

FOSSIL FUEL SUBSIDIES REFORM IN CHINA

2016

CURRENT CIRCUMSTANCES AND FUTURE DIRECTIONS



EXECUTIVE SUMMARY

In 2016, the signing and rapid adoption of the Paris Agreement injected new vitality into global action on climate change. The agreement sent a powerful signal to the world: it is time to phase out fossil fuels, and future energy needs will be met by clean and low carbon sources. Given this, the elimination of inefficient subsidies for fossil fuels returned to the agenda of climate and economic policymakers, and featured at the G7 and G20 summits this year. At the G7, heads of state set a deadline of 2025 for eliminating fossil fuel subsidies.

China, the world's second largest economy and the largest emitter of greenhouse gases, has taken a proactive approach on this. In 2013, it accepted a US invitation to participate in the first peer review of fossil fuels subsidies under the G20 framework, with the outcomes – including a Self Report and a Peer Review – submitted at the G20 summit in Hangzhou in 2016. The peer review process increased transparency around China's fossil fuel subsidy policies and produced the country's first ever roadmap for reform.

There is no universal definition nor scale of fossil fuel subsidies. Different international bodies, such as the International Energy Administration (IEA) and the Organisation for Economic Cooperation and Development (OECD), have estimated the size of China's fossil fuel subsidies, but using different methodologies and so obtaining different results. China's publication of the details of its subsidies and a roadmap for reform adds certainty to these discussions.

This briefing will provide clear guidance to any reader interested in the reform of China's fossil fuel subsidies. It reviews discussion to date on these subsidies and the outcomes of the US-China peer review process, and then covers key areas and directions of reform.

It should be noted that China's reform of fossil fuel subsidies

is taking place not only through the US-China peer review process but within a wider policy reform process. This ranges from the reform of China's energy pricing mechanisms, of environmental taxation, and of the division of fiscal and administrative powers between central and local governments – all key areas of reform for China. We hold that comprehensive reform of China's fossil fuel subsidies should include at least the following:

- Complete elimination of preferential urban land use taxation for oil and gas firms
- Disclosure of expenses and profits for heating firms, and reassessment of the need for subsidies for these firms
- Accelerated reform of fuel tax subsidies
- Internalisation of environmental costs of fossil fuels, through reform of environmental and resource taxes and an environmental pricing system
- Accelerated reform of the electricity system, and the elimination of preferences and guarantees for coal power

This opportunity to reform environmental taxation policy should be seized, going beyond the scope of the US-China peer review in order to bring about an early resetting of the relationship between environmental protection and economic development.

The peer review is just the first step towards a more thorough reform of fossil fuel subsidies in China. Follow-up steps need to be taken to implement the roadmap outlined in the review, and to come up with policy interventions that address the socio-economic impacts of the reform. Phasing out fossil fuel subsidies in China will touch on many fundamental economic policies. It will also affect the bottom lines of multiple interest groups. Carrying it through requires strong political will and resolution.

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BACKGROUND

Reform of Fossil Fuel Subsidies and its Significance

There is no international consensus on the definition of fossil fuel subsidies, nor any standard definition. The World Trade Organization's (WTO) definition of "subsidy" covers three elements (i) a financial contribution (ii) by a government or any public body within the territory of a Member (iii) which confers a benefit. According to this definition, fossil fuel subsidies can in principle be understood as various forms of direct and indirect assistance provided by governments for fossil fuels out of energy security considerations, to encourage the domestic supply of energy and provide cheap energy.

In the recently concluded peer review process, China and the US identified three main types of fossil fuel subsidy to review:

1. Fiscal expenditure subsidies. Refers to various forms of direct fiscal transfer from the government, including direct disbursements to consumers and producers, and related special funds;
2. Preferential taxation. Refers to the reduction in government income caused by tax reductions and special taxation provisions, including tax deduction and exemption, preferential tax rates, tax rebates and tax credits, etc.;
3. Relevant subsidies arising out of other market regulatory measures. Refers to the subsidies arising from market regulation and control mechanisms.

Since the early 1990s academic and international bodies have been discussing the scale of fossil fuel subsidies, methods of reform, and the possible impacts of those reforms. However, it was not brought up to the policy agenda until after the financial crisis of 2008. With national governments looking to reduce expenditure and increasing calls for a global response to climate change, the benefits of eliminating fossil fuel subsidies became more apparent.

The time was right. At the G20 meeting in Pittsburgh in September 2009, consensus was reached on a commitment "to phase out and rationalize over the medium term inefficient fossil fuel subsidies". Two months later Asia-Pacific Economic Cooperation (APEC) leaders meeting in Singapore made a similar commitment.

Reform of fossil fuel subsidies will have multiple benefits for the global economy, society and the environment. In economic terms, governments will save significant amounts of money; in social terms, subsidies will no longer flow primarily into the pockets of the rich; and in environmental terms unnecessary consumption of fossil fuels will no longer be encouraged, thus solving a range of associated environmental issues.

Methodologies for Calculating Fossil Fuel Subsidies

Different definitions of fossil fuel subsidies mean there are different methodologies for calculation. There are three commonly used methodologies: the inventory approach; hidden costs and quasi-fiscal deficits; and the price gap approach.

1. The inventory approach: List government policies encouraging the production or consumption of fossil fuels and calculate the monetary value of those policies. The OECD uses this method to calculate fossil fuel subsidies, with its inventories including both direct governmental expenditure and tax breaks for fossil fuels;
2. The price gap approach: This compares the “reference price” in an ideal, fully competitive market with the prices consumers actually pay to calculate the value of fossil fuel subsidies. This method is used by the IEA;
3. The hidden costs approach: Includes all unnecessary operational costs, including overstaffing and system losses. This method is used by the International Monetary Fund (IMF).

Masami Kojima, an energy specialist at the World Bank, has carried out a detailed examination of the strengths and weaknesses of each method, as shown in the table below¹.

Table 1: Complementarities and relative strengths of different measurement approaches

Approach	Use	Strengths	Challenges
Price gap	Benchmarking market prices and estimating price subsidies. Essential for pricing reform.	Could be less data-intensive than other methods. Good indicator of pricing distortions.	Ignores distortions that do not affect price levels. Does not capture gross inefficiencies resulting in high prices.
Hidden costs & quasi-fiscal deficits	Benchmarking sector performance, identifying contingent liabilities, identifying areas of operational inefficiencies and scope for cost reduction. Analysis integral to reform in network energy.	Captures areas of inefficiency and malpractice. Policymaking can focus on both subsidy reduction and cost reduction. Good for improving market and corporate governance. Useful even where there are no subsidies as defined in this paper.	Data tend to be less available than for price gap. Local government data, such as for district heating subsidies, are especially challenging to obtain.
Inventory approach	Mapping out all sources of subsidies, and often all measures of support beyond subsidies. Qualitative starting points can be iteratively improved over time.	Integrates transfers with market price support into holistic measurements of support. If a TSE framework is used, policy interactions between producers and consumers can be illustrated.	Most data intensive. Operational inefficiencies are not necessarily captured.

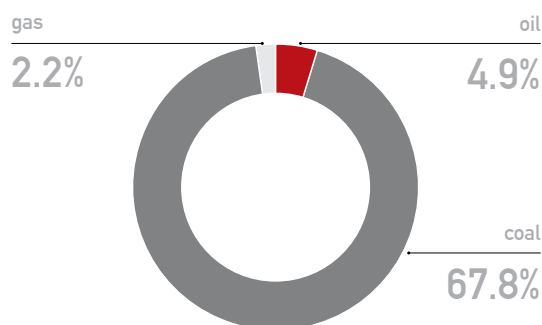
Source: World Bank

¹ (Kojima and Koplow, 2015) <https://openknowledge.worldbank.org/bitstream/handle/10986/21659/WPS7220.pdf?sequence=1&isAllowed=y>

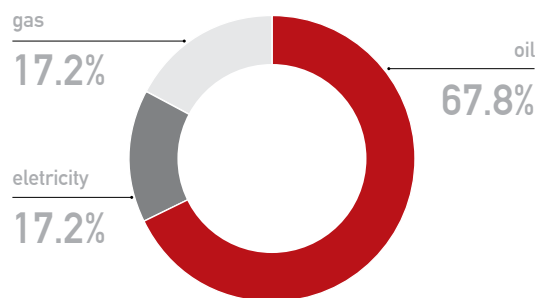
Existing Research into Fossil Fuel Subsidies and Calculation of China's Subsidies

Using their different methodologies, the IEA, OECD and IMF have calculated the scale of fossil fuel subsidies in different countries. Different methodologies and scopes of study mean that results differ widely and can neither be directly compared nor combined to produce an "overall" calculation.

The IMF's latest calculations, from 2015, put the value of energy subsidies worldwide in 2013 at US\$4.9 trillion. This includes "pre-tax" subsidies – the gap between the price paid by individual or business consumers and the actual cost of supply added to the cost of environmental damage caused by fuel consumption (including climate change and local pollution). Research has put the value of post-tax fossil fuel subsidies in China at US\$2.2 trillion, with the two largest components of this being damage caused by pollution (US\$1.7 trillion) and climate change (US\$433.7 billion). Coal, oil and natural gas received 93.9%, 4.9%, and 2.2% of total subsidies, respectively.



The IEA's 2015 World Energy Outlook calculated that in 2014 global fossil fuel subsidies were worth US\$493 billion; based on the price-gap approach, the difference between energy prices paid by consumers and a reference price. China accounted for US\$17.3 billion of this; with oil, electricity (largely coal-generated) and natural gas receiving 67.8%, 15% and 17.2% of the total, respectively.



Using the inventory approach, the OECD has calculated that between 2010 and 2014 annual direct government expenditure on fossil fuel and tax breaks was worth between US\$160-220 billion. Total subsidies in China for 2014 were about 220 billion yuan, with the bulk of financial support and tax breaks going to the oil industry.

¹ (IMF, 2015) <https://www.imf.org/external/chinese/np/blog/2015/051815bc.pdf>

² (IMF, 2015) How Large are Global Energy Subsidies? Country-level Subsidy Estimates,

³ (OECD/IEA, 2015) IEA fossil-fuel subsidies database

FOSSIL FUEL SUBSIDIES IN CHINA: CURRENT CIRCUMSTANCES

Prior to 2016, there were large discrepancies in calculations of the size of China's fossil fuel subsidies carried out by different international bodies, due to the differing methodologies applied. This meant there was no solid basis for analysis of these subsidies. But with the completion of the G20 peer review process and the publication of the Self Report and Peer Review Report in September 2016, a more accurate picture is available of the current state of affairs and future direction for reforms.

The US-China Fossil Fuel Subsidy Peer Review Process under the G20 Framework

At the September 2009 summit in Pittsburgh, G20 leaders committed to “phase out and rationalise, over the medium term, inefficient fossil fuel subsidies”. Two months later APEC leaders made a similar promise when they met in Singapore.

But in the three years since, the G20 has failed to introduce the tangible measures needed to turn high-level political commitments into action. The only mechanism available has been a non-binding, voluntary self-reporting system.

Following Pittsburgh, finance ministers were instructed to develop a voluntary peer review process to push fossil fuel reforms forward. In 2013, a methodology was published by which G20 members could evaluate the policies and policy outcomes of other nations. The results of those evaluations would, in theory, inform future G20 decisions.

The Peer Review Process

In 2013, the US made China an offer: for the two nations to complete the G20's first round of fossil fuel subsidy peer review jointly. China quickly agreed and during US vice-

president Joseph Biden's visit to China, in late 2013, the two sides announced the peer review would go ahead.

This speed was possible due to the two countries' existing dialogues outside the G20 framework, on the economy, energy and climate issues. The understanding and trust built up through the China-US Strategic and Economic Dialogue was particularly important.

Subsequently, the US and China used the Methodology for G20 Voluntary Peer Reviews on Inefficient Fossil Fuel Subsidies That Encourage Wasteful Consumption and started work. Key points in the process were as follows:

1. July 2014: China and the US reached agreement on Terms of Reference for the peer review process;
2. May 2015: Members of the review groups were confirmed. The group reviewing China's subsidies included representatives from Germany and Indonesia, US government officials, and IMF and OECD experts;
3. 2014 and 2015: Groups of American and Chinese experts agreed on the definition, methodology and scope of the review, and completed their own Self Reports;
4. April 2016: The peer review expert group completed its study tour in Beijing;
5. May 2016: The peer review expert group completed its study tour in Washington;
6. September 2016: The process was completed, and the Self Report and Peer Review Reports were published jointly at the G20 summit.

The peer review process provides a model of how to implement the G20's suggested procedure, and an experience of how to use the “inventory method” to analyse fossil fuel subsidies, particularly when dealing with cross-subsidies.

Peer Review Outcomes

The peer review process ultimately produced four documents: two Self Reports ^{5,6} from the Chinese and US, and two Peer Review Reports ^{7,8}.

China's Self Report identified nine fossil fuel subsidies in need of reform, amongst them; subsidies supporting extraction and refining, for electricity and heat generation, and for end-user transportation and household consumption. The table below includes estimates of the fiscal cost of these nine subsidies, how long they have been in place and the proposed method to reform them.

The US Self Report identified 16 fossil fuel subsidies at the extraction and development stages, and one in the residential sector.

Although a lack of data meant that China's Self Report only provided cost estimates for three subsidy policies, totalling 96.8 billion yuan, this was the first time China's government had put forward a clear roadmap and timetable for fossil fuel subsidy reform. This may do more to bring about real action than simple figures. Under the roadmap, two subsidies (exemptions from consumption taxes for fuels produced; and those used by oil and gas firms) are to be reformed between 2015 and 2020, while reform of the remaining seven policies is expected before 2030.

Of these nine subsidies, only one involves direct

government expenditure (the subsidy paid to some fuel users), with the rest being tax reductions and exemptions.

Due to the scope of the G20 process, the Self Reports only included subsidies listed under the inventory approach, meaning there was no measurement of the hidden subsidies for environmental damage or carbon emissions, or of price distortions. But in the process of reforming subsidies those policies must be examined and improved.

Also, the Chinese expert group, organized by the Ministry of Finance, carried out a full review of nine of the subsidies, examining their policy aims, the departments in charge, timescales, etc. Some subsidies was also calculated within the process deadline. Unfortunately, as China is still in the process of restructuring its tax expenditure system, ⁹ it is not possible to accurately calculate the total amount of subsidies delivered as tax reductions.

⁵ Germany, Indonesia, the United States, the IMF (2016): China's efforts to phase out and rationalise its inefficient fossil fuel subsidies: A report on the G20 peer review of inefficient fossil fuel subsidies that encourage wasteful consumption in China <http://www.g20.org/hywj/dncgwj/201609/P020160919419024987069.pdf>

⁶ China, Germany, Mexico, the OECD (2016): The United States' efforts to phase out and rationalise its inefficient fossil fuel subsidies: A report on the G20 peer review of inefficient fossil-fuel subsidies that encourage wasteful consumption in the United States <http://www.g20.org/hywj/dncgwj/201609/P020160919415264816685.pdf>

⁷ China (2016): G20 Voluntary Peer Review by China and the United States on Inefficient Fossil Fuel Subsidies that Encourage Wasteful Consumption: China Self-review Report

⁸ United States (2016): United States Self-Review of Fossil Fuel Subsidies

⁹ Under a tax expenditure system the government provides tax breaks to certain taxpayers, reducing government income from taxation. As that loss of income reduces government expenditure, the tax breaks are equivalent to a special type of government expenditure.

Table 2: 9 Fossil Fuel Subsidies identified in China's Self Report and Peer Review Response

	Estimated fiscal cost (100m yuan)	In effect since	Timetable for reform	Direction of reform
Subsidies for the exploration, development, and extraction of fossil fuels				
A consumption-tax policy of 'refund after payment' for refined oil produced by oil (gas) field enterprised for own use	27 (corrected figure)	2009-	Near to mid-term	Move point of taxation for refined oil
A policy of exempting China National Petroleum Corporation (CNPC) from land-use tax	Not currently available	1989-	Mid to long-term	Cancel policy
A policy of land-use tax exemption for China National Offshore Oil Corporation (CNOOC)	Not currently available	1990-	Mid to long-term	Cancel policy
Subsidies for the refining and processing of fossil fuels				
A policy of consumption-tax exemption for oil consumed by refined oil manufacturing enterprises for own use	1 (corrected figure)	2009-	Near to mid-term	Move point of taxation for refined oil
Subsidies for power and heat generation				
A policy of exempting thermal power stations from land-use tax in cities and towns	Not currently available	1989-	Mid to long-term	Cancel policy
A policy of VAT exemption for heating fees of heat supply enterprises for individual residents	Not currently available	Heating season of 2011 to end of 2015	Mid to long-term	Cancel policy
A policy of exempting heat-supply enterprises from real-estate tax and urban land-use tax	Not currently available	July 1, 2011 to end of 2015	Mid to long-term	Cancel policy
Subsidies for fossil fuels used in transport				
A series of Subsidies Derived from Petroleum Fuels Price and Tax Reform	940	2009-	Mid to long-term	Improvements
Subsidies for fossil fuels used in the residential sector				
A preferential eas-rate policy of value-added tax (VAT) on coal gas and liquefied petroleum gas	Not currently available	1994-	Mid to long-term	Abolish 13% preferential VAT rate

Source: chinadialogue and Energy Foundation China

BEYOND THE PEER REVIEW: PROGRESS AND DIRECTION IN CHINA'S REFORM OF FOSSIL FUEL SUBSIDIES

The peer review process saw China sketch out the key fields and roadmaps for reform of fossil fuel subsidies for the first time. It provides a timetable for multiple reforms in the run up to 2030 and is the first step towards actual reform. However, the progress of these reforms will be closely tied to other ongoing policy reforms such as China's energy pricing mechanisms, environmental taxation, and the division of financial and administrative powers between central and local government. This will be a difficult process.

Comprehensive reform of China's fossil fuel subsidies will require:

1. Fully implementation of short, medium and long term reform roadmaps for the nine items identified in the Self Report, including:

- Elimination of preferential urban land taxation for oil and gas firms;
- Disclosure of expenses and profits for heating firms, and a reassessment of the need for subsidies for these firms;
- Continued reform of fuel tax subsidies;

2. Internalisation of the environmental costs of fossil fuels through reform of environmental and resource taxes and an environmental pricing system;

3. Acceleration of reform of the power sector, elimination of preferences and guarantees for coal power and improvement of the competitiveness of renewable energy.

Fossil Fuel Subsidies and Reform of Urban Land Taxation for Oil and Gas Firms

Of the nine policies identified in China's Self Report, four relate to exemptions or reductions in urban land use taxes. A major part of the next phase of subsidy reform will be the removal of these preferential tax policies.

This is good news for local government. China's 1994 fiscal reform plan devolved powers over the collection and spending of urban land taxes to local government. The preferential taxes offered to big oil and gas companies have resulted in a loss in revenue for local government and environmental damage.

A good example of this is Dongying City, in Shandong province on China's east coast. Oil and gas giant Sinopec's Shengli field alone paid 5.05 billion yuan (US\$740 million) less in tax in 2013¹⁰, which is equivalent to 28.3% of the 2013 total tax revenue for the city¹¹, where the oil field is located. Similarly, tax authorities in Shaanxi province, north-western China, calculated PetroChina's Changqing field is exempt from 115 million yuan (US\$16.9 million) in land taxes annually¹².

Local governments have been strongly opposed to these tax exemptions and have long-lobbied the Ministry of Finance and other central authorities to abolish them.

Reform of this policy is already underway. In 2015, the scope of exemptions from urban land taxes for oil and gas firms was narrowed. This resulted in large increases in taxation income for some local governments. Table 3 shows how the exemptions have been greatly reduced:

¹⁰ Song Shumin, Gao Hong 2014. <http://www.e521.com/sssw/yjbg/387149.shtml>

¹¹ Dongying municipal government, 2013. http://zfxgk.dongying.gov.cn/gov/jcms_files/jcms1/web76/site/art/2015/6/26/art_4533_88626.html

¹² Shaanxi People's Government, Shaanxi Tax Bureau, 2015. <http://ducha.shaanxi.gov.cn/suggest/websit/htmlfiles/jycont/9551.htm>

Table 3: Comparison of urban land tax exemptions for oil and gas firms in 1989 and 2015

	Scope of exemptions in 1989	Scope of exemptions in 2015
	Prospecting, drilling, underground works, land used temporarily for surface works for oil fields.	Prospecting, drilling, underground works, land used temporarily for surface works for oil and gas fields.
	Land used for oil (and gas) wells, wells for injection of water (and gas), water wells.	No exemptions
Land for production and construction	Land, other than used for offices or accommodation, within oil fields for dedicated roads, railways and oil (or gas / water) pipelines	Land used for dedicated roads, railways and oil (or gas / water) pipelines outside of the company's land.
	Land for long distance oil pipelines	Land for long-distance oil pipelines
	Land for communications and electricity lines.	No exemptions
Land for production and accommodation	All land used for surface equipment for oil (gas) wells, including collection, measurement, transfer, storage and transportation, loading and unloading and general handling	No exemptions
	All land used for surface equipment to water (gas) injection wells, including distribution, extraction and transfer of water; and supply, distribution, compression and gas lifting.	No exemptions
	Land for electricity supply (distribution) equipment, water supply and drainage facilities, firefighting, flood prevention, flood drainage, and wind and sand breaks.	Land for firefighting, flood prevention and drainage, and wind and sand breaks outside of urban areas.
	Land used for basic housing, portable cabins, camps and tents for workers and their families	No exemptions

Source: chinadialogue and Energy Foundation China

This resulted in large increases in taxation income for some local governments. Karamay, an oil and gas city in Xinjiang, for example, saw an extra 100 million yuan (US\$14.7 million)¹³ in income in the first half of 2016 alone. This is with the reforms being phased in – the companies were still being given a 50% reduction on these taxes in the second half of 2015 and throughout 2016. When the full taxes are collected the boost to government coffers will be even larger.

But these recent changes were aimed mainly at the temporary use of land for prospecting and exploration. Preferential policies are still in place for laying pipelines and for other uses. The next stage will be to do away with these subsidies altogether, in line with local government wishes.

¹³ Karamay Tax Bureau, 2016. <http://kmy.xj-l-tax.gov.cn/n5953/n5984/n5985/c1057360/content.html>

Fossil Fuel Subsidies and Subsidies for Heating Firms

Of the nine policies identified in China's Self Report, four relate to the subsidies for heating suppliers: exemptions from property and land taxes, and from value-added taxes. The intent here is to ensure these firms continue to operate normally, providing affordable heating to some low-income groups. But as the Self Report states, these policies do not encourage heating supply firms to save energy and reduce emissions, and are given to the population as a whole rather than those specifically in need. To an extent, this causes wasteful use of fossil fuels.

Reform of heating subsidies requires a re-examination of the profitability of these companies. The price of coal has fallen steadily since 2011, when it peaked at 853 yuan a tonne¹⁴. However, subsidies instituted at times of high prices have not been revoked. As fuel accounts for 60% of the costs of these firms, cheaper fuel means greater profits.

The annual reports of many heating supply firms show significant profits. A firm in Dalian called Dalian Heat and Power supplies 30% of the city and saw net profit margin of 36.56% in the first half of 2016. Firms in Shanxi, Shenyang and Harbin have reported net profit margin of 24.57%¹⁵, 30.12%¹⁶, and 33.72%¹⁷. Subsidising firms that are already very profitable is a waste of public funds.

It will be necessary to fix pricing mechanisms for heating supply when eliminating these reforms. In 2005 the National Development and Reform Commission published a guideline¹⁸ stating that a change of 10% or more in coal prices would result in an adjustment of the cost of heating. However, city and provincial governments have not implemented this policy. Indeed, the vast majority of localities do not link the cost of heating to that of coal. In some localities, due to government intervention and public pressure to keep heating prices low, heating firms resist reforms that may affect their bottom line. In recent years the public has complained that the cost of heating has not fallen, and local consumer authorities are discussing how to link prices of coal and heating, using pricing mechanisms to pass on rising or falling costs to the consumer. A more detailed system for doing this will require transparency of the costs incurred by heating firms. Unreasonable expenditures should not be reflected in pricing mechanisms or ultimately borne by government or consumers. This will force companies to use better technology and management techniques to reduce fuel use.

¹⁴ Average price of 5,500 kilocalorie/kg thermal coal in the Bohai Gulf region

¹⁵ Shanxi Tongbao Energy, 2015. <http://www.jinnengjt.com/pub/jnjt/zjzn/xxpl/201606/P020160630650622172165.pdf>

¹⁶ Lianmei Holdings, 2015. <http://www.cninfo.com.cn/finalpage/2016-04-28/1202257976.PDF>

¹⁷ Harbin Investments, 2016. <http://q.stock.sohu.com/newpdf/201623868855.pdf>

¹⁸ NDRC, Ministry of Construction, 2005. http://www.sdpc.gov.cn/zwfwxz/zfdj/jggg/200511/t20051107_128931.html

Fuel Subsidies

According to the Self Report, subsidies related to petroleum fuel pricing and tax reform represented the largest and clearest data. Media reports claim that China's central government paid 573.4 billion yuan (US\$84.2 billion)¹⁹ in fuel subsidies for public transport, forestry and fishing. This is approximately 20 times the amount central government spent on energy-saving and environmental protection in 2015²⁰. The fiscal burden of these subsidies is both enormous and unsustainable.

Fuel subsidies were launched in 2006 to cushion the impact of oil price reforms on vulnerable groups. To prevent oil

price increases raising the cost of living for these groups, the fishery, forestry and urban public transport sectors were subsidised to artificially lower fuel prices.

But the Self Report finds that such subsidies are poorly targeted and do not reach low-income groups. For example, the diesel subsidy for the fishing industry flows to commercial fishing firms rather than fishermen. Such subsidies fail to meet the G20 aim of only retaining subsidies that "provide targeted support for the poorest."

As fuel subsidies are determined based on usage, the more fuel you use the more you benefit from the subsidy.

Table 4: Annual cost of fuel subsidies (100m yuan)

Year	2010	2011	2012	2013
Fishing	67.69	207.29	236.63	259.13
Forestry	15.41	50.10	61.73	46.43
Urban transport	96.03	306.53	363.16	311.53
Rural public buses	36.46	128.77	148.17	114.26
Taxis	63.13	186.06	209.90	170.43
Other spending	13.28	21.90	22.70	41.14

Source: Ministry of Finance .

Note: Staple crop farmers receive fuel subsidies via the direct general agricultural subsidy; while fuel subsidies for low-income groups are paid via welfare payments.

¹⁹ Ministry of Finance, 2016. http://www.mof.gov.cn/zhengwuxinxi/caijingshidian/jjrb/201605/t20160512_1987114.html

²⁰ Ministry of Finance, 2015. http://www.mof.gov.cn/zhengwuxinxi/caizhengxinwen/201503/t20150306_1198633.html

This fails to incentivise reduced usage, worsening environmental and climate problems.

The Self Report and the peer-review report identified fuel subsidies as being ineffective and leading to waste. It calls for them to be abolished.

Although the Self Report only provided general information on how these subsidies would be reformed (e.g. a sector-by-sector approach, gradually decoupling subsidies from fuel use, and providing alternative safeguards), what is certain is that reform of fuel subsidies is already underway and there is a clear roadmap for

the future. In 2015, the Ministry of Finance and other authorities started reforms of fuel subsidies, with specific measures for different types of recipient. These are summarised in the following table.

The G20 peer review process has breathed new life into an ongoing process of fuel subsidy reform.

Table 5: Specific measures for reform of fuel subsidies

Existing fuel subsidy	Reform measures	Responsible body
Fishing industry fuel subsidy	Transfer money into central government funds for scrapping and upgrading fishing vessels, in support of capacity building efforts such as the use of international fisheries and upgrading the fishing fleet.	Ministry of Agriculture to draw up specific plans.
Forestry fuel subsidy	To be folded into central government forestry subsidy funds.	Jointly managed by the Ministry of Finance and State Forestry Administration
Fuel subsidy for rural buses and taxis	To be added to normal central government disbursements to local governments and reduced annually by 2019 to 60% of the 2014 level. There will be a new rule that subsidies may not be linked to quantity or price of fuel used. Money saved will be distributed by local government to support development of local transportation and clean-energy taxis.	Local governments

Source: chinadialogue and Energy Foundation China

Fossil Fuel Subsidies and Reform of Environmental Taxation

In China, the environmental and resource losses involved in the production and use of fossil fuels are not reflected in prices – creating a possible hidden subsidy. China's Self Report does not identify negative environmental impacts as inefficient subsidies, but it does say that "resource and environmental taxation reforms" aimed at increasing the costs of using fossil fuels should be a key part of the subsidy reform process.

1. RESOURCE TAX REFORM

China started to reform oil and gas resource taxes in 2011, and coal resource taxes in 2014.

The aim of this round of reforms, particularly in the coal sector, was to replace arbitrary local government fees with better administrated and rationalized taxes. The principle of this round of reform was to not create extra tax burdens on enterprises. While eliminating such fees, the new resource taxes are to be based on the value of those resources, rather than the amount of resources extracted to avoid disturbing business practices and to phase-in reform more gradually. Attempts to avoid increasing the burden on taxpayers have certainly succeeded: statistics from the taxation authorities show that 36.6 billion yuan less in coal-related fees was collected in 2015. This reduced the burden on coal firms by 18.1 billion yuan.²¹

China's attempt to remove fees and replace these with taxes is praiseworthy. However, it is unclear whether not increasing the overall burden on taxpayers will genuinely reflect the scarcity and value of resources.

In this round of reform the central government instructed provincial tax authorities to first eliminate fees and then implement taxes, with a coal resource tax of between 2-10% depending on the ability of local firms to pay. In practice the localities set the tax rate to replace income lost from fees and did not take scarcity or environmental costs into account. In Anhui, for example, the tax authorities calculated that income from the existing resource tax, mining resource compensation fees and price adjustments funds was 830 million yuan. Accordingly, a coal resource tax rate of 2% was set²².

The data currently available suggests these reforms have placed too much emphasis on stabilizing the tax burden on resource firms. However, a resource tax should aim to reflect the scarcity and value of resources, internalising the social and environmental costs of extraction and promoting sustainable use. These reforms have failed to do this fully. China's suggestion in the Self Report that it will use resource tax reform to increase the costs of fossil fuel use needs to be further realised in future reform measures.

2. REFORM OF ENVIRONMENTAL TAXATION AND THE CARBON TAX

The peer-review group also called for an overall improvement of the data and understanding around the environmental impacts of fossil fuel subsidies in China, both in terms of greenhouse gas emissions and other forms of pollution. In fact, as early as 2004, the State Environmental Protection Agency (now the Ministry for Environmental Protection or MEP) and the National Bureau of Statistics led efforts to calculate "green GDP", which would take account of the cost of harmful factors such as air and water pollution, and solid waste.

²¹ State Administration of Taxation, 2016. <http://www.chinatax.gov.cn/n810219/n810724/c2196194/content.html>

²² Henan Tax Bureau, 2016. <http://www.ha-l-tax.gov.cn/sitegroup/root/html/ff8080813870bb2d013879382c01259a/20150602080288731.html>

Table 6: Comparison of pollution taxes and charges at the state and national level (yuan/kg)

Pollutant	Tax rate in the draft Environmental Protection Tax Law (2016)	National pollution charges (2014)	Beijing Pollution Charges (2013)	Tianjin Pollution Charges (2014)	Shanghai Pollution Charges (2015)
Sulphur dioxide	1.26	1.26	10	6.3	4
Nitrogen oxides	1.26	1.26	10	8.5	4
Chemical oxygen demand	1.4	1.4	10	7.5	3
ammonia	1.75	1.75	12	9.5	3
Taxis	63.13	186.06	209.90	170.43	
Other spending	13.28	21.90	22.70	41.14	

Source: chinadialogue and Energy Foundation China

In 2014, the MEP’s Chinese Academy of Environmental Planning found that 204.76 yuan (US\$30) of environmental externalities were incurred during the production and transportation of each tonne of coal output – equal to 28% of the coal price at the time.

Also in 2014, research by the Natural Resources Defense Council and Tsinghua University found externalities across the entire coal lifecycle to be even higher at 260.30 yuan (US\$38.23).

To clarify the costs and internalise them, China is reforming its environmental taxes. In December 2016, the Standing Committee of the National People’s Congress, China’s highest legislative body, passed an Environmental Protection Tax Law. The progress of the law is an important step in China’s reform of fossil fuel subsidies. Taxing environmental emissions arising from the production and use of fossil fuels will better reflect the environmental impacts and reduce hidden subsidies.

Table 6 compares the floor tax rates in the new law and existing central and local charges for pollution. According to the new law, local government can set environmental tax rates within their jurisdictions at or above the floor tax

rate level. Like the resource tax, it shows that the new tax has been designed to keep overall costs the same. The floor tax rates are far below that needed to cover external costs and eliminate hidden subsidies. Indeed, it may be cheaper for companies to pay the tax than to reduce emissions.

For example, the Chinese Academy of Environmental Planning, which is part of the Ministry of Environmental Protection, calculated that it costs 2 yuan to remove one kilogramme of sulphur from waste gases, and 5 yuan to remove one kilogramme of nitrogen oxides from a coal-fired power plant. In both cases, the proposed floor tax rate of 1.26 yuan per kilogramme is the cheaper option. If localities set the environmental tax based on these tax rates, the impact of the environmental protection tax on emissions will be greatly undermined.

Local governments are already using economic levers to reduce emissions and charge higher tax rates. Beijing, Shanghai and Tianjin already have pollution charges in place that are higher than the proposed tax. This information could be used in setting a higher floor tax rate. Efforts to avoid increasing the overall burden place too much emphasis on stability and the eventual effects may not be ideal.

The reform of resource and environmental tax systems proposed in the Self Report will require a much higher environmental protection tax rate, and where appropriate a carbon tax.

The Standing Committee has said that the idea of a carbon tax is more controversial and will not, at the moment, be implemented. Researchers, including a team from the Ministry of Finance affiliated Chinese Academy of Fiscal Sciences, have put forward detailed carbon tax proposals, covering implementation schedules, tax rates and scope of the tax base. This has been accompanied by debate among stakeholders. Without a consensus on a carbon tax, it is unlikely that the Standing Committee will legislate. However, the possibility of implementing a carbon tax as a part of the environmental protection tax should not be written off. Even if it cannot be done now, the legislative foundation for future implementation can be established.

China will launch a national carbon market in 2017, covering the petrochemicals, chemicals, building materials, steel, ferrous metals, paper-making, power-generation and aviation sectors. Any firm in these sectors with annual energy consumption of more than 10,000 tonnes of standard coal equivalent (TCE) must participate in the market. These firms account for half of all China's carbon emissions. With the market established and gradual increases in the carbon price, the external environmental costs of fossil fuels will to some degree be reflected in the costs of firms producing and using these sources of energy. For firms not participating in the market, a carbon tax could be used to internalise those external costs.

Fossil Fuel Subsidies and Coal

Slower economic growth has resulted in large surpluses in coal-fired power capacity appearing in the last two years. 2015 saw average annual hours of utilisation drop from about 5,000 to 4,239 – indicating more than 20% of capacity is unneeded²³. This has led some localities to preferentially purchase coal-fired power to ensure output targets are met.

In November 2016, the National Development and Reform Commission and the National Energy Administration published a programme for electricity development during the 13th Five Year Plan period. This would see coal-fired power capacity increase from 900 gigawatts to 1,100 gigawatts from 2015 to 2020, meaning China will still add an extra 200 gigawatts of coal-fired power. But with demand for power slowing, this may just exacerbate the surplus, leading to further wastage of renewable power.

Although government guidance on electricity reforms have made clear to accelerate the marketization of power sector, and that power generation and consumption plans should be opened up, progress has been slow. The power generation and consumption plans are a product of the planned economy era, through which the government allocates and distributes electricity. Although this does have some benefits, such as ensuring grid stability, it hampers the role of the market. In November 2015 and July 2016 the National Development and Reform Commission and the National Energy Administration issued documents on opening up power generation and consumption plans, and while this was an important step in market reforms of the electricity-generation sector, some coal-fired power generation remains insulated from

the market – a benchmark number of hours of generation will be purchased from these firms at the standard tariff, guaranteeing a certain degree of profit. The documents required local governments to set benchmark hours of operation which would ensure generators could keep running and, in line with those figures, arrange purchase of that electricity by power retailers and consumers. In effect this is policy support for coal-fired power – a possible hidden subsidy. Fully eliminating such subsidies requires further opening up of power generation and consumption plans.

It is worth noting that not all government financial support for the coal-fired power sector takes the form of subsidies. For example efforts to reduce inefficient and surplus coal sector capacity, particularly in mining, has included a central government fund to help affected workers. In May 2016, the Ministry of Finance published rules²⁴ for the management of funds for industrial restructuring, allocating 100 billion yuan over two years. According to calculations by the Ministry of Human Resources and Social Security, the reduction of capacity in the coal sector will require finding new roles for 1.3 million workers. The rules of such funding stipulate that only when production capacities are permanently eliminated (i.e. dismantling equipment, shutting down shafts, etc.) can local governments and enterprises be eligible for financial support. Some local governments already have schemes using these funds in place, providing financial assistance and subsidies for job creation and new businesses. These funds were not mentioned in the Self Report, but the Peer Report did state that, assuming the funds are used to ensure the surplus capacity is removed permanently, these are not ineffective or wasteful.

²³ China Electricity Council: Analysis and Prediction of Trends in Electricity Supply and Demand, 2016.

²⁴ Management of Funds for Restructuring of Industrial Enterprises. <http://jjs.mof.gov.cn/zhengwuxinxi/zhengcefagui/201605/P020160519546386062558.pdf>

OBSTACLES AND CHALLENGES TO FOSSIL FUEL SUBSIDY REFORM

The fossil fuel subsidy peer review was only the first step. Next comes the important task of clarifying China's subsidy policy, while speeding up implementation of the reform roadmap and developing new policy to balance the economic and social impacts of reform. Fossil fuel subsidies are a fundamental aspect of economic policy, therefore, even slight adjustments can have an enormous impact. Subsidies also affect many vested interests and so a huge amount of political will and strength is needed to drive reform.

The success or failure of fossil fuel subsidy reform hinges on whether the following challenges can be met or not:

Economic Competitiveness and Green Growth

Fossil fuels are an important means of production connected with the national economy and people's livelihoods; they still account for more than 85% of the country's primary energy consumption structure, with coal taking more than 60%. Any large-scale reform of fossil fuel energy subsidies is likely to cause a rise in energy prices. For example, if the social costs of coal are all internalized in China, its price will rise by about 28%. During a period of economic slowdown, such as now, the biggest obstacle to fossil fuel subsidy reform comes from an uncertainty about how reform will impact economic growth, leading to a lack of confidence in decision-making.

We believe that although the traditional model of intense energy use and investment-led economic development gave China rapid double-digit growth for a period of time, it also gave rise to multiple issues such as the subsequent slowdown, over capacity, and environmental pollution. Future global economic competition will be in areas

such as innovation and green growth. Fossil fuel subsidy reform will help to reduce the dependence on fossil fuels for economic growth, thereby forcing the transformation and upgrading of industry and making it more globally competitive. In the long term, it will be an effective measure to promote economic growth.

It is worth mentioning that economic policies, such as environmental taxes, are themselves already proving to pay "double dividends". They take into account both environmental protection and economic development and are considered "good governance" in China. Knowledge of this approach should be disseminated across the country quickly and work on the legislative process and raising taxes accelerated.

State-owned Enterprise Reform

The electricity, oil and gas industries are highly nationalized in China. Regardless of how upstream resources are allocated, mined, or processed mid-stream, the three big state-owned oil companies have a monopoly over the end sales market. The electricity industry is also considered to be the least market-oriented, least competitive, and private participants are least preferred. Fossil fuel subsidy reform will largely impact state-owned enterprises (SOEs), which have enormous economic clout, pay significant amounts in tax contributions, and are powerful lobbyists when it comes to policy-making. Many of the energy companies themselves decide on criteria for market access and energy prices.

Cancelling or offsetting fossil fuel subsidies will require dismantling the vested interests of energy SOE's. For example, cancelling the tax breaks given to oil and gas companies on urban land will directly affect their profits. The main beneficiaries of cancelling the policy will be

local governments. Oil and gas companies are not just beneficiaries of land use tax breaks, they are also major local taxpayers. Therefore, we can imagine the intense political struggle these reforms are up against.

On a deeper level, state-owned energy companies are responsible for maintaining and growing state-owned assets, they are under pressure to constantly improve their competitiveness. The hidden policies that favour them, such as direct financial subsidies, tax breaks, loan concessions and even production subsidies, have a huge impact on investor caution when it comes to state-owned energy companies and their efforts to accelerate efficiency improvements and upgrades.

Fossil fuel subsidy reform should be combined with the deepening of SOE reforms in the energy sector. All policies that hinder the building of fair market competition or the introduction of diversified ownership should be scrapped. The Guiding Opinions on Strengthening and Reform of State-Owned Enterprises by the Central Party Committee and the State Council pointed out that: "The introduction of private capital into state-owned enterprise reform", gives full play to "state-owned enterprises becoming more innovative, protecting resources and the environment, accelerating transformation and upgrading, and fulfilling a leading and exemplary role in social responsibility." Measures to reform fossil fuel subsidies can also effectively promote the reform of energy SOEs.

Public Utility Reform and the Protection of Vulnerable Groups

Fossil fuel subsidy reform will affect public utilities and services such as heating, electricity, gas and public transport. There is a positive side to these subsidies in that

they are intended to support clean energy development. For example, fuel subsidies for public buses act as incentives to use public transport, encouraging a greener way of travel. And so, subsidy reform in this area may be challenged by public opinion.

Reforming public services and utilities is not a "one size fits all" endeavour. It needs a refined policy design to protect the interests of vulnerable groups. And while ensuring the supply of public utilities and services, the adoption of low-carbon green technology must be prioritized, along with policies that benefit the customer. The Self Report recommends that the government phase out heating subsidies while at the same time: "reforming policy on heating prices and implementing heating compensation policies for low-income groups."

The removal of fuel subsidies for city buses should be combined with other policies such as low-carbon green technology policies to encourage urban development of electric buses. For example, the Notice on Improving Refined Oil Price Subsidy Policy of Urban Buses and Accelerating the Promotion and Application of New-energy Vehicles, jointly issued by the Ministry of Finance, Ministry of Industry and Information Technology and Ministry of Transportation, recommends adjusting current policies on refined oil price subsidies for city buses; gradually reducing the amount of subsidies annually; and encouraging the use of more new energy buses.

CONCLUSIONS

China's 13th Five-Year Plan began in 2016. At the centre of this blueprint for the next five years of China's economic development is a new energy revolution. The fact that China's leaders have already made many clear promises on climate change at the international level, combined with rising environmental awareness among Chinese people at home, provides government with a good opportunity to implement fossil fuel subsidy reform. The chance to reform China's environmental fiscal and tax policies should be grasped. Policymakers should strive to go beyond the scope of the G20 China-US peer review, and get a head start on picking up the pace of many aspects of reform, such as subsidies in the coal sector, "hidden subsidies", and straightening out the relationship between environmental protection and economic development.

The proposed direction of China's fossil fuel subsidy reform are complementary to many policies that are being discussed and promoted domestically. They can be described as "taking advantage of favourable conditions". The discussions touched on in this report are all within the framework of the G20 peer review and reform roadmap. But to implement the commitments made internationally on subsidy reform at home, China will need to connect fossil fuel subsidy reform to other items on the domestic policy agenda more closely. These include energy pricing mechanism reform, environmental tax reform, SOE reform and broader measures, such as adjusting the financial powers and authorities of central and local governments. Each reform agenda itself is facing many real challenges; they have to consider the impacts on the economy, resolve problems from the past, balance the interests of all parties and the impact on the public. China must use fossil fuel subsidy reform as a primer, and promote these reform measures one by one.

The problems that need to be overcome should not be under-estimated. In particular, there has already been a great deal of technical discussion on these reforms and the next set of issues will centre on how China can build more open and transparent mechanisms to create a wider space for policy discussion, to cement the determination to have stronger reforms, so that the real action can be taken. For those observers at home and abroad interested in China's fossil fuel subsidies, apart from paying attention to the scope of the G20 fossil fuel subsidy peer review, they should also observe and evaluate China's overall progress from a broader perspective.

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