



The **E15** Initiative

STRENGTHENING THE GLOBAL TRADE AND INVESTMENT SYSTEM  
FOR SUSTAINABLE DEVELOPMENT



## Subsidies, Clean Energy, and Climate Change

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E15 Task Force on  
Rethinking International Subsidies Disciplines

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**Think Piece**

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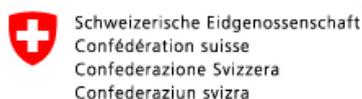
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# ABSTRACT

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Estimates show that fossil fuel subsidies average USD 400–600 billion annually worldwide while renewable energy (RE) subsidies amounted to USD 66 billion in 2010 and are predicted to rise to USD 250 billion annually by 2035. Domestic political rationales for energy subsidies include promoting innovation, job creation and economic growth, energy security, and independence. Energy subsidies may also serve social and environmental goals. Whether and to what extent subsidies are effective to achieve these goals or instead lead to market distortions is a matter of much debate and the trade effects of energy subsidies are complex.

This paper offers an overview of the types of energy subsidies that are used in the conventional and renewable energy sectors, and their relationship with climate change, in particular greenhouse gas emissions. While the WTO's Agreement on Subsidies and Countervailing Measures (ASCM) is mostly concerned with harm to competitors, this paper considers the extent to which the Agreement could also discipline subsidies that cause harm to the environment as a global common. Beyond the existing legal framework, this paper surveys a number of alternatives for improving the ability of subsidies disciplines to internalize climate change costs of energy production and consumption. One option is a new multilateral agreement on subsidies or trade remedies (with an appropriate carve-out in the WTO regime to allow for it if such an agreement is concluded outside it). Alternatively, climate change-related subsidies could be included as part of another multilateral regime or as part of regional agreements. A third approach would be to incorporate rules on energy subsidies in sectorial agreements, including a Sustainable Energy Trade Agreement such as has been proposed in other ICTSD studies.

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# LIST OF ABBREVIATIONS

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AB	Appellate Body
ASCM	Agreement on Subsidies and Countervailing Measures
EU	European Union
FAO	Food and Agriculture Organization
FIT	feed-in-tariff
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GHG	greenhouse gas
ICTSD	International Centre for Trade and Sustainable Development
ITA	Information Technology Agreement
IEA	International Energy Agency
LPG	liquefied petroleum gas
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
R&D	research and development
RE	renewable energy
SETA	Sustainable Energy Trade Agreement
STE	state trading enterprises
TRIMS	Trade-Related Investment Measures
TTIP	Transatlantic Trade and Investment Partnership
US	United States
UNFCCC	United Nations Framework Convention on Climate Change
VAT	value-added tax
WTO	World Trade Organization

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# INTRODUCTION

Estimates show that fossil fuel subsidies average USD 400–600 billion annually worldwide while renewable energy (RE) subsidies amounted to USD 66 billion in 2010 and are predicted to rise to USD 250 billion annually by 2035 (IEA 2011a). Domestic political rationales for energy subsidies include promoting innovation, job creation and economic growth, energy security, and independence.<sup>1</sup> They may also serve social and environmental goals. Whether and to what extent subsidies are effective to achieve these goals or instead lead to market distortions is a matter of much debate, and no comprehensive economic analyses appear to have been conducted on this to date (Morris 2012). A related issue is how such subsidies compare with alternative regulatory instruments aimed at the same objectives, such as command and control regulation (for example, RE mandates) and taxation (for example, carbon taxes, border adjustment measures).

The trade effect of energy subsidies provides another layer of complexity. While fossil fuels and fissile materials for nuclear fuel are traded regionally and globally, RE tends to be produced locally since electricity storage and transportation technologies are still underdeveloped. For instance, wind and solar energy tends to be consumed domestically or across contiguous states, rather than shipped across continents or oceans. The production inputs (photovoltaic cells, wind turbines, and so on), however, tend to be traded, as do biofuels. The financing of RE infrastructure may be done through foreign investment, with its corollary trade impacts. Subsidies with trade impacts and trade remedies affecting RE, then, involve the goods used to create the production facilities, and the conditions for foreign investment. Subsidies to the consumption of RE can also affect trade if imported conventional energy resources become less favoured (substitution effect).

The remainder of this paper proceeds in three parts.

1. Conceptualizing energy subsidies and market distortion for a climate change perspective.
2. Evaluating governmental interventions in the energy sector.
3. Ways forward.

# CONCEPTUALIZING ENERGY SUBSIDIES AND MARKET DISTORTION FOR A CLIMATE CHANGE PERSPECTIVE

Two-thirds of global greenhouse gas (GHG) emissions are currently generated by the energy sector (IEA 2013: 15). The main source of energy-related GHG emissions is fossil fuels, which still account for over 80 percent of global energy consumption (IEA 2013: 15). When looking at energy subsidies from a climate change perspective, the main category of market-distorting subsidies are fossil fuel subsidies. In 2012, worldwide fossil fuel consumption subsidies amounted to USD 544 billion, corresponding to an incentive of USD 110/tonne of CO<sub>2</sub> (IEA 2013: 93). Fossil fuel production subsidies account for USD 100 billion per year (GSI 2012). The International Energy Agency (IEA) estimates that if fossil fuel subsidies are fully eliminated by 2020, global primary energy demand will decrease by 5 percent and CO<sub>2</sub> emissions by 5.8 percent (2013: 507).<sup>2</sup>

All or nearly all fossil fuel subsidies generate environmental externalities if it stimulates excessive production and consumption of fossil fuels. In this sense, fossil fuels subsidies always incorporate a market-distortive element inasmuch as they cause harm to global commons. The externalization of emissions resulting from energy production and usage can be seen as a market failure when governments do not require producers to internalize the environmental cost from their emissions.

Rather than devising subsidies and other market correcting measures to roll back on this cost externalization, we could envision an energy-neutral, market-focused system to compute the environmental costs of energy into the price of goods and services. Climate change economists, in particular, have made great strides in developing methodologies to

1 | The ICTSD has commissioned a number of valuable reports on clean energy subsidies, including ICTSD (2013); Kuntze and Moerenhout (2013); Howse (2013); Ghosh with Gangania (2012); Wilke (2011).

2 | In September 2009, G20 leaders gathered in Pittsburgh and committed to "rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption" to avoid market distortions and barriers to investment in clean energy sources which would undermine efforts to deal with climate change (G20 Leaders' Statement 2009).

more accurately compute the full costs of emissions, in particular carbon.<sup>3</sup> Some models take into account not only the future environmental cost of emissions, but also the harm to human health from particulate matter, air pollution, and other harms (Committee on Health, Environmental, and Other External Costs and Benefits of Energy Production and Consumption and National Research Council 2010). Moreover, a number of states and domestic jurisdictions already have emissions certificates and emissions trading mechanisms that rely on such accounting.

Emissions externalization could then be defined as an implicit subsidy to energy producers, consumers, and downstream goods. Undoubtedly, there is a benefit to producers from emissions externalization. However, characterizing government inaction (the failure to require cost internalization) as a subsidy is problematic, and no political consensus exists on emissions internalization schemes globally. In World Trade Organization (WTO) terms, it would also be impossible to define such an economy-wide implicit subsidy as "specific." Therefore, although emissions externalization has, in many ways, effects similar to a subsidy, it will not be considered here as a subsidy in the generally accepted sense of the term. For governments that do require emissions accounting and regulate emissions permits, internalization of emissions from production abroad could be handled with border adjustment measures, rather than through subsidies or trade remedies.

The relationship between energy subsidies and climate change may be evaluated along several axes.

- Is the subsidy seeking to address a market distortion?
- Is the subsidy creating a distortion?

As to the first question, if a subsidy is meant to address a market distortion, we might ask whether that is the best way to remedy the distortion, or whether other trade instruments might be better tailored to the task, from a legal or practical perspective. Other policy instruments might include trade remedies, industrial policy, or regulatory instruments (such as certificates, emissions limitations, renewable energy quotas).

As to the second question, if a subsidy is causing a market distortion, we might ask whether the measure should be eliminated, countervailed, or safe-harboured. While the WTO Agreement on Subsidies and Countervailing Measures (ASCM) already provides a framework for answering such questions, the issue is whether the imperatives of adaptation to climate change and its mitigation require different criteria than those currently in place. The fundamental issue here is whether some subsidies might be desirable in spite of their market-distorting effect, recognizing that the liberalization objective of trade regimes does not operate in a social vacuum and will at times yield to other policy priorities, such as the protection of global commons. The general exceptions in the General Agreement on Tariffs and Trade (GATT) and General Agreement on Trade in Services (GATS), as well

as member states' choice to omit certain topics from their trade negotiations (for example, labour standards), already point to a balancing exercise between decreasing barriers to trade and allowing trade restrictions for particular objectives.

Unfortunately, subsidies to conventional energy and RE do not fall neatly into one or the other of the two categories outlined above. While only a limited set of energy subsidies directly alters the observable price for the supported fuels to the benefit of selected industrial sectors, fossil fuel subsidies stimulating their excessive production or consumption have an adverse impact on the environment as they discourage energy-efficiency improvements, increase GHG emissions, and create barriers to clean energy investments.<sup>4</sup>

Insofar as fossil fuel consumption subsidies keep domestic prices of conventional energy inputs artificially low to the advantage of key industrial sectors, they may hinder competition to the detriment of international competitors. The same holds true for fossil fuel production subsidies that lower the cost of energy production. The treatment of fossil fuel subsidies under the ASCM may vary depending on the channels through which they are administered (that is, the way in which a transfer is created) and on their formal incidence (that is, to whom and what a transfer is conferred).

The market-distorting effects of fossil fuel subsidies may operate at various levels, either by altering the price at which conventional energy inputs are consumed domestically and/or traded internationally or by distorting the price of energy-intensive products sold in the international market. While fossil fuel subsidies always contribute to externalising the environmental costs of polluting forms of energy, in some cases they also serve as a social safety net (for example, subsidised kerosene rations in India to ensure basic access to energy for cooking and transportation).

Conversely, subsidies that put RE on an equal footing with heavily subsidized fossil fuels could be thought of as correcting a market distortion. However, this subsidy escalation between clean energy and fossil fuels entails additional market distortions and environmental costs from overproduction.

3 See, for example, Ecofys (2014); Newbold et al. (2013); Borenstein (2011); Greenstone et al. (2011); Olson et al. (2012).

4 The adverse impact on the environment linked to these measures is often counterbalanced, at least declaratorily, by political, social, and economic goals. Recent studies, however, show that fossil fuel subsidies have seldom achieved their stated goals (IEA 2013: 507).

5 Depending on the form of energy that is subsidized, the effects on international competition may vary according to whether the energy input at issue is traded internationally (for example, in the case of oil resources) or rather more at a local/regional level (for example, electricity/natural gas). The effect of consumption subsidies on natural gas to support the fertilizers industry is an illustration.

Understood more broadly, market-correcting subsidies could also cover any subsidy designed to help producers and consumers internalize the environmental cost of energy production, transmission, distribution, and consumption. At the same time, RE production and distribution have an environmental cost and a climate impact. To the extent that this cost is externalized, RE subsidies also create a market distortion.

The following section reviews some of the main government interventions in the energy sector; it assesses whether they would be considered as a subsidy and what their impact might be in terms of market distortion.

## GOVERNMENT INTERVENTION IN THE ENERGY SECTOR

Table 1 provides a limited overview of the main subsidies in the energy sector observed globally, with some national or regional illustrations. The purpose of this paper is not to provide an extensive catalog. The Organisation for Economic Co-operation and Development (OECD) and the International Energy Agency (IEA), in particular, have developed extensive resources on monetary support and tax expenditures for fossil fuels.<sup>6</sup>

### SUBSIDIES

The energy sector traditionally represents a major area of government intervention. Governments widely resort to subsidies directed to various types of energy (fossil fuels, nuclear power, RE such as solar or wind electricity, and biofuels). On a general level, these government practices either lower the price paid by energy consumers (consumption subsidies), lower the cost of energy production, or raise the price received by energy producers (production subsidies) (IEA 2011b). The most typical subsidies include

- Tax expenditures (mainly excise tax reduction or exemption on fuel to the benefit of particular industrial users or sectors, but also carbon taxes, and more generally eco-tax concessions);
- Dual pricing policies (price controls or ceilings, sales of energy inputs by state trading enterprises at preferential rates), as well as export taxes or other types of export restrictions;

- Favourable credit terms (concessional loans and loan guarantees); and
- Research and development (R&D) grants by governments to support fundamental and applied research.

Their scope is considerably broader than the legal definition of "subsidy" adopted under the ASCM. It is therefore important to assess whether the existing ASCM disciplines capture market-distorting energy subsidies while still providing sufficient flexibilities for market-correcting energy subsidies.

### Fossil Fuel Subsidies

Tax expenditures typically fall within the definition of subsidies under the ASCM as "tax revenue foregone" and conferring a "benefit" measurable in terms of the gap between the price of a certain fuel for industrial consumers that has been granted a tax concession and the reference price borne by other users. Tax reductions or exemptions are usually granted to a specific group of industries (for instance, energy-intensive industries such as iron and steel) or to a specific sector (such as electricity generation), especially in energy-importing OECD countries. However, preferential tax treatments are at times granted to the general benefit of the domestic manufacturing sector (for example, in Italy, excise tax reductions benefit all large industrial users of natural gas), and may therefore not be subject to ASCM disciplines. Finally, certain EU countries confer tax concessions to encourage the use of less polluting fuels such as natural gas and liquefied petroleum gas (LPG). These support measures are often not specific (policies in France and Italy are examples), but they are sometimes confined to a set of beneficiaries (for example, in the case of Germany) and would then be subject to ASCM disciplines.

On the consumption side, many developed and developing countries adopt tax expenditures (such as reduced value-added tax [VAT] or excise tax on fuel) or direct budgetary transfers (including fuel vouchers or heating energy grants) directed to specific users, such as low-income households, or sectors (including agriculture, fishery, public transportation). These measures are widely applied to advance social goals and achieve re-distributional effects.<sup>7</sup> They fall within the definition of subsidy and are specific in most cases. The chances they will be challenged are, however, quite low.

On the production side, governments intervene in the markets through a number of direct expenditures (direct

6 See "OECD-IEA Fossil Fuel Subsidies and Other Support" database, <http://www.oecd.org/site/tadffss/>.

7 The IEA estimates that fossil fuel consumption subsidies are an inefficient means to alleviate poverty as they are only marginally distributed to the poorest segments of the population while often placing unsustainable burdens on state budgets, especially in the case of high energy prices (IEA, OECD, World Bank 2009: 11–13).

TABLE 1:

Recent Illustrative Energy Subsidies

Type of subsidy	Main purpose	Examples	
		Conventional energy	Clean energy
Tax expenditures (tax credits, deductions, deferrals, exclusions, accelerated depreciation or preferential tax rates)	Production support	Canada, UK, US: accelerated capital cost allowance; income tax deductions for oil and gas corporations; Australia, Canada, UK: tax deductions for exploration and/or extraction costs; capital expenditure deductions Germany, US: mining royalty reduction for coal; US: income tax credits for coke and coke gas; intangible drilling costs deduction; excess of percentage over cost depletion	US: tax incentives on underlying property if used for renewable energy production, tax breaks for commercial and residential conservation upgrades EU countries, US: reduced taxes on biofuels India, US: investment tax credits to attract investors to RE sector
	Consumption support	EU countries: excise tax and/or CO <sub>2</sub> tax exemptions on fuels for energy-intensive industries (e.g. steel) or industries engaged in energy upgrading/transformation (e.g. electricity)	
Direct expenditures	Production support and conservation	Estonia: direct project grants to producers of shale derived oil Korea: coal mining production support and support to briquette production	US: rebates for commercial and residential energy conservation upgrades, creation of green manufacturing centres EU, US: agricultural subsidies supporting the production and export of biofuel or biofuel feedstock India, China: government land acquisition/land transfer below market price to subsidize solar and wind power installations
	Consumption support	India, China: fuel vouchers, heating-energy grants	
Government policies raising/lowering domestic prices	Production support	Slovak Republic: feed-in tariff for domestic lignite Chile, Korea: import tariffs on hydrocarbons	EU countries, Canada: preferential, long term guaranteed feed-in-tariffs for electricity production from wind and solar power
	Consumption support	Russia, Middle East countries: dual pricing on natural gas Indonesia, Russian Federation, China, Argentina, Colombia: export restrictions on hydrocarbons	Some EU countries: FIT to individual producer/consumers
Loan and loan guarantees	Project development, R&D scaling	US: federal loan guarantees for investment in clean coal US: federal loan guarantees for new investor-owned nuclear reactors	US: support production of components (batteries, solar panels), to scale up R&D China: support to production of solar and wind components
Research and development	Improve technology for production, storage and conservation	Japan: develop oil refining technology programmes Korea, New Zealand: improve oil & gas exploration technologies US: funding for projects in fossil energy (e.g. coal liquefaction) New Zealand, Norway: acquire petroleum exploration data	UK: low carbon technology research support to help meet Kyoto commitments Australia, Czech Rep., US: improve efficiency of clean energy production, new clean energy technology US: improve energy saving in household appliances

grants linked to capital or to the acquisition of land); tax expenditures (accelerated capital cost allowances, income tax deductions, investment tax credits, reduced royalties or extraction taxes); concessional loans; and loans guarantees aimed at reducing the cost of coal as well as oil and gas production. These measures create market distortions in that they encourage higher levels of production by less efficient and more polluting producers. Many European countries, for instance, still support hard coal mining and/or the use of domestic coal for specific uses such as heating (in Finland by means of energy tax concessions) or electricity generation (in Slovenia, Spain, and Slovak Republic through market-support mechanisms).<sup>8</sup>

Finally, fossil fuels production is also subsidized by means of R&D grants given by governments to support the acquisition of exploration data or exploration technologies for oil and natural gas.

The most common types of fossil fuel production subsidies typically fall within the ASCM definition of a subsidy and are in principle countervailable if they are designed to pass the specificity test. However, their adverse effect may be hard to prove in the following scenarios:

- when subsidies are not specific;
- when support measures protect local production that has no trade impact as a means to simply maintain regional employment in depressed areas and/or in periods of economic crisis or transition (for example, small local mines);
- in the case of large energy producers when the subsidised production is so vast as to depress international market prices;
- when subsidies have no trade effect but cause GHG emissions.

### Renewable Energy Subsidies

A number of tax expenditures, direct expenditures, R&D grants, and favourable credit terms promote the production and consumption of clean energy as a substitute for conventional fuels. Most of them seem to fall within the ASCM definition of "subsidy." In many cases, however, it is unclear whether they would pass the specificity test.

A number of these subsidies could be countervailable if they were specific to an industry. Subsidies to support biofuel production, in particular, may be at issue. Some of these subsidies are also contingent on local content and have been challenged at the WTO on that basis.<sup>9</sup>

As with subsidies on conventional fuels, RE subsidies include an array of tax expenditures, R&D funding, preferential loans, and loan guarantees.

Tax expenditures used to spur innovation in energy sources, storage, transmission, and conservation fall more squarely within the traditional definition of a subsidy. Such interventions help to overcome barriers to entry to a market where existing players externalize their environmental costs and where new entrants will be internalizing more of their costs. They typically take the form of tax credits, deferments, deductions or exclusions, accelerated depreciation, and direct expenditures to upgrade infrastructure to improve energy conservation (residential and commercial).

Tax expenditures and direct expenditures to promote energy conservation also typically fall within the definition of a subsidy. Most are available to any commercial enterprise wishing to upgrade its facilities, and therefore are not specific and not subject to ASCM disciplines. A significant portion of these expenditures are available to residential users, who would likely not even qualify as an "industry" or "enterprise." State aid for residential users is often considered to have a social purpose as well, helping low- and middle-income households to reduce their energy bills.

R&D grants to support fundamental and applied research on RE production, storage, and distribution will fall within the covered subsidies of the ASCM if they are specific in the sense of Article 2. For instance, a grant for the development of hydrogen fuel cells might not be considered specific as there may not be a definable industry that is the beneficiary, and recipients might be indeterminate enough that the subsidy could not be said to be confined to a group of enterprises or industries. In contrast, R&D subsidies to improve the efficiency of photovoltaic panels may well be aimed only at solar panel companies, such that it might be specific to an industry. While R&D grants have little chance of being export contingent, they would run counter to Article 3 if they are conditioned upon the use of domestic goods input. ASCM Article 8.2(a) might have exempted R&D grants but this provision expired in 2000, before most of the R&D subsidies for RE were awarded.

Loans at preferential credit terms and loan guarantees to scale R&D on RE from lab to market to infrastructure (including commercial and residential buildings), improve energy conservation, and manufacture components used to produce clean energy (such as solar panels, batteries, wind turbines) will typically fall within the ASCM definition

<sup>8</sup> In certain countries, however, coal subsidies are part of a more comprehensive policy aimed at rationalising and progressively downsizing uneconomic mining production and remedying past environmental damages (for example, Germany, Hungary, Poland, Slovak Republic) (OECD 2012).

<sup>9</sup> Appellate Body Report, Canada—Measures Affecting the Renewable Energy Generation Sector, WT/DS412/AB/R, and Canada—Measures Relating to the Feed-in Tariff Program, WT/DS426/AB/R, 6 May 2013. Ongoing cases include EU—Measures Concerning the Importation of Biodiesel, WT/DS459; India—Solar Cells and Solar Modules WT/DS456; EU—Certain Measures Relating to the Energy Sector WT/DS452; and China—Measures Concerning Wind Power Equipment, WT/DS419.

of a subsidy. As with R&D subsidies, whether they will be prohibited or countervailable will depend on their specificity and whether they are contingent on export or domestic content. Loans and loan guarantees to support the manufacture of clean energy components (for instance, solar panel manufacture by Sunpower and Solyndra in the US, battery manufacture by Tesla) are more likely to be specific and therefore countervailable.

Credit facilities available to upgrade infrastructure to meet emissions reduction requirements would likely have been exempted under the expired Article 8.2(c) (assistance to promote adaptation of existing facilities to new environmental requirements) under certain conditions. However, they can still be designed in non-specific terms, such that they would not be disciplined by the ASCM. These are used widely in Europe and the US (federal and state levels).

Measures designed to ensure that energy prices do not fall below a level that allows for the internalization of environmental costs or guaranteed purchase price for energy produced using renewable sources might be a form of income or price support within the meaning of ASCM Article 1.1(a)(2). In *Canada–Renewable Energy/FIT*, Japan argued that Canada's feed-in tariff (FIT) amounted to income or price support, but the panel declined to decide the issue and the Appellate Body (AB) agreed that such a finding was not necessary for the disposition of the case.<sup>10</sup> The only point of reference for interpreting "income or price support" is Note 2 *Ad* Article XVI, paragraph 3, included in Annex I of the GATT 1947. Basically, government measures that stabilize the domestic price or the return to domestic producers of a product so that export prices are sometimes lower than domestic prices would not be considered an export subsidy if export prices are also comparable to or higher than in the domestic market during the representative period, and if the price or income support is not designed "to stimulate exports or otherwise seriously prejudice the interests of other contracting parties." In particular, a FIT arguably guarantees income to the energy producer and might result in an electricity price higher than the export price. But if there are also electricity exports at a price similar or higher than the FIT during the period, and the FIT was not designed to boost exports and seriously prejudice other members, it would not be considered a subsidy. Some issues considered in *Canada–FIT*, such as whether there is a separate market for energy from renewable sources, would likely bear on such an analysis. Additionally, there may not be exports of comparable energy products, and if there are, prices tend to fluctuate quite significantly (particularly for electricity). So the factual premises for making an income or price support case might be very hard to meet. Last, GATT Article XVI, paragraph 3, deals with "primary products." It is unclear whether biofuels (which involve significant processing) or electricity would qualify.

## Nuclear Subsidies

Finally, to the extent that the support measures directed to the nuclear sector make nuclear power available to industrial users at a much lower price than the prevalent price for fossil fuel-fired power generation, the argument might be made that they hamper competition and should therefore be subject under ASCM disciplines. The nuclear sector benefits from a wide array of production subsidies that typically fall within the ASCM definition of a subsidy—direct expenditures (including capital grants mainly linked to capital, accelerated depreciation), tax expenditures (such as investment tax credits, special depletion allowances and reduced royalty for uranium mining, underpricing of cooling water), and loan guarantees (for new plants and enrichment facilities) (Koplow 2011). Regulatory liability limits for accidents also arguably constitutes a subsidy to the nuclear power industry (EIA 1992: 77-78).

## EXPORT MEASURES

Dual pricing practices are widely implemented by energy-endowed countries as a means of reserving cheaper energy inputs and/or electricity for domestic consumers, including industrial users. The ASCM does not specifically tackle "market transfers" and thus its disciplines may not prove sufficient, depending on how dual pricing practices are implemented. The main problem related to "classical" forms of dual pricing is that, even in a scenario where they are considered to fall within the definition of "subsidy,"<sup>11</sup> such practices are often equally applied to all manufacturing sectors and are therefore not "specific" within the meaning of Article 2.<sup>12</sup> The issue of dual pricing has also been inserted in the Doha Round rules negotiations. In this context, the US and the EU have both proposed expanding the category of prohibited subsidies under Article 3 of the ASCM.<sup>13</sup> According to the EU proposal, in particular, Article 3.1 should also cover "the provision, by the virtue of government action, of goods to domestic production on terms and conditions more favourable than those generally available for such goods

10 "Canada–Renewable Energy" and "Canada–Feed-in Tariff," WT/DS412/AB/R, WT/DS426/AB/R, paras. 5.133–5.139.

11 Several authors have considered that dual pricing schemes possibly fall within the definition of subsidy under Article 1.1 (a) (iii) and (iv) ASCM at least when government-set prices do not provide for an "adequate remuneration" (full recovery of costs and a reasonable profit) as required by Article 14 (d) ASCM (Pogoretsky 2012: 181–228).

12 It is uncertain whether dual pricing could be considered to be de facto specific (Selivanova 2004: 574–79).

13 "Expanding the Prohibited 'Red Light' Subsidy Category, United States Proposal," WTO/RL/GEN/94, 16 January 2006; Submission of the European Communities on Subsidies, European Union Proposal, WTO/TN/RL/GEN/135, 24 April 2006.

when destined for export.”<sup>14</sup> The proposal has, however, not gained general consensus among WTO Members. Country-specific WTO-plus obligations on dual pricing were negotiated within the context of the accession of Saudi Arabia and the Russian Federation.<sup>15</sup> These commitments are, however, narrowly tailored and only concern natural gas and certain related items. Dual pricing is also being addressed in the accession packages of the numerous energy-producing countries currently negotiating their accession to the WTO.

Price differentials between domestic and international prices of fossil fuels may also be induced through the use of trade measures such as export taxes and restrictions. The status of export restraints under the ASCM is unclear. Proving the existence of a “financial contribution” is difficult because the government obviously does not provide itself the cheaper input material. If the effect of the export restriction is that the government entices private operators to provide energy inputs to domestic users, as opposed to foreign buyers, at a price that is below market prices, the argument might be made that the government’s encouragement is a form of “entrustment” or “direction” under Article 1.1.(a)(1) (iv). However, in *US – DRAMS* the AB explained that the government must be in a position to control the private suppliers and to command them to sell the input material to domestic users.<sup>16</sup> In *Canada – Export Restraints*, the “entrusts or directs” standard was further interpreted to require an “explicit and affirmative action, be it delegation or command.”<sup>17</sup> This may be possible if the export restraint is associated with sales by domestic state trading enterprises, under government control and at its direction, of the product subject to the restriction. The existence of a “benefit” under Article 1.1(b) might also be difficult as in the case of export restrictions the domestic market is distorted by a government intervention. Depending on the criteria used to determine the relevant product market (local or international) and the price benchmark (domestic price before the export control measure was implemented or at the time of purchase of domestic inputs by downstream producers, or export/world price), export restrictions may not be subject to ASCM disciplines. Quantitative forms of export restrictions are nevertheless prohibited by Article XI:1 GATT. Several newly acceded WTO Members, including major net exporters of fossil fuels such as the Russian Federation, have however assumed specific obligations on the use of export taxes on fossil fuels in post-1994 accession protocols.

## REGULATORY MEASURES

Other market-correction measures include carbon taxes; cap and/or emissions trading schemes; prohibition on consumables and devices that consume too much energy (for example, phasing out 100 Watts incandescent light bulbs); and RE production or consumption mandates. Such regulatory interventions also impact the market but without any public budgetary outlay or foregone revenue. Therefore,

it is unlikely that such government interventions would fall within the ASCM definition of a subsidy as they are not a financial contribution (on carbon taxes, see Hillman 2013).

## USE OF TRADE REMEDIES IN THE ENERGY SECTOR AND WTO DISPUTES

From 2010 to 2014, 45 members have notified countervailing duties actions to the WTO on energy products or inputs, relating both to fossil fuels and RE. From 2012 to 2014, 87 members have notified antidumping measures on energy products or inputs. No relevant safeguards notifications have been found. Further research on individual countries would reveal unreported and under-reported measures, but the main trends will likely remain true. The charts below show that the EU, the US, and China are the main players with respect to trade remedies. There does not appear to be a significant difference between trade remedy patterns observed in the energy sector and the use of trade remedies more generally, except that no safeguard measure has been notified in the energy sector.

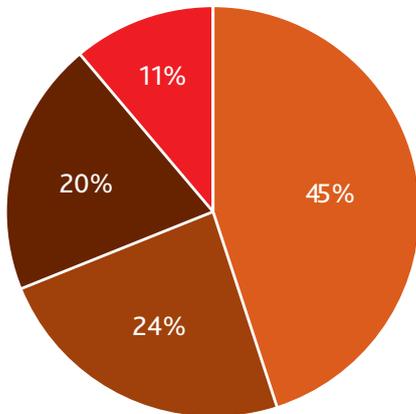
Figures 5 and 6 compare the number of trade remedies imposed on RE compared to conventional energy. The WTO notifications did not include data on the comparative value of these measures, or the proportion of trade affected for RE and conventional energy products. Anecdotally, trade remedies on clean energy in Europe represent a huge proportion of the import value affected by trade remedies (Katseng 2013). In the US, that trend would be balanced against trade remedies on steel (a large source of GHG emissions).

<sup>14</sup> “Expanding the Prohibited ‘Red Light’ Subsidy Category, United States Proposal,” WTO/RL/GEN/94, 16 January 2006; Submission of the European Communities on Subsidies, European Union Proposal, WTO/TN/RL/GEN/135, 24 April 2006.

<sup>15</sup> “Report of the Working Party on the Accession of Saudi Arabia,” WT/ACC/SAU/61, 1 Nov 2005, paras. 33–37; and “Report of the Working Party on the Accession of the Russian Federation,” WT/ACC/RUS/70, 17 Nov 2011, paras. 120–132.

<sup>16</sup> “Appellate Body Report, United States — Countervailing Duty Investigation on Dynamic Random Access Memory Semiconductors (DRAMs) from Korea,” WT/DS296/AB/R, adopted 27 June 2005, paras. 141–198.

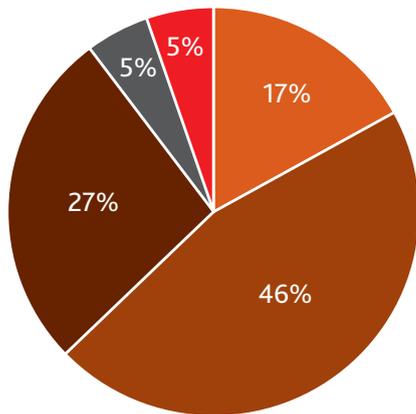
<sup>17</sup> “Panel Report, US – Measures Treating Export Restrictions as Subsidies,” WT/DS/194/R, adopted 23 Aug 2001, para. 8.29.



**FIGURE 1:**

Countervailing Duties by Reporting Member, 2010-2014 (45 notifications)

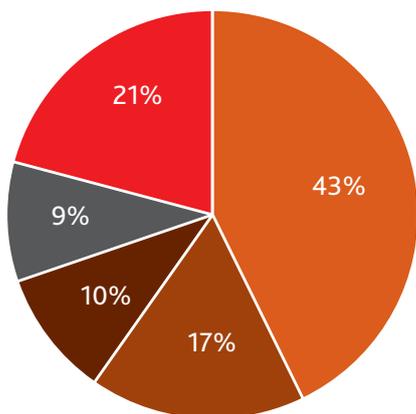
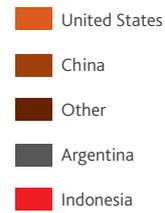
**LEGEND:**



**FIGURE 2:**

Countervailing Duties by Exporting Country, 2010-2014 (60 countries)

**LEGEND:**

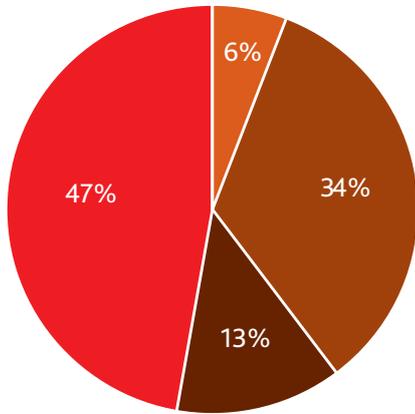


**FIGURE 3:**

Reporting Member of Anti-dumping Measures, 2010-2014 (N=87)

**LEGEND:**

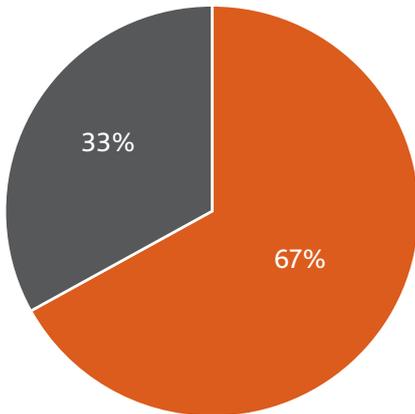




**FIGURE 4:**

Exporting Member Target of Anti-dumping Measures, 2010-2014 (N=163)

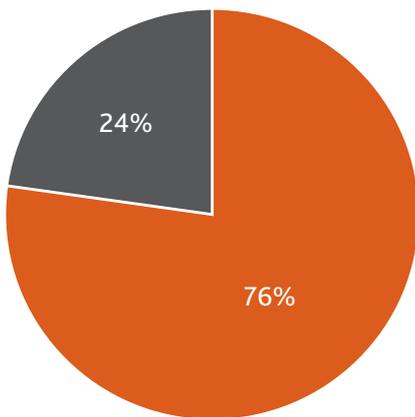
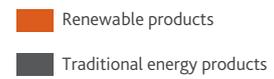
**LEGEND:**



**FIGURE 5:**

Products Subject to Countervailing Measures, RE vs. Traditional Energy Products (N=45)

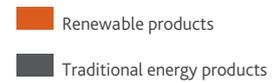
**LEGEND:**



**FIGURE 6:**

Products Subject to Anti-dumping Measures, RE vs. Traditional Energy (N=66)

**LEGEND:**



Countervailing duties that do not account for the “invisible” subsidy of environmental cost externalisation run counter to the objective of pursuing an emissions reduction agenda in the energy sector. The ASCM or domestic calculating methodologies would need to be modified to reflect such a cost in the value of the benefit and in the assessment of the injury to the domestic industry. So long as the same environmental costs are taken into account on both sides of the equation, calculations adjusted for environmental costs might pass muster under the ASCM.

Antidumping measures, whether on RE product inputs (such as solar panels and wind turbine components) or on conventional energy input goods, do not appear to raise any particular issue that is unique to the energy sector.

A growing number of disputes involved energy in recent years, particularly RE, most of which focus on ASCM and Trade-Related Investment Measures (TRIMS) Agreement disciplines. This is not surprising given the dramatic rise in state support for RE since 2010. However, most of these cases have not yet proceeded to the panel stage or have been settled, therefore giving us limited insights into how clean energy issues might be addressed. With many interpretative questions still open and a number of disputes in the process of resolution, some have argued that the very uncertainty of how clean energy support measures might be treated under the ASCM is a constraint on policy space (Rubini 2012). This is effectively a disincentive to move towards market-correcting subsidies in the RE space.

The most litigious issue is domestic content requirements, triggering disciplines under the GATT (national treatment issues), the TRIMS Agreement, and the ASCM. The environmental value of local content requirements is questionable (Stephenson 2013). Rather, the main value of local content requirements lies in employment

support, industrial development, and energy security and independence to some extent. Most of these objectives are traditionally seen as market distortions.

*Canada–FIT* suggests that the panel and the AB are inclined to give some consideration to the environmental value of RE in their definition of the benchmark market, which would be critical to interpreting the ASCM for a green objective. However, the panel and AB’s reasoning in this case have been heavily criticised on several grounds (Cosbey and Mavroidis 2014). Because the RE electricity market provided a higher benchmark price in this case, the panel and the AB’s position played out in favour of RE. However, some countries are at—or will soon reach—the point where solar energy is cheaper than fossil fuel, as illustrated by certain areas in Australia. With a number of other disputes involving RE subsidies pending, there will likely be further opportunities for the panel and the AB to develop their positions on this issue.

## WAYS FORWARD

ASCM rules capture a wide array of consumption and production fossil fuel subsidies to the extent that they are specific. In certain cases, however, it may be hard to prove adverse effects or specificity, and this is often the case when production fossil fuel subsidies are granted to the most polluting sources of energy (for example, coal mining). Moreover, ASCM rules do not adequately address governmental market transfer policies such as dual pricing practices. Similarly, a large portion of clean energy support measures fall within the scope of the ASCM, particularly those with local content requirements.

TABLE 2:

Trade Remedies Disputes Relating to Energy and Energy Input Products

Agreement		Renewable Energy	Conventional Energy
<b>Antidumping</b>		DS480, DS473 (biodiesel) (DS306 (lead acid batteries))	DS460, DS454 (steel tubes) DS216 (electrical transformers)
<b>SCM</b>	Domestic content	DS459 (EU biodiesel) DS456 (India Solar Mission) DS452 (EU FIT) DS426, DS412 (Canada FIT) DS419 (wind power)	DS476 (EU Third Energy Package)?
	Actionable CVD	DS459 (EU biodiesel) DS456 (India Solar Mission) DS437 (US CVD on solar & wind products)	DS437 (US CVD on steel & oil country tubular goods)

## REGULATORY CHALLENGES

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Even if fossil fuel subsidies were banned, control on production (as practiced by the Organization of the Petroleum Exporting Countries [OPEC]) may still distort the market enough that RE will need to be subsidized to operate on a level playing field. The current relaxation in production control, resulting in low oil prices, will likely redistribute production patterns among producers and make it difficult to predict whether production controls will return after the weaker producers have been eliminated by low prices. The challenge here is whether energy market distortions can be tackled effectively by a redesign of subsidies disciplines when other regulatory or commercial trends may act at cross-purposes with such a redesign.

If social and economic redistributive benefits of cheap energy are deemed to be legitimate governmental objectives, it may be hard to retreat from the subsidies one-upmanship between conventional and RE subsidies, or to design exceptions that are both climate-friendly and serve short-term redistributive and economic growth purposes. How should the social redistribution effect and safety net role played by energy subsidies be balanced with environmental objectives (which themselves also have a social component) and economic growth and development objectives?

Existing subsidies may have inadvertent distorting effects, particularly by favouring some forms of RE with suboptimal environmental benefits (for instance in the case of certain biofuels) over some with a lesser climate footprint (such as solar). Assuming the measure has an impact on trade, should such environmental distortions be taken into account in determining the existence and amount of the subsidy or trade remedy? For instance, could an “environmental malus” be added to the amount of the countervailable subsidy to reflect the environmental cost of the subsidy? Equally, subsidies may distort trade between energy products and non-energy products, as illustrated in the case of biofuel feedstock and food crop (Babcock 2011). How can exceptions or calculation methodologies discourage such distortions?

## MAPPING OPTIONS FOR THE FUTURE

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Several authors have proposed avenues to rethink existing disciplines in light of today's economic, political, and environmental challenges.<sup>18</sup> The calls for reform have intensified after the *Canada – Renewable Energy* case (Rubini 2014; Cosby and Rubini 2013). Many commentators have, in particular, warned against the dangers inherent in the “legal acrobatics” performed by the AB (Cosby and Mavroidis 2014: 12). The common ground is that the judicial approach is sub-optimal compared to a more comprehensive approach based on either an amendment or an interpretative understanding (possibly complemented by a waiver) of

existing ASCM rules. Most proposals have focussed on introducing adequate flexibilities for clean energy subsidies, but some proposals have also aimed to address the main shortcomings of the ASCM in disciplining the use of fossil fuel subsidies.

Limitations of political feasibility and the practicalities of increased regionalism in trade regulation offer a much broader range of possibilities than merely a revision of the ASCM. At least three types of considerations should inform the way forward.

- The “what”—should a reconsideration of subsidies and climate change be inscribed in a sectorial approach or fall within the scope of an across-the-board reframing?
- The “where”—should the issues be considered and regulated at the multilateral, regional, or unilateral level, or a combination thereof?
- The “how”—should we aim for a legally binding framework, possibly backed by domestic or international adjudication, and how can “soft law” approaches be leveraged in addition, or in the gaps?

## SECTORIAL APPROACH OR GENERAL STANDARDS?

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### Reshaping the ASCM

Should an across-the-board solution be preferred, the issue is how to include climate change-oriented policy instruments that affect subsidies or countervailing measures as part of the general disciplines of the ASCM. In addition to modifying general disciplines, many commentators advocate re-introducing exceptions or allowing waivers for environmental policies.

With respect to general ASCM disciplines reframed to address the specific issue of energy subsidies, the issue of dual pricing has been inserted in the Doha Round rules negotiations and some WTO Members have advocated the inclusion of dual pricing schemes as a new category of prohibited subsidies under Article 3 of the ASCM. The objective is to circumvent the specificity requirement of Article 2.<sup>19</sup> These proposals have not gained general consensus among WTO Members.

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<sup>18</sup> “Expanding the Prohibited ‘Red Light’ Subsidy Category, United States Proposal,” WTO/RL/GEN/94, 16 January 2006; Submission of the European Communities on Subsidies, European Union Proposal, WTO/TN/RL/GEN/135, 24 April 2006.

<sup>19</sup> “Expanding the Prohibited ‘Red Light’ Subsidy Category,” US Proposal, WTO/RL/GEN/94, 16 Jan 2006; “Submission of the European Communities on Subsidies, European Union Proposal,” WTO/TN/RL/GEN/135, 24 April 2006.

A difficulty with general rules on subsidies in the energy sector is their downstream effect on the entire economy, and spillover effects beyond that through exports. In an atomized global supply chain, the cross-border effects of subsidies are far-reaching and difficult to measure, as is their impact on competing industry. The ASCM rules on geographical specificity, however, fail to address this reality so that only subsidies provided within national borders can fall under ASCM disciplines (Clarke 2015: 7–8). Moreover, ASCM rules are not drafted in a way as to capture upstream subsidization, which is also typical in a world of globalized supply chains (Clarke 2015: 8).

While generally acknowledging the merits of Article 8.2 of the ASCM, many authors suggest that merely re-introducing similarly drafted exceptions may not be sufficient (see Howse 2010b: 20–21; Cosbey and Mavroidis 2014: 37–43). Accordingly, they propose the introduction of new specific exceptions, either modelled on the language of Article XX (Rubini 2012), or partially incorporating its relevant objectives in a rationale-based set of newly drafted exceptions, offering a justification to subsidies that pursue global public goods (Cosbey and Mavroidis 2014: 45–47). Others propose that non-actionable subsidies include appropriate policies listed in the Kyoto Protocol to implement Kyoto commitments (Howse 2010b: 21).

Another solution could be to introduce a waiver for existing and temporary renewable energy subsidies as per Article XI (3) of the Marrakech Agreement (Howse 2010b: 53–54; Porges and Brewer 2013: 59–60). Howse has, in particular, proposed that a clean energy waiver be conditioned on the removal of any discriminatory elements of a subsidy (for example, local content requirements) and of any other policies that may be in contradiction with the purpose the waiver aims to fulfil (such as climate change mitigation or environmental costs internalization), as well as contain an introductory clause similar in language to Article XX's chapeau (Howse 2013: 53). During the waiver's validity, any policy subject to it could be exempted from trade remedy action (Howse 2013: 54). It is not clear, however, whether clean energy subsidies should be exempted from ASCM Article 3. One difficulty is to define "clean energy"—whether RE or conventional fuel is environmentally preferable depends on specific circumstances.

### Sectorial approaches

A new Sustainable Energy Trade Agreement (SETA) has been proposed in International Centre for Trade and Sustainable Development (ICTSD) Working Papers. Kennedy has, in particular, suggested that a SETA could contain specific disciplines clarifying, adding, or diminishing ASCM obligations (Kennedy 2012). A SETA could build on the definition of "subsidy" in ASCM Article 1 to clarify which energy subsidies fall within the scope of subsidies disciplines. Alternatively, a SETA could provide a detailed classification of generation, production, and supply of clean energy equipment and services subject to its subsidies disciplines.

It could also expand the categories of prohibited subsidies beyond those addressed under ASCM Article 3 (Kennedy 2012). Finally, a SETA could diminish ASCM disciplines by granting immunity to certain categories of clean energy subsidies. In this respect, the solutions already envisaged in the context of an ASCM reform are all applicable in principle. Yet, depending on the solution chosen (for example, the introduction of a specific category of non-actionable subsidies, or Article XX type of exceptions) and on the legal status of a SETA (for example, an Information Technology Agreement [ITA] type of agreement, an optional agreement added to Annex 4 of the WTO Agreement), the effectiveness of these clauses may vary (Kennedy 2012: 27–28).

These options could also be adopted within the framework of the "Green Goods Initiative" launched in July 2014.<sup>20</sup> Although such negotiations are now focusing on tariff elimination on a broad list of climate-friendly goods, they will eventually touch upon non-tariff barriers and environmental services in accordance to the original Doha mandate (European Commission 2014).<sup>21</sup>

### Multilateral, regional or unilateral regulation?

A number of proposals outlined above take a multilateral approach to dealing with the issue of energy subsidies and climate change. Whether it be at the WTO, under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), or in the context of a broad trade in energy treaty, the ambition is to devise rules that could apply to all states. The advantage of such an approach is to provide unified rules and a single forum for monitoring implementation, discussing amendments, and possibly providing adjudication.

The political climate, however, makes the prospect of a multilateral agreement, regardless of forum, a very remote possibility. The mire of the Doha Round, the paralyzed post-Kyoto framework, and the increasingly disaffected Energy Charter Treaty process are currently unlikely to yield the swift action that climate change adaptation and mitigation requires.

At the regional level, the effectiveness of any advancement in subsidies disciplines may be diluted by free-riding problems. Depending on the contracting parties, the impact of a regional solution may be limited. In this respect, mega-regionals may prove critical in promoting new approaches

20 On the sidelines of the World Economic Forum in Davos on 24 Jan 2014, a group of 13 WTO members (the US, China, Australia, Canada, Costa Rica, Hong Kong, Japan, Korea, New Zealand, Norway, Singapore, Switzerland, and Chinese Taipei) led by the EU announced the intention to negotiate a plurilateral deal on the liberalization of trade in green goods. On 9 July 2014, they formally opened such negotiations in the WTO (Bridges Weekly 2014).

21 Paragraph 31 (iii) of the 2001 Doha Declaration called for "the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services."

to energy and energy subsidies. The Transatlantic Trade and Investment Partnership (TTIP) negotiations, in particular, have devoted significant space to energy issues. A non-paper on the TTIP Chapter on "Energy and Raw Materials," leaked and published by the Huffington Post on 19 May 2014, includes a number of draft provisions relevant to energy subsidies, particularly on the elimination of dual pricing practices and export restrictions (Articles C and E). The EU has also declared that the promotion of renewable energy will have a central role in the TTIP negotiations on energy (European Commission 2013: 3).

Notably, a number of G20 countries have pledged to unilaterally phase out market fossil fuel subsidies (ICTSD 2012: 12–13). Such a move, as well as the economic data being generated by the IEA, OECD, and World Bank on energy subsidies will contribute to the reduction of market-distorting fossil fuel subsidies regardless of reforms under the ASCM or in other fora.

### Hard law or soft law?

The political difficulties inherent in either amending the ASCM or devising new rules in other multilateral treaties have been noted above. They constitute a major impediment to a hard law approach to reform. Regional trade agreements or sectorial agreements may be more conducive to crafting binding legal standards on energy subsidies.

Some authors propose to adjust ASCM rules by means of an interpretative understanding, either promulgated at the committee level at the WTO or initiated as an open plurilateral agreement (Howse 2013: 51–53; Porges and Brewer 2013: 60–61). This solution could, on the one hand, permit to clarify once and for all the applicability of GATT Article XX to ASCM disciplines (Howse 2013: 51), which still remains uncertain although it is advocated by some scholars (Rubini 2012: 570). On the other hand, it could focus on defining the contours of key concepts such as benefit, financial contribution, and specificity in a way that leaves WTO Members sufficient green policy space (Howse 2013: 52). While providing for a more flexible solution compared to the amendment scenario, the value and impact of an interpretative understanding on the ASCM along these lines would depend on the breadth of the solutions adopted and, at least in the case where it is initiated as an open plurilateral agreement, on whether major players join it or not.

Soft law instruments in the area of subsidies may be instrumental in generating more information about energy subsidies and establishing a shared understanding of what is entailed by WTO commitments so as to ensure their credibility (Shaffer et al. 2015: 25). Although existing soft law mechanisms at the WTO (including notification requirements, monitoring mechanisms, and Trade Policy Reviews) have not per se proved effective in inducing governments to phase out subsidies (Shaffer et al. 2015: 3–10), the development of complementary soft law initiatives on energy subsidies by other international

institutions, in particular UN agencies, IEA, OECD, and relevant NGOs, ideally of the kind instigated by the Food and Agriculture Organization (FAO) and other NGOs in the area of fisheries subsidies, may be conducive to creating political pressure on states to make progress on energy subsidies reform (Shaffer et al. 2015: 25).

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## CONCLUSION

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How climate costs internalization and other environmental distortion reductions might be implemented will be affected by how international subsidy disciplines may be redefined within or outside the WTO. Existing ASCM disciplines have the potential to accommodate some subsidies for a climate change perspective, but they may require some amendments to provide a more coherent framework.

The first-best option would be a new multilateral agreement on subsidies or trade remedies (with an appropriate carve-out in the WTO regime to allow for it if such an agreement is concluded outside it). Alternatively, climate change-related subsidies could be included as part of another multilateral regime. Most likely, the disciplines would be more effective if they were incorporated in the WTO, rather than in another multilateral regime such as climate change regulation instruments. A second-best solution, which may be within closer political reach, would be to implement such an approach at the regional level. At this level, however, free-riding problems may occur and, depending on what actors are involved, the impact could be rather limited. A third-best solution would be to incorporate rules on energy subsidies in sectorial agreements. For example, this approach could be espoused in a SETA.

In the meantime, a first step towards building consensus on a more coordinated approach may be under way with the intensification of unilateral efforts towards dismantling fossil fuel subsidies.

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