



**China's Strategic Trade Policy  
Industry-Specific Trade and Investment Measures in the Value Chain  
of the Crystalline Silicon Photovoltaic Industry in the Age of WTO  
Legislation**

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AP	Protocol on the Accession of the People's Republic of China
CAGR	Compound Annual Growth Rate
CSPV	Crystalline Silicon Photovoltaic
CTC	Customs Tariff Commission of the State Council
DOC	United States Department of Commerce
DSB	Dispute Settlement Body
EXIM	Export Import Bank of China
FIE	Foreign Invested Enterprise
GAC	General Administration of Customs of the People's Republic of China
GATT	General Agreement on Tariffs and Trade 1994
GOC	Government of China
HNTE	High- and New Technology Enterprise
LTAR	Less than Adequate Remuneration
MOFCOM	Ministry of Commerce of the People's Republic of China
MSP	Minimum Sustainable Price
NDRC	National Development Reform Commission of the People's Republic of China
SASAC	State-owned Assets Supervision and Administration Commission of the State Council
SOE	State-Owned Enterprise
WTO	World Trade Organization



## 1 Introduction

In 2016, the European Union (EU) and the United States (US) decide on whether to grant market economy status to the People's Republic of China, following a deadline in China's Protocol on the Accession (AP) to the World Trade Organization (WTO). EU trade commissioner Karel de Gucht has pointed out that the European community treats the issue purely as a technical question and that its decision is based on several criteria set out in EU anti-dumping regulations. One requirement is that the government of China (GOC) does not influence the operative decisions of firms, and that these only act according to market signals (O'Connor, 2011). However, during the decade of China's WTO membership, several trade disputes have shown that the country has resorted to trade policy interventions in various cases, and several academic papers have claimed that these were strategic. This paper adapts Brandner's definition that a strategic trade policy is "trade policy that conditions or alters a strategic relationship between firms" (Brandner, 1995, 1).

O'Connor (2011) finds that many of China's "market sectors operate within the framework of the five-year plans, which encourage some sectors and discourage others". In der Heiden (2011, 1) uses evidence from the iron and steel industry to illustrate that Chinese sectoral industrial policy "carefully and discretionarily promotes global integration in some areas while delaying it in others". Azza (2011) concludes that China's passenger vehicle automobile sector was subject to strategic trade policy following the rationale of infant industry protectionism. Haley et al. (2013, 74) find that government subsidies bolstered "the explosive growth of China's glass and glass products industry" (Haley et al., 2013, 74), and that "government subsidies and loans have provided strong support for the paper industry's expansion" (Haley et al., 2013, 96). Furthermore, Haley et al. (2013, 57) find that government subsidies to the steel industry "fell in 2002 and 2003, immediately after China joined the WTO; however the subsidies surged in 2004 and have continued to grow exponentially since then, corresponding to China's rise as the largest producer and exporter of steel".

Most of the industries that academia identified as being subject to China's strategic trade policy are highly mature and the aspect of WTO legality is often ignored. Nevertheless, it appears that in recent years a relatively small growth industry has moved into the focus of China's trade policy: the crystalline silicon photovoltaic (CSPV) industry. China's Tenth Five-Year Plan (2001-2005) determined that "China will actively develop new energy and renewable energy such as wind, solar and geothermal power" (Wiley Rein, 2011a, 6), and this engagement was continued in the Eleventh Five-Year Plan (2006-2010), which promoted "actively developing and utilizing solar energy" (Wiley Rein, 2011a, 9). In late 2009 and 2011, two legal filings claimed to have identified non-WTO-compliant trade and investment



measures related to products relevant at different stages of the CSPV value chain. These are namely the WTO dispute *China - Measures Related to the Exportation of Various Raw Materials* and the *Petition to the United States Department of Commerce (DOC) by SolarWorld Industries America Inc.* Both filings led to in-depth investigations into China's use of trade policy instruments, and the final investigation results were partly published in early 2012 and 2013.

This paper reviews and combines the results of these two legal sources to answer the following leading question: How has China strategically employed industry-specific trade and investment policy instruments throughout the value chain of the CSPV industry that are not in compliance with its WTO obligations?

## 2 Setting the Scene: The CSPV Value Chain and Industry Development

Haley et al. (2013, 158) separate the value chain of CSPV module manufacturing into five steps, each with different industry characteristics as suggested in Table 1.

*Table 1: Global PV Annual Installations 2000-2012 (in MW)*

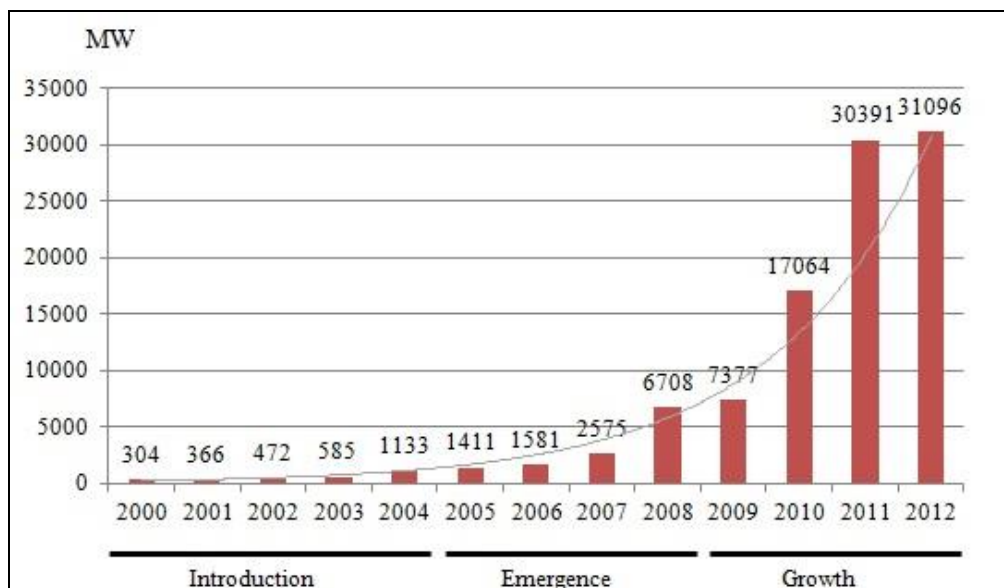
	Product	Process	Industry Characteristics
<b>Upstream</b>	Polysilicon	Quartz silica changed into polysilicon	Oligopolistic - 5-10 companies - High entry barriers - Vast supply of raw material inputs
<b>Midstream</b>	Wafer	Silicon ingots cut into wafers	Limited Competition - About 50 companies - Medium to high entry barriers - Dependence on polysilicon supply
	Cell	Circuitry out on wafer	High Competition - About 100 companies - Low entry barriers (labour intensive) - Essential step for power generation
	Module	Cells placed on glass and made into panels	High Competition - More than 400 companies - Low entry barriers (low investment and technology requirements)
<b>Downstream</b>	Shipping and Installation	Solar panels installed	Fragmentation - More than 5000 companies - Requires financing and connections

*Source: Haley et al. (2013, 158)*

For more than a decade, the CSPV industry has faced a remarkable exponential increase in global demand for finished modules, which led to rampant growth along the value chain. Upstream activities, involving (1) the production of polysilicon and crystallisation, were just as affected as midstream activities, including (2) the production of wafers, (3) cell conversion and (4) the assembly into modules, packaging and inspection. Eventually, the main downstream activity, consisting of (5) shipping and installation of finished modules surged, as total annual PV installations increased from 304MW in 2000 to 31,096MW in 2012, which accounts for an average compound annual growth rate (CAGR) of 47 percent.

The share of CSPV products of total demand has been particularly high, as it accounted for roughly 95 percent of total production during this time period (He et al., 2013, 395). To enhance comprehensibility in the further course, these twelve years of market development are divided into three phases: the introduction phase (2000-2004), emergence (2005-2008) and the growth phase (2009-2012), as depicted in Illustration 1.

*Ill. 1: Global PV Annual Installations 2000-2012 (in MW)*



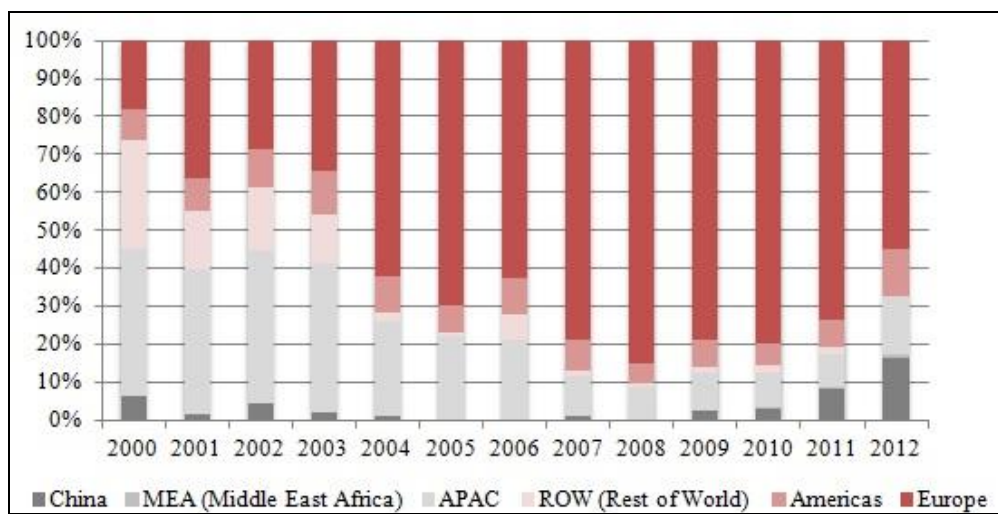
*Data Source: Latour et al. (2012, 14)*

While demand for PV installations grew on a global level, the pace diverged strongly between different world regions, as suggested in Illustration 2. While European demand accounted for only 18.4 percent of the global market (56MW) in 2000, it had risen to 85.1 percent (5,710MW) by 2008, before falling back to 55.2 percent (15,159MW) in 2012. Thus, the solar boom was increasingly driven by European demand during the introduction and emergence phases, which be led back to several government incentives, resulting from a stronger focus on environmental policies on the continent. On the forefront of this development, the



German government introduced the Erneuerbare-Energien-Gesetz in 2000<sup>1</sup>. However, triggered by the 2008 financial crisis and the following Euro crisis, several PV development schemes were reduced or terminated in an effort to cut down on EU members' national government spending, which led to a decreasingly dominant role of Europe in PV markets. In contrast, China's PV power market was historically small and restricted by relatively high costs of PV installations. The majority of the country's demand focused on off-grid electrification projects in rural areas, which only allowed for a small amount of annual installations. In 2009, the country's demand accounted for a mere 160MW (2.2 percent of the global market). However, China's PV installations surged to over 5,000MW (16.1 percent) in 2012, equalling a CAGR of 215 percent. This can be explained by a domestic introduction of PV development policies as a response to weakening demand from Europe and foreign countervailing duty threats concerning Chinese solar products (He et al., 2013, 394-95).

*III. 2: Regional Shares of Global PV Annual Installations 2000-2012 (in MW)*



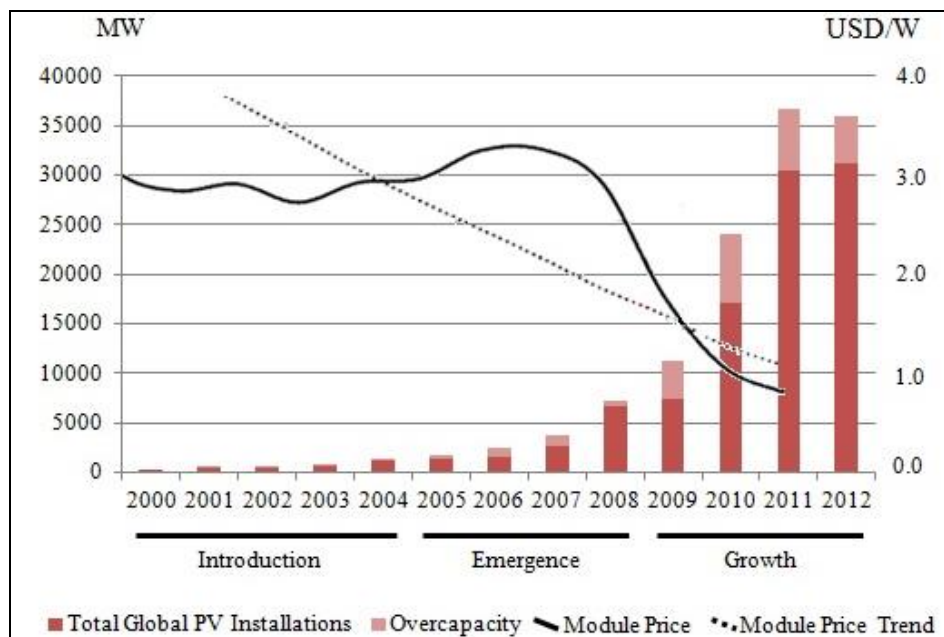
Data Source: Latour et al. (2012, 14)

The strong PV demand increase correlates to a similar exponential supply growth. While in 2000 global production of PV modules equalled only about 300MW, it amounted to a vast 31,096MW in 2012, resembling a CAGR of 50 percent. A surge in absolute production quantities particularly during the growth phase resulted in an unit price deterioration of CSPV modules by over a factor of two since 2008 (Buonassisi et al., 2013, 1). This unit cost reduction resulting from increasing production quantities points to the establishment of economies of scale and learning economies during the growth phase, and again triggered a rise in

<sup>1</sup> The Erneuerbare-Energien-Gesetz incentivised the production of renewable energies amongst others through higher feed-in tariffs. The demonstration of large scale usability of PV in Germany, as well as a price reduction through intensifying competition led to policy adjustments in other countries of the single European market, such as Italy, Spain, France, Belgium and Greece. These amplified the subsidization effects and led to a higher urban-residential use of government-subsidised PV in Europe up to 2008.

global demand. However, another reason for the price decline can be found: Recapturing that annual PV installations grew at a CAGR of 47 percent over the observed time period while production had a CAGR of 50 percent, it turns out that annual supply growth outperformed demand by 3 percent on average. This resulted in oversupply. The amount of overproduction was subject to relatively high volatility in the introduction and emergence phases, ranging between a minimum of 1.4 percent (5MW) of module production in 2001 and 21.9 percent (164MW) in 2003. However, overproduction peaked at 34.8 percent (3,938MW) in 2009 and since then has continuously decreased in relative terms due to market consolidation and a reduction of European government programmes. Yet, overproduction averaged at 23.6 percent during the growth phase, which also constitutes the highest total amounts. Illustration 3 suggests, that increasing total overproduction accompanied the price deterioration during the growth phase.

*Ill. 3: Global PV Module Supply, Overproduction and Price 2000-2012  
(in MW and USD/W)*

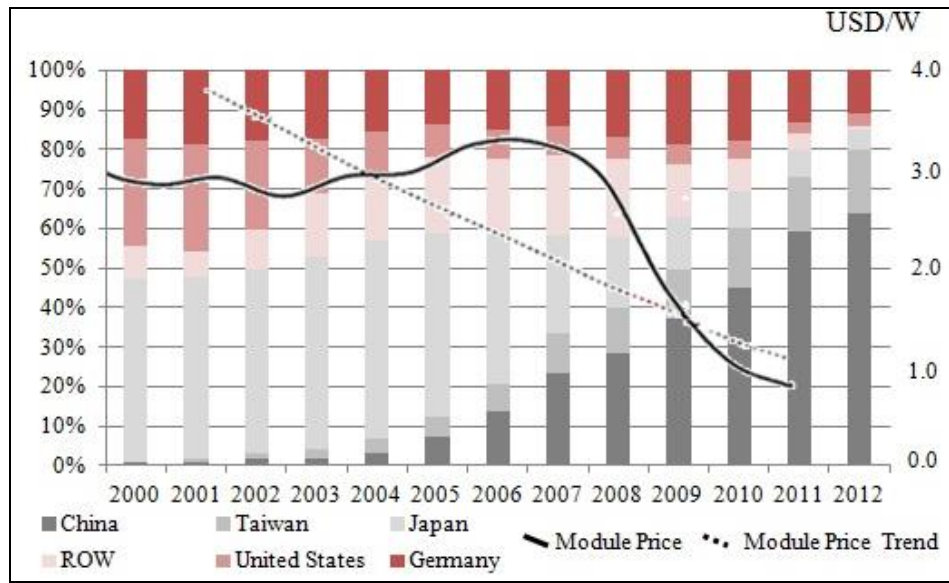


*Data Sources: Earth Policy Institute (2011), Mehta (2013), Buonassisi et. al (2013, 2)*

From a regional point of view, a vast shift of market shares can be observed, as depicted in Illustration 4. While in 2000 only 0.9 percent of all PV modules were produced in China, the number had only slightly increased to 3.3 percent by 2004. However, in the following years, China's PV companies continuously took over more market share until they reached a dominant position of 64.0 percent in 2012. While firms from all other producing countries have lost market share since the end of the introduction phase (except for Taiwanese producers), producers from Japan suffered the most: Their production share decreased from 50.2 per-

cent in 2004 to only about 5.0 percent in 2012., followed by producers from the US (-8.6 percent) and Germany (-4.5 percent) in the same time period.

*Ill. 4: Regional Shares of Global PV Annual Module Production 2000-2012 (in percent)*



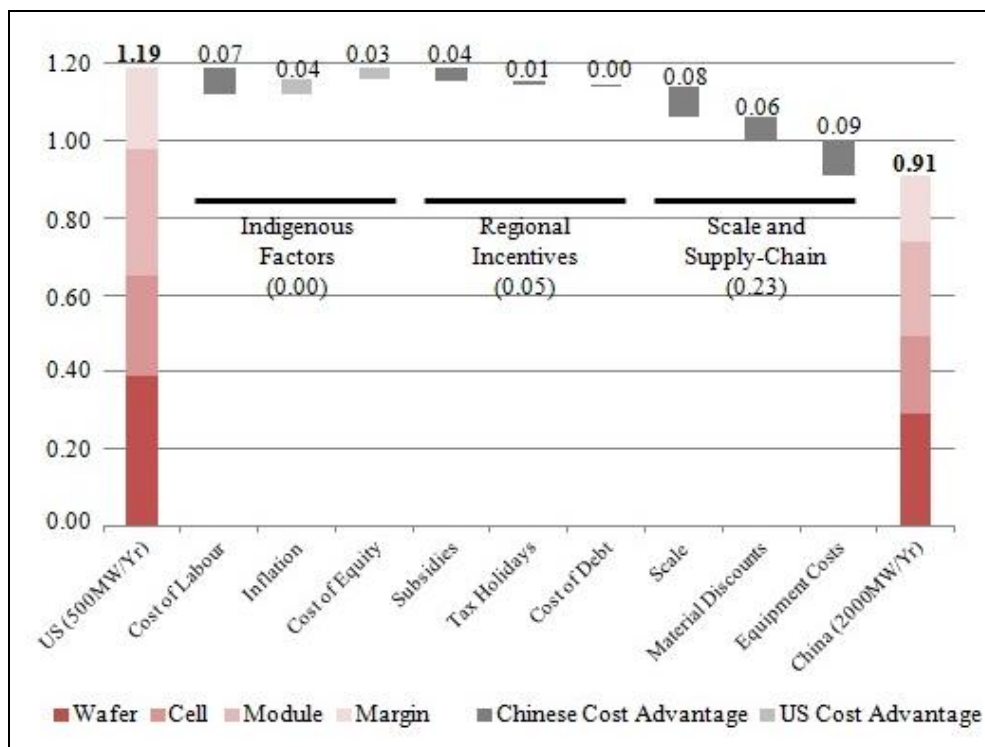
*Data Source: Earth Policy Institute (2011), Mehta (2013)*

Eventually, price deterioration in the PV market also correlates to the level of Chinese producers' market share and thus the question can be raised, which location-specific factors allowed Chinese companies to realize cost advantages that could be translated into more competitive prices. In a location analysis, Buonassisi et al. (2013, 3) estimate the minimum sustainable price (MSP) of Chinese midstream producers to be at USD 0.91 per W, while US competition exceeded the Chinese MSP with USD 1.19 per W. They find that Chinese prevalence in the market arises from regional incentives, scale and supply chain benefits, which were not available to competition abroad. In contrast, indigenous factors were "not a source of advantage for China and do not explain the striking rise of China-based PV manufacturer shipments" (Buonassisi et al., 2013, 3). All factors of the PV industry assumed to result in MSP advantages and disadvantages between the US and China are summarized in Illustration 5.

However, even though this MSP analysis provides an insight into the causes leading to cost advantages for Chinese-based PV producers, it has to be emphasized that it is only a snapshot based on 2012 data and that this analysis only includes midstream activities. Although the study accounts for supplier leverage, it ignores further upstream differentials in local raw material prices caused by China's strategic use of trade measures. At the time of data collection, the WTO had already launched several investigations about illegal Chinese trade and

investment measures concerning various raw materials industries. Furthermore, the DOC had received a petition for the imposition of countervailing subsidies against Chinese CSPV cells. Consequently, several illegal factors creating cost advantages for Chinese firms might have been reduced or terminated at the time of writing and thus been neglected. If the GOC has strategically resorted to trade and investment measures to create cost advantages, those cannot be reproduced elsewhere in times of WTO legislation without any further implications. In the following, this paper investigates how the GOC strategically employed its non-WTO-compliant trade policy tools at different stages of the CSPV value chain.

*Ill. 5: Factors of the PV Industry Resulting in MSP Advantages and Disadvantages between the US and China (in USD)*



Data Source: Buonassisi et al. (2013, 4)

### 3 Non-WTO-Compliant Trade and Investment Measures in the Value Chain of CSPV Companies in China

In the past five years, two legal cases have been filed that point to the illegal use of several trade and investment measures in China's CSPV value chain. In December 2009, the WTO dispute *China - Measures Related to the Exportation of Various Raw Materials* was filed, which gives insights into the measures imposed in upstream CSPV industries. Moreover, in November 2011, SolarWorld filed a petition to the DOC seeking an imposition of antidump-



ing and countervailing duties for CSPV cells, which further discloses illegal mid- and downstream measures. The cases further complement each other well since their periods of investigation almost overlap: While the WTO investigated into all measures in force on 21 December 2009, the DOC analyzed all measures between 1 January and 31 December 2010. In the following, several legal sources related to these two cases analyzed to create an insight into how China strategically employed industry-specific trade and investment policy instruments throughout the value chain of its CSPV industry against its WTO obligations.

### **3.1 Upstream: Raw Materials and Polysilicon**

Following the infant industry argument, Chinese government authorities have strategically supported the development of high-tech industries by generating a price differential for silicon inputs through a sophisticated system of export restrictions. The export restrictions affected silicon prices in the world market to rise, because China dominates the supplier market as 'large exporter' for silicon, accounting for 67, 65 and 66 percent of global silicon production in 2010, 2011 and 2012 respectively. Consequently, China also successfully managed to establish own players in the silicon-processing polysilicon oligopoly: While in 2006, China's polysilicon production amounted to a mere 500 tons and 95 percent of domestic polysilicon demand was imported, Chinese capacity exploded to over 60,000 tons in 2009, and 176,000 tons in 2011 (Wiley Rein, 2011a, 38-39), which amounts to a CAGR of 223 percent over a five year period. While "the majority of Chinese polysilicon markers are small and private" (GreentechSolar, 2013), several large polysilicon state-owned enterprises (SOEs) could then be used as tool to pass on cost advantages to midstream CSPV manufacturers. However, several measures employed in this system such as export restrictions on certain raw materials and industries were found to be illegal under WTO law, including various forms of silicon carbide and silicon metals amongst others (WTO, 2013). The raw material restrictions impacted China's domestic silicon supply positively, but led to scarcity abroad and thus pressurized midstream industries to move technologies and operations to China. Alternatively, foreign industries faced the risk of negative business disruptions, including closure of operations and the search for alternative suppliers (European Commission, 2012).

Firstly, China's authorities openly acknowledged that temporary export duties were imposed on selected goods during 2009 (WTO, 2011, 41), which violates Art. 11.3 of its WTO Accession Protocol (AP). With specific respect to silicon metals, the complainants of the case *China - Raw Materials* had found that the 2009 *Tariff Implementation Programme* raised the applied duty level temporarily to an applied ad valorem level of 15 percent. China's export duty system can be operated through an interplay of the general legal tariff framework and annually issued tariff plans. China's general legal framework for export duties comprises the *China*



*Customs Law and the Regulations on Import and Export Duties.* According to these, import and export duties may be imposed on any good leaving the country, unless the state council decides otherwise<sup>2</sup> (in der Heiden, 2011, 14). The administration of export duties is delegated to the Customs Tariff Commission of the State Council (CTC) and the General Administration of Customs (GAC). The GAC is charged with the supervision and control over all goods' arrivals in or departures out of the Chinese customs territory and collects duties and charges with equivalent effect (GAC, 2003). The CTC is responsible for the selection of dutiable goods, the determination of duty rates and the reporting of those to the state council for approval. These are typically announced in annual *Tariff Implementation Programmes*, which set out specific export duties applicable during a particular year<sup>3</sup> and which can be published on very short notice, e.g. the 2009 Tariff Implementation Programme<sup>4</sup> taking effect on 1 January 2009 was announced as late as 15 December 2008. "This is not to say that individually each of those measures [named in the paragraph above] is necessarily WTO-inconsistent" (WTO, 2011, 48), but the chain of measures acting in concert allowed to levy temporary export duties. Through expiry of the annual Tariff Implementation Plan, the design of China's export duty system aimed at evading the consequences of WTO legislation.

Chinese authorities did neither contest to the claims nor attempt to justify their steps (WTO, 2011, 48). They argued that these measures had already been replaced within the same year, and thus they should generally not be subject to the WTO panel's investigations (WTO, 2011, 41). However, this argumentation was refused, as WTO investigation panels were legally required to research all measures in force on the date of panel establishment, in this case on 21 December 2009. Thus, the panel did also not review whether the measures had been replaced in 2010 (WTO, 2011, 41). The GOC further argued that the imposition of export duties (and also quotas) on selected goods was generally necessary for the conservation of exhaustible natural resources facing critical long-term supply shortages (GATT Art. XI:2), and for environmental protection (GATT Art. XX), but the WTO panel denied that these defences were in line with WTO legislation<sup>5</sup> and established the obligation to remove all taxes and charges on exports (WTO, 2011, 48). Even though the country appealed, on 30 January

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<sup>2</sup> Customs Law (Art. 2, 3, 53, 55, 60), Export Quota Administration Measures (Art. 4, 9, 11, 36, 37)

<sup>3</sup> In certain cases, temporary duties are lifted earlier. This is published in circulars, such as the 2009 *Adjustment of Export Tariffs Circular* removing export duties on yellow phosphorus on 1 July 2009.

<sup>4</sup> The full title is *Notice Regarding the 2009 Tariff Implementation Programme* (State Council Tariff Policy Commission, shuiweihui (2008) No. 40, 1 January 2009).

<sup>5</sup> The WTO panel's reasoning was that, firstly, valid restrictions according to Art. XI 2:a could only be applied in the interim, not in the long-term, and only in order to relieve a passing shortage. Secondly, the wording of Art. 11.3 of China's AP did not allow China to defend its actions with GATT 1994 Art. XX as a principle. Consequently, the WTO issued its panel report on 5 July 2011, which found that Chinese authorities acted *prima facie* against Paragraph 11.3 of China's AP.





2012 "the Appellate Body upheld the Panel's recommendation that China bring its export duty (...) measures into conformity with its WTO obligations such that the "series of measures" do not operate to bring about a WTO-inconsistent result" (WTO, 2013). On 1 January 2013, China officially notified the WTO about the implementation of the DSB's recommendations (WTO, 2013).

Secondly, the WTO case *China - Raw Materials* highlights that China's export duties were combined with an export quota and licensing system to amplify the restrictive effect on selected resource exports. The complainants argued that a complex regulatory process filtered and partially restricted companies wishing to export certain raw materials. With particular respect to silicon, it was claimed that the 2009 Export Licensing Catalogue set a quota of 216,000 metric tonnes on silicon carbide exports to be awarded through bidding. This was inconsistent with GATT Art. XI:1 (WTO, 2011, 59). The WTO panel found that the legal basis for China's quota and licensing system in Art. 19 of the Chinese *Foreign Trade Law*, which states that "[China] applies quota and licensing systems to the management of goods subject to (...) export restrictions" (WTO, 2011, 73). Goods could be subject to quotas, where

"(i) they are 'non-renewable, staple-resource-type' goods; (ii) they are 'well positioned in international markets and upon the export volume of which the impact of price fluctuation is relatively little'; (iii) they are in 'oversupply, supplied in a relatively decentralized way and liable to be dumped at low price' (...) or [iv] on the basis of international treaties" (WTO, 2011, 66).

While in an ideal free market system licenses are promptly issued in an automatic manner without any disruptions through administrative procedures, the worst case scenario involves long-lasting, arbitrary and costly administrative procedures. In the case of China, companies wanting to receive an export license for certain resources have to pass through such a complex and selective two step system of quota allocation and license approval.

Under the Chinese *Foreign Trade Law*, the centralized administration of export quotas lies with the Ministry of Commerce (MOFCOM), which includes the development of drafts for relevant regulations and the oversight of their implementation. Together with the GAC, MOFCOM compiles, amends and releases annual *Export Licensing Catalogues*, which comprise listings of goods subject to explicit approval before export and their respective quota quantities. For an allocation of quotas, companies must submit their application for a certificate of quotas between 1 and 15 November of the previous year. The authorities then allocate quotas either through a bidding system or directly and may publish the decisions on export granted enterprises as late as 15 December (WTO, 2011, 62-63), which makes long-



term planning on production quantities impossible and thus has a discouraging effect for businesses.

China's *Regulation on Import and Export Administration* allows quota allocation by a bidding process, which is further regulated by the *Export Quota Bidding Measures* and *Export Quota Bidding Implementation Rules* and creates additional government revenue. The *Export Quota Bidding Committee* - under MOFCOM's supervision - sets a minimum bid price and may also set maximum and minimum bid quantities (WTO, 2011, 66). According to the WTO panel report (WTO, 2011, 68), in 2009 a minimum average unit bid price for silicon carbide exports of USD 1,300 per metric tonne was set. Furthermore, companies were required to meet a whole range of selective and arbitrary criteria to be eligible for bidding. Eligibility criteria for silicon carbides included product specific minimum requirements of registered capital of RMB 4 million, a minimum yearly export volume averaging 600 metric tonnes between 2005 and 2007 for trading companies and an average of 300 metric tonnes for manufacturing enterprises (WTO, 2011, 68). This ensured that only large established players were eligible, which are mostly SOEs. Once eligibility is awarded, the companies must submit further specific documents for review that are to testify the companies' compliance with financial or environmental laws (WTO, 2011, 69).

After the selection process, the decisions among all eligible companies are made on bidding price, which does not only ensure maximum government revenue, but again increases the export price. Only enterprises, whose proposed amounts still fall under the total quota quantity, are bid winners and receive a quota certificate. Winning enterprises must pay the entire bid price and a security deposit before an export licence is issued (WTO, 2011, 70). In a second step, companies that received a quota certificate submit an application form with further documents to the relevant authorized license issuing agency, which are supervised and inspected by the Quota Licensing Bureau. The licensing agency investigates reviews the documents for completeness and validity, but also judges whether sufficient management skills exist for successful execution of the transaction, which adds another degree of unpredictability to the entire process. Nevertheless, if granted, the relevant licensing authorities must issue the export licences within three working days. Granted export licenses are valid for a maximum time period of up to 6 months and expire at the end of the year (in der Heiden, 2011, 12).

Chinese authorities did not contest that this export quota regime applied to silicon carbides was inconsistent with GATT Art. XI:1. Nevertheless, they argued that the complainants had failed to confute the applicability of the exceptions of Art. XI:2(a). Furthermore, they tried to justify the quotas with the exceptions for general non-economic goals of GATT Art XX (WTO,





2011, 59-60). However, the WTO panel rejected the Chinese view, as the provisions under GATT Art. XX were always affirmative defences and China had failed to prove the necessity for it. It concluded that the series of measures acting in concert resulted in a restriction or prohibition of silicon carbide and contradicted Art. XI:1 (WTO, 2011, 135). The Panel's recommendation that China should bring its quota and licensing measures into WTO-compliance was also upheld by the Appellate Body. China officially notified the WTO about the implementation of the DSB's recommendations with the 2013 Catalogue of Goods Subject to Export Licensing Administration taking effect on 1 January 2013 (WTO, 2013).

### **3.2 Midstream: Wafer, Cell and Module Production**

In addition to upstream activities, the US Department of Commerce (DOC) found in an investigation that China's government authorities actively supported midstream activities of the domestic CSPV value chain through illegal subsidization (DOC, 2012a, 3). Table 2 contains all subsidies found to be countervailable by the DOC and the respective imposed minimum and maximum duty rates.

These midstream activities accompanied and amplified the effects of upstream raw material policies and eventually led to price advantages for Chinese firms against international competition in the CSPV end consumer market. In particular, the DOC found that 12 out of 32 alleged measures of a SolarWorld petition carried countervailable benefits according to US law, which is assumed to be in line with WTO legislation (DOC, 2012a, I-5-I-6). Even though precise subsidy amounts granted to Chinese firms were not published, the DOC imposed different countervailable duties based on each illegal measure, which hint to the relative relevance of each measure: the higher the countervailable subsidy rate, the higher the impact of the respective measure.

The DOC's antidumping investigation confirmed that Chinese authorities offered polysilicon at subsidized rates to CSPV producers. The world market price during the DOC's 2010 investigation period ranged between a high of USD 71 and a low of USD 53 (Wiley Rein, 2011a, 39), however, at this point in time the market price had already largely deteriorated due to increasing overproduction triggered by the scaling up of Chinese polysilicon capacity. According to Ng, (2013) "Polysilicon fetched as much as USD 450 a kilogram in 2008, luring huge capital investment in the nascent industry", which is also highlighted in Illustration 6.



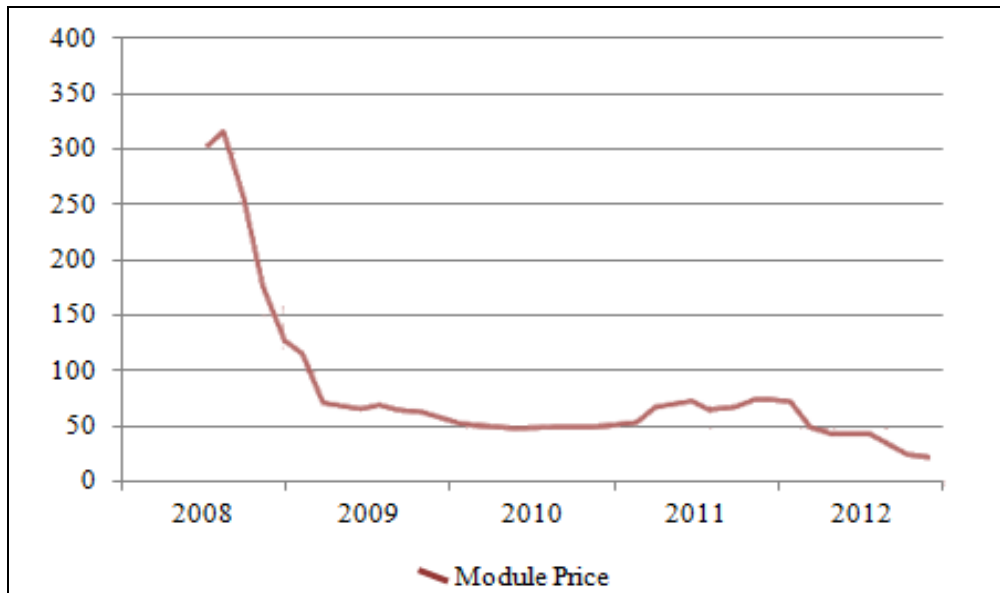
*Table 2: Countervailable CSPV Subsidy Programmes and their Respective Countervailable Rates (in percent)*

Programme	Countervailable Rate	
	min.	max.
<b>Preferential Policy Lending</b>	<b>0.89</b>	<b>1.95</b>
<b>Income Tax Benefit Programmes</b>	<b>0.43</b>	<b>1.62</b>
Two Free, Three Half Programme	0.13	0.13
Preferential Tax Programme for FIEs Recognized as HNTes	0.28	1.32
Tax Offsets for R&D Programmes	0.02	0.17
<b>Import Tariff and VAT Holiday Programmes</b>	<b>0.32</b>	<b>0.36</b>
Import Tariff and VAT Exemptions for Use of Imported Equipment	0.31	0.35
VAT Rebates on FIE Purchases of Chinese-Made Equipment	0.01	0.01
<b>Grants</b>	<b>0.40</b>	<b>0.48</b>
<b>Provision of Polysilicon, Electricity and Land</b>	<b>0.94</b>	<b>2.33</b>
Provision of Polysilicon for less than Adequate Remuneration	0.29	1.14
Provision of Electricity for less than Adequate Remuneration	0.50	0.52
Provision of Land for less than Adequate Remuneration	0.15	0.67
<b>Golden Sun Demonstration Programme</b>	<b>0.09</b>	<b>0.09</b>
<b>Export Buyer's Credit</b>	<b>10.54</b>	<b>10.54</b>

*Data Source: DOC (2012b, 11-20)*

Although the DOC's public investigation documents do not contain explicit subsidized rates, some Chinese polysilicon SOEs could break even at a market price of around USD 20, according to the management of GCL Solar (Ng, 2013), which highlights their full subsidization potential. Although the DOC identified the provision of polysilicon for less than adequate remuneration (LTAR) as an illegal subsidy and imposed countervailing rates ranging between 0.29 and 1.14 percent ad valorem, this was based on data collected during the 2010 investigation period. Considering that the world market price was much higher in previous years, the role of this kind of subsidization might not be represented accurately by these figures.

III. 6: Polysilicon Price Development 2008-2012 (in USD)



Source: Fitzwater (2011)

Furthermore, the petitioners had claimed that the provision of electricity for LTAR was arranged through provincial as well as through local authorities, who could exert influence on electricity companies through their governmental rights. Furthermore, in December 2006, the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) had categorized the electric power and grid sectors as strategic industries, which means that the state maintains absolute or sole ownership over all electric companies<sup>6</sup>. Thus, authorities also had a dominating business influence through their role as majority shareholders (Kyle et al., 2011, 33-34). According to the petitioners, electricity generated at SOEs was sold at discounted rates of up to 60 percent. After verification by Suntech and Trina Solar, the DOC confirmed that both companies "received a countervailable subsidy through purchasing electricity for LTAR" (DOC, 2012b, 14), which led to a cost advantage for their electricity-intensive production steps. Eventually, countervailable subsidy rates of 0.52 and 0.50 percent were introduced respectively.

Moreover, the DOC found that land was provided for LTAR to midstream CSPV producers, in particular to Trina Solar. SolarWorld's petition had claimed that "many CSPV cell producers have received land-use rights from the Chinese government for less than adequate remuneration or even for free" (Wiley Rein, 2011b, 47). While private companies can purchase

<sup>6</sup> On December 5, 2006 SASAC announced several strategic industries in its "Guiding Opinion on Promoting the Adjustment of State-Owned Capital and the Reorganization of State-Owned Enterprises", which gives an indication of key sectors in which China's government planned to maintain major presence. Sole ownership is considered 100 percent control, while absolute ownership is understood as majority control.



land-use rights from any holder of these rights in China, the GOC remains the ultimate owner of land. Thus, in some cases it reserves itself the right to redistribute land to industrial users, without appropriate compensation. Indeed, there are several reports in the CSPV industry, where producers have benefitted from such redistribution. For example, in 2010 the Changsha government authorities transferred about 22 acres of urban land at one-third of the official price to the CSPV cell manufacturer Hunan Sunzone Optoelectronics (Bradsher, 2010). Furthermore, reports about land distributions of 260 acres to Yingli Solar, 3000 acres to Suntech and 7000 acres to Trina Solar exist (Jones, 2013). According to Bradsher (2010), Chinese executives confirmed that subsidized land was "the rule, not the exception, for clean energy businesses in Changsha and across China." After several investigation and verification procedures, in which the GOC "made no attempt to provide the details of the particular Suntech and Trina transactions under examination" (DOC, 2012b, 7), the DOC established counter-vailable subsidy rate of 0.67 percent ad valorem for Trina and 0.15 percent ad valorem for Suntech.

In its petition to the DOC, SolarWorld claimed that Chinese CSPV companies received preferential loans and directed credit through bank lending at substantially lower interest rates than available in the EU or the US. These credits and loans took the form of direct fund transfers and conferred a benefit because they were administered on non-commercial market terms. The characteristics of China's banking system enable the GOC to provide privileged financing, since the financial sector is dominated by state-owned commercial banks and state policy banks<sup>7</sup>, which are used as an implementation instrument for government policies. SolarWorld's petition assumed that between January 2010 and September 2011, Chinese CSPV cell producers received about USD 41 billion from Chinese state-owned banks. After reviewing these claims, the DOC agreed that "there is a program of preferential policy lending specific to the renewable energy industry, including solar cells", which was counter-vailable (DOC, 2012b, 12). In its investigations, it found that Art. 25 of the *Renewable Energy Law* explicitly invoked financial institutions to offer favourable loans to renewable energy industries. Furthermore, the National Development and Reform Commission's (NDRC) *Directory Catalogue on Readjustment of Industrial Structure* listed projects of the solar energy

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<sup>7</sup> State policy banks comprise the China Development Bank, the Agriculture Development Bank and the Export-Import Bank (EXIM) amongst others (Kyle et al., 2011, 43). According to in der Heiden (2011, 18), these institutions are directly under the leadership of the State Council, and MOFCOM officially mandates them "to implement the state policies in industry, foreign trade and economy and finance to provide policy financial support so as to promote exports [... and to] support Chinese companies with competitive advantages to 'go global'<sup>7</sup>". Moreover, the state also remains largest shareholder in eleven out of thirteen major joint stock commercial banks, including the Bank of China, China Construction Bank, the Industrial and Commercial Bank of China, as well as the Agricultural Bank of China. Even though the SASAC never announced the banking sector to be strategic<sup>7</sup>, in 2009 nearly three-quarters of bank assets were under control of those banks, in which the state was at least the largest shareholder and, thus, had majority influence (Kyle et al., 2011, 43-44).



industry as eligible for support measures such as the provision of loans. On this basis, the DOC determined countervailable subsidy rates ranging from 0.89 to 1.95 percent ad valorem (DOC, 2012b, 12). The banking sector remains a possible source for illegal subsidies, as long as it is not largely privatized and government influence on the sector is diminished.

Moreover, SolarWorld's petition states that the GOC provided a broad range of *income tax holiday programmes* to CSPV producers on a national, provincial and local level, which should be classified as countervailable subsidies. However, while the petition lists about 12 non-WTO-compliant programmes, only 3 of them were found to be in conflict with legislation by the DOC and all of them were imposed on a national level. Overall, income tax benefit programmes found to be illegal were introduced on a national level with the objective of benefitting the CSPV industry and fostering technology advancement in China. Two of the three programmes specifically aimed at FIEs, which can be seen as a clear attempt to encourage foreign investment into China's midstream CSPV cell industry and as an incentive for foreign manufacturers to relocate production. Even though the relatively low individual countervailable subsidy rates point at a low relevance, the measures' efficiency is affected by the low average income of the CSPV industry. Furthermore, the simplicity of the application process contrasts sharply with the quota allocation process, which again highlights the impression that China uses disproportionate bureaucratic procedures to achieve a deterrence effect in certain situations.

Firstly, the DOC imposed trade remedies on grounds of the *Two Free, Three Half Programme*. This programme, which had already been included in the *Foreign Invested Enterprise and Income Tax Law* introduced in 1991 to encourage foreign investment, was carried over from the non-market economic system into the age of WTO legislation. It established a full income tax exemption in the first two years, and a half-of-the-income tax exemption in the following three years of profitability for productive enterprises with foreign investment (FIEs) and a minimum operating period of 10 years (Art. 8). The definition of FIEs comprised any Chinese-foreign equity or contractual joint-venture and any foreign-capital enterprise (Art. 2). Energy industries were furthermore identified as enterprises of productive nature by the *Implementation Rules of the Income Tax Law*. Even though the programme was officially terminated on 1 January 2008, a special arrangement was made for a transition period of 5 years after its termination. Enterprises, which had enjoyed preferential tax rates before the termination date, were subject to reduced income tax rates of 18 percent in 2008 which increased by 2 percent annually until the full tax rate of 25 percent was reached (Wiley Rein, 2011a, 53-54). Hence, the DOC found that the revenue forgone conferred a beneficial financial contribution to a specific group of recipients, namely FIEs. Finally, a countervailable sub-



sidy rate amounting to 0.13 percent ad valorem was determined for Suntech, since two of its subsidiaries benefitted from the scheme (DOC, 2012b, 15-16).

Secondly, SolarWorld claimed that since 2008 a Preferential Tax Programme for Foreign-Invested Enterprises Recognized as High or New Technology Enterprises (Art. 28.2 of the Enterprise Income Tax Law) was applicable to the solar industry. The legal framework for this programme had also been introduced in 1991 and aimed at encouraging technological progress and industrial development in new and high-tech sectors by attracting selected foreign high- and new technology enterprises (HNTEs). Generally, FIEs falling within the definition of HNTEs are entitled to a reduced income tax rate of 15 instead of 25 percent. Guidance on the identification and approval of high-tech status is provided in *Circular 172*, which defines HNTEs as companies that have been engaged in continuous R&D activities and transformed their technologic and scientific achievements. The circular explicitly lists those industries, which qualify for state support and has been specifically containing clean and renewable technologies since April 2008 (Wiley Rein, 2011a, 69-71). Furthermore, the petitioners also claimed that the programme had already lead to sanctions by the DOC in another case about aluminium extrusions. After its investigations DOC verified that CSPV cell producers had been designated as HNTEs under the scheme. Trina Solar and Suntech received illegal subsidies determined as beneficial financial contribution in the form of tax revenue forgone through this tax scheme. Ad valorem subsidy rates of 1.32 and 0.28 percent were consequently imposed (DOC, 2012b, 16-17).

Thirdly, the petition pointed at Tax Offsets for Research and Development Programmes according to Art. 30.1 of the *Enterprise Income Tax Law*. The programme allows eligible enterprises to deduct R&D expenses incurred in generating new technologies, products and processes from income tax. For research expenditures companies may deduct an additional 50 percent on top of the actual accrued amount from taxable income, while development expenditures may be amortized based on 150 percent of actual costs. The companies eligible for the tax offset are those conducting research in the projects covered by the HNTE list of *Circular 172* or those in *Circular No. 6*. Again, the DOC confirmed that these tax offsets formed were beneficial to HNTEs, because the GOC's tax revenue was forgone, and introduced countervailable subsidies ranging from 0.02 to 0.17 percent ad valorem (DOC, 2012b, 17).

Furthermore, the Chinese government intends to strengthen foreign investment and the introduction of high-tech industrial equipment by providing import tariff and VAT exemptions for FIEs' equipment purchases. Thus, in order to upgrade industrial technology, the GOC encouraged CSPV companies, and particularly FIEs, by exempting them from paying



VAT and import tariffs on equipment. This was an incentive for HNTes to invest in China, even though the country is not able to offer an environment which produces all high-tech components required in the CSPV production process. However, since many of the investments in equipment are made on a one-time basis, this investment subsidy had a non-recurring nature and its impact may be described as rather limited.

Import Tariff and VAT Exemptions for Use of Imported Equipment were granted in a 1997 circular<sup>8</sup>, which "exempted FIEs and certain domestic enterprises in 'encouraged industries' from paying VAT and tariffs on imported equipment used in their production and not intended for resale" (Wiley Rein, 2011a, 80). SolarWorld asserted that from 1998 to 2011, power generation through solar energy had been defined as an 'encouraged industry' by a listing in the *Catalogue of Industries, Products and Technologies Particularly Encouraged by the State*. In 2011, this listing was continued in the newly issued *Catalogue for Guidance of Industrial Structure Adjustment*. Thereby CSPV cell producers were entitled to a VAT reduction of up to 17 percent. The import tariff and VAT holiday programme is administered by the GAC and the NDRC, which issue a certificate to eligible firms under this programme (Wiley Rein, 2011a, 81). Even though authorities had already decided to discontinue the VAT and import tariff exemptions from 1 January 2009, the DOC confirmed that enterprises of the CSPV industry continued to receive import duty exemptions. It stated that "The exemptions are a financial contribution in the form of revenue foregone by the GOC and they provide a benefit to the recipient in the amount of the VAT and tariff savings" (DOC, 2012b, 18). Consequently, DOC imposed penalty rates of 0.31 and 0.35 percent ad valorem respectively for Trina and Suntech.

However, not only imported equipment was found to be subject to illegal VAT exemptions. VAT Rebates on FIE Purchases of Chinese-Made Equipment were also granted in order to attract foreign investment. SolarWorld claimed that with the introduction of 1999 measures<sup>9</sup>, Chinese authorities refunded FIEs' VAT payments on purchases of specific equipment produced in China. The programme covered all equipment under the 'restricted B' and 'encouraged' categories of related catalogues<sup>10</sup>. In contrast to the exemptions for imported equipment, these refunds were strictly limited to FIEs, which underlines the GOC's aim of attracting foreign investment by offering concessions for certain equipment acquisi-

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<sup>8</sup> Circular of the State Council Concerning the Adjustment in the Taxation Policy of Imported Equipment, GuoFa, No. 37, Dec. 29, 1997

<sup>9</sup> Interim Administrative Measures on Purchase of Domestic Equipment Projects with Foreign Investment, Guo Shui Fa 1999, No. 171

<sup>10</sup> Notice of the State Council Concerning the Adjustment of Taxation Policies for Imported Equipment and the Catalogue of Key Industries, Products and Technologies Encouraged for Development by the State





tions, but which also constitutes a subsidy to selected Chinese equipment producers. The application procedure for this tax benefit can be described as fairly straight-forward: "These VAT rebates are provided upon the presentation of documents demonstrating FIE status" (Wiley Rein, 2011a, 82). During the DOC's investigations, Trina Solar and two of Suntech's subsidiaries admitted to having benefitted from the programme, which was identified as countervailable subsidy. However, the DOC imposed a rate of 0.01 percent only, which highlights the low impact of this specific programme.

Lastly, SolarWorld's petition assumed eight *grant programmes* to be illegal under consideration of WTO law (Wiley Rein, 2011a, 18-34). While Chinese CSPV companies were found not to have benefitted during the period of investigation from most of the grants listed in the petition, the DOC however discovered that "respondents had received numerous grants from provincial and local governments that were not part of any of the other programmes included in this investigation" (DOC, 2012b, 19). The financial statements of Suntech and Trina Solar, as well as their answers to the DOC's questionnaires during the examination highlighted that these grants were disbursements by the GOC. Even though lists of all government grants issued to Suntech and Trina Solar containing dates and total amounts received were made available to the DOC by the two companies, these were unfortunately not published. As a consequence, the DOC imposed countervailable subsidy rates of 0.48 percent ad valorem for Trina Solar and 0.40 percent ad valorem for Suntech (DOC, 2012b, 20).

### **3.3 Downstream: Exports and Domestic Market Deliveries**

China's downstream measures aimed at demand creation through export promotion. Export buyer's credits ensured that modules produced in China were sold in overseas markets not only at a lower price, but also to better financing conditions. This strengthened Chinese mid-stream companies through creating higher demand for their products. Following SolarWorld's petition, the DOC set the highest individual countervailing duty for Chinese export buyer's credits, which thus accounted for the most significant impact on CSPV production of all trade and investment measures. Nevertheless, the Golden Sun Demonstration programme further aimed at building up the domestic market as fast as possible, and certain midstream producers also received benefits over this programme.

In July 2009, the *Golden Sun Demonstration Programme* was launched by the Ministry of Finance, the Ministry of Housing and Urban-Rural Development and the Ministry of Science and Technology under Art. 20 of the *Renewable Energy Law* "to provide assistance to firms in the construction of photovoltaic electricity-generation projects" (DOC, 2012b, 11). The programme is a combination of technological assistance, financial support and market de-





velopment to accelerate the progress of China's domestic CSPV industry. It aims at fostering constructive PV investments in China, which reduce the costs of PV electricity generation in relation to fossil fuel. The qualification requirements are tailored to establish fast and large-scale installations of state-of-the-art technology. The Chinese government stated that eligible projects had to have "an installed capacity of not less than 300 kWh (...) a construction period of not more than one year, and an operation period of not less than 20 years (...) [and] the photovoltaic project must be technologically advanced" (DOC, 2012c, 11). While the installation of on-grid systems was subsidized with a refund of 50 percent of the total cost, off-grid systems could receive up to 70 percent (He et al., 2013, 396-397). Officially, the *Golden Sun Demonstration Programme* was announced in July 2009 to provide power supply to remote regions (DOC, 2012c, 11). However, it can also be argued that it was rolled out to quickly reduce the country's PV industry's dependence on the weakening demand from overseas markets amid rising trade frictions with the EU and USA. During the DOC's investigations, Trina Solar admitted to having received a grant under the programme for installing a CSPV energy generating project. Since the DOC found that grants under this programme provided a financial contribution, carried a benefit in the amount of the grant and were specific, it eventually imposed a countervailing duty of 0.09 percent on Trina Solar.

Furthermore, China's government uses its state policy banks to implement export credit subsidies. The DOC confirmed the petitioner's claim that China maintains countervailable export-contingent loans at preferential rates to strengthen and subsidize exports of CSPV systems in its final decision memorandum (DOC, 2012c, I-5). The products eligible for export credit programmes are generally listed in the *List of High and New-Tech Products* or the *Catalogue of Chinese High Tech Products for Export*. Since 2006, the latter has been containing solar photovoltaic power generation systems (Wiley Rein, 2011a, 84). According to MOFCOM, producers of the goods listed may receive various forms of government support, which specifically include export credit, export loans, capital support, speedy customs clearance and custom examination and insurance (Butler et al., 2012, 19). The petition specifically claims that the Export Import Bank of China (EXIM) supports buyers of Chinese CSPV systems through *export buyer's credits*. "Export Buyer's Credit refers to the medium and long-term credit provided to foreign borrowers to finance their imports of Chinese products, technologies and services. The Credit is designed to facilitate foreign importer's (or project owner's) payment at sight of commercial contract to Chinese exporters (or contractors)" (EXIM Bank, 2013). The DOC confirmed that the credit is issued at preferential interest rates and thus supports the exports of Chinese CSPV products (DOC, 2012b, 9). Generally all independent foreign importers, financial institutions or government authorized institutions qualify as eligible borrowers. While the credits do not seem to be limited by type, EXIM still sets some requirements for application. Applicants must prove a generally high credit serving capacity



and sound credit standing, issue a repayment guarantee to EXIM and be located in a politically and economically stable country environment. Moreover, the respective commercial contract's value should not fall below the value of USD 2million, of which Chinese products should cover at least 50 percent. If approved, the export buyer's credit can amount up to 85 percent of the contract value and maturity may extend up to 15 years (EXIM Bank, 2013). While detailed information on interest rates is not publicly accessible, a study of 12 projects, which received loans from EXIM, indicates that interest rates vary between 2 and 4 percent and grace periods were found to range between 3 and 7 years (Hubbard, 2007, 7). These terms can be described as extremely concessional for buyers from the US or the Eurozone, considering that the inflation rates there amounted to 2.1 and 2.5 percent respectively. On this basis, the DOC determined that Suntech and Trina benefitted from export Buyer's Credits at the rate of 10.54 percent ad valorem each. Thus, export buyer's credits are the most important single trade measure that was employed in the CSPV value chain.

#### **4 The Interplay of CSPV-specific Trade and Investment Measures**

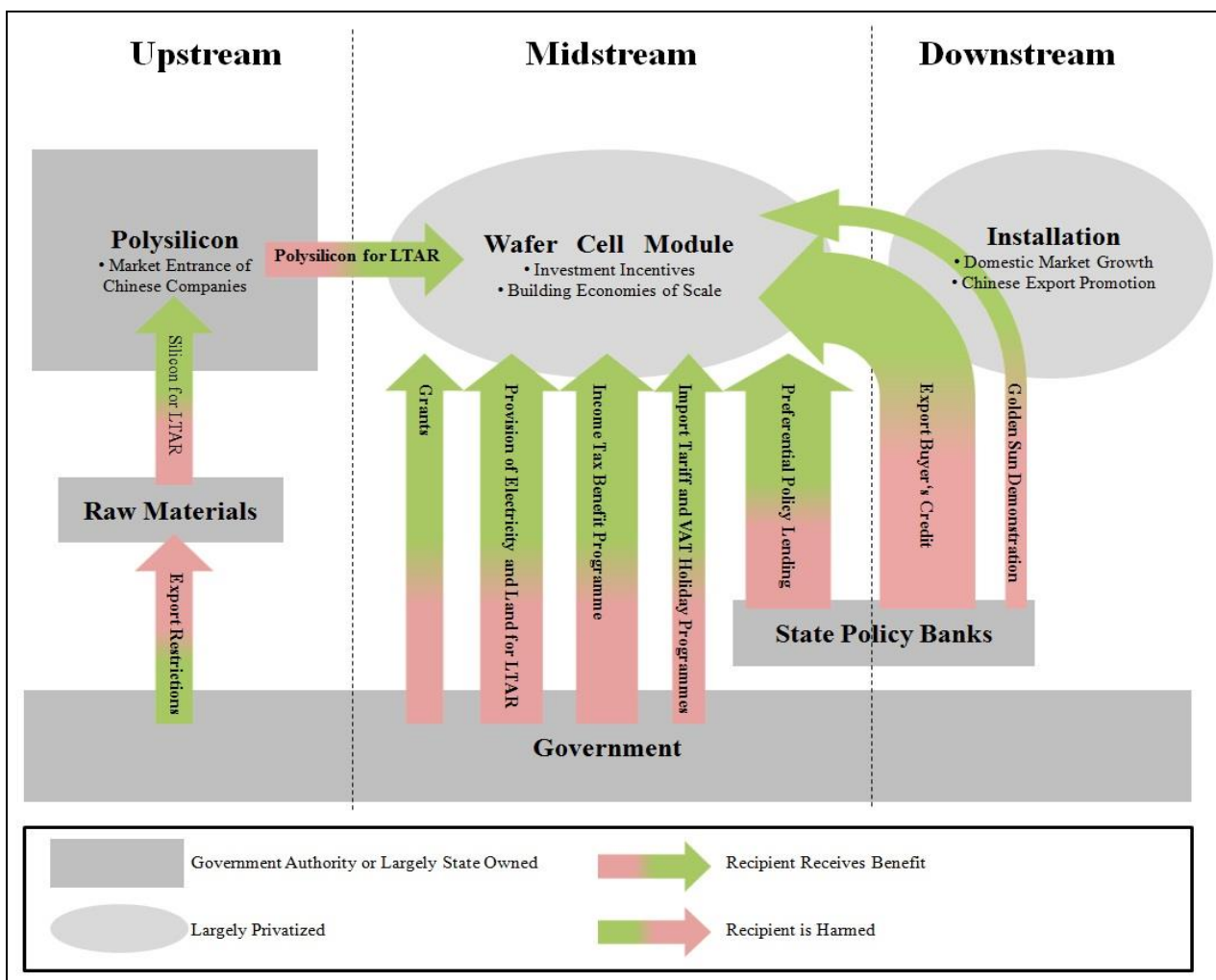
The previous sections highlighted that China has used a broad variety of non-WTO-compliant trade and investment measures to foster the emerging CSPV industry at different stages of its value chain, dominated by upstream export restraints, midstream subsidies and downstream export promotion and domestic market policies.

While export restrictions, including temporary export duties, quotas and minimum export prices, were established upstream to create raw material price differentials for polysilicon producers, these did not largely decrease the global market share of Chinese silicon producers in the short-run due to foreign firms' high dependence on Chinese supplies. Nevertheless, the input price differential of 50 to 100 percent positively affected Chinese polysilicon producers, who could buy inputs at lower prices than world competition and thus enter the industry and grow at expeditious rates. This also exerted pressure on foreign polysilicon producers, who faced business disruptions and were incentivized to move their production to China. However, considering that the polysilicon industry is oligopolistic and has high capital requirements as entry barriers, creating cost advantages for China's polysilicon industry to overcome these barriers could also be explained by economic rationales such as the infant industry argument.

However, the cost advantages created upstream could also be passed on to more value-enhancing midstream activities in the form of polysilicon provisions for LTAR, because China's silicon and polysilicon industries are largely state-owned. Together with preferential policy lending and a broad array of other illegal direct subsidies from the GOC, which helped Chinese midstream companies and particularly FIEs to offset production and investment

costs, several incentives were set for investments in midstream CSPV projects. The extent of these investments was so massively that the country's industries could not only outperform international competitors through higher economies of scale, but they also lead to overproduction and price deterioration. Eventually, China's cost advantages through illegal subsidies could be translated into lower prices, which foreign competitors could not match and which eventually drove them out of the market. China's illegal subsidization particularly harmed former world market leaders from Japan, but also from the US and Germany.

*III. 7: Non-WTO-Compliant Industry-Specific Trade and Investment Measures in the CSPV Value Chain*



Downstream, China's illegal subsidies mainly aimed at export promotion through buyer's credits to ensure that modules produced in China were sold in overseas markets not only below market price, but also at better financing conditions. This again strengthened Chinese midstream companies through creating higher demand for their products. The downstream



export financing programme accounted for the most significant illegal trade measure of the entire value chain and ensured that demand for Chinese midstream products was enhanced. Furthermore, the Golden Sun Demonstration programme aimed at building up the domestic market as fast as possible, and certain midstream producers also received benefits over this programme. The interplay of all trade and investment measures is modelled in Illustration 7.

## **5 Conclusion**

This paper illustrates that the GOC heavily intervened into the development of the entire domestic CSPV value chain and thereby resorted to a broad array non-WTO-compliant trade and investment measures. The trade measures were employed in a way that aimed at the creation of upstream price differentials, midstream subsidization and downstream export promotion. Before the GOC's illegal intervention China only had a dominant market share for silicon inputs, but the measures mentioned were interlinked in such way, that particularly midstream wafer, cell and module producers benefitted. This allowed the country to move into more value-enhancing midstream activities. China's strategic trade policy effectively altered the direction and size of trade and investment flows. The country managed to dominate CSPV production (except for the polysilicon industry) within less than a decade. Consequently, if the EU grants market economy status on the condition that the GOC does not influence the operative decisions of firms, the CSPV case is an argument to deny it.

From this paper several further conclusions can be drawn. Firstly, China's upstream SOEs play a substantial role in the country's approach to fostering selected growth industries, as they are used as an illegal subsidization tool. As long as SOEs remain under direct state control, they are a possible source of benefits granted to midstream producers, following the pragmatic directives of China's regime rather than market signals. Secondly, China's banking sector is the most significant single instrument for Chinese strategic trade policy, because the operations of several different subsidy programmes focus around it. Export financing loans originating from state policy banks such as EXIM are highly concessional and create demand for China's midstream products, which facilitates the country's move into more value-enhancing production steps. Thirdly, the GOC is generally not willing to subordinate its economic policy to WTO legislation, since it has continued to foster selected growth industries against its obligations even a decade after WTO accession. One reason for this is that the tightening of WTO rules by China's AP has limited the country's possibilities to intervene, even in situations, in which other countries would be allowed to do so. Consequently, the legal framework that the WTO has imposed on China increased number of situations, where the GOC faces moral hazard, and it might also have lowered the GOC's 'moral bar' to break trade rules. Fourthly, while the infant industry theory justifies the country's engagement to



overcome the cost advantages of international competition, it does not justify employing trade and investment measures to such an extent that China outperforms international competition. It rather appears that China seeks to create a country monopoly in a growth industry that it has identified as strategically significant. This could lead to a trade war in years to follow, if international counterparts retaliate.

Nevertheless, the US and the EU have started to take different approaches in dealing with China's strategic trade policy: The EU resorted to diplomacy, while the US aggravated the conflict. Although the EU imposed preliminary antidumping duties in June 2013, the European nations were discordant with each other about the step. The reason for this appears simple: In May 2013, China had announced to restrict chemicals and car imports into the country as a possible re-retaliation measure. Since these are industries, where Germany's export share is particularly high, the German government started to lead the opposition against a CSPV countervailing duty introduction. In contrast, France backed the introduction of duties, which resulted in China threatening to restrict wine imports. Although preliminary duties were imposed, China and the EU found a compromise in late June 2013: China offered that its CSPV companies voluntarily restrict their exports and charge a minimum export price, if the EU lifts its countervailing duties for participating firms. Nevertheless, the decision remained at the firms' own discretion (Focus, 2013). Furthermore, China's trade dispute with the United States has not been resolved at the time of writing. In September 2013, China retaliated the DOC's countervailing duties with import tariffs on polysilicon, further strengthening its efforts in this oligopolistic upstream industry. Moreover, SolarWorld filed a second petition to the DOC in January 2014, aiming to close a 'loophole' allowing China to circumvent countervailing duties (Wesoff, 2014). China's Ministry of Commerce answered by a missive stating: "China will closely follow the case, assess the impact on the Chinese solar sector and resolutely safeguard our interests through various mechanism" (Crooks, 2014).

This paper has identified and analyzed several industry-specific non-WTO-compliant trade and investment measures in the CSPV value chain. Future research should further investigate into legal tricks and other measures that allow China (and other countries) to circumvent WTO legislation. Furthermore, research should also try to measure the impact of non-industry specific trade and investment instruments such as currency undervaluation, and Chinese CSPV firm's strategic pricing. It also should be examined whether China has eventually terminated its illegal upstream measures after the WTO verdict, or whether the country only replaced them. Finally, the GOC's attempts to use structural EU weaknesses to manipulate the European community's decision making would be another field for future research.



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<sup>11</sup> To access this file, IA Access requires registration with a guest account. The file cannot be downloaded directly via the link provided. To obtain the file, please quick search for Bar Code: 3036022-01. Alternatively search for: Case No.: C-570-980, Date: 10/19/11, Title: *Petition Volume III - Part 1 of 9*.





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<sup>12</sup> To access this file, IA Access requires registration with a guest account. The file cannot be downloaded directly via the link provided. To obtain the file, please quick search for Bar Code: 3035966-01. Alternatively search for: Case No.: A-570-979, Date: 10/19/11, Title: *Petition Volume II - Part 1 of 9*.