



UPDATE ON RECENT PROGRESS IN REFORM OF INEFFICIENT FOSSIL FUEL SUBSIDIES THAT ENCOURAGE WASTEFUL CONSUMPTION

*Contribution by the International Energy Agency (IEA) and
the Organisation for Economic Co-operation and Development (OECD)*

to the G20 Sustainability Working Group

in consultation with:

*International Energy Forum (IEF), Organization of Petroleum Exporting Countries (OPEC)
and the World Bank**

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1. Introduction

At its meeting on 14-15 December 2016 the Sustainability Working Group (SWG) of the G20 requested that an update “that captures recent progress in countries, the peer review process and other developments to phase out inefficient fossil fuel subsidies that encourage wasteful consumption” be prepared by the International Energy Agency (IEA) and the Organisation for Economic Co-operation and Development (OECD), in consultation with the International Energy Forum (IEF), the Organization of the Petroleum Exporting Countries (OPEC), and the World Bank. The report is to be made available for the next SWG meeting, in Berlin on 22-23 March 2017. This document responds to that request.

Inefficient fossil-fuel subsidies that encourage wasteful consumption have been a focus of G20 work since September 2009, when G20 Leaders issued a Communiqué calling on its member economies to “rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption over the medium term while providing targeted support for the poorest”. In the years since then, the G20 has reaffirmed that commitment on several occasions.

The G20 work focuses on the phasing out of *inefficient* fossil fuel subsidies *that encourage wasteful consumption over the medium term*. These important qualifications (in italics) are central to the update. Still, for reasons of succinctness and readability in the text, the update refers to fossil fuel subsidies without the additional qualifications.

Various reports to the G20 have stressed that not all fossil-fuel subsidies are inefficient. To properly distinguish between those fossil-fuel subsidies that enhance the well-being and macroeconomic performance of an economy and those that can be classified as inefficient requires weighing their social costs and benefits against the expenditures and means used for production, transport and consumption in relation to international market prices, outlooks and policies. Reform of inefficient fossil-fuel subsidies is also recognized as a sovereign issue dependent on the unique situation and priorities of the individual countries. Moreover, the issue should be considered within the context of the common but differentiated responsibilities of developed and developing countries.

Fossil fuels receive many types of government support, provided through direct and indirect channels.¹ Such support can be differentiated according to whether it confers benefits to consumers or producers of energy. Fossil-fuel consumption subsidies, many of which lower prices to end-users below the international prices for the same fuels, are now rare in most developed economies, but are still present in many other regions. Some consumption subsidies are provided through direct grants or vouchers, and certain end-users of energy, particularly off-road users of gasoline and diesel, are commonly exempted from excise taxes normally levied on those fuels.

¹ See the joint report by the IEA, OPEC, the OECD, and the World Bank, “Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative”, Prepared for submission to the G-20 Summit Meeting Toronto (Canada), 26-27 June 2010. Available at <http://www.oecd.org/env/45575666.pdf>.

Production subsidies involve measures that seek to maintain or expand the domestic supply of fossil fuels. They remain a common form of subsidisation in both developed and developing countries, though many subsidies in this category that were previously provided to maintain high-cost production of coal were phased-out in the 1985-2004 period. Both production and consumption subsidies, by encouraging excessive consumption or production, can lead to an inefficient allocation of resources and market distortions, posing barriers to the introduction of cleaner technologies and fuels and discouraging the uptake of more resource-efficient practices. They can also put a strain on government budgets.

At the same time, in developing countries, targeted subsidies — such as for liquefied propane gas (LPG) — can help expand access to energy, as well as reduce the environmental degradation and indoor air pollution that is often associated with the use of crude biomass.

This report documents progress made in conducting peer reviews of economies' policies supporting fossil fuels, highlights recent developments in policy reforms around the world, and summarises other significant developments to further the goal of fossil-fuel subsidy reform.

2. G20 voluntary peer reviews of inefficient fossil fuel subsidies

Since September 2009, when the G20 Leaders called on their membership to “rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption over the medium term while providing targeted support for the poorest”, the G20 has engaged in a voluntary process of periodically reporting on their fossil-fuel subsidies.

In February 2013, G20 Finance Ministers went a step further and committed to develop and undertake a voluntary peer review process and report to G20 Leaders on the outcomes of the peer reviews. They agreed also to develop methodological recommendations² for undertaking a voluntary, peer-led process for inefficient fossil fuel subsidies that encourage wasteful consumption, with a view to encouraging broad participation. The aim of these voluntary peer reviews is to further the process of mutual learning and deepen the level of understanding of the challenges confronting reform efforts.

In 2014, China and the United States agreed to be the first countries to engage in mutual peer reviews, chaired by the OECD. These reviews commenced in 2015 with the preparation of “self report” documents by the countries themselves, in which China and the United States described their support measures, why they considered those measures to be inefficient (or not), and a timetable for reform. Review teams were then chosen by each country — Germany, Indonesia, the United States and the IMF and the OECD for the review of China, and Germany, China, Mexico and the OECD for the review of the United States. In person meetings were held in Beijing and Washington, D.C. in, respectively, April and May 2016, and the final peer-review reports were published in September of the same year.

As of the first quarter of 2017, Germany and Mexico were well advanced in their voluntary peer reviews, having completed the in-person phase of their reviews in February. The teams, again chaired by the OECD, comprise experts from China, Germany (on the review of Mexico), Indonesia, Italy, Mexico (on the review of Germany), New Zealand (invited by Germany and Mexico as an APEC Member and a member of the Friends of Fossil Fuel Subsidy Reform), and the United States. Indonesia and Italy are expected to be the subjects of the next set of peer reviews.

² See: <http://www.g20russia.ru/load/783530379>.

3. Other peer review processes of inefficient fossil fuel subsidies

In addition to the ongoing subsidy reform initiatives being pursued by the G-20, other groups such as APEC and the Friends of Fossil Fuel Subsidy Reform (a group of non-G-20 countries that support the reform of inefficient fossil-fuel subsidies) and civil-society organisations have also played a role, along with conditions placed on some loans for energy projects by international lending agencies and sovereign lending by the IMF.

APEC peer reviews

In March 2013, the Energy Working Group (EWG) of Asia-Pacific Economic Cooperation (APEC) recommended a voluntary peer review of inefficient fossil fuel subsidy reform (VPR-IFFSR) to assess APEC's progress towards its green-growth agenda.³ These peer reviews are intended to assist APEC economies in rationalizing and removing inefficient fossil fuel subsidies, while identifying essential energy services that need to be provided to vulnerable populations. In November of the same year, the EWG adopted guidelines for conducting the peer reviews, and Peru and New Zealand volunteered to be the first APEC economies to undergo the process.

Peer reviews of inefficient fossil-fuel subsidies have since been carried out in the Philippines (2016), Chinese Taipei (2016), and Viet Nam (2017). Brunei Darussalam is expected to undergo a review by the end of this year.

The Friends of Fossil Fuel Subsidy Reform

The Friends of Fossil Fuel Subsidies Reform Group (<http://www.fffsr.com>) of nine non-G20 countries⁴ continues to play a leading role in calling for an acceleration of fossil-fuel subsidy reform across the world, including within international processes and at events including the UNFCCC COPs, the World Bank and IMF "Spring" meetings, the UN Sustainable Development processes and the Clean Energy Ministerial. The "Friends" actively encourage countries within the G20, APEC and more widely to undertake reviews of their fossil fuel subsidies, and promoted the adoption of a G20 Peer Review process. New Zealand, a member of the FFFSR, was the first developed country to undertake a peer review within the APEC and G20 group of countries. It has publicly stressed the advantages of conducting a peer review for itself, and has provided an expert to other APEC economies' peer review processes, and to the G20 voluntary peer reviews of Germany and Mexico.

Finland has identified the need to rationalise its subsidy policies and to remove subsidies for fossil fuels. As part of an assessment based on the years 2009-2014, Finland investigated and categorised some 400 subsidy measures, covering tax support and exemptions, budget support and other instruments based on their environmental harmfulness. The categorisation is based on a transparent "traffic light" system, signalling "good" (relevant, targeted, effective, and having positive effects and few negative effects on the environment), "bad" (no longer relevant, a waste of money, having potential for negative effects on the environment) or "ugly" (badly designed, inefficient, badly targeted, having negative effects for the environment) subsidies (Ministry of Finance 2016). The assessment signalled that potentially harmful subsidies reside especially in the energy, transport and agricultural sectors. The energy sector alone accounted for EUR 800 million of potentially harmful subsidies annually (Ministry of Finance, 2016). The

³ See APEC (2013), "45th APEC Energy Working Group meeting non-paper: A brief review of the APEC fossil fuel subsidy reform process", March. Available at http://apecenergy.tier.org.tw/database/db/ewg45/Fossil_Fuel/NON_PAPER_brief_review_of_APEC_fossil_fuel_subsidy_reform_process.pdf

⁴ Costa Rica, Denmark, Ethiopia, Finland, New Zealand, Norway, Sweden, Switzerland, and Uruguay.

introduction of the traffic-light system has contributed to subsidy reforms such as the increase in transportation fuel, vehicle, energy and carbon dioxide taxation.⁵

4. Lessons learned from voluntary peer reviews of inefficient fossil-fuel subsidies

The peer review process has been a salutary experience for not just the countries that have undergone the reviews but also for those that have participated as reviewers. For the countries themselves, preparing for undergoing a peer review has encouraged them to take a thorough look at their support policies, and how those policies can be reformed or eliminated, and in what sequence. In the case of the G20 voluntary peer reviews, the thoroughness of this step has generally resulted in more information being reported on policies through countries' self reviews than has previously been the case through their annual progress reports. Later, in the in-person parts of the reviews, the reviewed country subjects its policies to the scrutiny of peers and experts, who often provide fresh perspectives. The reports, once made public, could also help governments win support domestically for persevering with the reform of politically difficult measures.

For the review-team members, participation has helped them appreciate the efforts made by the reviewing countries, and the challenges they face. A country seeking to reduce its own inefficient fossil-fuel subsidies that encourage wasteful consumption can in the process learn valuable lessons from its peers on what has worked and what has not. Importantly, because every participating country puts itself through a similar exercise, no country under review feels it is being singled out. "Today's critics become tomorrow's subjects"⁶, and vice-versa.

The reviews have also revealed national differences in understanding of what is meant by terms like "subsidy", "inefficient" and "wasteful" in different contexts. Although the peer reviews may not resolve these differences, dialogues among G20 countries should at least help identify areas of commonality.

5. Recent global progress in fossil-fuel subsidy reform

The remaining part of this document discusses progress towards fossil-fuel subsidy reform outside of the G20 context, as well as the initiatives of several intergovernmental organisations.

IEA and OECD analyses indicate that momentum has been building behind subsidy reforms for several years now, with good prospects that this will continue. Many of the reforms in developing and emerging countries have, in large part, been facilitated or triggered by the extended period of persistently high energy prices up until mid-2014, which pushed the cost of subsidies to very high levels in some countries, particularly those experiencing fast growth in energy demand.

The IEA has estimated that the global value of fossil-fuel consumption subsidies was around USD 320 billion in 2015.⁷ (Note: a number of developing countries that are energy exporters are of the opinion that

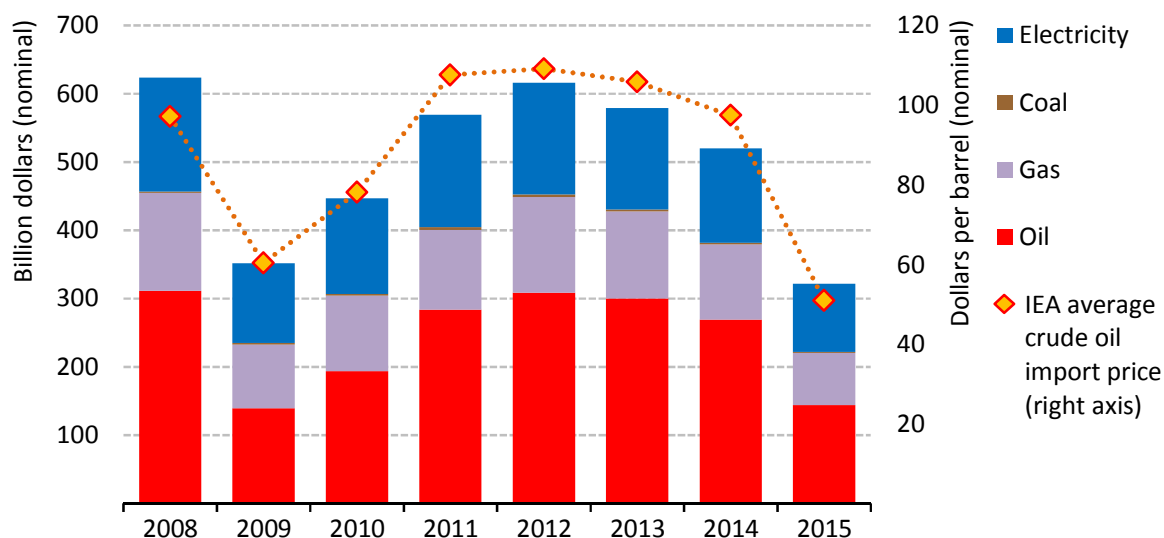
⁵ See p. 44 of: <https://www.diva-portal.org/smash/get/diva2:1044432/FULLTEXT02.pdf>

⁶ Fabrizio Pagani (2002), "Peer review: A tool for global co-operation and change", OECD Observer No. 235. Available at: http://oecdobserver.org/news/archivestory.php/aid/881/Peer_review.html

⁷ The IEA measures subsidies based on the amount by which the price of a given fuel falls short of its reference price, which corresponds to the international market price, adjusted for the costs of transportation and distribution and value-added tax (VAT), or where appropriate the full cost of supply. The estimates cover subsidies to fossil fuels consumed by end-users and subsidies to fossil-fuel inputs to power generation. For countries that import a given product, the estimates represent net expenditures resulting from the domestic sale of imported energy (purchased at world prices in hard currency), at lower, regulated prices. For countries that export a given product, the estimates represent the opportunity cost of pricing domestic energy below market levels.

the reference price in their markets could be based on their cost of production rather than on import- or export-parity pricing.) This represents a significant decline since the peak in 2012 when they reached almost USD 600 billion, though a large cause of the decline is the parallel fall in oil prices (Figure 1). Globally, the IEA has identified around 40 countries as subsidising the consumption of fossil fuels or of electricity generated by fossil fuels. In total, these countries account for over half of the world’s energy consumption. The value of subsidies as a share of total GDP of these countries averaged 1.3%. The rate of subsidisation (the ratio of the subsidy to the international reference price) averages 16%.

Figure 1. Economic value of global fossil-fuel consumption subsidies by energy source



Source: IEA (2015 & 2016), *World Energy Outlook*, International Energy Agency, Paris.

In addition to the subsidies identified by the IEA, the OECD in 2015 estimated that support to fossil fuels in its member countries fluctuated between USD 55 billion and USD 90 billion per year between 2005 and 2014, with preferential tax treatment supporting fossil-fuel consumption by certain consumer groups (mainly off-road uses of fuel, such as by farm and forestry machinery, and fishing vessels) making up around two-thirds of the total. Not including Mexico (which is also counted in the IEA estimates) would bring the range over the period to USD 55 billion to USD 80 billion. The OECD is currently in the process of updating and expanding the country coverage⁸ of its *Inventory of Budgetary Support and Tax Expenditures to Fossil Fuels*, and is expected to release its report and data by September 2017.

Ten countries account for almost three-quarters of the world total for fossil-fuel consumption subsidies estimated by the IEA; five of them — all oil and gas exporters — are in the Middle East or North Africa. Most of the other leading subsidisers are also important hydrocarbon producers. They generally set domestic prices above the cost of production, but well below the prices those fuels could reach on the international market, net of transport costs. A number of these countries are of the opinion that the reference price should be based on the cost of production rather than on import- or export-parity pricing.

Using its “price-gap” method, the IEA estimates the value of fossil-fuel consumption subsidies in the Middle East to have been around USD 130 billion in 2015, mostly in the form of foregone revenue from pricing fuels well below their international market value. This value marks a decline as governments across

⁸ Besides covering all of the OECD’s 34 Member countries, the report will also cover Argentina, Brazil, China, India, Indonesia, the Russian Federation, and South Africa.

the region have started undertaking pricing reforms. In fact, the current low fuel price environment offers the opportunity for many fossil-fuel producing countries in the region to initiate reforms, while budgets are constrained because of lower fuel-export revenues.

In August 2015, for example, the UAE fully liberalised its gasoline and diesel prices, introducing a pricing mechanism that sets domestic prices on a monthly basis, directly linked to international prices. In January 2016, Bahrain, Oman, and Qatar started adjusting the prices of regular and premium gasoline upwards, to bring them more closely into line with global market prices (Table 1). In August 2016, the Kuwaiti government raised the prices of premium, mid-grade, and regular gasoline by, respectively, 83%, 62% and 42%; it also tasked a special commission to re-examine state subsidies and fuel prices every quarter. Saudi Arabia also raised its prices for most fuels in 2016. The prices of its premium gasoline and diesel were increased by 50%, to USD 0.24 per litre for gasoline and to USD 14 per barrel for diesel, and the price of natural gas for power generation has hiked by 67%, to USD 1.25 per million British thermal unit.

In net-energy-importing countries, many of the reforms in recent years were facilitated or triggered by the extended period of persistently high energy prices between 2008 and mid-2014, which pushed the cost of subsidies to very high levels in some countries, particularly those experiencing fast growth in energy demand. Somewhat paradoxically, the plunge in oil prices since mid-2014 has provided the opportunity for the phase-out of consumer subsidies in several countries, by making their withdrawal less painful. Indeed, several countries have already seized the opportunity, including Egypt, India, Indonesia, and Malaysia. On the one hand, by reducing the cost of subsidising energy consumption, lower international prices may be said to reduce the budgetary urgency for governments of net fuel-importing nations to take action. But they also present a unique opportunity to abolish subsidies without having a major upward impact on prices — or inflation — and provoking public outcry. The durability of such reforms will be tested if and when international prices again move higher.

The OECD member country that has most reduced its fossil-fuel consumption subsidies is Mexico. Starting in the mid-2000s, its *Impuesto Especial sobre Producción y Servicios por Enajenación de Gasolinas y Diesel* (IEPS), a floating excise tax, turned sharply negative, resulting in subsidies equivalent to as much as 1.4% of GDP. The Federal Government has in recent years increased retail prices on a monthly basis in order to reduce the support conferred to consumers. By October 2014, domestic prices had matched international prices. Since then, there have been several further price increases, most recently at the beginning of 2017. Other reforms being carried out will ensure that petroleum-fuel prices track international prices and that the taxes charged on them will always be positive.

Progress is also visible in a number of other OECD countries. On the production side, Canada has in recent years reformed federal provisions relating to the treatment of certain capital expenses for oil-sands and coal-mining in order to improve the neutrality of the country's corporate tax system. Germany has continued to reduce the large budgetary transfers it provides to hard-coal mines located in North Rhine-Westphalia; grants for the sale of German hard coal were EUR 1.3 billion in 2016, compared with more than three times that amount twenty years earlier. The country plans to phase out subsidised hard-coal mining entirely by 2018.

Apart from Mexico, general consumption subsidies have largely been phased out in OECD countries. But some provide targeted assistance to low-income households, through grants or other measures. A few, such as Greece, are shifting towards targeted income support that is more decoupled from the consumption of particular necessities (food, fuel, housing). Many still discriminate among fuels and end users in their application of excise taxes. In Europe, however, the tax differentials on transport fuels, in which diesel is generally taxed at a lower rate than gasoline, are being reduced; both Portugal and France have instituted changes in recent years towards that goal. An increasing number of countries have also begun to introduce carbon taxes. Since 2014 these include several provinces of China, Korea, Mexico and Portugal. Several

others (the Provinces of Alberta and Ontario (Canada), Chile, South Africa) have announced plans to introduce carbon taxes on fuels in 2017.⁹

Other major developments in fossil fuel pricing policies and subsidy reforms are summarised in Table 1.

⁹ World Bank, Ecofys, and Vivid Economics (2016), *State and Trends of Carbon Pricing 2016*, World Bank, Washington, DC: World Bank. Available at <https://openknowledge.worldbank.org/handle/10986/25160>.

Table 1. Recent major developments in fossil-fuel pricing policies and subsidy reforms

Country	Recent developments
Algeria	In January 2016, increased prices of gasoline by 34% to DZD 28.45 (USD 0.27)/ litre, and diesel by 37% to DZD 18.76 (USD 0.18)/litre. Also increased prices of electricity and gas.
Angola	Ended subsidies for gasoline in April 2015 and for diesel in January 2016, respectively.
Argentina	In January, March and April 2016 increased prices of gasoline and diesel by 6%, and in May 2016 by 10%. In April 2016, increased prices of natural gas for residential, industry, transport, and electricity by reducing subsidies.
Bahrain	In January 2016, increased the price of regular gasoline (91 RON) by 60% to BHD 0.16 (USD 0.42)/litre and the price of premium gasoline (95 RON) by 56% to BHD 0.125 (USD 0.33)/litre, and also increased prices of electricity.
Ecuador	In October 2015, declared it would eliminate subsidies for jet fuel as well as for fuel oil, LPG, and diesel for a large industry.
India	In April 2016, introduced a direct cash transfer scheme for residential kerosene consumers and launched a program to progressively raise kerosene prices, starting in July 2016.
Indonesia	On 1 January 2015, subsidies to gasoline (88 RON) were abolished and the diesel subsidy capped at IDR 1 000 (USD 0.08)/litre, followed by further cut to IDR 500 (USD 0.04)/litre in 2016. In January 2016, announced plans to reform electricity subsidies to be better targeted to poor and vulnerable households.
Iran	In May 2016, the cabinet approved the removal of the gasoline quota for public and private passenger vehicles by September.
Kuwait	On 31 August 2016 raised the prices of ultra (98 RON), super (95 RON), and premium (91 RON), by 83%, 62% and 42%, respectively.
Mexico	Prepares to liberalize prices for gasoline and diesel by end of 2017; in January 2017 it started the transition to liberalized prices for gasoline and diesel in parts of the country, which began in March 2017.
Nigeria	In May 2016, increased the price cap for gasoline by 68% to 145 NGN (USD 0.73)/litre.
Oman	In January 2016, started adjusting prices of gasoline and diesel to global market prices, and increased prices of premium gasoline (95 RON) by 33 % to OMR 0.160 (USD 0.42)/litre and regular gasoline (90 RON) by 23 % to OMR 0.140 (USD 0.36)/litre. The price of diesel was also raised 9.6% to OMR 0.160 (USD 0.42)/litre.
Qatar	In January 2016, increased prices of gasoline by 33% to QAR 1.30 (USD 0.36)/litre for premium gasoline (97 RON) and by 35% to QAR 1.15 (USD 0.32)/litre for regular gasoline (90 RON). In May 2016, started adjusting the prices of gasoline and diesel to align with global market prices.
Saudi Arabia	In December 2015, announced numerous energy price hikes, including gasoline, natural gas and electricity. Increased prices of premium gasoline (RON 95) by 50% to 0.9SAR (\$0.24) per litre and regular gasoline (RON 91) by two-thirds to 0.75 SAR (\$0.20) per litre, and also increased prices of electricity.
Trinidad & Tobago	In September 2015, increased prices of gasoline and diesel. In April 2016, announced the budget that includes a decrease of subsidies for gasoline and diesel.
Tunisia	In April 2016, announced it would link domestic fuel prices to global market prices.
Thailand	In January 2016, announced it would deregulate prices for CNG starting in July.
Ukraine	In April 2016, Introduced a market-based price for natural gas, together with targeted social support for residential consumers.
Viet Nam	In March 2015, increased the electricity price by 7.5%.
Venezuela	In February 2016, increased prices of premium gasoline 60-fold, to VEF 6.0 (USD 0.60)/litre, and regular gasoline 13-fold, to VEF 1.0 (\$0.1)/litre.

Source: IEA

6. Other developments

This section provides information on other developments in inter-governmental organisations (IOs), provided by the individual IOs themselves.

The Group of Seven (G7) economies

The Group of Seven (G7) is an informal network of industrialised democracies — Canada, France, Germany, Italy, Japan, the United Kingdom and the United States — all of which are also members of the G20.¹⁰ Since at least the 1990s, the G7 has encouraged subsidy reforms, as part of its broader economic agenda. At their May 2016 Summit, in Ise-Shima, Japan, the Leaders of the G7 pledged to eliminate inefficient fossil fuel subsidies by 2025, and encouraged all countries to do so. The current president of the G7, Italy, has also made the reform of environmentally harmful subsidies a priority issue for discussion during its tenure.

The World Bank

The Energy Subsidy Reform and Delivery Technical Assistance Facility¹¹

In 2013 the Energy Sector Management Assistance Program (ESMAP) of the World Bank launched the Energy Subsidy Reform Technical Assistance Facility (ESRF). This USD 20 million, multi-year initiative is supporting countries as they design and implement subsidy reform programmes, co-ordinating the full range of the Bank's expertise in macro-economic and fiscal matters, poverty analysis and policy, communications and consultations, energy, and social protection. The ESRF is collaborating closely with other organisations that already produce analysis and research on subsidy reforms (such as the Global Subsidies Initiative (GSI), the International Energy Agency (IEA), the IMF, and the OECD) in promoting knowledge exchange.

The ESRF also supports clients by producing tools for assessment and decision-making on energy subsidy reform. Through a collaboration of experts from ten sectors, the Facility is developing a comprehensive analytical toolkit and assessment framework for diagnosing energy subsidies, their impact and the environment for reform. Once published, this framework will allow policymakers to appreciate the full scope of interconnected multi-sectoral reforms, and help them decide how they could be sequenced and prioritised.

The Energy Subsidy Reform Online Community (ESROC) webinar series connects government officials from across the world together for peer-to-peer dialogue about the technical and non-technical challenges of reforming energy subsidies. Since its launch in April 2015, the ESROC has grown to include 245 members from 32 countries, and provides simultaneous translation in up to three languages to allow for cross-regional exchanges. In an effort to further disseminate the valuable knowledge exchange created within ESROC, ESMAP recently launched the [Practitioner Exchange Series](#). The series will produce short case studies, each discussing important aspects of subsidy reform. In addition, the Facility supports and organizes regional workshops and conferences.

¹⁰ The European Union participates fully in the G7 as a “non-enumerated” member.

¹¹ Note that this technical-assistance facility is just one of the instruments the Bank Group offers to support countries with subsidy reform.

Organization of the Petroleum Exporting Countries (OPEC)

The G20 has provided a unique platform for reaching a balanced understanding of the issue of inefficient fossil fuel subsidies that encourage wasteful consumption. This effort has benefitted from the collaborative work of the international organisations involved, including the OECD, the World Bank, the IEA, the IEF and OPEC.

The G20's longstanding and consensus-based approach on this issue recognises that phasing out or rationalising inefficient fossil fuel subsidies that encourage wasteful consumption is a sovereign issue dependent on the unique situation and priorities of individual countries. As a result, it remains voluntary and country-led initiative. Moreover, it further recognises that efforts at the international level related to this initiative should be pursued within the context of common but differentiated responsibilities of developed and developing countries that must be left to countries in accordance with their circumstances and priorities.

OPEC Member Countries in general have been active in reviewing domestic energy phasing out or rationalising inefficient fossil fuel subsidies that encourage wasteful consumption to ensure the efficient and optimal use of their finite natural endowments. Lower production costs in most producer countries provide a lower cost base that may help provide energy access to those in need. For developing countries that are energy exporters, estimates based on the price gap approach (PGA) method referred to in this report tend to give a distorted picture of the level of such subsidies. Oil-producing economies in developing countries may use their oil resources in a way that effectively promotes their general economic development, and this approach could more than offset the notional loss of value by selling the resource internally at a price below international prices.

Experience has shown that ensuring energy access for the most vulnerable is a challenging and complicated task – one that cannot be accomplished by any “one-size-fits-all” solution or list of policy options that does not take into account the circumstances and priorities of the individual countries. This is particularly true in the case of the developing countries, where concerns regarding sustainability and social costs are of vital importance.

When pursuing such reforms, it is also essential to take into account second-round impacts, which in developing economies are inevitable and can adversely affect the most vulnerable. This is particularly socially sensitivity as oil producer countries have been challenged by lower income levels in the past years, making it even more important to support energy access, where needed. Therefore, it is important to carry out a social-cost benefit analysis to distinguish between those fossil fuel subsidies that enhance the well-being of an economy and those that can be classified as inefficient.

In the meantime, the structure and advancement of the economy should also be considered when any reforms of subsidies are planned. In this regard, efforts by the G20 to voluntarily share experiences and lessons learned can provide an effective and important contribution to this initiative.

IEA reviews

The IEA has been reviewing its member countries' energy policies since the 1980s, mainly through its *Energy Policies of IEA Countries* series. Countries are reviewed on a five to six years term. In the latest round of policy reviews, the IEA has made recommendation to a number of countries, addressing particular energy subsidies for all three main types of fossil fuels – coal, natural gas and oil.

Poland's energy system is highly dependent on coal, which is supplied largely from domestic sources. The coal sector experiences losses as a result of low coal prices on the international market, and the sector is subsidised by the Polish government. Two state-controlled electricity companies have acquired a number

of coal mines and use the coal produced in these mines for power generation, at unknown prices. The cross-subsidies between power producers and coal mines can help coal sector jobs in the short term, but it is an inefficient policy over the long-term basis. In its 2016 review, the IEA recommended that Poland restructure its public coal sector to redirect investments towards profitable mines and allow for unprofitable mines to be closed down.

Spain and Turkey also support their domestic hard-coal sectors. Spain's subsidies to its coal sector have been approved by the European Commission (EC), and are gradually being phased out. In its 2015 review, the IEA recommended Spain continue its efforts to eliminate the remaining subsidies for coal production by 2018, in accordance with the EC approval. Turkish Hard Coal Enterprises (TTK), a state-owned company exploiting hard coal resources, receives subsidies to lower the cost of production and support regional development. In its 2016 review, the IEA judged these subsidies to be inefficient in economic terms, and recommended that Turkey accelerate the restructuring of TTK and phase-out the subsidy by a set date. Turkey also subsidises power generation from domestic lignite mines through regional investment incentives, with the goal of increasing the country's coal-fired power capacity to 60 TWh by 2019.

Poland's natural gas prices have also been maintained regulated, both for households and other consumer sectors. In 2015, the European Court of Justice found that Poland had failed to comply with the EU Directive on the internal market in natural gas with regard to non-household customers. The price regulation is planned to be phased out, starting with non-household customers in 2017; household prices will be deregulated by no later than 2024. The IEA recommended in its 2016 review that Poland develop a clear and transparent programme for the implementation of full retail market liberalisation as soon as possible, including the elimination of regulated tariffs.

Natural gas prices are regulated also in other countries, often in the household sector to protect vulnerable customers. These include Spain (reviewed by the IEA in 2015), Portugal (reviewed in 2016) and Hungary (upcoming review in 2017). The IEA recommendations for these cases are consistent in the view that the member countries should transit away from regulated tariffs, alongside finding other and more targeted means to protect vulnerable customers. Social policy should not be carried out through inefficient regulation of the energy sector.

For oil subsidies, Belgium stands out among IEA member countries with its price-capping mechanism on oil fuels called *le contrat de programme*. This mechanism was created in 1974 following the first oil crisis. It is a contract between the Belgian Petroleum Federation (BPF) and the Minister for Energy. The contract sets limits on prices charged to end-consumers for gasoline, heating and automotive gasoil, fuel oil and LPG. Around 100 000 low-income families received subsidies for heating oil from the Social Heating Fund in 2015. In its 2016 review, the IEA did not see any real benefits with the maximum price-setting system, and recommended it be abolished in consultation with stakeholders.

Besides these direct subsidies of fossil fuels, there are also examples of support in terms of tax exemptions for certain fuels and sectors, typically to benefit the competitiveness of an industry. France, which was reviewed in 2016, has many full or partial tax exemptions or refunds on VAT or excise duties on oil products used in the agricultural, domestic aviation and industrial sectors (excise tax exemption to fuel use by refineries). In 2016, France was able to reduce several tax benefits, notably the support payment for fuel oil heating (*prime a la cuve*) and the exemption from internal consumption tax on natural gas, coal, lignite, and coking coal consumption were abolished in 2016.

The IEA's *Energy Policies Beyond IEA Countries* series goes more deeply into fossil-fuel subsidies and their reform. The IEA released an Indonesia Review in 2015, which found that energy subsidies lie at the heart of the challenge to developing the country's energy sector. The report acknowledged progress made in decreasing fossil fuel subsidies since the first IEA review, in 2008, and stated that the government's

recent move to phase out subsidies on gasoline and diesel is a powerful sign for change but needs to be sustained and extended to other fuels. The process of lowering fossil fuel subsidies in Indonesia were further assessed in a subsequent special IEA report on fossil fuel subsidy reforms from 2016.¹² The report states that the decline in international oil prices allowed for an elimination of the subsidy on gasoline and an attempt to fix an upper bound on diesel and kerosene subsidies in January 2015. As a consequence, the level of total fossil fuel subsidies in the 2016 budget for Indonesia were projected to be just 30% of the peak level reached in 2014.

The special report on fossil fuel subsidy reforms also assesses the development in Mexico, where a significant energy sector reform has taken place (as mentioned previously). This reform contains the liberalization of the fuel market and opening up of a previously state monopoly based energy sector. In a review of Mexico's energy policy published in 2017, the IEA praises the progress that has been made in the country and recommends Mexico to continue to implement its reform, including creating competitive markets, and to pursue a credible path to fulfil its long-term climate policy ambitions.

In October 2016, the IEA held a first international conference on fossil fuel subsidies in Paris with a group of policy makers and experts to take stock of fossil fuel subsidy reforms (FFSR) worldwide and discuss progress towards phasing out subsidies. Participants came from Argentina, Australia, Brazil, Chile, China, Denmark, Ethiopia, France, Germany, Indonesia, Japan, Malaysia, Mexico, Morocco, New Zealand, Portugal, Switzerland, Turkey, United Kingdom, and United States attended the conference, as well as international organisations, including ASEAN, CAF, GIZ, IADB, IISD/GSI, IMF, IPECC, OECD, OLADE, and the World Bank. The conference evaluated the state of play of FFSR and peer-review processes and on the specific challenges faced by the transport and electricity sectors. The IEA released the in-depth study, *Fossil Fuel Subsidy Reform in Indonesia and Mexico*. The international participants brought perspectives of diverse approaches and lessons learned, with government representatives from Mexico and Indonesia highlighting their experience. In doing so, they painted a fuller picture of the reform process by highlighting (i) issues to consider in embarking on the FFSR process; (ii) the challenges in implementing reforms; and (iii) the international peer review learning experience.

Several conclusions were drawn from the discussion (Table 2). Depending on the country and market context, gradual approaches can help smooth the transition. While an automatic pricing mechanism is useful, continuous political commitment is needed to sustain it. Fuel price volatility is a strong factor affecting FFSR. While major declines in international fuel prices help reforms, market price hikes impose significant challenges for continued FFSR. A formula-based pricing system could ensure retail prices evolve in step with international prices. Well-focused social aid and transfer policies are crucial tools to support the phase-out of FFS.

The IEA will publish in April 2017 a report on fossil fuel subsidies in APEC economies, which will cover recent developments in reforming fossil-fuel subsidies, estimates of the value of fossil-fuel consumption subsidies, and modelling-based analysis of the implications of phasing-out fossil-fuel subsidies in the region.

¹² Jörg Husar and Florian Kitt (2016), *Fossil Fuel Subsidy Reform in Mexico and Indonesia*, International Energy Agency, Paris.

Table 2: The IEA’s common elements to successful reform of energy prices and subsidies

<p><u>Get the prices right</u></p> <ul style="list-style-type: none"> • Ensure that prices reflect the full economic cost of the energy that is being supplied. • Set prices before tax with reference to international market prices and adjust as necessary to reflect inflation and currency volatility. • Ensure that pricing systems are transparent, well-monitored and enforced. 	<p><u>Implement reforms in steps</u></p> <ul style="list-style-type: none"> • Depending on the country and market context, gradual approaches can help a smooth transition • A formula-based pricing system ensures retail prices track international benchmarks. • Set up independent body to oversee energy pricing, helping consumers understand and accept the reasons for price changes.
<p><u>Manage the effects</u></p> <ul style="list-style-type: none"> • Social reforms may need to be implemented in parallel to protect vulnerable groups. • For example, conditional cash transfers to those with the lowest income may be required; but the effectiveness of such measures must be regularly monitored and evaluated. 	<p><u>Consult and communicate at all stages</u></p> <ul style="list-style-type: none"> • A comprehensive communication strategy is essential to convince citizens. • Such a strategy must speak to all energy users, but especially those most affected by the reforms. • Public inquiries, speeches, debates, workshops and printed material can all contribute.

Source: IEA.

OECD reviews

Reviews of fossil-fuel support policies and fuel taxation are undertaken systematically by the OECD’s Economics Department and its Environment Directorate.

The *Economic Surveys* are published every two years for each OECD member country and for some countries that are not OECD members, such as Brazil, China, India, Indonesia, and the Russian Federation, as well as accession economies, such as Colombia, Costa Rica, and Lithuania. There is also a separate *Survey* of the euro area.

The *Economic Surveys*, and the work of the Economic and Development Review Committee (EDRC) that oversees their preparation, have evolved since the creation of the OECD in 1961 when the *Surveys* focused on short-term macroeconomic developments. Today, their focus is mostly on policies having a potential to improve an economy’s long-run performance. The hallmark of the *Economic Surveys* is to clarify links between structural policies in these areas and macroeconomic performance. Accordingly, the *Surveys* have discussed issues relating to fossil-fuel subsidies and taxes on many occasions over the past decade, often making recommendations related to the liberalisation of energy markets, the pricing and taxation of carbon-based fuels and electricity, and subsidies.

A summary of selected *OECD Economic Surveys* published since 2015 that have discussed fossil-fuel subsidies or fuel taxation are listed in Table 3.

Table 3. OECD Economic Surveys published from 2015 through March 2017 that discuss support to fossil fuels

Economy and date of Survey	Comments and recommendations relating to fossil-fuel subsidies or taxation
Colombia (2015)	<p>The <i>Survey</i> explains that Colombia's fuel prices were being regulated at below-market rates, resulting in implicit fuel price subsidies. Changes in the formula for the country's fuel-price-stabilisation fund for gasoline and diesel increased transparency of price regulation and achieved a 28% reduction in the fund's deficit in 2012. However, a further strengthening of the link between international and domestic prices is needed. The <i>Survey</i> recommended the government implement a series of gradual price increases, as currently done in Mexico.</p> <p>Similarly, the <i>Survey</i> noted that subsidised utility prices reduce prices for households classified as low-income, financed by a 20% surcharge on households in higher-income categories and commercial and industrial users. It observes that these programmes are not well targeted, allowing almost 90% of Colombian households to benefit from utility price subsidies, and recommends targeting assistance better to low-income households by using conditional cash transfers, as for example, in Brazil.</p>
Estonia (2015)	<p>The <i>Survey</i> notes that tax rates on fossil fuels used for heat and electricity generation, which are mostly based on domestically produced oil shale, are much lower than on fuels used for transport. It calls for more effort be made to identify and internalise externalities generated by oil shale, and in that context welcomes indications that the government envisages increasing taxes on oil-shale related activities that are harmful to the environment. It suggests, too, that income support for low-income households take into account the impact of higher energy costs on poverty risks.</p>
Germany (2016)	<p>Energy tax exemptions, including for energy-intensive manufacturing, which are motivated by competitiveness considerations, were reduced in the course of Germany's 2011-14 tax reform package. The <i>Survey</i> observes, nonetheless, that "gradually removing the tax exemptions, taking into account EU rules and according to a predetermined time schedule, would reduce uncertainty and strengthen incentives to invest in energy efficiency, while limiting the costs of transition to new technologies and products."</p>
Greece (2016)	<p>A pilot means-tested guaranteed minimum income (GMI) scheme, under which households with low income and little assets could obtain income support, was launched in November 2014 and conducted in 13 municipalities. The GMI will be phased in over the whole country during the second half of 2016 and is expected to be rolled out fully in 2017. It will replace some of the emergency <i>ad hoc</i> programmes that subsidised food, energy and rent.</p>
Indonesia (2016)	<p>The <i>Survey</i> notes that, as of mid-2016, fuel subsidies had been mostly scrapped, dropping to about 3% of central government expenditures in 2015, from nearly 14% in 2014. However, it adds, remaining energy subsidies (including for electricity) still represent about 7% of public spending. The <i>Survey</i> recommends phasing these out completely. It welcomes a reform that began to limit electricity subsidies as of mid-2016 to only 25 million households in need, about half as many as in 2015. The implementation of this reform was targeted for completion by the end of 2016.</p>
Italy (2017)	<p>The <i>Survey</i> recommends shifting the tax burden from electricity to the energy products used to generate it – with the respective rates based on the pollution of each electricity source – which would accelerate the deployment of renewable energy sources.</p>
Malaysia (2016)	<p>The <i>Survey</i> notes that the substantial removal of fuel and food subsidies (which, with transport subsidies, amounted to 2.4% of nominal GDP in 2013), was stepped up in 2014-15. However, the production side remains distorted by prices for piped gas that are below market rates, and the absence of taxes on fossil fuels. The latter has led to a rapid increase in the contribution of coal to electricity generation.</p>
Mexico (2017)	<p>The <i>Survey</i> observes that increasing and fixing the tax rates of the "Special Tax on Production and Services" (IEPS) has already increased the federal government's tax revenues. The creation of a separate carbon tax was also welcomed. The <i>Survey</i> notes that if the carbon-tax rate were to be increased and the tax base expanded (e.g. to include natural gas), it would have the potential to</p>

Economy and date of Survey	Comments and recommendations relating to fossil-fuel subsidies or taxation
Poland (2016)	<p>account for a significantly larger share of tax revenues.</p> <p>Noting that coal used by households for heating is a significant source of urban air pollution, is not subject to an environmental tax, the <i>Survey</i> points out that such a tax would reinforce the government's subsidy programmes to replace inefficient individual household heating systems and its plans to encourage the expansion of district heating.</p>
Portugal (2016)	<p>Portugal has been applying a carbon tax to oil products used in non-ETS sectors since 2015, with rates indexed to carbon prices under the EU Emissions Trading Scheme, subject to a floor. In addition, Portugal raised its fuel-excise taxes in 2016, but the tax on diesel continued to be lower than that for petrol. The <i>Survey</i> recommends that tax credits, allowances and exemptions, which are widely used (e.g., in agriculture and fishing), be reconsidered.</p>
Turkey (2016)	<p>The <i>Survey</i> points out that coal, unlike other fuels, is not subject to special consumption taxes, and that coal-consumption subsidies have been estimated at USD 730 million in 2013. It comments that Turkey's climate change and air pollution mitigation strategies would need to tackle coal-originated emissions more actively, including by promoting cleaner technologies in new plants.</p>
United States (2016)	<p>The <i>Survey</i> observes that increasing shortfall of the Federal Highway Trust Fund (financed by federal excise taxes on gasoline and diesel) and uncertainty over future federal transportation infrastructure funding arrangements have triggered state initiatives to raise funding, including via higher state fuel taxes and toll roads. It observes that "surface transportation infrastructure funding could be put on a sounder footing by making better use of user fees to address negative externalities more effectively. For example, heavy trucks account for just 4% of road users but represent almost one-quarter of the road maintenance costs, mainly because they cause greater damage to the road pavement. Boosting user fees for heavy trucks would help users internalise these externalities."</p>

Source: OECD.

The OECD's Environmental Performance Review (EPR) programme was launched in 1992. Reviews are conducted within a peer-review framework. To date, the OECD has conducted over 80 country reviews, including reviews of key partner economies, such as Brazil, China and South Africa. The reviews occur in cycles, and OECD countries are now being reviewed for the third time. A summary of the *Environmental Performance Reviews* published since the beginning of 2015 that have discussed fossil-fuel subsidies or fuel taxation is provided in Table 3.

The OECD's Environmental Action Programme (EAP) Task Force also undertakes reviews of energy subsidies in the EU's six Eastern Partnership (EaP) countries (Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine). During 2016 it carried out reviews in all of these countries; final reports of those reviews are expected to be published in 2017.

Table 4. OECD Environmental Performance Reviews published from 2015 through March 2017 that discuss support to fossil fuels

Country and year of review	Comments and recommendations relating to fossil-fuel subsidies or taxation
Brazil (2015)	The <i>Review</i> , noting the adjustments to federal CIDE tax on transport fuels that had been made in previous years, calls on Brazil to maintain positive rates for the federal CIDE tax on petrol and diesel and adjust them to reflect fuel carbon content and emissions of local air pollutants, and that it apply the CIDE to fuels used for aviation and stationary purposes (e.g. industry).
Chile (2016)	The <i>Review</i> observes that support for fossil fuels in Chile has been scaled back in recent years, though a fuel-price smoothing mechanism remains in place. This mechanism reduces the excise-tax rates on petrol and diesel when international fuel prices exceed a certain threshold, and raises them when international prices are low, subject to a cap on total fiscal expenditure. The <i>Review</i> recommends that the system should be examined carefully to ensure that it does not function as an implicit fossil-fuel subsidy.
Estonia (2017)	The <i>Review</i> , recommended that Estonia develop a comprehensive assessment of the extent and magnitude of environmentally harmful subsidies and set priorities for phasing them out; continue to phase out exemptions and preferential rates (including of energy excise taxes, and resource extraction taxes) for certain economic sectors, such as agriculture.
France (2016)	The <i>Review</i> notes that, in 2014, carbon began to be included in the taxation of fossil fuels, and the rate of the carbon tax was to be increased until 2017. Fuel oil duty was also increased in 2015 and 2016. The gap between the duty on diesel and fuel oil narrowed by almost six centimes per litre between 2014 and 2017. Overall, tax expenditures related to fossil fuels were estimated at EUR 6.2 billion in 2015, equivalent to 20% of energy tax revenues and 0.3 % of GDP. Among the <i>Review's</i> recommendations are that France develop environmental assessment of direct and indirect public support, in particular via prior evaluation of Budget Act measures, with a view to eliminating measures that may harm the environment; gradually eliminate exemptions to the transport fuel consumption tax
Korea (2017)	[To be completed after the release of the report, on 16 March 2017]
Netherlands (2015)	The <i>Review</i> recommends that The Netherlands consider partially switching from the taxation of electricity to the taxation of natural gas use in households, which is not covered by the EU ETS; contributing to effectively making the "cap" of the ETS stricter by buying and retiring some emission allowances; and reconsider the planned tax exemption for coal used in electricity generation, taking into account the impact of such a tax on local air pollution.
Poland (2015)	The <i>Review</i> observes that a broad range of exemptions to the payment of excise taxes on energy remains. It recommends, <i>inter alia</i> , that Poland review its system of environmentally related taxes and charges with a view to imposing an effective carbon tax on fuel used in the sectors not covered by the EU ETS; provide targeted support for households adversely affected by higher energy, water or waste prices; continue to regularly review and, when appropriate, reform tax expenditures and direct and indirect subsidies, based on their economic, environmental and social impacts; and reduce incentives for co-firing biomass with coal.
Spain (2015)	The <i>Review</i> acknowledges that new measures passed in 2012 significantly extended the energy tax base, adding a tax on fossil fuels used for electricity production, natural gas used for heating, and fuels for energy transformation. However, these new taxes, as well as the previous tax on coal, apply to energy on a volumetric basis, with no consideration of their carbon content. On a gigajoule (GJ) basis, coal and natural gas are taxed the same amount when used for electricity generation. Among other recommendations, the <i>Review</i> calls on Spain to extend and refine the use of environmentally related taxes in the framework of a comprehensive tax reform, including by: specifying a carbon component in the tax on fuels used in the sectors not covered by the EU emissions trading system, as well as increasing the tax on diesel used in transport to at least the same level as that for gasoline.

Source: OECD.