Climate impacts of Fossil fuel subsidy reform

Laura Merrill
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Friends of Fossil Fuel Subsidy Reform Network
lmerrill@iisd.org
Carbon Co-benefits

- **CO-BENEFIT** of reform can be reduction in carbon emissions
- **NOT** the main reason or focus for countries to undergo reforms
- **BUT** given the political effort to increase prices either by subsidy reform or an increase in taxation on fossil fuels countries can consider modelling emissions reductions from policy change to coordinate with energy and climate planning
- **MAIN** reasons for fuel subsidy reform are usually economic in terms of reducing the drain on the public purse and opportunities to use the funding more productively elsewhere e.g. Indonesia
- **NEEDS** a ‘swap’ (i.e. shift to low carbon energy) and long-term climate rules (Paris) to keep emissions down for the long-term, post reforms.


Climate impacts of FFS and their reform August 2018
Global estimates

Different estimates depending on different scenarios and time frames, producer or consumer, oil price, usually reduction to BAU and not absolute.

- Most recent review by GSI of more than 20 studies on emissions reduction (global and country estimates) Annex A (Gerasimchuk et al., 2017)
- Around 6.4–8.2% by 2050 (Schwanitz et al. 2014; Burniaux & Chateau, 2014) for consumer subsidies
- OECD: reform and removal of these subsidies could lead to co-benefits of global emissions reductions of around 3 per cent by 2020, rising to around 8 per cent by 2050 (Durand-Lasserve, et al., 2015; Burniaux & Chateau, 2014).
- IEA (2015): found 10 per cent reduction in energy sector emissions by 2030 from accelerating the partial phase-out of subsidies to fossil fuel consumption.
- 37Gt of savings by 2050 (Gerasimchuk et al., 2017) for production subsidies (only) (equivalent to aviation emissions)

Global estimates

- A quarter of the combined effort currently proposed by countries as part of the Paris Agreement of between 4-8 Gt from fossil fuels and industry.
- Regions with larger subsidies mean reforms would have greater emissions reductions i.e. MENA.
- 0.5 to 2 Gt or between 1-4% globally by 2030.
- GSI research from 2015 found that only 9% of NDCs actually include mention of FFSR.
- Opportunity to include this tool within NDCs as a co-benefit?

Figure 3 | Global and regional impact of subsidy removal and NDCs on CO₂ emissions from fossil fuels and industry under low oil prices. a. The impact of subsidy removal on global annual emissions compared to each model’s baseline. b. The impact of subsidy removal on cumulative change in emissions from 2020 to 2030 at the regional level (coloured bars). Solid lines represent emission effects of unconditional NDCs and dashed lines of conditional NDCs—both modelled in MESSAGE. The uncertainty ranges for these effects arise from different historical emission inventories, alternative accounting, attribution of non-commercial biomass and uncertainties in the formulations of NDCs (Supplementary Methods, Supplementary Table 15, ref. 29). See Supplementary Fig. 6 for high-oil-prices scenarios and Supplementary Fig. 5 for global relative changes and regional absolute changes.

• GSI-IF (GSI-Integrated Fiscal model)
• Modelling the impact of FFSR, investment of savings in energy efficiency and renewables (SWAP) at the country level
• Developed and shared with 20 countries in 2015 (country reductions as a % of national emissions by 2020 against BAU): Algeria (22%), Bangladesh (9%), China (1%), Egypt (15%), Ghana (3%), India (3%), Indonesia (7%), Iran (18%), Iraq (41%), Morocco (2%), Nigeria (2%), Pakistan (3%), Russia (6%), Saudi Arabia (30%), Sri Lanka (2%), Tunisia (6%), UAE (14%), US (0.2%), Venezuela (34%), and Vietnam (2%).

GSI-IF country modelling

Cumulative total reductions across 20 countries
- 2.82 Gt by 2020
- 6.31 Gt by 2025

Average of 11% in 2020 from 20 countries, increase to 18% by 2020 with modest recycling of saved revenues toward renewables (10%) and energy efficiency (20%). USD 93 saved per tonne of CO2e abated from FFSR


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Opportunity to revisit this research in 2018/2019 and to work with countries to model the emissions impact of FFSR and swaps with savings, as a co-benefit of country policy reform and for increased ambition.
Policy and link to NDCs

Inclusion of FFSR in INDC

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- 40 INDCs use fiscal instruments (including the EU representing 28 countries)
- 25 clean energy subsidies
- 15 fossil fuel subsidy or energy sector reform