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Management Summary

The Impact of Anti-Dumping and / or Countervailing Measures on Imports of Solar Modules, Cells and Wafers from China on EU Employment and Value Added

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Introduction

On September 6th 2012, the European Commission started an anti-dumping proceeding against China in order to investigate if the prices of Chinese manufactured crystalline photovoltaic wafers, cells and modules are dumped. On November 8th 2012, it also commenced a parallel anti-subsidy proceeding.

In its study, Prognos sets forth the effect that anti-dumping and / or countervailing duties would have on the demand for solar installations and, as a consequence, on employment and value added along the photovoltaic ("PV") value chain in the EU. We have concluded that, if anti-dumping and / or countervailing duties were imposed, these would increase the market price of Chinese PV modules, cells and wafers. This price increase would result in increased costs of installations. As a result, the viability of installing PV modules in many markets will be negatively impacted, in other words, the European PV market will shrink.

This reduction in market size will cause a commensurate decrease in installation, engineering and other related services. Moreover, upstream operators in the EU, such as production equipment producers or suppliers of raw materials and components, would suffer due to the decrease in demand from Chinese producers. EU producers of PV modules, cells and wafers might increase production and sales in certain areas but any increased employment or value added would be significantly outweighed by the much larger decrease in employment and value added that would be suffered by upstream and downstream operators.

We calculate the potential effects on employment and value added in the five major PV markets in the EU, namely Germany, Italy, Spain, France and the United Kingdom. The calculations are based on a development of demand for solar panels according to a forecast made by EPIA for the next years.

Methodological Approach

In a first step, we describe and analyse the national PV support schemes because PV markets are substantially driven by sufficient support. It was the revenue from the support schemes that allowed investors to derive sufficient revenue and return on investments from solar installations. We have determined for 2013, 2014 and 2015 the revenue that may be obtained by investors from public support schemes for three different types of PV installations (private rooftop, commercial rooftop and ground mounted).

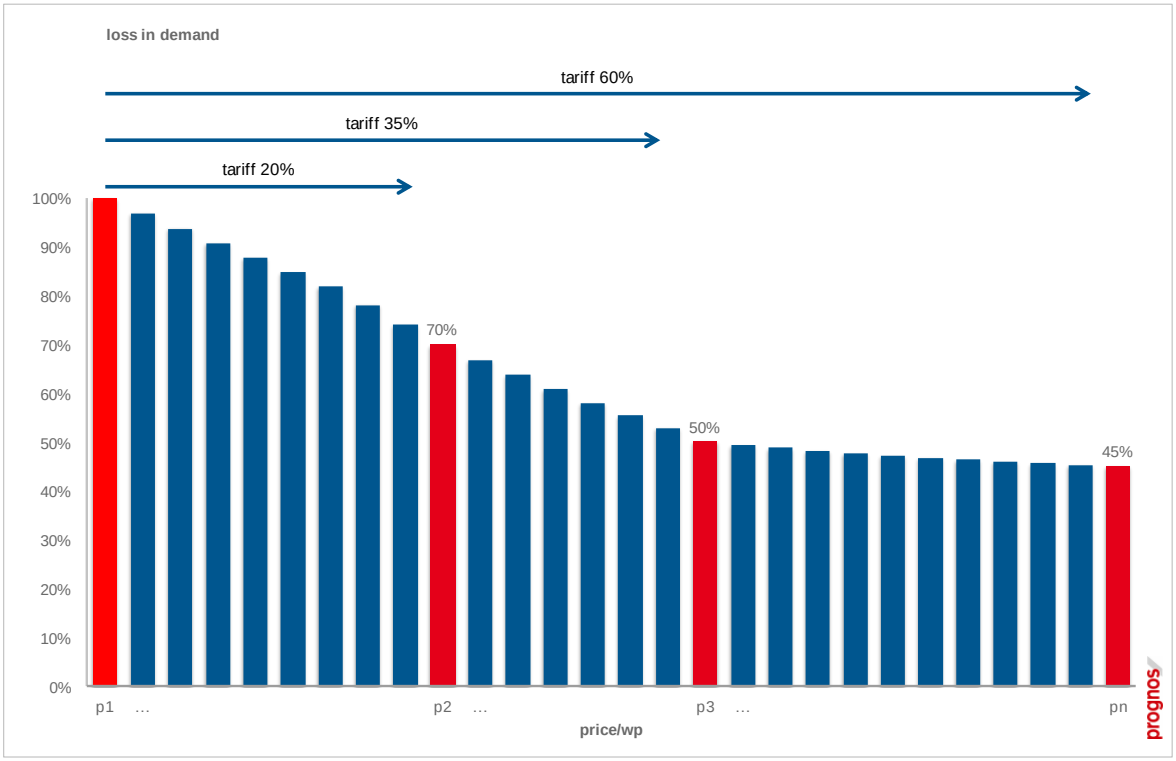
Nevertheless, because the cost of PV installations has decreased by more than 50 % in the last 5 years, grid parity between solar and other energy is in sight in some regions or EU Member States. Moreover, after the financial crisis, public support for solar installations decreased thereby decreasing the revenue for both private and commercial solar installations. Therefore, we also assess whether or not PV investments are economically feasible based merely on grid parity taking into account the revenue from the self-consumption of solar energy without any additional financial support being obtained.

We then compare the total costs of a PV system (in the energy sector so-called Levelized Cost of Energy (LCOE)) with the revenue for PV energy from these investments in the respective market segment. If the LCOE is greater than the effective revenue that the owner receives (revenue with own consumption with or without public support still being available) then the investment case is not profitable and therefore the demand for solar installations will decrease.

The calculation is carried out for PV systems using modules, wafers or cells manufactured in China and separately for systems that use modules, wafers, or cells manufactured in the European Union. Moreover, for the purposes of illustrating the impact of anti-dumping and / or countervailing duties on the European market we calculate the Levelized Cost of Energy for Chinese modules as a result of duty rates for three scenarios: (1) of 20 %, (2) of 35 % and (3) of 60 %. Taking into account the difference between the revenue and the different levels of LCOE, we evaluate the impact on the demand for solar installations in the markets concerned.

Figure 1 below shows the impact on the demand for PV products in a stylized manner. An increase of system prices as a result of the imposition of anti-dumping and / or countervailing duties is expressed as going from p1 to the highest level pn. The vertical axis shows the corresponding decrease in demand, as a result of increasing LCOEs and decreasing ROIs for investors. A tariff of e.g. 35 % leads to an increase from p1 to p3 and a market decrease of about 50 %. The Figure also shows that with **any increase** in the price level due to anti-dumping and / or countervailing duties, the demand for PV will decrease.

Figure 1: Stylized Demand curve



Source: Prognos 2013

Results

On the basis of the market size, the estimation of employment effects of anti-dumping and / or countervailing duties on the imports of solar panels from China leads to **four main findings** (see Figure 2 and 3):

1. Employment in the **solar sector in Europe** decreases because the demand for PV products decreases which results in less value added, i.e. less solar installations and less demand of BOS components.
2. Employment and value added are also affected by the **decrease of exports of raw materials and machinery** from EU Member States to China.
3. Moreover, all **other segments of the EU economy** such as the supply of engineering or other services are suffering from the decrease in demand for solar products.
4. Employment and value added in the EU may be somewhat positively affected by a limited **increase of production of solar products** in the EU.

We use dynamic Input-Output-Tables (IO-Tables) to calculate the employment effects and additional value added reductions in the European economies as a whole.

Our analysis is conducted in detail for the five major EU-countries named above. To cover the European market as a whole, the employment effect on the aggregate of the EU-27 is estimated in addition.

Impact on EU employment and value added

The anti-dumping and / or countervailing duties cause a reduction in demand which is *directly* followed, on the one hand, by a shrinking demand for installations and services and thereby results in less value added in the crafts sector. On the other hand, the supply of intermediate inputs (including raw materials, components, production equipment) from Europe to China decrease. Additionally, the IO-Tables account for the (*indirect*) value added reductions in the European economies as a whole (i.e., the impact on other sectors of the EU economy that will suffer from spill-over effects of the decreased demand for solar installations).

In our calculations, in an optimistic view, only anti-dumping and / or countervailing duties of 35% and above, may have have some positive effect on the production of solar products in the EU as their relative position in the market improves. In case the EU producers gain some market share and augment their outputs, this will lead to some increase of employment and value added in the EU. However, this positive impact is dwarfed by the impact of the loss of demand for solar products and the spill-over effects this has for the EU solar value chain and the other branches of the EU economy linked thereto. This study demonstrates (Figure 2) that anti-dumping and / or countervailing duties would have a negative impact on employment in the EU with 115,600 (scenario 1) to 193,700 (scenario 3) jobs being lost within the first 12 months. However in the third year, the total job losses would range between 175,500 (scenario 1) and 242,000 (scenario 3). As these job losses have to be interpreted as an average over the three year we conclude that 218,200 jobs are at risk in the EU Member States.

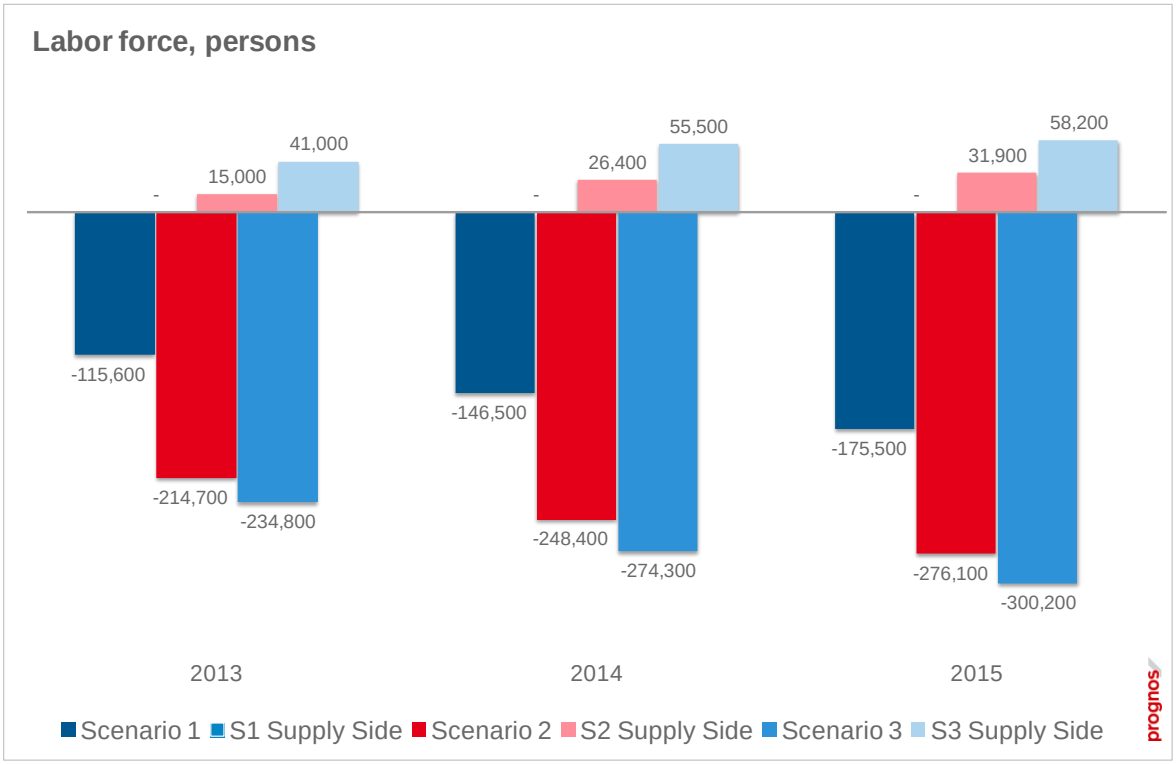
The job increases as a result of increased production of EU solar products represent at the very most 17-20 % of the jobs lost along the PV value chain due to the imposition of anti-dumping duties.

Losses in value added in the EU would be also be very significant. Figure 3 shows that these would range between € 4,740 million and € 7,500 million (scenario 1) and € 7,860 million and € 10,220 million (scenario 3) from the first to the third year of implementation of the duties. In total over three years € 18.4 billion would be lost in scenario 1 and € 27.2 billion in scenario 3.

If, as mentioned above, in an optimistic view EU producers can somewhat increase their production, the additional value added might be between 10% to not more than 20% of the loss in value added along the PV value chain shown in Figure 3 below.

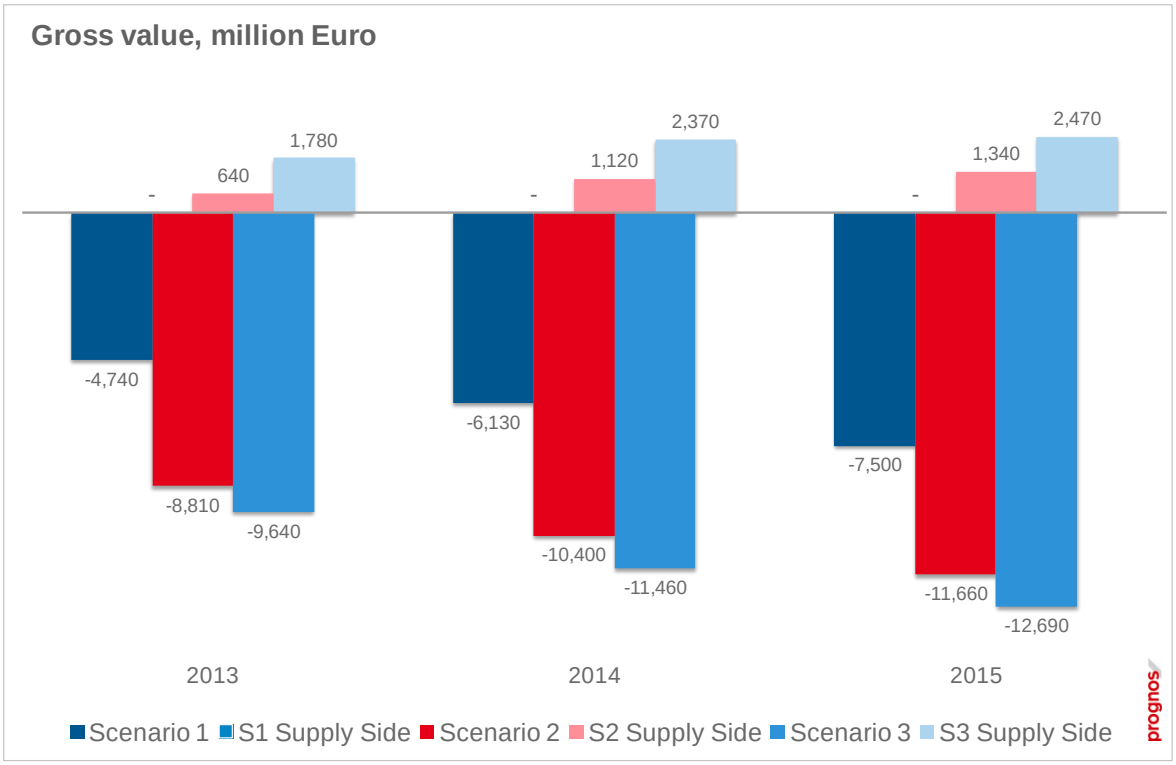
Irrespective of the three scenarios which are given for illustration purposes, we conclude that, **any imposition of a duty at whatever level** will cause demand for solar installations to decrease thereby triggering important losses of jobs and value added.

Figure 2: EU-27 reduction in labor force 2013-2015 including effects on supply side



Source: Prognos 2013

Figure 3: EU-27 reduction in gross value 2013-2015 (Mio. €) including effects on supply side



Source: Prognos 2013

Annex

Table 1-3 summarize the main findings of our calculations of the impact of duties on employment and value added along the PV value chain (before offsetting of potential gains in employment / value added at the level of the EU producers which would only occur as from Scenario 2 as shown in Figures 2 and 3 above) in a breakdown for the five major countries:

In **Scenario 1**, on average over the years 2013-2015 about 107,600 jobs are put at risk in the EU-5 where **especially Germany (-54,700 jobs), Italy (-21,400 jobs) and the UK (-16,700 jobs)** are concerned. The corresponding loss of value added sums up to € 13.6 billion for the EU-5 over the next three years. Especially Germany loses more than € 7 billion.

In the **Scenarios 2 and 3 these numbers are significantly higher** as the demand shrinks to a greater extent according to Figure 1 above.

Table 1: Main findings in terms of gross value (Mio. €) and labor force including effects on supply side, ***Scenario 1***

	2013	2014	2015
EU-5			
gross value (million €)	-3,530	-4,500	-5,530
labor force	-86,000	-107,500	-129,400
GER			
gross value (million €)	-1,930	-2,190	-2,900
labor force	-45,500	-51,300	-67,400
ITA			
gross value (million €)	-650	-850	-790
labor force	-18,200	-23,900	-22,200
FRA			
gross value (million €)	-320	-670	-940
labor force	-5,900	-12,100	-16,900
SPA			
gross value (million €)	-100	-170	-170
labor force	-2,200	-3,700	-3,600
UK			
gross value (million €)	-530	-620	-730
labor force	-14,200	-16,500	-19,300
EU-27 (deducted from EU-5)			
gross value (million €)	-4,740	-6,130	-7,500
labor force	-115,600	-146,500	-175,500

Source: Prognos 2013; Between the table 1 and the figures 2 and 3 may occur some rounding differences.

Table 2: Main findings in terms of gross value (Mio. €) and labor force including effects on supply side, ***Scenario 2***

	2013	2014	2015
EU-5			
gross value (million €)	-6,080	-6,600	-7,100
labor force	-148,600	-157,700	-167,900
GER			
gross value (million €)	-3,400	-3,280	-3,520
labor force	-80,300	-77,100	-82,200
ITA			
gross value (million €)	-980	-940	-880
labor force	-27,600	-26,500	-24,800
FRA			
gross value (million €)	-500	-940	-1,080
labor force	-9,200	-17,100	-19,500
SPA			
gross value (million €)	-150	-230	-220
labor force	-3,300	-4,800	-4,600
UK			
gross value (million €)	-1,050	-1,220	-1,400
labor force	-28,200	-32,200	-36,700
EU-27 (deducted from EU-5)			
gross value (million €)	-8,170	-9,280	-10,320
labor force	-199,700	-221,900	-244,100

Source: Prognos 2013; Between the table 2 and the figures 2 and 3 may occur some rounding differences.

Table 3: Main findings in terms of gross value (Mio. €) and labor force including effects on supply side, ***Scenario 3***

	2013	2014	2015
EU-5			
gross value (million €)	-5,880	-6,510	-7,050
labor force	-145,000	-156,700	-166,900
GER			
gross value (million €)	-3,410	-3,300	-3,610
labor force	-81,100	-78,200	-84,700
ITA			
gross value (million €)	-800	-780	-710
labor force	-22,600	-22,100	-20,100
FRA			
gross value (million €)	-350	-870	-1,060
labor force	-6,800	-16,000	-19,300
SPA			
gross value (million €)	-140	-210	-210
labor force	-2,900	-4,200	-4,200
UK			
gross value (million €)	-1,180	-1,360	-1,470
labor force	-31,500	-36,200	-38,600
EU-27 (deducted from EU-5)			
gross value (million €)	-7,860	-9,090	-10,220
labor force	-193,700	-218,800	-242,000

Source: Prognos 2013; Between the table 3 and the figures 2 and 3 may occur some rounding differences.