Fossil Fuel Subsidies: Building a Framework to Support Global Reform

Expert Workshop on Subsidies to Fossil Fuels and Climate Mitigation Policies in Latin America and the Caribbean
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Key Themes

- Review of existing estimates.
  - Positive trends & remaining gaps.
  - Discussion issues relating to transport, power sector, externalities.
- Expanding and leveraging subsidy work.
  - Institutional structures, coordination.
  - Systematic expansion of subsidy data.

Developing Better Estimates

Benefits of Reform Remain Very Large

Fiscal	• $500 billion year likely low estimate, even excluding externalities. • Crowds out social spending.
Environmental	• Undermines ghg and other pollution control efforts. • Significant negative impacts on human health; and on air, water, and land quality. • Slows transition to cleaner fuels.
Societal	• Spurs black markets and associated corruption.
Political	• **Reform is nearly impossible without detailed, timely, and broadly accepted data.**

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Developing Better Estimates

Subsidy Transparency is Improving

- **Visibility.** High level recognition on the scale and importance of subsidies.
- **Activity.** More IOs, NGOs, governments, and academics evaluating subsidy, subsidy reform.
- **Frequency.** Data sets more regular than in the past, and some consensus on measurement, metrics.
- **Near-term challenges**
  - Politics, politics.

> *"The federal government by no stretch of the imagination subsidizes the oil industry. The oil industry subsidizes the federal government at a rate of $95 million a day."*
> – Jack Gerard, President, American Petroleum Institute (2011)

  - Expanding coverage, measurement standardization, sharing of raw data.
  - Improved granularity (e.g., region, time of day) so key market distortions more visible.

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Developing Better Estimates

Important Estimation Differences Remain

Global Subsidy Estimates, 2011

	IEA	OECD	IMF, Pre-Tax Value	IMF, Plus Tax and Externalities
	billions of USD			
Total	523	84	492	2,000
Oil	285	59	220	728
Gas	104	15	116	709
Coal	3	10	6	376
Power	132		150	179
Subsidy-weighted shares of power sector in IEA sample: 26% coal, 20% oil, 55% natural gas.				
Method	Price gap Power: avg. production cost, capped +T&D	PSE, CSE, GSSE	FF: price gap – VAT + PSE Power: IEA or "going concern" prices.	Pre-tax + global baseline tax rate + externality estimate
Coverage (countries)	38 (including 2 OECD)	34 OECD	Oil: 176 countries for price gap, 12 for PSE; Coal and natural gas: 56 countries for price gap, 16 for PSE; Power: 77 countries	

Sources: IEA, 2012; OECD, 2013; IMF, 2013. PSE = producer subsidy equivalent; CSE = consumer subsidy equivalent; GSSE = general services support estimate (e.g., R&D, environmental cleanup). Totals may not add due to rounding.

Developing Better Estimates

Big Numbers, But Still Many Gaps

Category	Coverage Gaps
Geographic gaps	• Producer subsidies outside of OECD. • State, provincial, or municipal subsidies of all types outside of a few OECD countries.
Policy gaps	• Credit and insurance. • Tax breaks outside of OECD. • Regulatory oversight and site remediation. • Energy security (e.g., stockpiling, oil defense). • Bulk energy transport infrastructure. • Market price support (e.g., purchase mandates). • Multiple-level subsidies in state-owned enterprises. • Subsidies of significant (though not sole) benefit to energy sector.
User fees	• Consistent evaluation of fee levels versus related services provided.

Transport

Subsidies to Bulk Transport Need to be Counted

- Strong connection between infrastructure and fossil fuel supply chains.
  - **All.** Pipelines, transmission lines.
  - **Most.** Rail (coal: ~ 40% of US tonnage in 2012; increasing frack oil), inland waterways (coal and oil > 50% of US tonnage for decades).
  - **Shared but significant .** Coastal shipping for oil, coal, LNG. Tankers may be cost-driver of some port projects.
- Many subsidies to bulk fuel transport are not captured:
  - Rights-of-way; property tax reductions; tax-favored corporate forms (MLPs); insufficient user fees for construction, maintenance; caps or gaps in liability.
  - Regional cross-subsidies in tariff structures (often to reduce cost of long-distance transport to or from remote or rural areas).
- Impacts
  - Reduce cost of delivery; hide benefits of distributed energy, DSM; may encourage over-development for export (e.g., coal in Pacific NW of US; Russian NG in arctic).
  - Ripple through price gap adjustments (regional terminal prices & subsequent links).

Transport

Fossil-Dependent Infrastructure

- **Impacts similar to direct fuel subsidies.** Elevates demand for (mostly fossil) fuels & transit; skews modal choice; increases emissions.
- **These subsidies are *not* small:**
  - Inadequate user fees on roads ~$140 billion/year in US. Cross-subsidies to heavy trucks worsens inter-modal distortions.
  - Proxy carbon tax of $25/ton on international air and ocean shipping would raise about $38 billion/year (IMF, WB).
- **Fiscal, environmental benefits from reform.**
  - Track and correct, though probably as a separate category.
  - Different from straight subsidy to fuel.

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Transport

Address External Costs of Transport Separately

- Examples: accidents, congestion, pollution.
- Societal costs linked to how, what, and where we drive.
- Better to address within externality category than as a part of fuel subsidy estimates.

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Electricity

Challenging Attributes

- Estimating reference prices difficult.
  - Little international trade limiting price discovery.
  - Cost-based proxies:
    - Non-payment can make potential revenues far less than actual revenues.
    - Government-owned infrastructure can include hidden subsidies that mask real cost of power.
  - Cross-subsidies common (regional, time-of-day, type of customer).
- Existing studies use somewhat different approaches.
  - IEA: average production cost in country plus flat T&D adder. Capped at levelized cost of new combined cycle gas turbine plants (the de facto marginal supply)
  - IMF: IEA estimates for 37 countries; 40 countries use average domestic cost, including both production and capital recovery; non-payment of bills; and distributional losses. Subsidized fossil inputs appear to be captured in the power sector, not at the fuel level.
  - OECD: inventory picks up some subsidies to electric power through its review of source fuels.

Electricity

Testing and Improving Estimates

- **Sensitivity and standardization.** Which simplifications in power price gap subsidy calculations matter most?
  - Average cost values missing important baseline subsidies (ROE, taxes, insurance, proper cost of capital and resource access).
  - Missing capital recovery factor (i.e., ST vs. LT market perspective).
  - Use of average costs in regions where LRMC is materially higher.
  - Use of national averages versus visibility for variability by region, power quality, time-of-day, etc.
  - **Develop standardized template** so assumptions for each calculation are visible.
- **Attribution to fuels.** Assign power subsidies to source fuels.
  - IEA already does this to net out non-fossil generation.
  - Current methods understate subsidies to coal in both IEA and IMF data.

Externalities

Too Big to Ignore; too Uncertain to Combine

Fuel	# Assessments	Range across studies		High estimate as multiple of low	
		Low-end	*High-end*	*Across studies*	*Within study*
		c/kWh	*c/kWh*		
Per unit of electricity [1]					
Coal	4	0.14	21.00	155x	63x
Oil	3	0.03	15.38	463x	7x
Gas	4	0.001	5.59	5380x	578x
Global total		*bil USD/yr*	*bil USD/yr*		
All fossil electric [2]		90	3,070	34x	
High/low spread			2,980		
Highest est. for fiscal subsidies to ffs [4]			607	5x	
Sources and notes					
(1) Burtraw, Krupnick, and Sampson (2012).					
(2) Kitson, Wooders, and Moerenhout (2011).					
(3) Composition of literature reviews differ, and global total estimates will not necessarily align with scaling the per kWh values by global energy production. Data have been scaled to 2012 USD.					
(4) Indicative value by adding 2011 IEA price gap to OECD's producer subsidy values, despite some overlap for KOR and MEX.					

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Framing LAC Research

Price Gap Necessary, Not Sufficient

- **Extending price gap helpful.** Comparable data, data sharing, building blocks for aggregation important in building global snapshot of support.
  - New work should expand or refine coverage.
  - IEA (Venezuela, Ecuador, Argentina, Mexico); IMF and World Bank recent and pending analysis.
- **Politics remains key challenge.** Small price gaps may not trigger action; very large price gaps face other constraints to reform.
- **Building case for reform in LAC.** What questions and analysis can address key reform areas and bolster the case for change?

Framing LAC Research

Case Studies to Highlight Reform Options

- **Island states and remote areas**
  - Distributional cross-subsidies and their impact on fuel choice, modal choice, and break-points for decentralized power.
- **State-owned production firms or distribution infrastructure**
  - Detail on multi-level subsidies, going-concern pricing, political cross-subsidies.
- **"Export-increment" financing**
  - Funding capital upgrades via reduced need to consume fuels in subsidized domestic market (e.g., auto replacement in Venezuela).
- **More systematic metrics of reform efforts & backsliding risks.**
- **Many energy market anomalies in LAC region** already delineated in Kojima (2013) and IMF (2013).

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Leveraging Global Subsidy Reform

Improving Transparency, Coordination of IOs

- **Efficiency.** Small budgets, time pressures to bring down spending, ghg, require better integration of analyses.
- **Scope and transparency.** Expanded coverage, visibility of core metrics.
  - Sharing of raw data across IOs, not just results.
  - Private intra-net can address privacy, licensing concerns on raw data.
  - Drill-down capability: totals to composition; ability to compare similar interventions across countries.
  - Much greater visibility of assumptions and coverage in each study.
- **Group like with like.** Segregate items with high measurement uncertainty (e.g., externalities), at least for now.

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Leveraging Global Subsidy Reform

Expanding Coverage, Outsourcing Standardization

- **Coordinate and specialize.** Structured and coordinated expansion of subsidies research across research groups:
  - More countries, levels of government, time periods.
  - More policy types (credit support, *including by MBDs*; insurance; specific types of tax breaks; supply security; etc.)
- **Remove definitional issues from political realm.**
  - 25 years of meetings on "what is a subsidy" is enough for me; move measurement standardization to a separate track.
  - Quantifying subsidies similar challenges as corporate accounting.
  - IASB model: independent expert board evaluating common issues, publishing accounting rules.
- **Make mandatory reporting mandatory.** Enforceability, peer pressure.

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