A Review of the Potential International Trade Implications of Key Wind Power Industry Policies in China

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1. Introduction

This paper reviews wind power industry policies in China, investigates how similar regulations in other industries have been treated under the policies of the WTO, and assesses the likely international trade implications of the aforementioned policies in the wind sector. It concludes with a brief discussion of whether ongoing and proposed Chinese government policies to promote local wind turbine manufacturing are likely to be challenged by other WTO member countries.[2]

China, along with many other countries, is looking not only to expand its domestic use of renewable energy but also to develop accompanying local renewable energy technology industries to serve that demand. Wind power technology manufacturing is one such industry, and several government policies specifically aim to promote the development of Chinese wind turbine technology. However, several of these policies that aim to directly encourage local wind turbine manufacturing, and in some cases aim to differentially support Chinese turbine manufacturers, could be challenged as inconsistent with China's international trade agreements.

Policies that aim to promote the development of indigenous technical capacity have been widely used in China across many industries. For example, government programs have required foreign firms to engage in joint ventures with Chinese companies in return for preferential treatment in the Chinese market, and in many cases to transfer technology as a prerequisite. Other policies surround customs duties and import tariffs that impede the import of foreign goods, often in industries where Chinese substitutes are available. In addition, regulations that mandate local content percentages in goods sold in China to promote local manufacturing over imports are widespread.

Although found in many industries and sectors, all of the policies mentioned above are or have been commonly used within China's wind power industry, and may be inconsistent with

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[2] This paper is not intended to serve as legal advice, and is written from a policy analysis rather than a legal perspective. The author is not a laywer, but has incorporated the unofficial review comments from several lawyers versed in international legal issues.

international trade law, currently overseen by the World Trade Organization (WTO), which China joined in December 2001.[3] For example:

- Several foreign companies are pursuing joint venture arrangements with Chinese firms and have transferred wind turbine technology. In cases where technology transfers have been required as a pre-condition for doing business, they could be questioned under WTO rules.
- Customs duties have been adjusted over the years to alternatively encourage or discourage imports of wind turbines or of components. In cases where such duties could constitute barriers to trade, they could be questioned under WTO rules.
- Most recently, all large wind farms in China are required to use wind turbines that meet a local content requirement. Even more recently, it has been suggested that local content requirements be further extended to require that wind turbines contain mandated quantities of Chinese-owned intellectual property. Local content requirements are explicitly not permitted as outlined in China's WTO accession agreements.
- Government subsidies have been used to support wind power technology research, development and demonstration (RD&D). In cases where such subsidies have been directly provided to Chinese-owned wind turbine manufacturers and promoted the use of locally produced technology over like foreign technology, this could be contested as a non-tariff trade barrier.

The purpose of this paper is not to make a determination of the legality of these policies but rather to highlight policies that Chinese international trade experts want might to examine more closely in order to avoid future conflicts with WTO agreements. Whether any given governmental measure is consistent with WTO rules is a highly contextual question that depends on the exact design features of that measure and its broader context. Thus, nothing in this paper should be considered as a judgment that any actual measure of any particular government violates WTO rules.[4]

2. Wind Industry Policies in China with International Trade Implications

2.1 Joint Ventures and Technology Transfer

One example of a government program that required technology transfer in the wind power industry was the former State Development and Planning Commission's (SDPC) "Ride the Wind Program" of 1997 (MOST et al., 2002). This program established two joint venture enterprises to domestically manufacture wind turbines: one between the Spanish wind turbine manufacturer Made and Chinese tractor machinery company Yituo, and another between German wind turbine manufacturer Nordex and the Xi'an Aero Engine Cooperation. Companies were selected for this program based on their agreements to transfer wind turbine technology, and in return received financial support from government technology funds. The technology transfers carried out

[3] The WTO oversees and resolves trade disputes for all agreements negotiated under the WTO, as well as under the General Agreement on Tariffs and Trade (GATT) (replaced by the WTO in 1995), including approximately 30 other agreements between member countries.

[4] The tone and some language in this disclaimer are based on a similar disclaimer used in Howse (2005).

through this program started with a 20 percent local content requirement and a goal of an increase to 80 percent as learning on the Chinese side progressed (Lew, 2000).

2.2 Customs Duties and Import Tariffs

Customs duties or import tariffs on wind turbines and/or components have been used in China over the past several years. From 1990 to 1995, imported wind turbines were exempted from customs duties (to promote wind development). As expectations of a domestic wind turbine industry grew, China changed the customs duty regulations in 1996 so that there was a higher duty on imported complete turbines and a lower duty on imported components (to encourage local turbine manufacturing, with some use of international components). In 1998, further differentiation between the two was made when components were exempted from value-added taxes (VAT) and turbines were not (Liu et al., 2002). Current customs duty regulations vary somewhat across components and are applied differently to firms with different ownership structures. The customs duty on wind turbine components varies by component (with lower duties for high-tech components) and ranges from 1 to 10 percent, while the duty for complete turbines ranges from 0 to 6 percent, depending on the ownership structure of the importing company (with some joint ventures exempted from customs duty).

2.3 Local Content Requirements

Local content requirements have been in place in China's wind power industry for many years. Wind farm projects approved by the National Development and Reform Commission (NDRC) during the Ninth Five-Year Plan (1996-2000) required that wind turbine equipment purchased for these projects contain at least 40 percent locally-made components. Beginning in 2003, NDRC launched a program to auction off the rights to development for large wind farms (Wind Concessions) that includes local content requirements that have been growing more stringent over time. Requirements began with mandating 50 percent local content in 2003, and increased to 70 percent in 2004, where it remains today.[5] In selecting the winning projects under these concessions, local content percentages (above the minimum standards of 50-70 percent) are a key determinant of the evaluation—responsible for 35 percent of the score used in evaluating bids in 2006, up from 20 percent in 2005.[6] In addition, the 70 percent local content requirement now applies not only to the government-run wind concessions, but to all wind farms being developed in China.[7]

These local content requirements are causing foreign firms interested in selling wind turbines in China to develop a manufacturing strategy that will allow them to meet these requirements.

[5] Local content is essentially determined by the fraction of locally-sourced expenditures.

[6] Based on the results of the most recent round of wind concessions (August 2006), it does not appear that bids that exceeded the 70 percent target for local content received sufficient extra credit in the weighting of their bids to overcome the impact of price on bid selection; the proposed wind power tariffs appear to still be the dominant factor in project selection.

[7] Other countries have incentivized the use of local content by making it a factor in the wind power project selection process, including Canada. In order to promote economic development in the region through industry relocation, Hydro Quebec required that developers of two large wind farm projects in Quebec meet local content targets by establishing wind turbine manufacturing facilities in a particular Quebec region (see Lewis & Wiser, 2006). Other countries that have used similar local content requirements include Brazil and Spain.

Consequently, many leading international wind turbine manufacturers are either establishing local manufacturing facilities or assembly facilities for Chinese-made components. Local content requirements currently mandate a certain fraction of domestic manufacturing, but they do not promote a comprehensive form of technology transfer that includes the transfer of know-how or of intellectual property rights. Consequently, foreign wind turbine manufacturers can meet current content requirements by developing a Chinese manufacturing base without necessarily involving Chinese-owned firms in wind turbine design and assembly activities, and consequently can maintain control over key intellectual property and technical know-how.

Obtaining the intellectual property associated with advanced wind turbine designs is a key priority for the Chinese government as it develops new policies to promote wind power development that explicitly support Chinese wind turbine manufacturers. Some have proposed, for example, that new wind projects may need to meet not just a local content requirement, but also a local intellectual property requirement. Although the exact determination of this metric may be difficult, the idea would be to require that the majority of the intellectual property rights (IPR) associated with the wind turbine would have to be in the hands of a Chinese-owned (or perhaps majority Chinese-owned) company. This could be achieved through local Chinese firms taking a leadership role in self-developing wind turbine IPR, or by those firms purchasing wind turbine IPR through licensing arrangements with foreign firms (or through the outright purchase of those firms).

2.4 Wind Power-Related Subsidies

In addition to the policies and programs described above, there are other financial incentives in place to support wind power development in China, including direct subsidies for government capacity building, subsidized R&D, tax-related incentives, and pricing incentives. While some are equally available to Chinese and foreign owned projects and technology (some tax and pricing incentives), others (such as R&D) specifically target Chinese technology. For example, the National Development and Reform Commission (NDRC) and the Ministry of Science and Technology (MOST) have both directly subsidized research and development on key renewable energy technologies. MOST also supports research and development through two national High-Tech Research and Development programs: The 863 Program supports the commercialization of new technologies, and the 973 Program supports basic science research. In addition, there are some subsidies for demonstration projects and training courses from the NDRC, the Ministry of Finance (MOF), and the Ministry of Agriculture (MOA) (NREL, 2004). There has also been growing interest in expanding support for the demonstration and early commercial deployment of Chinese wind turbine technology. Finally, some Chinese provinces offer income tax relief for joint-venture enterprises involved in renewable energy and other “high-tech” sectors.

3. China and the WTO

3.1 China's Accession Conditions

As of December 2001, China officially agreed to phase out many tariffs and technology-transfer requirements as part of its entry to the World Trade Organization (WTO), the group of 149 countries that oversees the global trading system. In order for China to become a member of the WTO it had to negotiate a bilateral concession agreement with any member country that requested one, in addition to signing the existing WTO agreements.

The United States was one country that requested a bilateral concession agreement with China. Negotiations between the countries required that each side make concessions: the US Congress would be required to stop its annual review of Most Favored Nation status, granting China Permanent Normal Trading Relations status; China in turn would have to agree to several reductions on import tariffs and quotas, with specific attention focused on industries that were of economic interest to the US, such as the automobile industry (Gallagher, 2003). Any provisions that China agreed to through bilateral negotiations with any individual country automatically would apply to all WTO member countries because of the WTO's non-discrimination rules (WTO, 1995). Language included in the US bilateral agreement stated that "China would no longer condition importation or investment approvals on whether any competing domestic suppliers exist, or [on] performance requirements of any kind, such as export performance, local content, technology transfer, offsets, foreign exchange balancing, or research and development" (US Congress, 2000). Additionally, foreign and domestic businesses were to be taxed uniformly, and the majority ownership limits on foreign manufacturers for car engines would be eliminated.[8]

Upon becoming the 143rd member of the WTO in 2001, China agreed to a schedule by which to meet its WTO obligations. However, China's continued technology and content requirements levied on several foreign industries—including those in the large wind turbine industry—raise the question as to whether China could be perceived as using its domestic policies to block investment and trade with WTO Members. When it joined the WTO, among the obligations China agreed to were the Trade-Related Investment Measures (TRIMs), which apply to investment measures related to trade in goods (TRIMs, 1995). In doing so, China agreed to "eliminate and cease enforcing trade and foreign exchange balancing requirements, as well as local content requirements, refuse to enforce contracts imposing these requirements, and only impose or enforce laws or other provisions relating to the transfer of technology or other know-how, if they are in accordance with the WTO agreements on protection of intellectual property rights and trade-related investment measures" (WTO, 1995; US-China Business Council, 2000). This has been further interpreted to mean that "China has agreed that, upon accession, it will not condition investment approvals, import licenses, or any other import approval process on performance requirements of any kind, including: local content requirements, offsets, transfer of technology, or requirements to conduct research and development in China" (US-China Business Council, 2000). In addition to China's specific accession agreements and the TRIMS, other

[8] It was also agreed that Chinese Provincial governments were to be given the authority to approve foreign direct investment (FDI) projects of up to $150 million without central government approval—up from a limit of $30 million before 2002.

agreements particularly relevant to this discussion include sections of the General Agreement on Tariffs and Trade (GATT), the Agreement on Subsidies and Countervailing Measures (SCM) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

The following section discusses these relevant trade agreements, and in cases where examples are found, looks at industries other than wind turbines, and at countries other than China, to see how these agreements have been interpreted in situations concerning mandated technology transfers, differential customs duties, local content requirements, and domestic subsidies.

3.2 WTO and Technology Transfer

In order to join the WTO, China had to agree to remove all requirements for technology transfer, as mentioned above. However, many examples of "incentivized" technology transfer could be claimed to persist in China today. For example, private sector executives have been quoted as saying that they are accustomed to negotiating an exchange of "technology for market" with the Chinese, or trading "short-term sales for long-term competition," and that China is "pushing for [the] crown jewels of technology from companies that want access to China's exploding marketplace." According to one commentary on the subject, it is believed that these demands "fall into a gray area of international trade law and economic development strategy" (Kranhold, 2004). Despite the fact that mandated technology transfers could be found to violate WTO member agreements, it appears that few companies to date have raised the issue in the Chinese context.

Many companies have been willing to engage in technology transfers in China, including Motorola Incorporated, which has put more than $300 million into 19 technology-research centers in the country; Microsoft Corporation, which has a center in Beijing employing more than 200 researchers; and Siemens AG, which has reportedly spent more than $200 million since 1998 working with a Chinese academic institute to develop a mobile-phone technology for the Chinese market (Kranhold, 2004). China is certainly not the only developing country pushing for foreign technology transfer, but the size of its new markets gives Chinese negotiators leverage that other countries may lack.

In addition to the mentions of technology transfer in China's accession agreements, the WTO has a specific IPR agreement, the TRIPS. Although these agreements primarily attempt to standardize the protection and enforcement of intellectual property rights across international boundaries, they include some language specific to the "least-developed country members" of the WTO. The TRIPS state that in view of the needs of least developed country members for flexibility in creating a viable technological base, these members may be exempt from some of the provisions of the TRIPS agreement for 10 years from their date of application (WTO TRIPS Article 66). However, this primarily refers to the difficulty that least developed countries may face in enforcing IPR protection; there is no language in this Agreement that would permit developing countries to violate other aspects of trade law (as discussed throughout this section) in order to create "a viable technological base."[9]

[9] In addition, this Article includes language stating that developed country Members "shall provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to

3.3 WTO and Import Tariffs

In order to join the WTO, China had to agree to a schedule to either reduce or in some cases phase out all together many of its import tariffs (see, e.g. GATT Article II and III, TRIMS Article 2, and the SCM Agreement, among other accession agreements).

In certain situations, China has varied its taxes on imported products to encourage or discourage the import of goods. In sectors where China is trying to develop industries (including the wind turbine industry), tariffs have often been lower on imported components than on complete products in order to encourage local assembly. In some cases, tariffs go a step further and serve as a form of penalty on products that are not manufactured locally. For example, China recently imposed a tariff on imported auto parts (equivalent to the tariff on a complete automobile) if the final assembled vehicle fails to meet certain local content requirements. Previously, all components were subject to a 10-14 percent tax rate. This change in policy triggered an international trade dispute under the WTO which began in March 2006.[10]

As China's WTO commitments limit its tariffs on imported auto parts to rates that are significantly below its tariffs on complete vehicle imports, countries bringing the dispute before the WTO (the US, EU and Canada) believe that these tariffs go beyond what is permitted under WTO regulations. Articles II and III of the GATT and Article 2 of the TRIMS were alleged to be violated, as well as specific commitments made by China in its WTO accession agreement. Dispute settlement consultations to date are unresolved, although some have speculated that if China refuses to change its policy, the complaint will lead to punitive special tariffs being imposed on China by other WTO member countries—a possible action that countries may take under the WTO (Jing, 2006).

3.4 WTO and Local Content Requirements

Although local content requirements in the wind turbine industry have not been the topic of international trade disputes as of yet, local content requirements in other sectors have been contested, particularly in the auto sector. In addition to the pending dispute pitting China vs. the US, EU and Canada on auto part import tariffs, the US and EU won a ruling against India's local content requirements in passenger car production in 2001[11]. India's regulations required auto manufacturers serving India to sign memoranda of understanding (MOUs) that imposed local content requirements on signatories. The MOU stated that signatories were required to use no more than 50 percent imported content in passenger car production by the end of the third year of the MOU, and no more than 30 percent imported content by the end of the fifth year. The EC and US both alleged violations of Articles III (National Treatment on Internal Taxation and Regulation) and XI (General Elimination of Quantitative Restrictions) of the GATT and Article 2 (National Treatment and Quantitative Restrictions) of the TRIMs.

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least-developed country Members in order to enable them to create a sound and viable technological base" (WTO TRIPS Article 66), although it is unclear how such a vague mandate could actually be enforced.

[10] For dispute descriptions see "China — Measures Affecting Imports of Automobile Parts" Dispute DS339 (EU), DS340 (US), DS342 (Canada).

[11] Dispute Settlement: Dispute DS146. "India — Measures Affecting the Automotive Sector." http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds146_e.htm

The WTO dispute settlement panel decided that these practices indeed violated these WTO agreements, stating that India had acted inconsistently with its obligations under Article III:4 of the GATT by imposing on automotive manufacturers an obligation to use a certain proportion of local parts and components in the manufacture of cars and automotive vehicles ("indigenization" condition); India had acted inconsistently with its obligations under Article XI of the GATT 1994 by imposing on automotive manufacturers an obligation to balance any importation of certain kits and components with exports of equivalent value ("trade balancing" condition); and India had acted inconsistently with its obligations under Article III:4 of the GATT 1994 by imposing, in the context of the trade balancing condition, an obligation to offset any purchases of previously imported restricted kits and components on the Indian market by exports of equivalent value.[12] Of particular relevance to this paper is the "indigenization" condition India imposed on components used in the manufacture of cars, which could be considered quite similar to China's local content requirements in wind turbines.

3.5 WTO and Domestic Subsidies

Export subsidies and subsidies tied to domestic content requirements are explicitly prohibited by WTO law. More generally, for subsidies that do not follow either of these two definitions, the use of subsidies becomes an issue under international trade law when a subsidy differentially supports "like" products in a way that results in less favorable treatment for a group of imported products in comparison to a group of like domestic products."[13] Further, "in the structure and design of the regulatory scheme," there must be "some systematic bias or orientation in favor of 'like' domestic products" in order to be impermissible under international trade law (Howse, 2005). Based on this description it appears as if subsidies that are differentially applied to locally manufactured products over imported products, and subsidies that can only be given to locally owned firms producing a like product to a foreign owned firm, could be contested.

One subsidy-related dispute that has been brought by the US against China under the WTO concerns China's value-added tax (VAT) for domestically-produced or designed integrated circuits (ICs). The claim was that Chinese companies are entitled to a partial refund of the 17 percent VAT levied on all ICs, resulting in a lower VAT rate on their products. The US claimed this constituted China subjecting imported ICs to higher taxes than domestically produced ICs, and therefore was giving less favorable treatment to imported ICs. China agreed to amend these measures and the dispute was settled.[14]

There have been examples within the GATT/WTO regime where the domestic policy concerns of its member states, including concerns regarding environmental protection and natural resource

[12] India appealed this finding, then subsequently withdrew its appeal. In November 2002, one year after the ruling, India informed the WTO that it had fully complied with the recommendations of the dispute settlement panel (WTO, 2006).
[13] Relevant WTO language on subsidy agreements includes the GATT, Article III:4, and the Agreement on Subsidies and Countervailing Measures (SCM).
[14] Dispute DS309: China-Value-Added Tax on Integrated Circuits.
http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds309_e.htm

preservation, have been accommodated, even when preferential treatment is involved.[15] Another example is the Agreement on Agriculture in which member nations have made specific exceptions for domestic agricultural subsidies. Although it is possible that policies that differentially support renewable energy over traditional energy sources might meet an exemption for environmental reasons, it is unlikely that such a distinction could be made between domestically manufactured renewable energy technology and imported renewable energy technology.

The SCM also refers to some particular subsidies that are deemed non-actionable (i.e., that cannot be contested), notably including some R&D and environmental subsidies. The safe harbor for these classes of subsidies has since expired, but a negotiated alternative has not yet been developed (see Howse 2005). As such, while R&D subsidies focused on local IPR may now be actionable, it seems unlikely, given the widespread use of such subsidies and the unsuccessful negotiations so far, that a WTO member would contest the use of such policy tools at this point.

In general, Howse (2005) notes that beyond export subsidies and subsidies tied to domestic content requirements – which are explicitly disallowed under WTO rules – there has been relatively little interest in contesting other subsidies provided by member nations (except in the context of agricultural subsidies).

4. Implications for China's Wind Industry Policies

Based on the above summary of the WTO and an initial review of how regulations in other industries that are similar to those in China's wind power industry have been treated under the policies of the WTO, the following preliminary analyses of the possible international trade implications of these wind power policies are offered.

Inequitable Import Tariffs – Customs duties that favor or disfavor the import of wind turbines or components have been used in the past in China. Such tariffs could be considered a trade barrier and be contested under WTO, as evidenced in the ongoing auto parts import tariff dispute brought against China by the US, EU and Canada.[16] However, because the present tariff for wind power components is relatively low (typically less than 10 percent, as opposed to the 25 percent tariff that was challenged on automobile components), it seems somewhat unlikely that another country will challenge China on this basis alone.

"Mandated" Technology Transfer – Requiring companies to transfer technology violates China's accession agreements with the WTO. In practice, however, when required technology transfer is accompanied by significant Chinese sales opportunities for foreign companies, experience has shown that such requirements will often not be contested under international trade law. Most if not all examples of mandated technology transfer (gas turbines, automobile

[15] For example, Article XX of the GATT states that its regulations should not be construed to prevent the adoption or enforcement by any contracting party of "measures necessary for the protection of human or animal life and measures in relation to the conservation of exhaustible natural resources" (GATT, Article XX).

[16] Tariffs that are differentiated based on the environmental characteristics of the product are less likely to be actionable under the WTO, but import tariffs that are intended to support local manufacturing for industrial development purposes—even renewable energy technologies—may not receive the same treatment.

technology, wind turbine technology) have been accompanied by arrangements that give the transferor significant, often prearranged access to the Chinese marketplace. If this practice were to change, and regulations were adopted requiring the transfer of technology in order for foreign companies to do business at all in China (but without as significant or certain a sales opportunity), this would very likely become the subject of a trade dispute under the WTO.

Local Content Requirements – The acceptability of policies that mandate the use of local content may depend somewhat on how they are structured. For example, if the use of locally manufactured technology, such as wind turbines, is one of several criteria used to select wind power projects for development, it remains unclear whether such an evaluation protocol could be successfully contested under international trade law. However, strict minimum criteria for local content applied universally (as in China's current 70 percent local content requirement for Wind Concessions as well as other large wind projects) could most certainly be contested under the WTO, as the agreements surrounding China's WTO accession clearly stated that its regular practices of mandating local content in many sectors were to be discontinued. They could also be contested under GATT Article III, which India was found in violation of in a local content dispute in the auto sector.[17]

Although accession to the WTO clearly committed China to discontinue its regular practices of mandating local content in many sectors, the ongoing use of local content requirements in China's wind turbine industry have yet to be contested under WTO. (Similar local content requirements have also been utilized for wind development in Canada, Spain and Brazil). It is likely that local content requirements have not been challenged in these cases because the wind industry is still relatively small compared to other industries—such as passenger automobiles—and therefore the overall stakes are not as high. In addition, the current structure of local content requirements allows foreign companies to maintain control of the intellectual property rights associated with their technology, even if their manufacturing facilities must shift to China. In many cases, local manufacturing can contribute to cost reductions in technology production, and therefore provide an actual benefit to the company. Consequently, international turbine manufacturers must weigh their options: either meet the challenge of a 70 percent local content requirement in return for access to the potentially large Chinese wind power market, or attempt to challenge the requirement through a WTO dispute. When such local content requirements limit a company's ability to do business, they are most likely to be contested; to date, local content requirements imposed on foreign wind turbine manufacturers apparently have not posed significant limitations.

Policies that mandate the use of products containing locally-owned intellectual property could be viewed as an extension of mandating the use of locally manufactured products. Consequently, they could be contested on the grounds of violating not only WTO agreements on local content, but also agreements forbidding the differential support of domestic over imported products, and possibly the TRIPS as well, since such a policy goes against common international rules governing the protection of intellectual property. One main difference between policies that mandate local manufacturing/local content, and policies that mandate the use of products containing local intellectual property, however, is that mandating the use of local intellectual

[17] This is not meant to be an exhaustive list, but rather a selection of examples of agreements that may be relevant to this discussion.

property is much more damaging to foreign firms. Since the only way to define "local intellectual property" is intellectual property held by a locally owned firm, this largely excludes the participation of foreign owned firms from the market. Under such a policy, there are few scenarios in which foreign firms can compete with local firms. Therefore, it seems much more likely that IPR requirements would be contested under WTO because of their potentially negative impacts on foreign turbine manufacturers.

Domestic Subsidies – Determining whether subsidies (whether financial, tax, or otherwise) to support renewable energy are permitted under current WTO rules is somewhat complicated. If such subsidies explicitly support the export of domestic products or are tied to domestic content requirements, then they likely would be found in violation. For other subsidies, if they are found to differentially support domestic products over like imported products in a systematic way, this could also be considered a violation. According to Howse (2005), these domestic subsidies are problematic if it can be shown that there is a financial contribution by government and a competitive advantage conferred on the recipient. In addition, the subsidy must be "specific" and cause certain defined "adverse effects." Policies that direct "subsidies" toward Chinese wind turbines—whether in the form of support for R&D, demonstration projects, reduced taxation, or subsidized electricity purchases—could consequently be problematic. However, since R&D support is widespread around the world in WTO member countries, these programs are unlikely to be contested so long as they do not restrict the ability of foreign turbine manufacturers to compete in the larger Chinese market.

5. Conclusions

As China's wind power market grows and the financial stakes increase, international trade disputes become more likely. Many of China's current and proposed wind industry policies concerning import tariffs, technology transfer, local content, and domestic subsidies could become the subject of trade disputes if believed to violate current WTO agreements by other WTO member countries. Local content requirements for wind turbine technology are perhaps most clearly at risk of being the subject of an international trade dispute, but since many international wind turbine manufacturers are already in the process of meeting these local content requirements and have not yet brought such a challenge, a dispute is perhaps unlikely in the near term. Proposed local intellectual property requirements for wind turbine technology may pose the greatest risk of catalyzing a trade dispute since they would likely exclude foreign firms from the Chinese wind power market to a far greater extent than current and past requirements.

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