Lessons learnt by the Global Subsidies Initiative from investigating energy producer subsidies

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Global Subsidies Initiative

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iisd International Institute for Sustainable Development / Institut international du développement durable

Better living for all—sustainably

iisd International Institute for Sustainable Development / Institut international du développement durable

- **Independent Policy Research Institute, est. 1990**

to promote sustainable development

GSI Global Subsidies Initiative

- Established (by IISD) in 2005

to investigate and promote reform of subsidies … that have negative economic, social or environmental impacts

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Are energy subsidies the best use of public money? (1)

Fossil Fuels

$400-700 bn/year – largely oil consumers

But >$100 bn to producers, including in OECD

Fisheries

$15-35 bn/year – 25% of industry revenue

$50 bn/year lost from depleted stocks

Biofuels

>$20 bn/year

Mostly developed countries, but growing worldwide

ECONOMIC: Hugely inefficient - savings can easily compensate vulnerable

ENVIRONMENTAL: Resource depletion, pollution, land use, accidents

SOCIAL: Reduce competitiveness of poor producers; increase volatility

Irrigation

Scale unknown

GSI estimates $1 bn in Spain, >$0.5 bn in 4 Indian States

Nuclear

Scale unknown

Industry depends on subsidies

Agriculture

$384 bn in 2009

Over-production in developed countries very trade-distorting

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Are energy subsidies the best use of public money? (2)

Ideally we should be able to do cost-benefit analysis of energy subsidies …

Social cost	=	Private + govt cost	+	Negative externalities including environmental effects

Social benefit	=	Private + govt benefit	+	Positive externalities including environmental effects

$$\text{Net present value of the subsidy program} = \sum_{t=0}^{n} \frac{\text{Subsidy program's social benefit net of its social cost}}{(1 + \text{discount rate})^t}$$

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But it's amazing how little information is available on energy subsidies

- The GSI uses the 3-stage process to investigate subsidies

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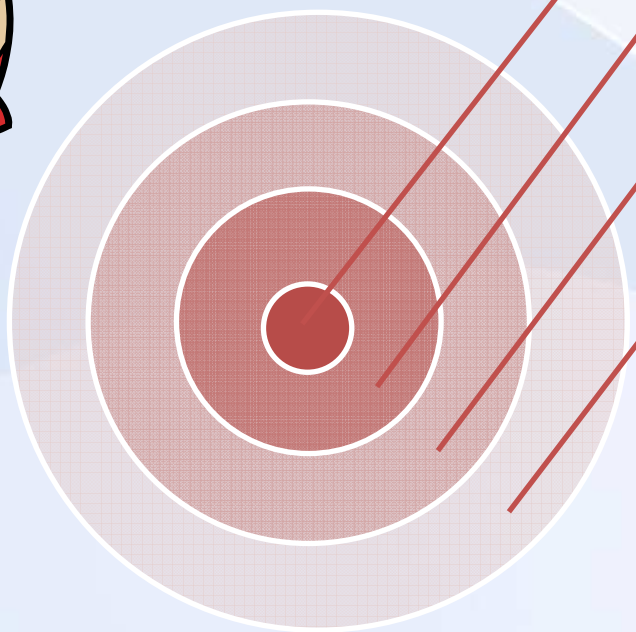
The devil is in the details…

Define → **Measure** → **Evaluate**



- Budget expenditure (incl. tax expenditures) and potential expenditures
- Market price support and market transfers
- Uncollected or under-collected use of government-owned assets
- Non-internalized externalities (not always included)

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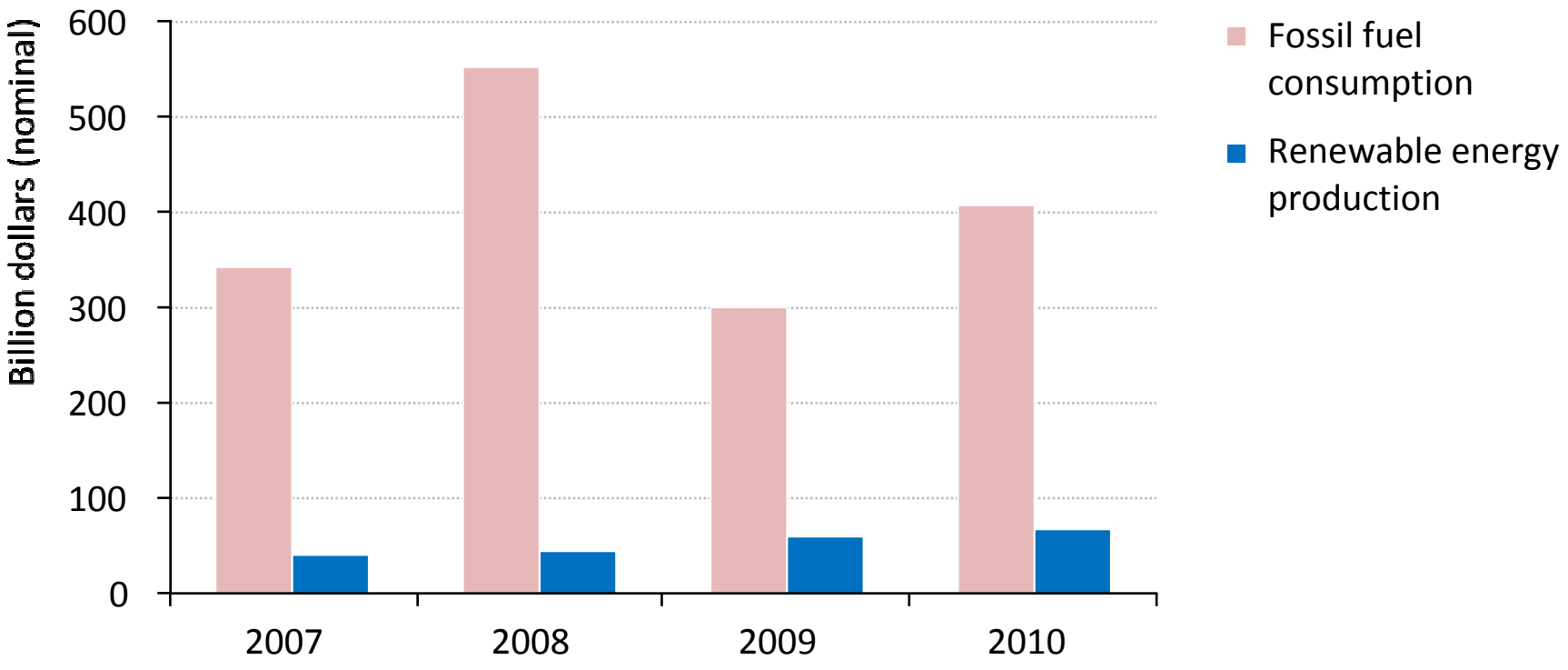
World subsidies to fossil fuels consumption & renewable energy



Fossil-fuels subsidies amounted to $409 billion in 2010 – down from the peak of $550 billion in 2008 but still much larger than subsidies to renewables, which reached $66 billion in 2010

Define → **Measure** → Evaluate

GSI exploratory work (not a final say!)

Subsidies per unit of energy generated

TABLE 6.2: SUMMARY OF STUDIES REVIEWED

All currencies are converted based on year under consideration.

		US ¢ / kWh	2009 Generation (TWh)	Notes
Fossil Fuels	Financial + R&D External Costs	0.1 - 0.7 0.7 - 23.8	12,900	• Range of estimates reflects different scope and methodologies of studies • Estimates not applicable to all countries and generation technologies • Data from tables 3.1, 4.1 and 5.1
Nuclear	Financial + R&D External Costs	0.5 - 11.6 0.2 - 1.2	2600	
Renewables	Financial + R&D External Costs	1.7 - 15.4 0.2 - 3.2	500 (excl. hydro) 3600 (incl. hydro)	

Source: Kitson et al. *Subsidies and External Costs in Electric Power Generation: A comparative review of estimates*. GSI, September 2011.

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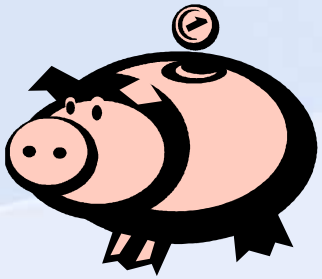
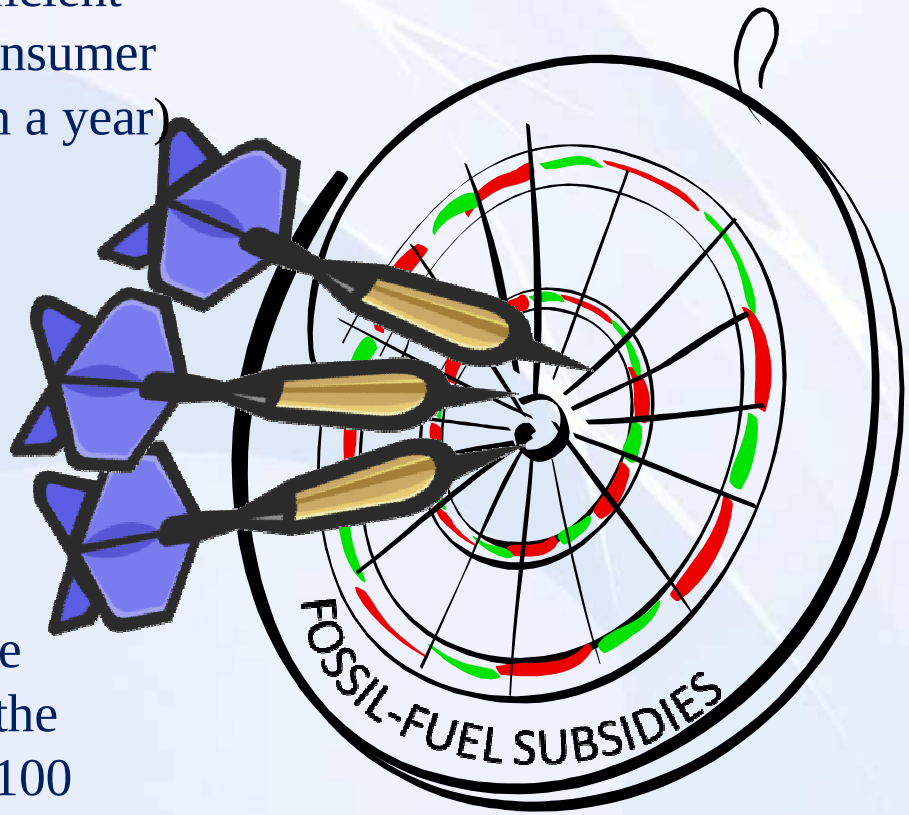
Triple Attention to Fossil-Fuel Subsidy Reform

Need to phase out inefficient public spending (FF consumer subsidies over $400 bln a year)

Need to cut demand for fossil fuels to abate emissions and to create a level playing field for renewables



Need to find 'innovative sources' of finance for the Green Climate Fund ($100 bln a year by 2020)



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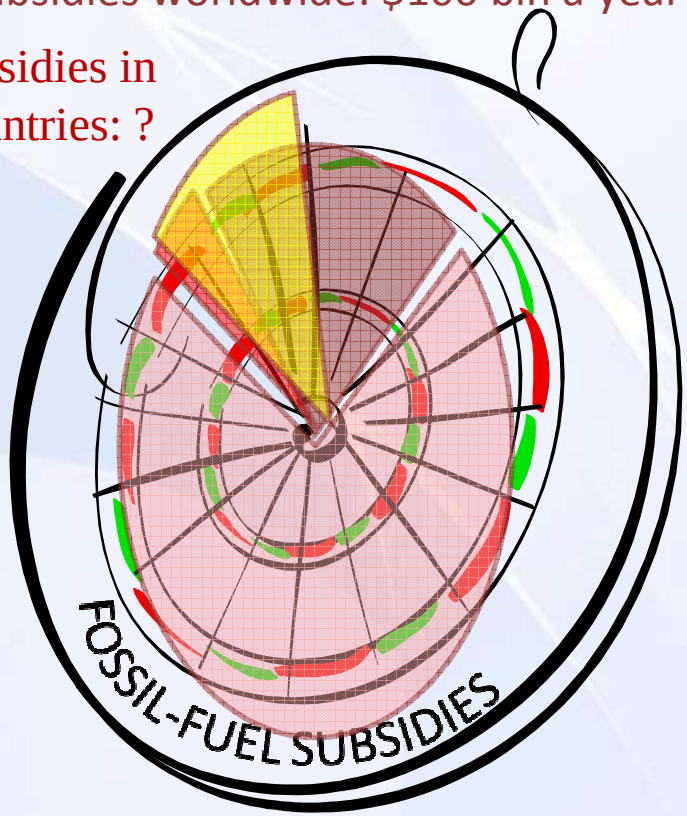
Fossil Fuels: Global Focus

GSI's 'heroic estimate' of fossil-fuel producer subsidies worldwide: $100 bln a year

Consumer subsidies in developed countries: ?

OECD estimate of all types of fossil-fuel subsidies in 24 developed countries: USD 45 – 75 bln a year



IEA estimate of consumer subsidies in developing countries: $ 490 bln in 2010

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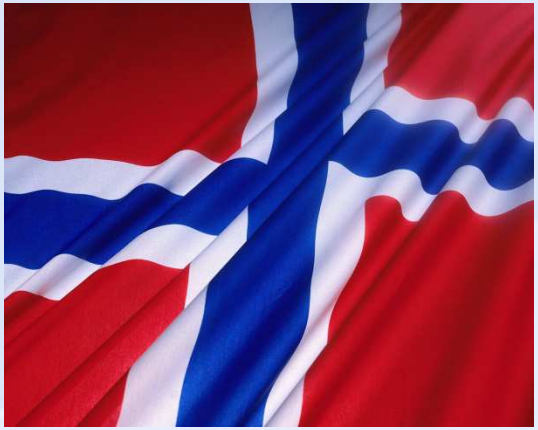
Fossil fuels: Country Focus
GSI 'provocation series': 'Fossil Fuels: At What Cost?'

INDONESIA
CANADA
NORWAY
RUSSIA
NIGERIA (TBC)



More at: http://www.iisd.org/gsi/fossil-fuel-subsidies/fossil-fuels-what-cost

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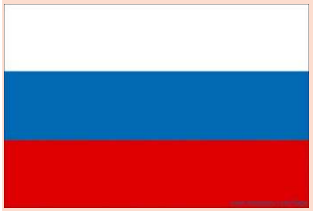
Study results (values not comparable directly due to different national taxation benchmarks)

Country	Scope	Subsidies Identified	Value of Subsidies	Data year
	Upstream oil & gas	3 + 7 potential	**$1.8 billion**	2008
	Upstream oil activities, 3 Provinces	63	**$2.8 billion**	2008
	Upstream oil & gas, Federal subsidies	30	**$14.4 billion**	2010

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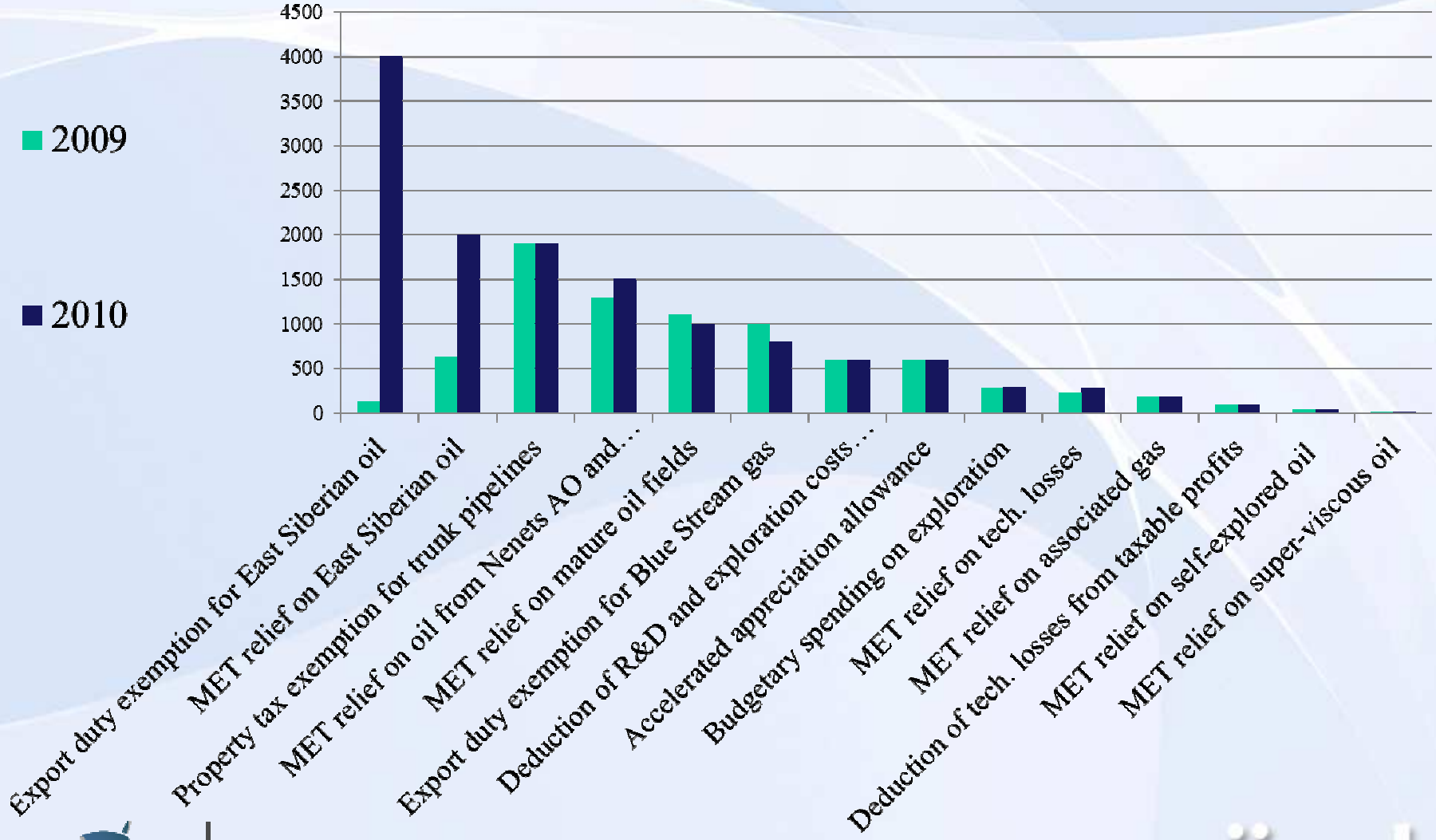
Top 10 most sizeable federal subsidies to upstream oil and gas activities in Russia



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‘Soft evaluation’ of oil and gas producer subsidies in Russia against their policy objectives

Extensive development of new fields

- Stimulating rational and efficient use and maximum recovery of oil & gas reserves
- Ensuring reserve replacement and sustained production of oil & gas for domestic consumption
- Securing sufficient volumes of oil & gas for export
- Supporting/creating jobs in the energy-related sectors
- Preventing capital flight and attracting FDI in the oil & gas sector as Russia’s flagship industry
- Sustaining/increasing the state’s share in oil & gas production to prevent disinvestments
- Stimulating technological advancements in oil & gas extraction with potential spillovers to other sectors
- Participating in the global race for development of the Arctic oil & gas resources

Improving energy efficiency and recovery

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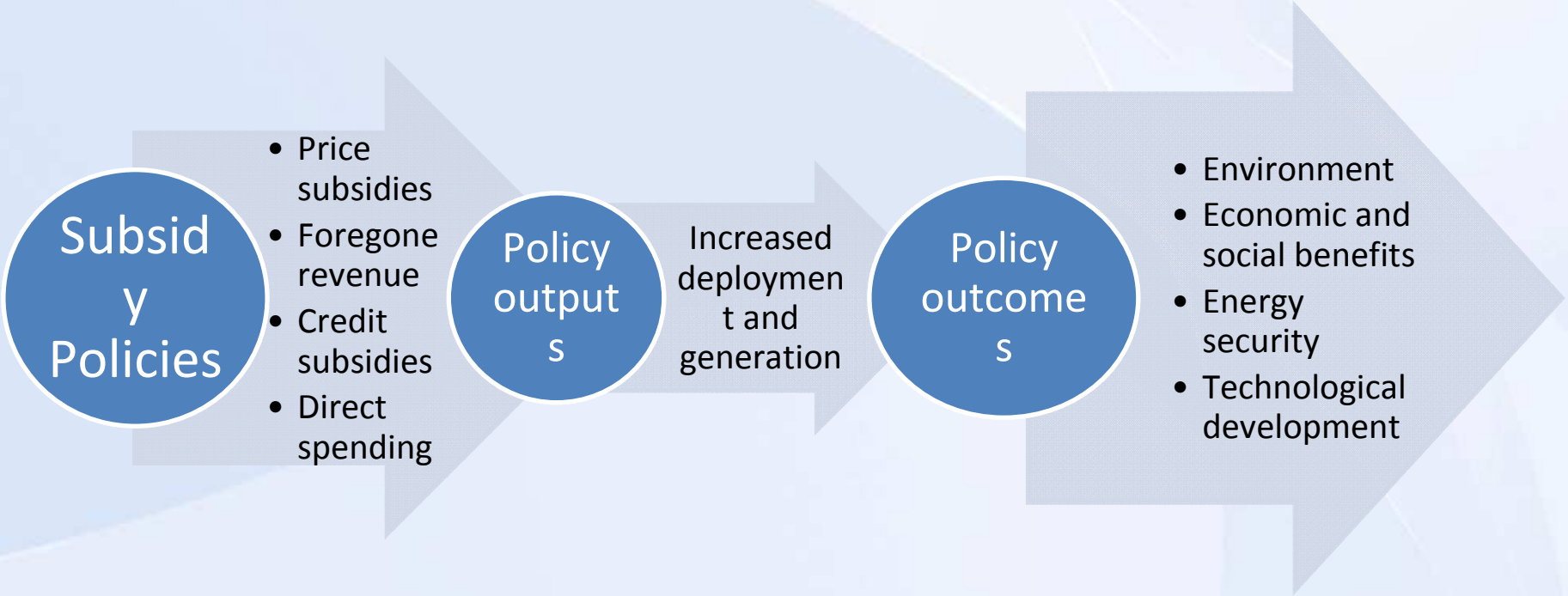
GSI Exploratory Evaluation of Subsidies to Renewables (not a Final Say!)

- An impact analysis approach



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Tentative Findings (1)

- A range of complexity in applying the method

	Data	Tech. complexity	Accuracy of valuation
Outputs	Not always disaggregated		
Outcomes			
Environmental	Life-cyc. CO_2 fctrs needed		Range of CO_2 $ values
Econ. & social	High data burden	Technically complex	Need for net impacts
Energy security		Qualitative analysis only	No estimate of $ value
Tech. development	No way to isolate effects		
Costs	Some $s unaccounted?		

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Tentative Findings (2)

	1. Deployment	2. Environment (mt CO_2)[1]	3. Economy (thousand job years, gross)	4. Energy security (% total electricity production)	5. Technology development	Est. value of env. & econ. benefits (€bn)	6. Costs (€ billion)
Wind							
Germany	21.10 GW	684.2	832	6.2%	No indicators were identified to measure benefits related to technology development	35.1 – 178.3	22.3 - 33.3
China[2]	3.35 GW	53.8 - 114.9	83	0.09%		2.5 – 80.7	0.9
Biomass							
Germany	4.34 GW	371.3	472	4.2%		19.7 – 97.8	46.2 - 60.4
UK	0.85 GW	11.2-39.5	54	1.1%		2.0 – 30.5	3.3 - 4.4
Solar PV							
Germany	17.20 GW	203.8 – 313.8	203 – 256	1%		8.1 – 75.6	71.8
Spain	3.78 GW	42.4 – 177.3	86 - 105	2%		2.8 – 40.7	33.5

In Germany, estimates are based on the date range 2000-2010; in China, 2005-2009, and only for a sub-set of onshore wind power, stimulated by the country's concessionary tendering system; in the UK, 2002-2009; and in Spain, 2000-2010. All estimates are based on the impacts of capacity that had been during the date range concerned. Subsidies to this capacity were estimated across the policy lifetime. Environmental and economic impacts were estimated across the lifetime of the RET: 20 years for wind power; 20 years for biomass; and 25-35 years for solar PV.

Notes:

[1] Only GHG reductions were estimated under environmental benefits. In all cases, figures represent CO_2 reductions, with the exception of Germany, for which it was possible to estimate reductions in CO_2-equivalent.

[2] The analysis on China only considers China's concessionary tendering mechanism. Its other subsidy mechanisms – the government approval subsidy regime and the 2009 feed-in tariff – have both stimulated large amounts of deployment, but could not be included in the analysis due to a lack of data.

Tentative Findings (3)

- Exploratory country estimates
  - Low-cost RETs, good case for cost-effectiveness in some cases
  - High-cost RETs… less clear…
  - At high levels of penetration, less clear…
  - … & bad practice certainly exists…
  - Impact analysis can help identify policy weaknesses and risks, e.g.
    - Interactions with other climate-related policies (leakage?)
    - Local content requirements & other green industrial policy
    - Caps, spending controls, review mechanisms etc.

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GSI Recommendations

1. Impact analysis is **possible** and **useful**
2. Assess **simple** criteria frequently and stagger more comprehensive assessments including **complex** criteria (such as modelling)
3. Both **monitoring** and **transparency** are vital
4. Use policy feedback and learning mechanisms to **adapt** policy and continually **improve** cost-effectiveness

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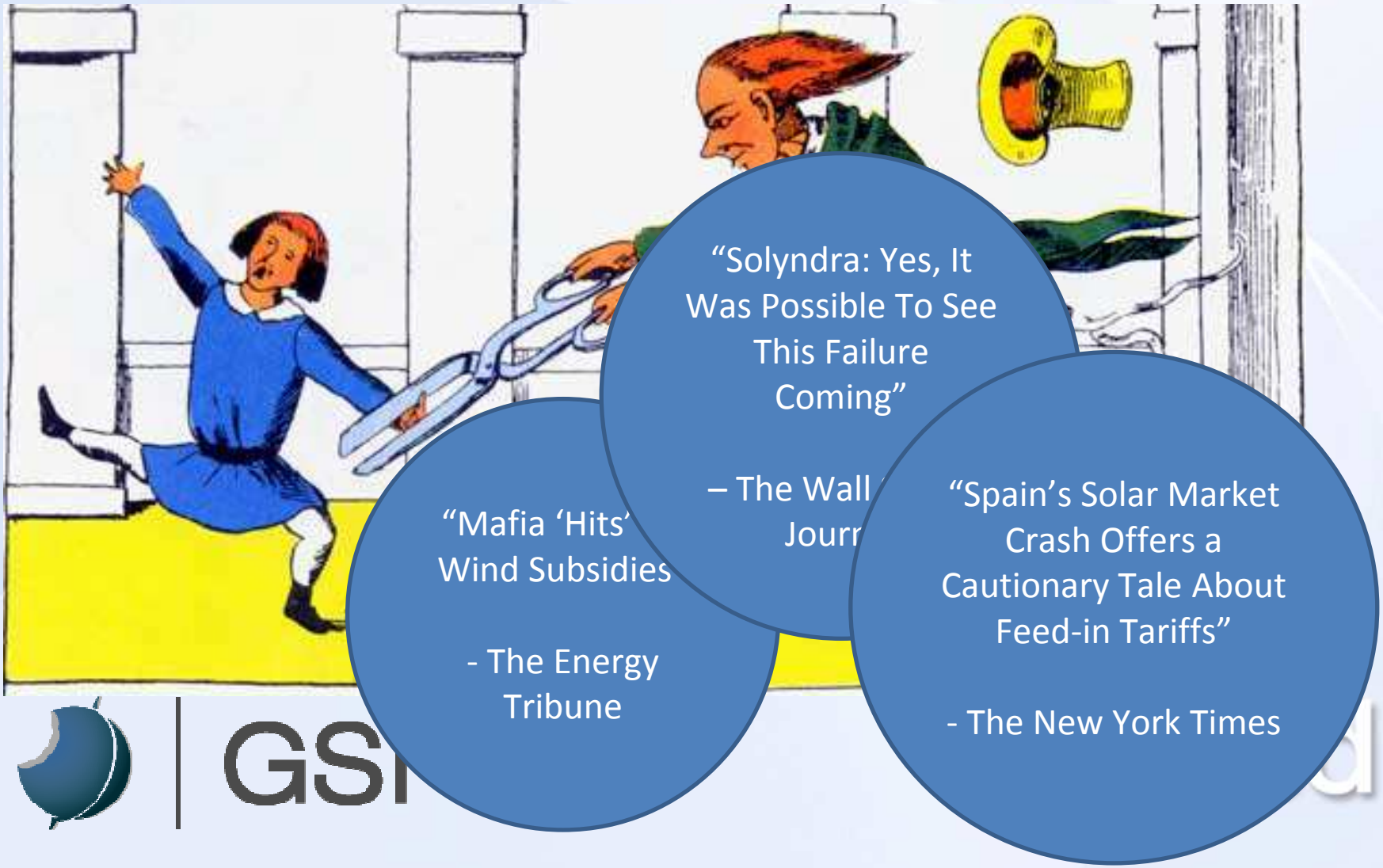
Cautionary Tales



GSI agenda for future work on energy producer subsidies

Identify trends in more countries, especially developing countries

- What policies and where?
- Are costs monitored? Reported?
- Who pays and who benefits?
- What impacts?
- What issues matter most?

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