

SUMMARY AND CONCLUSIONS

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This Workshop provided the first forum in which experts from a variety of backgrounds (government, academics, researchers and representatives of international organisations and civil society) could gather together in an international forum to take stock of the technical knowledge of subsidies and their environmental impacts in such diverse areas as agriculture, fisheries, energy, industry, transport, forestry and water resources.

Is it possible to agree on a common definition of a subsidy and on methods to measure them? How can the environmental impact of a subsidy, or group of subsidies, be detected and measured? Is there any correlation between the scope or size of subsidies and their harmful impact on the environment? Are enough reliable data and methods available to identify, measure and analyse environmentally harmful subsidies? Such were the main questions that the participants tried to answer.

The Workshop's conclusions can be summarised in four major categories:

- context, synergies and tradeoffs;
- conceptual differences and foundations;
- empirical data on subsidies and their impact on the environment; and
- possible directions for future OECD work.

Context, synergies and tradeoffs

The Workshop agreed that the debate over environmentally harmful subsidies should be placed in the broader context of sustainable development. That entails weighing up the overall environmental impacts of subsidies with their economic and social effects. Measuring the costs and benefits of multiple

government interventions would be a challenging exercise, but one which could significantly assist in framing the issues and generating appropriate questions.

From the standpoint of sustainable development, subsidies are potentially harmful if they adversely affect one or more of the stocks of capital (natural capital, produced capital, human capital and social capital) that contribute to the well-being of humankind. Concrete examples would be subsidies that impede desirable technological change or deepen poverty. Expanding the analysis to encompass the effects of subsidies on human and social capital would be a major step, because the linkages between subsidies and the formation of social and human capital are generally of an indirect nature. Similarly, the importance of technological progress should not be underestimated. And, given that the poor carry much of the burden of protectionist policies, it is also necessary to explore how subsidies affect poverty in both developed and developing countries.

Much emphasis was placed on the need to look not only at the *direct effects* of subsidies on natural capital, but also at their *indirect effects*. By “direct effect” is meant the impact that a subsidy has on the environment as a result of induced changes in levels or patterns of production or consumption. “Indirect effects” occur in more subtle ways. The persistence of poverty, for example, can force people to have to choose short-term degradation of their local environment – even though they know it could undermine the natural capital on which their future welfare depends – just to be able to survive. Deterioration of the environment can also cause the erosion of social capital through loss of community, decline in trust or increased corruption. The measurement of such indirect effects runs up against many difficulties, but should nevertheless constitute an avenue of research for the future.

The Workshop participants agreed that there are significant synergies to be gained from examining the issue of environmentally harmful subsidies, both across sectors and within the sustainable development framework. One of the main aims of the Workshop was to pool experiences and knowledge from the various sectors, and it was clear that there is much to gain from such information sharing. This is especially so given that the various sectors are at different stages in their identification and analysis of subsidies. The sustainable development framework also provides a broader perspective with which to exploit available synergies.

The issue of tradeoffs emerged as a consistent theme in the Workshop in two contexts. First, the broad definition of sustainable development implies that there may often need to be some tradeoffs among the various forms of capital that make up the total stock of capital available to humankind. While it is

desirable to pursue “win-win” outcomes, they may not always be achievable. Second, it was reinforced that the optimal level of pollution resulting from economic activity is not generally zero. As a result, a cautionary note is required: reform or removal of environmentally harmful subsidies will not by itself solve environmental problems, but such steps are a necessary part of the process of improving environmental outcomes.

Conceptual differences and foundations

Defining subsidies

In general terms, the Workshop concluded that the elements of a common definition and framework for subsidies currently exist, although there remains the challenging task of providing a formal, unifying framework. In general, a subsidy is a result of government action that confers an advantage on consumers or producers, in order to supplement their income or lower their costs. This broad definition, or significant elements of it, can be found in the analysis of subsidies across the sectors examined at the Workshop. The terminology that has been used has varied between sectors depending on, among other things, the purpose for which the particular subsidy was adopted. For example, depending on circumstances, subsidies are variously referred to as transfers, payments, support, assistance or aid. Workshop attendees agreed that adoption of a more common rhetoric would help minimise confusion when comparing information from different sectors.

The WTO definition of a subsidy was recognised as being a useful starting point for the analysis of subsidies. It is the only internationally agreed definition of a subsidy and contains most of the elements of the broader definition used by the OECD (with two key exceptions: government-provided general infrastructure and price support). Organising frameworks that can be used to build on the WTO definition to better define and measure subsidies include the effective rate of assistance concept and the existing system of national accounts. A cautionary note was offered on using the term “implicit subsidy”. This has been increasingly used to refer to the monetised value of (negative) externalities generated by an activity and goes beyond the meaning generally ascribed to a subsidy.

In terms of defining what constitutes an environmentally harmful subsidy, the Workshop concluded that the definition adopted by the OECD in its earlier study on reducing environmentally harmful subsidies is a good starting point: “a subsidy can be defined as ‘environmentally harmful’ if it encourages more environmental damage to take place than what would occur without the subsidy” (OECD, 1998). Achieving consensus on measuring techniques and

methods seems to be the most promising avenue, provided there is greater transparency in classifying the information.

Measuring subsidies

The stocktaking of OECD work on subsidies to date has identified five main approaches to measuring them, some of which overlap:

- Programme aggregation: adding up the budgetary transfers of relevant government programmes; in most cases data are at the national, and not sub-national level.
- Price-gap: measuring the difference between the world and domestic market prices of the product in question.
- Producer/consumer support estimate: measuring the budgetary transfers and price gaps under relevant government programmes affecting production and consumption alike.
- Resource rent: measuring the resource rent foregone for natural resources.
- Marginal social cost: measuring the difference between the price actually charged and the marginal social cost.

An OECD paper presented at the Workshop reviews subsidy definitions and coverage in six sectors of the economy (agriculture, fisheries, forestry, energy, manufacturing and transport), along with irrigation water (Honkatukia, 2002). It is clear that there are differences across the sectors:

- *Agriculture*: the most commonly used definitions and measures of subsidies are the producer support estimate (PSE), the consumer support estimate (CSE), the total support estimate (TSE), calculated annually by the OECD; and the aggregate measurement of support (AMS) used in the GATT Uruguay Round and WTO agricultural negotiations. OECD estimates cover market price support, financial transfers (including those to reduce the cost of fixed capital and/or variable inputs), general services (transfers covering the costs of research, marketing and structural/infrastructure services) and consumption subsidies. Data are available with respect to both production and consumption.
- *Fisheries*: the OECD measures transfers to reduce the costs of fixed capital and/or variable inputs; direct payments; general services (transfers covering the costs of research,

management, and enforcement and infrastructure); and, to some extent, price support through market measures.

- *Energy*: the OECD measures grants or soft loans to producers or consumers of energy; market price support; differential tax rates on different fuels; and publicly funded research and development programmes. Data are available with respect to production in the case of coal subsidies.
- *Transport*: subsidies are commonly measured on a purely financial basis as the gap between government expenditures on transport systems and the revenues collected from those systems. Measurement on an economic basis has also been attempted, on the basis of the deficit or surplus of revenues produced by current taxes and charges compared with those that would pertain in an optimum where all transport services are priced at their marginal social costs (including the external costs of congestion, scarcity, accidents, noise, air pollution, climate change and so on).
- *Manufacturing*: measured subsidies include grants and interest rate subsidies, tax exemptions, soft loans, equity investments, tax deferrals and loan guarantees.
- *Irrigation water*: subsidies are measured either as government expenditure covering all or some of the costs of installing and/or maintaining irrigation systems, or on the basis of the water's true value to the irrigator.

The Workshop emphasised the need to:

- consider all types of policy intervention, including budget and off-budget transfers;
- distinguish between transfers and non-internalised externalities; and
- make the presentation of subsidy accounts more transparent.

It would also be better to avoid using the term “subsidy”, but rather to speak of “support”, which is a more neutral term and covers a wider range of transfers (including those for goods and services for which markets are missing).

Ideally, the classification system should be multidimensional, containing information about the *mechanisms* for granting support (basis for implementation); *targets* of that support (intended beneficiaries, such as

producers or consumers); and *policy context* (public priorities and objectives). It should be designed in such a way that data can be organised to produce aggregates for any category of subsidy.

When subsidies are accompanied by regulatory measures to limit inputs, production, depletion of natural resources or damage to the environment, such information should be compiled to assess the environmental *impact* of subsidies, and this dimension should be added to the classification of subsidies. This approach results in two-dimensional matrices with “types of subsidies” constituting one dimension, and “production constraints (conditionality) or management regime” the other. This matrix approach is being used for the agriculture sector and has been used in fisheries. It was stressed that it would be useful to test whether the approach could be taken in other sectors as well.

Environmentally harmful subsidies

Discussion at the Workshop showed the difficulty of distinguishing subsidies that were potentially harmful from those that had no impact, or a beneficial impact, on the environment, as well as the complexity of the relationships between the elimination of a subsidy and its environmental impact. There is not, in fact, a “one-to-one” linkage between the magnitude or type of support in a given sector, and the damage inflicted on the environment. Equally, there is no direct linkage between the elimination of a subsidy and improvement to the environment.

The environmental impact of a support measure depends on a number of characteristics determined by the way in which a given level of support is provided, and the nature of the:

- markets for intermediate and finished products;
- available replacement technologies, products or services causing less environmental stress;
- tax system in force;
- regulatory and institutional framework; and
- local biophysical features of the receiving environment.

To take into account these features and to be able to identify subsidies whose removal would be beneficial for the environment, the Workshop proposed to use a checklist. The checklist is based on the nature of the conditions for support and certain context-specific information.

The checklist classifies the various support measures according to the transfers generated and the method of implementation (market price support, support for inputs, direct income support). A two-dimensional matrix could show the magnitude or size of subsidies on one side and how they are implemented on the other. The Workshop suggested that the checklist could be widened, such as by adding a criterion relating to the political impediments to subsidy reform.

The checklist also raises a series of questions. To what extent do other regulations in place limit or exacerbate damage to the environment? Would the technologies and products likely to replace subsidised technologies and products cause less pollution? What would be the most probable responses of the affected industries in terms of production volume or the rate of natural resource exploitation?

Using this checklist demonstrates that, in the short-run, subsidies that reduce variable costs (such as energy and materials, including water) are more likely to impact on production (and thus emissions) than subsidies that lower fixed costs. The environmental harm of these subsidies is aggravated if they delay the development and dissemination of new technologies that increase resource productivity while cutting back on environmentally harmful effects. Other subsidies likely to have an environmentally harmful effect are those that lower the cost of access to natural resources, and capital subsidies that impede or thwart technological change, locking in potentially less efficient uses of energy and other materials.

The proposed checklist was regarded by participants as a pragmatic approach for providing policymakers with insights that could help them rank subsidies according to their degree of harmfulness to the environment. In addition, it was emphasised that it is important to consider not only the environmental impact of a given subsidy, but the impact of the entire mix of subsidies that are concurrently applied, in view of their interactions, and to examine the tax consequences of withdrawing a subsidy. Finally, the checklist could foster stronger co-operation between various governmental or non-governmental organisations through the sharing of data.

Empirical data on subsidies and their impact on the environment

Despite the progress that had been made, the data on subsidies currently available was found patchy across sectors and countries, and quality was variable. First, the only data available across the economy are those produced for national accounts systems, but the subsidy categories given in that framework are defined very narrowly (do not include market price support, for

example) and related only to gross transfers. Second, because detailed subsidy data available relating to certain products, industries or sectors used different definitions, coverage of policies and methods of calculation and classification, it is not readily comparable. Third, since most data on subsidies have been compiled for reasons other than to analyse their potential effects on the environment, the categories into which subsidies have been aggregated might not be suitable for that purpose. Lastly, it could be difficult to match data on subsidies with information on environmental variables, insofar as data on subsidies often related to a given sector, whereas data on the environment tended to relate to specific products or technologies. In sum, these factors limit the analysis of the potential environmental impact of subsidies.

Data comparability has been achieved in some cases, as in common analytical frameworks of national accounting and the existing sectional support accounts – for example, in calculating the nominal assistance coefficient (NAC), the producer support estimate (PSE), the consumer support estimate (CSE) and the effective rate of assistance (ERA). However, narrow classifications by sector or by national territory are of limited use when countries are confronted with a range of environmental and social threats with global impacts.

Empirical data on subsidies

Agriculture

This is the sector for which the most data are available. Data published annually by the OECD on the overall levels and composition of agricultural support for OECD countries, and those published by the WTO in connection with trade policy reviews, are the main sources of information available. Data for non-OECD countries and at the sub-national level are patchy for some countries.

Irrigation water

No organisation is currently compiling or distributing data on irrigation water subsidies in a comprehensive manner. Nevertheless, some data are gathered by the OECD, the World Bank and certain independent researchers, using one of the two definitions of irrigation water subsidies.

Fisheries

Data have been compiled by the OECD since 1996 and the OECD remains the only continuing systematic effort to measure subsidies to the fishing sector.

APEC, the WTO, non-governmental organisations like the WWF and independent researchers have also undertaken studies, generally of a one-off nature. Overall, there are gaps in the information gathered (especially with reference to tax relief and regional and local subsidies), making in-depth analysis of the data difficult. Market price support is not calculated explicitly, and serious gaps exist for subsidies in countries outside the OECD area.

Forestry

There are no comparable data regarding financial transfers to the forestry sector, either for the OECD countries or for other groups of countries. In the absence of a systematic information-gathering effort, a study launched by the European Forest Institute will go some way towards filling this vacuum.

Energy

Yearly estimates of coal support are regularly reported by the IEA, and date back to the mid-1980s. The European Commission maintains a database on public grants to collieries. But information on subsidies for other forms of energy other than coal is not collected regularly at the international level and are often highly variable. Partial information may be found in the detailed energy policy studies of the IEA Member countries, in *ad hoc* studies by the IEA, OECD, World Bank and independent researchers. Data on prices in the energy sector are also readily available for OECD countries.

Transport

Data on public expenditures on transport infrastructure, external costs and revenue from the use of transport are available for a number of countries. The UNITE research program of the European Commission has collected data for many EU countries and provides the most comprehensive set of data available. The European Conference of Ministers of Transport (ECMT) has modelled optimal charges for the use of inland transport infrastructure in five of its member countries.

Environmental impact of subsidies

Quantifying the environmental impact of subsidies is an analytical challenge for all of the sectors studied.

Agriculture

Most of the studies available analyse the linkages between support for agriculture, production and the effects on water, air and soil, particularly related to farming practices and the use of fertilisers pesticides, and greenhouse gases, but are also starting to look at other environmental effects, such as biodiversity or landscape. There are several studies on the production effects of trade liberalisation in agriculture at the global level, and some progress in the OECD on quantifying the environmental impacts in selected commodity sectors for OECD countries, as well as similar studies for non-OECD countries (FAO, UNEP). A major challenge is to specify the linkages between support, production and multiple environmental effects, which vary significantly at the regional or local level.

Irrigation water

Most of the existing studies make the connection between eliminating subsidies and saving water, but do not otherwise incorporate environmental variables explicitly. There is a lack of data concerning correlations of irrigation water-related environmental indicators (such as intensity of currents, nitrate levels in water, soil toxicity, groundwater levels, and loss of soil productivity due to catchment area salinity) with changes in the amounts of subsidies.

Fisheries

The OECD recently examined the effects of subsidies on trade. The analysis is now starting to increase understanding of the linkages between the various management regimes (open access, catch control and effective management) and subsidies, and putting them in the broader analytical framework of sustainable development.

Forestry

No quantitative methodologies appear to estimate the environmental impact of subsidies in the forestry sector. There are very few studies in this field, and there is a need to establish the linkage between the rate of exploitation of a forest and the level of support.

Energy

Most of the studies carried out in this area focus on the potential impact of eliminating subsidies on greenhouse gases, and on CO₂ in particular. More

recent analysis in the energy sector is more focused on non-OECD countries rather than for the OECD this latter gap needs to be addressed.

Transport

There are many studies analysing the environmental impact of various modes of transport, but generally the studies available provide no way to measure the environmental impact of reducing a subsidy through internalisation of external costs. As mentioned earlier, the ECMT work does address this task.

Manufacturing

No study appears to be available that makes the connection between eliminating subsidies and the impact on the environment.

The main conclusion which emerges is that there are still formidable hurdles to overcome – specifying the relationships, gathering relevant data, and modelling the linkages. Moreover, where studies have been conducted, they limited the examination of environmental impacts to only some of the relevant variables.

Possible directions for future OECD work

A number of avenues for the OECD's short- or medium-term future work were raised, taking account of the Organisation's comparative advantages relative to other IGOs and NGOs. These involve the collection and dissemination of data on subsidies, work to improve the conceptual framework for understanding the linkages between subsidies and their impact on the environment (testing the proposed checklist), reinforcing co-operation between various institutions that are working on the issue, and reviewing the linkages (synergies and tradeoffs) between subsidies and sustainable development.

Practical difficulties in internalising externalities remain central among obstacles to the phasing out of harmful subsidies agreed by OECD Ministers. Overcoming this obstacle requires a coherent prescription for action in light of three distinct, but evolving contexts. First, the conditions under scrutiny – the environment – are changing as we make our observations and measurements. Second, technologies are evolving rapidly, often outpacing changes in policy development. Third, the structures and constitutions of many organisations are undergoing fundamental changes, reflecting changing public concerns and importance of different constituencies.

Development of the work and the establishment of a network of experts, as recommended by the Workshop, will not easily advance removal of obstacles to policy reform without reinforcement of a high-level mandate. Useful outcomes from a series of technical tasks and their successful implementation will continue to depend on firm political commitment.

The Workshop suggested that the OECD undertake the following areas of work.

Supplement existing databases on subsidies, update them regularly and distribute them more widely

Alongside the pursuit of work on collecting data for the agriculture, fisheries, transport, energy and industrial sectors, there is a need to distribute the information gathered by OECD to a wide audience via a website. It was noted, moreover, that the creation of a centralised website serving all practitioners in the field would reduce transaction costs.

Improve the conceptual framework for analysing the environmental impact of subsidies and testing the checklist

OECD is in a good position to stimulate dialogue between experts and conduct peer reviews of the methodologies used or proposed in order to assess the environmental impact of subsidies. It is in this context that the checklist discussed during the Workshop should also be tested. A key question here is whether the starting point should be the environmental impact – making a distinction between the overall and the local impact and working back to the subsidy – or vice versa, *i.e.* to start with the total amount of the subsidies and examine their overall or local impact. In some sectors it is apparent that subsidies are large (such as agriculture, irrigation water and fisheries), while in others environmental issues are significant (such as energy and transport), which suggests that both approaches seem desirable and complementary and would be partly determined by practical considerations. Nevertheless, there was general agreement at the Workshop that subsidy accounts should be designed with environmental analysis in mind, but also recognising that a range of other analytical considerations (such as economic and social impacts) remain important.

Strengthen co-operation between the various institutions working in this area

It was emphasised that it would be useful for the OECD to strengthen co-operation among the various institutions known for their work on subsidies, such as the World Bank, the FAO and the WTO, but also research institutions

and non-governmental organisations that are active in the field and not subject to political constraints in choosing their research programmes. It would also be desirable to set up a network of experts – modelled on that of statisticians in the area of national accounts – to exchange views and share experience and data on the better incorporation of subsidies into the system of national accounts, and on the analysis of subsidies and their environmental effects.

Examine the linkages between subsidies and sustainable development

Subsidies often have an impact on more than one aspect of sustainable development – the impacts can be both positive and negative for the environmental, economic and social pillars. In order to provide a better understanding of the overall benefits and costs, tradeoffs and impacts of subsidy reform, the environmental aspects should not be studied in isolation but in the broader context of sustainable development.

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