



AN OECD-WIDE INVENTORY OF SUPPORT TO FOSSIL-FUEL PRODUCTION OR USE

Key findings

- The OECD has compiled an inventory of over 550 measures that support fossil-fuel production or use in its 34 member countries. Those measures had an overall value of about USD 55-90 billion a year between 2005 and 2011.
- In absolute terms, about two-thirds of this amount benefitted petroleum products (i.e. crude oil and its derivative products), with the rest equally split between coal and natural gas.
- Because several OECD countries do not produce significant amounts of fossil fuels, consumer measures account for a large share of overall support. Producer support remains, however, far from negligible in those OECD countries that produce fossil fuels.
- A significant portion of the support provided in OECD countries is through tax expenditures such as tax credits, exemptions or reduced rates. Tax expenditures provide a preference for fossil fuels compared with the “normal” tax rules in the particular country. Since normal tax rules and rates vary significantly between countries, however, this type of support is not readily comparable.
- The OECD *Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels 2013* marks a significant step towards greater transparency and accountability of policies that relate to the production or use of fossil fuels. While the inventory does not evaluate the merits of individual policies, it is a critical first step that will facilitate analysis and understanding of which of these mechanisms may be inefficient or wasteful, and for identifying options for reform.

The need for an inventory

OECD member countries continue to recover slowly from the worst economic crisis to take place in decades. With an increased understanding of the risks of climate change, countries are struggling at home and internationally to find cost-effective measures to reduce their greenhouse-gas emissions. Policy makers must deal with a multitude of challenges at once: nourish growth while encouraging it to be more “green”; prevent high unemployment rates from becoming entrenched; reduce government deficits; and manage global imbalances. Implementing growth-friendly fiscal structures and public spending patterns is critical to reducing imbalances and stimulating growth.

Reforming or eliminating inefficient support for the consumption or production of fossil fuels can contribute towards achieving these economic and fiscal objectives, while also helping to tackle environmental problems such as climate change (Burniaux and Chateau, 2011; OECD, 2012). At the global level, reforming fossil-fuel subsidies would contribute to curbing emissions of greenhouse gases (GHGs) such as CO₂ by removing major incentives to produce or use such fuels. At the country level, reforming fossil-fuel support would also help reduce public spending and increase tax revenues, thereby improving fiscal balances. This could free up scarce government resources for other priorities, such as protecting vulnerable households, stimulating employment creation, or help address climate change at home and elsewhere.

The importance of reforming policies that support fossil fuels was explicitly recognised in the OECD’s June 2009 Declaration on Green Growth, in which 34 countries vowed to “encourage domestic policy reform, with the

aim of avoiding or removing environmentally harmful policies that might thwart green growth, such as subsidies: to fossil fuel consumption or production that increase greenhouse gas emissions ...” (www.oecd.org/greengrowth). Three months later, G-20 leaders committed to “rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption”, and called on the rest of the world to do the same (www.g20.org). In November 2009, a similar commitment was made by leaders of the Asia-Pacific Economic Cooperation (APEC) forum (www.apec.org). Since then, the OECD, together with other inter-governmental organisations, has been actively involved with the G-20 Energy Expert Group and has contributed to several reports on energy support that have been prepared for G-20 Leaders.

Despite the many benefits of reforming fossil-fuel subsidies, efforts to implement reforms have been hampered by a crucial lack of information regarding the amount and type of support measures in place. This lack of information was most profound for fossil-fuel support in industrialised countries, including OECD countries. The International Energy Agency (IEA) has been producing data on fossil-fuel consumer subsidies in emerging and developing countries for several years using an estimation approach known as the “price-gap” method, which measures the extent to which a policy keeps domestic fuel prices below an international reference price. However, the price-gap approach does not capture support to producers and tax concessions to producers and consumers, which account for much of the support provided by developed countries, since such measures do not push final prices below the level of international reference prices. Such support and tax concessions nonetheless reflect policies that may induce greater production or use of fossil fuels than would otherwise be the case.

To help fill this critical data gap, the OECD began to collect in 2010 data on budgetary support and tax expenditures that relate to fossil fuels. After the release in 2011 of the first *Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels* that covered 24 OECD countries, an expanded and updated version covering all OECD countries was released in early January 2013. This *Inventory* substantially improves transparency with respect to fossil-fuel support measures and will help inform future discussions of energy policies, both at the national level and in international forums.

How fossil fuels are supported in OECD countries

Governments support energy production in a number of ways, including by: intervening in markets in a way that affects costs or prices; transferring funds to recipients directly; assuming part of their risk; selectively reducing, rebating or removing the taxes they would otherwise have to pay; and undercharging for the use of government-supplied goods or assets. Support to energy consumption is also provided through several common channels: price controls intended to regulate the cost of energy to consumers; direct financial transfers; schemes designed to provide consumers with rebates on purchases of energy products; and tax relief. Figure 1 provides an organising framework for examining the different types of support to fossil fuels, reflecting their formal incidence and the transfer mechanisms used.

The OECD inventory takes stock of the broad set of measures identified by governments that effectively “support” fossil-fuel use or production, as defined by the PSE-CSE framework, which has already been used extensively to measure support, most notably in agriculture.¹ The scope of “support” is deliberately broad, and is broader than some conceptions of “subsidy”. It covers a wide range of measures that provide a benefit or preference for a particular activity or a particular product, either in absolute terms or relative to other activities or products. The data in the inventory were sourced from official government documents and web sites, and complemented by information provided directly by government agencies. The valuations are generally those estimated by the respective governments, although the OECD has allocated support to the different fuels based on production and consumption volumes or values where such information is not available from government sources.

1. The PSE-CSE framework distinguishes among those measures that benefit producers (PSE: Producer Support Estimate), consumers (CSE: Consumer Support Estimate), and those that benefit producers collectively, or that do not support current production, such as industry-specific R&D (GSSE: General Services Support Estimate). For more information, see the OECD’s PSE Manual, available at: www.oecd.org/agriculture/PSE

Figure 1. Matrix of fossil fuel support measures, with examples

		Statutory or Formal Incidence (to whom and what a transfer is first given)								
		Production							Direct consumption	
		Output returns	Enterprise income	Cost of intermediate inputs	Costs of Production Factors				Unit cost of consumption	Household or enterprise income
					Labour	Land and natural resources	Capital	Knowledge		
Transfer Mechanism (how a transfer is created)	Direct transfer of funds	Output bounty or defficiency payment	Operating grant	Input-price subsidy	Wage subsidy	Capital grant linked to acquisition of land	Capital grant linked to capital	Government R&D	Unit subsidy	Government-subsidized life-line electricity rate
	Tax revenue foregone	Production tax credit	Reduced rate of income tax	Reduction in excise tax on input	Reduction in social charges (payroll taxes)	Property-tax reduction or exemption	Investment tax credit	Tax credit for private R&D	VAT or excise-tax concession on fuel	Tax deduction related to energy purchases that exceed given share of income
	Other government revenue foregone			Under-pricing of a government good or service		Under-pricing of access to government land or natural resources; Reduction in resource royalty or extraction tax		Government transfer of intellectual property right	Under-pricing of access to a natural resource harvested by final consumer	
	Transfer of risk to government	Government buffer stock	Third-party liability limit for producers	Provision of security (e.g., military protection of supply lines)	Assumption of occupational health and accident liabilities	Credit guarantee linked to acquisition of land	Credit guarantee linked to capital		Price-triggered subsidy	Means-tested cold-weather grant
	Induced transfers	Import tariff or export subsidy	Monopoly concession	Monopsony concession; export restriction	Wage control	Land-use control	Credit control (sector-specific)	Deviations from standard IPR rules	Regulated price; cross subsidy	Mandated life-line electricity rate

Source: OECD, 2013a.

Policy features that support fossil fuels have been put in place for various reasons. While a number of the measures may be inefficient or wasteful, others may not be. The inventory does not analyse the impact of specific measures or pass judgement on which ones might be usefully kept in place, and which ones a country might wish to consider for possible reform or removal. Its purpose is to provide information about policies that provide some level of support as a starting point for further analysis about the objectives of particular measures, their impacts (economic, environmental and social), and possible reforms and alternatives.

Across its 34 member countries, the OECD has identified over 550 measures which are estimated to have an overall value of between USD 55 and USD 90 billion per year for the years 2005 to 2011. The *Inventory* provides important information about the incentives created within each national economy. Caution is required, however, in interpreting the support amounts and in aggregating them as the majority of support mechanisms identified in the inventory are tax expenditures. Tax expenditures are *relative* preferences within a country's tax system that are measured with reference to a benchmark tax treatment set by that country. Since the benchmark or "normal" tax treatment varies considerably from country to country, the value of this type of support is not comparable across countries.² Further, with respect to aggregation, tax-expenditure estimates generally do not take into account interactions that may be involved where multiple measures are removed at the same time.

As indicated in Figure 2, in absolute terms, petroleum products (i.e. crude oil and its derivative products) have generally been the prime beneficiaries of the fossil-fuel support measures listed in the inventory. This reflects to some extent the large share of oil in countries' total primary energy supply, along with the fact that petroleum products are now consumed in OECD countries mainly in transport, a usage which is more heavily taxed on average. The peak observed for 2008 was driven partly by transfers via Mexico's excise tax on transport fuels — the IEPS — the rate of which becomes negative in times of high international oil prices, thereby providing a subsidy to final users of fuel.³

In terms of recipients, Figure 3 shows that, in absolute terms, measures relating to the consumption of fossil fuels have accounted for more than two-thirds of total support in recent years; producer measures accounted for slightly more than a fifth. This difference in part reflects the fact that several major OECD countries included in the inventory do not produce fossil fuels on a significant scale, but are important consumers (e.g. France, Italy, and Sweden).

Some countries are more transparent than others when it comes to budgetary support and tax expenditures, which has implications in terms of the coverage of support mechanisms in the inventory, with the largest number of support mechanisms listed for those countries that are most transparent. Part of the value of this inventory is that it provides a standardised template for reporting measures. This common platform should encourage countries to become more open in quantifying and reporting on policy measures that affect fossil-fuel production or use.

More generally, the OECD inventory marks the beginning of an ongoing process that will be broadened and deepened over time. The inventory will gradually be expanded to cover countries acceding to the OECD (e.g. Russia) and Key Partners of the OECD (e.g. China, India). Numerous other forms of support — notably those provided through risk transfers, concessional loans, injections of funds (as equity) into state-owned enterprises, and market price support — were not quantified in this inventory. The data requirements for estimating the transfers associated with such measures are greater than for budgetary transfers and tax expenditures, and the calculations to estimate the support elements more complex.

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2. The OECD publication *Taxing Energy Use* shows consumption tax expenditures together with energy taxation and consumption in each OECD country (see OECD, 2013b). This publication establishes an analytic foundation for discussions about appropriate tax settings on energy use and for the assessment of the tax treatment of different types, uses and users of energy.
 3. The spot price of West Texas Intermediate (WTI) light sweet crude oil averaged about USD 100 per barrel in 2008.

Figure 2. Support to fossil fuels in OECD countries by year and type of fuel
(Millions of current USD)

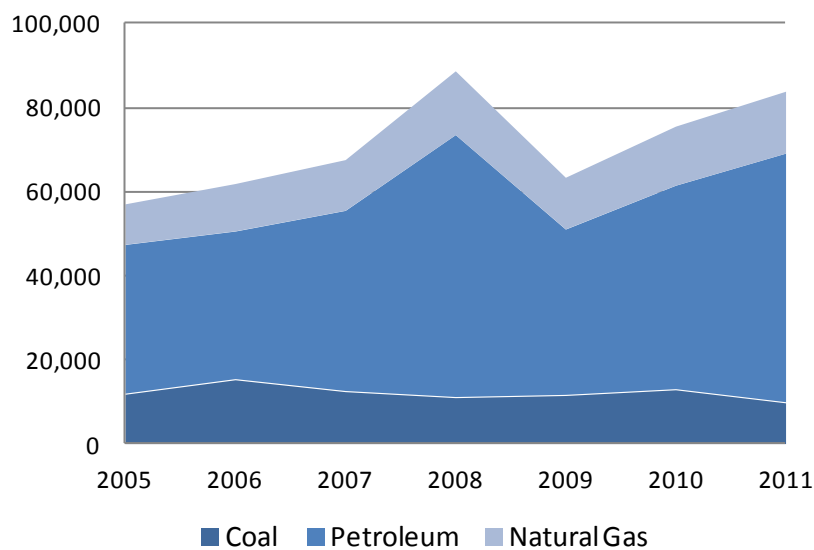
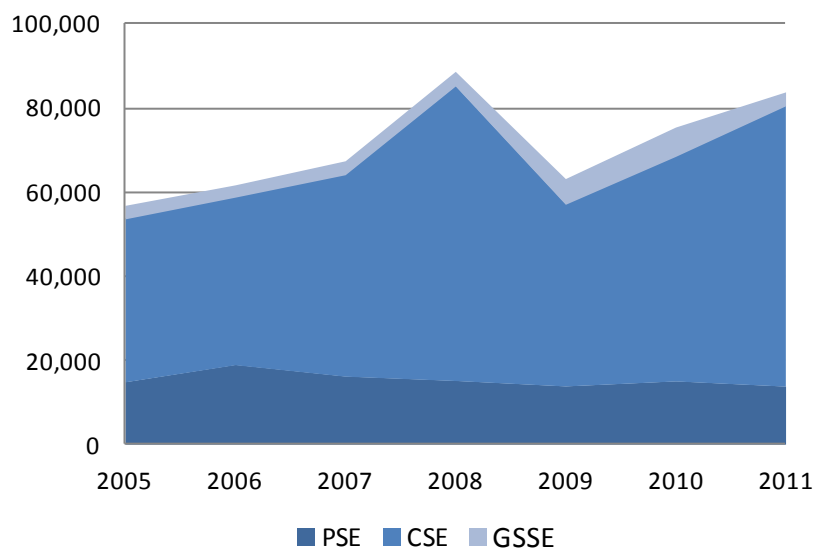


Figure 3. Support to fossil fuels in OECD countries by type of indicator
(Millions of current USD)



Note: The above charts are based on an arithmetic sum of the individual support measures identified for all 34 OECD member countries. It includes the value of tax relief measured under each jurisdiction's benchmark tax treatment. The estimates do not take into account interactions that may occur if multiple measures were to be removed at the same time.
Data Source: OECD (2013a).

Lessons learned from country experiences in managing fossil-fuel subsidy reform

Experience shows that it is not easy to reform or phase-out environmentally harmful and costly subsidies, given the vested interests of those that benefit from them and the limited available data on these subsidies. Despite this, a number of countries have made significant progress in phasing-out fossil-fuel subsidies in recent years (Box 1).

Box 1. Examples from specific countries

Germany — The production of hard coal in Germany has traditionally attracted government support for geological, historical and political reasons. The total, nominal value of estimated producer support for hard coal amounted to about EUR 5 billion (0.3% of GDP) in 1999. As the production of hard coal in Germany remains largely uneconomic, the government has decided to phase out its support to the industry by 2018. This gradual phase-out is reflected in the reduction in the total amount of estimated producer support by more than half, about EUR 2 billion (0.1% of GDP) in 2011.

Mexico — Mexico supports the consumption of petroleum products through a floating excise tax on transport fuels, the *Impuesto Especial sobre Producción y Servicios por Enajenación de Gasolinas y Diesel* (IEPS). The design of the IEPS ensures that tax rates for diesel fuel and gasoline vary with changes in international benchmark prices, so that excise taxes increase when international benchmark prices decrease. Conversely, increases in those benchmark prices trigger decreases in the rates of IEPS, which can even become negative in times of high oil prices. With world crude-oil prices averaging USD 100 per barrel in 2008, the total value of consumer support in Mexico jumped to a record MXN 223 billion (USD 20 billion; 1.8% of GDP). While the subsequent decrease in international oil prices a year later brought total consumer support down to MXN 16 billion (USD 1.2 billion; 0.1% of GDP), estimates for 2011 have total consumer support increasing again to MXN 209 billion (USD 16.8 billion; 1.5% of GDP). As part of Mexico's ambitious energy strategy aimed at cutting national greenhouse-gas emissions by 50% by 2050 compared with 2000, the government is working to better target energy subsidies, while bringing prices more in line with costs (OECD, 2011a). The government has started to implement a new cash-transfer scheme connected to its *Oportunidades* programme to help poor households cover their energy needs with fewer distortions than under the current system. Mexico has also started a pilot programme to replace electricity subsidies for pumping irrigation water with direct cash transfers in some states, thus removing the price distortion that has led to significant over-exploitation of groundwater.

Poland — The bulk of state aid to the energy sector in Poland is apportioned to the coal industry. The total amount of producer support for coal over the 1999-2011 period is estimated by OECD to have exceeded PLN 25 billion (USD 7 billion). Prior to the collapse of communism, the production of coal was mainly supported through the provision of various social benefits to coal miners and the regulation of coal prices. With the economic transition of the 1990s, the state began to restructure the coal sector through a series of capacity-adjustment programmes, which resulted in the shutting down of unprofitable mines and a reduction in employment. These programmes proved, however, ineffective and the state decided (as in Germany) to gradually phase out government support. Most of the remaining costs are now associated with historical liabilities. Poland, similar to other coal-producing countries in the European Union, is subject to EC Council regulations regarding state aid. Since 2011, Council Decision 2010/787/EC authorises state aid only for the purpose of closing mines, the treatment of health damages sustained by miners, and addressing the environmental liabilities related to past mining.

Sweden — Sweden has minimal fossil-fuel energy resources and annually harvests only 2.2 million cubic metres (about 1.2 million tonnes of coal equivalent) of peat for energy use. Since all of the country's oil, natural-gas and coal needs are met through imports, producer support measures are negligible. Sweden does, however, provide numerous exemptions and reductions from energy- and CO₂-taxes that benefit particular users and uses of fossil fuels. Total tax expenditures that relate directly to fossil-fuel consumption were estimated to amount to about SEK 19.1 billion (USD 2.9 billion) in 2011. Although significant, this amount largely stems from Sweden's ambitious carbon-pricing policy. The country bases its tax-expenditure estimates related to energy on the assumption that all fuels should generally be subject to the same rate of tax (either per unit of energy content or per unit of carbon, depending on the tax in question). In 2011, 69% of the tax expenditures relating to fossil fuels (SEK 13.2 billion; USD 2 billion) were due to the end use of diesel, which is taxed at a lower rate than gasoline for transport purposes. Sweden has announced plans to increase the reduced rates on many fuels and uses, therefore further reducing their tax expenditures in the coming years.

United States — In the case of the United States, the OECD *Inventory* estimates that total producer support, including tax expenditures at the federal level and for some states, represented about USD 6 billion in 2011 (about 0.04% of GDP). The federal budget for FY2013 proposes to eliminate a number of tax preferences benefitting fossil fuels, which could increase revenues by more than USD 23 billion over the years 2013 to 2017 (OMB, 2012). Some measures can also be found at the sub-national level, where states sometimes provide additional tax expenditures benefitting oil and gas producers. Based on a sample of ten coal- or oil-producing states (Alaska, California, Colorado, Kentucky, Louisiana, Oklahoma, Pennsylvania, Texas, West Virginia, and Wyoming), the OECD found that sub-national measures accounted for about 53% (USD 3.1 billion) of the USD 5.8 billion total estimated by the OECD for producer support in 2011.

Recent reforms to coal subsidies in a number of European countries provide examples of how governments have addressed these distributional concerns in the past few decades. Reforms of the coal-mining sector in countries such as the Czech Republic, Germany, Poland, the Slovak Republic and Slovenia were accompanied by social assistance related to the closure of mines and, often, generous severance packages for affected workers. Reforms of the UK coal-mining industry were initially imposed with little adjustment assistance, leading to problems of high unemployment and poor health in the affected regions. In 2000, however, the UK government began to provide financial support to assist the remaining parts of the coal industry to adjust their operations to be able to enter into commercially realistic investment projects that maintained access to coal reserves, provided employment opportunities in disadvantaged areas, and created an enabling environment for the development of alternative economic opportunities in coal-mining areas. This support has since ended.

Case studies on reform of subsidies to fossil-fuel consumption indicate that increasing the availability and transparency of energy support data is essential. First, improved data on the scope and nature of fossil-fuel support can be useful to dispel myths and misinformation, and can encourage informed discussion and debate among both those with an interest in maintaining the policy features that provide support and those interested in their reform.

An important condition for successful subsidy reform is the credibility of the government's commitment to compensate vulnerable groups for energy price increases and, more generally, to use the freed public funds in a beneficial way. Governments need to ensure public trust in the reform agenda through broad communication, and appropriate timing of subsidy removal and implementation of compensatory social policies. Groups that are severely affected by subsidy reforms — including but not restricted to the poor — may need to be compensated.

Looking at the experience of governments that have successfully reduced fossil-fuel and electricity subsidies, some common strategies for success can be identified.

- *Increasing the availability and transparency of support data.* The new OECD *Inventory* is most helpful in this respect. Informed discussion and debate are necessary among those with an interest in maintaining support policies and those interested in their reform. In addition, the collection and transparency of data with respect to support can facilitate peer review and encourage compliance with future subsidy reform processes.
- *Providing financial support for economic restructuring or poverty alleviation to smooth the path for fossil-fuel subsidy reform.* However, such support should be well-targeted, temporary, and transparent. It should not be automatically provided, but an assessment should be made of the extent to which the economy and society can absorb the impacts of the reform, especially if the reforms are phased-in gradually.
- *Where possible, integrating reforms to fossil-fuel subsidies in a package that includes broader structural reforms.*
- *Ensuring credibility of the government's commitment to compensate vulnerable groups and, more generally, to use the freed public funds in a beneficial way.* Governments need to ensure public trust in the reform agenda through broad communication strategies, appropriate timing of subsidy removal, and implementation of compensatory social policies. A finely-tuned communication strategy is needed to explain the reform rationale and the associated compensatory measures that will be taken before they are introduced so as to establish trust and to ensure that the impact on potential losers from the reform are understood and their views heard.

For further information about OECD work on fossil-fuel support and to download OECD reports, see:
www.oecd.org/iea-oecd-ffss

Relevant OECD reports

- Burniaux, J-M. and J. Chateau (2011), "Mitigation Potential of Removing Fossil Fuel Subsidies: A General Equilibrium Assessment", *OECD Economics Department Working Paper No. 853*, OECD Publishing, Paris.
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- OECD (2013b), *Taxing Energy Use: A Graphical Analysis*, OECD Publishing, Paris (forthcoming).
- OMB — Office of Management and Budget (2012), *Fiscal Year 2013 - Cuts, Consolidations, and Savings — Budget of the United States Government*, Executive Office of the President of the United States, Washington, D.C.

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