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Chinese renewable energy and technology policies:

Legal compatibility with WTO rules & Economic interactions with other countries' climate and industrial policies

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HIGHLIGHTS

China, the US, and the WTO Chinese renewable energy and technology policies are under the spotlight. The United States Trade Representative accused China of violating WTO rules, and formally filed a complaint with the WTO on 22 December 2010, contesting a specific subsidy to wind power manufacturing. The United States has requested dispute settlement consultations with China, and if these consultations fail, a Dispute Settlement Body (DSB) will be formed to resolve the dispute. The purpose of this paper is not, though, to guess what the findings and conclusions of the DSB will be before it submits its final report, nor is it to say what these should be.

Balancing push and pull policies The balance between pull (supporting the production of electricity through renewable energy sources) and push (supporting the production of corresponding technologies) policies, both within

and across countries, is of paramount importance to create the necessary conditions for renewable energy support to really contribute to the global effort to reduce GHG emissions.

China, France, and photovoltaic The case of photovoltaic in France is a good example of what not to do. France put in place high guaranteed purchase prices for photovoltaic electricity, but did not implement strong enough policies to create and support the French photovoltaic industry. The results for this lack of balance in between pull and push policies are straightforward. It created a big trade deficit of 800 millions of euros in 2009, which amounts to 2% of the overall French trade deficit.

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Introduction

Chinese renewable energy and technology policies are under the spotlight,¹ and opinions on these policies differ. The United States Trade Representative accused China of violating WTO rules, and formally filed a complaint with the WTO on 22 December 2010, contesting a specific subsidy to wind power manufacturing, provided by the Special Fund for Wind Power Manufacturing. Such policies are praised by others and used as an example to follow – in Europe in particular, many stress upon the implications of the Chinese twelfth five-year plan for the global race towards low carbon technology competitiveness.

The United States has requested dispute settlement consultations with China, and if these consultations fail, a Dispute Settlement Body (DSB) will be formed to resolve the dispute.² Ultimately, the DSB will decide whether or not the Special Fund for Wind Power Manufacturing violates WTO rules in that it provides a prohibited subsidy to Chinese wind power manufacturers. The purpose of this paper is not to guess what the findings and conclusions of the DSB will be before it submits its final report. It is even less to say what these should be. The value of this paper is elsewhere.

Firstly, we will show where and how renewable energy and technology policies fit within the WTO framework. Looking at renewable policies is something relatively new for the WTO. There are other cases – Japan lodged a case against Canada over conditions on feed-in-tariffs for renewable energy in the province

of Ontario³ – but they are specific and do not cover the whole spectrum of renewable energy and technology policies. By doing so, we aim at defining a general framework to help identify when and how a specific support policy risks violating WTO rules.

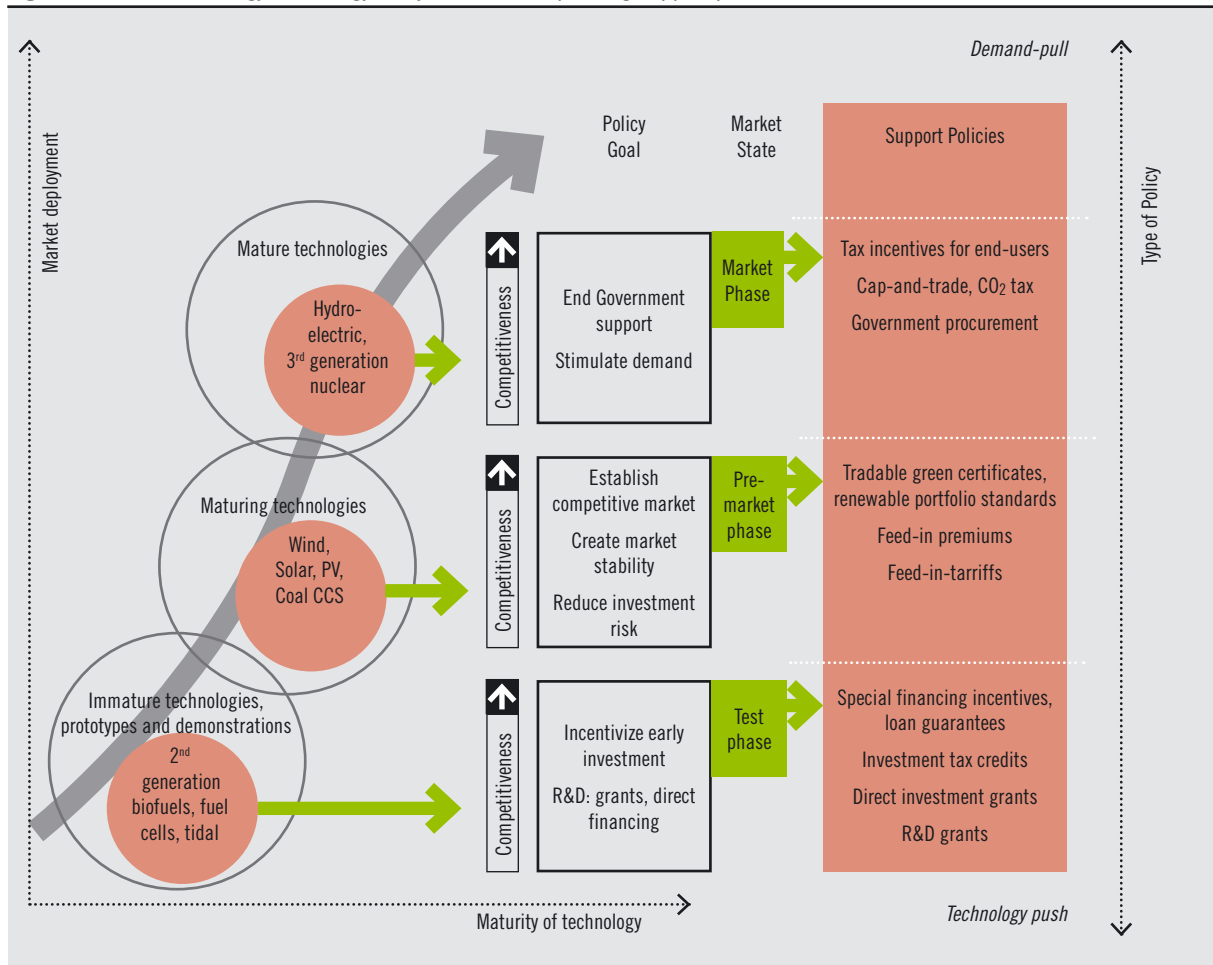
Secondly, we will closely examine both the content of the Chinese renewable support schemes and the content of the United Steelworkers Union (USW) petition. Under the provisions of Section 301 of the Trade Act of 1974, the USW submitted to the US Trade Representative a petition contesting the legality of several Chinese energy policies. The US Trade Representative chose to bring only one case – the Special Fund for Wind Power Manufacturing – to the DSB. We will examine on which ground these policies were claimed to be violating WTO rules. Again, the purpose of this section is not to determine whether or not these policies are violating WTO rules. This would be both useless – these cases have not been brought to the DSB – and impossible – sufficient data for such a query is not available. But we aim to explain on which ground future decisions by the DSB might be made.

Thirdly, and most importantly, we will step back from the legal examination of Chinese renewable energy policies and look at them within the broader perspective of global climate and industrial policies. Indeed, it would clearly be unacceptable if one country were proved to benefit economically at the expenses of others from industrial policies that violate WTO rules. But it would similarly be unacceptable if current WTO rules prevented the kind of government intervention needed to efficiently

1. Even if empirical evidence is very difficult to gather, as information and data are not always made publicly available.
2. Dispute settlements usually take less than one year.

3. The DSB did not yet submit its findings and conclusions. It will make a decision before the end of 2011.

Figure 1. Renewable energy technology lifecycle and corresponding support policies*



* Authors' synthesis of the following sources: Céline Hiroux, « Le développement économique des énergies renouvelables », 25 January 2010; Ôlz, *op. cit.*; Jean-Paul Bouttes, "Public R&D policy and emissions reductions in the electricity sector." Proceedings of the *Dialogue européen sur l'énergie et le climat* Conference, Institut du développement durable et des relations internationales, Madrid, Spain, 29-30 March 2007.

fight against climate change, bearing in mind the need for urgent action. We will therefore look at the economic interactions in between Chinese renewable energy and technology policies and other countries – especially the EU – climate and industrial policies.

1. Renewable energy and technology policies within the framework of the WTO

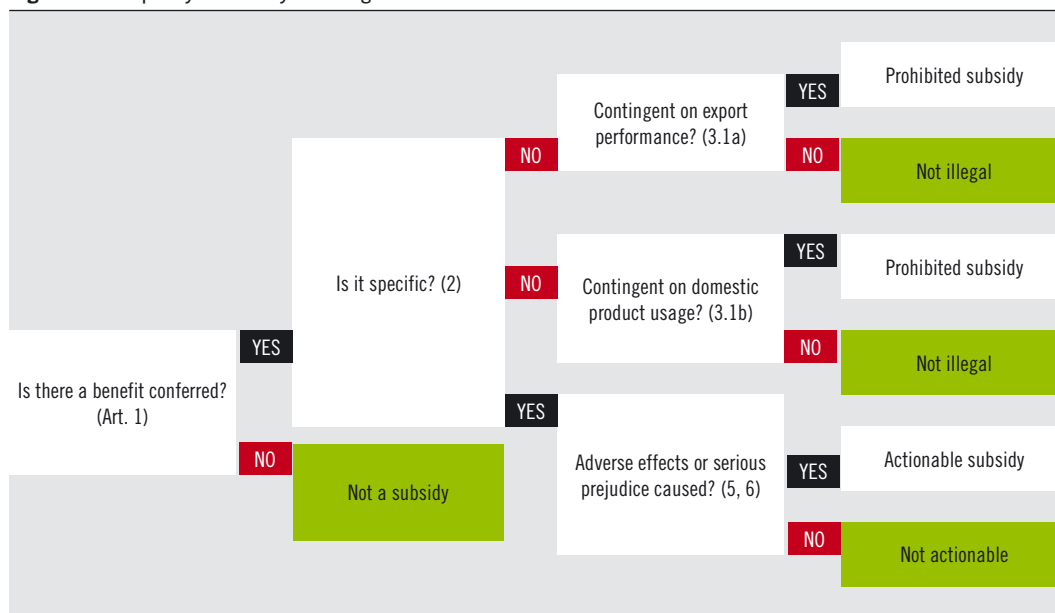
1.1. The technology lifecycle and government renewable energy support policies

The specter of global climate change, the depletable nature of fossil fuels, and the need for energy security have made the

development of renewable energy a critical priority for many nations. Efficient support policies are designed to support the development and deployment of renewable energies in a way that corresponds to the maturity of technologies and the objectives of the government, in order to ensure an efficient application of support policy.

Support policies can be classified broadly in two categories: *demand-pull* instruments, such as cap-and-trade systems, renewable portfolio standards, and feed-in-tariffs; and *technology-push* instruments, which include R&D, direct investment, and special financing incentives. In the case of renewable energy, the difference between pull and push policies is quite

Figure 2. Is a policy a subsidy? The logic of the ASCM*



*Source: Authors' own analysis of the *Agreement on Subsidies and Countervailing Measures*.

simple: the objective of pull policies is to facilitate the production of electricity by renewable energy sources; push policies aim to support the production of corresponding technologies (photovoltaic panels, wind mills...)

As a technology matures, government support should transition from supply to demand-focused, that is, it should provide less support for technology development and manufacturing infrastructure and concentrate efforts on uptake and deployment.⁴ Yet the distinction between mature and immature technologies is far from discrete. For this reason, any renewable energy development policy should consist of a mix of instruments that are designed to create a smooth transition from heavily subsidized, infant technologies, to mature technologies bolstered by competitive, demand-side incentives. Figure 1 shows the optimal application of support policies as they correspond to technology maturity.

1.2. Subsidies and the WTO

Technology-push policies are at the greatest risk of conflict with WTO rules, most specifically subsidies, which are defined in the *Agreement on Subsidies and Countervailing Measures*.

To be considered a subsidy, a policy must meet several conditions. First, the policy must include some form of *financial contribution* by a government or its agents (Article 1 of the ASCM). These contributions, which must *confer a benefit*, can be a direct transfer of funds, non-collected, foregone, or reduced taxes, goods or services in excess of basic public infrastructures, or funds channeled through a private entity. The second condition for a policy to be considered a subsidy is that it must be *specific*, meaning that it must confer benefit on a certain enterprise, group of enterprises, industry, or specific territory (Article 2).⁵

Subsidies that meet both of these criteria can be classified in two categories: *prohibited* and

4. J. Lewis and R.H. Wiser, "Fostering a renewable energy technology industry: comparison of wind industry policy support mechanisms," *Energy Policy*, no. 35 (2007); R. Hass et al., "Promoting electricity from renewable energy sources – lessons learned from the EU, U.S. and Japan.," Céline Hiroux, *op. cit.*

5. World Trade Organization, *Agreement on Subsidies and Countervailing Measures*, http://www.wto.org/english/docs_e/legal_e/24-scm_01_e.htm and World Trade Organization, "Anti-dumping, subsidies, safeguards: contingencies, etc.," http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm8_e.htm#subsidies

Figure 3. General compatibility of energy support policies with WTO rules*

SUPPORT POLICY	BENEFIT CONFERRED?	CONDITIONS FOR ILLEGALITY
Demand-pull instruments		
Tax incentives for end-users	No, only consumers receive the incentive.	Local content requirements
Tradable green certificates, quotas	No, the government only demands a certain level of renewable energy production, but does not necessarily specify which form of energy needs to produce it.	Discrimination between imported and domestic electricity
CO2 tax	No, all carbon-emitting producers are subject to the tax.	Discrimination between tax treatment of imported and domestic products
Cap-and-trade systems	Conditional on the allocation mechanism.	Free allocation: permit allowances that do not establish the same criteria for domestic and foreign emitters Auction allocation: all emitters have access to the market
Feed-in-tariffs, Feed-in-premiums	Yes. Energy producers receive financial payments as electricity is produced.	Eligibility criteria for producers is discriminatory on a basis of national origin
Technology-push instruments		
Special financing, loan guarantees	Yes. Investors gain access to funding that they would not otherwise have. Loan interest subsidies are a direct financial contribution.	Eligibility criteria for recipients discriminates between "like" products, subsidies are specific
Producer tax incentives	Yes. Financial contribution to producers.	Eligibility criteria for recipients discriminates between "like" products, subsidies are specific
Direct investment	Yes. Financial contribution to investors.	Eligibility criteria for recipients discriminates between "like" products, subsidies are specific
Research and Development funding	Yes. R&D projects receive funding support from the government.	Generally not illegal, "Green box" subsidy (in the case of agricultural R&D)

*Source: Authors' own analysis.

actionable.⁶ Prohibited subsidies establish export targets for recipients of the subsidy or oblige the use of domestic goods instead of foreign goods (Article 3). They are explicitly intended to confer a competitive advantage upon an enterprise, group of enterprise, or industry in international markets. Actionable subsidies are *specific* subsidies that do not necessarily subsidize exports, but otherwise cause injury to an importing country's domestic industry, a rival exporting industry in another country, or exporters abroad competing in the subsidizing country.⁷ However, complaining countries may only initiate countermeasures when *adverse effects* are determined to exist as a result of the subsidy (Article 5). Adverse effects are identified as injury to a domestic industry or group of enterprises, nullification of conditions of the GATT 1994, or *serious prejudice* to the interests of another country. Many subsidies are actually perfectly legal; disputes

only arise when it can be empirically shown that adverse effects and serious prejudice are caused in the marketplace.

2. Chinese renewable energy and technology policies and the United Steel Worker complaint

2.1. Overview of Chinese Energy Policy

In recent years, China has shown a strong willingness to support the development and deployment of renewable energy, with extensive policies on a large scale. Of course, renewable energy is just one part of China's environmental and climactic policy. China has set a goal to reduce energy intensity (energy consumed per unit of GDP) by 31 percent from 2010 to 2020.⁸

6. A third category, non-actionable subsidies, originally existed, but expired without renewal on 31 December 1999.

7. World Trade Organization, "Anti-dumping, subsidies, safeguards: contingencies, etc." *op. cit.*

8. U.S. Energy Information Administration, "China Energy Data," U.S. Energy Information Administration, November 2010. <http://www.eia.doe.gov/cabs/China/Background.html>; ChinaFAQs, "Timeline of China's energy efficiency policies," World Resources Institute, 2009.

Figure 4. Chinese Energy Policy*

	R&D GRANTS, INDIRECT INVESTMENT	DIRECT INVESTMENT	SPECIAL FINANCING	PRICE SETTING	QUOTAS AND REGULATION	TAX INCENTIVES
ALL TECHNOLOGIES	Renewable Energy Law: Renewable Energy Special Development Fund, Tenth Five-Year Plan	Renewable Energy Law: Renewable Energy Development Fund, Tentative Management Method for Renewable Energy Development Special Fund, investments in grid expansion and access	Special financing from: Agricultural Development Bank of China, Export-Import Bank of China, Agricultural Bank of China, China Development Bank, Bank of China, China Construction Bank, Industrial and Commercial Bank of China, DORCU	Price setting occurs on a technology-by-technology basis, as per the Renewable Energy Law.	Renewable Energy Law sets targets for installed capacity in 2010 and 2020.	Reduced VAT and corporate income taxes for renewable energy projects.
		Government investment in SinoHydro, Export-import bank financing and export credits	Export-import bank financing and export credits.	(see above).	Renewable Energy Law sets targets for installed capacity in 2010 and 2020.	(see above).
WIND POWER	Renewable Energy Law: Renewable Energy Special Development Fund, 1.5 MW wind turbine development program.	Tentative Management Method for Renewable Energy Development Special Fund, Management Regulations on Special Fund for Wind Power Manufacturing Sector in China	Ride the Wind Program.	Feed-in-tariffs and tendering.	Renewable Energy Law sets targets for installed capacity in 2010 and 2020.	50 percent VAT reduction.
BIOMASS/BIOFUEL	Renewable Energy Law: Renewable Energy Special Development Fund.	Renewable Energy Law: Renewable Energy Special Development Fund.	(see above).	«Yardstick» feed-in-tariffs set according to desulfurized coal electricity prices, subsidy of 0.25 yuan awarded for projects meeting efficiency requirements	Renewable Energy Law sets targets for installed capacity in 2010 and 2020.	(see above).
SOLAR PV	Renewable Energy Law: Renewable Energy Special Development Fund.	Capacity-based subsidies, <i>Golden Sun</i> program.	(see above).	Subsidies offered by capacity, some high enough to cover half the cost of purchasing and installing.	Renewable Energy Law sets targets for installed capacity in 2010 and 2020.	(see above).
SOLAR THERMAL	Renewable Energy Law: Renewable Energy Special Development Fund.	Renewable Energy Law: Renewable Energy Special Development Fund.	(see above).	Prices set on a per-project basis by the State Council.	Renewable Energy Law sets targets for installed capacity in 2010 and 2020.	(see above).
GEOTHERMAL	Renewable Energy Law: Renewable Energy Special Development Fund.	Renewable Energy Law: Renewable Energy Special Development Fund.	(see above).	Prices set on a per-project basis by the State Council.	Renewable Energy Law sets targets for installed capacity in 2010 and 2020.	(see above).
TIDAL	Renewable Energy Law: Renewable Energy Special Development Fund.	Renewable Energy Law: Renewable Energy Special Development Fund.	(see above).	Prices set on a per-project basis by the State Council.	Renewable Energy Law sets targets for installed capacity in 2010 and 2020.	(see above).

* Sources: Baker & McKenzie 2009, Crachilov et al. 2009, Foster et al. 2008, *National Renewable Energy Laboratory 2004*, Price et al. 2008, Qiang 2010, Tan et al. 2010, United Steelworkers Union 2010, Wanli 2009, Zhou et al. 2010.

Figure 5. Overview of USW Complaints*

COMPLAINT	WTO REFERENCE	MAIN POLICIES IDENTIFIED
Local content requirements	ASCM 3.1 (b), 3.2	Ride the Wind Program, Special Fund for Wind Power Manufacturing
Export subsidies	ASCM 3.1 (a), 3.2	Export Product Research and Development Fund, Export credit from China Export Import Bank, Export guarantees and insurance from Sinosure
Improper justification as green box R&D subsidy	ASCM 8	Special Fund for Wind Power Manufacturing, Export Product Research and Development Fund
Actionable subsidies (specific subsidies that cause serious prejudice)	ASCM 1, 2	Renewable Energy Law, Eleventh Five-Year Plan, National Medium- and Long-Term Program for Science and Technology Development (2006-2020), Medium and Long-Term Development Plan for Renewable Energy in China (2007), Eleventh Five-Year Plan for Renewable Energy (2008), Interim Measures of the Ministry of Finance for the Administration of the Special Fund for the Development of Renewable Energy,

United Steelworkers Union, "Petition for relief under section 301 of the Trade Act of 1975, as Amended: China's Policies Affecting Trade and Investment in Green Technology", 2010.

The selection of policies presented in this paper is by no means an exhaustive list; the chosen policies instead present a cross-section of Chinese renewable energy policy. Subsidies to coal-fired generation are also included to put subsidies to renewable energy in perspective. Figure 3 presents these policies.

2.2. The United Steelworkers Union complaint

The United States Trade Representative began a formal investigation of Chinese energy policies following the submission of a Section 301 petition by the United Steelworkers Union (USW). The policies discussed in this paper are not an exhaustive list of those listed in the USW petition, but a cross-section of major Chinese policies chosen to illustrate the arguments in the petition.

The complaints can be divided into several categories: policies that allegedly violate local content requirement bans (ASCM 3.1(b), 3.2), policies that allegedly subsidize exports (ASCM 3.1(a), 3.2), policies that are supposedly not protected by the green box (ASCM 8), and actionable subsidies that are supposedly causing serious prejudice in the international market (ASCM 1, 2).

Again, without trying to determine if Chinese policies actually violate these rules, we will explain what would need to be proved by the DSB in these cases or in cases similar to these.

Local content requirements:

China announced the end of local content requirements in all wind power subsidies in October 2009. The Ride the Wind Program and the Special Fund for Wind Power Manufacturing both confer a benefit (loan interest subsidies and special financing) and thus may be considered subsidies. Yet in the absence of local content requirements, they are not necessarily illegal.

Despite the October 2009 agreement, the US Trade Representative assailed the presence of local content requirements in the Special Fund for Wind Power Manufacturing. To be illegal, it must be shown that China's announcement of the end of local content requirements did not mean the end of local content requirements in the implementation of the policy. This could be demonstrated by the DSB in an empirical examination of the recipients of funding from this policy.

Prohibited subsidies:

Prohibited subsidies, namely those that violate Article 3 of the ASCM, may be deemed illegal if this policy is contingent on export performance or favors local products over foreign products.

Export subsidies: Export Product Research and Development Fund, China Export Import Bank's export credit policy, and export guarantees and insurance from Sinosure were cited by the USW as policies that are contingent on export performance, which would qualify

them as illegal according to ASCM Article 3.1(a).

The Export Product Research and Development Fund subsidizes technologies that are deemed by the government to be an important export product (renewable energy technologies are among these technologies). However, the Chinese government confirmed to the U.S. Trade Representative that this policy has been terminated, which makes it irrelevant in a WTO dispute.

The USW also alleged that the loan terms offered by the China Export Import Bank are generally much more favorable than those of comparable institutions in other countries (interest rates are lower and repayment schedules are extended). The USW cited this observation with what it refers to as “second-hand reports,” which would clearly require more substantiation before the WTO.

Sinosure’s activities in the area of export guarantees and insurance also came under fire from the USW as a prohibited export subsidy. The USW held that the premiums charged by Sinosure for these insurance products are below a level that would be adequate or profitable for the risk of the ventures they underwrite, implying that the Chinese government is assuming these losses (Sinosure was established with public capital).⁹ Contrary to the lack of data available for the China Export Import Bank, the USW cited an agreement between Sinosure and LDK Solar Co., Ltd. as an example of the specificity of these subsidies to export products, namely renewable energy technologies.

Green box and R&D subsidies: The USW also attacked certain policies that it found were improperly justified as an exempt “green box” research and development subsidy under Article 8 of the ASCM. The Special Fund for Wind Power Manufacturing contains domestic content requirements and does not explicitly state that the subsidy is purely for certain research and development costs, which would

9. The USW refers to the WTO Appellate Body’s decision in *US-Upland Cotton*, in which these insurance products were deemed export subsidies.

in theory disqualify it from Article 8 protection.¹⁰ However, the lack of specific language in the policy does not necessarily violate these conditions; the DSB would need to find proof showing that these regulations are not respected or empirically show that the subsidy has been applied illegally.

Actionable subsidies:

For actionable subsidies, adverse effects and serious prejudice must be shown empirically, that is, the negative effects in the international marketplace, such as a fall in market share or impediment of exports by a third party, must be demonstrated quantitatively. Articles 5 and 6 of the ASCM define the “adverse effects” and “serious prejudice” that predicate a subsidy as “actionable.”

Wind power support policies were cited as causing serious prejudice toward the United States, and the USW presented statistics showing a sharp drop-off in imports of U.S. wind turbine sets in 2008, when many Chinese support policies came into effect. The report also referenced European imports of wind turbine sets, showing a rapid decrease in American turbine imports, replaced by a sharp increase of Chinese imports of the same products in the same period mentioned above. Furthermore, the USW claimed that Chinese subsidies distort international market share, citing prices of wind turbine sets, where the Chinese products are significantly less expensive than comparable American products.

Figure 6. Average Unit Value of European Imports of Towers and Lattice Masts (Euros/Ton)¹¹

	2006	2007	2008	2009
US	2373	1686	1964	3636
China	1049	1320	1270	2277

Along with these data, the USW argued that increasing European demand justifies

10. ASCM Article 8.2(a) states that a research and development subsidy is non-actionable if “the assistance covers not more than 75 per cent of the costs of industrial research or 50 per cent of the costs of pre-competitive development activity.” Also stipulated in Article 8 are specific costs for which the subsidy can be applied, such as personnel and equipment.

11. United Steelworkers Union, *op. cit.*: 191.

concerns that Chinese subsidies have altered market share; imports of American turbine sets would be expected to rise, *ceteris paribus*, given increasing demand in the international marketplace. The USW used a similar argument to discuss the effects of Chinese solar subsidies.

While these trends would seem to suggest serious prejudice in the marketplace, this logic is somewhat deterministic and is lacking econometric evidence attesting the validity of the hypothesis. Technology learning and falling labor costs can also explain this decline in prices.

3. Chinese renewable energy and technology policies: economic interaction with other countries' climate and industrial policies

The legal examination of Chinese renewable energy policies is important not only because it partially answers the question raised by the US to the DSB, but also because it would be unacceptable if one country were proved to benefit economically at the expenses of others from industrial policies that violate WTO rules. Nevertheless, it is essential to take a step back and look at these policies within the broader perspective of global policies designed to tackle climate change. Indeed, it would similarly be unacceptable if current WTO rules prevented the kind of government intervention needed to efficiently fight against climate change, considering the need for urgent action.

Since renewable energy public support policies contribute to the global effort to tackle climate change, it could be argued that *any* kind of renewable energy support policy confers positive externalities globally. Yet this argument is short sighted. Under certain circumstances, a specific way of supporting renewable energies in one country could actually make it more difficult to raise the level of ambition of climate policies in another.

The balance between pull (supporting the production of electricity through renewable energy sources) and push (supporting the production of corresponding technologies)

policies, both within and across countries, is of paramount importance to create the necessary conditions for renewable energy support to really contribute to the global effort to reduce GHG emissions.

The rationale for combining pull and push policies for renewable energies is as follows. Renewable energy technologies are not yet mature, meaning that the price of electricity produced by using these technologies is often still significantly higher than the price of electricity produced by using conventional technologies. In order to bring the costs of renewable energy technologies down, the renewable energy industry must achieve price competitiveness. Given the diffuse nature of these technologies, progress cannot be made only by investing directly in the industry; technologies must be tested on the ground through small and large demonstration projects. Lessons learned *via* these demonstration projects contribute to progress made the industry and to the development of economies of scale. Pull policies, such as feed-in-tariffs, therefore aim to cultivate and grow these niche markets.

Pull and push policies correspond to the public and private rationale for supporting renewable energies. Pull policies support the production of electricity produced by using renewable energy sources; they therefore contribute directly to the reduction of GHG emissions. Push policies support the production of renewable energy technologies; they contribute indirectly to the reduction of GHG emissions. But they also confer a private benefit to the industries producing these technologies.

Public and private reasoning for supporting renewable energies need not be opposed; they need to work hand in hand. The private benefit conferred to industries by push policies is necessary to solve the collective action problem of tackling climate change. In the absence of this private benefit, no country has an incentive to develop renewable energies: on the contrary, it would have an incentive to wait for others to develop renewable energies and then adopt them.

But symmetrically, no country has an incentive to implement pull policies only. Let us

consider an example. Imagine that country A sets the objective of having X% of the energy it consumes produced by renewable energy sources, and that it relies mainly on feed-in-tariffs (a pull policy) to achieve this objective. Country A faces a high risk that renewable technologies will be imported. This risk is even higher if country B supports its renewable energy technology industry (through push policies).

This example more or less corresponds to the situation in between the EU (country A) and China (country B), even if this is a very simplistic way of picturing a much more complex reality. The reality is more complex for two main reasons:

- Some countries within the EU are actively supporting renewable energy technologies through push policies (Germany on wind mills, Spain on photovoltaic panels). But to reach the 20% renewable energy target set by the EU, the vast majority of Member States (MS) are mainly relying on feed-in-tariffs.
- The balance between pull and push policies is different in China for wind and photovoltaic. On wind, China actively supports wind mill technology, but also supports the electricity produced through wind (*via* a feed-in-tariff, in particular). On solar photovoltaic, China supports aggressively the production of photovoltaic panels, but they are mainly exported.

The political debate within the EU on the move from 20 to 30% of emissions reduction in 2020 proves that the lack of balance in between pull and push policies in between the EU and China makes it more difficult for the EU to increase the level of ambition of its climate policies. Indeed, the fact that European renewable feed-in-tariffs encourage the import of Chinese photovoltaic panels (and therefore subsidizes the Chinese industry) is used by some to oppose such a move. The IEA notes that Chinese production capacity for solar photovoltaic cells has expanded from 100MW to 2GW between 2005 and 2008, with 95 percent of this capacity exported in the absence of domestic demand.¹² The monetary

value of exports of solar photovoltaic cells from China to Europe doubled between 2007 and 2008.¹³ The negative economic impacts of this trend are likely to be small and concentrated on a small number of utilities and industries. But this situation is politically important, and needs to be addressed. Otherwise, a move that would benefit the EU as a whole would be held hostage by political discourse.

The case of photovoltaic in France is a good example of what not to do. France put in place high guaranteed purchase prices for photovoltaic electricity, but did not implement strong enough policies to create and support the French photovoltaic industry. The results for this lack of balance in between pull and push policies are straightforward. It created a big trade deficit of 800 millions of euros in 2009, which amounts to 2% of the overall French trade deficit. In front of this difficult situation, the French government commissioned a report (the "Charpin report").

The main recommendations of the report are the following: massively and rapidly (2010) decrease the guaranteed purchase prices; design and implement (starting in 2011) a new R&D strategy and industrial policy to create and support the French photovoltaic industry. The report also emphasizes the need that support schemes do not target the existing technologies (crystalline silicon), because Chinese products are much more competitive (25% less expensive than French products on average), but focus on new technologies (thin film).

The French government is likely to follow the recommendations from the report. The decrease of the photovoltaic guaranteed purchase price is unfortunate, because stop and go in policies reduce their credibility and the confidence that investors, utilities and industries must have to engage into the transition towards a low carbon economy. But it is inevitable and it was in fact foreseeable.

One should be cautious in drawing conclusions from these examples. They suggest that if pull

photovoltaic energy," OECD/IEA (2010).

13. Stokes, Bruce, "Emerging Green Technology Poses Threat of Trade Wars," in *YaleGlobal*, 14 May 2010.

12. International Energy Agency, "Technology Roadmap: Solar

policies are not combined with push policies within a given country or a group of country (such as the EU), the policy mix will not be sustainable. Indeed, there will be some political pressure to shut them down, or at least not to increase them. It also therefore posits that there should be international coordination on how to balance pull and push policies, lest the global effort to reduce GHG emissions will be weaker than what it could be.

Conclusion

It is important that the WTO ensures that there is a level playing field in between countries and

industries. The DSB will soon make a decision on the legality of the Special Fund for Wind Power Manufacturing, and determine whether or not it includes a prohibited subsidy. More generally, the same rules should apply to all countries supporting renewable energies.

But the DSB is certainly not the appropriate forum to organise the necessary international cooperation on how to balance, both domestically and globally, pull and push policies. It needs to stick to its task, and settle disputes. The WTO might serve this purpose, but more realistically, this could be tackled by bilateral or regional trade agreements, balancing climate and industrial objectives. ■

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