



**Non-Confidential**

**To** Director, Operations 3 – Australian Anti-Dumping Commission  
**From** Vivian Wang / Andrew Korbel / Andrew Percival  
**Date** 30 September 2014  
**Subject** **Dumping Investigation – PV modules or panels – Injury and Particular Market Situation**

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We refer to our submission, made on behalf of the China Chamber of Commerce for Import and Export of Machinery and Electronic Products (**CCCME**), to the Anti-Dumping Commission (**Commission**) on 23 June 2014, in which we argued against Tindo Manufacturing Pty Ltd's (**Tindo**) allegation that:

- it has suffered material injury during the period from 1 July 2012 to 31 December 2013 (**Injury Period**);
- that material injury was caused by alleged dumped exports of the subject goods from China; and
- a particular market situation exists in China's PV modules or panels market.

We submitted that

- the alleged dumped imports did not cause any material injury on the grounds that they did not cause any volume effect, price effect or profit or profitability effect, and that if Tindo did suffer any material injury (which is denied), that material injury was caused by factors other than the alleged dumping; and
- there is no evidence showing that the Chinese domestic selling price of the subject goods is so distorted as to become unsuitable for comparison with their export price, and accordingly there is no basis to conclude that there is a "particular market situation" in China's PV modules or panels market.

On behalf of the CCCME, we make further submissions in relation to the issues of "material injury" and "particular market situation" below.

**1 Summary of submission**

In summary, as explained in this document, it is CCCME's submission that:

- import data that we have now obtained from the Australian Bureau of Statistics (**ABS Data**) supports our existing contention that the allegedly dumped imports did not cause any volume effect or price effect to Tindo; and

- there is no “particular market situation” in relation to the raw materials used for the production of solar cells which in turn are used in the production of PV modules or panels. In relation to that issue, we submit that:
  - given that Tindo provided no evidence to support a finding of a “particular market situation”, the Commission’s proposed approach to assessment of the “particular market situation” question is inconsistent with WTO rules;
  - the Commission’s claimed use of its findings on “particular market situation” in the ongoing dumping and countervailing investigation into silicon metal exported from China (**Silicon Metal Investigation**) in support of its assessment of “particular market situation” in this investigation is unjustified – the products involved in the two investigations, ie Metallurgical Grade Silicon and Solar Grade Silicon, are fundamentally different; and
  - whatever may be the case with Metallurgical Grade Silicon, there is no “particular market situation” in relation to Solar Grade Silicon, which is the primary raw material used for the production of PV modules or panels.

## 2 Further Comments on injury

The further comments that we make on the question of “material injury” in this submission are based on the ABS Data to which we have had access since our preliminary submission was lodged on 23 June 2014.

According to the Commission’s Consideration Report No. 239, the goods under consideration in this investigation are PV products classified to

- 8541.40.00, statistical code 53 (**8541400053**);
- 8501.61.00, statistical code 33 (**8501610033**);
- 8501.61.00, statistical codes 24 (**8501610024**);
- 8501.62.00, statistical code 34 (**8501620034**);
- 8501.63.00, statistical code 40 (**8501630040**); and
- 8501.64.00, statistical code 41 (**8501640041**).

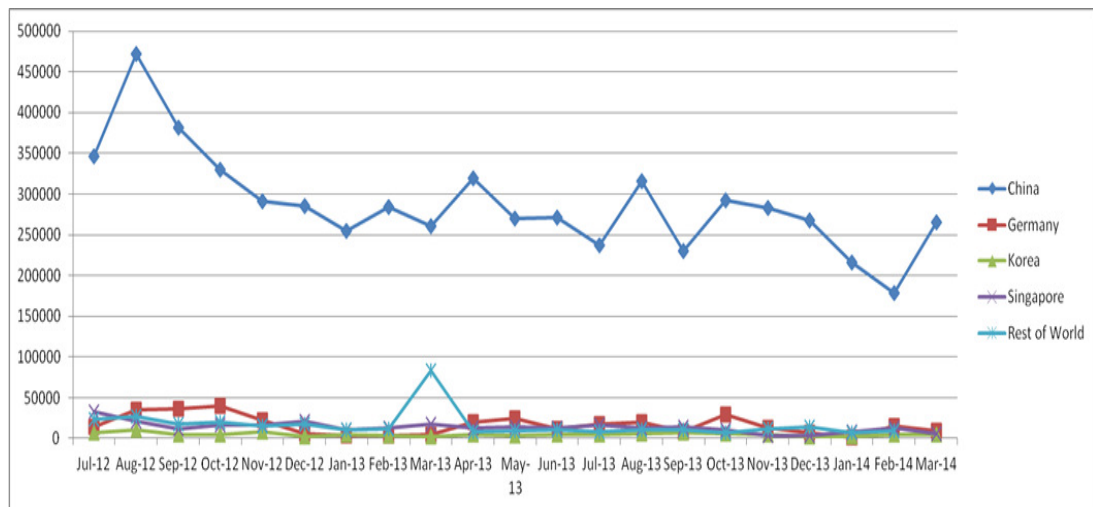
We understand that goods classified under 8541400053 are DC modules while goods classified under the other codes are AC modules.

### (a) *Analysis of volume effects*

Diagram 1.1 below shows the volume of imports of goods under 8541400053 to Australia during the Injury Period. The goods are described as “assembled solar arrays and solar cells” which, as we understand it, are DC modules.

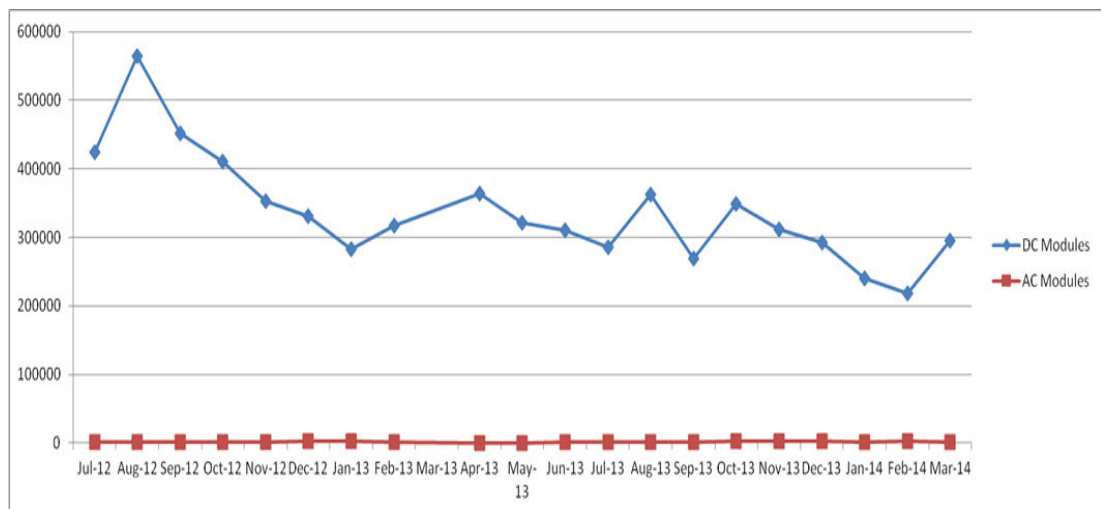
Diagram 1.1 shows that during the Injury Period,

- China was the largest exporter of DC modules to Australia; and
- China’s export of DC modules decreased significantly by 22.8%, ie from 346,772 units to 267,693 units according to the ABS Data.



**Diagram 1.1 Volume of Imports of DC Modules**

Diagram 1.2 below shows that the volume of imports of the goods under the other codes, namely AC modules, during the Injury Period was very small - less than 2,000 units in most months according to the ABS Data.



**Diagram 1.2 Volume of Imports of AC Modules and DC Modules**

The ABS Data supports the position we put on behalf of CCCME in our preliminary submission that during the Injury Period the allegedly dumped imports of the subject goods did not cause any volume effect.

We pointed out in our preliminary submission that Tindo has mainly produced AC modules, which production increased during the Injury Period despite the allegedly dumped imports. Diagram 1.2 above suggests that during the Injury Period the imports of AC modules were constantly negligible and hence could not have had any volume effect on Tindo's production and sale of AC modules. The diagram also indicates that the demand for AC modules in the Australian market has been very small, as imports were overwhelmingly dominated by DC modules. This lends support to the contention that we made in the preliminary submission, that:

*if there was any injury, that injury was at least partly the result of Tindo's focussing on AC modules rather than on the production of the more popular DC modules, for which there was much more significant customer demand.*

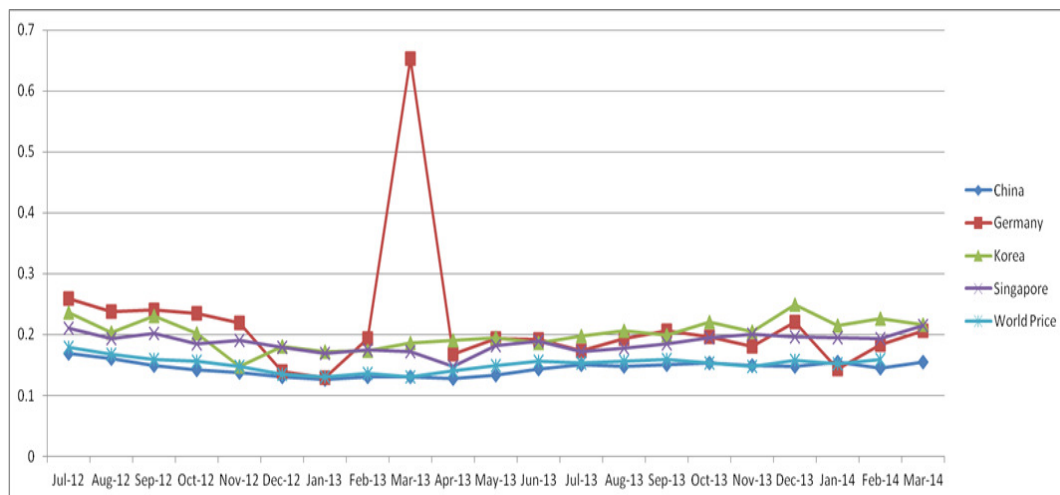
The conclusions above drawn from Diagram 1.2 are also supported by the information provided by True Value Solar Pty Ltd (**True Value**), an Australian importer, in the Commission's visit report on True Value published on 16 September 2014. In the visit report, True Value advised that while the Australian industry mainly sells AC modules, it "mainly sells DC modules, which are mass-produced in China" (page 8).

In relation to DC modules, we have shown in the preliminary submission that Tindo managed to increase its production of DC modules significantly during the Injury Period despite the allegedly dumped imports. The diagrams above show that although China was the largest exporter of DC modules to Australia during the Injury Period, its export of DC modules decreased significantly through that period. Accordingly, the ABS Data supports our contention in the preliminary submission that:

*imports of the GUC from China at allegedly dumped prices did not, and will be unlikely to, cause material injury to Tindo in so far as volume or market share is concerned.*

#### **(b) Analysis of price effects**

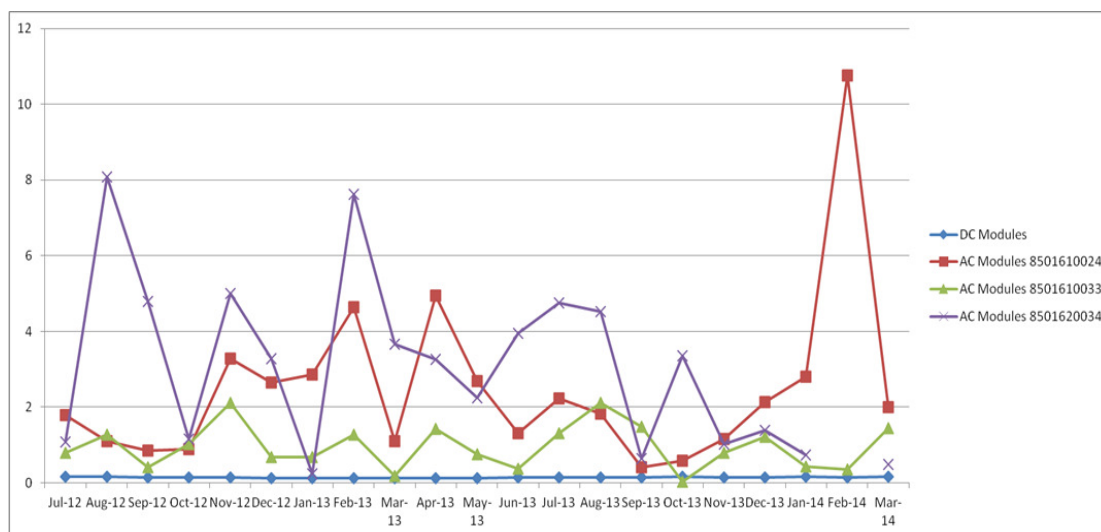
Diagram 1.3 below shows that although China's unit export price of DC modules was the lowest and similar to the world price, China's unit export price was not significantly lower than the unit export prices of the other major exporters of DC modules to Australia during the Injury Period.



**Diagram 1.3 Unit Export Price of DC Modules**

The imports of AC modules are classified into five categories, including goods under codes 8501610024, 8501610033, 8501620034, 8501630040, and 8501640041. The unit export prices vary from category to category during the Injury Period.

Diagram 1.4 below compares the unit export prices of the three main AC module exports from China (namely goods under codes 8501610024, 8501610033, 8501620034) with China's unit export price of DC modules.



**Diagram 1.4 Unit Export Price of AC Modules and DC Modules**

Diagram 1.4 shows that the unit export prices of AC modules were significantly higher than the unit export price of DC modules during the Injury Period. The price difference is probably due to the fact that AC modules are ready to be plugged into the grid by use of an on-board micro-inverter while DC modules need to be connected to a separate inverter that converts the electricity generated to AC power (p. 8, Consideration Report).

The significant price difference appears to suggest that AC modules and DC modules are in different market segments in terms of pricing and hence that it is unlikely that the price of DC modules would have any impact on the price of AC modules. This is confirmed by the information provided in the Commission's visit report on True Value in which True Value advised that AC modules are more expensive than DC modules and "are considered to be the premium end of the market...and are preferred by commercial customers" (pages 8 and 18). Further, even accepting that the price of DC modules could affect the price of AC modules, it is very unclear what the extent of such an effect (if any) might be.

In addition, given the negligible volume of imports of AC modules, it is unlikely that the export price of AC modules could actually affect Tindo's selling price of AC modules.

For completeness, we reiterate that in our preliminary submission we contended that China's exports of the subject goods did not cause any price depression or suppression to Tindo's selling price given the fact that "Tindo managed to maintain a minor decrease in price while achieving a significant cost reduction", and hence an increase in profit and profitability of both of the modules during the Injury Period.

### **3 Further comments on "particular market situation"**

#### **(a) No evidence for consideration of "particular market situation"**

In our preliminary submission, we submitted that the Commission has no evidence before it to continue to consider the issue of "particular market situation" because:

- the Commission has found that there was insufficient evidence to substantiate Tindo's claim that the Chinese domestic PV modules and panels market has been

materially distorted by the Government of China's (GOC) provision of "policy loans" and credit facilities to Chinese manufacturers of the subject goods through state-owned commercial banks at non-commercial and preferential rate; and

- in its application, Tindo did not provide any evidence in relation to the issue of whether the selling price of silicon metal, which the Commission claimed to be one of the main raw materials used in the production of solar panels, has been distorted by the influence of the GOC in the Chinese silicon metal market.

The Commission's decision to continue to consider whether there is a "particular market situation" that has distorted the selling price of silicon metal appears to be incompatible with the WTO Anti-Dumping Agreement (ADA).

Article 5.1 of the ADA provides

*Except as provided for in paragraph 6, an investigation to determine the existence, degree and effect of any alleged dumping shall be initiated upon a written application by or on behalf of the domestic industry.*

Article 5.6 allows the investigating authorities to initiate an investigation by its own initiative without a written application. However, this is not the case in the present investigation which was initiated by Tindo's written application and not by the Commission's own initiative.

Further, Article 5.2 requires an applicant to provide evidence in relation to dumping, injury and a causal link between the dumped imports and the alleged injury; and Article 5.3 requires the authorities to examine whether the evidence provided by the applicant is sufficient to justify the initiation of an investigation.

Accordingly, the Commission's assessment of the issue of "particular market situation", as an essential part of its assessment of dumping, must be based on the evidence provided in Tindo's application. Under Article 5.2 of the ADA, it is Tindo's obligation to adduce sufficient evidence to substantiate its claim on "particular market situation". Tindo provided such evidence in its application but it has been considered by the Commission to be insufficient.

As a result, the Commission should have found that there is no sufficient evidence for it to continue to examine the issue of "particular market situation". By continuing to consider whether the selling price of silicon metal has been distorted by GOC influence, the Commission has effectively and unjustifiably exonerated the applicant from its evidentiary obligations under Article 5.2 of the ADA.

**(b) Inappropriate to base on the silicon metal investigation**

Even accepting that the Commission's examination of whether a "particular market situation" exists in China's silicon metal market due to GOC influence is justified (which the CCCME denies), in our respectful submission the Commission has mistakenly identified the raw materials used for the production of solar cells which in turn are used in the production of PV modules or panels.

In the Silicon Metal Investigation, the goods under consideration are described by the Commission as follows (p. 7, Consideration Report No. 237):

- *Silicon metal containing at least 96.00 per cent but less than 99.99 per cent silicon by weight, and*
- *Silicon metal containing between 89.00 per cent and 96.00 per cent silicon by weight that contains aluminium greater than 0.20 per cent by weight*  
*of all forms (i.e. lumps, granules, or powder) and sizes.*

As such, the subject goods in the Silicon Metal Investigation are what are known as Metallurgical Grade Silicon, which are not and cannot be used as raw materials for the production of PV modules or panels. In contrast, the primary raw materials used for the production of PV modules or panels are Solar Grade Silicon. Metallurgical Grade Silicon and Solar Grade Silicon are not “like” products.

First, Metallurgical Grade Silicon and Solar Grade Silicon are fundamentally different in physical characteristics. We are instructed that while Metallurgical Grade Silicon normally contains 89% - 99% of silicon, Solar Grade Silicon requires a purity of 6N, that is, at least 99.9999% of silicon. Due to the significantly different requirements of silicon purity, Metallurgical Grade Silicon often contains major contaminations of carbon, alkali-earth and transition metals, and hundreds of ppmw of B and P,<sup>1</sup> which contaminations cannot exist in Solar Grade Silicon. In addition, in order to achieve the unique physical characteristics of Solar Grade Silicon, the technologies applied to its production are also fundamentally different from those used to produce Metallurgical Grade Silicon.

Secondly, due to their respectively unique physical characteristics, Metallurgical Grade Silicon and Solar Grade Silicon have different end-uses. Metallurgical Grade Silicon is mainly used for the production of aluminium products and chemical products such as silicones<sup>2</sup> and does not satisfy the purity requirements for the production of solar cells/wafers. In contrast, the principal use of Solar Grade Silicon is to produce solar cells/wafers with some of its top-grades being used in the semiconductor industry.

Thirdly, due to the different end-uses of Metallurgical Grade Silicon and Solar Grade Silicon, they serve different industrial consumers. As indicated above, while Metallurgical Grade Silicon is mainly used by primary and secondary aluminium producers and by the chemical industry, Solar Grade Silicon is mainly used by producers of PV products and by the semiconductor industry. Given the significant difference in physical characteristics such as purity and quality, the market price of Solar Grade Silicon is much higher than the price of Metallurgical Grade Silicon. We are instructed that Solar Grade Silicon can be 10 times more expensive than Metallurgical Grade Silicon.

Fourthly, Metallurgical Grade Silicon and Solar Grade Silicon are classified under different tariff classifications, with the former classified under 2804.61.00 and the latter under 2804.69.00. Those different tariff classifications are based on the International Convention on the Harmonized Commodity Description and Coding System, which is currently used by

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<sup>1</sup> Sergio Pizzini, “Towards solar grade silicon: Challenges and benefits for low cost photovoltaics” 94(2010) *Solar Energy Materials & Solar Cells* 1528-1533. (see **non-confidential Attachment A**)

<sup>2</sup> Canada Border Services Agency, Statement of Reasons AD/1400, CVD/136 (Silicon Metal) page 7, recital 28. (see **non-confidential Attachment B**)

more than 200 countries.<sup>3</sup> The fact that the two goods fall within different tariff classifications correctly reflects their differences in physical characteristics, end-uses and consumer perceptions, and suggests strongly that they are not “like” products.

In light of the above, it is unreasonable and unjustifiable for the Commission to seek to use its findings on “particular market situation” in the Silicon Metal Investigation as evidence for a finding of “particular market situation” in this investigation. As discussed above, the subject goods under the two investigations are fundamentally different. Accordingly, even if the Commission finds that the price of Metallurgical Grade Silicon has been distorted by GOC influence in the Silicon Metal Investigation, that finding is not transferrable to this investigation and does not show that the price of Solar Grade Silicon has also been distorted.

**(c) No price distortions in relation to Solar Grade Silicon**

If, despite CCCME’s objection, the Commission decides to assess, in this investigation, whether the selling price of the raw materials used for the production of PV modules or panels has been distorted by GOC influence, the Commission must consider the price of Solar Grade Silicon and not the price of Metallurgical Grade Silicon, the subject goods of the Silicon Metal Investigation.

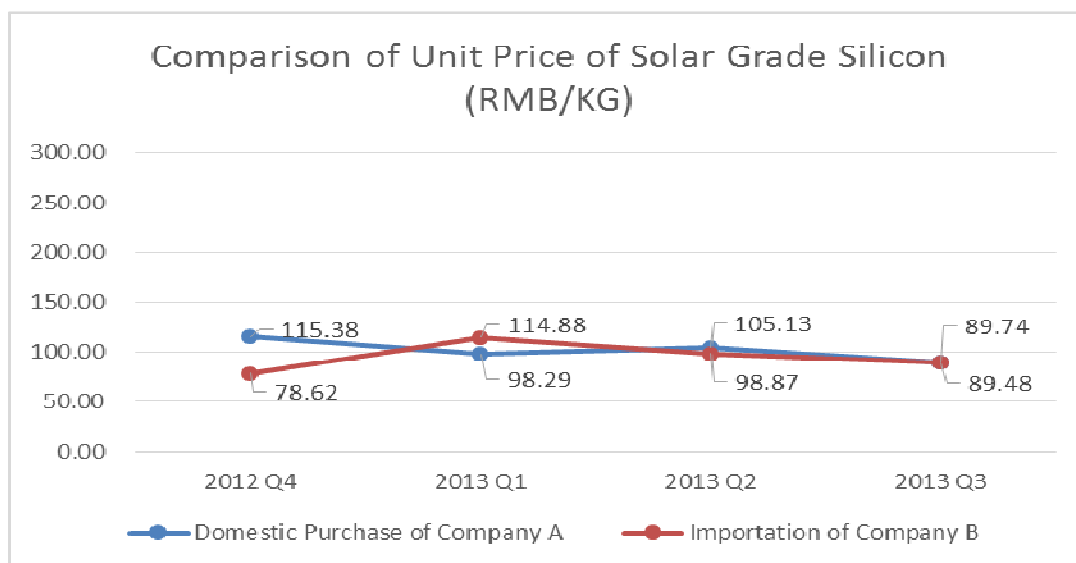
The CCCME has obtained from Chinese PV modules/panels producers the purchase data set out in the table and diagram below. Copies of the relevant purchase invoices are attached in **Confidential Attachment C**.

**Comparison of Unit Price of Solar Grade Silicon (RMB/KG)**

	2012 Q4	2013 Q1	2013 Q2	2013 Q3
Domestic Purchase of Company A	115.38	98.29	105.13	89.74
Importation of Company B	78.62	114.88	98.87	89.48

<sup>3</sup> <http://www.wcoomd.org/en/topics/nomenclature/overview/what-is-the-harmonized-system.aspx>





The diagram shows that Chinese domestic prices of Solar Grade Silicon were higher than the import prices of the goods at the beginning of the Injury Period; and after two periods of fluctuation and competition in Q1 2013 and Q2 2013, Chinese domestic prices and import prices became essentially the same. This suggests that in relation to Solar Grade Silicon, there is not any alleged “particular market situation” or GOC influence on prices. To the contrary, the Chinese Solar Grade Silicon market has been very competitive, in the face of intense competition from imports.

#### **4 Conclusion**

In light of the above, it is our opinion, and that of CCCME, that there is strong evidence showing that Tindo has not suffered material injury due to alleged dumped imports from China.

If there was any material injury caused to Tindo, that injury was caused by known factors other than imports from China.

The Commission should not continue to consider whether a “particular market situation” exists in China’s silicon metal market and if the Commission continues to do so, should not base its consideration on its findings on “particular market situation” in the ongoing Silicon Metal Investigation. Instead, the Commission’s assessment of whether the selling price of the raw materials used for the production of PV modules or panels has been distorted by GOC influence in this investigation must be based on positive and reliable evidence in relation to the selling price of Solar Grade Silicon in the competitive Chinese market.

If the Commission disagrees with our submission above, the CCCME requests the Commission to provide the legal basis and evidence in support of its position so as to allow the CCCME to review and comment.

If you have any queries in relation to these submissions, please do not hesitate to contact any of us.

**East Associates and Corrs Chambers Westgarth**

**Vivian Wang**

Partner

+86 10 6590 6639 ext.287

[vivian\\_wang@ealawfirm.com](mailto:vivian_wang@ealawfirm.com)

**Andrew Korbel**

Partner

(02) 9210 6537

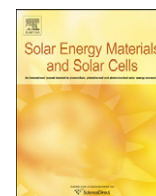
[andrew.korbel@corrs.com.au](mailto:andrew.korbel@corrs.com.au)

**Andrew Percival**

Special Counsel

(02) 9210 6228

[andrew.percival@corrs.com.au](mailto:andrew.percival@corrs.com.au)



# Towards solar grade silicon: Challenges and benefits for low cost photovoltaics

Sergio Pizzini \*

Ned Silicon Spa, Via Th. Edison 6, 60027 Osimo (Ancona), Italy

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## ABSTRACT

It is well known that silicon in its various structural configurations (single crystal, multicrystalline, amorphous, micro nanocrystalline) supplies almost 90% of the substrates used in the photovoltaic industry. It is also known, since years, that the photovoltaic (PV) industry shows a marked growth trend, which demanded and demands a continuous, huge increase of the bulk silicon supply in the order of 30%/yr.

In order to fulfill their today and future needs, many companies worldwide took the decision to start the installation of many thousand tons/year plants, most of them using the Siemens process, some of them using the MG route, to produce the so called solar grade (SG) silicon.

The advantages of the Siemens process are well known, as it provides ultrapure silicon, directly usable for growing either single crystalline Czochralski ingots or multicrystalline ingots using the directional solidification (DS) technique.

The disadvantages are its high energetic cost (a minimum of 120 kWh/kg) and the possible losses of chlorinated gases in the atmosphere, with possible severe environmental problems.

The advantages of the MG route are still potential, as there is no commercially available production of solar silicon as yet, and rely on its reduced energetic costs (a maximum of 25–30 kWh/kg) for a feedstock directly usable for growing multicrystalline ingots using the DS technique. The drawbacks of silicon of MG origin are its larger concentration of metallic impurities, as compared with the Siemens one, the higher B and P content, and the potentially high carbon content.

The aim of this paper is to deal with some of the problems encountered so far with the silicon of MG origin with respect to the metallic and non metallic impurities content, as well as to propose technologically feasible solar grade feedstock specifications.

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## 1. Introduction

Photovoltaics represents the most direct way to harvest solar light and convert it to electrical energy, considering that with optimized, multi stack cells the thermodynamic limit of their efficiency at 42,600 suns is close to 90% [1] against their average current efficiency of 16–17% at the module level.

Its full development in the years to come will depend, however, both on the optimization of the cell process and on the availability of low cost silicon substrates, to be used in conventional p–n devices or in third generation solar cells, where suitable up and down conversion surface layers will enable to overcome at least the Shockley–Queisser detailed balance limit [2].

The cheapest silicon present on the market is the metallurgical (MG) silicon, which is produced in millions of tons/year at a cost

of few \$/kg and of about 14–16 kWh/kg. As such, it is 98–99% pure, with a major contamination of carbon, alkali earth and transition metals, and hundreds of ppmw of B and P.

MG silicon is, therefore, of no use for electronic and photovoltaic applications, as transition metals are the origin of deep levels in the gap, with their strong recombination activity, and B and P dopant impurities are much too high in concentration (> 50–100 ppmw) to allow suitable compensation procedures [3].

It is well known that MG silicon could lead to polycrystalline, electronic grade (EG) silicon by few energy intensive processes, all based on the conversion of MG silicon to halogenated silicon compounds or directly to silane, which could then be reduced or pyrolyzed, after suitable distillation/purification procedures, to ultrapure silicon, under the form of polycrystalline silicon bars, silicon grains [4] or silicon powder [5,6]. The cost of the Siemens type of processes is mostly due to the electricity cost, as the energy needed amounts to hundreds of kWh/kg, as well as to the huge investment costs. Irrespective of energy costs, all these processes present serious environmental problems, as halogenated silicon compounds hydrolyze in the air, in case of

\* Corresponding author. Tel.: +39 331 6685224; fax: +39 734 605912.  
E-mail address: [pizzini@nedssilicon.com](mailto:pizzini@nedssilicon.com)



inadvertent escape in the atmosphere, and are highly flammable. In addition, fluidized bed reactors or open space reactors, used to produce silicon grains or silicon powder, present a technical inconvenience associated with the adhesion of reaction products to the reactor walls, whose mandatory cleaning finally turns on to reduced process productivity and higher production costs. In order to make PV appealing for the energy market and competitive with conventional sources and nuclear energy, PVs plants should get hundreds of GW yearly, so that the amount of silicon needed will exceed one million tons/year. As the investment cost for a conventional Siemens-type of plant of 1000 tons/y could be estimated around 100 million €, the financial means needed to build those plants are above any reasonable economic limit.

Among the alternatives to silicon solar cells fabricated using polycrystalline EG silicon, thin film silicon in its various applications (amorphous tandem, nanocrystalline) should be considered a potential future competitor to bulk silicon. Nevertheless, it might experiment, at current silicon costs, severe problems associated with its still limited efficiency and with the huge investment costs.

Also for thin film cells based on compound semiconductors like CdTe and copper indium selenide (CIS), albeit representing today a negligible share of the total PV market, we might foresee a substantial upscaling, in spite of problems associated with their final decommissioning and with environmental risks in case of fire. A recent paper by Raugei et al. [7] shows, in fact, that their material inputs, energy pay back times, global warming potentials and eco-toxicity values are systematically better than those of EG polycrystalline silicon.

However, considering that MG silicon is already produced at millions of tons yearly, only the partial conversion of MG plants to solar silicon plants, or brand new upgraded (UMG) silicon manufacturing plants, might accomplish for the world energy needs, provided UMG silicon might be produced at a reasonable cost and level of purity, at least capable of obtaining a top 15% conversion efficiency with cells made on UMG substrates.

The main challenges and advantages associated with the MG route were discussed by this present author in two recent papers [8,9], to which the interested reader is addressed to get full details about the basic physics and chemistry of impurities and defects in silicon. Here some further notes are presented concerning the impurities, which present the major theoretical and experimental commitment in view of their effective removal or deleterious effects suppression.

## 2. MG silicon and metallic impurities

As is well known, already in the 1980s Hopkins et al. [10] and Pizzini et al. [11] started the earliest systematic investigations on the influence of metallic impurities on the diffusion length of minority carriers in silicon. While Hopkins examined only the case of metallic impurities in single crystal silicon, Pizzini examined the case of multicrystalline (mc) silicon as well.

The main results of these investigations are reported in Figs. 1 and 2, which show that the use of an impurity-contaminated silicon for PV applications is very demanding, in the sense that the amount of tolerable impurities is in every case low, although depending on the nature of the impurities and on the macroscopic structure (single crystal and multicrystalline) of the host.

It could be observed in Fig. 2 that the main trend observed for single crystal silicon is replicated in the case of mc silicon, showing in addition the stronger impact of Ti and V, with respect to Fe.

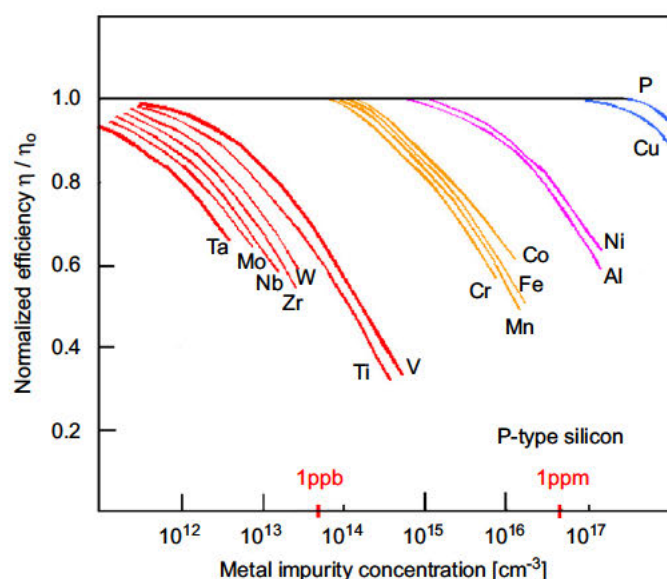


Fig. 1. Effect of metallic impurity content (in at/cm<sup>3</sup>) in single crystal silicon on the normalized efficiency of solar cells.

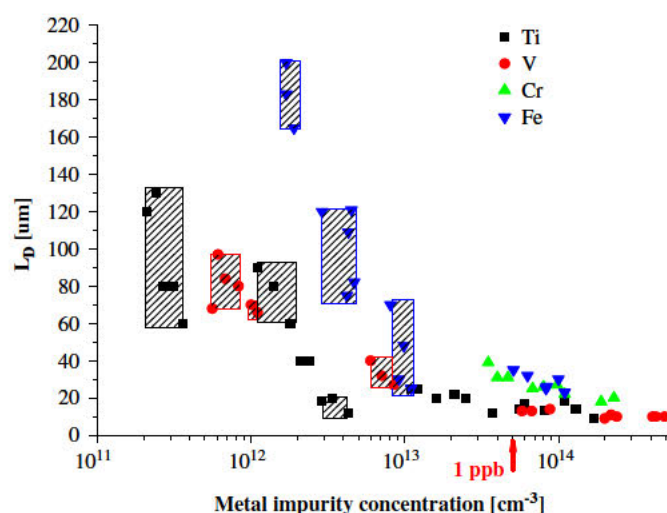


Fig. 2. Influence of the impurity concentration on the minority carriers diffusion length of mc-Si.

It should also be noted that a systematic study of the effect of grain boundaries and dislocations on the PV efficiency and on their role on segregation of impurities in multicrystalline silicon started also in those years, in correspondence with the early use of silicon casting at Wacker Heliotronic and Bridgman solidification at Heliosil and Solarex. In the same years it was shown that columnar growth was favored by the use of Bridgman or Directional Solidification techniques, like in the case of metallic alloys, where constitutional supercooling and the microscopic shape of the S–L interface govern the orientation of the crystals [12].

It was shown, as well, that an excess of metallic impurities (100 ppmw Fe) drives a degenerated growth, stopping the regular columnar growth [13], again in good agreement with literature anticipation on metallic alloys. In fact, inside the breakdown zone a cellular structure sets up, with micrograins and a high density of dislocations.

The detrimental role of metallic impurities in PV applications was recently reconsidered by Geerligs et al. [14], Dubois et al.



**Table 1**  
Calculated acceptable impurity contamination in silicon feedstock ( $C_f$ ), wafers ( $C_w$ ) and solar cells ( $C_{sc}$ ) [17].

Element	$C_f$ (ppma)	$C_w$ (ppma)	$C_{sc}$ (ppma)
Ti	0.022	$2.7 \times 10^{-4}$	$2.7 \times 10^{-4}$
Cr	0.026	$4.8 \times 10^{-4}$	$4.7 \times 10^{-4}$
Fe	12.5	0.010	$9.7 \times 10^{-3}$
Cu	4.6	0.046	$5.9 \times 10^{-3}$

**Table 2**  
Contents of metallic and non-metallic impurities in wafers manufactured from a UMG feedstock.

Impurity	Sample 1 (ppmw)	Sample 2 (ppmw)	Sample 3 (ppmw)
Al	0.15	0.02	0.14
Ti, V, Cr, Co	< 0.005	< 0.005	< 0.005
Fe	< 0.05	< 0.05	< 0.05
Ni, Cu	< 0.01	< 0.01	< 0.01
Other metals	< 0.01	< 0.01	< 0.01
O	2.5 (ppma)	3.4 (ppma)	1.5 (ppma)
C	5.1–10 (ppma)	6.9–10.7 (ppma)	6.3–9.9 (ppma)
B	2	1.0	3
P	1.8	2.7	1.3

[15,16], Hofstetter et al. [17] and Coletti et al. [18], this last within the Crystal Clear Project ([www.ipcrystalclear.eu](http://www.ipcrystalclear.eu)) with results varying within a wide range.

As an example, a tentative guess about the maximum allowable Fe and Ti content in the feedstock to get a loss of 2% against a feedstock of EG origin is given by Geerligs, who gives 0.07 ppmw for Ti and 2.5 ppmw for Fe.

Hofstetter calculated instead the impurity thresholds for Ti, Cr, Fe and Cu in feedstock, wafers, and solar cells. The results are reported in Table 1, which show the large tolerance of iron in a solar silicon feedstock.

Dubois et al., eventually, demonstrated that an implanted iron content around 2 ppba does not impact the conversion efficiency of single crystal and mc solar cells, respectively, but that the larger tolerance limit depends on the ability of iron to be efficiently gettered and passivated by hydrogenation.

These results indicate not only that the feedstock contamination threshold is specific for a particular growth process and for a given impurity, as the impurity removal depends on the segregation yield of the growth process, but also that gettering and hydrogenation processes might play a major role, as shown, among many others, by Dubois [15,16] and Sheoran et al. [19].

Under this respect, it might be interesting to take into consideration the results reported in Table 2 relative to the impurity content of few wafers of solar grade silicon of metallurgical origin, extracted from a lot of 1000, on which solar cells were processed, getting a maximum efficiency of 15%. The typical lifetime of the as-grown samples was 0, 93  $\mu$ s, which increased at 2, 5–4  $\mu$ s on a complete cell<sup>1</sup>

These results show that the impurity tolerance of solar grade mc wafers is higher than expected when considering the calculated values reported in Table 1, but still ranging within sub-ppm amounts. The difference comes from the impact of gettering and hydrogenation processes occurring during the solar cell fabrication.

The conclusion might be that few ppbw amounts of metallic impurities inside an as-grown wafer allow reasonably high

efficiencies, but that the actual amount depends strongly on the specific impurity.

The arguments concerning the role of B and Al will be discussed in Sections 3.3–3.5.

### 3. How to get a UMG feedstock for solar grade applications

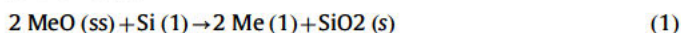
As shown before, MG grade silicon is much too dirty to be employed for EG and PV applications. The present author reported a critical analysis of the impurity removal processes, which might be applied to lead MG silicon to solar quality, while emphasizing that the most dangerous impurities are B, P and C, which could not be removed efficiently by segregation procedures [9].

Independently of any specific discussion on the issues concerning these impurities, which will be considered in the next Sections, it should be emphasized here that the carbon presence in MG silicon is intrinsic to the direct carbothermic process, which is carried out using carbon as the reductant. Therefore, the resulting liquid silicon is saturated with carbon, and its concentration depends on the ultimate reaction temperature. Instead, the B and P (and Al) concentration depends uniquely on the B, P and Al concentration in the raw materials (silica quartz and carbon-based materials) used in the carbothermic process.

#### 3.1. Removal of metallic impurities

Also high grade raw materials contain several ppmw amounts of metallic impurities, which, when transferred to silicon, will induce severe minority carriers lifetime degradation effects when their concentration is above the threshold limits. Impurity removal in the Siemens process is conventionally carried out by purification of the chlorinated silanes, such that the inlet stream in the polycrystalline silicon production reactors is essentially impurity-free.

The ultimate metallic impurity removal in any feedstock of direct MG origin is currently carried out using directional solidification (DS) processes, as it has already been fully described in the literature and in some other author's past works [8,9]. The effective purification yield is impurity-nature's dependent, as it is the impurity segregation coefficient. The yield of the segregation process depends, in addition, on the growth technique adopted and on the growth rate, with a substantial decrease with the deviation from the equilibrium conditions. It is known that the effective segregation coefficients of Czochralsky (Cz) growth are smaller than with any DS process. In general one can assume that a minimum purification yield of  $10^3$  might be achieved at a DS growth rate of 1 cm/h. However, one major problem with the DS processing arises with the contamination of the silicon ingot by the impurities diffusing from the quartz crucible and its silicon nitride coating, as it was shown, among others, by Binetti et al. [20]. Very recently, this issue was revisited by Olsen and Øvreid [21], who showed that a substantial (more than tenfold) increase of the lifetime is obtained using crucibles manufactured with pure quartz with a purified silicon nitride coating. It should be emphasized that thermodynamics, not only diffusion, rules these processes, as metallic oxides (MeO) dissolved or present as a second phase in the quartz crucible and exhibiting smaller values of the Gibbs free energy [22], as compared to that of silicon dioxide, are reduced to metals by reaction with silicon, according to the reaction



Most of the metallic oxides, including Cu, Fe, Ni, and Cr, might react with liquid silicon, leaving an equimolar amount of metals dissolved in silicon.

<sup>1</sup> These wafers were kindly delivered to us by Dr. Mariano Zircon, of X Group, where the cell manufacturing process was carried out.



This process occurs primarily above the melting point of silicon, but also when solid silicon is in contact with the silicon nitride coating, inducing the set up of a metallic impurity enriched diffusion layer.

The influence of this kind of crucible and coating contamination is twofold. Above the melting point of silicon metallic impurities diffuse in the melt and increase the average impurity content of the silicon charge, with a relatively small impact on the overall contamination. Below the melting point, instead, metallic impurities diffuse from the crucible walls towards the ingot's bulk, thus deteriorating the electronic properties of an ingot's slab [20,21] whose thickness depends on the single impurity  $i$  diffusion length  $L = \sqrt{D_i t}$ , where  $D_i$  is the diffusion coefficient and  $t$  is the time of the diffusion process. One can foresee that the experimental value of the thickness of the impurity contaminated slab would depend on the fastest diffusing impurities.

Neglecting these outcomes, which are systematic for any DS growth process, one can conclude that one or two DS processes should be sufficient to lead the metallic impurity content of a good UMG silicon feedstock to solar quality, but that the use of low grade crucibles and silicon nitride coatings might give a prejudice to the final quality.

### 3.2. Carbon in upgraded MG silicon

Carbon is a major problem in upgraded MG silicon. As liquid silicon in a carbothermic furnace remains in contact with its graphite bottom and walls, it is always saturated with carbon. Its concentration depends therefore on the actual silicon temperature, which might be higher than 1800 °C and on the residence time, which might be of the order of few hours. The solubility of carbon in silicon has been investigated since the early years of semiconducting silicon [23] and recently reexamined by Durand and Duby [24] who found that the solubility of carbon at the eutectic temperature is 9 ppma in solid silicon and 261 ppma in liquid silicon. In the range of temperatures between the melting point of silicon (1687 K) and 3130 K the carbon solubility (in mole fraction) in liquid silicon at the equilibrium with SiC is represented by the equation

$$\log X_C = 2714 - 10,623/T \quad (2)$$

and the repartition coefficient at the melting temperature is  $3.4 \times 10^{-2}$ .

At 1800 °C the equilibrium C content in liquid silicon is 1600 ppmw and SiC must segregate by cooling.

Filtering techniques are therefore applied systematically for silicon decarburization [25,26]. Thermodynamics shows, however, that filtering at temperatures higher than the melting point of silicon might only reach the equilibrium concentration in the two phase Si<sub>l</sub>-SiC region, thus to values of hundreds of ppmw. Thus, filtering, even if conducted at temperatures as close as possible to the eutectic temperature, always results in large carbon concentrations in the liquid charge.

Alternative to filtering are chemical processes aiming at carbon removal by oxidation. In fact, while silicon refining by oxidation should be considered inadequate for those impurities that present oxide phases less stable than silicon dioxide, carbon and boron are exceptional cases, due to the high vapor pressures of their oxides [27]. Thermodynamics show, as an example, that the reaction



could occur more favorably than the direct oxidation of silicon



at temperatures in excess of 1600 °C.

Bubbling oxygen in a ladle containing liquid silicon could therefore be a way of reducing the carbon concentration, although with sensible oxidation losses of silicon and possible degradation of the silicon quality, due to impurity diffusion from the ladle walls.

A similar kind of solution has been proposed by Sakaguchi and Maeda [28], who were able to show that by filtering and low pressure oxidation at temperatures higher than 1500 °C the decarburization process of a silicon sample containing 100 ppmw of carbon works relatively well, as the final C concentration is 10 ppmw. Argon must be, however, introduced at the liquid interface to remove the CO and CO<sub>2</sub> as reaction products.

A serious drawback of the oxygen bubbling procedure, and of the consequent oxygen concentration increase in the liquid, is the formation of slags and the solid state segregation of oxides and mixed oxycarbides during the solidification process, as shown among others, by Pizzini et al. [11]. This issue, however, deserves future experimental efforts, as the available knowledge concerns mostly silicon samples of electronic origin.

The most direct way to reduce the excess carbon would be, however, a controlled solidification, as the C content in solid silicon at the melting point is 6 ppma.

The problem here is to prevent the incorporation of the SiC particles in the solid phase during the growth process. The question was taken into consideration by Muhlbauer et al. [29], who carried out C removal experiments using the directional solidification technique. They showed that low crystallization rates, the convexity of the freezing interface and the presence of a convective heat flow from the crucible walls towards the centre prevent the incorporation of the SiC particles in the solid phase.

As UMG silicon always contains C and O, because it comes in contact with air when it is drawn out the carbothermic furnace or remains in liquid state in a ladle, we investigated the relationships between the oxygen and carbon concentration and the SiC segregation in samples extracted from directionally solidified ingots.

It is well known from earlier studies on the segregation of oxygen and carbon in EG silicon that supersaturated oxygen and carbon could remain dissolved in solid silicon in a metastable situation, and that high temperature annealing is requested to segregate them. We should therefore expect that carbon and oxygen in upgraded MG silicon should experiment a similar situation, with an additional complication arising from their associated presence.

Actually, we identified [11] a region where second phase formation occurs with the precipitation of an (oxi) carbide phase. Precipitation, monitored by microstructural examinations, occurs when the carbon concentration is larger than 7 ppma and the oxygen concentration is lower than 2.5 ppma. As the oxygen content takes these critical values only corresponding to the least fraction solidified in a DS ingot [8] precipitates should and, actually, are confined on the top of the ingot. We have also shown that the minority carrier's diffusion length depends on the oxygen and carbon content and takes the largest values corresponding to solid solutions containing equimolar concentrations of oxygen and carbon. Intragrain precipitation of (oxi) carbides is generally anticipated or associated with the segregation of carbon and oxygen at GB, which can be detected using SIMS [30] measurements in GB scanning or mapping configuration.

These results confirm that the presence of carbon and oxygen impurities in solid silicon should play a dominant role in the absence of metallic impurity contamination.

### 3.3. Boron content and donor and acceptor neutralization in silicon

Solar silicon of MG origin might contain a B and P content well in excess of 10 ppma, thus inducing partial compensation

excesses, resistivity values lower than  $1 \Omega \text{ cm}$  and uncontrollable resistivity profiles along the ingots, which often start p type and turn n type on top, leading to a poorly usable material yield.

B and P removal using chemical (bubbling with reactive gases), physical (B and P segregation using liquid/liquid extraction) and vacuum P sublimation processes was extensively used in the last thirty years with still moderate industrial success. All these processes were critically taken into consideration in previous papers of the present author [8,9]. Here it should be remarked that gas bubbling and liquid/liquid extraction processes, being carried out at temperatures higher than the melting point of silicon, present extremely severe material compatibility problems, which might result in high production costs and poor product quality homogeneity. In addition, separation of the traces of the second phase from the solid silicon phase in the case of liquid/liquid extraction processes requires grinding and acid etching processes with the additional risk of metallic impurity contamination.

Compensation by deliberately doping the excess of donor or acceptor impurities might be used as an alternative technique, provided the initial dopant content as well as the donor to acceptor ratio, as recently demonstrated by Dhamrin et al. [31], does not exceed a typical threshold value.

To the author's knowledge, the information available concerning this subject is extremely poor.

The effect of compensation in single crystal silicon was originally investigated by Pizzini and Calligaris [3], who showed that the lifetime depends slightly on the excess acceptor concentration in B and P doped single crystals, limiting the upper useful compensation range at a  $N_A/N_D$  value around  $5 \times 10^{16}$ , with total boron levels as high as  $1.7 \times 10^{17}$  (5 ppmw). These results were confirmed by a later work [32] using both single crystal and multicrystalline samples, which showed that the diffusion length remains larger than  $100 \mu\text{m}$  at excess acceptor concentration values as high as  $10^{17} \text{ cm}^{-3}$ . These results are also supported by the good photovoltaic behavior of the UMG wafers of Table 1.

In the same paper it was demonstrated that DLTS measurements show the presence of a deep trap of unidentified nature at 0.53 eV, whose concentration was proportional to the B content at fixed O concentration. This result allowed us to conclude not only that this deep trap, identified as a B–O complex, was responsible for the lifetime decrease with the increase of the B content (light induced degradation or LID effect), but also that B–P compensation competes with the B–O complex formation. In more recent papers, Geerligs et al. [33] reconsidered the effect of compensation on the capture cross section of minority carriers, showing that there is a large range of literature values, which do not enable a definitive conclusion about the effect of compensation on the silicon lifetime. Finally, Kopecek et al. [34] showed that the light induced degradation (LID) seems not to be dependent on the total B content in a compensated Cz–Si material, concluding that P and B may form B–P complexes that suppress the formation of B–O complexes, with a beneficial effect on LID effects. However, it was also emphasized that this conclusion needs to be supported by further systematic measurements.

The problem that remains is a resistivity gradient along the ingot due to the different segregation coefficients of B and P. A method to obviate this drawback is suggested by Koji [35], who shows that the segregation coefficient of B is influenced by the B concentration, in such a way that it could be moderately tuned for a specific B and P compensation.

### 3.4. Segregation of boron at extended defects

We showed, using SIMS measurements, that in the presence of carbon, boron segregates at GB. This event is signaled by a

hundredfold increase of the B signal with respect to the boron background of the sample [36]. This result can be interpreted as a good example of a segregation process dominated by a chemical reaction, in agreement with the theoretical modelization of the B–C interaction [37], which shows that, in spite of a still incomplete modeling picture, B–C complexes seem to be stable species in Si. GBs could therefore be used to segregate B from the bulk, but the increase of their electrical activity should be investigated to judge the effectiveness of the process.

### 3.5. Influence of Al on the photovoltaic properties of UMG silicon

The Al content in UMG silicon is generally high (seen as an example Table 1) as Al is a systematic impurity present in quartz ores. For this reason its possible detrimental role on the electrical properties of silicon has been considered [38], also in connection with its unfavorably high segregation coefficient, estimated to be larger than  $10^{-3}$ . Degoulange et al. [39] also showed that its precise detection in multicrystalline wafers prepared from a UMG feedstock refined using a plasma torch requires extreme attention, as it is probably distributed within the grains and the grain boundaries. The mean values reported ( $\sim 0.18$  ppmw) however correspond quite well with the values reported in Table 1.

Al is generally treated as an acceptor impurity, but from our old measurements [40] it is demonstrated that it behaves also like a deep trap, due to the presence of two deep levels at 0.315 and 0.378 eV, detected by deep level transient spectroscopy (DLTS). Incidentally, the second level is a hole trap while the first one is a recombination centre. In the same work it was shown that the hole mobility and the carrier concentration decrease for Al concentrations larger than  $10^{17} \text{ cm}^{-3}$ , while the diffusion length decreases monotonically already for Al contents larger than  $10^{16} \text{ cm}^{-3}$ .

In a recent work, Øverlid et al. [38] reported additional, interesting, information on the electrical effect of Al in multicrystalline silicon. They showed, in fact, that in a multicrystalline silicon ingot grown in a DS furnace using a silicon feedstock containing 32 ppmw Al and 0.1 ppmw B, both the B and Al concentrations start to increase from the bulk value only close to the top of the ingot. The resistivity curve as function of the growth fraction might instead be well fitted by assuming that is the B concentration alone that determines the resistivity with Al, which is important only in the upper part of the ingot. The minor effect of Al on the resistivity could be easily understood considering that the ionization energy of the shallowest level of Al lies at 0.069 eV, against that of B, which is at 0.044 eV. Under the Boltzman approximation, the concentration of active B ( $c_{\text{B}}/c^{\circ}\text{B}$ ) = 0.494 while that of Al ( $c_{\text{Al}}/c^{\circ}\text{Al}$ ) = 0.069, thus demonstrating that, in fact, in Al and B doped silicon B is the dominant acceptor.

Even considering that these results need further optimization, it might be concluded that the available knowledge about the Al influence on the electrical properties of solar silicon shows that the Al content in a solar silicon feedstock should range around a maximum of 30 ppmw, in order to accomplish for both the resistivity and lifetime requirements.

## 4. Conclusions

In order to supply to the PV market a good feedstock of UMG origin, several problems of pure technological nature should still be overcome, as no drawbacks of chemical and/or physical nature limit or even impede the manufacturing of a good silicon feedstock, which could be converted in usable wafers in a single DS process. The commitment is still hard, but not impossible. From the reported data, including those of Tables 1 and 2, a



Table 3

Tentative solar grade silicon feedstock specification (impurity content in ppmw).

Al	Ti, V, Cr, Co	Fe	Ni	Cu	Other metals	B	P	C
≤ 50	< 5	< 50	< 10	< 10	10	< 3	< 3	6

preliminary specification for the average impurity content in such a feedstock is proposed in Table 3, prepared using for the segregation coefficients of metallic impurities an average value of  $10^{-3}$ , and a value of  $2 \times 10^{-3}$  for Al.

These figures fit relatively close to the results reported by Coletti in Ref.[18].

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Canada Border  
Services Agency

Agence des services  
frontaliers du Canada

4214-39  
AD/1400  
4218-37  
CVD/136

OTTAWA, November 5, 2013

## **STATEMENT OF REASONS**

**Concerning the making of final determinations with respect to the dumping and subsidizing of**

**CERTAIN SILICON METAL  
ORIGINATING IN OR EXPORTED FROM THE PEOPLE'S REPUBLIC OF CHINA**

## **DECISION**

Pursuant to subsection 41(1)(a) of the *Special Import Measures Act*, on October 21, 2013, the President of the Canada Border Services Agency made final determinations respecting the dumping and subsidizing of silicon metal containing at least 96.00% but less than 99.99% silicon by weight, and silicon metal containing between 89.00% and 96.00% silicon by weight that contains aluminum greater than 0.20% by weight, of all forms and sizes, originating in or exported from the People's Republic of China.

Cet *Énoncé des motifs* est également disponible en français.  
This *Statement of Reasons* is also available in French.

**Canada** 

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## **SUMMARY OF EVENTS**

[1] On March 1, 2013, the Canada Border Services Agency (CBSA) received a written complaint from Québec Silicon Limited Partnership and its affiliate QSIP Canada ULC of Bécancour, Quebec (the complainant), alleging that imports of certain silicon metal originating in or exported from the People's Republic of China (China) are being dumped and subsidized. The complainant alleged that the dumping and subsidizing had caused injury and are threatening to cause injury to the Canadian industry producing these goods.

[2] On March 22, 2013, pursuant to paragraph 32(1)(a) of the *Special Import Measures Act* (SIMA), the CBSA informed the complainant that the complaint was properly documented. The CBSA also notified the Government of China (GOC) that a properly documented complaint had been received and provided the GOC with the non-confidential version of the subsidy complaint. The GOC was invited for consultations prior to the initiation of the investigations, pursuant to Article 13.1 of the *Agreement on Subsidies and Countervailing Measures*; however, no such consultations took place.

[3] The complainant provided evidence to support the allegations that certain silicon metal from China had been dumped and subsidized. The evidence also disclosed a reasonable indication that the dumping and subsidizing had caused injury and were threatening to cause injury to the Canadian industry producing these goods.

[4] The GOC made representations with respect to the complaint on April 17, 2013. In those representations, the GOC expressed its view that the complaint filed with the CBSA was “frivolous” and “unsubstantiated by evidence”. Based on this view, the GOC argued that the investigations concerning certain silicon metal should not be initiated.<sup>1</sup>

[5] While the CBSA recognized the views expressed by the GOC, the analysis of the complaint indicated that it was properly documented and the information contained therein was sufficient to meet the requirements of SIMA for initiation. The CBSA addressed the GOC's representations in detail in the *Statement of Reasons* for the preliminary determinations. On April 22, 2013, pursuant to subsection 31(1) of SIMA, the President of the CBSA (President) initiated investigations respecting the dumping and subsidizing of certain silicon metal from China.

[6] Upon receiving notice of the initiation of the investigations, the Canadian International Trade Tribunal (Tribunal) commenced a preliminary injury inquiry, pursuant to subsection 34(2) of SIMA, into whether the evidence discloses a reasonable indication that the alleged dumping and subsidizing of certain silicon metal from China have caused injury or retardation or are threatening to cause injury to the Canadian industry producing the goods.

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<sup>1</sup> CBSA Exhibits: 8nc, s8nc – Comments on Silicon Metal Complaint – Government of China.

[7] On June 21, 2013, pursuant to subsection 37.1(1) of SIMA, the Tribunal made a preliminary determination that there is evidence that discloses a reasonable indication that the dumping and subsidizing of certain silicon metal originating in or exported from China have caused injury or are threatening to cause injury.

[8] On July 22, 2013, as a result of the CBSA's preliminary investigations and pursuant to subsection 38(1) of SIMA, the President made preliminary determinations of dumping and subsidizing of certain silicon metal originating in or exported from China and began imposing provisional duties on imports of the subject goods pursuant to subsection 8(1) of SIMA.

[9] On July 23, 2013, the Tribunal initiated an inquiry pursuant to section 42 of SIMA to determine whether the dumping and subsidizing of the above-mentioned goods had caused injury or were threatening to cause injury to the Canadian industry.

[10] The CBSA continued its investigation and, on the basis of the results, the President was satisfied that certain silicon metal originating in or exported from China had been dumped and subsidized, and that the margins of dumping and amounts of subsidy were not insignificant. Consequently, on October 21, 2013, the President made final determinations of dumping and subsidizing pursuant to paragraph 41(1)(a) of SIMA.

[11] The Tribunal's inquiry into the question of injury to the Canadian industry is continuing. Provisional duties will continue to be imposed on the subject goods from China until the Tribunal renders its decision. The Tribunal has announced that it will issue its finding by November 19, 2013.

## **PERIOD OF INVESTIGATION**

[12] The period of investigation with respect to dumping (dumping POI), covered all subject goods sold or imported into Canada from January 1, 2012 to December 31, 2012.

[13] The period of investigation with respect to subsidizing (subsidy POI), covered all subject goods sold or imported into Canada from January 1, 2012 to December 31, 2012.

## **INTERESTED PARTIES**

### **Complainant**

[14] The complainant is the only producer of silicon metal in Canada.<sup>2</sup>

[15] The name and address of the complainant is:

Québec Silicon Limited Partnership and QSIP Canada ULC  
6500 rue Yvon Trudeau  
Bécancour, QC G9H 2V8

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<sup>2</sup> CBSA Exhibits: 2nc, s2nc – Complaint, paragraph 9, page 8.

## **Importers**

[16] At the initiation of the investigations, the CBSA identified 23 potential importers of the subject goods from information provided by the complainant and CBSA import documentation over the period of January 1, 2012 to December 31, 2012.

[17] The CBSA sent an importer Request for Information (RFI) to all potential importers of the goods. The CBSA received nine responses to the importer RFI, with varying degrees of completeness, all of which were received by the due date.<sup>3</sup>

## **Exporters**

[18] At the initiation of the investigations, the CBSA identified 219 potential exporters and producers of the subject goods from information provided by the complainant and CBSA import documentation. RFIs respecting Dumping, Section 20 of SIMA, and Subsidy were sent to each of these potential exporters and/or producers in China.

[19] The CBSA received seven responses to the exporter dumping RFI<sup>4</sup>; two responses to the exporter Section 20 RFI<sup>5</sup>; and six responses to the exporter subsidy RFI.<sup>6</sup> Of these 15 responses, only one response to the exporter dumping RFI was received by the due date.

## **Surrogate Producers**

[20] As part of the section 20 inquiry, RFIs were sent to 16 known producers of silicon metal in Brazil, South Africa and Thailand. These producers were requested to provide domestic selling price and costing information for silicon metal produced at their facilities.

[21] The above-mentioned countries were selected as their growing economies and silicon metal industries are comparable to the situation in China.

[22] Of the 16 surrogate producers contacted, only one provided a response to the RFI, which was received subsequent to the due date.<sup>7</sup>

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<sup>3</sup> CBSA Exhibits: 31pro, 32nc, 33nc, 34pro, 34pro, 35pro, 36pro, 37pro, 38nc, 39pro, 40nc, 41pro, 42nc, 43pro, 4nc, 48pro, 46nc, 53nc.

<sup>4</sup> CBSA Exhibits: 54pro, 55nc, 58pro, 59nc, 60pro, 61nc, 62pro, 63nc, 65pro, 64nc, 66pro, 67nc, 75pro, 76nc.

<sup>5</sup> CBSA Exhibits: 68pro, 69nc, 77pro, 78nc.

<sup>6</sup> CBSA Exhibits: s58pro, s59nc, s60pro, s61nc, s62pro, s63nc, s64pro, s65nc, s66pro, s67nc, s70pro, s71nc.

<sup>7</sup> CBSA Exhibits: 71pro, 72nc.

## **Government of China**

[23] For the purpose of these investigations, “Government of China” refers to all levels of government, whether federal, central, provincial/state, regional, municipal, city, township, village, local, legislative, administrative or judicial, singular, collective, elected or appointed. It also includes any person, agency, enterprise, or institution acting for, on behalf of, or under the authority of any law passed by, the government of that country or that provincial, state or municipal or other local or regional government.

[24] At the initiation of the investigations, the CBSA forwarded Subsidy and Section 20 RFIs to the GOC. The GOC did not provide responses to either the Subsidy or the Section 20 RFI.

## **PRODUCT INFORMATION**

### **Definition**

[25] For the purpose of these investigations, subject goods are defined as:

silicon metal containing at least 96.00% but less than 99.99% silicon by weight, and silicon metal containing between 89.00% and 96.00% silicon by weight that contains aluminum greater than 0.20% by weight, of all forms and sizes, originating in or exported from the People’s Republic of China.

### **Additional Product Information**

[26] The subject goods include all forms and sizes of silicon metal, including off-specification material such as silicon metal with high percentages of other elements, such as aluminum, calcium, iron, etc.

[27] Silicon is a chemical element, metallic in appearance, solid in mass, and steel gray in color, that is commonly found in nature in combination with oxygen either as silica or in combination with both oxygen and a metal in silicate minerals. Although commonly referred to as metal, silicon exhibits characteristics of both metals and non-metals. Silicon metal is a polycrystalline material whose crystals have a diamond cubic structure at atmospheric pressure. It is usually sold in lump form typically ranging from 6” x 1/2” to 4” x 1/4” for the metallurgical industry, 1" by 1" and smaller for the chemical industries and also in crushed powder form.

[28] Silicon metal is principally used by primary and secondary aluminum producers as an alloying agent and by the chemical industry to produce a family of chemicals known as silicones.

### **Production Process**

[29] Silicon metal is produced by combining high purity quartzite (consisting principally of natural crystallized silica (SiO<sub>2</sub>)) with a carbonaceous reducing agent (such as low-ash coal, petroleum coke, charcoal or coal char) and a bulking agent (such as wood chips) in a submerged-arc electric furnace.

[30] In the furnace, the raw materials are smelted at a very high temperature into molten silicon metal. Periodically, the molten silicon metal is tapped from the furnace and poured into large ladles.

[31] Certain impurities, called “slag” – consisting mainly of calcium, aluminum and silicon oxides – are inherent to the production of silicon metal and therefore end up in the ladle with the molten silicon metal. When the molten silicon metal is tapped from the furnace and exposed to oxygen, the slag and molten silicon metal, which have different densities, tend to separate in the ladle. As the slag and molten silicon metal separate, impurities are removed from the silicon metal.

[32] At this point in the process, oxygen can be used to remove additional impurities (aluminum and calcium) from the molten silicon metal, before it is allowed to cool. Oxygen is introduced into the molten silicon metal in gaseous form by means of a porous plug in the base of the ladle.

[33] The molten silicon metal is next poured into molds or onto areas of the plant floor sectioned off using beds of silicon metal fines or sand. Once all of the molten silicon metal has been tapped (drained) from the furnace, the slag is then removed and placed in a slag pot.

[34] After the silicon metal has cooled, it is pre-crushed (e.g., by lifting and dropping the cooled metal onto the floor using a front-end loader). The purpose of such pre-crushing is to yield pieces suitable for transporting to the silicon metal crushing and sizing equipment, which typically is located in a separate area of the plant. At this point, the silicon metal can be stored (i.e., inventoried as work-in-process).<sup>8</sup>

### **Classification of Imports**

[35] The subject goods are normally imported into Canada under the following HS classification number:

2804.69.00.00

[36] The HS classification number identified is for convenience of reference only. The HS classification number may include non-subject goods. Also, subject goods may be imported under HS classification numbers that are not listed. Refer to the product definition for authoritative details regarding the subject goods.

### **LIKE GOODS**

[37] Subsection 2(1) of SIMA defines "like goods", in relation to any other goods, as goods that are identical in all respects to the other goods, or in the absence of identical goods, goods the uses and other characteristics of which closely resemble those of the other goods.

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<sup>8</sup> CBSA Exhibits: 2nc, s2nc – Complaint, paragraphs 26-31, pages 12-13.

[38] Silicon metal produced by the domestic industry in Canada competes directly with and has the same end uses as the silicon metal imported from China. The goods produced in Canada are completely substitutable with silicon metal produced in China. Therefore, the CBSA has concluded that silicon metal produced by the Canadian industry constitutes like goods to the silicon metal produced in China.

[39] After considering questions of use, physical characteristics and all other relevant factors, the CBSA is of the opinion that subject and like goods constitute only one class of goods.

### **THE CANADIAN INDUSTRY**

[40] As previously stated, the complainant accounts for all known domestic production of like goods.

### **IMPORTS INTO CANADA**

[41] During the investigations, the CBSA refined the estimated volume of imports based on information from CBSA import documentation and information received from exporters and importers.

[42] The following table presents the CBSA's analysis of imports of certain silicon metal for purposes of the final determinations:

**Imports of Certain Silicon Metal (January 1, 2012 – December 31, 2012)**

<b>Imports into Canada</b>	<b>% of Total Import Volume</b>
China	71.5%
All Other Countries	28.5%
<b>Total Imports</b>	<b>100%</b>

### **INVESTIGATION PROCESS**

[43] Regarding the dumping investigation, information was requested from known and potential producers, exporters, vendors and importers, concerning shipments of subject silicon metal sold in or imported into Canada during the dumping POI of January 1, 2012 to December 31, 2012.

[44] Regarding the subsidy investigation, information related to potential actionable subsidies was requested from known and potential exporters in China and from the GOC concerning financial contributions made to exporters or producers of subject silicon metal released into Canada during the subsidy POI of January 1, 2012 to December 31, 2012.

[45] After reviewing the responses to the RFIs, supplemental RFIs were sent to each of the responding parties to clarify information provided in the submissions. In addition, on-site verifications were conducted at the premises of selected exporters during the final phase of the dumping and subsidy investigations.



[46] Details pertaining to the information submitted by the exporters in response to the exporter dumping RFI as well as the results of the CBSA's dumping investigation can be found in the "Dumping Investigation" section below. Details pertaining to the information submitted by the exporters in response to the subsidy RFI as well as the results of the CBSA's subsidy investigation can be found in the "Subsidy Investigation" section below.

[47] As part of the final stage of the investigations, case arguments and reply submissions were provided by counsel representing the complainant and exporters. Details of all representations can be found in **Appendix 3** of this document.

[48] Under Article 15 of the World Trade Organization (WTO) *Anti-dumping Agreement*, developed countries are to give regard to the special situation of developing country members when considering the application of anti-dumping measures under the Agreement. Possible constructive remedies provided for under the Agreement are to be explored before applying anti-dumping duty where they would affect the essential interests of developing country members. As China is listed on the *Development Assistance Committee (DAC) List of Official Development Assistance (ODA) Recipients* maintained by the *Organization for Economic Co-operation and Development (OECD)*,<sup>9</sup> the President recognizes China as a developing country for purposes of actions taken pursuant to SIMA.

[49] Accordingly, the obligation under Article 15 of the WTO *Anti-dumping Agreement* was met by providing the opportunity for exporters to submit price undertakings. In these investigations, the CBSA did not receive any proposals for undertakings from any of the exporters in China.

## **DUMPING INVESTIGATION**

[50] The CBSA received complete responses to the exporter dumping RFI from the following companies:

- Rio Tinto Procurement (Singapore) Pte Ltd.;
- Sui Ning Bao Qing Silicon Co., Ltd.;
- Changsha Benevo International Co., Ltd.;
- Xiamen ITG Group Corp., Ltd.;
- Xiamen K Metal Co., Ltd./ Hua'an Linan Silicon Industry Co., Ltd.;
- Mangshi Sinice Silicon Industry Company Limited.

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<sup>9</sup> The Organization for Economic Co-operation and Development, DAC List of ODA Recipients as at January 1, 2012, the document is available at: [www.oecd.org/dac/stats/49483614.pdf](http://www.oecd.org/dac/stats/49483614.pdf).

## **Normal Values**

[51] The normal value of goods sold to importers in Canada is generally based on the domestic selling prices of like goods in the country of export pursuant to section 15 of SIMA, or on the aggregate of the cost of production of the goods, a reasonable amount for administrative, selling and all other costs, and a reasonable amount for profits, pursuant to paragraph 19(b) of SIMA.

[52] Where, in the opinion of the President, sufficient information has not been furnished or is not available, normal values are determined pursuant to a ministerial specification in accordance with subsection 29(1) of SIMA.

## **Export Prices**

[53] The export price of goods sold to importers in Canada is generally based on the lesser of the adjusted exporter's sale price for the goods or the adjusted importer's purchase price, pursuant to section 24 of SIMA. These prices are adjusted, where necessary, by deducting the costs, charges, expenses, duties and taxes resulting from the exportation of the goods as provided for in subparagraphs 24(a)(i) to 24(a)(iii) of SIMA.

[54] Where there are sales between associated persons or a compensatory arrangement exists, the export price may be determined based on the importer's resale price of the imported goods in Canada to non-associated purchasers, less deductions for all costs incurred in preparing, shipping and exporting the goods to Canada that are additional to those incurred on the sales of like goods for use in the country of export, all costs that are incurred in reselling the goods (including duties and taxes) or associated with the manufacture of the goods in Canada and an amount representative of the industry profit in Canada, pursuant to paragraphs 25(1)(c) and 25(1)(d) of SIMA. Where, in any cases not provided for under paragraphs 25(1)(c) and 25(1)(d) of SIMA, the export price is determined in such manner as the Minister specifies, pursuant to paragraph (25)(1)(e) of SIMA.

[55] Where, in the opinion of the President, sufficient information has not been furnished or is not available, export prices are determined pursuant to a ministerial specification in accordance with subsection 29(1) of SIMA.

## **Amount for Profit for Purposes of Section 25 of SIMA**

[56] An amount for profit was determined pursuant to paragraph 22(c) of the *Special Import Measures Regulations* (SIMR) by using the most recent profit data available, based on the year 2010, from a report produced using Industry Canada's SME Benchmarking Tool which represented goods that are of the group or range of goods that is next largest to the same general category of foundry alloys. This includes goods produced by aluminum rolling, drawing, extruding and alloying.

[57] The amount for profit determined was 3.56%.

## Results of the Dumping Investigation

[58] With respect to the exporters that provided complete responses to the RFI, the CBSA determined a margin of dumping by comparing the total normal value with the total export price of the goods. When the total export price is less than the total normal value, the difference is the margin of dumping for that specific exporter.

[59] The determination of the volume of dumped goods was calculated by taking into consideration each exporter's net aggregate dumping results. Where a given exporter has been determined to be dumping on an overall or net basis, the total quantity of exports attributable to that exporter (i.e., 100%) is considered dumped. Similarly, where a given exporter's net aggregate dumping results are zero, then the total quantity of exports considered to be dumped by that exporter is zero.

[60] In determining the margin of dumping for the country, the overall margins of dumping found in respect of each exporter were weighted according to each exporter's volume of subject silicon metal exported to Canada during the dumping POI.

[61] Based on the preceding, 100% of silicon metal originating in or exported from China and imported into Canada during the POI, was dumped. The margin of dumping for China can be found in **Table 2** at the end of this section.

[62] Under paragraph 41(1)(a) of SIMA, the President shall make a final determination of dumping when he is satisfied that the goods have been dumped and that the margin of dumping of the goods of a country is not insignificant. Pursuant to subsection 2(1) of SIMA, a margin of dumping of less than 2% of the export price of the goods is defined as insignificant. The margin of dumping of silicon metal from China is not less than 2% of the export price of the goods and is, therefore, not insignificant.

[63] For purposes of a preliminary determination of dumping, the President is responsible for determining whether the actual and potential volume of dumped goods is negligible. After a preliminary determination of dumping, the Tribunal assumes this responsibility. In accordance with subsection 42(4.1) of SIMA, if the Tribunal determines the volume of dumped goods from a country is negligible, the Tribunal is required to terminate its injury inquiry in respect of those goods.

[64] A summary of the margins of dumping determined for this investigation is found in **Appendix 1**.

## Section 20 Inquiry

[65] Section 20 of SIMA may be applied to determine the normal value of goods in a dumping investigation where certain conditions prevail in the domestic market of the exporting country. In the case of a prescribed country under paragraph 20(1)(a) of SIMA,<sup>10</sup> it is applied where, in the opinion of the President, domestic prices are substantially determined by the government of that country and there is sufficient reason to believe that they are not substantially the same as they would be if they were determined in a competitive market. Where section 20 is applicable, the normal values of goods are not determined using domestic prices or costs in that country.

[66] For purposes of a dumping proceeding, the CBSA proceeds on the presumption that section 20 of SIMA is not applicable to the sector under investigation, absent sufficient information to the contrary. The President may form an opinion where there is sufficient information that the conditions set forth in paragraph 20(1)(a) of SIMA exist in the sector under investigation.

[67] The CBSA is also required to examine the price effect resulting from substantial government determination of domestic prices and whether there is sufficient information on the record for the President to have reason to believe that the resulting domestic prices are not substantially the same as they would be in a competitive market.

[68] For the purpose of this investigation, the complainant requested that section 20 be applied in the determination of normal values due to the alleged existence of the conditions set forth in paragraph 20(1)(a) of SIMA. The complainant provided information to support these allegations concerning the Chinese ferroalloy sector, which includes silicon metal, such as the extensive state ownership of Chinese silicon metal producers and China's 12<sup>th</sup> Five-Year Plan.

[69] As stated at the initiation of the investigation, the CBSA considers that silicon metal is part of the ferroalloy sector. For example, publications such as CRU and Metal Bulletin include silicon metal in their pricing and reporting with respect to the ferroalloy sector. Further, a number of policy-type documents<sup>11</sup> relating to the ferroalloy sector issued by the GOC Ministry of Industry and Information Technology refer to lists of companies that specifically include silicon metal producers.

[70] At the initiation of the investigation, the CBSA had sufficient evidence, supplied by the complainant and obtained from its own research, to support the initiation of a section 20 inquiry to examine the extent of GOC involvement in pricing in the ferroalloy sector, which includes silicon metal. The information indicated that Chinese prices in this sector have been influenced by various GOC industrial policies. Consequently, the CBSA sent section 20 RFIs to the GOC, all known ferroalloy producers and exporters in China to obtain information on the matter.

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<sup>10</sup> China is a prescribed country under section 17.1 of the *Special Import Measures Regulations*.

<sup>11</sup> CBSA Exhibit Dumping/Subsidy 9 (NC).

## Results of the Section 20 Inquiry

[71] The CBSA received responses from two producers of silicon metal in China. With respect to these two producers, only one of the producers exported subject goods during the POI. In addition, the non-exporting producer's response to the Section 20 RFI was found to be substantially incomplete and as such, the information contained therein was not used for purposes of the Section 20 inquiry.

[72] The GOC did not provide a response to the Section 20 RFI and did not submit any information with respect to the Section 20 inquiry at any time during the course of the investigation.

[73] As noted earlier in the report, only one of the 16 surrogate producers contacted for purposes of the Section 20 inquiry provided a response to the RFI. The response was received from Silicon Smelters (Pty) Ltd. of South Africa.

[74] The following sections detail the CBSA's analysis of the relevant factors related to the Section 20 inquiry that are present in the Chinese ferroalloy sector, which includes silicon metal.

### *GOC Export Control Measures*

[75] One of the ways in which the GOC has influenced the pricing of silicon metal in the domestic market is through the implementation of various export control measures. The complaint references three such export control measures while additional export control measures were also identified by the CBSA during the course of the investigation.

[76] The first export control measure identified in the complaint relates to an export tax of 15% levied on exports of silicon metal. As noted in the complaint, a WTO panel recently concluded in the case *China – Measures related to the Exportation of Various Raw Materials* that the GOC had been unfairly restricting exports of silicon metal by applying export duties under its Tariff Implementation Program. While the 15% export tax on silicon metal was eliminated on January 1, 2013, this export control measure was in place throughout the POI of January 1 to December 31, 2012.<sup>12</sup>

[77] The second export control measure identified in the complaint alleged that silicon metal is subject to a "17% export VAT".<sup>13</sup> Based on the CBSA's general knowledge of the VAT system in China, it appears the complainant may have meant that no VAT refund was available with respect to exports of silicon metal. This is supported by Public Attachment 60 of the complaint which is a 2005 notice by the Chinese Ministry of Finance and the State Administration of Taxation stating that silicon metals, as well as other non-ferrous metal items such as zinc and tin, are no longer eligible to receive a VAT refund on exports as the refund policy for those goods has been repealed.

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<sup>12</sup> CBSA Exhibit 2 (NC) – Complaint – The Dumping and Subsidization of Silicon Metal Originating in or Exported from the People's Republic of China, March 1, 2013 at page 39, para 117.

<sup>13</sup> *Ibid* at page 40, para 118.

[78] In general terms, China's VAT system is similar to a consumption tax, with the ultimate burden borne by the consumer. A manufacturer in China pays VAT on its purchases of raw materials, processes the goods, and then sells the end-products, collecting VAT from the customer in the process. The manufacturer then remits the difference between the VAT collected and the VAT paid on the purchases of the raw materials. In this manner, a manufacturer does not incur any VAT related costs on his production materials. However, VAT on export sales is generally treated differently.

[79] With exports, the exporter still pays the same VAT on their purchases of raw materials, however, when they export the goods, they only receive a VAT refund of a fixed percentage, which is established by the GOC rather than the actual VAT they had paid. Further, the VAT refund cannot exceed the VAT paid on raw materials. As a result, the VAT refund on exports should offset some or all of the VAT paid on the raw materials used to produce goods for export.

[80] However, in the case where certain goods, like silicon metal, do not receive a VAT refund, the VAT paid on raw materials is not offset and this results in increased costs and reduced profitability for Chinese producers who export. As such, the export control measure relating to export VAT encourages producers to sell into the domestic market and collect VAT on their sales to offset their raw material VAT rather than export and incur additional costs as a result of not receiving a VAT refund on such exports.

[81] The third and final export control measure identified by the complainant alleges the GOC directly controls the export price of silicon metal.<sup>14</sup> To support this allegation, the complainant supplied an article in its confidential version of the complaint where it was indicated that minimum export prices were maintained by Chinese Customs.

[82] While the CBSA was unable to obtain any official documents published by the GOC in respect of minimum export prices, confidential information obtained during the course of the investigation indicated that such a practice likely existed during the POI.

[83] In addition to the export control measures identified in the complaint, the CBSA found evidence indicating that the GOC limits silicon exports through the use of export quotas. According to a research report published in February 2012 by a Hong Kong securities firm, the GOC imposed export quotas on nine minerals, including silicon metal, to "...ensure ample supply in the home market".<sup>15</sup>

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<sup>14</sup> *Ibid.*

<sup>15</sup> CBSA Exhibit 9 (NC) - CBSA S.20 Research Documents for Initiation - TAB 7 – Oil & Chemicals Sector Research, 12<sup>th</sup> Five-Year Plan unveiled – the likely beneficiaries, Guosen Securities (HK), February 7, 2012, page 1.

[84] The CBSA also found an article published by Platts in December 2012 announcing that China's Ministry of Commerce (MOFCOM) had granted licenses to 255 Chinese producers and trading companies to export ferroalloys.<sup>16</sup> The article noted that the companies were grouped into two categories according to the type of ferroalloys they export, but that MOFCOM did not reveal the export volumes allocated to each company. The information in that article suggests that there are export quotas in place and that exports of silicon metal may be further controlled through licensing restrictions imposed by MOFCOM.

[85] The cumulative effect of the GOC's export control measures identified above can be viewed as causing a forced increase in the domestic supply of silicon metal by making exports less profitable for Chinese exporters of silicon metal. This results in a supply and demand imbalance in China's domestic silicon metal market resulting in lower domestic prices for silicon metal in China.

[86] In the past, the GOC has argued that its use of such export control measures as identified above are intended to address environmental and resource efficiency issues. However, an analysis of the impact of export restrictions conducted by the World Trade Organization (WTO) in its Trade Policy Review Report for China dismisses the effectiveness of the GOC using export restrictions as a means of addressing its environmental and resource efficiency concerns. The WTO Report noted:

“However, whether intended or not, export restraints for whatever reason tend to reduce export volumes of the targeted products and divert supplies to the domestic market, leading to a downward pressure on the domestic prices of these products. The resulting gap between domestic prices and world prices constitutes implicit assistance to domestic downstream processors of the targeted products and thus provides them a competitive advantage. Insofar as China is a major supplier of such a product, export restraints may also shift the terms of trade in China's favour. Also, some export restrictions might be imposed to pre-empt imposition of import restrictions by governments in export markets.”<sup>17</sup>

#### State-ownership in the Chinese Silicon Metal Sector

[87] The complainant alleged that there is significant state-ownership in the Chinese silicon metal market and that this has an impact on domestic prices. To support this, the complaint stated that as many as eight of the top ten Chinese producers of silicon metal are state-owned enterprises (SOEs). However, the complainant only provided evidence identifying three companies as SOEs and did not name the other five companies it suspects to be SOEs.<sup>18</sup>

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<sup>16</sup> *Ibid* at TAB 15 – China approves 255 companies for ferroalloy export licenses in 2013, Platts, December 28, 2012.

<sup>17</sup> *Ibid* at TAB 32 – excerpt from “Trade Policy Review, Report by the Secretariat, China”, WT/TPR/S/230/REV.1, WTO, Trade Policy Review Body, July 5, 2010, page 44.

<sup>18</sup> CBSA Exhibit 2 (NC) – Complaint – The Dumping and Subsidization of Silicon Metal Originating in or Exported from the People's Republic of China, March 1, 2013 at pages 40-41, paras 120-121.

[88] According to CRU figures provided in the complaint, the three companies identified as SOEs account for a capacity of 453.2 MVA (Megavolt amperes)<sup>19</sup>. Based on these figures, the complainant argued that based on the SOE to private enterprise ratio for the five top-ten companies, the ratio suggests SOEs play a significant role in the silicon metal market and possess enough market share to act as price leaders.<sup>20</sup>

[89] In reviewing the confidential CRU Silicon Market analysis<sup>21</sup> submitted by the complainant, the CBSA noted that the three SOEs identified in the complaint account for less than 5 percent of the total capacity for silicon metal in China.

[90] Further, while the complainant has suggested that as many as eight of the top-ten Chinese producers are SOEs, the complaint identified approximately 400 known producers of silicon metal in China.<sup>22</sup>

[91] The China Nonferrous Metals Industry Association (CNIA) appears to be responsible for the silicon metal industry as the Silicon Industry Branch forms part of the CNIA.<sup>23</sup> As part of the CNIA's activities, it supplies members of the association with various types of information respecting government policies as they apply to silicon metal.

[92] According to CBSA research and past experience in steel related investigations, detailed information on state-owned enterprises can be found in yearbooks and supplemental volumes for various industry sectors as published by China's National Bureau of Statistics or through information available from industry associations such as the CNIA.

[93] Detailed information respecting the CNIA and its role in the silicon metal market was requested by the CBSA in the Section 20 RFI issued to the GOC, however no information was received as the GOC did not participate in the investigation.

[94] At the initiation of the investigation, it was suspected that the China Nonferrous Metals Yearbook for 2011 contained information pertaining to silicon metal that could be useful to the CBSA in determining the extent of state-ownership and its impact on the silicon metal market.<sup>24</sup> The CBSA requested the yearbook in the Section 20 RFI issued to the GOC, however since the GOC did not provide a response to the CBSA's Section 20 RFI, the yearbook was never received.

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<sup>19</sup> Production capacity in China is often expressed in terms of furnace amperage measured in MVA.

<sup>20</sup> CBSA Exhibit 2 (NC) – Complaint – The Dumping and Subsidization of Silicon Metal Originating in or Exported from the People's Republic of China, March 1, 2013 at pages 40-41, paras 120-121.

<sup>21</sup> CBSA Exhibit 1 (PRO) – Complaint – The Dumping and Subsidization of Silicon Metal Originating in or Exported from the People's Republic of China, March 1, 2013, Confidential Attachment 49.

<sup>22</sup> CBSA Exhibit 2 (NC) – Complaint – The Dumping and Subsidization of Silicon Metal Originating in or Exported from the People's Republic of China, March 1, 2013, page 16, para 45.

<sup>23</sup> CBSA Exhibit 9 (NC) - CBSA S.20 Research Documents for Initiation – TAB 2 – The Silicon Industry Branch of the China Nonferrous Metals Industry Association Rules, China Nonferrous Metals Industry Association website.

<sup>24</sup> *Ibid* at TAB 20 – A Guide to China's Energy Statistics, Jonathan E. Sinton and David G. Fridley, Energy Analysis Department, Lawrence Berkeley National Laboratory, April 29, 2001 & Chinabookshop.net Advertisement – The Yearbook of Nonferrous Metals Industry of China 2011.



[95] The information supplied by the complainant, as detailed above, does not support the argument that state-ownership of silicon metal producers in China results in a significant impact on domestic pricing. As no further information respecting the impact of state-ownership on the silicon metal market was obtained during the course of the investigation, the CBSA was unable to determine whether state-ownership in fact plays a significant role in the Chinese silicon metal market and domestic pricing.

#### Government Influence on the Price of Inputs used in the Production of Silicon Metal

[96] The complaint also alleged that the GOC controls the pricing for key inputs that account for up to 70% of the cost of producing silicon metal.<sup>25</sup> The two key inputs that make up the majority of the cost of production for silicon metal are electricity and coal, as discussed in detail below.

[97] The complaint alleged that electricity is sold to Chinese silicon metal producers at prices less than fair market value. As a result, the complainant argues that this would have an enormous impact on the cost of production of silicon metal given that electricity reportedly accounts for 55% to 60% of the cost of production in China.<sup>26</sup> In reviewing the complaint, the CBSA noted that a substantial amount of information was provided to support this allegation.<sup>27</sup>

[98] In 2008, as much as 90% of the total electricity production capacity in China was reportedly owned by SOEs and “state-held share enterprises”. Further, the complainant also submitted a more recent report from 2011 indicating that nearly half of electricity produced in China is produced by five SOEs.<sup>28</sup>

[99] Information was also provided indicating that electricity rates in Yunnan Province are 32% below rates in other regions of China and that that province continued to issue preferential rates to electricity-intensive industries throughout 2012.<sup>29</sup> This is significant given that a 2012 CRU report shows silicon capacity in Yunnan is approximately 2,095 MVA, which represents 19% of the total capacity in China.<sup>30</sup> Further, the U.S. Geological Survey (USGS) - 2011 Minerals Yearbook estimated that in 2011, Yunnan Province accounted for one-half of all silicon metal production in China.<sup>31</sup>

[100] As noted later on in the subsidy section, analysis of the information submitted by MSSI indicated they purchase electricity from the state-owned Dehong Grid located in Dehong Prefecture at prices substantially lower than the prices paid by enterprises operating in other industries in that same prefecture. This information supports the allegations made in the complaint regarding the GOC’s influence on the price of electricity as is detailed below.

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<sup>25</sup> CBSA Exhibit 2 (NC) – Complaint – The Dumping and Subsidization of Silicon Metal Originating in or Exported from the People’s Republic of China, March 1, 2013 at page 47, para 139.

<sup>26</sup> *Ibid* at page 101, para 257.

<sup>27</sup> *Ibid* at pages 100 to 106, paras 255 to 272.

<sup>28</sup> *Ibid* at page 105, para 269.

<sup>29</sup> *Ibid* at page 103, para 264.

<sup>30</sup> *Ibid* at Confidential Attachment 49.

<sup>31</sup> CBSA Exhibit 9 (NC) - CBSA S.20 Research Documents for Initiation - TAB 25 – 2011 Minerals Yearbook – Silicon [Advance Release], U.S. Department of the Interior, U.S. Geological Survey, February 2013, page 67.3.

[101] A substantial amount of information was also provided in the complaint regarding the sale of coal by SOEs in China at prices less than fair market value.<sup>32</sup> Accounting for 8% to 10% of the cost of silicon metal production in China,<sup>33</sup> the complainant submits that SOEs represent in excess of 60% of total coal output in China.<sup>34</sup>

[102] The complaint also alleged the GOC exercises control over the coal industry through the use of policies, laws, regulations, production caps and production ceilings which allow it to control the volumes of coal produced and consumed in China.<sup>35</sup> These allegations were supported by a variety of reports referenced in the complaint, some examples of which are provided below.

[103] One example of this is the GOC's 12<sup>th</sup> Five-Year Plan (2011-2015) which aims to cap production and capacity in the coal sector at 3.9 billion tonnes and 4.1 billion tonnes respectively by 2015. That plan also aims to restrict the number of coal companies to 4,000 and create, through mergers and acquisitions, 10 large and 10 medium-size companies that will account for over 60% of total national coal capacity.<sup>36</sup>

[104] The complainant also noted that MOFCOM restricts export volumes of coal by setting annual quotas. According to a WTO panel report, MOFCOM limited coal exports to 38 million tonnes in 2011 and maintained this cap on coal exports in 2012.<sup>37</sup> Further, the domestic price for coke, a coal substitute and downstream product of coal, is also allegedly controlled by the GOC. Coke, like silicon metal, was also subject to export controls during the proposed investigation period of 2012. According to a WTO panel, the GOC unfairly restricted exports of coke by levying an export tax of 40% under its Tariff Implementation Program. The WTO panel also noted that coke was subject to export quotas that are adjusted annually by the GOC.<sup>38</sup>

[105] Based on the information presented above, it appears that the GOC exercises substantial influence over the pricing of main inputs used in the production of subject goods. The effect of this influence on the price of electricity and coal likely has a significant impact on the domestic price of silicon metal given that these inputs account for as much as 70% of the cost of production.

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<sup>32</sup> CBSA Exhibit 2 (NC) – Complaint – The Dumping and Subsidization of Silicon Metal Originating in or Exported from the People's Republic of China, March 1, 2013 at pages 106 to 11, paras 273 to 285.

<sup>33</sup> *Ibid* at page 106, para 274.

<sup>34</sup> *Ibid* at page 111, para 284.

<sup>35</sup> *Ibid* at page 106, para 274.

<sup>36</sup> *Ibid* at page 109, para 278.

<sup>37</sup> *Ibid* at page 109, para 279.

<sup>38</sup> *Ibid* at page 39, para 117.

## Government Purchases of Silicon Metal

[106] The complaint also alleged that the GOC influences the market by purchasing silicon metal. This allegation appears to rely upon the fact that the CBSA had previously found the Chinese aluminum sector to be significantly influenced by SOEs in its investigation concerning aluminum extrusions.<sup>39</sup>

[107] While the complainant argued that a significant proportion of silicon metal produced in China is purchased by aluminum producers,<sup>40</sup> no evidence was provided in the complaint indicating the volume of silicon metal purchased or consumed by Chinese aluminum producers. Although the two main industries that use silicon metal are the aluminum and chemicals industries, it is unclear what proportion of Chinese produced silicon metal is sold into each market. Further, the CBSA did not receive any information during the course of the investigation beyond what was submitted in the complaint in that respect, and no information was provided in respect of the GOC's influence in the chemicals sector.

[108] A significant amount of information was provided in the complaint respecting the GOCs influence on the Aluminum sector.<sup>41</sup> The reason for placing such a focus on the aluminum industry in China is summarized in paragraph 135 of the complaint:

“In its determination to initiate a section 20 investigation in Pup Joints, Piling Pipe and Oil Country Tubular Goods, the CBSA simply noted that it had previously found that GoC steel industry policies influence the Chinese steel sector and thus there was sufficient information that the GOC determines prices and that these prices are different from what they would be in a competitive market. Here, there is a previous CBSA finding confirming that “... [t]he GoC’s involvement [in the aluminum sector] is extensive enough to significantly affect companies within the industry.” The GoC also continues to exercise a substantial degree of control over the aluminum industry by shaping its structure and development through multiple policies governing project approvals, preferential tax treatment, and environmental regulations.”

[109] However, it should be noted that in those three previous investigations, each of those products represent downstream products of the larger steel sector. As such, the steel sector does not purchase those three products. Rather, those three products form part of the steel sector as they are manufactured from steel and then sold downstream to purchasers in other industry sectors such as the oil and drilling industry. In the current investigation, silicon metal does not represent a downstream product of the aluminum sector and aluminum is not an input used in the production of silicon metal. As aluminum is a further downstream product which uses silicon metal as an input, the steel sector example presented in the complaint does not apply to the current investigation respecting silicon metal.

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<sup>39</sup> *Ibid* at page 41, para 122.

<sup>40</sup> *Ibid* at page 42, para 123.

<sup>41</sup> *Ibid* at pages 43-47, paras 129 to 138.

[110] Based on the limited information available at initiation, the CBSA noted it was unable to assess the significance of this factor without additional information and that this would not be considered a key factor in initiating a section 20 inquiry. As no additional information was received during the course of the investigation to indicate what proportion of silicon metal is consumed by the Chinese aluminum industry as opposed to other industries such as the chemical industry, the CBSA does not consider this to be a significant factor in determining whether section 20 conditions are applicable to silicon metal.

#### Government Policies and Regulations Directed at Production Levels and Participants

[111] In the complaint, it was noted that in past investigations, the CBSA has determined that Section 20 conditions exist based in part on the existence of GOC industrial policies that regulate domestic industry including pricing. The complainant then indicates that China's 12<sup>th</sup> Five-Year plan included provisions that "...are designed to align silicon metal production with GoC priorities" and that the plan "...specifically includes provisions to promote the development of silicon metal".<sup>42</sup>

[112] In reviewing the version of the 12<sup>th</sup> Five-Year plan<sup>43</sup> submitted by the complainant, the CBSA found that the plan appears to be general in nature and does not specifically refer to "silicon metal". The plan does however include references to the elimination of backward technologies and equipment and the overall improvement in the utilization of energy resources for enterprises.<sup>44</sup> It also mentions that overall volume expansion in smelting industries should be strictly controlled,<sup>45</sup> and the relocation of urban non-ferrous metal enterprises should be carried out in an orderly fashion.<sup>46</sup> With respect to non-ferrous metals specifically, the plan also refers to supporting cutting-edge smelting technologies, energy conservation, and recycling energy and waste products.<sup>47</sup> The CBSA recognized that all of these aspects of the 12<sup>th</sup> Five-Year Plan could have an impact on the silicon metal market in China.

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<sup>42</sup> *Ibid* at page 42, para 124.

<sup>43</sup> *Ibid* at Non-confidential Attachment 26.

<sup>44</sup> *Ibid* at Non-confidential Attachment 26, page 7, Section 3.

<sup>45</sup> *Ibid* at Non-confidential Attachment 26, page 6, Section 1.

<sup>46</sup> *Ibid* at Non-confidential Attachment 26, page 7, Section 2.

<sup>47</sup> *Ibid* at Non-confidential Attachment 26, page 8, number 05-Non-ferrous Metals.

[113] Through its preliminary research for initiation, the CBSA identified additional industrial and geographically specific 12<sup>th</sup> Five-Year plans (2011-2015) that could have a significant impact on the silicon metal market in China. These plans included:

- 12<sup>th</sup> Five-Year Development Plan for the Non-Ferrous Metals Industry, which includes the sub-plan, The 12<sup>th</sup> Five-Year Development Plan for the Aluminum Industry;<sup>48</sup>
- 12<sup>th</sup> Five-Year Development Plan for the New Materials Industry;<sup>49</sup>
- 12<sup>th</sup> Five-Year Development Plan for the Oil & Chemicals Sector;<sup>50</sup>
- 12<sup>th</sup> Five-Year Plan for the Raw Materials Industry;<sup>51</sup>
- 12<sup>th</sup> Five-Year Plan for Further Promoting the Economy of the Western Regions;<sup>52</sup> and
- The 12<sup>th</sup> Five Year Plans for the following provinces and provincial-level cities: Chongqing, Guizhou, Yunnan, Shaanxi, Gansu, Qinghai, and Heilongjiang.<sup>53</sup>

[114] As a result, the CBSA requested complete translated copies of each of those 12<sup>th</sup> Five-Year plans, including attachments, from the GOC in the Section 20 RFI issued at initiation. In addition to these five-year plans, the RFI sent to the GOC also requested numerous other documents that were identified through CBSA research, including other plans, policies, notices, and catalogues. Some examples of these requested documents and their potential implications are discussed below. However, as noted earlier, the GOC did not participate in the current investigation, and as such, the requested documents were never received by the CBSA.

[115] According to the USGS 2011 Minerals Yearbook, one of the aims of China's 12<sup>th</sup> Five-Year Plan is to eliminate backward production capacity, which includes silicon metal capacity. To achieve this, the GOC committed to phasing out silicon metal production in electric arc furnaces with a 6,300 kilovoltampere (KVA) capacity by the end of 2012.<sup>54</sup>

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<sup>48</sup> CBSA Exhibit 9 (NC) - CBSA S.20 Research Documents for Initiation - TAB 3 – 12th Five-Year Development Plan for the Non-Ferrous Metals Industry.

<sup>49</sup> *Ibid* at TAB 4 - 12th Five-Year Development Plan for the New Materials Industry, partially translated by Google Translate.

<sup>50</sup> *Ibid* at TAB 7 – Oil & Chemicals Sector Research, 12<sup>th</sup> Five-Year Plan unveiled – the likely beneficiaries, Guosen Securities (HK), February 7, 2012, page 1.

<sup>51</sup> *Ibid* at TAB 17 – The main points of the raw material industry in Yunnan Province in 2013, China Silicon Industry Branch Website, February 18, 2013.

<sup>52</sup> *Ibid* at TAB 30 – China Approves 12<sup>th</sup> Five-Year Plan for Western Regions, China Briefing News, February 27, 2012.

<sup>53</sup> *Ibid* at TAB 29 – “Industries Guidance Catalogue (2012)”, Series Interpretation (5) – Western Region, China Nonferrous Metals Industry Association Webpage, January 23, 2013.

<sup>54</sup> *Ibid* at TAB 25 – 2011 Minerals Yearbook – Silicon [Advance Release], U.S. Department of the Interior, U.S. Geological Survey, February 2013, page 67.3.

[116] In conducting research, the CBSA was able to find the list of specific ferroalloy enterprises required to eliminate production capacity as published by the Ministry of Industry and Information Technology (MIIT) for both 2010<sup>55</sup> and 2011.<sup>56</sup> Each MIIT list identifies the number of enterprises targeted, the province they are located in, the enterprise name, the specific piece of production equipment to be eliminated, and the capacity affected.

[117] In comparing the two MIIT lists with the names of possible exporters of subject goods provided by the complainant, the CBSA noted that the MIIT lists included silicon metal producers and that this GOC capacity reduction policy applies to silicon metal. Of the possible exporters identified in the complaint, 6 companies in 2010 and 10 in 2011 were found on the lists and were required to reduce capacity.

[118] The CBSA was also able to locate the 2012 notice by the MIIT with respect to the elimination of backward capacity but was unable to obtain the actual list of enterprises as attached to that notice.<sup>57</sup> As well, a notice requesting all provinces to submit a plan for eliminating capacity in 2013 was also found. This notice requested provinces to submit the appropriate forms to report on the results of capacity reduction in 2012 and appears to reference inspections of capacity elimination carried out by authorities.<sup>58</sup>

[119] During the course of the investigation, the CBSA obtained a document issued by the Yunnan Government which outlined policies and plans specifically relating to silicon metal.<sup>59</sup> The translated title of the document is “Document of the Office of the People’s Government of Yunnan Province (Yun Zheng Ban Fa [2012] No. 236) – Opinions Concerning Promoting Industrial Restructuring of Industrial Silicon”.<sup>60</sup> The document was prepared by the Yunnan Government in accordance with the requirements of the “Circular of the State Council on Accelerating the Structure Adjustment of the Industries with Production Overcapacity” (Guo Fa [2006] No.11).

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<sup>55</sup> *Ibid* at TAB 24 – List of enterprises to eliminate backward production capacity of the Ministry of Industry and Information Technology announced to the public 18 industries, China Silicon Industry Branch Webpage, August 13, 2010.

<sup>56</sup> *Ibid* at TAB 23 – 2011 announced by the Ministry of Industry and Information Technology industries and eliminate backward production capacity of enterprises list, China Silicon Industry Branch Webpage, July 13, 2011.

<sup>57</sup> *Ibid* at TAB 26 – 2012 19 industries and eliminate backward production capacity enterprise list (first batch), MIIT No. 26 of 2012, China Nonferrous Metals Industry Association Webpage, July 10, 2012.

<sup>58</sup> *Ibid* at TAB 28 – Eliminate backward production capacity target plan submitted to the 2013 Industrial, Department of Industry Joint industry letter [2012] 907, China Nonferrous Metals Industry Association Webpage, December 7, 2012.

<sup>59</sup> CBSA Exhibit 140 (NC) – Verification Exhibits – Mangshi Sinice Silicon Industry, VE 22.

<sup>60</sup> CBSA Exhibit 140 (NC) – Verification Exhibits – Mangshi Sinice Silicon Industry, Translation of Opinions of Industrial Silicon.

[120] The document issued by the Yunnan Government outlines a number of statistics relating to the production and sales of silicon metal by producers in Yunnan during 2011 as well as a number of problems concerning silicon metal production such as redundant production capacity, high resource and energy consumption, pressure on the environment, low industry concentration, and low equipment levels. The document also specifies a number of measures to be used to address the problems identified.

[121] The Yunnan Government also notes that provincial industrial departments are responsible for leading the restructuring of the silicon industry. As such, those departments are responsible for reviewing and approving the implementation of the measures in the states and municipalities.<sup>61</sup>

[122] To address concerns respecting capacity, the Yunnan Government notes that while silicon metal furnaces operating at 6,300 KVA or lower have been completely phased out according to the “Market Access Conditions for the Ferroalloy Industry”, the government will now ensure all silicon metal furnaces operating at or under 12,500 KVA will be phased out by 2015. As well, according to the principle “Close small, Construct big”, restructuring or new construction of industrial silicon furnaces must reach a capacity of 2 X 25,000 KVA or above.<sup>62</sup> The document also states that any restructured or newly constructed industrial silicon projects must have at least two sets of electric furnaces and the electric furnaces must meet the minimum requirements (presumably referring to the 25,000 KVA).<sup>63</sup>

[123] In the document, the Yunnan Government states that industrial silicon capacity for Dehong, Baoshan, Lincang, and Wenshan will be restricted to 550,000 tons, 400,000 tons, 150,000 tons, 150,000 tons, and 50,000 tons respectively in order to restrict total silicon capacity to less than 1.4 million tons in Yunnan. The document also states that in principle, no other States and Municipalities are allowed to add new industrial silicon production capacity or to add new industrial silicon projects. However, it also notes that if a project is indeed necessary, the main product shall be chemical grade silicon and the project shall have corresponding downstream processing technology or partners.<sup>64</sup>

[124] Based on the research conducted by the CBSA and the information obtained during the course of the investigation, as detailed above, the GOC implemented a number of controls to reduce current production capacity as well as limit future production capacity with respect to silicon metal. Further, the information shows that these efforts were undertaken during the POI and are planned to continue until 2015.

[125] In addition to the GOC controlling silicon metal production levels by eliminating and limiting capacity, it appears the GOC is also controlling production levels by restricting access to the silicon metal industry.

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<sup>61</sup> *Ibid* at page 4.

<sup>62</sup> *Ibid* at pages 2-3.

<sup>63</sup> *Ibid* at page 4.

<sup>64</sup> *Ibid* at page 3.

[126] At the time of initiation, the CBSA found an announcement issued by the MIIT published on the CNIA website announcing the publication of the fourth installment of the list of enterprises to meet the ferroalloy industry access conditions (industrial silicon).<sup>65</sup> This announcement included a list of 22 companies, including a few companies identified by the complainant as potential exporters.

[127] Four separate articles were also found on the China Silicon Industry Branch's website referring to access verifications of silicon enterprises by members of the Silicon Industry Branch and the Ministry of Industry.<sup>66</sup> The companies identified in the articles appear to be the companies listed in the fourth installment of the ferroalloy access list which suggests that enterprises must be verified by the GOC prior to being approved to enter the silicon metal industry.

[128] As noted above, the Yunnan Government plans to limit access to the industry given it has indicated that in principle, no other States and Municipalities are allowed to add new industrial silicon production capacity or to add new industrial silicon projects.<sup>67</sup> Further, the Yunnan Government also indicated that it will promote mergers and acquisitions, reorganizations, centralized sales, and strive to build three to five flagship enterprises.<sup>68</sup>

[129] Another way the GOC appears to control production levels is by limiting capacity expansions through policies related to land. At the time of initiation, the CBSA found an announcement relating to a 2012 directory released by the Ministry of Land and Resources that limits the use of land depending on the type of project. The directory appears to be separated into two categories, a restricted projects directory and a prohibited projects directory. While the CBSA could not find the restricted directory, it appears that sections 17, 18, and 19 of the prohibited directory may relate silicon metal production. These three sections reference particular sizes of furnaces used in ferroalloy production and reference capacity in KVA as seen in the capacity elimination lists referred to above. Further, industrial silicon is specifically referred to in section 19 of the prohibited directory, although due to the quality of the translation, it is unclear what specific type of project it is referring to.<sup>69</sup>

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<sup>65</sup> CBSA Exhibit 9 (NC) - CBSA S.20 Research Documents for Initiation – TAB 8 – The list of companies that meet the ferroalloy industry access conditions (the industrial silicon) (fourth installment), MIIT Notice No. 15 of 2012, China Nonferrous Metals Industry Association Webpage, April 12, 2012.

<sup>66</sup> *Ibid* at TAB 5 – Silicon Industry Branch accompanied by the Ministry of Industry leading industrial silicon enterprise access verification, Articles (1), (2), (3), and (4), China Silicon Industry Branch Webpage, February 6, 2012.

<sup>67</sup> CBSA Exhibit 140 (NC) – Verification Exhibits – Mangshi Sinice Silicon Industry, Translation of Opinions of Industrial Silicon, page 3.

<sup>68</sup> *Ibid* at page 4.

<sup>69</sup> CBSA Exhibit 9 (NC) – CBSA S.20 Research Documents for Initiation – TAB 9 – Restrictions prohibit the land for the project directory (2012) released, China Nonferrous Metals Industry Association Webpage, June 20, 2012.



[130] With respect to GOC land policies, the CBSA also noted that the document issued by the Yunnan Government states that any restructured or newly constructed industrial silicon projects must be located in industrial parks. The Yunnan Government also indicated in the document that it will gradually phase out existing silicon production equipment located outside the industrial parks, and promote industrial silicon enterprises to relocate production facilities to the silicon industrial parks.<sup>70</sup>

#### Government Restrictions on the Use and Supply of Inputs

[131] In the Yunnan Government's "Opinions Concerning Promoting Industrial Restructuring of Industrial Silicon", it notes that the government will restrict the energy consumption per unit of silicon product at 12,000 kwh or less, comprehensive energy consumption per unit of product at 3,500 kg of standard coal or less, restrict carbonaceous reducing agents consumption per unit of product at 1,300 kg or less (including restrict unit consumption of actual charcoal at 900 kg or less), achieve silicon recycle rate at 85% or above, achieve waste heat utilization rate for industrial silicon electric furnaces at 70% or above, realize waste water recycling internally, and achieve complete recycling of micro-silica dust.<sup>71</sup>

[132] In order to enforce these restrictions and aid in achieving the goals set out above, the Yunnan Government requires that Provincial industrial authorities implement a reporting system for annual resources and energy consumption. In accordance with the reporting system, enterprises with energy consumption per unit of product above the prescribed limit or above the provincial average shall be given yellow card warning. Enterprises receiving a yellow card warning shall then be included in the key supervision list of energy conservation. For enterprises and products with energy consumption per unit of product above the national and provincial prescribed limit (electricity consumption), punitive electricity rates will also be applied. In addition, enterprises that receive yellow card warnings three years in a row shall have their production equipment listed in the mandatory phase-out plan in the 4th year.<sup>72</sup>

[133] In addition to the measures above related to electricity, the document also notes that measures will be implemented to limit the use of charcoal to promote the production of high-grade silicon and restrictions will be placed on the use of carbon based reducing agents for certain manufacturers that produce low grade silicon such as #441, #553, and metallurgical silicon. The Yunnan Government also noted that state, municipality, county, and district forestry authorities shall work together with industrial authorities to strengthen supervision, urge charcoal producing enterprises to establish and improve raw material purchase and sale accounts, modernize charcoal production and administration.<sup>73</sup>

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<sup>70</sup> CBSA Exhibit 140 (NC) – Verification Exhibits – Mangshi Sinice Silicon Industry, Translation of Opinions of Industrial Silicon, page 4.

<sup>71</sup> *Ibid.*

<sup>72</sup> *Ibid* at page 5.

<sup>73</sup> *Ibid.*

## Chinese Domestic Silicon Metal Price Analysis

[134] In its preliminary analysis, the CBSA reviewed the Chinese monthly domestic pricing for silicon metal that was provided in the complaint, as published by CRU.<sup>74</sup> The CBSA then compared those domestic prices with the monthly prices for silicon metal in the US market as published by Metal Bulletin, Platts Metals Week, Ryan's Notes, and CRU, as well as with the average of the prices published in those four publications.

[135] Metal Bulletin, Platts Metals Week, Ryan's Notes, and CRU are reputable independent firms which publish statistical data, market trends, activity forecasts and market research on world commodities. In addition, information from these sources is provided in sufficient detail to allow a proper product comparison with the silicon metal imported into Canada. For these reasons, the CBSA is satisfied that pricing data from these publications is an appropriate basis to be used in its analysis for the President's final determination.

[136] According to that analysis, throughout the POI the Chinese domestic selling price of silicon metal was significantly below the price in the US Domestic market, with Chinese prices often around USD 1,000 less per metric tonne (MT). Overall, it was found that on average, Chinese domestic prices as published by CRU were 37 percent below the average US domestic selling prices during the POI.<sup>75</sup>

[137] For purposes of the final determination, the CBSA conducted a pricing analysis based on the confidential domestic sales information submitted in response to the dumping RFI by the following three exporters: MSSSI,<sup>76</sup> Xiamen ITG Group Corp., Ltd. (Xiamen ITG),<sup>77</sup> and Xiamen K Metal Co., Ltd. (K Metal).<sup>78</sup>

[138] In conducting the pricing analysis, the CBSA used two different methods of comparison. The first method compared the Chinese domestic selling prices from the above noted exporters during the POI to normal values determined for purposes of the final determination. The second method compared the same Chinese domestic selling prices to the domestic selling prices for silicon metal sold in South Africa during the POI based on information submitted by the surrogate producer Silicon Smelters (Pty) Ltd.<sup>79</sup>

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<sup>74</sup> CBSA Exhibit 1 (PRO) – Complaint – The Dumping and Subsidization of Silicon Metal Originating in or Exported from the People's Republic of China, March 1, 2013, Confidential Attachment 31.

<sup>75</sup> CBSA Exhibit 27 (PRO) – Complaint Analysis - Attachment 5, Section 20 Report concerning Certain Silicon Metal originating in or exported from the People's Republic of China, page 17.

<sup>76</sup> CBSA Exhibit 93 (PRO) - Response to Supplemental RFI #1 - Mangshi Sinice Silicon Industry Company Limited.

<sup>77</sup> CBSA Exhibit 58 (PRO) - Response to Exporter RFI - Xiamen ITG Group Corp., Ltd.

<sup>78</sup> CBSA Exhibit 65 (PRO) - Response to Exporter RFI - Xiamen K Metal Co., Ltd.

<sup>79</sup> CBSA Exhibit 71 (PRO) - Response to Exporter RFI from Designated Country – Silicon Smelters (Pty) Ltd.

[139] Under the first method of comparison, the CBSA's analysis indicated that the weighted average net Chinese domestic selling prices for silicon metal grades 553, 441, 3303, and 2202 as reported by the three Chinese exporters were below the normal values on average by a range of 43% to 50%.<sup>80</sup>

[140] Under the second method of comparison, the CBSA found that weighted average net Chinese domestic selling prices for silicon metal were below the South African domestic selling prices during the POI by a range similar to the range reported above with respect to the comparison to normal values. However, given that the CBSA only received information from one surrogate producer located in South Africa during the course of the investigation, the detailed results cannot be disclosed due to confidentiality concerns.<sup>81</sup>

### Section 20 Inquiry Conclusion

[141] The wide range, length and the material nature of the GOC measures detailed above have resulted in significant influence on the Chinese ferroalloy sector, which includes silicon metal. The conditions described in paragraph 20(1)(a) of SIMA exist in this sector. Domestic prices are substantially determined by the GOC, and there is sufficient reason to believe that the domestic prices of silicon metal are not substantially the same as they would be in a competitive market.

[142] Based on the analysis presented above, for the purposes of the final determination, the President affirmed the opinion rendered at the preliminary determination that the conditions described in paragraph 20(1)(a) of SIMA apply in the ferroalloy sector in China, which includes silicon metal.

### **Normal Values - Section 20**

[143] Normal values of goods sold to importers in Canada are generally based on the domestic selling prices of like goods in the country of export or based on the cost of production of the goods, a reasonable amount for administrative, selling and all other costs, and a reasonable amount for profits.

[144] However, normal values could not be determined on the basis of domestic selling prices in China or on the full cost of goods plus profits, as the President has formed the opinion that the conditions of paragraph 20(1)(a) of SIMA exist in the ferroalloy sector, which includes silicon metal, in China.

[145] Where section 20 conditions exist, the CBSA may determine normal values using the selling price, or the total cost and profit, of like goods sold by producers in a surrogate country designated by the President pursuant to paragraph 20(1)(c) of SIMA. However, due to confidentiality concerns with respect to the submitted information, the surrogate country data provided by the single responding producer could not be used for calculating normal values for purposes of the final determination.

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<sup>80</sup> CBSA Exhibit 161 (PRO) –Section 20 Report concerning Certain Silicon Metal originating in or exported from the People's Republic of China – Final Determination, pages 22-25.

<sup>81</sup> *Ibid* at pages 25-26.

[146] Where normal values cannot be determined under paragraph 20(1)(c), SIMA provides an alternative methodology to calculate normal values under paragraph 20(1)(d), using re-sales in Canada of like goods imported from a third country. The CBSA determined that this provision could also not be used given that the importers did not provide any information respecting goods imported into Canada and resold in the condition in which they were imported.

[147] Accordingly, the CBSA has used an alternative method to determine normal values for the purposes of the final determination, pursuant to a ministerial specification under subsection 29(1) of SIMA. In this respect, the CBSA based the normal values on silicon metal pricing data found in Metal Bulletin, making certain adjustments.

[148] Metal Bulletin is a widely-respected publication based in the UK which reports US Midwest delivered prices for basic grade silicon metal on both a weekly and monthly basis. Metal Bulletin also reports prices for the European market but on different basis than the prices published for the US. Where US prices represent delivered price, European prices represent in-warehouse prices. Further, US prices are published for a standard grade whereas the European prices are based on a grade with a different chemical composition. Therefore, a blend of the different reported prices for the US and Europe was not possible given these discrepancies and could not be used in conjunction with the information submitted in order to establish normal values. It should be noted that Metal Bulletin does not publish a world price for silicon metal nor does it publish prices for any other domestic markets other than Europe or the US.

[149] The CBSA based the normal values on the monthly average US free market prices for Grade 553 silicon metal as reported by Metal Bulletin. These prices, which represent delivered prices, were adjusted by removing an amount for freight. For grades of silicon metal other than Grade 553, an adjustment was made by adding a price premium.

#### Rio Tinto Procurement (Singapore) Pte Ltd. (RTPS)

[150] RTPS was established in 2009 in order to provide centralized procurement services to companies within the Rio Tinto Group. In fulfilling its role within the group, RTPS purchases subject goods from unrelated Chinese suppliers and re-sells those goods to an associated importer in Canada, Rio Tinto Alcan Inc. (RTA).

[151] On-site verifications were held at RTPS from August 27, 2013 to August 28, 2013 and at RTA from September 10, 2013 to September 12, 2013. The information in the company's submissions was fully verifiable and the exporter was deemed to have provided complete and accurate information.

[152] As stated previously, normal values for RTPS could not be calculated on the basis of domestic selling prices in China or on the full cost of goods plus profit, as the President has formed the opinion that the conditions of section 20 exist in the ferroalloy sector.

[153] As a result, normal values for RTPS were calculated pursuant to a ministerial specification under subsection 29(1) of SIMA, based on adjusted silicon metal pricing data found in Metal Bulletin.

[154] As the exporter and importer were related, a reliability test was performed to determine whether the section 24 export prices were reliable as envisaged by SIMA. The reliability test conducted by the CBSA consists of a comparison of the export prices determined pursuant to section 24 of SIMA for the subject goods imported by RTA and purchased from RTPS, with the export price determined pursuant to section 25 of SIMA.

[155] During the POI, silicon metal sold by RTPS to RTA was not resold in Canada in the condition in which it was imported to parties not associated with RTA. Rather, the subject goods were incorporated into further manufactured goods prior to being sold to Canadian customers not associated with RTA. As a result, the section 25 export price was determined pursuant to the methodology of paragraph 25(1)(d) of SIMA which applies to goods not resold in the same condition as they are imported.

[156] The section 25 “deductive” export prices were based on the importer’s sales price of foundry alloys in Canada to non-associated purchasers, less deductions for all additional costs incurred in preparing, shipping and exporting the silicon metal to Canada, all costs incurred in selling the further manufactured goods in Canada or associated with the manufacture of the goods, and an amount representative of the industry profit in Canada. The amount for profit was determined in accordance with paragraph 22(c) of the SIMR by using the most recent profit data available, based on the year 2010, from a report produced using Industry Canada’s SME Benchmarking Tool which represented goods that are of the group or range of goods that is next largest to the same general category of foundry alloys.

[157] Using the information provided by RTA, the CBSA was unable to link specific shipments of silicon metal sold by RTPS to RTA during the POI to a specific sale of further manufactured goods by RTA during the POI. As such, the CBSA could not determine an individual section 25 based export price for each individual export sale of silicon metal made by RTPS to RTA during the POI as envisaged by Section 25(1)(d) of SIMA.

[158] As a result, the CBSA determined the section 25 export price under Section 25(1)(e) using a methodology based on Section 25(1)(d) of SIMA.

[159] In comparing the RTPS monthly average section 24 export price of silicon metal to RTA’s export prices for each sale of foundry alloy as calculated using the section 25 based methodology above, the reliability test revealed that the export prices determined in accordance with section 24 of SIMA were unreliable and therefore, export prices were determined pursuant to paragraph 25(1)(e) of SIMA.

[160] The total normal value was compared with the total export price for all subject goods released into Canada during the POI from RTPS. The margin of dumping for RTPS is 180.3%, expressed as a percentage of the export price.

Mangshi Sinice Silicon Industry Co., Ltd. (MSSI)

[161] MSSI is a silicon metal producer and exporter located in Yunnan Province, wholly owned by the multinational Grupo FerroAtlántica based in Spain. MSSI provided a response to the dumping RFI in the week following the deadline for submission.<sup>82</sup> In its submission, MSSI reported that it sold directly to unrelated importers in Canada during the POI.

[162] On-site verification was conducted at MSSI from August 19, 2013 to August 21, 2013. The information in the company's submissions was fully verifiable and the exporter was deemed to have provided complete and accurate information.

[163] As stated previously, normal values for MSSI could not be calculated on the basis of domestic selling prices in China or on the full cost of goods plus profit, as the President has formed the opinion that the conditions of section 20 exist in the ferroalloy sector.

[164] As a result, normal values for MSSI were calculated pursuant to a ministerial specification under subsection 29(1) of SIMA, based on adjusted silicon metal pricing data found in Metal Bulletin.

[165] Export prices were determined in accordance with section 24 of SIMA, based on the exporter's selling price of the subject goods, adjusted to take into account all costs, charges and expenses incurred in preparing the goods for shipment to Canada and resulting from the exportation of the goods.

[166] The total normal value was compared with the total export price for all subject goods released into Canada during the POI from MSSI. The margin of dumping for MSSI is 72.3%, expressed as a percentage of export price.

Xiamen ITG Group Corp., Ltd.

[167] Xiamen ITG is a limited liability trading company operating in Xiamen, China, which submitted a response to the dumping RFI in the week following the CBSA's due date.<sup>83</sup> During the POI, Xiamen ITG acted as both an exporter of subject goods selling directly to Canada, and as a trading company selling subject goods to the exporter in China for SIMA purposes.

[168] As stated previously, normal values for Xiamen ITG could not be calculated on the basis of domestic selling prices in China or on the full cost of goods plus profit, as the President has formed the opinion that the conditions of section 20 exist in the ferroalloy sector.

[169] As a result, normal values for Xiamen ITG were calculated pursuant to a ministerial specification under subsection 29(1) of SIMA, based on adjusted silicon metal pricing data found in Metal Bulletin.

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<sup>82</sup> CBSA Exhibits: 66pro, 67nc.

<sup>83</sup> CBSA Exhibits: 58pro, 59nc.

[170] Export prices were determined in accordance with section 24 of SIMA, based on the exporter's selling price of the subject goods, adjusted to take into account all costs, charges and expenses incurred in preparing the goods for shipment to Canada and resulting from the exportation of the goods.

[171] The total normal value was compared with the total export price for all subject goods released into Canada during the POI from Xiamen ITG. The margin of dumping for Xiamen ITG is 47.3%, expressed as a percentage of export price.

### **All Other Exporters - Margin of Dumping**

[172] For all other exporters that did not provide the requested information during the course of the dumping investigation, normal values were determined in accordance with subsection 29(1) of SIMA, as in the opinion of the President, sufficient information has not been furnished or is not available to enable the determination of normal values as provided in sections 15 to 23 of SIMA. In accordance with the ministerial specification, the normal values of the goods sold to the importer in Canada were determined by advancing the export prices of the goods as determined under section 24, 25(1)(e) or section 29 of SIMA by the highest amount by which the normal value exceeded the export price on an individual transaction (235%) for an exporter that provided a substantially complete response to the RFI, excluding anomalies.

[173] For all of the other exporters, import pricing information available from the CBSA's import documentation was used for the purposes of determining export prices by ministerial specification under subsection 29(1) of SIMA.

[174] The total normal value was compared with the total export price of all subject goods released into Canada during the POI from all other exporters. The margin of dumping for all other exporters is 235%, expressed as a percentage of the export price.

### **Summary of Results - Dumping**

[175] The following table summarizes the results of the dumping investigation respecting all subject goods released into Canada during the POI.

**Table 2**  
***Margin of Dumping and Volume of Dumped Goods***  
(January 1, 2012 to December 31, 2012)

<b>Country</b>	<b>Volume of Dumped Goods as Percentage of Country Imports</b>	<b>Margin of Dumping*</b>	<b>Volume of Country Imports as Percentage of Total Imports</b>	<b>Volume of Dumped Goods as Percentage of Total Imports</b>
China	100%	190.1%	71.5%	71.5%

\* as a percentage of export price

## **Representations Concerning the Dumping Investigation**

[176] Following the September 17, 2013 close of the record, case arguments were received from counsel representing the complainant, RTA, RTPS, Changsha Benevo International Co., Ltd., Sui Ning Bao Qing Silicon Co., Ltd., Xiamen ITG, Xiamen K Metal Co., Ltd., and Hua'an Linan Silicon Industry Co., Ltd. Reply submissions were also filed on behalf of the aforementioned parties.

[177] The issues raised by participants through the case arguments and reply submissions pertaining to the dumping investigation, as well as the CBSA's response to these issues, are provided in **Appendix 3**.

## **SUBSIDY INVESTIGATION**

[178] In accordance with section 2 of SIMA, a subsidy exists if there is a financial contribution by a government of a country other than Canada that confers a benefit on persons engaged in the production, manufacture, growth, processing, purchase, distribution, transportation, sale, export or import of goods. A subsidy also exists in respect of any form of income or price support within the meaning of Article XVI of the General Agreement on Tariffs and Trade, 1994, being part of Annex 1A to the WTO Agreement that confers a benefit.

[179] Pursuant to subsection 2(1.6) of SIMA, there is a financial contribution by a government of a country other than Canada where:

- (a) practices of the government involve the direct transfer of funds or liabilities or the contingent transfer of funds or liabilities;
- (b) amounts that would otherwise be owing and due to the government are exempted or deducted or amounts that are owing and due to the government are forgiven or not collected;
- (c) the government provides goods or services, other than general governmental infrastructure, or purchases goods; or
- (d) the government permits or directs a non-governmental body to do anything referred to in any of paragraphs (a) to (c) where the right or obligation to do the thing is normally vested in the government and the manner in which the non-governmental body does the thing does not differ in a meaningful way from the manner in which the government would do it.

[180] Where subsidies exist they may be subject to countervailing measures if they are specific in nature. According to subsection 2(7.2) of SIMA, a subsidy is considered to be specific when it is limited, in a legislative, regulatory or administrative instrument, or other public document, to a particular enterprise within the jurisdiction of the authority that is granting the subsidy; or is a prohibited subsidy.



[181] The following terms are defined in section 2 of SIMA. A “prohibited subsidy” is either an export subsidy or a subsidy or portion of subsidy that is contingent, in whole or in part, on the use of goods that are produced or that originate in the country of export. An “export subsidy” is a subsidy or portion of a subsidy contingent, in whole or in part, on export performance. An “enterprise” is defined as including a group of enterprises, an industry and a group of industries.

[182] Notwithstanding that a subsidy is not specific in law, under subsection 2(7.3) of SIMA a subsidy may also be considered specific having regard as to whether:

- (a) there is exclusive use of the subsidy by a limited number of enterprises;
- (b) there is predominant use of the subsidy by a particular enterprise;
- (c) disproportionately large amounts of the subsidy are granted to a limited number of enterprises; and/or
- (d) the manner in which discretion is exercised by the granting authority indicates that the subsidy is not generally available.

[183] For purposes of a subsidy investigation, the CBSA refers to a subsidy that has been found to be specific as an “actionable subsidy”, meaning that it is subject to countervailing measures if the persons engaged in the production, manufacture, growth, processing, purchase, distribution, transportation, sale, export or import of goods under investigation have benefited from the subsidy.

[184] Financial contributions provided by state-owned enterprises (SOEs) may also be considered to be provided by the GOC for purposes of this investigation. An SOE may be considered to constitute “government” for the purposes of subsection 2(1.6) of SIMA if it possesses, exercises, or is vested with, governmental authority. Without limiting the generality of the foregoing, the CBSA may consider the following factors as indicative of whether the SOE meets this standard: 1) the SOE is granted or vested with authority by statute; 2) the SOE is performing a government function; 3) the SOE is meaningfully controlled by the government; or some combination thereof.

[185] At initiation, the CBSA identified 89 potential subsidy programs in the following eight categories:

1. Special Economic Zones (SEZ) Incentives;
2. Grants;
3. Preferential Loan Programs and Loan Guarantees;
4. Preferential Tax Programs;
5. Relief from Duties and Taxes on Materials and Machinery;
6. Goods/Services Provided by the Government at less Than Fair Market Value;
7. Reduction in Land Use Fees; and
8. Additional Programs and Incentives in China’s latest Notification. <sup>84</sup>

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<sup>84</sup> “New and Full Notification Pursuant to Article XVI:1 of the GATT 1994 and Article 25 of the Agreement on Subsidies and Countervailing Measures”, WTO Doc. G/SCM/N/186/CHN (October 21, 2011) [https://docs.wto.org/dol2fe/Pages/FE\\_Search/FE\\_S\\_S009-1.aspx?language=E&CatalogueIdList=89855,732,6058,4,95033,105001,104493,97140,67305,59602,61766&CurrentCatalogueIdIndex=2&FullTextSearch](https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-1.aspx?language=E&CatalogueIdList=89855,732,6058,4,95033,105001,104493,97140,67305,59602,61766&CurrentCatalogueIdIndex=2&FullTextSearch).

[186] Details regarding potential subsidies were provided in the *Statement of Reasons*<sup>85</sup> issued for the initiation of this investigation. A further review during the preliminary phase of the investigation resulted in the removal of two subsidy programs. The two programs were found by the CBSA to be duplicates of the same program. The preliminary and final phases of the investigation also resulted in the addition of four new programs to the investigation. As a result, 91 programs were investigated. These programs can be found in **Appendix 2**.

## **Results of the Subsidy Investigation**

[187] In conducting its investigation, the CBSA sent a subsidy RFI to the GOC, as well as to potential producers and exporters of silicon metal located in China that had been identified through CBSA import documentation. Information was requested in order to establish whether there had been financial contributions made by any level of government including SOEs possessing, exercising or vested with government authority, and, if so, to establish if a benefit has been conferred on persons engaged in the production, manufacture, growth, processing, purchase, distribution, transportation, sale, export or import of certain silicon metal; and whether any resulting subsidy was specific in nature. The GOC was also requested to forward the RFIs to all subordinate levels of government that had jurisdiction over the exporters. The exporters were requested to forward a portion of the RFI to their input suppliers, who were asked to respond to questions pertaining to their legal characterization as SOEs.

[188] The GOC did not provide a response to the subsidy RFI.

[189] The GOC made representations with respect to the complaint on April 17, 2013, before the initiation on April 22, 2013. In those representations, the GOC expressed its views on the complainant's identified subsidy programs. However, the arguments put forward by the GOC against the CBSA's investigation of the named subsidy programs were not supported by proper documentation. Therefore, the CBSA is not in a position to make use of the representations submitted by the GOC prior to initiation.

[190] The CBSA received complete responses to the exporter subsidy RFI from the following companies:

- Sui Ning Bao Qing Silicon Co., Ltd. (Sui Ning);
- Changsha Benevo International Co., Ltd. (Changsha Benevo);
- Xiamen ITG Group Corp., Ltd. (Xiamen ITG);
- Xiamen K Metal Co., Ltd./ Hua'an Linan Silicon Industry Co., Ltd. (K Metal/Hua'an Linan);
- Mangshi Sinice Silicon Industry Company Limited (MSSI).

[191] On-site verification of the subsidy material submitted was conducted at the premises of MSSI in August 2013.

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<sup>85</sup> Initiation of Investigation Statement of Reasons for Silicon Metal; August 6, 2013.

[192] Of the companies listed above, only MSSSI and Xiamen ITG are considered to be exporters for SIMA purposes during the POI. Rio Tinto Procurement Singapore (RTPS) is also considered to be an exporter for purposes of this investigation. At the same time, Changsha Benevo, Sui Ning, K Metal/ Hua'an Linan and Xiamen ITG acted as suppliers of subject goods that were exported to Canada by other parties.

[193] As noted above, the GOC did not submit a response to the subsidy RFI, and therefore did not provide the required information relating to financial contribution, benefit and specificity. This significantly impeded the CBSA's investigation as sufficient information has not been furnished to enable the determination of the amount of subsidy in the prescribed manner. In addition, complete responses to the subsidy RFI were received from producers supplying only a small percentage of the quantities shipped to Canada by RTPS, thereby precluding any possible subsidy pass-through analysis respecting RTPS. As a result, subsidy amounts for all exporters have been determined under a ministerial specification pursuant to subsection 30.4(2) of SIMA.

[194] However, in consideration of the level of information received from the exporters, producers, and trading companies that provided complete responses to the subsidy RFI, individual amounts of subsidy have been determined for those parties where sufficient information has been furnished to enable the necessary calculations by applying a methodology provided for under subsection 30.4(1) and as prescribed under Part II of the SIMR.

[195] Therefore, for shipments of silicon metal originating from producers that provided complete responses to the original and supplemental RFIs and who fully cooperated in the investigation by allowing complete verification, the amount of subsidy shall be based on the total amount of benefits found for that producer and, where applicable, trading company, distributed over the total quantity of goods to which the benefits are attributable.

[196] A summary of the amounts of subsidy per exporter is provided in **Appendix 1**, whereas a summary of the findings for the named subsidy programs can be found in **Appendix 2**.

[197] A description of the CBSA's analysis of responses received during the investigation is provided below.

### Sui Ning

[198] Sui Ning is a producer of silicon metal in Hunan Province that supplied subject goods during the POI that were subsequently exported to Canada by other parties. Although Sui Ning is not considered to be the exporter for SIMA purposes in this investigation, the company provided a response to the CBSA's subsidy RFI in the week following the due date.

[199] During the course of the investigation, the CBSA sent Sui Ning three supplemental RFIs to obtain and verify certain information required to determine a program-specific amount of subsidy for the company. As of the close of record, such information had not been provided.

[200] Therefore, the amount of subsidy for Sui Ning was determined based on a ministerial specification pursuant to subsection 30.4(2) of SIMA using the same methodology as was used for all other exporters who did not provide a response to the CBSA.

### Changsha Benevo

[201] Changsha Benevo is a trading company that sold subject goods in China that were subsequently exported to Canada. Although Changsha Benevo is not considered to be the exporter for SIMA purposes in this investigation, the company provided a response to the CBSA's subsidy RFI in the week following the due date.

[202] Of the seven producers from whom Changsha Benevo sourced the product that was exported to Canada, no producer furnished sufficient information to receive program-specific amounts of subsidy.

[203] Therefore, the amount of subsidy for Changsha Benevo was determined based on a ministerial specification pursuant to subsection 30.4(2) of SIMA using the same methodology as was used for all other exporters who did not provide a response to the CBSA.

### Xiamen ITG

[204] During the POI, Xiamen ITG acted as both an exporter of subject goods selling directly to Canada, and as a trading company selling subject goods to the exporter in China for SIMA purposes. The subject goods exported to Canada by Xiamen ITG itself were supplied by three producers who did not provide complete responses to the RFI during the CBSA's investigation. The subject goods sold by Xiamen ITG to the exporter in China were supplied by both producers who provided complete responses to the RFI and those that did not.

[205] The CBSA examined the information submitted by Xiamen ITG in response to the CBSA's original and supplemental RFIs, and verified the data through a desk-audit. It was found that, during the POI, the company had received benefits from the following three programs:

- Program 58: Compensation of Export Credit Insurance Premiums;
- Program 59: Compensation of Interest Expenses on Export Credit Insurance Financing;
- Program 60: Compensation of Interest Expenses on Export Financing.

[206] However, since the subject goods exported to Canada by Xiamen ITG were supplied by producers who did not provide complete responses to the RFI during the CBSA's investigation, the amount of subsidy for Xiamen ITG for the final determination was determined based on a ministerial specification pursuant to subsection 30.4(2) of SIMA using the same methodology as was used for all other exporters who did not provide a response to the CBSA.

### K Metal/Hua'an Linan

[207] Hua'an Linan, a silicon metal producer, and its related trader, K Metal, submitted a joint response to the subsidy RFI in the week following the deadline for submission. K Metal/Hua'an Linan are not considered to be the exporter for SIMA purposes in this investigation.

[208] The CBSA examined the material submitted by K Metal/Hua'an Linan in response to the CBSA's original, and three supplemental, RFIs, which was then verified through a desk-audit. It was found that the company had received benefits from the following two programs during the POI:

- Program 81: VAT Exemptions on Domestically Purchased Equipment;
- Program 82: Utilities Provided by Government at Less than Fair Market Value.

[209] Where applicable, the amount of the benefits received under these subsidy programs were then incorporated into the calculations of the amount of subsidy for the exporter of the goods.

### MSSI

[210] As stated previously, MSSI provided a response to the subsidy RFI in the week following the deadline for submission. It also responded to a supplemental RFI. An on-site verification of MSSI was conducted during the month of August 2013.

[211] It was found that MSSI received a grant from the Mangshi Commission of Commerce to support its exporting activities.

[212] As well, the CBSA's review and analysis of the information submitted by MSSI indicated that the company was purchasing electricity from the state grid at prices that were considerably below those applicable to other heavy industries in Dehong Prefecture.

[213] Therefore, for the purposes of the final determination, the CBSA determined that MSSI had received benefits from the following two programs during the POI:

- Program 29: Grants for Export Activities – 3.99 Renminbi per metric tonne (RMB/MT);
- Program 82: Utilities Provided by Government at Less than Fair Market Value – 1,456.48 RMB/MT.

[214] On the basis of the final analysis of the information provided by MSSI, the CBSA determined an amount of subsidy of 14.2% of the export price or 1,460.5 RMB/MT. All subject goods exported by MSSI were found to be subsidized.

## RTPS

[215] As a privately held corporation domiciled in Singapore, RTPS did not provide a response to the CBSA's subsidy RFI. However, RTPS is considered to be the exporter for SIMA purposes of the majority of subject goods shipped to Canada during the POI, as supplied by approximately 20 producers and/or trading companies. Suppliers of only a small proportion of RTPS's exports responded to the subsidy RFI.

[216] Therefore, for shipments of silicon metal exported by RTPS but originating with producers that provided complete responses to the original and supplemental RFIs, and who fully cooperated in the investigation by allowing complete verification, the amount of subsidy was based on the total amount of benefits found for that company, distributed over the total quantity of goods to which the benefits are attributable. For goods exported by RTPS that originated with other producers, the amount of subsidy was determined based on a ministerial specification pursuant to subsection 30.4(2) of SIMA using the same methodology as was used for all other exporters who did not provide a response to the CBSA.

[217] In this manner, the CBSA calculated the weighted average subsidy applicable to all subject goods exported to Canada during the POI by RTPS, which yielded an amount of subsidy for RTPS of 25.4% of the export price or 1,934.5 RMB/MT.

## Other Exporters

[218] For all other exporters, the CBSA determined an amount of subsidy, pursuant to a ministerial specification, on the basis of the following methodology:

- i) the highest amount of subsidy for each of the six programs used by the companies that provided complete submissions as found at the final determination; plus
- ii) the subsidy amount for the actionable subsidy program in (i) which had the lowest allocation per metric tonne, applied to each of the remaining 85 potentially actionable subsidy programs for which information is not available or has not been provided at the final determination.

[219] Using the above methodology for all other exporters, the result is an amount of subsidy of 1,945 RMB/MT.

[220] In summary, 100% of the subject goods from China are subsidized and the amount of subsidy is 21.1%, expressed as a percentage of the export price.

### Summary of Results - Subsidy

**Table 3**  
***Amount of Subsidy and Volume of Subsidized Goods***  
(January 1, 2012 to December 31, 2012)

<b>Country</b>	<b>Volume of Subsidized Goods as Percentage of Country Imports</b>	<b>Amount of Subsidy*</b>	<b>Volume of Country Imports as Percentage of Total Imports</b>	<b>Volume of Subsidized Goods as Percentage of Total Imports</b>
China	100%	21.1%	71.5%	71.5%

\* as a percentage of export price

[221] In making a final determination of subsidizing under paragraph 41(1)(a) of SIMA, the President must be satisfied that the subject goods have been subsidized and that the amount of subsidy on the goods of a country is not insignificant. According to subsection 2(1) of SIMA, an amount of subsidy that is less than 1% of the export price of the goods is considered insignificant.

[222] However, according to section 41.2 of SIMA, the President is required to take into account Article 27.10 of the *WTO Agreement on Subsidies and Countervailing Measures* when conducting a subsidy investigation. This provision stipulates that a countervailing duty investigation involving a product from a developing country should be terminated as soon as the authorities determine that the overall level of subsidies granted upon the product in question does not exceed 2% of its value calculated on a per unit basis.

[223] SIMA does not define or provide any guidance regarding the determination of a “developing country” for purposes of Article 27.10 of the *WTO Agreement on Subsidies and Countervailing Measures*. As an administrative alternative, the CBSA refers to the *Development Assistance Committee List of Official Development Assistance Recipients* (DAC List of ODA Recipients) for guidance.<sup>86</sup> As China is included in the listing, the CBSA will extend developing country status to China for purposes of this investigation. As the preceding table illustrates, the amount of subsidy found during this investigation is not insignificant.

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<sup>86</sup> The Organization for Economic Co-operation and Development, DAC List of ODA Recipients from 2011 to 2013, the document is available at:  
[www.oecd.org/dac/stats/DAC%20List%20used%20for%202012%20and%202013%20flows.pdf](http://www.oecd.org/dac/stats/DAC%20List%20used%20for%202012%20and%202013%20flows.pdf).

[224] For purposes of the preliminary determination of subsidizing, the President has responsibility for determining whether the actual or potential volume of subsidized goods is negligible. After a preliminary determination of subsidizing, the Tribunal assumes this responsibility. In accordance with subsection 42(4.1) of SIMA, the Tribunal is required to terminate its inquiry in respect of any goods if the Tribunal determines that the volume of subsidized goods from a country is negligible.

### **Representations Concerning the Subsidy Investigation**

[225] Following the September 17, 2013 close of the record, case arguments were received from counsel representing the complainant, RTA, RTPS, Changsha Benevo International Co., Ltd., Sui Ning Bao Qing Silicon Co., Ltd., Xiamen ITG, Xiamen K Metal Co., Ltd., and Hua'an Linan Silicon Industry Co., Ltd. Reply submissions were also filed on behalf of the aforementioned parties.

[226] The issues raised by participants through the case arguments and reply submissions pertaining to the subsidy investigation, as well as the CBSA's response to these issues, are provided in **Appendix 3**.

### **DECISIONS**

[227] On the basis of the results of the dumping investigation, the President is satisfied that certain silicon metal originating in or exported from China, has been dumped and that the margin of dumping is not insignificant. Consequently, on October 21, 2013, the President made a final determination of dumping pursuant to paragraph 41(l)(a) of SIMA.

[228] On the basis of the results of the subsidy investigation, the President is satisfied that certain silicon metal originating in or exported from China has been subsidized and that the amount of subsidy is not insignificant. Consequently, on October 21, 2013, the President made a final determination of subsidizing pursuant to paragraph 41(l)(a) of SIMA.

[229] **Appendix 1** contains a summary of the margins of dumping and amounts of subsidy relating to the final determinations.

### **FUTURE ACTION**

[230] The provisional period began on July 22, 2013, and will end on the date the Tribunal issues its finding. The Tribunal is expected to issue its decision by November 19, 2013. Subject goods imported during the provisional period will continue to be assessed provisional duties as determined at the time of the preliminary determinations. For further details on the application of provisional duties, refer to the *Statement of Reasons* issued for the preliminary determinations, which is available on the CBSA's Web site at [www.cbsa-asfc.gc.ca/sima-lmsi](http://www.cbsa-asfc.gc.ca/sima-lmsi).

[231] If the Tribunal finds that the dumped and subsidized goods have not caused injury and do not threaten to cause injury, all proceedings relating to these investigations will be terminated. In this situation, all provisional duties paid or security posted by importers will be returned.



[232] If the Tribunal finds that the dumped and subsidized goods have caused injury, the anti-dumping and/or countervailing duties payable on subject goods released by the CBSA during the provisional period will be finalized pursuant to section 55 of SIMA. Imports released by the CBSA after the date of the Tribunal's finding will be subject to anti-dumping duty equal to the margin of dumping and countervailing duty equal to the amount of subsidy.

[233] The importer in Canada shall pay all applicable duties. If the importers of such goods do not indicate the required SIMA code or do not correctly describe the goods in the CBSA import documentation, an administrative monetary penalty could be imposed. The provisions of the *Customs Act*<sup>87</sup> apply with respect to the payment, collection or refund of any duty collected under SIMA. As a result, failure to pay duty within the prescribed time will result in the application of interest.

[234] In the event of an injury finding by the Tribunal, normal values and amounts of subsidy have been provided to the exporters that provided complete submissions for future shipments to Canada and these normal values and amounts of subsidy would come into effect the day after an injury finding. Information regarding normal values of the subject goods should be obtained from the exporter.

[235] Exporters of subject goods who did not provide sufficient information in the dumping investigation will have normal values established by advancing the export price by 235% based on a ministerial specification pursuant to section 29 of SIMA. Anti-dumping duty will apply based on the amount by which the normal value exceeds the export price of the subject goods. Similarly, exporters of subject goods who did not provide sufficient information in the subsidy investigation will be subject to a countervailing duty amount of 1,945 RMB/MT, based on a ministerial specification pursuant to subsection 30.4(2) of SIMA.

### **RETROACTIVE DUTY ON MASSIVE IMPORTATIONS**

[236] Under certain circumstances, anti-dumping and/or countervailing duty can be imposed retroactively on subject goods imported into Canada. When the Tribunal conducts its inquiry on material injury to the Canadian industry, it may consider if dumped and/or subsidized goods that were imported close to or after the initiation of the investigation constitute massive importations over a relatively short period of time and have caused injury to the Canadian industry. Should the Tribunal issue a finding that there were recent massive importations of dumped and/or subsidized goods that caused injury, imports of subject goods released by the CBSA in the 90 days preceding the day of the preliminary determination could be subject to anti-dumping and/or countervailing duty.

[237] In respect of importations of subsidized goods that have caused injury, this provision is only applicable where the CBSA has determined that the whole or any part of the subsidy on the goods is a prohibited subsidy. In such a case, the amount of countervailing duty applied on a retroactive basis will equal the amount of subsidy on the goods that is a prohibited subsidy. An export subsidy is a prohibited subsidy according to subsection 2(1) of SIMA.

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<sup>87</sup> *Customs Act* R.S.C. 1985.

## **PUBLICATION**

[238] A notice of these final determinations of dumping and subsidizing will be published in the *Canada Gazette* pursuant to paragraph 41(3)(a) of SIMA.

## **INFORMATION**

[239] This *Statement of Reasons* has been provided to persons directly interested in these proceedings. It is also posted on the CBSA's Web site at the address below. For further information, please contact the officers identified as follows:

**Mail:** SIMA Registry and Disclosure Unit  
Anti-dumping and Countervailing Directorate  
Canada Border Services Agency  
100 Metcalfe Street, 11<sup>th</sup> floor  
Ottawa, Ontario K1A 0L8  
Canada

**Telephone:** Vera Hutzuliak 613-954-0689  
Matthew Lerette 613-954-7398  
Manshun Tong 613-954-1666

**Fax:** 613-948-4844

**E-mail:** [simaregistry@cbsa-asfc.gc.ca](mailto:simaregistry@cbsa-asfc.gc.ca)

**Web site:** [www.cbsa-asfc.gc.ca/sima-lmsi](http://www.cbsa-asfc.gc.ca/sima-lmsi)



Caterina Ardito-Toffolo  
Acting Director General  
Anti-dumping and Countervailing Directorate

Attachments

**APPENDIX 1 – SUMMARY OF MARGINS OF DUMPING AND AMOUNTS OF SUBSIDY**

<b>Exporter</b>	<b>Margin of Dumping*</b>	<b>Amount of Subsidy (Renminbi per metric tonne)</b>
Rio Tinto Procurement (Singapore) Pte Ltd.	180.3%	1,934.5
Mangshi Sinice Silicon Industry Company Limited	72.3%	1,460.5
Xiamen ITG Group Corp., Ltd.	47.3%	1,945.0
All Other Exporters	235%	1,945.0

\*expressed as a percentage of the export price

## **APPENDIX 2 – SUMMARY OF FINDINGS FOR NAMED SUBSIDY PROGRAMS**

As noted in the body of this document, the GOC did not submit a response to the subsidy RFI, and therefore did not provide the required information relating to financial contribution, benefit and specificity. This significantly impeded the CBSA's investigation as all information has not been furnished to enable the determination of the amount of subsidy in the prescribed manner. For example, this required information would have enabled the CBSA to conduct a proper *de jure* and *de facto* specificity analysis for each of the programs identified. Due to the lack of response from the GOC, subsidy amounts for all exporters have been determined under a ministerial specification pursuant to subsection 30.4(2) of SIMA based on the best information available to the CBSA. However, in consideration of the information received from the exporters who provided complete responses to the subsidy RFI, individual amounts of subsidy have been determined for those exporters where sufficient information had been furnished to enable the necessary calculations.

This appendix consists of descriptions of the subsidy programs from which the responding exporters benefited from during the course of the POI, followed by a listing of the other potentially actionable subsidy programs identified by the CBSA.

### **SUBSIDY PROGRAMS USED BY RESPONDING EXPORTERS**

Without a response to the subsidy RFI from the GOC, the CBSA has used information available to describe the subsidy programs used by exporters that responded to the RFI in the current investigation. This includes using information obtained from CBSA research on potential subsidy programs in China, information provided by exporters and descriptions of programs that the CBSA has previously published in recent *Statements of Reasons* relating to subsidy investigations involving China.

## **II. Grants**

### **Program 29: Grants for Export Activities**

Program 29 was identified by the CBSA during on-site verification. Details of this program were provided in the form of an email, general ledgers, and proof of payments supplied by the company. The program was administered from the local municipal government. The purpose of the grant was to support the company's exportations of silicon metal.

On the basis of the available information, this program constitutes a financial contribution pursuant to paragraph 2(1.6)(a) of SIMA, i.e., a practice of government that involves a direct transfer of funds and confers a benefit to the recipient equal to the amount of the grant provided. Due to the lack of a response by the GOC, there is insufficient information to indicate that the subsidy is not specific pursuant to the criteria set out in subsection 2(7.1).

The amount of subsidy was calculated under ministerial specification pursuant to subsection 30.4(2) of SIMA, by distributing the benefit amount received by the exporter over the total quantity of goods to which the benefit was attributable.

### **III. Preferential Loan Programs**

#### **Program 58: Compensation of Export Credit Insurance Premiums**

During the POI, one of the exporters that responded to the subsidy RFI received benefits under this program. The exporter provided limited information with respect to this program, while the GOC provided no information.

The information provided by the exporter indicates that, under this program, the GOC compensates companies for the premiums they paid when purchasing export credit insurance.

The CBSA has determined that, based on the available information, this program constitutes a financial contribution pursuant to paragraph 2(1.6)(a) of SIMA; i.e. a practice of government that involves a direct transfer of funds. This grant confers a direct benefit to the recipient in the form of a grant, and the benefit is equal to the amount of the grant provided. Due to the lack of a response by the GOC, there is insufficient information to indicate that the subsidy is not specific pursuant to the criteria set out in subsection 2(7.1).

As a result, an amount of subsidy was calculated with respect to this program under ministerial specification pursuant to subsection 30.4(2) of SIMA, by distributing the benefit amount received by the exporter over the total quantity of goods to which the benefit was attributable.

#### **Program 59: Compensation of Interest Expenses on Export Credit Insurance Financing**

During the POI, one of the exporters that responded to the subsidy RFI received benefits under this program. The exporter provided limited information with respect to this program, while the GOC provided no information.

The information provided by the exporter indicates that, under this program, the GOC compensates companies for interest costs incurred when their financing is related to the purchase of export credit insurance.

The CBSA has determined that, based on the available information, this program constitutes a financial contribution pursuant to paragraph 2(1.6)(a) of SIMA; i.e. a practice of government that involves a direct transfer of funds. This grant confers a direct benefit to the recipient in the form of a grant, and the benefit is equal to the amount of the grant provided. Due to the lack of a response by the GOC, there is insufficient information to indicate that the subsidy is not specific pursuant to the criteria set out in subsection 2(7.1).

As a result, an amount of subsidy was calculated with respect to this program under ministerial specification pursuant to subsection 30.4(2) of SIMA, by distributing the benefit amount received by the exporter over the total quantity of goods to which the benefit was attributable.

## **Program 60: Compensation of Interest Expenses on Export Financing**

During the POI, one of the exporters that responded to the subsidy RFI received benefits under this program. The exporter provided limited information with respect to this program, while the GOC provided no information.

The information provided by the exporter indicates that, under this program, the GOC compensates companies for interest costs incurred when obtaining export financing.

The CBSA has determined that, based on the available information, this program constitutes a financial contribution pursuant to paragraph 2(1.6)(a) of SIMA; i.e. a practice of government that involves a direct transfer of funds. This grant confers a direct benefit to the recipient in the form of a grant, and the benefit is equal to the amount of the grant provided. Due to the lack of a response by the GOC, there is insufficient information to indicate that the subsidy is not specific pursuant to the criteria set out in subsection 2(7.1).

As a result, an amount of subsidy was calculated with respect to this program under ministerial specification pursuant to subsection 30.4(2) of SIMA, by distributing the benefit amount received by the exporter over the total quantity of goods to which the benefit was attributable.

## **V. Relief from Duties and Taxes on Materials and Machinery**

### **Program 81: VAT exemptions on domestically purchased equipment**

During the POI, one of the producers that responded to the subsidy RFI received benefits by not paying VAT on certain purchases of domestic production equipment. The producer provided limited information with respect to such benefits, while the GOC provided no information.

The CBSA has determined that, based on the available information, this VAT exemption program constitutes a financial contribution pursuant to paragraph 2(1.6)(a) of SIMA; i.e. a practice of government that involves a direct transfer of funds. This grant confers a direct benefit to the recipient in the form of a grant, and the benefit is equal to the amount of the grant provided. Due to the lack of a response by the GOC, there is insufficient information to indicate that the subsidy is not specific pursuant to the criteria set out in subsection 2(7.1).

As a result, an amount of subsidy was calculated with respect to this program under ministerial specification pursuant to subsection 30.4(2) of SIMA, by amortizing the benefits over the useful life of the equipment and subsequently distributing the annual benefit amount over the total quantity of goods to which the benefit was attributable.

## **VI. Goods/Services Provided by the Government at Less than Fair Market Value**

### **Program 82: Utilities Provided by Government at Less than Fair Market Value**

This program relates to the costs incurred by producers of subject goods when purchasing electricity from state, provincial or municipal power companies in China. Information available to the CBSA indicates that such power companies are SOEs. When exporters or producers of subject goods purchase utilities directly or indirectly from SOEs at less than fair market value, and those SOEs are considered to be possessing, exercising, or vested with governmental authority, a subsidy may be found to exist.

For the purposes of this investigation, there are three key concepts to consider when determining whether a subsidy exists under this program:

- whether the exporters or producers of subject goods to Canada purchased utilities from SOEs;
- whether the SOEs that provided such utilities are considered to be possessing, exercising, or vested with governmental authority; and
- the fair market value of the utilities provided by SOEs.

In terms of the first concept, information submitted by the responding exporters contained purchases of utilities (electricity), the names of the suppliers/producers, and the ownership status of these parties, where known. The producers that responded to the subsidy RFI indicated in their submission that they have purchased only from SOEs.

In terms of the second concept, the following analysis considers whether SOEs in the electricity sector could be regarded as “government” for the purpose of subsection 2(1) of SIMA. SOEs may be considered to constitute “government” if they possess, exercise or are vested with government authority, which may be indicated by the following factors:

- where a statute or other legal instrument expressly vests government authority in the entity concerned;
- evidence that an entity is, in fact, exercising governmental functions; and
- evidence that a government exercises meaningful control over an entity.

The exercise of meaningful control by the GOC, examined in conjunction with the performance of government functions as discussed above, is sufficient to indicate that these SOEs possess, exercise or are vested with governmental authority. As such, the CBSA will consider SOEs in the electricity sector to be included under the definition of “government” in subsection 2(1) of SIMA.

The third concept relating to this program is the determination of the fair market value of the inputs provided by SOEs for the purposes of evaluating whether the purchase price from SOEs is below fair market value.

The CBSA determined whether the financial contribution conferred a benefit to the exporter whose producer of subject goods indicated purchasing electricity from an SOE. This determination involved the comparison of the price at which the goods were provided by the government with the prices that were applicable to other heavy industries in the area. The CBSA then multiplied the difference by amount of KWH purchased during the POI, expressed on a per metric tonne basis.

On the basis of available information, this program constitutes a financial contribution pursuant to paragraph 2(1.6)(c) of SIMA, i.e., the government provides goods or services, other than general infrastructure, or purchases goods, and thereby confers a benefit to the recipient. The amount of subsidy was calculated under ministerial specification pursuant to subsection 30.4(2) of SIMA, by distributing the benefit amount received by the exporter over the total quantity of goods to which the benefit was attributable.



## **OTHER POTENTIALLY ACTIONABLE SUBSIDY PROGRAMS**

The following 85 programs were also included in the current investigation. Questions concerning these programs were included in the RFI sent to the GOC and to all known exporters of the goods in China. None of the exporters who provided responses to the RFI reported using these programs during the subsidy POI. Without a complete response to the subsidy RFI from the GOC and all known exporters, the CBSA does not have sufficient information to determine that any of these programs do not constitute actionable subsidies. In other words, the CBSA does not have sufficient information to determine that any of the following programs should be removed from the investigation for purposes of the final determination.

### **I. Special Economic Zone (SEZ) Incentives**

- Program 1: Corporate Income Tax Exemption and/or Reduction in SEZs and other Designated Areas
- Program 2: Local Income Tax Exemption and/or Reduction in SEZs and other Designated Areas
- Program 3: Exemption/Reduction of Special Land Tax, Property Tax, Real Estate Tax and Land Use Fees in SEZs and Other Designated Areas
- Program 4: Tariff and Value-added Tax (VAT) Exemptions on Imported Materials and Equipment in SEZs and other Designated Areas
- Program 5: Income Tax Refund where Profits Re-invested in SEZs and other Designated Areas
- Program 6: Preferential Costs of Services and/or Goods Provided by Government or State-owned Enterprises (SOEs) in SEZs and Other Designated Areas
- Program 7: VAT exemptions
- Program 8: Export duty exemptions for exports from zone
- Program 9: Tax exemption for products produced within the zone and eligible for import substitution
- Program 10: Special import substitution treatment for enterprises operating in zone.
- Program 11: Investment Credits and R&D Deductions for preferentially supported and encouraged enterprises operating in a zone
- Program 12: Preferential access to loans for enterprises operating in zones
- Program 13: Preferential transfer price for land

### **II. Grants**

- Program 14: Government Export Subsidy and Product Innovation Subsidy
- Program 15: Research & Development (R&D) Assistance Grant
- Program 16: Superstar Enterprise Grant
- Program 17: Matching funds for international market development for SMEs
- Program 18: Awards to Enterprises Whose Products Qualify for "Well-Known Trademarks of China" or "Famous Brands of China"

- Program 19: Export Brand Development Fund
- Program 20: Provincial Scientific Development Plan Fund
- Program 21: Patent Award of Guangdong Province
- Program 22: Training Program for Rural Surplus Labor Force Transfer Employment
- Program 23: International Market Exploration Fund
- Program 24: National Innovation Fund for Technology Based Firms
- Program 25: Grants for Encouraging the Establishment of Headquarters and Regional Headquarters with Foreign Investment
- Program 26: Export Rebate for Mechanic, Electronic, and High-Tech Products
- Program 27: Provincial Government of Guangdong Science and Technology Bureau Project Fund
- Program 28: Energy-Saving Technique Special Fund
- Program 30: SME international market expansion funds to export enterprises in Liaoning (Yingkou) Coastal Industrial Base
- Program 31: Grants for “International Top 500 Enterprises” that establish offices in Yingkou
- Program 32: Foreign Trade Development Fund of Old Industrial Bases of Northeast China
- Program 33: New Product Award
- Program 34: Capital Increase Award
- Program 35: Emission Reduction and Energy-saving Award
- Program 36: Grant for Market Promotion and Trade Development
- Program 37: Refund of Land Transfer Fee
- Program 38: Subsidy from Water Saving Office
- Program 39: Special Supporting Fund for Commercialization of Technological Innovation and Research Findings
- Program 40: Environment Protection Award (Jiangsu)
- Program 41: Enterprise Technology Centers
- Program 42: Allowance to Pay Loan Interest
- Program 43: Supporting Fund for Non-refundable Export tax loss
- Program 44: International Market fund for Export Companies
- Program 45: International Market Fund for Small and Medium sized export companies
- Program 46: Business Development Overseas Support Fund
- Program 47: Refund from Government for Participating in Trade Fair
- Program 48: Reimbursement of Foreign Affairs Services Expenses
- Program 49: Special Fund for Fostering Stable Growth of Foreign Trade
- Program 50: Subsidy for Technology Development
- Program 51: Grants, Loans, and Other Incentives for Development of Famous Brands, China Top World Brands or other well-known Brands
- Program 52: “Five Points, One Line” Program of Liaoning Province
- Program 53: State Special Fund for Promoting key Industries and Innovation Technologies
- Program 54: Provincial Fund for Fiscal and Technological Innovation
- Program 55: Supporting Fund for the Development from Guangzhou Local Governments

### **III. Preferential Loan Programs**

- Program 56: Loan Guarantee Fund for Science & Technology Enterprises by Liaoning Governments
- Program 57: Chinese Government Concessional Loan and Preferential Export Buyer's Credit
- Program 61: Subsidized Loans for Stockpiled production

### **IV. Preferential Tax Programs**

- Program 62: Reduced Tax Rate for Productive FIEs Scheduled to Operate for a Period Not Less Than 10 Years
- Program 63: Tax Preference Available to Companies that Operate at a Small Profit
- Program 64: Preferential Tax Policies for Foreign Invested Export Enterprises
- Program 65: Preferential Tax Policies for FIEs and Foreign Enterprises Which Have Establishments or Places in China and are Engaged in Production or Business Operations Purchasing Domestically Produced Equipment
- Program 66: Preferential Tax Policies for Domestic Enterprises Purchasing Domestically Produced Equipment for Technology Upgrading Purpose
- Program 67: Refund of Housing Tax
- Program 68: Refund of Stamp Tax
- Program 69: Income Tax Refunds for Senior Managers
- Program 70: Exemption from administrative charges and licence fees
- Program 71: Preferential Tax refunds for Merging with Underperforming Local Enterprises or Investing in Renovation of Enterprises
- Program 72: Income Tax Refund for Re-investment of FIE Profits by Foreign Investors
- Program 73: Corporate Income Tax Reduction for New High-Technology Enterprises
- Program 74: Exemption from income tax on foreign investor's profits
- Program 75: Local Income Tax Exemption and/or Reduction
- Program 76: Export VAT Refunds
- Program 77: Preferential Tax Program for FIEs Recognized as HNTEs (High and New Technology Enterprises)
- Program 78: Tax Offset for R&D Expenses in Guangdong Province
- Program 79: Preferential Tax Treatment for the Technology Development Expenses by Liaoning Governments

### **V. Relief from Duties and Taxes on Materials and Machinery**

- Program 80: Relief from Duties and Taxes on Imported Material and Other Manufacturing Inputs and Equipment

## **VI. Goods/Services Provided by the Government at Less than Fair Market Value**

Program 83: Inputs Provided by Government at Less than Fair Market Value

## **VII. Reduction in Land Use Fees**

Program 84: Reduction in Land Use Fees, Land Rental Rates, and Land Purchase Prices

## **VIII. Additional Programs and Incentives in China's Latest Notification**

Program 85: Fiscal Fund to Alleviate Poverty

Program 86: Incentives for Environmental Preservation and Recycling

Program 87: Preferential Tax Policies for Township Enterprises

Program 88: Specific Employed Persons Programs

Program 89: Preferential Tax Policies for Research and Development of New Products, New Technologies and New Crafts

Program 90: Preferential Tax Policies for Enterprises Transferring Technology

Program 91: Specific Funds for SMEs

## **SUBSIDY PROGRAMS REMOVED FROM INVESTIGATION**

- Export Assistance Grant
- Provincial Scientific Development Plan Fund

## **APPENDIX 3 – DUMPING AND SUBSIDY REPRESENTATIONS**

The CBSA received case arguments and reply submissions from counsel for Quebec Silicon Limited Partnership and QSIP Canada ULC (collectively referred to as the “complainant”), and from counsel for RTA, RTPS, Changsha Benevo, Sui Ning, Xiamen ITG, K Metal, and Hua’an Linan (collectively referred to as the “Respondents”).

The major issues raised by these parties are discussed below:

### **The President’s Preliminary Determinations of Dumping and Subsidy**

#### **Case Argument - Respondents**

Counsel for the Respondents argued that the methodology used by the President to impose provisional duties at the preliminary determinations is contrary to SIMA, the SIMA Handbook, the WTO Anti-Dumping Agreement (ADA) and the WTO Agreement on Subsidies and Countervailing Measures (ASCM). Counsel contended that the President unlawfully failed to calculate individual rates of dumping and subsidizing, and that his interpretation of “information available,” under subsection 38(1) of SIMA, is unreasonably narrow. In addition, Counsel argued that the President had improperly used adverse facts in that the Respondents had provided information in a timely fashion.

#### **Reply Submission - Complainant**

Counsel for the complainant chose not to respond to arguments dealing with the procedures and methodologies used by the President to arrive at the preliminary determinations, stating that these issues are moot within the context of the final determinations. Counsel did, however, note certain actions of the Respondents during the course of the investigations, which the complainant believes contradict their assertion that they had provided sufficient information in a timely manner.

#### **CBSA Response**

The CBSA acknowledges its obligations to the WTO Agreements and believes it has conducted the investigations according to the standards set forth in both the ADA and ASCM.

With this said, it is the CBSA’s responsibility to administer and follow the relevant Canadian legislation in the form of SIMA, and it is under this authority that the CBSA conducts its dumping and subsidy investigations. The SIMA Handbook, on the other hand, is a compilation of guidelines and current policies respecting the administration of SIMA, which does not supersede the legislation.

The CBSA wishes to emphasize that the President's preliminary determinations of dumping and subsidy pursuant to subsection 38(1) of SIMA are strictly estimates that are made using the information available to him at that time, and any provisional duties collected as a result thereof are subject to review and revision based on the results of the final determinations.

As was explained in the *Statement of Reasons* issued at the preliminary determinations, the CBSA had not received sufficient information on a timely basis from any of the three exporters to enable the estimation of a margin of dumping and amount of subsidy based solely on each company's own information.

As a result, the CBSA estimated the margin of dumping and amount of subsidy at the preliminary determination based on the best information available at that time. Some of the figures used to calculate the estimates were those that were used at the initiation of the investigations; some were provided by exporters; and some by importers.

### **Incomplete Submissions from K Metal/Hua'an Linan, MSSl, Sui Ning and Xiamen ITG**

#### **Case Argument - Complainant**

Counsel for the complainant has argued that the responses received from K Metal/Hua'an Linan and MSSl to the CBSA's dumping RFI are incomplete and these companies should not be considered as cooperating exporters for the purpose of assessing normal values.

Similarly, Counsel for the complainant has argued that the responses received from K Metal/Hua'an Linan, MSSl, Sui Ning and Xiamen ITG to the CBSA's subsidy RFI are also incomplete and that these companies should not be granted specific amounts of subsidy.

#### **Reply Submission – Respondents**

Counsel for the Respondents has submitted that the complainant's arguments to exclude the evidence of the Respondents follow a logic that is contrary to the provisions of SIMA and Canada's international treaty obligations.

#### **CBSA Response**

The CBSA has reviewed all submitted information in accordance with the provisions of SIMA. The CBSA believes that it has also followed the standards set forth by the WTO respecting the appropriate submission, timely provision and substantiation of the data, as well as in affording parties with the opportunity to provide further information and accepting information that is not ideal in all respects.

Following its review and analysis of all responses received, the CBSA has decided to accept all information provided by the companies listed above other than that submitted by Sui Ning in its response to the subsidy RFI.

### **Lack of cooperation from the GOC**

#### **Case Argument - Complainant**

Counsel for the complainant has argued that since the GOC did not respond to the CBSA's subsidy RFI, producers and exporters in China that responded to the subsidy RFI should not be assessed amounts of subsidy strictly on the basis of their responses. Counsel believes there must be a factor of deterrence built into such an assessment.

Counsel has further argued that the CBSA should amend its methodology for calculating amounts of subsidy for exporters that did not respond to the subsidy RFI as the current method leads to an unfairly low amount of subsidy.

#### **Reply Submission – Respondents**

Counsel for the Respondents has replied that it is impermissible under SIMA, the ADA and the ASCM to ascribe fault to the Respondents for the GOC's decision not to respond to the subsidy RFI in the name of "deterrence," as this is not a concept founded in any of these documents.

#### **CBSA Response**

Since the GOC did not submit a response to the subsidy RFI, subsidy amounts for all exporters were determined under a ministerial specification pursuant to subsection 30.4(2) of SIMA. Determinations made under ministerial specification reflect, in the opinion of the President, the best information available to him.

Under the ministerial specification issued at the final determination in this investigation, individual amounts of subsidy were determined for those parties where sufficient information was furnished to enable the necessary calculations, and a general rate of subsidy was determined for those parties where sufficient information was not furnished. The President's decision in this respect is in accordance with the relevant Canadian legislation in the form of SIMA, and is believed to be in conformity with the standards set forth in the ASCM.

### **Presumed Existence of Subsidies**

#### **Case Argument - Respondents**

Counsel for the Respondents has argued that the preliminary determination improperly presumed the existence of subsidies and that SIMA does not entitle the President to presume that the subsidy programs under investigation are actionable. Counsel also noted that over 200 pages of comments to this effect presented by the GOC prior to the initiation of the investigation "were summarily rejected by the President in the PD."

## **CBSA Response**

Prior to the initiation of the investigation, the CBSA determined that the complaint contained sufficient information about the named Chinese subsidies that was reasonably available to the complainant, given that such availability was limited by the transparency and accessibility practices of the government under investigation. The CBSA also undertook its own research to review the accuracy and adequacy of the complainant's evidence, and determined in accordance with subsection 31(1) of SIMA that there was evidence that certain silicon metal from China had been subsidized through the named programs.

Therefore, at the initiation of the investigation, questions concerning the named subsidy programs were included in the RFI sent to the GOC and to all known exporters of the goods in China. In that a complete response to the subsidy RFI was not provided by the GOC and by all known exporters, the President does not have sufficient information to determine that any of the identified programs do not constitute actionable subsidies and that they should be removed from the investigation for purposes of the final determination.

The CBSA wishes to re-iterate that the arguments which the GOC put forward against the CBSA's investigation of the named subsidy programs were not supported by proper documentation.

### **Pass-through Analysis in the Calculation of the Amount of Subsidy for RTPS**

#### **Case Argument - Respondents**

Counsel for the Respondents maintains that if the President proceeds with a subsidy investigation, he must calculate amounts of subsidy based on the Respondents' evidence in this investigation and with reference to the "pass-through" guidelines as found in the SIMA Handbook.

#### **Reply Submission - Complainant**

Counsel for the complainant submits that, pursuant to WTO DSO341 *Mexico-Olive Oil*, there is no pass-through analysis required in the case of RTPS, and that its exports to Canada of subject goods, if purchased from subsidized Chinese producers, must be subject to the full countervailing duty rates applicable to those goods.

## **CBSA Response**

The CBSA would like to re-iterate that the SIMA Handbook is a compilation of guidelines and policies respecting the administration of SIMA, which does not supersede the legislation. In circumstances where sufficient information has not been provided to enable the determination of an amount of subsidy by exporter as prescribed, the President relies on the best information available to determine amounts of subsidy under ministerial specification pursuant to subsection 30.4(4).



As stated earlier in this report, for exports of subject silicon metal originating with producers who provided complete responses to the CBSA's subsidy RFI, the amount of subsidy shall be based on the amount of subsidy found for that producer and, where applicable, trading company. For goods exported by RTPS that originated with other producers, the amount of subsidy was determined based on a ministerial specification using the same methodology as was used for all other exporters who did not provide a response to the CBSA.

### **Calculation of Export Subsidies for Xiamen ITG**

#### **Case Argument – Respondents**

Counsel for the Respondents argues that although Xiamen ITG disclosed benefits that were export subsidy programs, the President imposed the provisional duty applicable to all subject goods, which is contrary to section 10 of SIMA. Counsel stated that the President must properly apply section 10 of SIMA in making the final determination.

#### **CBSA Response**

The CBSA notes that section 10 of SIMA does not apply either to a preliminary determination, a final determination or to provisional duties.

Section 10 applies in cases where both anti-dumping and countervailing duties are levied on subject goods imported into Canada subsequent to a Tribunal finding, and where the President, in accordance with clause 41(1)(a)(iv)(c) of SIMA, has specified at the final determination that certain named programs constitute prohibited subsidies as defined in section 2 of SIMA. Sufficient information was not provided in this investigation for the President to specify that the benefits received by Xiamen ITG constituted prohibited export subsidies.

### **Double Remedy**

#### **Case Argument - Respondents**

Counsel for the Respondents submitted that according to the WTO Appellate Body in DS379, “the imposition of double remedies, that is, the offsetting of the same subsidization twice by the concurrent imposition of anti-dumping duties calculated on the basis of an [non-market economy] NME methodology and countervailing duties, is inconsistent with Article 19.3 of the [ASCM]” and therefore, “so long as the President continues to use an NME methodology in the dumping investigation, the imposition of any separate countervailing duties will be illegal and that there can be no reason for the President to conduct a subsidy investigation at all.”

## **Reply Submission - Complainant**

In reply to the case argument, counsel for the complainant submitted that the imposition of anti-dumping duties pursuant to Section 20 and of countervailing duties on the same goods is wholly consistent with SIMA. Additionally, counsel argues that the WTO Appellate Body decision in DS379 does not prohibit concurrent NME dumping and countervailing investigations. Furthermore, counsel for the complainant conveys that the burden of proving how much, if any, of the subsidy is offset by the dumping duty, falls on the party most able to provide relevant information, in this case the Respondents.

## **CBSA Response**

The CBSA has considered the case arguments submitted by the Respondents as well as the reply submissions made by the complainant for the purposes of the final determinations. The CBSA assessed that the complaint met the requirements to initiate a subsidy investigation and a dumping investigation and therefore it proceeded with these investigations concurrently, as provided for in SIMA. In conducting the dumping investigation, the CBSA evaluated the market conditions in China and concluded that the conditions of paragraph 20(1)(a) of SIMA exist in the ferroalloy sector, which includes silicon metal. While the CBSA is in the process of assessing any possible implications of the Appellate Body decision in DS379, the CBSA would like to emphasize that the Appellate Body's decision in DS379 does not preclude the concurrent application of anti-dumping and countervailing duties for non-market economies.

## **Identification of the Exporter for SIMA Purposes**

### **Case Argument - Respondents**

Counsel for the Respondents submitted that they maintain the position that RTPS is not an exporter for the purposes of SIMA and that the CBSA should revisit this decision for the final determinations. Counsel further argues that for the purpose of identifying the exporter in this investigation, RTPS's situation is materially different from that of the exporter in the *EMCO* decision and a review of both SIMA and the SIMA Handbook supports the view that RTPS is not an exporter for the purposes of SIMA, but is rather an intermediary vendor.

## **CBSA Response**

The CBSA has considered the case arguments submitted by the Respondents. While the CBSA acknowledges that the exporter's circumstances in the Tribunal's decision respecting *EMCO Electric International – Electrical Resource International v. President of the Canada Border Services Agency* do not reflect the current situation in all respects, this decision nonetheless provides guidance in determining the factors considered by the Tribunal in identifying the exporter. In consideration of the latest jurisprudence, policy guidelines and the guidance provided by the Tribunal's *EMCO* decision on this issue, the CBSA, in conducting its comprehensive review of responses and on-site verifications of both RTPS and RTA, has assessed the following factors:

- the manner in which the goods were ordered and sold to the importer in Canada;
- the ownership of the goods at the time they were shipped in Canada;
- how the title of ownership transferred from the seller to the importer in Canada;
- whether the goods were directly or indirectly shipped to Canada from China;
- which party acted as the principal in the transactions;
- who was responsible for arranging for, preparing, and paying for the shipment of the goods to Canada;
- the names on the documentation such as purchase orders, shipping documents, invoices and proof of payment related to the transactions;
- who received payment from the importer for the subject goods imported during the POI; and
- whether the producers of the subject goods had direct knowledge of when and where the subject goods would ultimately be shipped.

As a result of its analysis, the CBSA maintains that RTPS is considered to be the exporter of the subject goods for the purposes of the final determinations.

### **Establishment of Normal Values Based on Published Prices**

#### **Case Argument - Complainant**

Counsel for the complainant submitted that there continues to be insufficient information on the record to establish normal values on the basis of surrogate responses pursuant to Section 20 of SIMA. Therefore, the complainant submits that the President should specify normal values pursuant to Section 29 of SIMA on the basis of published prices of sales of silicon metal sold in the United States (US) such as CRU Ryan's Notes and Platts Metals.

## **Reply Submission - Respondents**

In reply to the case argument, counsel for the Respondents submitted that the CBSA should not calculate normal values based on sales of silicon metal sold in the US. Rather than restricting prices to a single US market, counsel maintains that the President should use a global average price for silicon metal by grade, with appropriate freight adjustments. The Respondents further submit that the President should exercise discretion under section 29, in order to specify normal values in a manner that reflects the lower costs and prices in China and provides a “fair comparison.”

## **CBSA Response**

The CBSA has considered the case arguments submitted by the complainant as well as the reply submissions made by the Respondents for the purposes of the final determination.

Where section 20 conditions exist, the CBSA may determine normal values on the basis of goods sold by producers in a surrogate country in accordance with paragraph 20(1)(c) of SIMA. However, as the CBSA only received data from one producer located in a surrogate country, the CBSA was unable to use that data to determine normal values for purposes of the final determination due to confidentiality concerns.

The CBSA was also unable to determine normal values in accordance with paragraph 20(1)(d) of SIMA as sufficient information was not received from importers in their RFI responses with respect to importations of like goods originating in a country other than China and sold by the importer in Canada in the condition which they were imported.

Accordingly, the CBSA has used an alternative method to determine normal values for the purposes of the final determination, pursuant to a ministerial specification under section 29 of SIMA. In this respect, the CBSA based the normal values on silicon metal pricing data found in Metal Bulletin. Metal Bulletin is a widely-respected publication based in the UK which reports US Midwest delivered prices for the basic grade of silicon metal on both a weekly and monthly basis.

The CBSA made appropriate adjustments and freight deductions to these prices as described in detail under subtitle **Normal Values - Section 20** of this document.

## **Industry Profit Under Section 25 of SIMA**

### **Case Argument - Complainant**

Counsel for the complainant submitted that section 24 of SIMA should be disregarded in determining export prices for RTPS, and that Section 25 be used since the sales prices between the RTPS, the exporter, and RTA, its related importer, are unreliable. The complainant further argues that, in calculating Section 25 export prices by using a deductive method based on importer's resale prices in Canada, the President should apply, at a minimum, a 10.2% industry profit amount, as shown in the Industry Canada survey of alumina and aluminum producers in Canada.

## Reply Submission - Respondents

In reply to the case argument, counsel for the Respondents submitted that the President must first form an opinion regarding the reliability of the selling prices between RTPS and RTA before calculating export prices under Section 25. Counsel for the Respondents argues that the President should not use the 10.2% profit margin because industry statistics do not permit the President to assess whether the sales on which this profit margin is based satisfy the conditions of sections 21 and 22 of SIMR. The Respondents further submit that the President must be restricted to either using profit data on sales of silicon metal re-sold by importers in Canada or imputed profits provided by end-users, i.e., RTA.

## CBSA Response

The CBSA has considered the case arguments submitted by the complainant as well as the reply submissions made by the Respondents for the purposes of the final determination.

The CBSA described in detail, under subtitle **Normal Values - Section 20** of this document, the reliability test performed to determine whether the export prices calculated under Section 24 were reliable. Nonetheless, the CBSA would like to provide clarification in response to the arguments raised by the parties above.

During the POI, silicon metal sold in Canada by RTA was not resold in the condition in which it was imported. Rather, the subject goods were incorporated into further manufactured goods prior to being sold by RTA to Canadian customers. As a result, the export price was determined following a methodology based on paragraph 25(1)(d) of SIMA, which applies to goods not resold in the same condition as they are imported.

The CBSA did not receive sufficient information to enable it to determine an amount for profit on the sale of the further manufactured goods sold by RTA in Canada for purposes of paragraph 22(a) of SIMR. In addition, the CBSA did not receive sufficient information to allow it to determine an amount for profit on the sales of goods of the same general category as the further manufactured goods in Canada in accordance with paragraph 22(b) of SIMR. Accordingly, the amount for profit used for purposes of the export price methodology based on paragraph 25(1)(d) of SIMA was determined in accordance with paragraph 22(c) of SIMR.

In determining an amount for profit under paragraph 22(c), the CBSA relied upon a report produced using Industry Canada's SME Benchmarking Tool which produces reports based on industry-specific income statement and balance sheet data. The industry report selected by the CBSA is classified as NAICS 331317 – Aluminum Rolling, Drawing, Extruding and Alloying, which represents goods that are of the group or range of goods that is next largest to the same general category of the further manufactured goods into which the imported goods (i.e. silicon metal) have been incorporated. Using the most recent profit data available from this report, which is based on the year 2010, the CBSA found that this whole industry operated at a profit equal to 3.56% expressed as a percent of total revenue.

### **Additional Documentation on the Administrative Record**

On September 27, 2013, the CBSA added new documents (i.e. exhibits 152 (pro), s152 (pro), 153 (nc), and s153 (nc)) to the administrative record for the Silicon Metal dumping and subsidy investigations. The documents consist of information provided by the complainant relating to silicon metal pricing and freight. The documents in question were provided September 13, 2013 prior to the closing of the record but were not included on the list of exhibits until September 27, 2013, when the administrative oversight was recognised.

Interested parties were given until October 2, 2013 to provide case arguments specifically addressing the information contained in these documents, and until October 7, 2013 to submit related reply submissions.

### **Case Argument - Respondents**

Counsel for the Respondents submitted that CBSA's failure to notify the Respondents of the inclusion of these "highly relevant" exhibits on the administrative record before the closing of the record, amounts to a denial of fair process and a procedural defect, which may be detrimental to the Respondents. The Respondents submit that they have been denied a reasonable opportunity to file additional responsive evidence prior to the close of record. Counsel further argues that the contents of these exhibits do not provide them with a meaningful opportunity to reply as the data contained in the spreadsheets is incomplete and unclear.

In the absence of clarity, the Respondents submit that the data provided in these documents must be disregarded for the purposes of the calculation of dumping and subsidy margins by the President.

### **Reply Submission - Complainant**

In reply to the case argument, counsel for the complainant submitted that these documents are truly "highly relevant"; they go to the issue of accurately establishing the pricing premiums for subject goods for normal value purposes. To address the Respondents comments on being denied a reasonable opportunity to file responsive evidence, the complainant argues that the Respondents were given the opportunity to respond to the information and exercised their right through the case arguments above.

As such, the complainant submits that the CBSA has proceeded fairly and that the Respondents have failed to demonstrate any prejudice resulting from the filing of these documents.

### **CBSA Response**

The CBSA has considered the case arguments submitted by the Respondents as well as the reply submissions made by the complainant for the purposes of the final determinations.

The CBSA acknowledged the administrative oversight that occurred in not including the exhibits in the Administrative Record in a timely fashion, and proceeded, in the interest of procedural fairness and due process, to contact all interested parties and gave them the opportunity to provide case arguments and reply submissions respecting the information contained in those exhibits.

In light of the importance of the exhibits in allowing an accurate determination of normal values, and in view of the opportunity provided to interested parties in submitting arguments respecting these documents, the CBSA has accepted these exhibits for purposes of the final determinations.