



TSEC Corporation

Investor Conference



Nov 26th, 2019



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Company Profile

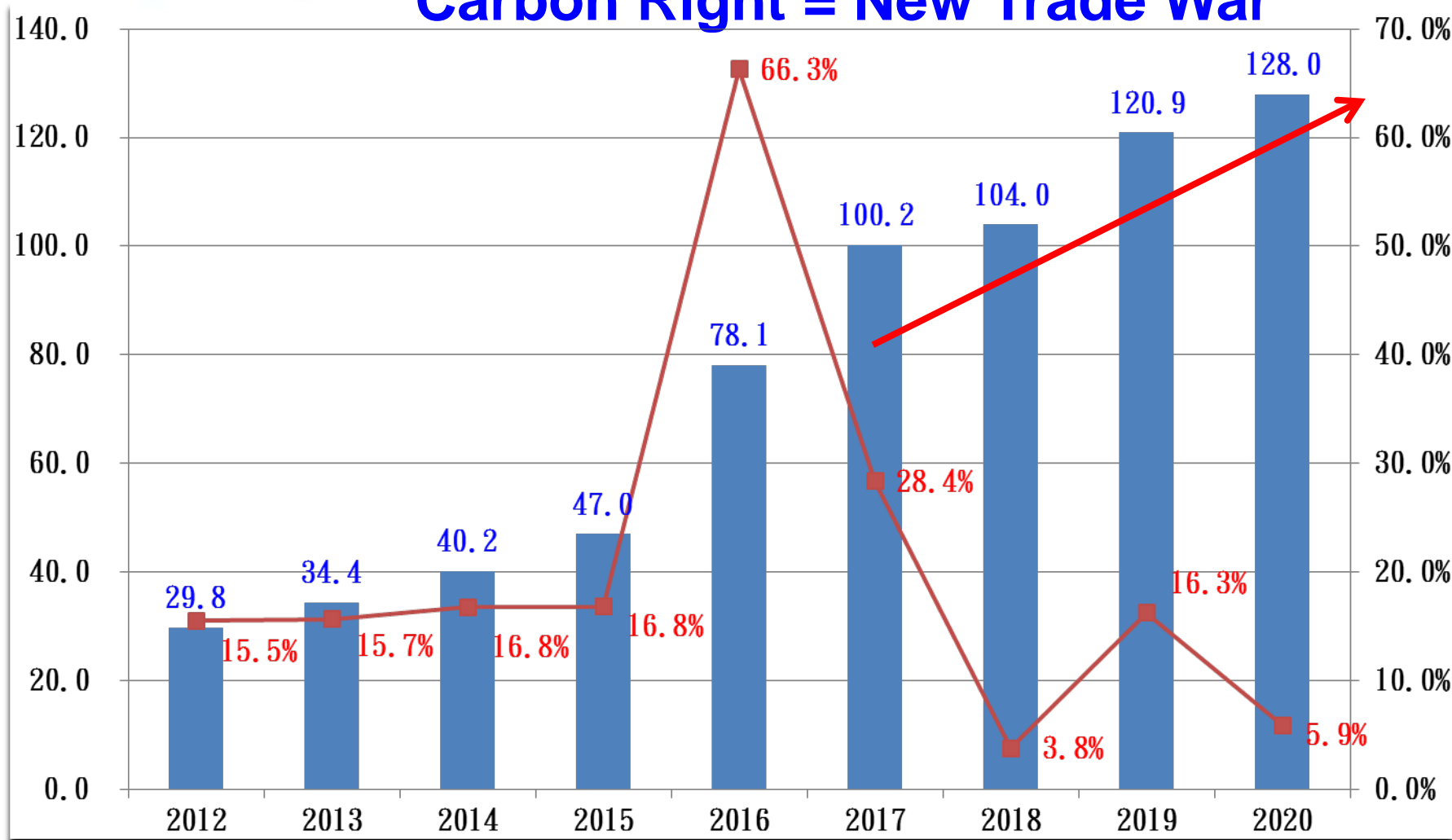
Date of Founding	June 24 th , 2010
Name of Co.	TSEC Corporation
TSEC stands for	Taiwan Solar Energy Corporation
Paid-In Capital	NT\$ 3.79billion
Factory Location	Hsin-Chiu(Solar Cell) ; PingTung(Panel)
Products	1.Solar Cell 2.Solar Module 3.Solar Project Developer 、 O&M
Prod. Capacity	PERC Cell 900MW 、 Panel 500MW
# of Employee	Appx. 1,100
Sales Offices	New Taipei 、 Hsin-Chiu 、 Tainan 、 ChangHwa 、 Pingtung
Major Shareholders	Wei-Jen Inv. Co. 、 Aurora Group 、 Farglory Group 、 Formosa Group





Global PV Installation Growing Trend

Carbon Right = New Trade War



Source: TSEC Marketing、PVinfolink、Bloomberg

2017~2018: Influence from China 531 Policy

2019~2020: Rapid growth from Non-China market



Steady Growth in 2020

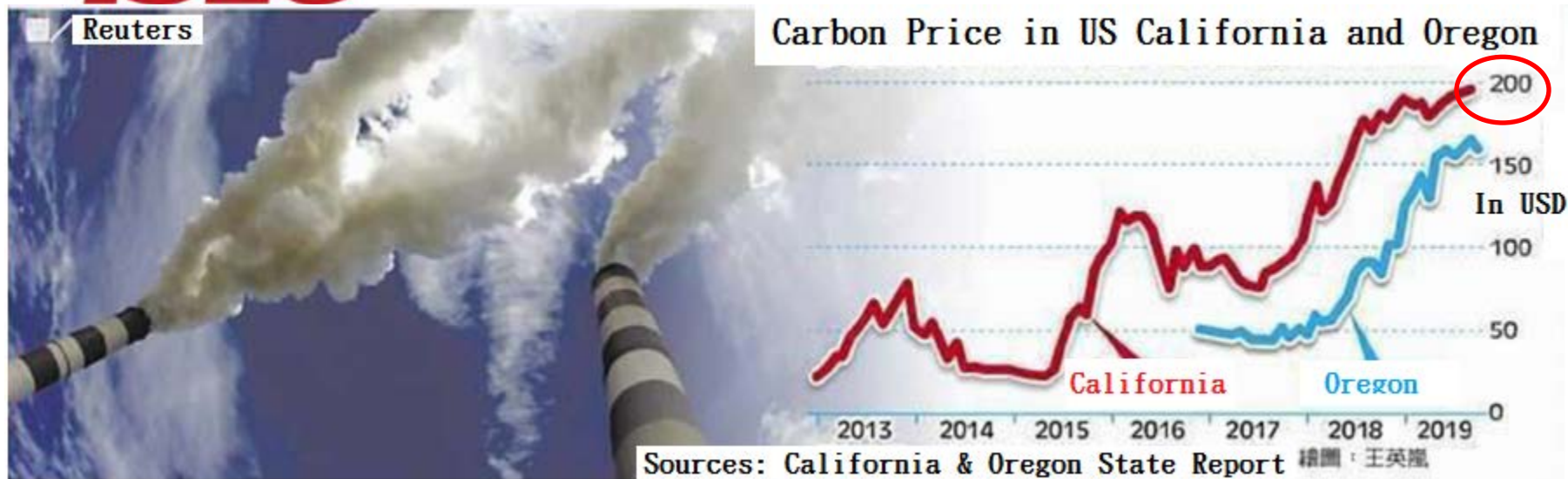
Graph 2: Forecast for Global Top 20 Module Demand Markets, 2019 ~2020



Source: TrendForce, Jul., 2019

According to TrendForce, four countries including China 33%, USA 11%, India 9% and Japan 6% add up will still dominate the majority of global PV Market. However, the total percentage of these 4 has dropped significantly from 78.9% to 59%, which demonstrates a strong growth in other regions or countries.

Yr-by-Yr Carbon Right Price Hikes



What is Carbon Right?

Carbon Right is now trading as a commodity among countries and companies of which is calculated based on the carbon emissions per ton.

What is the price for Carbon Right per kwh?

According to Taiwan Bureau of Energy

1kwh produces 0.554kg of CO₂ = 0.00054ton

0.00054ton X USD200/ton = USD 0.1108/kwh = **NTD 3.39/kwh !!!**

Higher than Taiwan Industrial Electricity Charge NTD 2.6/kwh!!!

Thus then, if NTD 2.6/kwh + Carbon Right NTD 3.39/kwh = appx. NTD 6/kwh



Taiwan Renewable Energy Certificate





RE100 Climate Group

RE100 was established in 2014 by The Climate Group and CDP. Their mutual target is to obtain world's 100 most influential companies to participate in 100% renewable energy. There are now 154 participants and still increasing.



Two Companies from Taiwan are also in the list.

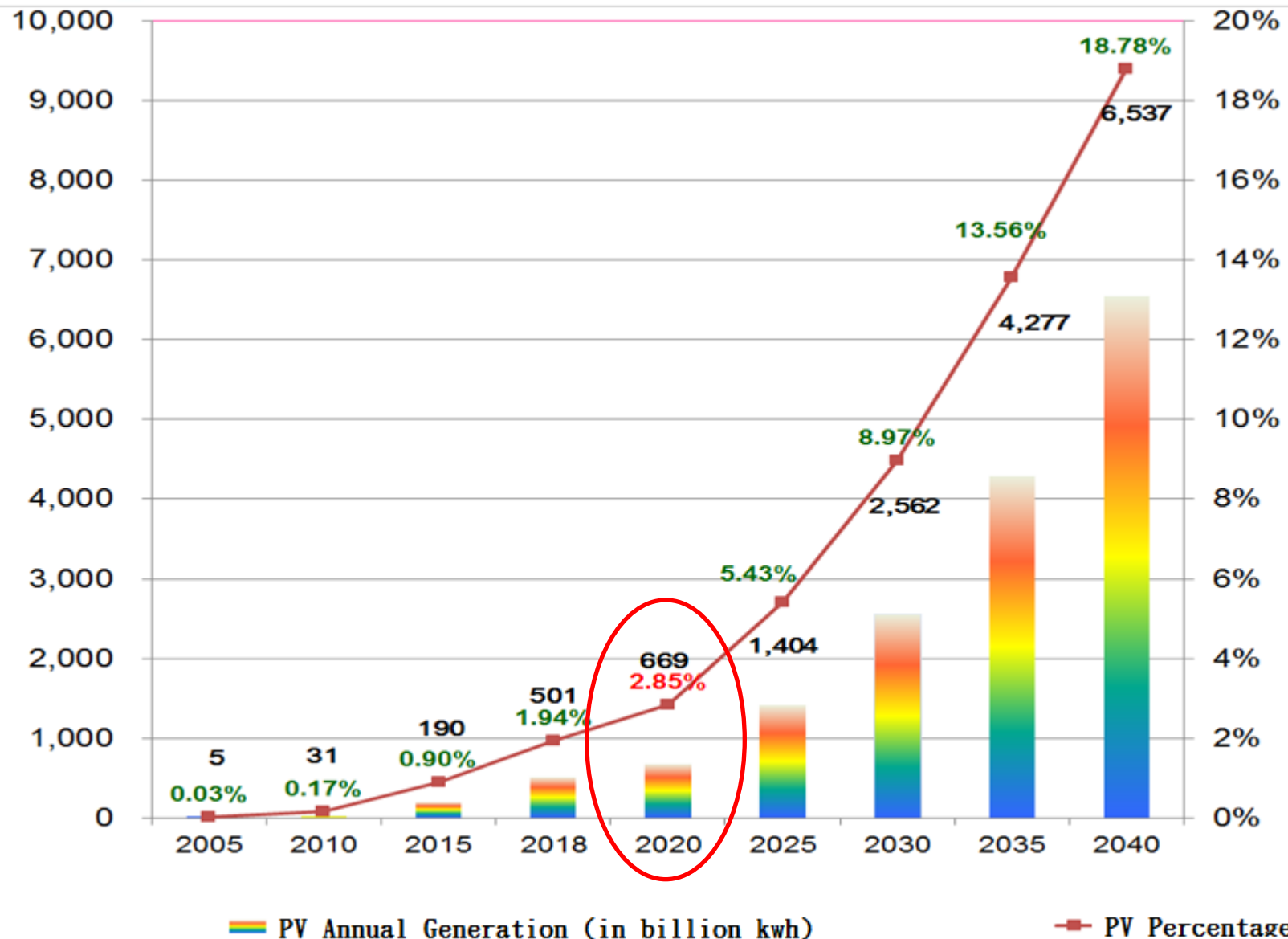


Renewable Energy in Major Region/Countries

- **EU** – Sets a target of 32% for renewable energy by 2030, including Solar and Wind power. Among 28 member countries, 11 countries have exceeded 20%, which paves a foundation for reaching its target by 2030.
- **USA** – Even though the country imposes 201 tariff policy on PV imports, the PV market still shows a steady growth.
- **India** - Sets a target of 170GW renewable energy by year 2020 and announced to complete 500GW in 2030, including PV 320GW. According to its central energy bureau, the total renewable usage will increase to 48% by year 2030.
- **Japan** – PV installation will reach to 64GW by year 2030 of which is equivalent to 7% of total country electricity usage. The accumulated installations has reached to 44.3GW in 2018 and the country ranked the forth largest PV installation global wide.



Solar Power in Its Early Stage



Sources: PVinfolink · TSEC Marketing Dept.

Taiwan PV Market Update





Taiwan Gov't Pushing for Higher Renewable %

➤ Electricity Structure Plan for Taiwan by 2025:

Gas 50%, Coal 30% and Renewable Energy 20%

➤ PV Installation by 2025

20GW = Generates 25billion kwh = 10% of total Electricity Generation

➤ 3 Major National Electricity Policy attribute to higher installation % in PV:

- ◆ **Electricity Liberalization** – Divides in three sectors (1)Power Generation (2)Power Transmission (3)Electricity Selling.
- ◆ **Renewable Development and Anti-Nuclear** – Setting regulations for certain large electricity users to invest in Renewable Energy.
- ◆ **Renewable Energy Certification** – To implement renewable energy certification.



Taiwan PV Analysis

- Ministry of Economic Affairs **has implemented VPC** (Voluntary Product Certificate) system to resist solar panels made from the overseas in 2016.
- In 2018, Taiwan PV installation **set a record high of 970MW** in the history. It was the first time that the country successfully stands for 1% in the global PV list.
- Until the end of 2nd quarter in 2019, the PV accumulation has reached to 3.6GW. As the Gov't targeting for 20GW by 2025, there is still 16.4GW remaining for completion. **Approximately 2.5GW annual installation** should be seen while NTD29.2billion per year is to be anticipated.
- Throughout the years, **large ground mount projects** have been launched and approved since 2018. TSEC's market share is at around 25~30% in 2019.

Taiwan Annual PV Installation Target

Until year 2018, total PV accumulation was 2.8GW

2019 Installing Target > 1.3 GW

2020 Installing Target > 2.2 ~ 2.4GW

2020 Accumulate Installing Target = 6.5GW

(2019~2020) 2years installing target = 3.7GW

Total Investment Amount = NTD222billion



TSEC Business & Operational Planning





Business Review

- **2019Q1 – Successful achieved profit turnaround.**
 - **2019Q2~Q3 – Maintaining positive Sales Margin and Cash-flow**
- Please refer to Taiwan Stock Exchange website for TSEC Financial Reports**

Q2~Q3 Sales and Margin drop caused by the followings:

1. The market anticipates a massive increase in wafer production by Longi and ChungHuan, thus then triggered the panel price drop request from downstream.
2. Due to mayor change in couple major PV counties from the latest government election, most of the large ground mount projects have been postponed from 6~9months for reevaluation.



2020~2021 TSEC Business Plan

- I. Obtain a higher Panel Market Share: 35%-45%.**
- II. Increase CAPEX in Solar Panel capacity, from 500 to 800MW, to further decrease manufacturing cost and reach economies of scale.**
- III. Master in PERC Cell production for lower cost.**
- IV. Develop self-owned solar farm: 150MW and above.**
- V. Implement TSEC Power Platform for better O&M Services and product value-added.**
- VI. Collaborate with international investors for rapid business growth.**



Local Market vs Overseas'

Solar Cell vs Solar Panel

Local Market and Solar Panel Business serve as the foundation for business turnaround.

Sales	Cell	Panel	Sales	Local	Overseas
2018/Q1	76%	24%	2018/Q1	37%	63%
Q2	64%	36%	Q2	52%	48%
Q3	39%	61%	Q3	77%	23%
Q4	6%	94%	Q4	97%	3%
2019/Q1	2.08%	97.92%	2019/Q1	98.31%	1.69%
Q2	1.16%	98.84%	Q2	99.13%	0.87%
Q3	2.15%	97.85%	Q3	98.36%	1.64%



Large Ground Mount Projects might encounter Insufficient Supply of Panel in 2020

Large Ground Mount	Total	2019	2020	2021
ChungBin Industrial 1 & 2	180	5	175	0
ChungBin Industrial 3 & 4	180	0	35	145
Foreign Investor (IXXXX)	50	0	50	0
Taiwan Power Tainan	150	115	35	0
Tainan National Project	200	0	90	110
Taiwan Sugar (Detention Basins)	68.6	0	34.4	34.2
Taiwan Sugar Yulin	120	0	120	0
Taiwan Sugar Tainan	202	0	202	0
Tainan ChiGu fish-ponds	80	0	10	70
Tainan fish-ponds	210	0	45	165
TaiTung Project	202	0	40	162
PingTung 800MW	420	0	372	48
ChiYi Salt Field	70	70	0	0
Taiwan Power LunWeiSi	100	100	0	0
小計	2,233	290	1,208	734.2

- Large Ground Mount requires Larger Panel Maker to supply in time:
TSEC 500MW / URE 400MW(Taiwan Panel Capacity) / AUO 300MW
- Mid-Small Size panel suppliers will be phased out



Taiwan Largest Private Solar Ground Mount Project in ChiaYi

Project Owner: Vena
Module provider: TSEC **70MW**





TSEC Power Platform

