

Quantifying Support to Energy – Why is It Needed?

Expert Workshop on Estimating Support to Fossil Fuels

Organisation for Economic
Cooperation and Development
Paris, France
18-19 November 2010

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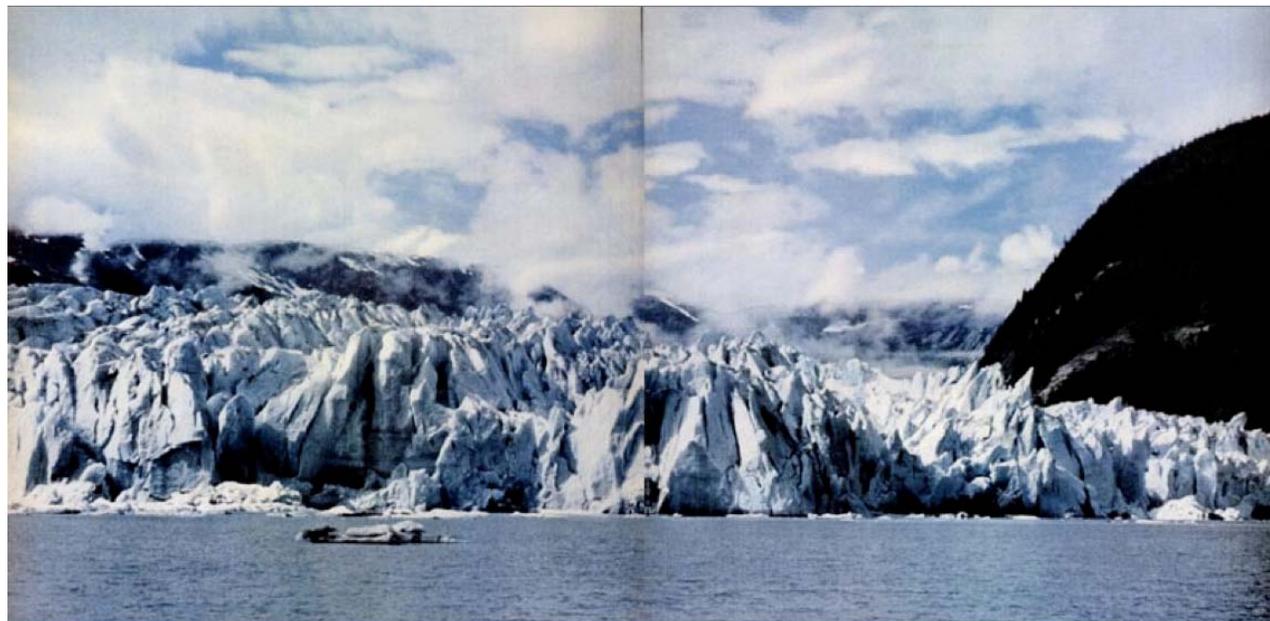
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Energy in Simpler Times: Home Atomic Energy Kit

*“Boy! What experiments!
They make your blood
tingle.”*

*-Popular Science magazine,
December 1947.*

Energy in Simpler Times: Melting Glaciers as a Marketing Strategy



EACH DAY HUMBLE SUPPLIES ENOUGH ENERGY TO MELT 7 MILLION TONS OF GLACIER!

This giant glacier has remained unmelted for centuries. Yet, the petroleum energy Humble supplies—it converted into heat—could melt it at the rate of 80 tons each second! To meet the nation's growing needs for energy, Humble has applied science to nature's resources to become America's Leading Energy Company. Working wonders with oil through research, Humble provides energy in many forms—to help heat our homes, power our transportation, and to furnish industry with a great variety of versatile chemicals. Stop at a Humble station for new Enco Extra gasoline, and see why the "Happy Motoring" Sign is the World's First Choice!

HUMBLE
OIL & REFINING COMPANY
America's Leading Energy Company

ENCO
Happy Motoring

TWO GLACIERS ALONG A RIVER IN US STATE ARE 270 SQUARE MILES. IF THE PETROLEUM ENERGY HUMBLE SUPPLIES COULD MELT IT AT THE RATE OF 7 MILLION TONS A DAY.

“Each day Humble supplies enough energy to melt 7 million tons of glacier!”

-Humble Oil & Refinery Company (now part of Exxon) advertisement in *Life* Magazine, 1962.

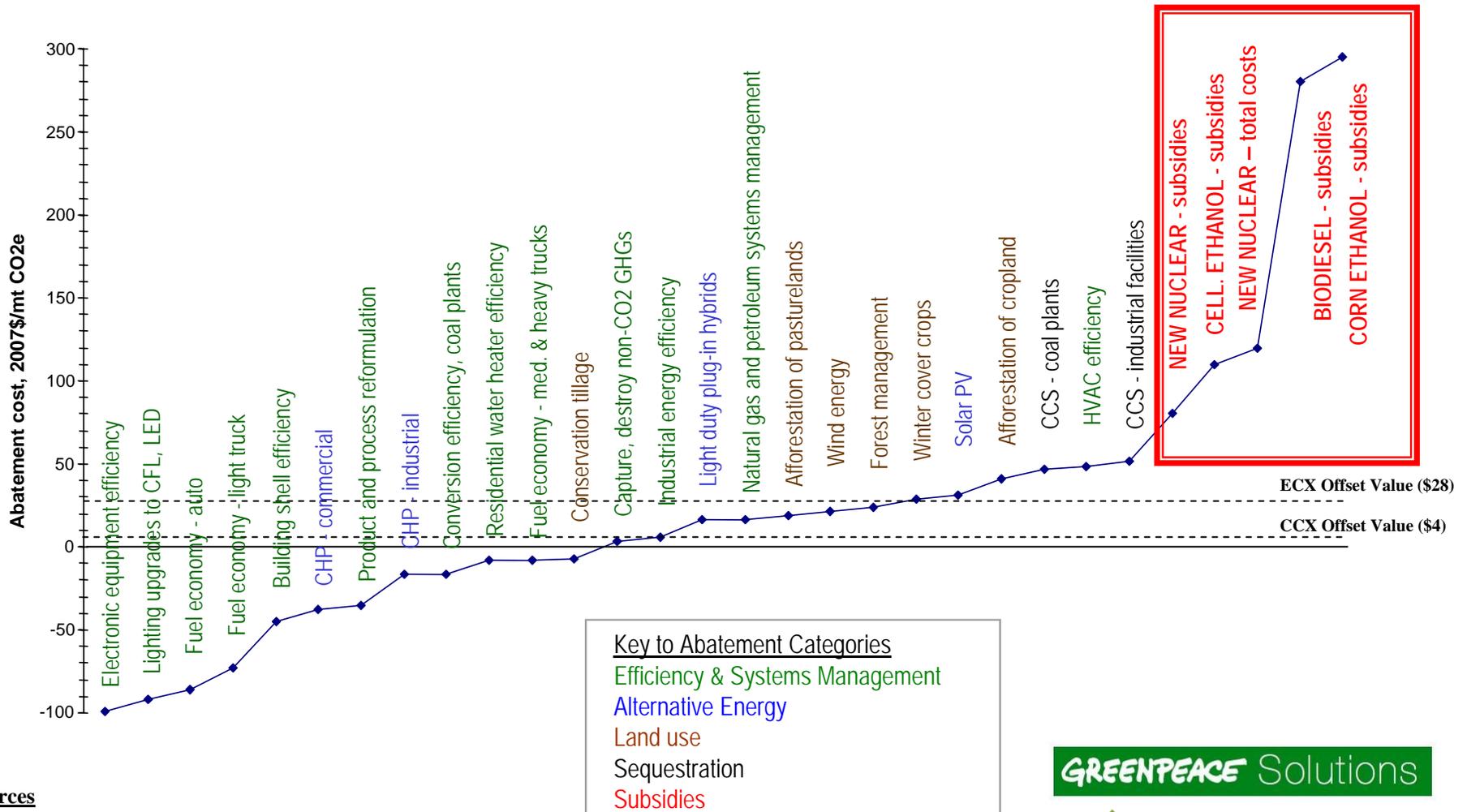
If Energy Issues Ever Were Simple, They No Longer Are...

- Climate Change
- Trade
- Competitiveness
- National Security
- Poverty Reduction and Regional Development
- Fiscal Savings from Reform

Energy Subsidies Exacerbate Key Drivers of Climate Change

- Fossil fuels main source of anthropogenic GHG emissions.
 - Concurrent subsidization and constraining carbon makes no sense.
 - Energy market restructuring main lever to cut fossil fuel use; heavily affected by subsidies.
- Subsidy reform supports climate stabilization.
 - Removal of consumer subsidies to fossil-fuels alone would reduce global CO₂ emissions by 5.8% by 2020 (WEO 2010).
 - 40% of abatement needed to be on track to limit warming to 2° C by 2020.
- Subsidies to lower carbon options (e.g., clean coal) may still be biasing markets away from lowest cost solutions.

Government-Led Solutions: Politics Often Directs Money in Highly Inefficient Directions



Sources

Abatement technologies: McKinsey & Company, mid-range case.

Offset prices: Average of contract values from CCX (2008-10) and ECX (2008-12).

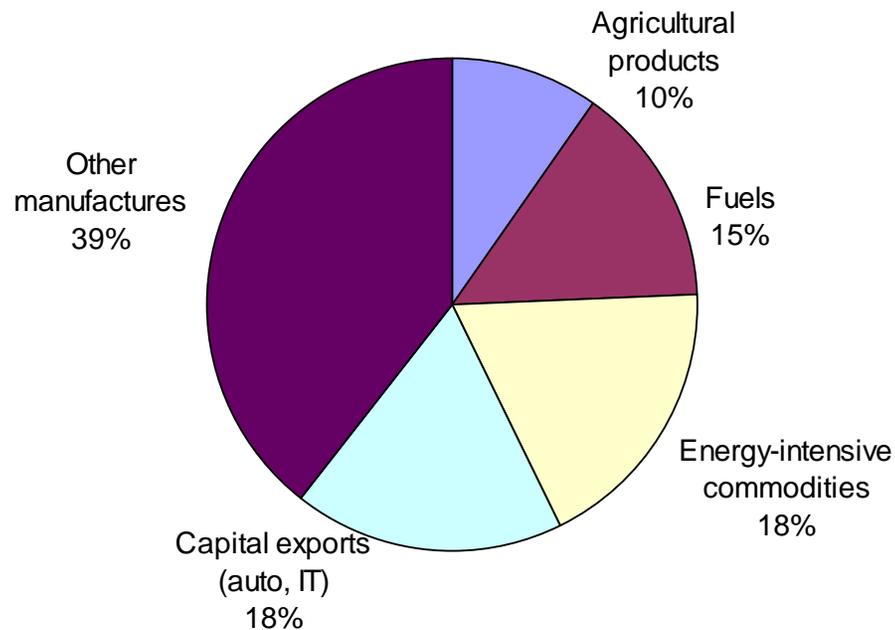
Subsidy data: Earth Track, Inc.

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Fuels and Embedded Energy Comprise a Large Portion of Global Merchandise Trade

Importance of Energy in Trade



Source: WTO, "Merchandise trade by product," *International Trade Statistics 2010*.

- Fuel exports larger than agriculture (including fisheries).
- Capital exports affect long-term energy demand.
- Energy + energy intensive commodities (iron, steel, chemicals, non-fuel minerals) > one third global merchandise exports.
- Exports of travel and transport services > \$1.5 trillion/year; nearly half of total commercial service exports.

Natural Resources are Increasingly Important as Per Capita Wealth Declines

	Total Wealth	Natural Capital	Natural Capital Share
	<i>2000 USD/person</i>		
Low-income countries	7,532	1,925	26%
Middle-income countries	27,616	3,496	13%
High-income OECD countries	439,063	9,531	2%
World average	95,860	4,011	4%

Source: World Bank, *Where is the Wealth of Nations? Measuring Capital for the 21st Century*, 2006. Data excludes oil states.

- **High leakage.** Lowest 40% get only 15-20% of fuel subsidies in developing countries, though still hurt disproportionately if subsidies removed (IGO-4, 2010).
- **High opportunity cost.** Poorly structured energy policies and subsidy-related corruption can squander largest potential source of wealth for poorest segments.

Subsidies to High-Cost Regions or Industries: Better Ways to Help?

- Common in all countries evaluated. Examples:
 - Subsidized bulk fuel transport (e.g., Chinese coal shipments by rail, Argentinean natural gas pipelines).
 - Extension of energy networks (e.g., Indonesian pipelines, Brazilian fossil-fuel generators, Chinese grid extension and maintenance).
 - Support to uneconomic industries (German hard coal; subsidized industrial power in Saudi Arabia; royalty relief in Alaska).
- Stated objectives (rural employment, regional stabilization) may be good.
- Often multiple pathways; data on subsidies or cross-subsidies often sparse or non-existent.
- Keep end-goal; force transparency and competition for how to reach.

Energy Subsidy Estimates Remain Intermittent and Inexact

- **No systematic or standardized evaluation of energy subsidies around the world.**
- **Successes:**
 - Increasingly frequent assessments of consumer subsidies.
 - Capability to model benefits of reform on trade, welfare, GDP.
 - Growing consensus on need to track more complicated subsidy mechanisms.
- **Remaining challenges:**
 - Existing reporting requirements tend to be voluntary and unstructured, with little or no enforcement mechanism.
 - Available estimates show wide dispersion resulting from technical and political differences in approaches.
 - Very limited data on producer subsidies to fossil fuels; most of what has been done has been produced outside of government.
 - Virtually no integration of sub-national subsidy policies.
 - Aggregated data often misses regional or sectoral cross-subsidies.
 - Independent expert body to standardize reporting and valuation methods does not exist.

Different Types of Programs Generate Larger Variance in Estimates

- **Financial transfers (grants, R&D support)**
- **Below-market provision of goods or services, including risk-bearing, intermediation benefits**
 - Loans, loan guarantees
 - Indemnification
 - Government-owned enterprises
 - Provision of market intelligence
- **Tax breaks [special taxes] for particular activities**
- **Purchasing preferences or mandates [bans]**
- **Insufficient financial accrual for facility closure, known externalities**
- **Granting [revocation] of property rights**

High



Budget
Visibility and
Ease of
Quantification

Low

All Transfer Mechanisms Matter

U.S. Federal Value Transfer, 2009, All Sectors of Economy

	Cost to Gov't¹ (<i>\$Billions</i>)	% Share	Value to Recipient (<i>Rarely Quantified</i>)
Composition of annual commitments			
Direct spending (outlays)	3,517,681	57%	Same as cost to gov't
New loan disbursements	694,067	11%	Higher
New loan guarantee commitments	842,515	14%	Higher
Tax Expenditures	1,086,343	18%	Often higher
Transfers from federal mandates	0	??	<i>Ad hoc</i> only
New risks underwritten	Not aggregated	??	Higher
Statutory liability caps	No listing	??	Higher
<i>Total annual value transfers</i>	6,140,606		

¹Other budget data from U.S. OMB FY11 budget and supplemental materials.

Valuation Challenges: U.S. “Official” Estimates Well Below Others

Study, Publication Date, Sponsor	Data Year(s)	Fuels Included	Total Subsidies/Year, Average Values
B. Fossil fuels			
EIA (1992)—oil and gas portion only	1992	O&G portion	(\$0.5)
EIA (1999 and 2000)—oil and gas portion only	1999	O&G portion	\$2.1
EIA (2008)—oil and gas portion only	2007	O&G portion	\$2.1
Koplow and Martin (1998) for Greenpeace	1996	Oil only	\$32.2
International Center for Technology Assessment (2005)	2003	Oil, mostly defense-related	\$133.2
Wahl (1996) for the Institute for Local Self Reliance	1996–97	Oil, with some natural gas	\$257.8
Hwang (1995) for the Union of Concerned Scientists	1990–91	Oil, with some natural gas	\$270.4
International Center for Technology Assessment (1998)	1998	Oil, with some natural gas	\$1,412

Source: Koplow, EIA Energy Subsidies Estimates: A Review of Assumptions and Omissions, 2010.

G20: Self-Reporting Without Enforcement Unlikely to be Successful

	G20 Annex Submittals		Producer Subsidies	IEA Consumer Subsidy Estimates		Fuel Underpricing 2008, % of US Reference Price	
	Subsidies subject to phase-out	New reforms pursuant to G20?		Approximate Subsidies, 2007	Fuel composition of power sector, 2007	Diesel	Gasoline
China	Yes (1 item)	No		\$38 billion (mostly oil, then electricity)	81% coal; 2% O&G	129%	177%
Germany	Yes(2 items)	No	At least €1.7billion	n/e		200%	279%
Indonesia	Yes (~4 items)	No		n/e		54%	89%
United States	Yes (12 items)	No	\$52 billion	n/e		100%	100%

n/e = not estimated

Source: Koplow/Kretzmann (2010), based on data from IEA, GTZ and Earth Track.

Fossil Fuel Subsidy Quantification: Desired End-Points

- **Decision-making relevance.** Near-real time data on subsidy policies that distort or undermine trade and climate commitments.
- **Policy alignment.** Fiscal spending supports environmental objectives; climate policy and subsidies not at cross-purposes.
- **Policy contestability.** Ability to evaluate promised outcomes versus actual; and to propose more varied options with better fiscal and environmental trade-offs.
- **Fiscal savings** and improved economic efficiency.

Questions for Consideration

- **Understanding failure.** Energy subsidy reform initiatives have been ongoing for at least 20 years (OECD, IEA, IMF, World Bank, UNEP, G20, many NGOs). What has impeded conversion into permanent structural reforms?
- **Understanding success.** In contrast, what has made detailed subsidy tracking in agriculture successful?
- **Progress in an imperfect world.** Full consensus on subsidy definition is unlikely in the near-term. What pathways exist to achieve progress without it?
- **Institutional attributes.** What oversight, incentive structure, and powers are needed for successful:
 - Subsidy transparency and valuation?
 - Successful implementation and oversight of reform?
 - Are there institutional structures that have contributed to the lack of success to-date, and should not be replicated.