



Monitoring SDG Indicator 12.c.1 on Fossil Fuel Subsidies

Options Paper

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1. Overview – fossil fuel subsidies and the SDGs

Fossil fuel subsidies and the SDGs



- Fossil fuel subsidies disproportionately benefit wealthier households
- Subsidy reforms in combination with targeted social welfare programmes can address poverty



- Outdoor air pollution estimated to cause 3 million premature deaths worldwide in 2012
- Removing subsidies and taxing fossil fuels could cut global air pollution by half



- Women often do not benefit directly from fossil fuel subsidies
- Social welfare programmes and targeted cash transfer can be designed to empower women



- Subsidies can hinder the uptake of new low-carbon technologies
- Risk of creating stranded assets



- Fossil fuel subsidy reform could result in significant emissions reductions.
- Risk of creating stranded assets



- Decoupling economic growth from natural resource use is fundamental.
- Removing fossil fuel subsidies reduces the global demand for fossil fuels

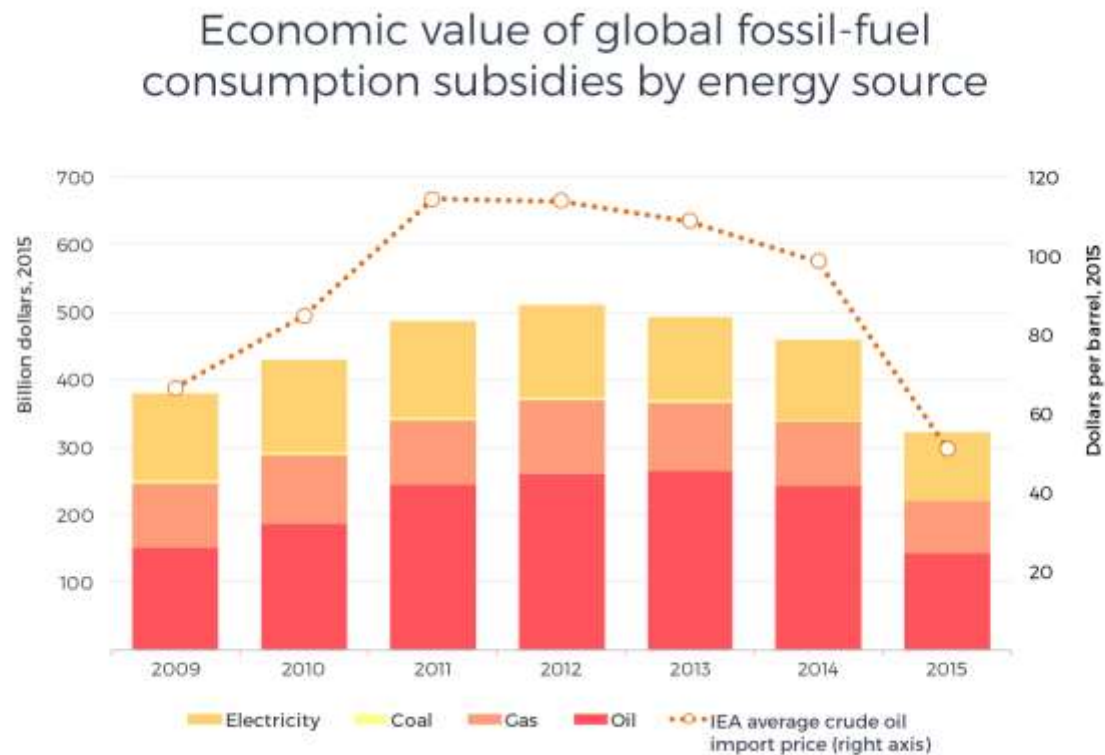


- Fossil fuel subsidies are 3.5 times larger than the financing required to meet the SDGs for basic social protection, universal health and education

Consumer subsidies by energy type (\$320 billion in 2015, IEA data)



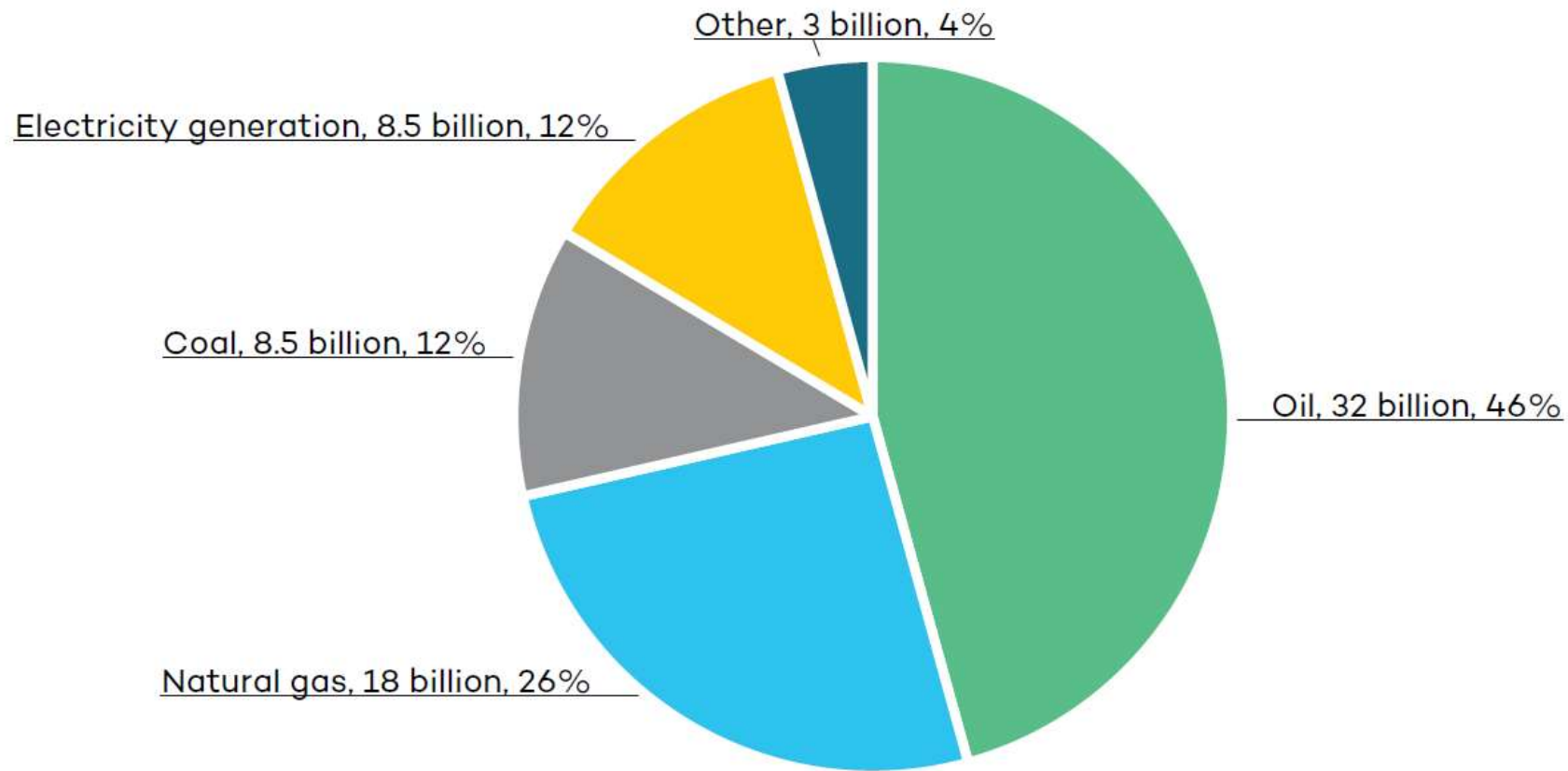
Categories of consumers: private sector, public sector, households



- IEA = 41 developing & emerging economies
- IEA data, assumptions
- IEA definition ('subsidies change prices')
- Benchmarks based on global fuel market prices
- Non-application of 'normal' GST/VAT is a subsidy

Sources: IEA (2017)

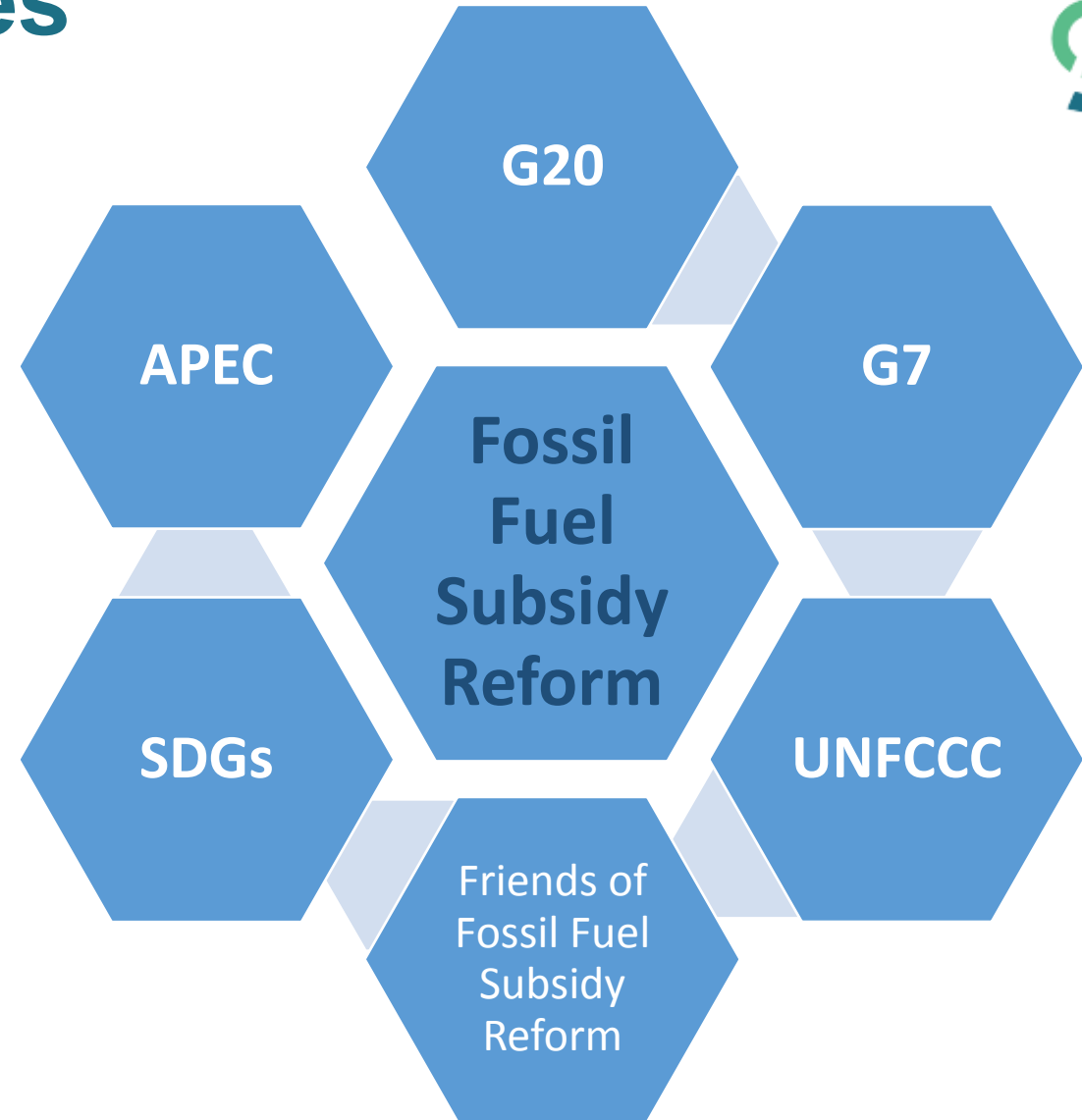
Producer subsidies by energy type (\$70 billion on annual average in G20 countries)



- Basis: OECD inventory of support measures
- OECD + BRICSAM
- Definition ~ OECD ASCM
- Data only from govt. sources (→ conservative)

Sources: GSI & ODI (2017) based on OECD (n.d.)

International processes





2. Unpacking Indicator 12.c.1

12.c.1: “Amount of **fossil fuel** subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels”



➤ Need to define what is a fossil fuel – available definitions very similar

- e.g. OECD (2015):
 - Primary fossil fuel commodities
 - e.g. Crude Oil, Natural Gas, Bituminous and Sub-Bituminous Coal, Peat
 - Extracted from conventional and unconventional (e.g. oil from bituminous sands, shale-based natural gas, coal-bed methane) sources
 - Secondary refined or processed products
 - e.g. Diesel Fuel, Gasoline, Kerosene, Liquefied Petroleum Gas (LPG), Liquefied Natural Gas (LNG), Compressed Natural Gas (CNG), Coal and Peat Briquettes

⇒ *select internationally-used definition*

12.c.1: “Amount of fossil fuel **subsidies** per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels”



- Commonly used subsidy definitions (WTO, OECD, IEA) are high-level (no detailed lists of subsidy types) and have large overlaps
- Helpful concept of “concentric circles” of subsidies (after OECD, see Handout)
 - i. Direct transfer of funds (data generally available in national statistics)
 - ii. Tax revenue foregone
 - iii. Other government revenue foregone
 - iv. Transfer of risk to government
 - v. Induced transfers

⇒ *Select a definition: WTO has over 160 signatories*

⇒ *Include direct transfer (i) and revenues foregone (ii, iii) as a minimum; for a comprehensive approach all elements should be included*

12.c.1: “Amount of fossil fuel subsidies per unit of **GDP** (production and consumption) and as a proportion of total national expenditure on fossil fuels”



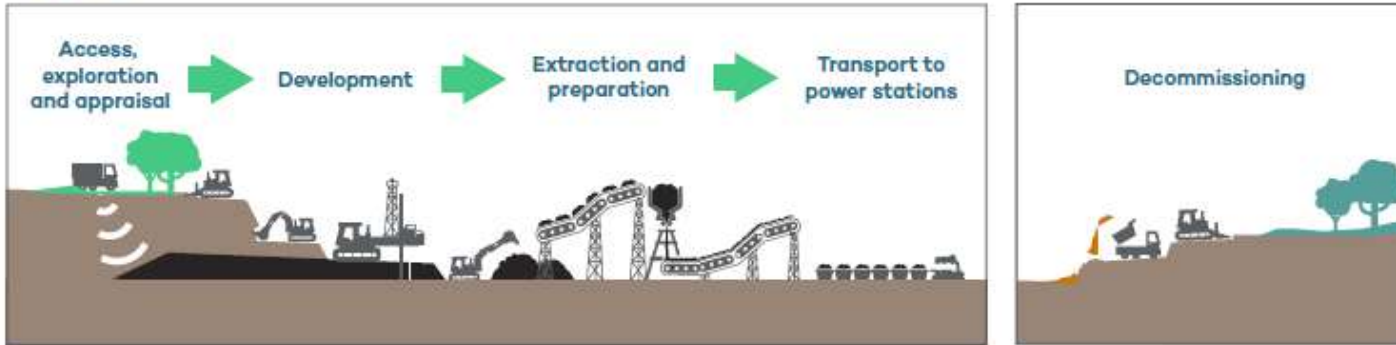
- Three major sources
 - a. National statistics (deepest sectoral coverage; consumption and production sides)
 - b. World Bank (collated from national statistics – some minor differences; local currency and US\$; consistent between countries)
 - c. IMF (as World Bank; again minor differences)

⇒ *Use World Bank data*

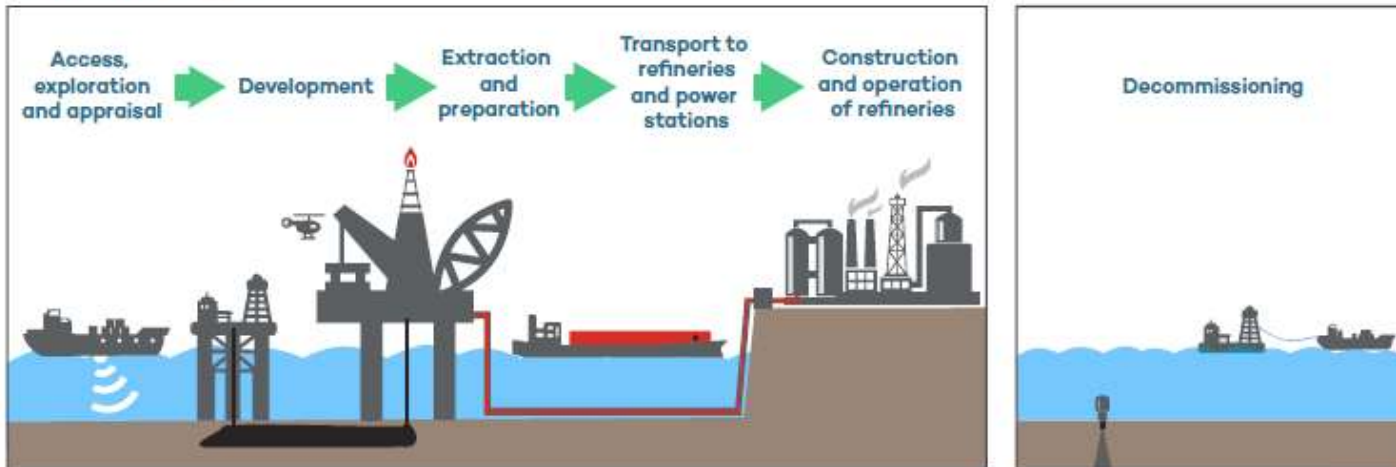
12.c.1: “Amount of fossil fuel subsidies per unit of GDP (**production** and consumption) and as a proportion of total national expenditure on fossil fuels”



Coal



Oil and gas



- “Production” encompasses a wide range of stages
 - e.g. Infrastructure built for the use of the fossil fuel industry (e.g. port facilities, roads)
- Subsidies identified through an inventory of measures
- “Production” can also be under sub-national regulations and laws
 - ⇒ *Agree on system boundaries for production*
 - ⇒ *Include sub-national level*

Figure 1. Stages of fossil fuel production

Source: Adapted from Bast, et al., 2015.

12.c.1: “Amount of fossil fuel subsidies per unit of GDP (production and **consumption**) and as a proportion of total national expenditure on fossil fuels”



- Consumption recorded against classes in energy statistics (Industry by branch, Commercial, Transport, Households, etc.)
 - IEA Statistics and Balances a much-used source of this data
- Few estimates of transfers in budget lines of countries, e.g. Egypt, India
- State owned enterprises (SOEs) can be an important source of consumption (and financial) data
- Some consumption of fossil fuels is for non-energy uses (e.g. industrial feedstocks)
- IEA, IMF measure using the price-gap method

⇒ *Use IEA classes and data for consistency*

⇒ *Include non-energy consumption of fossil fuels*

12.c.1: “Amount of fossil fuel subsidies per unit of GDP (production and consumption) and as a proportion of **total national expenditure on fossil fuels**”



- Not commonly-collected or reported indicator
- Consumption can be multiplied by prices (by consumer type, fuel)
- Structure of prices and taxes to consumers can be complex
- Some estimates for some countries available in international data sets, e.g. IEA, US DOE EIA, BP, ENERDATA, etc.

⇒ *Assess which national estimates are available on expenditure and how comparable they are*

⇒ *Will almost certainly need to collect both consumption and price data. Use international data for comparability where possible*

Conclusion



- International best practices for measuring and monitoring fossil fuel subsidies have been tested and established over the past decade.
- The following points need to be finalised for a consistent and practical methodology for the global monitoring of SDG 12.c.1

Definition fossil fuel	OECD
Definition subsidies	WTO
Producer	Inventory method Agree on scope
Consumer	IEA data, Price-gap method Benchmark and price data
GDP	World Bank data
National expenditure	Define best data set



3. Methodologies for scoping and calculating fossil fuel subsidies



>> Degree of agreement on subsidy categories

Subsidy category	Data challenges	Controversies
Direct transfer of funds	Programme-level budgetary expenditures exist for around half the world's countries.	Relatively uncontroversial. Main controversies arise when a programme is only partially specific.
Tax revenue foregone	Data are best for OECD countries. Many do not report TEs related to fuel excise taxes.	Only some governments consider tax expenditures (apart from tax credits) to be equivalent to "subsidies".
Other government revenue foregone	Many subsidies in this category are features of regulations, and not well-known.	Governments often disagree with the categorisation of some types of measures, especially royalty concessions, as subsidies.
Transfer of risk to government	Because most credit is recipient-specific, details on many credit transactions are hard to obtain	Main controversies are over how to treat multilateral credit, especially export credits.
Induced transfers	Sources of best price data for many countries is proprietary	Standard is international reference price; however, some FF producers argue that the reference price to be production costs



Estimating direct transfers

- Direct transfers of money include:
 - Providing direct grants to beneficiaries, or subsidising intermediate inputs or value-adding factors
 - Procuring goods from favoured suppliers at above-market prices
- If detailed programme information on **budgetary expenditures** is available, measuring the subsidy is straight-forward. The only issue is allocating it across fuels if more than one type of fuel (or mineral) benefits from the programme.
- If such information is *not* available – for example, the transfers are included in a larger financing package for a state-owned enterprise – then alternative sources for production-related subsidies could include company accounts, or annual reports from corporations.
- For expenditures benefitting consumers, an alternative source for budget documents could be household surveys.



Estimating foregone tax revenue through tax concessions

- If detailed programme information on **tax expenditures** is available, measuring the subsidy is straight-forward. The only issue is allocating it across fuels if more than one type of fuel (or mineral) benefits from the programme.
- If such information is not published, tax benefits that are directly related to sales or purchases can be estimated by multiplying the tax rate (e.g., \$ per litre) by the affected volume.
- Otherwise, estimating the foregone revenue related to may require constructing tax and income models for the affected industries.



Estimating market transfers (“price gap”) to or from producers and consumers — Standard approach

- Policies that artificially raise the price received by producers, or lower the price paid by consumers, can be considered “induced transfers”. These can be implemented through domestic price regulation or border measures (import tariffs, other import controls, export taxes, export controls). They are measured by multiplying the affected production or consumption by the gap between the price received by domestic producers, or paid by domestic consumers, and a **reference price**.
- The domestic price is typically the average price charged for the fuel across the country, or at some reference location, over the course of a year. Where such price data are not collected by statistical agencies, prices are sometimes obtained by surveys.
- The reference price is usually based on some international reference price (such as the price of a petroleum product at a regional hub, or an export or import unit value). The IEA’s formula for a net exporter, for example is:

Reference price = (product price at the nearest international hub) – (cost of freight and insurance back to the net exporter) + (cost of internal distribution and marketing) + VAT

- The formula for market transfers to consumers is thus:

Consumption subsidy = (Reference price - End-user price) × Units consumed

- *Note:* often some adjustment for quality differences has to be made. For example, coal that is exported is often of a higher quality (containing less ash) than coal sold domestically, hence should command a higher price.

4. Overview of the state of data used in monitoring

» Current state of monitoring and data gaps

Subsidy category	Production		Consumption	
	Production-related capital	Production or input related	Consumption-related capital	Consumption related
Direct transfer of funds	OECD (43)	OECD (43)	Partial coverage by OECD (43)	OECD (43)
Tax revenue foregone	OECD (43)	OECD (43)	Not yet measured	OECD (43)
Other government revenue foregone	Not yet measured	Partial coverage by OECD (43)	Not yet measured	–
Transfer of risk to the government	Many measures identified for G20 countries but not yet quantified	Some measures identified for G20 countries but not yet quantified	Many measures identified for G20 countries but not yet quantified	–
Induced transfers	–	Not yet measured	–	Estimated for world by IEA and IMF



Current state of monitoring and data gaps

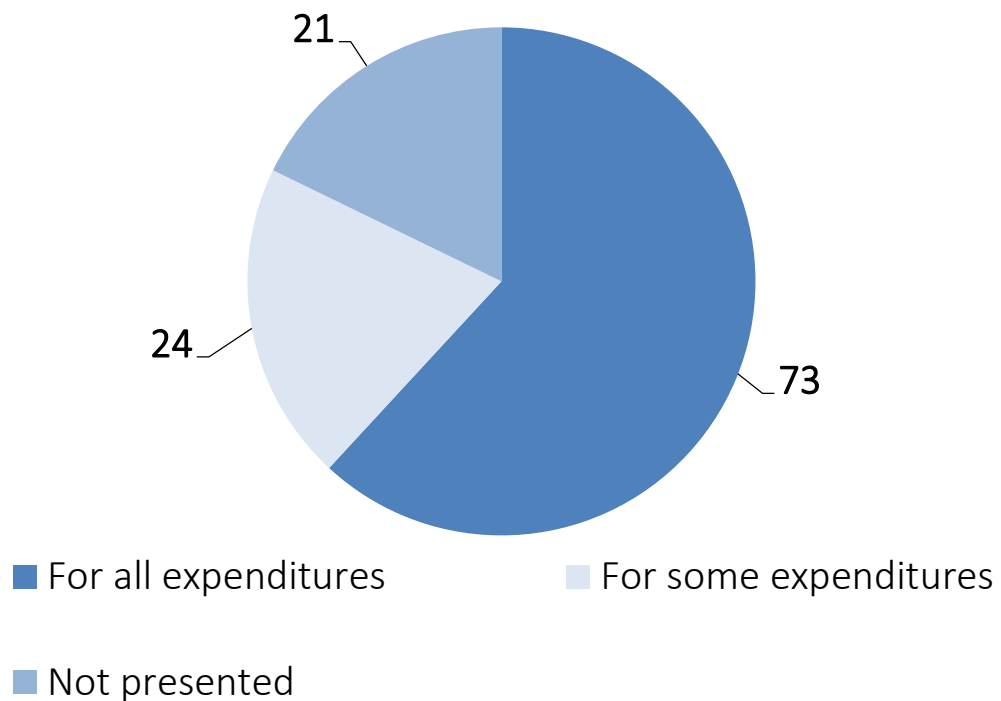
- There is reasonably good data on measuring market transfers to consumers, with existing databases covering most countries in the world. We would need to establish common reference prices and collect price data for countries where estimates are not yet available.
- Data on producer subsidies and tax revenues currently available mainly for OECD countries, however, could be collected from budget and tax expenditure reports. We need governments to inform us as to the details of their budget reporting.
- Data on public finance is more sparse (and mainly available for G20 countries). It would need to be supplemented with national data.

» Challenges to improving national reporting

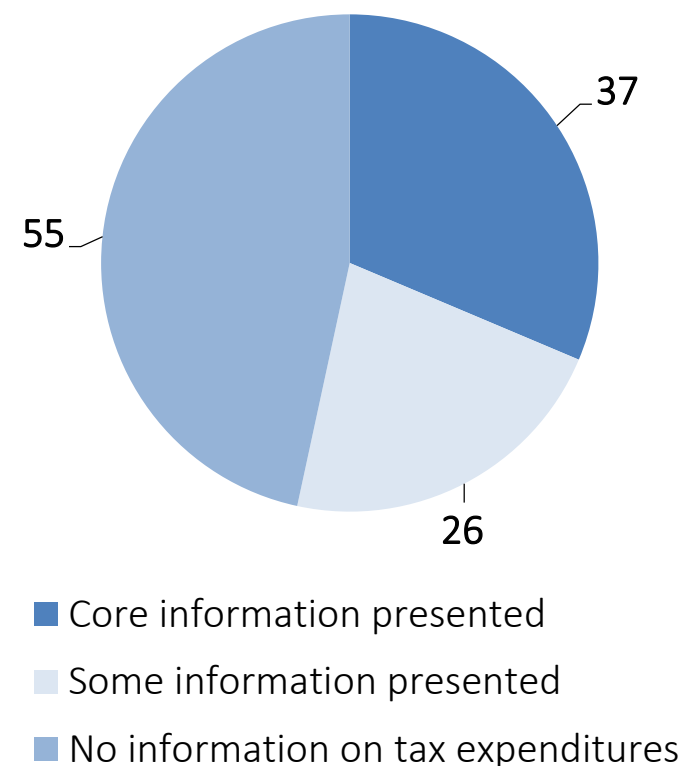
- Not all countries provide estimates of their proposed or actual budget expenditures. According to the IBP's Open Budget Survey, for **45 out of 118 countries** the budget documentation does not present all expenditures for individual programs in the budget year.
- Nonetheless, estimates of fossil fuel subsidies have not been compiled for some of the countries with detailed reporting, and could easily be generated.
- Even fewer countries provide detailed estimates of tax expenditures. Only in 37 out of 118 countries does the budget documentation present core information on tax expenditures.
- Fuel price data are similarly unavailable in many cases, although countries could report their domestic fuel prices to avoid reliance on proprietary data.

» Challenges to improving national reporting: data from the *International Budget Partnership*

Budget reporting of individual programme expenditures



Presentation of tax expenditures



Country case study - India



- Mission completed on 26 September
- Main findings will be presented at the expert meeting



5. Technical Consultation - Options

1. Consumer Subsidies



- Some countries have data on direct transfers and tax expenditures
 - Could be a double counting issue if price gap method also used
- Data used to calculate price gap:
 - IEA, IMF reference price based on world spot market prices, include taxes, generic estimates of other costs
 - Some advocate using domestic price (~production cost) for reference price

Reference price = (product price at the nearest international hub) – (cost of freight and insurance back to the net exporter) + (cost of internal distribution and marketing) + VAT

Issues:

- Agree on method for the calculation of the reference price
- No publicly available comprehensive database of national fuel prices

Proposed Option for Indicator 12.c.1:

- ⇒ *Include direct transfers and tax expenditure*
- ⇒ *Use IEA/IMF methodology for price gap (inc. taxes)*
- ⇒ *Use national data for fuel price and to calculate the reference price*

2. *Electricity from Fossil Fuels*



- Subsidies to electricity generated from fossil fuels are generally included, e.g. IEA price-gap uses a long run marginal cost reference price
- **Issue:** scope of inclusion
 - Selling fossil fuels to electricity generators at below market rates (typically by government order)
 - Subsidies to types of generation (e.g. subsidised loans to coal-fired power plants)
 - General subsidies to the electricity system (e.g. subsidies for distribution, government making up the financial losses of a SOE, etc.)

Proposed Option for Indicator 12.c.1:

⇒ *Include subsidies to electricity from fossil fuels*

⇒ *Develop guidance to countries on scope, measurement*

- *Include subsidies to fossil fuels inputs (use market reference price)*
- *Include inputs to fossil fuel generation plant*
- *Attribute other subsidies to electricity according to the share of fossil fuels in the generation mix*

3. *Producer Subsidies*



- Subsidies to fossil fuel production have been measured in practice using an inventory approach
 - OECD Inventory of Support Measures the key reference
 - Based on direct transfers, tax expenditures
- **Issues:** Lack of internationally-agreed approaches for subsidy inventories, agreed measurement techniques
- Best practice:
 - Experience in OECD Inventory, Peer Reviews (limited), independent studies
 - Producer subsidy types have been classified by some organisations (see Handout “GSI typology of energy subsidies”)

Proposed Option for Indicator 12.c.1:

⇒ Include at least direct transfers and tax expenditure

⇒ Develop guidance to countries

⇒ Progressively develop inventories in each country, disaggregated by fossil fuel



4. Sub-Indicators

1. Data used to produce the indicator	a) Absolute figures for the underlying data needed to produce the indicators b) Disaggregated data, e.g. consumption, prices, taxes, subsidies by fuel
2. Additional reports	e.g. Peer and Self-Reviews
3. Progress towards fossil fuel reform	a) Considerations of “inefficient” FF subsidies b) Plans for FF subsidy reform c) Numbers of subsidies in force in the given year
4. Further information of value	a) Greenhouse gas emissions from fossil fuel consumption and production b) External costs from fossil fuel consumption and production (e.g. IMF data) c) Tax rates on fossil fuel consumption and production d) Tax revenues from fossil fuel consumption and production e) Details of specific fossil fuel subsidies

*Proposed Option for Indicator 12.c.1:
⇒ Include 1; Include 2?, 3?, 4? Others?*



Background information - methodologies



Estimating government support: general principles

When measuring sectoral subsidies, the following principles are usually followed.

- Exclusions:
 - Transfers associated with policies that are widespread in terms of beneficiaries and goods or services are typically not counted in sectoral accounts. Example: tax credits for corporate expenditure on R&D.
 - Costs associated with the administration of a relevant ministry (e.g., Energy, Treasury, Natural Resources)
- Specificity
 - Transfers associated with policies that benefit a relatively small set of industries may be considered sufficiently specific.
 - However, only the proportion of the transfer considered benefiting fossil fuels should be included.
 - If actual breakdowns of expenditure by benefiting industry are not available, estimates may be made by allocating total expenditure to the benefiting industries according to some logical apportioning metric, such as total value of production (or consumption).



Estimating the value of concessional credit

- Interest subsidies
 - The cost to the government of interest subsidies are detailed at a programme level in **budget documents**, measuring the subsidy is straight-forward.
 - If such information is *not* available – for example, the financing is provided as part of a larger package of measures supporting a state-owned enterprise – then details on the amounts of the loans and the rate of interest charged may be obtainable from the benefiting corporation(s).
- Providing loans at below-market rates or relaxing repayment conditions
 - The grant-equivalent value of preferential credit is sometimes reported by governments, but often is not.
 - If such information is not published, estimating the grant equivalent of grace periods, extended payback periods, etc. has to be done for each loan and may require comparing the difference in the net present value of the loan with an equivalent loan provided under commercial conditions.
- Guaranteeing loans, or forgiving government-provided loans that are defaulted
 - Some governments publish the grant-equivalent value of the loan guarantees they provide, but most do not.
 - If such information is not published, there are several methods for estimating the grant equivalent of loan guarantees. The most accurate ones require a lot of information on the riskiness of the project benefiting from the loan



Estimating market (“price gap”) transfers to or from producers and consumers — Alternative approaches

- *Consumption subsidies (price-gap)* — In cases in which countries are net importers of a fuel that is sold domestically at below the reference price, it is usually necessary to compensate the company that sells the fuel at below its cost. This budgetary transfer can serve as an alternative estimate of the **consumption subsidy** if price or consumption data are poor or difficult to obtain.
- *Production support (price gap)* — Import tariffs on the fuel can substitute for the price gap in the measurement of market price support where price or production data are poor or difficult to obtain



Estimating market (“price gap”) transfers to or from producers and consumers – Data on energy production and consumption

- IEA *World Energy Statistics* reports detailed data on the supply and consumption of energy for 150 countries and regions (including all OECD countries and other key energy producing and consuming countries), published annually
- Final consumption broken down by sector and energy sources (coal, gas, oil and electricity).



Background information - data



Data on market transfers to consumers

- Price-gap approach is the most widely used to quantify market transfers to consumers. Price-gap estimates of consumption subsidies have been calculated by several international organisations:
 - Reported annually by the IEA, covering 40 (developing) countries where price gaps exceed the margin of error and for which affected volumes are significant
 - The IMF has estimated “pre-tax” subsidies for most countries in the world (in 2013 and 2015).
 - The IADB (with the World Bank) has produced price-gap estimates for Latin America and Caribbean countries, covering 2008-2014; the results are expected to be published before the end of 2017.
- Details on the sources for the price data are not currently provided. Some are based on country surveys, others on publicly available databases, in-country consultants, or biennial GIZ survey data (covering over 170 countries).
- Reference prices are generally based on import or export parity prices using the price of a product at the nearest international hub. Some reference prices are based on export or import input unit values.



Data on producer subsidies

- The OECD collects information on government support to fossil-fuel production for its *Inventory of Support Measures for Fossil Fuels*, currently biennial and covering 44 countries.
- Data are collected from government budgets and tax expenditure reports, in most cases available publicly.
- The International Budget Partnership's Open Budget Survey provides general information on the state of public budgets for 115 countries. End-year budgets are publicly available in 81 countries. What is not indicated by these surveys is which countries' budget documents report expenditures on a programme-by-programme basis.
- An overview of tax expenditure reporting has been provided for OECD countries in the 2010 publication, *Tax Expenditures in OECD Countries*.
- The IMF has published Fiscal Transparency Evaluations for 18 countries, reporting also on the availability, frequency and comprehensives of tax-expenditure reporting. Of the 13 non-OECD countries covered, 7 did not disclose basic information on revenue loss from tax expenditure (The evaluations were undertaken between 2013 and 2017.)



Data on public finance to fossil-fuel related projects

- Oil Change International's *Shift the Subsidies Database* tracks public financial flows to fossil fuels from:
 - Major Multilateral Development Banks, with data from 2008 through 2015.
 - Bilateral Financing Agencies of the United States, with data from 2008 through 2015.
 - Bilateral Financing Agencies of other G20 countries, with data from 2013 through 2015.
- The finance amount is calculated as the amount committed from the financial institution on the date that the loan, grant, or guarantee was approved by the institution. If it can be determined that only a portion of the project or loan went to energy, then only that percentage is included as the finance amount.
- However, these data represent the gross values of loans, grants, or guarantees, not their subsidy-equivalent values.



Data on tax revenues from fossil fuels

- The OECD maintains the Policy Instruments for the Environment (PINE) database, containing detailed information on environmentally related taxes, fees and charges.
- Covers 58 countries, including all OECD countries, OECD accession candidates, and selected non-OECD countries
- Energy taxes reported by fuel type and per litre tax rate
- Annual energy tax revenues also reported but with some data gaps