"Annexure A"

REPORT NO. 613

APPLICATION FOR AN INCREASE IN THE GENERAL RATE OF CUSTOMS DUTY ON CRYSTALLINE SILICON PHOTOVOLTAIC MODULES OR SOLAR PANELS

The International Trade Administration Commission herewith presents its Report No. 613: **APPLICATION FOR AN INCREASE IN THE GENERAL RATE OF CUSTOMS DUTY ON CRYSTALLINE SILICON PHOTOVOLTAIC MODULES OR SOLAR PANELS,** with recommendations.

MELULEKI NZIMANDE
CHIEF COMMISSIONER

PRETORIA
18/02/2021

REPUBLIC OF SOUTH AFRICA

INTERNATIONAL TRADE ADMINISTRATION COMMISSION OF SOUTH AFRICA

REPORT NO. 613

APPLICATION FOR AN INCREASE IN THE GENERAL RATE OF CUSTOMS DUTY ON CRYSTALLINE SILICON PHOTOVOLTAIC MODULES OR SOLAR PANELS

Synopsis

Amisec (Pty) Ltd, trading as ARTsolar, applied for an increase in the general rate of customs duty on crystalline silicon photovoltaic modules (PV modules/solar panels), classifiable under tariff subheading 8541.40.10, from free of duty to the WTO bound rate of 10% *ad valorem*, by way of creating an 8-digit tariff subheading.

The subject products are used to convert energy from the sun directly into electricity by photovoltaic effect. Solar panels are made of individual solar cells consisting of various layers of material such as crystalline silicon, which are joined together to form solar power systems.

The Commission considered the application in light of the information at its disposal. In particular, the Commission took the following factors into account:

- As a first step towards reversing historical dependence on fossil fuels for energy generation, government pledged to reduce the country's greenhouse gas emissions over the coming decades;
- In parallel, government realised that renewable energy generation could become a highly significant catalyst for industrial development and job creation;
- A electricity tariffs rise, it is expected that more electricity users will seek for alternatives and migrate away from the grid;

- The SACU PV module industry is still in its infancy stage. However, a significant number of local manufacturers have already shut down due to strong competition from low-priced imports;

- The significant decline in the level of production, sales and capacity utilisation of the domestic industry manufacturing PV modules/solar panels;

- The significant decline in market share and worsening profitability coupled with escalating production costs experienced by the domestic industry;

- The domestic industry manufacturing PV modules/solar panels is experiencing substantive price disadvantages vis-à-vis similar imported subject products;

- The significant decline in domestic employment and investment opportunities; and

- A 10% customs duty on PV modules or solar panels will assist in protecting the remaining local manufacturers, attract new investments into the industry and encourage the deepening of the value chain through localisation of certain inputs.

The Commission concluded that tariff support would enable the domestic industry manufacturing PV modules/solar panels to improve its production capacity utilisation achieve economies of scale and create both direct and indirect jobs.

The Commission recommended that the rate of customs duty on PV modules/solar panels, classifiable under tariff subheading 8541.40.10, be increased from free of duty to 10% *ad valorem,* by way of creating an 8-digit tariff subheading. The Commission further recommended that the proposed duty structure be reviewed after a period of three years from the date of implementation unless determined otherwise by the Commission to assess the industry's performance.

THE APPLICATION AND TARIFF POSITION

1. Amisec (Pty) Ltd, trading as ARTsolar ("ARTsolar"), applied or an increase in the general rate of customs duty on PV modules/solar panels, classifiable under tariff subheading 8541.40.10, from free of duty to the WTO bound rate of 10% *ad valorem*, by way of creating an 8-digit tariff subheading.

2. As motivation for the increase in the general rate of customs duty the applicant cited, *inter alia*, the following:

    - There is currently no protection for PV module manufacturers in the SACU region;
    - Unlike USA and Europe, the SACU region does not have duties to protect local manufacturers from unfair trade;
    - JA Powerway (Pty) Ltd, Soliare Direct (Pty) Ltd, SMA Inventers Manufacturers (Pty) Ltd and Jinko Solar (Pty) Ltd have ceased PV module production operations in the SACU region due to high competition from low-priced imports;
    - Local manufacturers have no meaningful local work since the last Renewable Energy Independent Power Producer Programme (REIPPP) project ended due to the market being flooded with low-priced imports of PV modules/ solar panels; and
    - The tariff increase requested would result in retention of employment, increase in capacity utilisation and possible investment into the domestic industry.

3. The application was published in the Government Gazette on 29 March 2019, for interested parties to comment, as follows:

INCREASE IN THE GENERAL RATE OF CUSTOMS DUTY ON:

"Crystalline silicon photovoltaic modules or panels classifiable under tariff subheading 8541.40.10, by way of creating an 8-digit tariff subheading, from free of duty to 10% ad valorem".

4. The existing tariff structure for the subject products is as follows:

Table 1: Current tariff structure for the subject products

Tariff heading	Tariff subheading	Description	Unit of measurement	Rate of duty				
				General	EU	EFTA	SADC	MERCOSUR
85.41		**Diodes, transistors and similar semi-conductor devices; photosensitive semiconductors devices, including photo-voltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes (LED) mounted piezo-electric crystals:**						
8541.40		**Photosensitive semiconductor devices, including photo-voltaic cells whether assembled or not assembled in modules or made up in into panels; light-emitting diodes(LED):**						
	8541.40.10	Photo-voltaic cells whether or not assembled in modules or made up into panels	u	Free	Free	Free	Free	Free

Source: SARS 2019

5. The subject products are currently imported free of duty. The WTO bound rate is 10% *ad valorem*.The tariff structure as requested by the applicant is as follows:

Table 2: Requested tariff structure for the subject products

Tariff heading	Tariff subheading	Description	Unit of measurement	Rate of duty				
				General	EU	EFTA	SADC	MERCOSUR
85.41		**Diodes, transistors and similar semi-conductor devices; photosensitive semiconductors devices, including photo-voltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes (LED) mounted piezo-electric crystals:**						
8541.40		**Photosensitive semiconductor devices, including photo-voltaic cells whether assembled or not assembled in modules or made up in into panels; light-emitting diodes(LED):**						
	8541.40.xx	Photo-voltaic cells not assembled in modules or made up into panels	U	Free	Free	Free	Free	Free
	8541.40.xx	Photo-voltaic cells assembled into modules or made up into panels	U	10%	Free	Free	Free	10%

Source: SARS 2019

6. Table 2 above, shows the requested tariff position and the suggested separate 8-digit tariff subheading provided by SARS for administration purposes. The nature of the current tariff classification is such that the PV modules are classified with solar cells. The suggested tariff subheading and the wording will separate solar cells not assembled into modules or made up into panels from solar cells that are already imported assembled into modules or made up into panels.

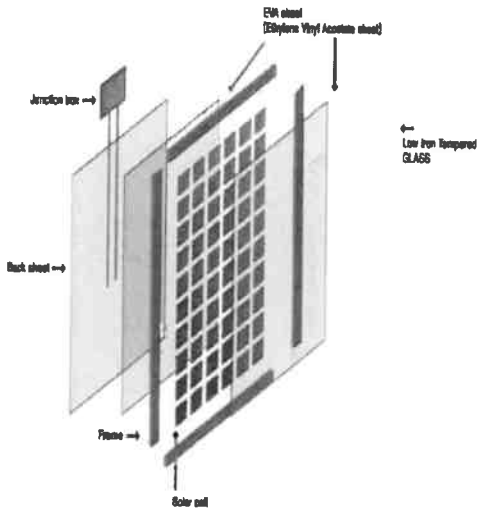
INDUSTRY AND MARKET

7. The subject products are crystalline silicon photovoltaic modules or solar panels used to convert energy from the sun directly into electricity by photovoltaic effect. Solar panels are made of individual solar cells consisting of various layers of material such as

crystalline silicon, which are joined together to form solar power systems, ranging from a few watts of electricity output to multi-megawatt power stations.

Figure 1: Solar panel

Figure 2: Structure of a Solar panel



Source: ARTsolar, 2018

8. Figure 1 above depicts a fully assembled solar panel. Figure 2 above is a diagram of the structure of the PV module/solar panel depicting the main components.

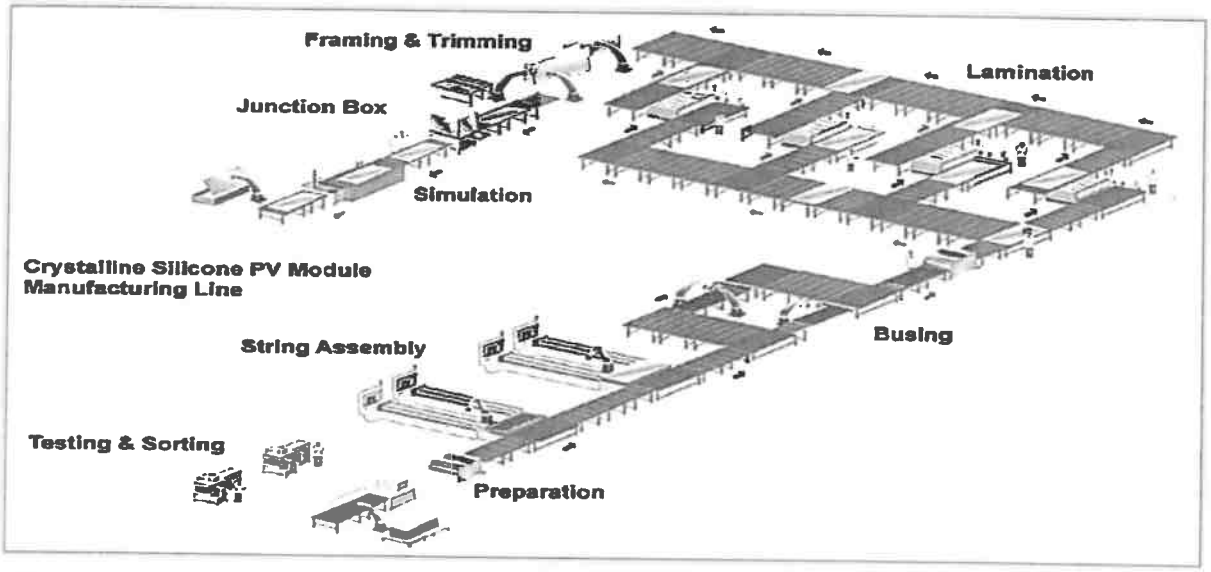
9. Figure 2 above, shows that the main inputs used in the manufacture of the subject product are PV low iron glass, Ethylene Vinyl Acetate (EVA) encapsulate, solar cells, back sheet, aluminium frame, and junction box. The other inputs include silicone sealant, tinned copper ribbon, cross connectors, diodes and cables.

10. Solar cells are the main input material used in the manufacture of solar panels as they constitute the highest percentage of the total raw material costs. The majority of the input materials are imported from China. However, Seraphim Solar South Africa (Pty) Ltd (Seraphim) has invested in a fully automated solar cell factory in Coega.

11. As shown in Figure 3 below, a PV module is first made as a laminate comprising of low iron tempered glass, EVA, solar cells which are connected to each other with soldered on copper conductors and a back sheet.

12. The laminate is then heated in a vacuum, which removes potential air bubbles while the EVA melts and then cools. Once cooled, the laminate is framed with extruded aluminium, which is bonded in place with silicone sealant. Thereafter, a junction box is applied which has flexible power cable to conduct the power from the module to where it will be used.

Figure 3: Standard production process flow for solar panels



Source: Artsolar, 2018

13. An electroluminescence test is performed in order to identify cracks and perform production quality control. Lastly, a flash test or sun simulation projects an exact quantity of bright light onto the completed module to test output current and voltage. The combination of these parameters indicates the power in Watt Peak.

14. The New Growth Path Framework (NGP) identifies the green economy as one of the key job drivers. The emphasis is on programmes to encourage local production of some of the green goods and relevant components.

15. The latest iteration of the Industrial Policy Action Plan highlights that, as a first step towards reversing historical dependence on fossil fuels for energy generation, government has pledged to reduce the country's greenhouse gas emissions over the coming decades. In parallel, the government realised that renewable energy generation could become a highly significant catalyst for industrial development and job creation.

16. In an initial move to develop the country's renewable energy sector, government introduced the REIPPP. The REIPPP contracts private power producers to supply energy to the national grid through a 20-year purchase agreement with Eskom. The REIPPP establishes local content requirements for projects to encourage growth of the local industry. Furthermore, the subject products are designated in terms of the Preferential Procurement Policy Framework Act (PPPFA).

17. In terms of the global trends, the United Nations report on Global Trends in Renewable Energy Investment (2018) notes that there has been an extraordinary surge in solar investment around the world and China has been the leading destination for renewable energy investment accounting for approximately 45% of the global total of $279.8 billion in 2017. China also accounted for just over half of the new global solar capacity in 2017.

18. The Integrated Resource Plan (IRP) 2010–2030, which was promulgated in March 2011, identifies the preferred generation technology required to meet expected demand growth up to 2030. The current IRP shows that, coal will continue to play a significant role in electricity generation in South Africa as it is the largest base of the installed generation capacity. However, the solar component of the national energy mix is expected to grow significantly due to the current energy crisis. As electricity tariffs rise, it is expected that more electricity users will seek for alternatives like rooftop PV systems or utility scale PV generation and migrate away from the grid.

19. Due to the versatile nature of the PV technology, there are several market segments which can be distinguished in terms of sizes, end-user markets, grid connections and mounting structures. For the purpose of this submission the focus is on grid connections and end-user markets.

20. In terms of the grid connections, two types of PV technology and are described as follows:

    a) **A grid connected system** implies that PV module is connected to the national electricity network and any excess electricity generated by the PV system is fed back into the grid; and

    b) **An off-grid system** is a standalone system that is not grid-tied and supplies

electricity directly to the user.

21. The market segments can also be distinguished from the four end-user perspective i.e. utility-scale, industrial applications, commercial applications and residential applications.

22. It is generally argued that the SACU PV module market is in its infancy stage. ARTsolar and Seraphim are the only remaining manufacturers of the subject product in the SACU region.

23. Several local manufacturers of the subject products have shut down i.e. Jinko Solar (Pty) Ltd, Solaire Direct (Pty) Ltd, SetSolar, SunPower Energy Systems Southern Africa (Pty) Ltd, JApowerway (Pty) Ltd and SMA Inventers Manufacturers (Pty) Ltd. The major reasons for ceasing local production included, amongst others: high local manufacturing costs; low demand for locally manufactured solar panels; and strong competition from low-priced imports.

24. The local PV module market is dominated by importers, which have extensive experience and expertise in developing, constructing, and operating projects. The identified importers include the following: Jinko Solar (Pty) Ltd; Solaire Direct (Pty) Ltd; SetSolar (Pty) Ltd; SunPower Energy Systems Southern Africa (Pty) Ltd; JApowerway (Pty) Ltd; SMA Inventers Manufacturers (Pty) Ltd; Meiji New Energy (Pty) Ltd; The Green Energy Warehouse CC; Energise Solar Solutions (Pty) Ltd; Nuvision Electronics (Pty) Ltd; Yekani Manufacturing (Pty) Ltd; Canadian Solar International Limited; Rubicon Electrical Distributors (Pty) Ltd; Segen Solar (Pty) Ltd; Electrolink (Pty) Ltd; and BYD SA Company (Pty) Ltd.

25. The PV module downstream activities comprise of system and technology integrators, installers, maintenance providers, project owners and users.

COMPETITIVE POSITION

26. The investigation revealed various challenges facing the domestic industry manufacturing PV modules and they are summarised as follows:

    a) Delays in REIPPP project approvals;

    b) High upfront cost as the implementation of renewable energy technologies needs

significant initial investment;

c) High cost of capital compared to conventional energy supplies;

d) High local manufacturing costs;

e) Lack of consumer awareness on benefits and opportunities of renewable energy; and

f) Low demand for locally manufactured PV modules due to increasing import volumes into the SACU region.

27. The development of the PV industry can bring significant socio-economic benefits in the SACU region, which would include improving energy security and job creation potential. The following opportunities have been identified with regards to the development of the local PV module industry:

a) Growing electricity demand;

b) Recent rising electricity tariffs;

c) Increasing pressure to reduce carbon emissions globally;

d) Increasing consumer awareness even though it is at a slow pace;

e) Significant creation of jobs in the manufacturing, installation, maintenance and servicing segment; and

f) SACU positioning itself as the gateway to Africa with a potential emerging market for exports of finished products.

28. According to the information at the Commission's disposal, the domestic industry manufacturing PV modules/solar panels experiences substantive price disadvantages vis-à-vis similar imported products.

COMMENTS RECEIVED

29. Comments in support of the application were received from interested parties including the Advanced Manufacturing Sector Desk of the Department of Trade and Industry (thedti), the Department of Energy (DoE), Seraphim, a manufacturer of solar panels, and Jinko Solar (Pty) Ltd.

30. The main reasons cited for support for an increase in customs duty on the subject products centred on the following reasons: increasing the customs duty on PV modules will protect the remaining local manufacturers and attract new investments into the industry; Chinese producers have extensive economies of scale as a result of the financial support that they receive in the form of export subsidies; local manufacturers are forced to import certain components which attract duties as a result the producers face higher manufacturing costs; the planning of the procurement roll-out needs to be reviewed so that it is aligned the development of local industrial capacity and capabilities; and a minimum threshold of local content should be enforced.

31. Comments objecting the application were received from various interested parties which included the following: Building Energy South Africa (Pty) Ltd; Cyracom (Pty) Ltd, Hyperion Solar Development (Pty) Ltd; Nomispan (Pty) Ltd; Nomispark (Pty) Ltd; Scuitdrift Solar (Pty) Ltd; Sol Invictus (Pty) Ltd; Rubicon Electrical Distributors (Pty) Ltd; IBC Solar South Africa (Pty) Ltd; Segen Solar (Pty) Ltd; Gransolar (Pty) Ltd and Canadian Solar International Limited; and South African Photovoltaic Industry Association (SAPVIA).

32. The reasons cited for objecting the increase in customs duty on subject products include the following: limited local capacity; the cost-raising effect of the duty increase; policy certainty with regards to designation is required; the focus should not be on manufacturing as more jobs are created in project development, construction and installation, and operations and maintenance; there are international examples where import tariffs or local content regulations for solar cells/modules have resulted in jobs losses; the local manufacturers should produce for the international markets; other incentives offered by government must be explored to support local manufacturers instead of increasing customs duty.

33. The Association for Renewable Energy Practitioners (AREP) commented on the application providing insights into the industry's challenges and opportunities. AREP submitted a report which cites amongst others, the following: the increase in market growth is largely driven by load-shedding coupled with grid-parity; the government tenders should give preference to local manufacturing; jobs in the renewable power generation are concentrated in the services, construction and manufacturing sectors; the largest number of jobs will be created within the solar PV rooftop space and not necessarily within

the REIPPP or utility scale sector; and the domestic industry should also focus at manufacturing various components used in the manufacture of the subject products.

FINDINGS

34. The Commission considered the application in light of information at its disposal. In particular, the Commission took the following factors into account:

- As a first step towards reversing historical dependence on fossil fuels for energy generation, government pledged to reduce the country's greenhouse gas emissions over the coming decades;
- In parallel, government realised that renewable energy generation could become a highly significant catalyst for industrial development and job creation;
- A electricity tariffs rise, it is expected that more electricity users will seek for alternatives and migrate away from the grid;
- The SACU PV module industry is still in its infancy stage. However, a significant number of local manufacturers have already shut down due to strong competition from low-priced imports;
- The significant decline in the level of production, sales and capacity utilisation of the domestic industry manufacturing PV modules/solar panels;
- Worsening profitability coupled with escalating production costs experienced by the domestic industry;
- The domestic industry manufacturing PV modules/solar panels is experiencing substantive price disadvantages vis-à-vis similar imported subject products;
- The significant decline in domestic employment and investment opportunities; and
- A 10% customs duty on PV modules or solar panels will assist in protecting the remaining local manufacturers, attract new investments into the industry and encourage the deepening of the value chain through localisation of certain inputs.

35. The Commission concluded that tariff support would enable the domestic industry manufacturing PV modules/solar panels to improve its production capacity utilisation achieve economies of scale and create both direct and indirect jobs.

RECOMMENDATION

36. In light of the foregoing, the Commission recommended that the rate of customs duty on crystalline silicon photovoltaic modules/solar panels, classifiable under tariff subheading 8541.40.10, be increased from free of duty to the WTO of 10% ad valorem, by way of creating an 8-digit tariff subheading.

37. The Commission further recommended that the proposed duty structure be reviewed after a period of three years from the date of implementation to assess the industry's performance, unless determined otherwise by the Commission.

'Annexure C'

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SUBMISSION

To:	**The Minister of Trade and Industry** **The Director-General: Department of Trade and Industry**
From:	**Chief Commissioner: International Trade Administration Commission of South Africa**
Subject:	**Report No. 613: Increase in the General Rate of Customs Duty on Crystalline Silicon Photovoltaic Modules or Panels**
Enquiries:	**Ms. N Somdaka** **Tel: (012) 394 3696** **E-mail: nsomdaka@itac.org.za**

PURPOSE

1. To obtain the Minister's approval of the Commission's recommendation that the rate of customs duty on crystalline silicon photovoltaic modules or panels, classifiable under tariff subheading 8541.40.10, be increased from free of duty to the WTO bound rate of 10% *ad valorem*, by way of creating an 8-digit tariff subheading.

THE APPLICATION AND TARIFF STRUCTURE

2. Amisec (Pty) Ltd, trading as ARTsolar, applied for an increase in the general rate of customs duty on crystalline silicon photovoltaic modules (PV modules/solar panels), classifiable under tariff subheading 8541.40.10, from free of duty to the WTO bound rate of 10% *ad valorem*, by way of creating an 8-digit tariff subheading.

3. As motivation for the increase in the general rate of customs duty the applicant cited, *inter alia*, the following:

   - There is currently no protection for PV module manufacturers in the SACU region;
   - Unlike USA and Europe, the SACU region does not have duties to protect local manufacturers from unfair trade;

- JA Powerway (Pty) Ltd, Soliare Direct (Pty) Ltd, SMA Inventers Manufacturers (Pty) Ltd and Jinko Solar (Pty) Ltd have ceased PV module production operations in the SACU region due to high competition from low-priced imports;

- The local manufacturers have no meaningful local work since the last Renewable Energy Independent Power Producer Programme (REIPPP) project ended due to the market being flooded with low-priced imports of PV modules/solar panels; and

- The tariff increase requested would result in retention of employment, increase in capacity utilisation and possible investment into the domestic industry.

4. The application was published in the Government Gazette on 29 March 2019, for interested parties to comment, as follows:

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5. The existing tariff structure for the subject product is as follows:

Table 1: Current tariff structure for the subject products

Tariff heading	Tariff subheading	Description	Unit of measurement	Rate of duty				
				General	EU	EFTA	SADC	MERCOSUR
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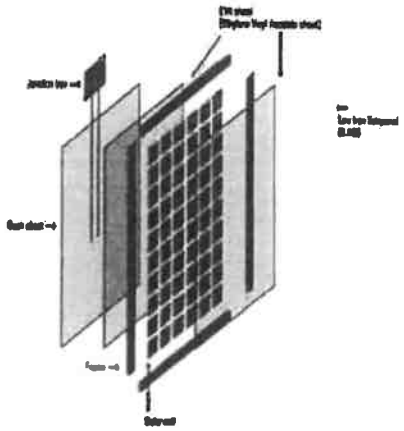
8541.40		Photosensitive semiconductor devices, including photo-voltaic cells whether assembled or not assembled in modules or made up in into panels; light-emitting diodes(LED):						
	8541.40.10	Photo-voltaic cells whether or not assembled in modules or made up into panels	u	Free	Free	Free	Free	Free

silicon, which are joined together to form solar power systems, ranging from a few watts of electricity output to multi-megawatt power stations.

10. Figure 1 below depicts a fully assembled 60-cell solar panel. Figure 2 below is a diagram of the structure of the PV module/solar panel depicting the main components.

Figure 1: Solar panel

Figure 2: Structure of a Solar panel



Source: ARTsolar, 2018

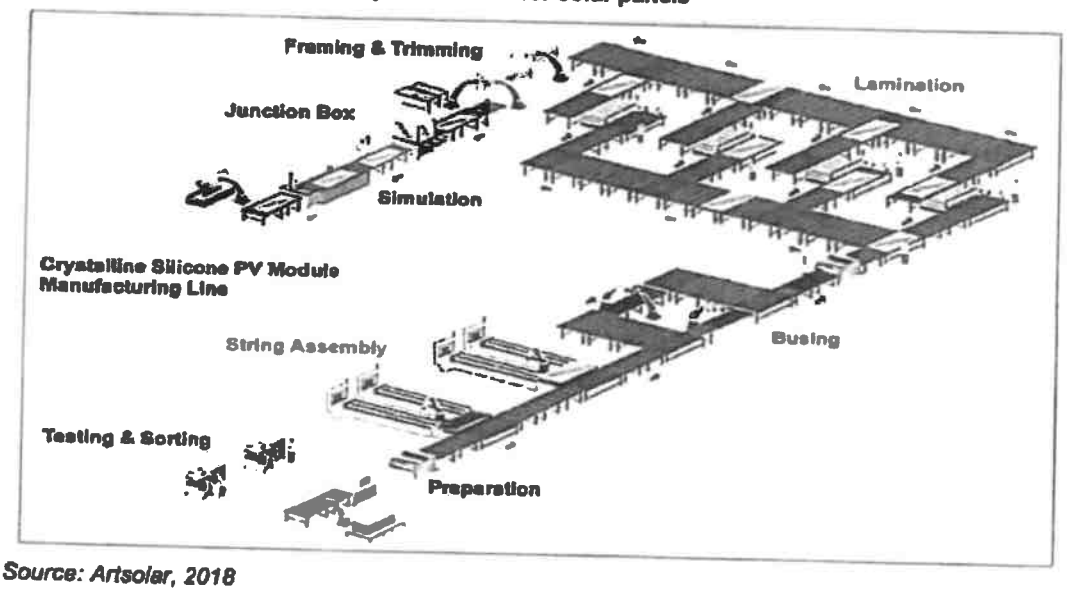
11. Figure 2 above, shows that the main inputs used in the manufacture of the subject product are PV low iron glass, Ethylene Vinyl Acetate (EVA) encapsulate, solar cells, back sheet, aluminium frame, and junction box. The other inputs include silicone sealant, tinned copper ribbon, cross connectors, diodes and cables.

12. Solar cells are the main input material used in the manufacture of solar panels as they constitute the highest percentage of the total raw material costs. The majority of the input materials are imported from China. However, Seraphim Solar South Africa (Pty) Ltd (Seraphim) has invested R330 million in a fully automated solar cell factory in Coega. It has been indicated that the manufacturing of these components will commence in the first quarter of 2020.

13. As shown in Figure 3 below, a solar panel is first made as a laminate comprising of low iron tempered glass, EVA, solar cells which are connected to each other with soldered on copper conductors and a back sheet.

14. The laminate is then heated in a vacuum, which removes potential air bubbles while the EVA melts and then cools. Once cooled, the laminate is framed with extruded aluminium, which is bonded in place with silicone sealant. Thereafter, a junction box is applied which has flexible power cable to conduct the power from the module to where it will be used.

Figure 3: Standard production process flow for solar panels



Source: Artsolar, 2018

15. An electroluminescence test is performed in order to identify cracks and perform production quality control. Lastly, a flash test or sun simulation projects an exact quantity of bright light onto the completed module to test output current and voltage. The combination of these parameters indicates the power in Watt Peak.

16. The New Growth Path Framework (NGP) identifies the green economy as one of the key job drivers. The emphasis is on programmes to encourage local production of some of the green goods and relevant components. In this regard, ITAC conducted a proactive analysis of the tariff regime for green goods highlighting that at its infancy stages the green industry may require developmental tariffs.

17. The latest iteration of the Industrial Policy Action Plan highlights that, as a first step towards reversing historical dependence on fossil fuels for energy generation, government has pledged to reduce the country's greenhouse gas emissions over the coming decades. In parallel, the government realised that renewable energy generation could become a highly significant catalyst for industrial development and job creation.

18. In an initial move to develop the country's renewable energy sector, government introduced the REIPPP. The REIPPP contracts private power producers to supply energy to the national grid through a 20-year purchase agreement with Eskom. The REIPPP establishes local content requirements for projects to encourage growth of the local industry. Furthermore, the subject products are designated in terms of the Preferential Procurement Policy Framework Act (PPPFA).

19. In terms of the global trends, the United Nations Report on Global Trends in Renewable Energy Investment (2018) notes that there has been an extraordinary surge in solar investment around the world. It also notes that China has been the leading destination for renewable energy investment accounting for approximately 45% of the global total of $279.8 billion in 2017. China also accounted for just over half of the new global solar capacity in 2017.

20. As shown in Table 3 below, the geographical split of investment in renewable energy has evolved over the years, from European dominance to the unchallenged China in 2017.

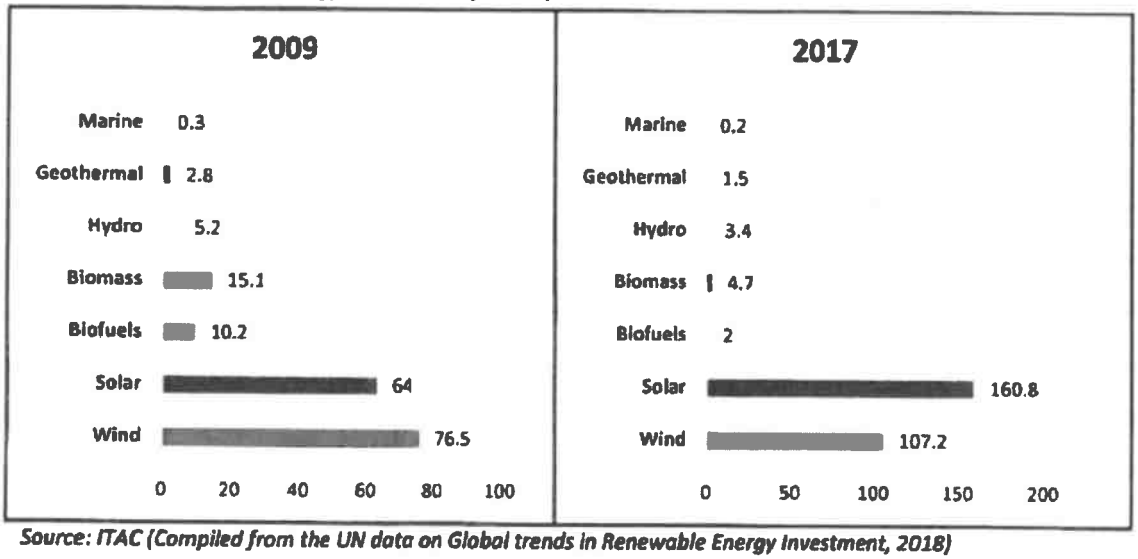
Table 3: Renewable Energy Investment by Geography, $Bn

Region		2009	2017
1.	United States	23.9	40.5
2.	Brazil	7.6	6.0
3.	Americas (excl US and Brazil)	5.5	13.4
4.	Europe	82.5	40.9
5.	Middle East and Africa	1.7	10.1
6.	China	38.1	126.6
7.	India	4.2	10.9
8.	ASOC (excl China and India	14.5	31.4

Source: United Nations, Bloomberg New Energy Finance, 2018.

21. As shown in figure 4 below, the splits in global investment in renewable energy by sector, shows how solar has reportedly increased from the second place in 2009 to an unchallenged first place in 2017.

Figure 4: Renewable Energy Investment by Sector, $Bn



Source: ITAC (Compiled from the UN data on Global trends in Renewable Energy Investment, 2018)

22. Locally, the DoE implemented the Integrated Resource Plan 2010–2030 (IRP) which identifies the preferred generation technology required to meet expected demand growth up to 2030. Since the promulgated IRP 2010–2030, the following capacity developments have taken place in terms of the national energy mix:

Table 4: Updated plan for the period ending 2030

	Coal	Nuclear	Hydro	Storage (pumped storage)	PV	Wind	CSP	Gas/Diesel	Other (Cogen, Biomass, Landfill)	Embedded Generation
2018	39126	1860	2196	2912	1474	1980	300	3830	499	Unknown
2019	2155					244	300			
2020	1433				114	300				
2021	1433				300	818				
2022	711				400					
2023										
2024										
2025										
2026										
2027										
2028										
2029										
2030										
TOTAL INSTALLED	33847	1860	4696	2912	7958	11442	600	11930	499	2600
Installed Capacity Mix (%)	44.6	2.5	6.2	3.8	10.5	15.1	0.9	15.7	0.7	
	Installed Capacity									
	Committed / Already Contracted Capacity									
	New Additional Capacity (IRP Update)									

Source: Department of Energy, 2019

23. As shown in Table 4 above, coal will continue to play a significant role in electricity generation in South Africa in the near future as it is the largest base of the installed generation capacity.

24. As electricity tariffs rise, it is expected that more electricity users will seek for alternatives like rooftop PV systems or utility scale PV generation and migrate away from the grid. As a result, the PV/solar component of the national energy mix is expected to grow from 2025 due to the current energy crisis.

25. Due to the versatile nature of the PV technology, there are several market segments which can be distinguished in terms of sizes, end-user markets, grid connections and mounting structures. For the purpose of this submission the focus is on grid connections and end-user markets.

26. In terms of the grid connections, two types of PV technology and are described as follows:

    a) **A grid connected system** implies that PV module is connected to the national electricity network and any excess electricity generated by the PV system is fed back into the grid; and

b) **An off-grid system** is a standalone system that is not grid-tied and supplies electricity directly to the user.

27. The market segments can also be distinguished from the four end-user perspective i.e. utility-scale, industrial applications, commercial applications and residential applications.

28. It is generally argued that the SACU PV module market is in its infancy stage. ARTsolar and Seraphim are the only remaining manufacturers of the subject product in the SACU region.

29. Several local manufacturers of the subject products have shut down i.e. Jinko Solar (Pty) Ltd, Solaire Direct (Pty) Ltd, SetSolar, SunPower Energy Systems Southern Africa (Pty) Ltd, JApowerway (Pty) Ltd and SMA Inventers Manufacturers (Pty) Ltd. The major reasons for ceasing local production included, amongst others: high local manufacturing costs; low demand for locally manufactured solar panels; and strong competition from low-priced imports.

30. The local PV module market is dominated by importers, which have extensive experience and expertise in developing, constructing, and operating projects. The identified importers include the following: Jinko Solar (Pty) Ltd; Solaire Direct (Pty) Ltd; SetSolar (Pty) Ltd; SunPower Energy Systems Southern Africa (Pty) Ltd; JApowerway (Pty) Ltd; SMA Inventers Manufacturers (Pty) Ltd; Meiji New Energy (Pty) Ltd; The Green Energy Warehouse CC; Energise Solar Solutions (Pty) Ltd; Nuvision Electronics (Pty) Ltd; Yekani Manufacturing (Pty) Ltd; Canadian Solar International Limited; Rubicon Electrical Distributors (Pty) Ltd; Segen Solar (Pty) Ltd; Electrolink (Pty) Ltd; and BYD SA Company (Pty) Ltd.

31. The PV module downstream activities comprise of system and technology integrators, installers, maintenance providers, project owners and users.

32. The investigation revealed various challenges facing the domestic industry manufacturing PV modules and they are summarised as follows:

a) Delays in REIPPP project approvals;

b) High upfront cost as the implementation of renewable energy technologies needs significant initial investment;

c) High cost of capital compared to conventional energy supplies;

d) High local manufacturing costs;

e) Lack of consumer awareness on benefits and opportunities of renewable energy; and

f) Low demand for locally manufactured PV modules due to increasing import volumes into the SACU region.

33. The development of the PV industry can bring significant socio-economic benefits in the SACU region, which would include improving energy security and job creation potential. The following opportunities have been identified with regards to the development of the local PV module industry:

a) Growing electricity demand;

b) Recent rising electricity tariffs;

c) Increasing pressure to reduce carbon emissions globally;

d) Increasing consumer awareness even though it is at a slow pace;

e) Significant creation of jobs in the manufacturing, installation, maintenance and servicing segment (The NGP identifies the green economy as one of the key job drivers); and

f) SACU positioning itself as the gateway to Africa with a potential emerging market for exports of finished products.

34. As shown in Table 5 below, the applicant's total production volume significantly declined from 155 124 units in 2016 to 419 units in 2017 due to the fact that the REIPPP was stalled.

35. The total production volume increased in 2018 and this was attributed to the applicant being awarded a project to supply the subject products to Council for Scientific and Industrial Research (CSIR) through designation for local procurement.

Table 5: Market and trade analysis

No	Variable	Nominal values 2016	2017	2018
1	**Total Production Volume**	**155 124**	**419**	**13 940**
2	**Total Sales Volume**	**155 005**	**8 123**	**8 662**
	Applicant Sales volume(unit-PV modules) - REIPPP	141 475	-	-
	Applicant Sales volume (unit-PV modules) -Domestic	13 530	8 123	8 662
2	**Total Sales Value- Domestic**	30 563 036	29 567 720	11 187 960
3	**Total Import Volumes (unit-PV Modules/cells)**	68 249 676	69 718 142	56 311 912
4	**Total Import Value (R)**	2 068 490 845	1 186 694 234	1 445 741 783
5	**Total Export Volumes (unit-PV Modules/cells)**	3 975 185	661 931	147 168
6	**Total Export Value (R)**	1 315 984 883	697 820 960	98 017 491
7	**Total Investment (R)**	**R 57 361 381**	**R 46 635 454**	**R 64 618 236**
	Plant & machinery	R 57 361 381	R 46 635 454	R 64 618 326
8	**Production Capacity**	312 500	312 500	312 500
9	**Capacity utilisation**	50%	0.1%	4%
10	**Employment**	218	9	15

Source: Artsolar and ITAC calculations, 2019

36. Due to the stock carried over from the previous year, the sales volume were slightly higher than the production volumes in 2017. Overall, the applicant's production volume declined by approximately 91% from 155 124 units to 13 940 units during the period under investigation.

37. The production capacity of the applicant is 312 500 units per annum. In terms of capacity utilization, the applicant was operating at 50% of its total production capacity in 2016. The applicant's capacity utilization dropped significantly from 50% to 4% during the period under investigation.

38. The applicant has invested approximately R168 million in plant and machinery over the period under investigation. The investment was made in preparation for the anticipated REIPPP windows bid 3.5 and 4. However, according to the latest information, the REIPPP windows bid 3.5 and 4 has been finalised and the local manufacturers have not be considered.

39. In 2016, the level of employment was 218, this was as a result of ARTsolar being contracted to produce the subject product under REIPPP. The applicant's employment significantly declined by 93% from 218 to 15 between 2016 and 2018.Indirect jobs are created in the installation, maintenance and servicing segments of this industry.

Table 6: Price competitiveness

No	Variable	Nominal values		
		2016	2017	2018
1	Price advantage/disadvantage	10%	81%	76%
2	Ex-factory selling price (R/pv module)	2187	3525	3447
3	**Total production cost (R/pv module)**	**5215**	**3419**	**3840**
	Input material cost (R/PV module)	2055	849	894
	Labour cost (R/pv module)	1791	379	567
	Other cost (R/pv module)	1027	1755	1812
4	Indirect variable cost (R/pv module)	341	437	567
5	Profit (net) (R/pv module)	-3028	106	-393

Source: Artsolar and ITAC calculations, 2019

40. As indicated earlier, the solar cells constitute approximately 53% of the total raw material costs. As shown in Table 6 above, the total production cost of the subject products declined by 26% during the period under investigation. This was as a result of the significant decline in total output due to the REIPPP being stalled.

41. ARTsolar experienced a significant decline in labour cost during the period under investigation due to job losses.

42. The indirect variable cost includes indirect labour, utilities, R & D and variable overheads. It increased from R341/unit in 2016 to R567/unit in 2018. The 'other cost' component of the cost includes repair and maintenance, plant depreciation, insurance, rent and interest.

43. A rebate provision of customs duty for the importation of inputs not manufactured locally will contribute to the reduction in the production costs and improvement of the competitive position of the local manufacturers. As such, the Commission is engaging the industry to explore the creation of a rebate provision on input material.

44. ARTsolar incurred net losses on the subject product in 2016 and 2018 with the exception of 2017. The applicant experienced profits of R106 per PV module in 2017. This was

achieved through increasing selling prices, however, the production volumes were insignificant low during this period.

45. Trade statistics cannot be separately analysed since the data includes both imports of the input product (solar cells) and the final product (solar panels). As a result, any conclusion based on such statistics may be misleading.

46. Table 6 above, shows that the applicant experienced price disadvantage throughout the period under the investigation. Invoices solicited from the identified importers indicate that the price disadvantage experienced by the applicant vis-à-vis similar imported subject products increased from 10% in 2016 to 76% in 2018.

47. Reciprocal commitments made by the applicant for the proposed tariff amendment were provided (Table 7), particularly with respect to production volumes, investment and employment creation.

Table 7: Reciprocity

No.	Variable	2020	2021	2022
1	Expected total production volume (unit-Pv Module)	312 500	462 686	462 686
2	Expected ex-factory selling price (R/unit-Pv Module)	R 3 447	R 3 447	R 3 447
3	Expected total investment (R)	R 0	R 3 000 000	R 0
	Plant & Machinery	R 0	R 3 000 000	R 0
4	Supply side measures (R)	1 008 548	21 650 000	1 732 500
	Research and development	898 548	1 400 000	1 470 000
	Skills development and training	110 000	250 000	262 500
	Upgrading machinery & equipment	0	20 000 000	0
5	Expected total Employment	57	120	120

48. Subsequent to the tariff support, the applicant indicated that:

a) Production volumes will be increased in 2020 in line with the current production capacity;

b) The prices of the subject products will be maintained at R3 447 for the next 3 years following tariff support; and

c) The applicant will increase and upgrade investment in plant and machinery following tariff support. This will result in an increase in production capacity from

current 312 500 units to 462 686 units.

49. The reciprocal commitments forecasts are based on the following:

a) The anticipation that the applicant will be awarded a contract in the next bid windows of the REIPPP and other government designation projects like the recently awarded CSIR project;

b) The reciprocal commitments are also based on the forecasts which project an increased growth in the rooftop segment of this industry, increasing electricity tariffs, load shedding and increased international pressure for SACU to reduce carbon emissions;

c) The applicant is negotiating partnerships with various companies, which have been awarded contracts in the Round 4 of the REIPPP. One of the companies is the USA based company Trina Solar;

d) The applicant is working with **thedti** and the IPP office to ensure that the designation policy is implemented in the Round 5 of the REIPPP by enforcing the local content requirements; and

e) Supply agreements have been signed with global companies in Zimbabwe, Botswana, Kenya, Namibia, Malawi and Zambia. The Export Credit Insurance Corporation of South Africa is involved in this regard.

50. Comments in support of the application were received from interested parties including the Advanced Manufacturing Sector Desk of the Department of Trade and Industry (thedti), the Department of Energy (DoE), Seraphim, a manufacturer of solar panels, and Jinko Solar (Pty) Ltd.

51. The main reasons cited for support for an increase in customs duty on the subject products centred on the following reasons: some of the local manufacturers ceased local production due to high local manufacturing costs; increasing the customs duty on PV modules will protect the remaining local manufacturers and attract new investments into

the industry; Chinese producers have extensive economies of scale as a result of the financial support that they receive in the form of export subsidies; local manufacturers are forced to import certain components which attract duties as a result the producers face higher manufacturing costs; the planning of the procurement roll-out needs to be reviewed so that it is aligned with the development of local industrial capacity and capabilities; and a minimum threshold of local content should be enforced.

52. Comments objecting the application were received from various interested parties which included the following: Building Energy South Africa (Pty) Ltd; Cyracom (Pty) Ltd, Hyperion Solar Development (Pty) Ltd; Nomispan (Pty) Ltd; Nomispark (Pty) Ltd; Scuitdrift Solar (Pty) Ltd; Sol Invictus (Pty) Ltd; Rubicon Electrical Distributors (Pty) Ltd; IBC Solar South Africa (Pty) Ltd; Segen Solar (Pty) Ltd; Gransolar (Pty) Ltd and Canadian Solar International Limited; and South African Photovoltaic Industry Association (SAPVIA).

53. The reasons cited for objecting the increase in customs duty on subject products include the following: limited local capacity; the cost-raising effect of the duty increase; policy certainty with regards to designation is required; the focus should not be on manufacturing as more jobs are created in project development, construction and installation, and operations and maintenance; there are international examples where import tariffs or local content regulations on solar cells/modules have resulted in job losses jobs; the local manufacturers should produce for the international markets; and other incentives must be explored to support local manufacturers instead of increasing customs duty.

54. The Association for Renewable Energy Practitioners (AREP) commented on the application providing insights into the industry's challenges and opportunities. AREP submitted a report which cites amongst others, the following: the increase in market growth is largely driven by load-shedding coupled with grid-parity; the government tenders should give preference to local manufacturing; jobs in the renewable power generation are concentrated in the services, construction and manufacturing sectors; the largest number of jobs will be created within the solar PV rooftop space and not necessarily within the REIPPP or utility scale sector; and the domestic industry should also focus at manufacturing various components used in the manufacture of the subject products.

55. The Commission considered the application in light of information at its disposal. In particular, the Commission took the following factors into account:

- As a first step towards reversing historical dependence on fossil fuels for energy generation, the government pledged to reduce the country's greenhouse gas emissions over the coming decades;

- In parallel, the government realised that renewable energy generation could become a highly significant catalyst for industrial development and job creation;

- In an initial move to develop the country's renewable energy sector, the government introduced the REIPPP. The subject products are also designated in terms of the PPPFA;

- In terms of the latest IRP 2010-2030, whilst coal will continue to play a significant role in electricity generation, it is expected that more electricity users will seek for alternatives like rooftop solar systems and migrate away from the grid due to the current energy crisis;

- SACU PV market is in its infancy stage. ARTsolar and Seraphim are the only remaining manufacturers of the subject product in SACU region. Most of the PV module manufacturers in the SACU region have ceased local production due to various challenges including high local manufacturing costs and strong competition from cheap imports;

- The applicant has invested approximately R168 million in plant and machinery over the period under investigation.

- Seraphim has invested R330 million in a fully automated solar cell factory in Coega. It has been indicated that the manufacturing of these components will commence in the first quarter of 2020;

- The applicant's employment significantly declined by 93% from 218 to 15 during

the investigation period.

- The domestic market is dominated by importers who have extensive experience, economies of scale and vertically integrated manufacturing processes making it difficult for the local manufacturers to compete;

- Overall, the applicant's production volume declined significantly by approximately 91% from 155 124 units to 13 940 units during the period under the investigation;

- The applicant's capacity utilization dropped significantly from 50% to 4% during the period under investigation;

- The PV solar cells are the main inputs used in the manufacture of the applicant's solar panels and they constitute approximately 53% of the total raw material costs;

- A rebate provision of customs duty for the importation of inputs not manufactured locally will contribute to the reduction in the production costs and improvement of the competitive position of the local manufacturers;

- ARTsolar incurred net losses on the sale of the subject product during the investigation period. This is despite increasing prices of the subject products and a significant decline in labour costs because of retrenchments;

- The domestic industry manufacturing PV modules/solar panels is experiencing substantive price disadvantages vis-à-vis similar imported products, from 10% in 2016 to 76% in 2018; and

- The implementation of the REIPPP has proven that a lack of policy coherence and alignment within government can undermine the effectiveness of procurement/designation as a lever to promote industrial development.

56. Reciprocal commitments made by the applicant for the proposed tariff amendment were provided particularly with respect to production volumes, investment and employment creation.

57. The reciprocal commitments are based on the forecasts, which project an increasing growth in the rooftop segment of this industry, increasing electricity tariffs, load shedding and increased international pressure for SACU to reduce carbon emissions.

58. A 10% customs duty on PV modules/solar panels will assist in protecting the remaining local manufacturers, attract new investments into the industry and encourage the deepening of the value chain through localisation of certain inputs e.g. packaging material and junction boxes.

59. The Commission concluded that tariff support would enable the domestic industry manufacturing PV modules/solar panels to improve its production capacity utilisation; achieve economies of scale; and create both direct and indirect jobs.