

Fossil fuels' supply and climate change

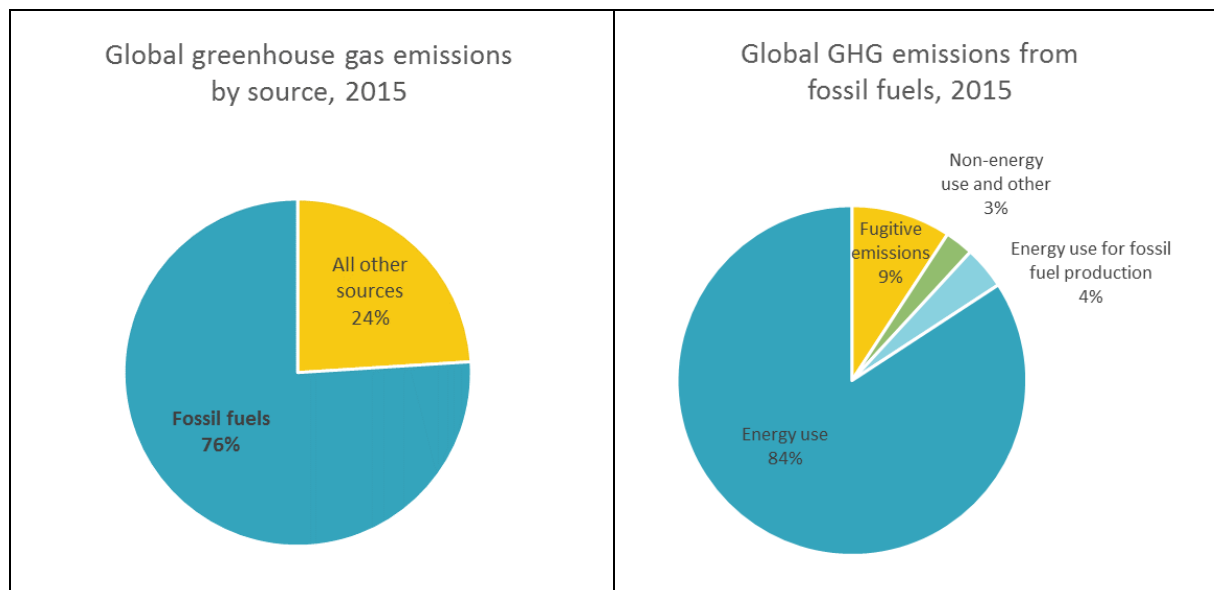
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Fossil fuels' contribution to climate change



The Industrial Revolution brought about unprecedented human development. Fossil fuels such as coal, oil and natural gas helped to operate this transformation. However, burning fossil fuels produces health-damaging air pollutants and climate-damaging greenhouse gases (GHG).

Fossil fuels account for 76% of global greenhouse gas emissions and nearly 90% of all carbon dioxide emissions. They are the largest contributor to global climate change. [UNEP *et al.*, 2019]



Source: UNEP *et al.*, 2019

Government plans for fossil fuel production are inconsistent with the global climate goals [UNEP *et al.*, 2019].

The top nine fossil fuel producing countries alone – China, USA, Russia, Saudi Arabia, India, Australia, Indonesia, Iran, Canada – account for over two-thirds of global fossil fuel CO₂ emissions, when accounted from an extraction-based perspective.

Although many governments plan to decrease their domestic GHG emissions, they simultaneously have plans and projections for the expansion of fossil fuel production. Some countries justify their increases in production with the export markets (e.g. the United States, Russia, and Canada) while others are seeking to limit or end imports (e.g. India and China).

Government plans for fossil fuel production expansion are inconsistent with the global climate goals approved with the Paris Agreement, i.e. to limit the increase of the global average temperature to well below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels in order to significantly reduce the risks and negative impacts of climate change [UNFCCC, 2015]. The planned expansion will lead to a global production by 2030 that is equivalent to about 50% more fossil fuels than would be consistent with a 2°C pathway, and 120% more than would be consistent with a 1.5°C pathway. The production gap is largest for coal, followed by natural gas.

Government support creates unlevel playing field and favours continued dependency

Despite the major contribution of fossil fuels to climate change, coal, oil, and gas infrastructure projects continue to enjoy government support, unlocking projects that would not be commercially viable otherwise. For example, the last hard coal mine in Germany closed in late 2018, driven by the requirement for the removal of subsidies to their operation by 2018 per the European Union's State aid rules [European Union 2010 in UNEP *et al.*, 2019].

Government support artificially lowers fossil fuels' prices and unlocks projects that would not be commercially viable otherwise [UNEP *et al.*, 2019].

Governments support fossil fuel production in numerous ways, covering the entire project cycle and value chain, including through plans and targets, direct investment using public funds, financing through public institutions (which provide access to domestic and international finance), government ownership (which also eases access to finance, often at a subsidized, below market value), assuming liability for the risks, providing infrastructure (e.g. roads, rail, and ports), providing land below market value, R&D funding, tax breaks, low-cost or free exploration and production licenses, non-enforcement or exemption from certain regulations and limited corporate liability for environmental and health damage, and site remediation.

The IEA estimates that State Owned Enterprises (SOEs) accounted for 42% of global energy investment in 2017 [IEA, 2018 in UNEP *et al.*, 2019]. One study found that SOEs in the G20 countries annually invested an average of USD 286 billion in oil, gas, coal production and fossil-fuel-based power in 2013 and 2014 [Bast *et al.* 2015 in UNEP *et al.*, 2019]. Analysts predict that investment in fossil fuel exploration and delivery infrastructure might remain at about USD 1 trillion annually through 2040 [IEA 2018a in UNEP *et al.*, 2019].

Governments also invest in fossil fuel infrastructure overseas to support further exports. Just recently, Australia approved legislation to increase government support for investment in new overseas infrastructure projects from USD 2 million to USD 900 million for the benefit of Australian coal and gas exports [Parliament of Australia 2019; Hasham 2019 in UNEP *et al.*, 2019]. The United Kingdom provided an annual average of USD 550 million in international public finance for upstream oil and gas in 2013 and 2014 through UK Export Finance [UNEP *et al.*, 2019].

The OECD and International Energy Agency (IEA) estimate subsidies going to fossil fuel production at USD 24 billion in 2017 [OECD/IEA 2019 in UNEP *et al.*, 2019]. In the UK, in the tax years 2015–16 and 2016–17, the oil and gas industry received an average of USD 224 million more per year in government support than it paid back in taxes [Muttitt *et al.* 2019 in UNEP *et al.*, 2019].

Government support for fossil fuel production is often justified on the premise that it will enhance energy security and economic development. However, the downsides of the dependence on volatile energy commodities, both as source of revenue for producing countries and as commodity for the consumers, is often overlooked.

Norway plans to divest its USD 1 trillion sovereign wealth fund from upstream oil and gas, in order to reduce Norway's oil price exposure [Norwegian Ministry of Finance 2019b in UNEP *et al.*, 2019].

In addition, externalities of the fossil fuel economy on health, environment and climate remain largely unaccounted for. It should also be noted that global consumer subsidies are estimated to be substantially higher than subsidies to fossil fuel producers. The International Monetary Fund (IMF) has been studying consumer subsidies. The IMF estimates that global fossil fuel subsidies, defined as the fuel consumption times the gap between existing and efficient prices

considering production and environmental costs, amounted to \$4.7 trillion (6.3 percent of global GDP) in 2015 and were projected at \$5.2 trillion (6.5 percent of GDP) in 2017 [Coady *et al.*, 2019].

Efficient fossil fuel pricing in 2015 would have lowered global carbon emissions by 28% and fossil fuel air pollution deaths by 46%, and increased government revenue by 3.8% of GDP [Coady *et al.*, 2019].

A dilemma for fossil fuel producing countries

Fossil fuel producing and exporting countries are often highly dependent on resource extraction for the generation of both economic activity and fiscal revenues. For example, the fossil fuel sector generates approximately 8% of Canada's GDP [UNEP *et al.*, 2019]. For many members of the Organization of the Petroleum Exporting Countries (OPEC), well over half of all fiscal revenues come from oil and gas (IEA 2018b in UNEP *et al.*, 2019).

The oil and gas sector is estimated to contribute between 10% to 20% of Russia's GDP and almost half of the federal government's revenues [UNEP *et al.*, 2019].

Fossil fuel interests can be closely aligned with governments, particularly when state-owned enterprises are involved. For example, Coal India is the world's largest coal mining company. With over 75% government ownership and producing 84% of India's thermal coal, it is a major employer in many parts of the country [UNEP *et al.*, 2019].

Infrastructure for fossil fuels' exploration and delivery "locks in" fossil fuel use. Once built, this infrastructure decreases fossil fuel prices and entangles workers and communities in a fossil fuel economy. [UNEP *et al.*, 2019]

Finding alternative sources of economic activity: integrated policy packages and plans for down-sizing fossil fuel production

Countries and regions that currently rely heavily on domestic fossil fuel extraction as a key motor of their economy, and as a key source of revenue to fund public services, will face added challenges in the transition to a climate-neutral economy. Going far beyond climate policy, such countries and regions need to develop alternative models for economic prosperity that will deliver decent jobs and generate wealth. Also here, climate efforts should go hand-in-hand with sustainable development and poverty eradication efforts.

Diversification of the economy is crucial. Although there is no "one-size-fits-all" solution, an integrated policy package is likely to be needed, covering multiple aspects such as spatial planning, industrial strategy, employment, finance and special governance arrangements in order to attract investment into the region, stimulate business

development, address infrastructure gaps and retain the workforce for the economic renewal. The case of coal mining phase-out in Wales, UK, shows that it is possible to regenerate the social and economic fabric of a region historically dependent on coal. It also shows that the hardships caused by the abrupt downsizing of the coal industry during times of recession are far more severe than if the downsizing is done progressively, in times of prosperity, when alternative job opportunities are available [Marques, 2019].

The International Labour Organization estimates that 24 million jobs could be created through changes that limit warming to 2°C, while six million jobs would be lost, including two million in the mining and extraction of fossil fuels. [ILO 2018 in UNEP *et al.*, 2019]

Policy makers should consider the distributional impacts of scaling down fossil fuel production and plan a just transition in

order to minimize the disruption for fossil-fuel-dependent workers and communities. Countries such as Canada, Germany, and New Zealand have already taken initiatives in this direction [UNEP *et al.*, 2019].

Incorporating fossil fuel supply-side planning into LEDS can avoid a more costly and disruptive transition further down the line [UNEP *et al.*, 2019].

Policy options to align fossil fuel development plans with climate goals and policies

Under the Paris Agreement, each signatory country sets forward its climate policies in a so called Nationally Determined Contribution (NDC) to climate action. Countries are required update their NDC in 2020, raising the level of ambition beyond their previous NDC. In addition, countries are also invited to voluntarily submit during 2020 their national plans for transitioning to a low-carbon economy by 2050, known as long-term Low-Emissions Development Strategies (LEDS). [UNFCCC, 2015]

Currently, among the NDCs of the top 57 of fossil-fuel-producing nations only two countries — India and Nigeria include mitigation measures related to fossil fuels' supply [Verkuijl *et al.* 2019 in UNEP *et al.*, 2019].

Examples of fossil fuel supply-side measures that countries might consider for their NDCs:

- subsidy reform, including removal of subsidies for fossil fuel producers;
- regulation banning new extraction permits and moratoria on new fossil fuel infrastructure;
- divest public funds from fossil fuels;
- government provision of goods, services and finance to support economic renewal and just transition of regions whose economy currently relies on fossil fuel production;
- Adjust mandates and resources of implementation instruments (e.g.: UK's Oil and Gas Authority, a public UK body, has the statutory mission of maximizing extraction)
- enhance transparency of national reporting of fossil fuel production.

References

David Coady; Ian Parry; Nghia-Piotr Le; Baoping Shang (2019). Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates. IMF Working Papers. May 2.

Marques, A. (2019) Case study: Welsh coal-exit – A policy package for regional economic regeneration. www.e-potential.net/resources

UNEP *et al.* (2019). The Production Gap: The discrepancy between countries' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C. A report by SEI, IISD, ODI, Climate Analytics, CICERO, and UNEP. <http://productiongap.org>

United Nations Framework Convention on Climate Change (2015). Draft Decision CP.21, Approval of the Paris Agreement.

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