatory way are not of its concern. Second, policies that give rise to price differentials between domestic and international prices — what the OECD calls “market price support” when referring to effects on producers, and “market transfers” when referring to effects on consumers — are included in the ASCM definition of a subsidy only in the particular case of “income or price support in the sense of Article XVI of GATT 1994” — i.e. a financial contribution by a government, such as through intervention purchases, “which operates directly or indirectly to increase exports of any product from, or reduce imports into, a Member's territory” (WTO, 2006, p. 53).

Thus, the main subsidy element missing from the WTO definition (because the WTO addresses subsidies and tariffs through different mechanisms) is a transfer between

consumers and producers through government policies that raise or lower the price of a good or service compared with what it would be in the absence of government intervention. A common form of such a transfer is that created by an import tariff or other trade barrier. A tariff works as a tax on imports, enabling domestic producers to command a higher price. Similarly, an export tax prevents domestic producers from charging the full price prevailing in international markets, and thus benefiting domestic consumers.

To a producer, it matters little whether increased revenues are provided through a direct, per unit subsidy, or through a government-managed increase in the market price. Similarly, an individual consumer is going to be indifferent in choosing between receiving a subsidy to buy a good or being able to buy the good at a price reduced by the unit value of the subsidy. The main difference is that while subsidies should show up in government budgets, market transfers do not.

Thus, a full accounting of subsidies requires taking into account both the subsidies included in the WTO definition and market transfers. It is common to refer to the totality of these two elements as “total support” rather than “total subsidies”.

A word needs to be said about externalities. There are many people, particularly environmental economists, who would like to add non-internalized externalities to the definition of a “subsidy”, particularly in the case of fossil fuels. There are many counter-arguments for why that would be unwise. For one, subsidies are the result of government action; many externalities would exist even in the absence of government. Second, most definitions of a subsidy view it as a transfer, and its optimal level will often be zero. A (negative) environmental externality will vary by time and place, and it is at its optimal level when marginal abatement costs equal marginal damage costs. Third, the uncertainty surrounding an estimate of an environmental externality is usually far greater than for a subsidy; when an externality estimate is combined with a subsidy estimate, the information conveyed by the subsidy estimate is greatly diluted. For these (and other) reasons it is suggested that externalities be identified — and monetized where feasible — but otherwise not included in the formal definition of a “subsidy”.

There is also a pragmatic reason to keep the accounts separate: subsidies have a direct budgetary impact, making them more visible and therefore (in theory) easier to repeal than an externality is to internalize. Knowing the additional externalities created by subsidies is crucial when arguing for subsidy reform. Indeed, defenders of subsidies typically invoke positive external benefits (R&D spillovers, employment effects) — arguments that can more easily be countered by referring to much larger negative external costs.

The nature and scale of subsidies to fossil fuels and nuclear power

Many schemes are used to classify subsidies. The three most common are policy purpose (e.g., reduce CO₂ emissions), administrative form (e.g., grant, loan, tax concession), and economic incidence (e.g., subsidy to outputs, subsidy to intermediate inputs). While the ideal is to classify subsidies according to multiple criteria, practitioners generally prefer economic incidence: it provides a more objective basis for classification than policy purpose, and is more economically meaningful than administrative form.

Subsidies to fossil fuels are provided in various guises. It is convenient to divide them up between those targeted at increasing domestic supplies, and those aimed at reducing prices for domestic consumers. Of course, the final incidence of any subsidy (i.e., in whose pockets it ends up) may differ from its initial incidence — a subsidy to production may be passed on via lower prices to consumers, or a consumer subsidy may allow a producer to charge a higher price — but the distinction suffices for most subsidies, and is crucial when considering intended and unintended trade effects.

In terms of producer subsidies, the most economically distorting are those that are directly linked to production or that support the price of the commodity itself, and that are linked to the use of an input. Included among these policies are government requirements that particular classes of domestic users, usually electric utilities, consume a minimum amount of a particular fuel. Such forms of support are generally provided to producers that have higher cost structures than their foreign competitors. They used to be common for coal in Europe and Japan, and are now more common for renewable energy.

Somewhat less distorting are government policies that support capital formation in an industry. These have largely been phased out for coal producers in OECD countries, but may still exist in some other parts of the world. They are still common, particularly through special capital-depreciation facilities in domestic tax codes, for the oil and gas industry. Many countries also spend public money on R&D supporting their domestic fossil-fuel industries, and on geological surveys to help identify new hydrocarbon deposits.

Support for capital formation, through subsidized credit and direct subsidies for capital equipment, and government expenditure on R&D, are also among the two categories of subsidies most commonly provided to the nuclear power industry. Other forms of support include below-cost provision of government-provided enrichment services; limits on liability resulting from an accident or attack; and the socialization of costs associated with managing nuclear waste. Some countries make inadequate provision for plant decommissioning. And in the last decade several countries have expanded purchase mandates for “green” energy to include nuclear power or have granted them windfall grants of carbon credits at the inception of national carbon-trading schemes (Schneider et al., 2009).

Table 1 sketches out what we know of the current situation regarding fossil fuels in terms of data availability. For the sake of exposition we divide it between the producer and the consumer sides, though the ultimate incidence — i.e., whose pocket a subsidy enriches — will vary from situation to situation. Except in one case, I have assigned no monetary values; rather, I provide a guestimate of order of magnitude, with a small “x” designating a value between 1 and 4, and a large “X” designating a value between 5 and 9. If those order-of-magnitude guestimates are roughly correct, then that suggests that the numbers that are most often quoted — those provided through the under-pricing of fuels (“market transfers”) — probably account for not much more than 60% of total transfers favouring fossil fuels, which may range between US\$ 500 billion and US\$ 700 billion per annum.

The effects of fossil-fuel subsidies

Subsidies to energy have a large bearing on international trade, particularly the energy industries concerned (and those that compete with them) and industries for which energy is an important intermediate input, like steel, aluminium, glass and cement. But they also strain the budgets of many countries and, to the extent they encourage use of more, or dirtier, fossil fuels, have a significant environmental effect.

Market interventions, in particular those that keep prices for fuels lower than their market value, have been the subject of reforms urged by the World Bank and the IMF since the late 1980s. More recently, low energy prices — because of their distorting effects on competition in energy-intensive products, like fertilizers — have proved to be a contentious issue in negotiations over the accession to the WTO of certain energy-rich countries, like Russia. According to the IEA (2007), Russia's internal consumption of natural gas is subsidized at a rate of US\$ 25 billion a year, which is more than twice the annual rate of investment in the Russian gas industry.

Table 1. Summary of incidence of subsidies to fossil fuels (including fossil-fuel-based electricity) and difficulty of estimating their values

Type of subsidy	OECD Countries		Non-OECD Countries	
	Incidence	\$10 ⁹ /yr	Incidence	\$10 ⁹ /yr
<i>Producer subsidies</i>				
Market price support	<i>Uncommon: easy to estimate</i>	x0	<i>Common: moderately difficult to estimate</i>	X0
Direct production subsidies (including tax incentives)	<i>Common: moderate difficulty to estimate</i>	x0	<i>Extent not known: moderate difficulty</i>	x0
Subsidies to energy-producing capital	<i>Very common: complicated to estimate</i>	x0	<i>Abundant: difficult to find data and complicated to estimate</i>	x0
Subsidies for inputs	<i>Common: mainly through government services</i>	x0	<i>Probably very common, especially in the form of free resources: variable difficulty to estimate</i>	x0
Government-supported R&D	<i>Very common: data readily available from the IEA</i>	x0	<i>Common mainly in richer countries: moderately difficult to obtain data</i>	x0
<i>Consumer subsidies</i>				
Market transfers (e.g., regulated low prices)	<i>Common mainly in respect of regulated lifeline rates: data available but could be a big job</i>	x0	<i>Common: good time series available for general price policies</i>	~400
Subsidies to energy-consuming capital	<i>Common (e.g., for automobiles and aircraft): difficult to obtain data and estimate</i>	x0	<i>Probably common: difficult to obtain data and estimate</i>	x0
Total		X00		X00

Source: Global Subsidies Initiative.

The climatic and local pollution consequences of burning fossil fuels are an even stronger reason for paying attention to subsidies that benefit them. Once again, we have only fragmentary information. But the little information we have is significant. A recent study by the OECD (2009) suggests that a multilateral removal of consumption subsidies alone would lower global CO₂ emissions by 10% by 2050, compared with a business-as-usual scenario. Eliminating such subsidies would of course necessitate careful planning, and may require flanking measures to help the poorest members of society adjust.

Past efforts to discipline fossil-fuel subsidies

The problem of subsidies to fossil fuels started to be analyzed in the 1980s, particularly by NGOs and inter-governmental organizations (Kosmo, 1987; IEA, 1988; Burniaux, 1990). An analysis by the World Bank (Larson and Shaw, 1992), however, caught the attention of top officials, and was even mentioned in a Communiqué of the G7 in 1995

[to be confirmed]. Numerous new studies were commissioned (e.g., OECD, 1997) and both the World Bank and the IMF made reform of fuel subsidies a priority. Consumer subsidies were reduced in most of the newly emerging countries of Central and Eastern Europe, and several African and Asian countries, under pressure from multilateral lending institutions, partially or completely deregulated their fuel prices. But they did not disappear.

The entering into force of the WTO's Agreement on Subsidies and Countervailing Measures, in 1995, did not significantly alter the debate on subsidies to energy. For one, many of the countries that were members of the Organization of Petroleum Exporting Countries (OPEC) were not WTO members at the time, and several of them (e.g., Algeria, Iran, Iraq), along with the Russian Federation, still only have the status of observers. Bilateral and regional trade agreements have been largely ineffective in addressing subsidies to energy, for the general reason that, unlike tariffs, a country cannot make a concession on subsidies that selectively benefit only certain of its trading partners.

Interest in doing something at the international level about subsidies to fossil fuels has increased in recent years, however, and this time the conditions are much more auspicious than previously. Clearly, subsidies to energy have an impact on climate change. This was already recognized officially in the Kyoto Protocol, which contains hortatory language calling on signatories to avoid creating new subsidies to fossil fuels. With negotiations on a post-2012 international climate regime soon to reach a climax, the issue was already unlikely to go away.

On the trade side, concerns about the effects of subsidies to fossil fuels on trade in renewable energy technologies and biofuels has led to suggestions that the next WTO trade round [*sic*] be an "energy round", presumably addressing energy subsidies along with other energy-related trade issues. And recent months have seen attempts to forge plurilateral agreements to reduce or eliminate subsidies to fossil fuels, including a new commitment by the G-20 group of nations. Meanwhile, new non-governmental projects, such as the Global Subsidies Initiative of the International Institute for Sustainable Development, which has made subsidies to fossil fuels the focus of its current work, will ensure that the size and effects of these subsidies start to attract the attention they deserve.

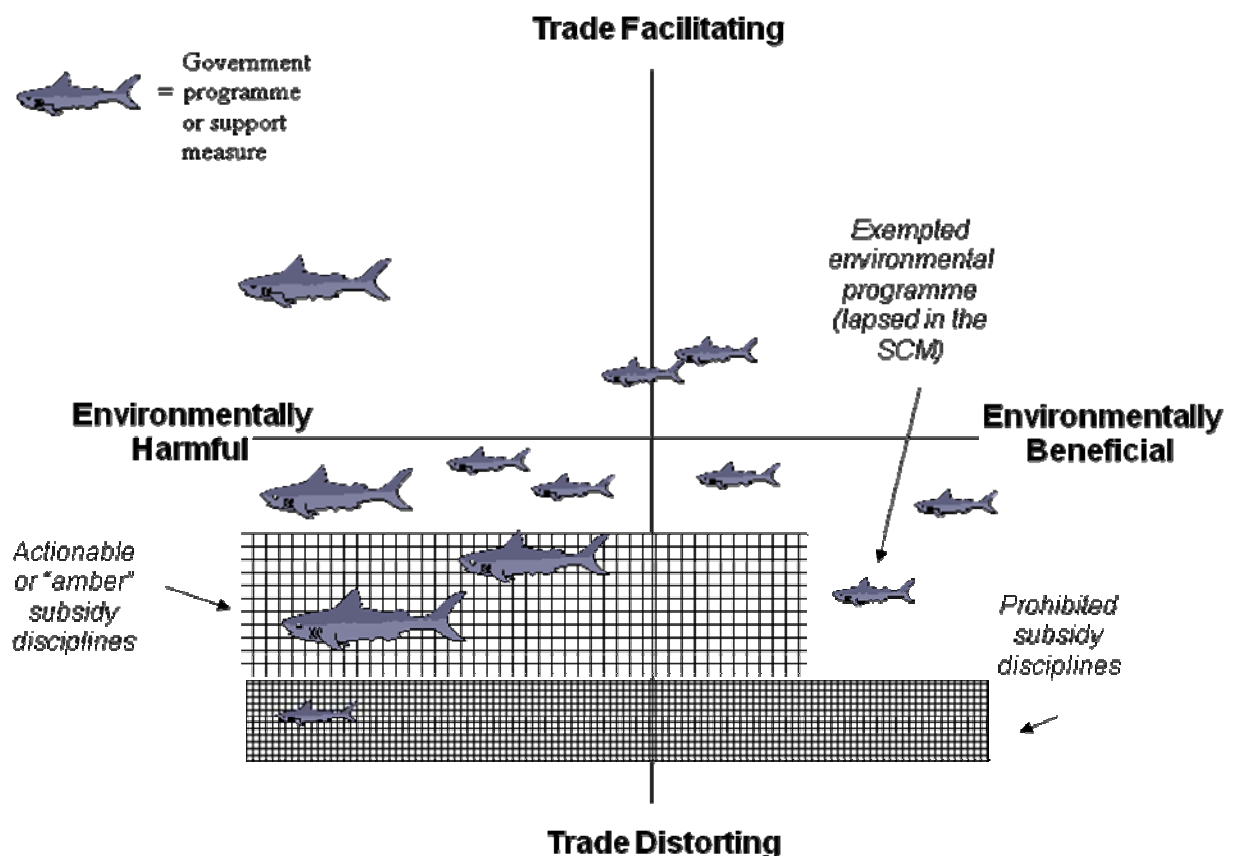
WTO disciplines on energy subsidies and the by-catch effect

Given that much of the interest in reducing subsidies to fossil fuels is motivated by the benefits of doing so for the environment (see, e.g., OECD, 2009), it is worthwhile asking to what extent existing disciplines, notably those of the WTO, already are having a dampening effect on the use of subsidies. If at least some energy subsidies are both environmentally harmful and trade distorting, then current trade-related disciplines are likely already to be having some dampening effect on environmentally harmful subsidies. The supposition that many trade-distorting subsidies are also potentially environmentally harmful (or at best environmentally neutral) can be reasoned logically, and much of the empirical evidence points in that direction. The main empirical challenge, besides data limitations, is to ascertain in particular cases whether a trade-distorting subsidy is actually environmentally harmful — e.g., whether other government interventions, such as limits on pollution, render them environmentally neutral. There are also likely to exist some

subsidies that are environmentally beneficial and trade distorting, subsidies that are environmentally harmful but not trade-distorting (in a mercantilist sense), and perhaps even subsidies that are environmentally beneficial and trade facilitating.

These relationships can be plotted on a graph with two axes (Figure 1): environmental effect and degree of trade distortion of support measures. The placement of the “fish”, which represent support measures, is illustrative only: it is not derived from any particular analysis. The cross-hatched rectangles in the lower half are the “nets” of trade-related subsidy disciplines. The reason for shortening the top rectangle in the lower right-hand part of the graph is that some of the disciplines explicitly allow for subsidies that are deemed to be environmentally beneficial (and assumed to be minimally trade distorting), such as in the “green box” of the WTO’s Agreement on Agriculture (and until 1999 in the WTO Agreement on Subsidies and Countervailing Measures). The looser mesh in the top-most net is meant to imply that some smaller (e.g., de minimus support under Article 6.4 of the AoA) subsidies that are not.

Sectoral support seen from both the environmental and trade perspectives



Current international subsidy disciplines seek to catch (or avert) subsidies that are trade distorting. They are the target. But some subsidies that are also environmentally harmful will also be caught (or discouraged) in the process, whether intentionally or not. To continue the fisheries metaphor, some energy subsidies may become a significant “bycatch” of trade-related subsidy disciplines — but in this case, in contrast with most fisheries bycatch, the extra harvest is desirable.

Of course, many would argue that there are holes in the nets, or that the nets are not well placed. The big fish that evades WTO subsidy disciplines is subsidies to consumption (the upper left-hand corner of the graph). Whether the WTO could, within its remit, extend the nets into that area is doubtful. For this reason, an additional or parallel process, such as that envisaged by the G-20 leaders is needed.

Where to from here?

Experience with previous efforts to address sectoral subsidies at the international level (see, e.g., Steenblik, 1999) suggest that an important prerequisite for success is good information:

- All concerted action on subsidy reform — for agriculture, for coal (in Europe), for fisheries — has started from a thorough, respected description of the extent of the subsidies and the distortions they are causing.
- Moreover, those efforts have been most successful when they have done that for most of the major subsidizers simultaneously. This makes the policy community aware an issue has arisen worthy of attention and reduces the risk that any one country will become overly defensive out of a perception that it is being singled out.
- Concerted action has also only happened when the monitoring of subsidies has become institutionalized — that is, countries know that the monitoring of their subsidies will continue into the indefinite future. One-off studies — as the World Bank published in the early 1990s (Larson and Shaw, 1992), and the IEA in 1999 — can be too easily brushed aside.
- That means, as well, that the method and data have to be respected and documented, and applied in a consistent manner across countries. Normally, that means setting up teams of experts in an inter-governmental agency. What is needed in the short term, however, is the creation of a credible effort that could be sustained outside of these institutions, if need be.
- Concerted action also requires developing a core, and committed coalition of countries willing to push for work and negotiations in international forums. Thus, agriculture had its Cairns group, and fisheries had its Friends of Fish. A coalition for reform of energy subsidies needs to be built as well.
- Finally, the general public must be receptive to the idea of reform. In industrialized countries, most people already regard subsidies to fossil fuels as perverse. But education (and flanking measures) are needed in developing countries and countries in transition. A major part of the project will involve seminars in developing countries, and media training sessions, to help explain the project and the arguments for reform.

The absence of authoritative information on the level and impact of subsidies, in short, denies policy makers valuable information that could inform their decision making, and perversely empowers those with a vested interest in delaying policy changes aimed at addressing trade distortions, human health and environmental externalities and access to energy.

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