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Greenhouse gases mitigation potential and economic efficiency of phasing-out fossil fuel subsidies[☆]



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ABSTRACT

Quoting a joint analysis made by the OECD and the IEA, G20 Leaders committed in September 2009 to “rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption”. This analysis was based on the OECD ENV-Linkages General Equilibrium model and shows that removing fossil fuel subsidies in a number of non-OECD countries could reduce world Greenhouse Gas (GHG) emissions by 10% in 2050 (OECD, 2009). Indeed, these subsidies are huge. IEA estimates indicate that total subsidies to fossil fuel consumption in 37 non-OECD countries in 2008 amounted to USD 557 billion (IEA, OPEC, OECD, World Bank, 2010a, 2010b). This represents almost five times the yearly bilateral aid flows to developing countries as defined by the Official Development Assistance (ODA). This paper discusses the assumptions, data and both environmental and economic implications of removing these subsidies. It shows that, though removing these subsidies would amount to roughly a seventh of the effort needed to stabilize GHG concentration at a level of 450 ppm or below 2 °C, the full environmental benefit of this policy option can only be achieved if, in parallel, emissions are

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¹ The views of the authors do not necessarily represent the views of the OECD or of its member countries.

also capped in OECD countries. Finally, though removing these subsidies qualifies as being a “win–win” option at the global level in terms of environmental and economic benefits, this is not true for all countries/regions. The paper also provides some discussion about the robustness of these results.

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1. Introduction

At their September 2009 Summit, G20 Leaders committed to “rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption”. This decision came after a joint analysis by the OECD and the IEA showed that removing fossil fuel subsidies in a number of non-OECD countries could reduce world Greenhouse Gas (GHG) emissions by 10% in 2050 compared with their level in the absence of such a reform (OECD, 2009). Indeed, these subsidies are huge. According to IEA estimates, total subsidies to fossil fuel consumption in 37 non-OECD countries amounted in 2008 to USD 557 billion (IEA, OPEC, OECD, World Bank, 2010a, 2010b), almost five times the yearly bilateral aid flows to developing countries in the form of Official Development Assistance (ODA).² As indicated in Fig. 1, fossil fuel consumption subsidies³ are quite substantial in some countries, especially in several oil-exporting countries where they amount to 10% or more of GDP (see Appendix B for subsidies expressed in USD and over time). Even in oil-importing countries like India, subsidies in terms of gross domestic product (GDP) are not negligible, amounting to almost 5% of 2008 GDP.

From a theoretical perspective, in an autarkic economy where subsidies are the only existing price distortions, removing these subsidies should reduce energy related GHGs emissions, while bringing real income gains to the country that removes the subsidies. These gains originate from an increase of consumer welfare and from a more efficient reallocation of resources. Hence, this policy reform is a “win–win” option as it brings both environmental and economic benefits. In a global world economy, characterized other departures from the first-best world and where economies are interrelated through international trade, there is no guarantee that all countries would report positive welfare impacts from subsidy removal, although the welfare at the world level should increase.

However, governments are reluctant to remove these subsidies as they claim they are justified on equity grounds, *i.e.* to protect the access of poor households to fossil fuels and electricity, even if evidences frequently shown the opposite (Arze del Granado et al., 2012). This argument could be reversed as the budgetary savings obtained from subsidy removal would give room for maneuver to implement social support that could be better targeted to poor households. For example access to fossil fuels and electricity can be guaranteed by directly supporting the purchasing power of the poor unlike across-the-board subsidized fossil fuels and electricity consumption that subsidizes all households.

A recent publication by the Global Subsidies Initiative (GSI) provides a comprehensive survey of the analysis undertaken in the past in order to quantify the economic and environmental consequences of fossil fuel subsidies at the world level (Ellis, 2010). These surveyed studies are all at the world level, with multiple sectors and countries or regions and generally based on partial or

² This paper used 2008 IEA data while in recent years IEA has updated the amount of total fossil fuel, for the latest year, 2011, the actual number is USD 523 billion (IEA, 2012).

³ This analysis covers subsidies to coal, refined petroleum products, natural gas and electricity consumptions. The electricity subsidy may in principle cover subsidies to nuclear-based, hydroelectric and renewable electricity sources, hence including subsidies that do not increase the consumption of fossil fuel. However, these subsidies are negligible in the countries covered by the IEA database.

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