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## Reviewing, Reforming, and Rethinking Global Energy Subsidies: Towards a Political Economy Research Agenda



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### ABSTRACT

This article provides a review of global energy subsidies—of definitions and estimation techniques, their type and scope, their drawbacks, and effective ways to reform them. Based on an assessment of both policy reports and peer-reviewed studies, this article presents evidence that energy subsidies could reach into the trillions of dollars each year. It also highlights how most subsidies appear to offer net costs to society, rather than benefits, in the form of government deficits, increased waste, shortages of energy fuels, and aggravated environmental impacts, among others. The review then talks about how tools such as best practices in measurement and estimation, subsidy elimination, impact studies, and adjustment packages can dramatically reorient subsidies so that they become more socially and environmentally sustainable. It also argues that such efforts need to explicitly learn from previous successes and recognize the importance of political economy, the possible winners and losers to subsidy reform. The final part proposes a future research agenda.

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**1. Introduction**

Energy subsidies have emerged to become one of the most polemic, pervasive, and political energy policy tools. On the one hand, their often-stated justification is that subsidies help target public resources into neglected areas of infrastructure and development; can spur much-needed innovation; and/or are instrumental at achieving various social or technological goals (Koplow, 2004a, 2015). Some energy subsidies, notably low-income assistance to poor households under the Low Income Home Energy Assistance Program or Weatherization Assistance Program in the United States (U.S Department of Energy, 2009), or the Warm Front Program in the UK (Sovacool, 2015), have served a valuable social mission. Others, such as those supporting the early efforts of the Rural Electrification Administration (Kitchens and Fishback, 2015), were essential in the expansion of what was at that time a new and novel technology, the electricity grid. Despite many implementation problems, subsidized energy does provide an important social safety net across the Middle East and Africa (El-Katiri and Fattouh, 2015). For instance, in South Africa subsidies for Liquefied Petroleum Gas stoves have been key to the rapid adoption of more sustainable, less carbon-intensive cooking practices that also save households money (Kimemia and Annegarn, 2016).

On the other hand, many subsidies serve almost no discernible public good—and in some ways, they can do considerable bad (Johnston et al., 2014). When addressing the Organization of Economic Cooperation and Development (OECD), Kiyoo Akasaka, Deputy Secretary General, went so far as to argue that “Subsidies often introduce economic, environmental, and social distortions with unintended consequences. They are expensive for governments and may not achieve their objectives while also inducing harmful environmental and social outcomes.” (Akasaka, 2007) More recently, Secretary-General of the OECD Angel Gurría passionately argued that “We need strong, credible and predictable climate policies, in particular a price on carbon and the elimination of both consumer and producer subsidies that support incumbent fossil fuels. These are, in climate terms, ‘sins of commission’ for which there is no excuse.” (Gurría, n.d.) Energy subsidies, moreover, are increasingly becoming parts of costly and protracted trade disputes, creating friction between countries. One study found that energy subsidies were involved in 14.5% of the trade disputes handled by the World Trade Organization between 2010 and 2013 (Bougette and Charlier, 2015).

This article provides a global review of energy subsidies (primarily but not exclusively those for fossil fuels and nuclear power). It assesses the type and scope of subsidies, how they are defined and measured, their drawbacks, effective ways to reform them, and future research questions. Based on an assessment of both policy reports and peer-reviewed studies, this article presents evidence that energy subsidies could reach into the trillions of dollars each year. It also highlights how most subsidies appear to offer net costs to society, rather than benefits, in the form of government deficits, increased waste, shortages of energy fuels, crime associated with illicit fuel trade, and aggravated environmental impacts, among others. The final parts of the review also discuss various policy reform efforts as well as associated political economy implications and a future research agenda.

**2. Defining Subsidies and Understanding Estimation Techniques**

To begin, defining an energy subsidy can be fraught with difficulty. The World Trade Organization defines a subsidy as “a financial contribution by a government, or agent of a government, that confers a benefit on its recipients” (Kojima and Koplow, 2015). The United Nations and International Energy Agency define an energy subsidy as “any measure that keeps prices for consumers below market levels, or for producers above market levels, or that reduces costs for consumers and producers” (United Nations Environment Programme Division of Technology, 2002) The Global Subsidies Initiative and the International Institute for Sustainable Development add that subsidies can do this in complex ways. They can directly or indirectly transfer liabilities, forgo government revenue, provide goods or services below market value, or offer direct income or price support for a preferred technology (Beaton et al., 2013). As Table 1 reveals, at least 17 different types of energy subsidies are on the books for many countries around the world, and most of these were oriented towards lowering the cost of energy production, though others did focus on raising prices and still others lowering prices for users (Koplow, 1993; United Nations Environment Programme Division of Technology, 2008; Koplow and Dernbach, 2001; Koplow, 2004b).

Given this breadth and complexity, as well as interaction with other policies, energy subsidies can be pervasive, yet difficult to identify. Consider the example of one small subsector, transport of energy fuels. In the United States, inland waterway maintenance for the delivery of

**Table 1**  
Typology of Global Energy Subsidies.

Type of subsidy	Example(s)	How it works		
		Lowers cost of production	Raises price to disfavored producer	Lowers price to consumer
Direct financial transfer	Grants to producers	X		
	Grants to consumers			X
Preferential tax treatment	Low-interest or preferential loans	X		
	Rebates or exemptions on royalties, sales taxes, producer levies and tariffs	X		
	Investment tax credits	X		X
	Production tax credits	X		
	Accelerated depreciation	X		
	State sponsored loan guarantees	X		
Trade restrictions	Quotas, technical restrictions, and trade embargoes		X	
	Import duties and tariffs		X	
Energy-related services provided by government at less than full cost	Direct investment in energy infrastructure	X		
	Publicly sponsored R&D	X		
	Liability insurance	X		
	Free storage of waste or fuel	X		
	Free transport	X		
Regulation of the energy sector	Demand guarantees and mandated deployment rates	X	X	
	Price controls and rate caps		X	X
	Market-access restrictions and standards		X	

Source: Modified from Trevor Morgan, Energy Subsidies: Their Magnitude, How They Affect Energy Investment and Greenhouse Gas Emissions, and Prospects for Reform (Geneva: UNFCCC Secretariat Financial and Technical Support Programme, June 2007).  
R&D = Research and Development.

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