Stock code: 5483

Sino-American Silicon Products Inc.
and Subsidiaries

Consolidated Financial Statements

With Independent Auditors' Report

For the Years Ended December 31, 2019 and 2018

Address: No.8, Industrial East Road 2, Science Based Industrial Park, Hsinchu, Taiwan, R.O.C.

Tel.: (03) 577-2233

(English translation of consolidated financial statements originally issued in Chinese is unaudited and for information purpose only; The Chinese version shall prevail.)

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Representation Letter

The entities that are required to be included in the combined financial statements of Sino-American Silicon Products Inc. as of and for the year ended December 31, 2019 under the Criteria Governing the Preparation of Affiliation Reports, Consolidated Business Reports, and Consolidated Financial Statements of Affiliated Enterprises are the same as those included in the consolidated financial statements prepared in conformity with International Financial Reporting Standards No. 10 endorsed by the Financial Supervisory Commission, “Consolidated Financial Statements”. In addition, the information required to be disclosed in the combined financial statements is included in the consolidated financial statements. Consequently, Sino-American Silicon Products Inc. and Subsidiaries do not prepare a separate set of combined financial statements.

Sino-American Silicon Products Inc.

Chairman: Ming-Kuang Lu

March 19, 2020

Independent Auditors' Report

To the Board of Directors of Sino-American Silicon Products Inc.

Opinion

We have audited the consolidated financial statements of Sino-American Silicon Products Inc. and its subsidiaries ("the Group"), which comprise the consolidated balance sheets as of December 31, 2019 and 2018, the consolidated statements of comprehensive income, changes in equity and cash flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, based on the audit results of the accountant and the audit report of other accountants the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at December 31, 2019 and 2018, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with the Regulations Governing the Preparation of Financial Reports by Securities Issuers and with the International Financial Reporting Standards ("IFRSs"), International Accounting Standards ("IASs"), Interpretations developed by the International Financial Reporting Interpretations Committee ("IFRIC"), and the former Standing Interpretations Committee ("SIC") endorsed and issued into effect by the Financial Supervisory Commission of the Republic of China.

Basis for Opinion

We conducted our audits in accordance with the Regulations Governing Auditing and Certification of Financial Statements by Certified Public Accountants and the auditing standards generally accepted in the Republic of China. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Group in accordance with the Certified Public Accountants Code of Professional Ethics in Republic of China ("the Code"), and we have fulfilled our other ethical responsibilities in accordance with the Code. Based on the audit results of the accountant and the audit report of other accountants, we believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis of our opinion.

Other Matter

Among the investments included in the consolidated company under equity method, the financial statements of Crystalwise Technology Inc. have not been checked by the accountant and have been checked by other accountants. Therefore, among the opinions expressed by the accountant on the consolidated financial statements, the amount booked in the financial statements of is based on the audit report of other accountants. The amount of investment in Crystalwise Technology Inc. under equity method was 0.4% On December 31. The share of gain or loss of related companies under equity method for January 1 to December 31, 2018 accounted for (3)% of the net profit before tax respectively.

The consolidated company has prepared standalone financial statements for 2019 and 2018, and the audit report issued by the accountant with unqualified opinions plus other matters is available for reference.

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audits of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. Based on our judgment, the key audit matters that should be disclosed in this audit report are as follows:

1. Revenue recognition of customer contracts

Please refer to note 4(15) “Revenue recognition” for accounting policy and note 6(25) “Revenue from contracts with customers” of the consolidated financial statements for further information.

Description of key audit matter:

The main source of Revenue of the semiconductor business unit of the consolidated company is the sales of semiconductor silicon crystal materials and their components. The recognition of operating revenue is determined according to the trading conditions agreed with the customers. As the transaction volume is large and from globalized operation locations, as a result, the accountant has recognized the Revenue as one of the important evaluation items for the implementation of the consolidated financial report audit.

How the matter was addressed in our audit:

In relation to the key audit matter above, we have performed certain key audit procedures that included understanding of revenue recognition policies and assessing whether revenue recognition policies are appropriate based on sales terms and revenue recognition criteria; understanding the design and process of implementation of internal controls and testing operating effectiveness; testing selected sales samples and agreeing to customer orders, delivery note and related documentation supporting sales recognition; testing sales cut-off, on a sample basis, for transactions incurred within a certain period before or after the balance sheet date by reviewing related sales terms, inspecting delivery documents, and other related supporting document to evaluate whether the revenue was recorded in proper period.

2. Assessment of impairment loss on property, plant and equipment

For the accounting policy of asset impairment, please refer to Note 4 (13) of the consolidated financial statements for impairment of non-financial assets; for accounting hypothesis and estimated uncertainty of assessment of impairment loss on property, plant and equipment(including right of use assets), please refer to Note 5 (1) of the consolidated financial statements. For notes to the assessment of impairment loss on property, plant and equipment, please refer to Note 6 (11) and 6(12) of the consolidated financial statements.

Description of key audit matters:

The industry in which the solar power business unit of the consolidate company is located is subjected to fluctuations due to the market environment and the energy policies of various governments, with fierce market competition and continuous price drop of products. Therefore, the assessment of impairment loss on property, plant and equipment is important; the asset impairment assessment includes Identifying the cash-generating unit, determining the evaluation method, selecting important assumptions, and calculating the recoverable amount that must rely on the subjective judgment of the management. The evaluation process is complicate d and contains the subjective judgment of the management. Therefore, the accountant booked it as one of the important audit matters.

Audit procedure implemented:

The principal audit procedures for the above key audit matters by the accountant include:

assessing whether the cash-generating unit and its related tested assets that the consolidated company management has identified to impair show possible signs of impairment, and further understanding and testing the evaluation models and key assumptions such as future cash flow projections, use period and weighted average cost of capital that the management use in the impairment test, including expected product Revenue, costs and expenses, and assessing the accuracy of previous management forecasts; and carrying out sensitivity analysis of results. Furthermore, the management authority is also consulted on relevant procedures in order to identify whether there will be matters capable of affecting the impairment test result in the future after the financial statements. And assess whether the consolidated company has properly disclosed the policy of long-term non-financial asset impairment and other related information

3. Impairment of goodwill

Please refer to the note 4(13) “Intangible assets” for accounting policy, note 5(2) “Significant accounting assumptions and judgments, and major sources of estimation uncertainty” for impairment assessment, and note 6(13) “Intangible assets” for further details.

Description of key audit matter:

The Group is in a capital intensive industry, with goodwill arising from business combinations' Moreover, the Group operates in an industry in which the operations are easily influenced by various external factors, such as market conditions and governmental policies. Therefore, the assessment of impairment of goodwill is one of the key areas in our audit. The assessment procedures, including identification of cash-generating units, valuation models, selection of key assumptions and calculations of recoverable cash inflows, depend on the management’s subjective judgments, which contained uncertainty in accounting estimations. Consequently, this is one of the key areas in our audit.

How the matter was addressed in our audit:

In relation to the key audit matter above, we have performed certain key audit procedures that included: assessing triggering events identified by management for impairment indicators existing in a cash-generating unit, assessing whether the assumptions used for evaluating the recoverable amount are reasonable; evaluating the achievement of prior year financial forecasts; inspecting the calculations of recoverable amounts; assessing the assumptions used for calculating recoverable amounts and cash flow projections; performing the sensitivity analysis based on key factors; assessing whether the accounting policies for goodwill impairment and other relevant information have been appropriately disclosed.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with the Regulations Governing the Preparation of Financial Reports by Securities Issuers and with the IFRSs, IASs, IFRIC, and SIC endorsed and issued into effect by the Financial Supervisory Commission of the Republic of China, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group’s ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

Those charged with governance (including the Audit Committee) are responsible for overseeing the Group's financial reporting process.

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the auditing standards generally accepted in the Republic of China will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with auditing standards generally accepted in the Republic of China, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

1. Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

2. Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.

3. Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

4. Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Group to cease to continue as a going concern.

5. Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

6. Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditors' report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The engagement partners on the audit resulting in this independent auditors' report are Cheng-Chien, Chen and An-Chih, Cheng.

KPMG

Taipei, Taiwan (Republic of China)
March 19, 2020

Sino-American Silicon Products Inc. and subsidiaries

Consolidated Balance Sheet

December 31, 2019 and 2018

Expressed in thousands of New Taiwan Dollars

		2019.12.31		2018.12.31	
	Assets	**Amount**	**%**	**Amount**	**%**
	Current assets:				
1100	Cash and cash equivalents (Note 6(1))	$ 34,901,425	32	36,829,131	35
1110	Financial assets at fair value through profit or loss－current (Note 6(2))	1,883,576	2	323,548	-
1136	Current financial assets at amortized cost (Note 6(4) and 7)	240,068	-	-	-
1170	Notes and accounts receivable, net (Note 6(5)and 25)	8,434,249	7	9,767,417	9
1180	Accounts receivable due from related parties, net (Note 6(25) and 7)	72,965	-	113,915	-
130X	Inventories (Note 6(6))	7,398,293	7	7,881,367	8
1476	Other financial assets – current (Note 8)	913,823	1	770,117	1
1479	Other current assets	1,321,234	1	1,575,354	2
		55,165,633	50	57,260,849	55
	Non-current Assets:				
1513	Financial assets at fair value through profit or loss－non current (note 6(2))	95,163	-	-	-
1517	Financial assets at fair value through other comprehensive income - non-current (Note 6 (3))	332,185	-	1,204,924	1
1535	Financial assets measured at amortized cost - non-current (Note 6 (4) and 7)	267,612	-	281,366	-
1550	Investments accounted for using equity method (Note 6 (7))	3,248,537	3	2,041,896	2
1600	Property, plant and equipment (Note 6 (11) and 8)	40,276,715	37	37,438,555	36
1755	Right of use assets (Note 6 (12))	913,609	1	-	-
1780	Intangible assets (Note 6 (13))	3,227,583	3	3,649,397	4
1840	Deferred tax assets (Note 6 (21))	1,927,636	2	1,514,843	2
1990	Other non-current assets (Note 6 (20) and 8)	788,017	1	267,825	-
1980	Other financial assets – non-current (Note 8)	3,140,806	3	325,660	-
		54,217,863	50	46,724,466	45
	Total assets	**$ 109,383,496**	**100**	**103,985,315**	**100**

		2019.12.31		2018.12.31	
	Liabilities and Equity	**Amount**	**%**	**Amount**	**%**
	Current Liabilities:				
2100	Short-term borrowings (Note 6 (14) and 8)	$ 11,465,075	11	9,334,809	9
2120	Financial liabilities at fair value through profit or loss– current (Note 6(2))	216,700	-	119	-
2130	Contract liabilities - current (Note 6 (25), 7 and 9)	4,128,893	4	4,662,837	5
2170	Notes and accounts payable	4,171,687	4	5,184,889	5
2180	Accounts payable to related parties (Notes 7)	8,008	-	51,342	-
2201	Payroll and bonus payable	2,851,934	3	2,295,168	2
2250	Provision – current (Note 6 (18) and 9)	232,256	-	10,074	-
2230	Current tax liabilities	2,692,745	2	2,127,809	2
2399	Other current liabilities (Note 6 (16),(17) and 7)	4,393,096	4	6,486,646	6
		30,160,394	28	30,153,693	29
	Non-current Liabilities:				
2527	Contract liabilities-non-current (Note 6 (25), 7 and 9)	17,280,344	16	15,712,134	15
2540	Long-term borrowings (Note 6 (15) and 8)	-	-	2,040,200	2
2550	Provision – non current (Note 6 (18) and 9)	4,674,648	4	1,014,869	1
2570	Deferred tax liabilities (Note 6 (21))	4,813,876	4	3,664,664	4
2600	Other non-current liabilities (Note 6 (16) and (17))	887,803	1	312,861	-
2640	Net defined benefit liabilities-non-current (Note 6 (20))	2,950,390	3	3,173,029	3
		30,607,061	28	25,917,757	25
	Total liabilities	60,767,455	56	56,071,450	54
	Equity (Note 6 (22)and (23))				
3110	Ordinary shares	5,862,367	5	5,863,207	6
3170	Pending share capital	(150)	-	(330)	-
		5,862,217	5	5,862,877	6
3200	Capital surplus	21,072,595	19	21,757,292	21
	Retained earnings:				
3310	Legal reserve	462,354	-	311,579	-
3320	Special reserve	513,302	1	513,302	1
3350	Unappropriated retained earnings (accumulated loss)	2,591,235	2	1,507,753	1
		3,566,891	3	2,332,634	2
3400	Other equity interest	(3,831,462)	(3)	(3,071,087)	(3)
	Total equity attributable to shareholders of Sino-American Silicon Products Inc.	26,670,241	24	26,881,716	26
36XX	Non-controlling interests (Note 6 (8 and 9))	21,945,800	20	21,032,149	20
	Total equity	48,616,041	44	47,913,865	46
	Total liabilities and equity	**$ 109,383,496**	**100**	**103,985,315**	**100**

(Please read the attached notes to the consolidated financial statements for details)

Sino-American Silicon Products Inc. and subsidiaries
Consolidated Statements of Comprehensive Income
from January 1 to December 31, 2019 and 2018

Expressed in thousands of New Taiwan dollars

		2019		2018	
		Amount	**%**	**Amount**	**%**
4000	**Operating revenue** (Note 6 (25) and 7)	$ 65,510,225	100	69,238,945	100
5000	**Operating costs** (Note 6 (6), (12),(13),(19),(20),(26) and 7)	46,242,686	71	50,597,092	73
	Gross profit from operations	19,267,539	29	18,641,853	27
	Operating expenses (Note 6 (12),(13),(19),(20),(26) and 7)				
6100	Selling expenses	1,396,627	2	1,416,904	2
6200	Administrative expenses	2,513,345	4	2,094,839	3
6300	Research and development expenses	1,844,789	3	1,849,867	3
6450	Impairment loss determined in accordance with IFRS 9 (Note 6(5))	(2,643)	-	102,738	-
	Total operating expenses	5,752,118	9	5,464,348	8
	Net operating income	13,515,421	20	13,177,505	19
	Non-operating income and expenses:				
7010	Other Revenue (Note 6 (27) and 7)	767,209	2	517,896	-
7020	Other gains and losses, net (Note 6 (28))	136,376	-	71,244	-
7050	Financial costs	(150,407)	-	(212,003)	-
7060	Shares of profit of associates and joint ventures accounted for using equity method (Note 6 (7))	(344,430)	(1)	(236,409)	-
		408,748	1	140,728	-
7900	**Income before income tax**	13,924,169	21	13,318,233	19
7950	Income tax expenses (Note 6 (21))	5,028,824	7	4,682,753	7
	Net income for the year	8,895,345	14	8,635,480	12
8300	**Other comprehensive income (loss):**				
8310	**Items that may not be reclassified subsequently to profit or loss**				
8311	Gains (losses) on remeasurements of defined benefit plans (Note 6 (20))	179,386	-	(265,423)	-
8316	Unrealized gains (losses) from investments in equity instruments measured at fair value through other comprehensive income	5,450	-	(521,764)	(1)
8349	Income tax related to components of other comprehensive income that will not be reclassified to profit or loss (Note 6 (21))	(120,951)	-	68,152	-
		63,885	-	(719,035)	(1)
8360	**Items that may be reclassified subsequently to profit or loss**				
8361	Exchange differences on translation of foreign operations	(1,535,230)	(2)	940,983	1
8370	Share of other comprehensive income of associates and joint ventures accounted for using equity method (Note 6 (19))	269,600	-	(173,644)	-
8399	Income tax related to components of other comprehensive income that will be reclassified to profit or loss (Note 6 (21))	305,271	-	(102,154)	-
	Total Items that may be reclassified subsequently to profit or loss	(960,359)	(2)	665,185	1
8300					
	Other comprehensive income (after tax)	(896,474)	(2)	(53,850)	-
	Total comprehensive income	$ 7,998,871	12	8,581,630	12
	Net income attributable to:				
	Shareholders of Sino-American Silicon Products Inc.	$ 2,248,386	4	1,950,503	2
	Non-Controlling Interests	6,646,959	10	6,684,977	10
		$ 8,895,345	14	8,635,480	12
	Total comprehensive gain or loss attributable to:				
	Shareholders of Sino-American Silicon Products Inc.	$ 1,774,007	3	1,604,225	2
	Non-Controlling Interests	6,224,864	9	6,977,405	10
		$ 7,998,871	12	8,581,630	12
	Basic earnings per share (NT dollars) (Note 6 (26))				
9750	Basic earnings per share	$	3.86		3.36
9850	Diluted earnings per share	$	3.83		3.34

(Please read the attached notes to the consolidated financial statements for details)

Sino-American Silicon Products Inc. and subsidiaries
Consolidated statement of changes in equity
From January 1, 2018 to December 31, 2019

Expressed in thousands of New Taiwan Dollars

	Equity attributable to the owners of the parent company																
				Retained earnings				Other equity items									
	Ordinary shares	Pending share capital	Capital surplus	Legal reserve	Special reserve	Unappropriated retained earnings (Accumulated loss)	Total	Exchange differences on translation of foreign financial statements	Financial assets at fair value through other comprehensive income	Unrealized gains (losses) on available for sale financial assets	Employees' unearned remuneration	Other	Total	Treasury shares	Total	Non-Controlling Interests	Total Equity
Balance at January 1, 2018	5,920,587	-	24,205,831	311,579	513,302	(317,629)	507,252	(1,973,334)	-	(1,109,281)	(236,020)	(4,302)	(3,322,937)	(169,861)	27,140,872	16,636,039	43,776,911
Effects of retrospective application of new accounting standards	-	-	-	-	-	1,222,787	1,222,787	-	(2,338,298)	1,109,281	-	-	(1,229,017)	-	(6,230)	(6,024)	(12,254)
Balance at January 1, 2018 after adjustments	5,920,587	-	24,205,831	311,579	513,302	905,158	1,730,039	(1,973,334)	(2,338,298)	-	(236,020)	(4,302)	(4,551,954)	(169,861)	27,134,642	16,630,015	43,764,657
Net income for the year	-	-	-	-	-	1,950,503	1,950,503	-	-	-	-	-	-	-	1,950,503	6,684,977	8,635,480
Other comprehensive income for the year	-	-	-	-	-	(107,341)	(107,341)	387,093	(626,030)	-	-	-	(238,937)	-	(346,278)	292,428	(53,850)
Comprehensive income for the year	-	-	-	-	-	1,843,162	1,843,162	387,093	(626,030)	-	-	-	(238,937)	-	1,604,225	6,977,405	8,581,630
Loss made up by capital reserve	-	-	(317,629)	-	-	317,629	317,629	-	-	-	-	-	-	-	-	-	-
Cash dividends distribution from capital surplus	-	-	(1,759,511)	-	-	-	-	-	-	-	-	-	-	-	(1,759,511)	-	(1,759,511)
Share of net worth changes of subsidiaries, associates and joint ventures accounted for using equity method	-	-	124	-	-	-	-	-	-	-	-	922	922	-	1,046	-	1,046
Retirement of treasury stock	(55,550)	-	(114,311)	-	-	-	-	-	-	-	-	-	-	169,861	-	-	-
Donated surplus	-	-	239	-	-	-	-	-	-	-	-	-	-	-	239	-	239
Non-controlling equity changes	-	-	(245,804)	-	-	-	-	-	-	-	-	-	-	-	(245,804)	(425,701)	(671,505)
Expiration of restricted employee stock	-	-	(9,487)	-	-	-	-	-	-	-	160,686	-	160,686	-	151,199	-	151,199
Restrictions on employee rights invalid, pending for cancellation	(1,830)	(330)	(2,160)	-	-	-	-	-	-	-	-	-	-	-	(4,320)	-	(4,320)
Disposal of investments in equity instruments designated at fair value through other comprehensive income	-	-	-	-	-	(1,558,196)	(1,558,196)	-	1,558,196	-	-	-	1,558,196	-	-	-	-
Cash dividends paid by subsidiary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2,149,570)	(2,149,570)
Balance at December 31, 2018	**$ 5,863,207**	**(330)**	**21,757,292**	**311,579**	**513,302**	**1,507,753**	**2,332,634**	**(1,586,241)**	**(1,406,132)**	**-**	**(75,334)**	**(3,380)**	**(3,071,087)**	**-**	**26,881,716**	**21,032,149**	**47,913,865**
Net income for the year	-	-	-	-	-	2,248,386	2,248,386	-	-	-	-	-	-	-	2,248,386	6,646,959	8,895,345
Other comprehensive income for the year	-	-	-	-	-	29,819	29,819	(638,103)	133,905	-	-	-	(504,198)	-	(474,379)	(422,095)	(896,474)
Comprehensive income for the year	-	-	-	-	2,278,205	2,278,205	2,278,205	(638,103)	133,905	-	-	-	(504,198)	-	1,774,007	6,224,864	7,998,871
Appropriation and distribution of retained earnings:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Legal reserve	-	-	-	150,775	-	(150,775)	-	-	-	-	-	-	-	-	-	-	-
Cash dividends on ordinary shares	-	-	-	-	-	(1,356,963)	(1,356,963)	-	-	-	-	-	-	-	(1,356,963)	-	(1,356,963)
Cash dividends distribution from capital surplus	-	-	(401,900)	-	-	-	-	-	-	-		-	-	-	(401,900)	-	(401,900)
Share of net worth changes of subsidiaries, associates and joint ventures accounted for using equity method	-	-	(279,229)	-	-	-	-	-	-	-	-	112	112	-	(279,117)	1,984	(277,133)
Non-controlling equity changes	-	-	(21)	-	-			-		-	-	-	-	-	(21)	(447)	(468)
Expiration of restricted employee stock	-	-	(3,115)	-	-	-	-	-	-	-	56,726	-	56,726	-	53,611	-	53,611
Restrictions on employee rights invalid, pending for cancellation	(840)	180	(660)	-	-	-	-	-	-	-	-	-	-	-	(1,320)	-	(1,320)
Donated surplus	-	-	228	-	-	-	-	-	-	-	-	-	-	-	228	-	228
Disposal of investments in equity instruments designated at fair value through other comprehensive income	-	-	-	-	-	313,015	313,015	-	(313,015)	-	-	-	(313,015)	-	-	-	-
Cash dividends paid by subsidiary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(5,312,750)	(5,312,750)
Balance at December 31, 2019	**$ 5,862,367**	**(150)**	**21,072,595**	**462,354**	**513,302**	**2,591,235**	**3,566,891**	**(2,224,344)**	**(1,585,242)**	**-**	**(18,608)**	**(3,268)**	**(3,831,462)**	**-**	**26,670,241**	**21,945,800**	**48,616,041**

(Please read the attached notes to the consolidated financial statements for details)

Sino-American Silicon Products Inc. and subsidiaries
Consolidated Statements of Cash Flows
From January 1, 2018 to December 31, 2019
Expressed in thousands of New Taiwan dollars

		2019	2018
Cash flows from operating activities:			
Income before income tax	$	13,924,169	13,318,233
Adjustments:			
Adjustments to reconcile profit (loss)			
Depreciation expense		5,030,426	5,628,233
Amortization expenses		364,830	354,779
Expected credit losses / Provisions for bad debt expense		(2,643)	102,738
Net gains on financial assets or liabilities at fair value through profit or loss		286,287	(44,659)
Interest expenses		150,407	212,003
Interest income		(757,732)	(482,902)
Dividend income		(9,477)	(34,994)
Share-based payment remuneration cost		53,611	151,199
Share of profit of subsidiaries and associates accounted for using equity method		344,430	236,409
(Gains) losses on disposal of property, plant and equipment		23,276	(129,992)
Gains on disposal of investment		(72,584)	-
Loss on disposal of intangible assets		1,141	-
Impairment loss of finance assets		25,973	-
Provision for (reversal of) inventory valuation		(109,158)	(37,345)
Impairment loss for (reversal of) non-finance assets		(8,779)	1,436,217
Provision for liability		3,883,063	443,404
Total adjustments		9,203,071	7,835,090
Changes in operating assets and liabilities:			
Notes and accounts receivable (including related parties)		1,374,487	(1,153,986)
Inventories		592,232	2,203,883
Prepayments for purchase of materials		4,248	1,079,561
Other financial assets		70,638	(524,740)
Other current assets		(325,743)	(408,244)
Notes and accounts payable (including related parties)		(1,055,681)	(115,644)
Contract liabilities		(2,037,234)	14,252,038
Net defined benefit liabilities		(3,293)	5,838
Other operating liabilities		(229,612)	811,517
Total changes in operating assets and liabilities		(1,609,958)	16,150,223
Total adjustments		7,593,113	23,985,313
Cash inflow generated from operations		21,517,282	37,303,546
Interest received		782,061	452,590
Dividends received		9,477	34,994
Interest paid		(159,532)	(233,845)
Income tax paid		(3,318,168)	(1,467,974)
Net cash flows from operating activities		18,831,120	36,089,311

(Continued on next page)

(Please read the attached notes to the consolidated financial statements for details)

Sino-American Silicon Products Inc. and subsidiaries
Consolidated Statements of Cash Flows (Continued)
From January 1, 2018 to December 31, 2019
Expressed in thousands of New Taiwan dollars

	2019	2018
Cash flows from investing activities:		
Acquisition of financial assets at fair value through other comprehensive income	(197,610)	(197,197)
Proceeds from disposal of financial assets at fair value through other comprehensive income	553,385	-
Proceeds from capital reduction of financial assets at fair value through other comprehensive income	28,239	8,732
Acquisition of financial assets measured at amortized cost	(250,000)	-
Acquisition of financial assets at fair value through profit or loss	(1,907,850)	(276,529)
Proceeds of financial assets at fair value through profit or loss	194,245	-
Acquisition of investments accounted for using equity method	(1,132,310)	(990,000)
Cash dividends from investments accounted for using equity method	55,068	6,422
Proceeds of subsidiary	166,668	
Acquisition of property, plant and advance payments received for equipment	(7,719,440)	(6,597,886)
Proceeds from disposal of property, plant and equipment	105,349	560,149
Decrease in other financial assets	(3,067,397)	56,023
Net cash flows used in investing activities:	(13,171,653)	(7,430,286)
Cash flows from financing activities:		
Decrease in short term borrowings	2,163,041	(4,464,007)
Increase in long term borrowings	-	1,026,000
Repayments of long term borrowings	(2,040,200)	(4,632,672)
Increase (decrease) in guarantee deposits received	(145,179)	17,858
Payment of lease liabilities	(201,027)	-
Distribution of cash dividends out of capital reserve	(1,758,863)	(1,759,511)
Restrictions on employee rights invalid of write-off	(1,320)	(4,320)
Change in non-controlling interests	(468)	(575,394)
Donated surplus	228	239
Cash dividends of distributing non-controlling interests	(5,312,750)	(2,149,570)
Net cash flows used in financing activities	(7,296,538)	(12,541,377)
Effect of exchange rate changes	(290,635)	368,703
Net increase in cash and cash equivalents	(1,927,706)	16,486,351
Cash and cash equivalents at beginning of period	36,829,131	20,342,780
Cash and cash equivalents at end of period	$ 34,901,425	36,829,131

(Please read the attached notes to the consolidated financial statements for details)

Sino-American Silicon Products Inc. and subsidiaries

Notes to the Consolidated Financial Statements

For the years ended December 31, 2019 and 2018

(Expressed in Thousands of New Taiwan Dollars, Unless Otherwise Specified)

1. Company history

Sino-American Silicon Products Inc. (“SAS” or “the Company”) was incorporated in accordance with the Company Act of the Republic of China in January 1981; also, the Chunan Branch was established in June 2005 at No.8, Industrial East Road 2, Science Based Industrial Park, Hsinchu, Taiwan, R.O.C. The company, as well as its subsidiaries (together referred to as the “Group”) mainly engages in the design, production and sale of semi-conductor silicon materials and components, rheostat, optical and communications wafer materials; also the related technology, management consulting business, and technical services of the photo-voltaic power system generation and installation.

The parent company’s stocks have been traded publicly at the Taipei Exchange (referred hereinafter as TPEx) since March 2001.

For the purpose of reorganization and provision of professional work to enhance competitiveness and business performance, a resolution was reached at the shareholders’ meeting of the parent company on June 17, 2011 to have the semiconductor business and sapphire business (including the related assets, liabilities and business operations) split and transfer the businesses o the parent company’s 100% owned subsidiaries, GlobalWafers Co., Ltd. (hereinafter referred to as “GlobalWafers”) and Sino Sapphire Co., Ltd. (hereinafter referred to as “Sino Sapphire”) with the base date of split as scheduled on October 1, 2011. The parent company based on the net carrying value of the semiconductor business paid NT$ 38.50 per share to acquire 180,000 thousand shares at NT$ 10 par value per share of GlobalWafers; also, based on the sapphire business net assets the parent company paid NT$ 40 per share to acquire 40,000 thousand shares at NT$ 10 par value per share of Sino Sapphire.

A resolution merging with Sunrise Global Solar Energy Co., Ltd. (hereinafter referred to as “Sunrise Global”) was reached by the Board of Directors on August 12, 2013 with the base date of merger scheduled as August 1, 2014. The parent company is the surviving corporation and Sunrise Global is discontinued after the merger.

The shares of GlobalWafers were approved for trading over the counters through the Taiwan Stock Exchange. They were booked on the counters on September 25, 2015 and were closed for trading over emerging counters the same day.

The consolidated company acquired all outstanding ordinary shares of SunEdison Semiconductor Limited (hereinafter referred to as SunEdison) on December 2, 2016 so that it aquired the control over SunEdison Semiconductor Limited and its subsidiaries. SunEdison is the world's leading semiconductor wafer manufacturer and supplier. Since its inception, SunEdison has been a leader in wafer design and R&D technology. SunEdison's R&D and manufacturing bases are located throughout the United States, Europe and Asia to develop next-generation high-performance semiconductor wafers. Through this acquisition, the consolidated company will be able to increase its global market share, customer base and other wafer technology and capacity and expand operations.

2. Approval date and procedures of the consolidated financial statements

These consolidated financial statements were authorized for issuance by the board of directors on March 19, 2020.

3. New standards, amendments and interpretations adopted

(a) The impact of the International Financial Reporting Standards ("IFRSs") endorsed by the Financial Supervisory Commission, R.O.C. ("FSC") which have already been adopted.

The following new standards, interpretations and amendments have been endorsed by the FSC and are effective for annual periods beginning on or after January 1, 2019.

New, Revised or Amended Standards and Interpretations	Effective date per IASB
IFRS 16 "Leases"	January 1, 2019
IFRIC 23 "Uncertainty over Income Tax Treatments"	January 1, 2019
Amendments to IFRS 9 "Prepayment features with negative compensation"	January 1, 2019
Amendments to IAS 19 "Plan Amendment, Curtailment or Settlement"	January 1, 2019
Amendments to IAS 28 "Long-term interests in associates and joint ventures"	January 1, 2019
Annual Improvements to IFRS Standards 2015–2017 Cycle	January 1, 2019

Except for the following items, the Group believes that the adoption of the above IFRSs would not have any material impact on its consolidated financial statements. The extent and impact of signification changes are as follows:

1. IFRS 16"Leases"

   IFRS 16 replaces the existing leases guidance, including IAS 17 Leases, IFRIC 4 Determining whether an Arrangement contains a Lease, SIC-15 Operating Leases – Incentives and SIC-27 Evaluating the Substance of Transactions Involving the Legal Form of a Lease.

   The Group applied IFRS 16 using the modified retrospective approach, under which the cumulative effect of initial application is recognized in retained earnings on January 1, 2019. The details of the changes in accounting policies are disclosed below,

   1) Definition of a lease

      Previously, the Group determined at contract inception whether an arrangement is or contains a lease under IFRIC 4. Under IFRS 16, the Group assesses whether a contract is or contains a lease based on the definition of a lease, as explained in Note 4(11).

On transition to IFRS 16, the Group elected to apply the practical expedient to grandfather the assessment of which transactions are leases. The Group applied IFRS 16 only to contracts that were previously identified as leases. Contracts that were not identified as leases under IAS 17 and IFRIC 4 were not reassessed for whether there is a lease. Therefore, the definition of a lease under IFRS 16 was applied only to contracts entered into or changed on or after January 1, 2019.

2) As a lessee

As a lessee, the Group previously classified leases as operating or finance leases based on its assessment of whether the lease transferred significantly all of the risks and rewards incidental to ownership of the underlying asset to the Group. Under IFRS 16, the Group recognizes right-of-use assets and lease liabilities for most leases – i.e. these leases are on-balance sheet.

The Group decided to apply recognition exemptions to short-term leases and leases of low-valve assets, including other equipment.

● Leases classified as operating leases under IAS 17

At transition, lease liabilities were measured at the present value of the remaining lease payments, discounted at the Group's incremental borrowing rate as at January 1, 2019. Right-of-use assets are measured at either:

— their carrying amount as if IFRS 16 had been applied since the commencement date, discounted using the lessee's incremental borrowing rate at the date of initial application; or

— an amount equal to the lease liability, adjusted by the amount of any prepaid or accrued lease payments – the Group applied this approach to all other lease.

In addition, the Group used the following practical expedients when applying IFRS 16 to leases.

— Applied a single discount rate to a portfolio of leases with similar characteristics.

— Adjusted the right-of-use assets by the amount of IAS 37 onerous contract provision immediately before the date of initial application, as an alternative to an impairment review.

— Applied the exemption not to recognize right-of-use assets and liabilities for leases with less than 12 months of lease term.

— Excluded initial direct costs from measuring the right-of-use asset at the date of initial application.

- Used hindsight when determining the lease term if the contract contains options to extend or terminate the lease.

- Leases previously classified as finance leases

  For leases that were classified as finance leases under IAS 17, the carrying amount of the right-of-use asset and the lease liability at January 1, 2019 are determined at the carrying amount of the lease asset and lease liability under IAS 17 immediately before that date.

3) As a lessor

The Group is not required to make any adjustments on transition to IFRS 16 for leases in which it acts as a lessor, except for a sub-lease. The Group accounted for its leases in accordance with IFRS 16 from the date of initial application.

4) Impacts on financial statements

On transition to IFRS 16, the Group recognized additional right-of-use assets and lease liabilities both of $1,150,876 thousands. When measuring lease liabilities, the Group discounted lease payments using its incremental borrowing rate at January 1, 2019. The weighted-average rate applied is 1.18%.

The explanation of differences between operating lease commitments disclosed at the end of the annual reporting period immediately preceding the date of initial application, and lease liabilities recognized in the statement of balance sheets at the date of initial application disclosed as follows:

		January 1, 2019
Operating lease commitment at December 31, 2018 as disclosed in the Group's consolidated financial statements	$	1,114,945
Recognition exemption for:		
short-term leases and leases of low-value assets		(21,894)
Extension and termination options reasonably certain to be exercised		83,429
	$	**1,176,480**
Discounted using the incremental borrowing rate at January 1, 2019	$	1,150,876
Finance lease liabilities recognized as at December 31, 2018		28,392
Lease liabilities recognized at January 1, 2019	**$**	**1,179,268**

2. IFRIC 23 "Uncertainty over Income Tax Treatments"

In assessing whether and how an uncertain tax treatment affects the determination of taxable profit (tax loss), tax bases, unused tax losses, unused tax credits, as well as tax rates, an entity shall assume that a taxation authority will examine the amounts it has the right to examine and have a full knowledge on all related information when making those examinations.

If an entity concludes that it is probable that the taxation authority will accept an uncertain tax treatment, the entity shall determine the taxable profit (tax loss), tax bases, unused tax losses, unused tax credits, as well as tax rates consistently with the tax treatment used or planned to be used in its income tax filings. Otherwise, an entity shall reflect the effect of uncertainty for each uncertain tax treatment by using either the most likely amount or the expected value, depending on which method the entity expects to better predict the resolution of the uncertainty.

There was no material impact on the cash flows during the said period.

(b) The impact of IFRS endorsed by FSC but not yet effective

The following new standards, interpretations and amendments have been endorsed by the FSC and are effective for annual periods beginning on or after January 1, 2020 in accordance with Rule No. 1080323028 issued by the FSC on July 29, 2019:

New, Revised or Amended Standards and Interpretations	Effective date per IASB
Amendments to IFRS 3 “Definition of a Business”	January 1, 2020
Amendments to IFRS 9, IAS39 and IFRS7 “Interest Rate Benchmark Reform”	January 1, 2020
Amendments to IAS 1 and IAS 8 “Definition of Material”	January 1, 2020

The Group assesses that the adoption of the abovementioned standards would not have any material impact on its consolidated financial statements.

(c) The impact of IFRS issued by International Accounting Standards Board but not yet endorsed by the FSC

As of the date, the following IFRSs that have been issued by the International Accounting Standards Board (IASB), but have yet to be endorsed by the FSC:

New, Revised or Amended Standards and Interpretations	Effective date per IASB
Amendments to IFRS 10 and IAS 28 “Sale or Contribution of Assets Between an Investor and Its Associate or Joint Venture”	Effective date to be determined by IASB
IFRS 17 “Insurance Contracts”	January 1, 2021
Amendments to IAS 1 “Classification of Liabilities as Current or Non-current”	January 1, 2022

The Group is evaluating the impact of its initial adoption of the abovementioned standards or interpretations on its consolidated financial position and consolidated financial performance. The results thereof will be disclosed when the Group completes its evaluation.

4. Summary of significant accounting policies:

The significant accounting policies presented in the consolidated financial statements are summarized below. Except for those specifically indicated, the following accounting policies were applied consistently throughout the periods presented in the consolidated financial statements.

(1) Statement of compliance

The consolidated financial statements have been prepared in accordance with the "Regulations Governing the Preparation of Financial Reports by Securities Issuers" (hereinafter referred to as the Regulations), International Financial Reporting Standards, International Accounting Standards, IFRIC Interpretations, and SIC Interpretations endorsed and issued into effect by the Financial Supervisory Commission, R.O.C (hereinafter referred to as the "IFRSs endorsed by the FSC").

(2) Basis of preparation

A. Basis of measurement

Except for the following significant accounts, the consolidated financial statements have been prepared on a historical cost basis:

(a) Financial instruments at fair value through profit or loss are measured at fair value;

(b) Financial assets at fair value through other comprehensive income are measured at fair value;

(c) Cash-settled shared-based-payment liability is measured at fair value;

(d) The defined benefit liabilities (assets) are measured at fair value of the plan assets less the present value of the defined benefit obligation, limited as explained in note 4(16).

B. Functional and presentation currency

The functional currency of each Group entity is determined based on the primary economic environment in which the entity operates. The consolidated financial statements are presented in New Taiwan dollars, which is the Company's functional currency. All financial information presented in New Taiwan dollars has been rounded to the nearest thousand.

(3) Basis of consolidation

A. Principles of preparation of the consolidated financial statements

The consolidated financial statements comprise the Company and subsidiaries. Subsidiaries are entities controlled by the Group. The Group 'controls' an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity.

The financial statements of the subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases. Intra-group balances and transactions, and any unrealized income and expenses arising from intra-group transactions are eliminated in preparing the consolidated financial statements. The Group attributes the profit or loss and each component of other comprehensive income to the owners of the parent and to the non-controlling interests, even if this results in the non-controlling interests having a deficit balance.

The Group prepares consolidated financial statements using uniform accounting policies for alike transactions and other events in similar circumstances.

Changes in the Group's ownership interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions. Any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received will be recognized directly in equity, and the Group will attribute it to the owners of the parent.

When the Group loses control over a subsidiary, it derecognizes the assets (including any goodwill) and liabilities of the subsidiary, and any related non-controlling interests and other components of equity. Any interest retained in the former subsidiary is measured at fair value when control is lost, with the resulting gain or loss being recognized in profit or loss. The Group recognizes as gain or loss in profit or loss the difference between (i) the fair value of the consideration received as well as any investment retained in the former subsidiary at its fair value at the date when control is lost ;and (ii) the assets (including any goodwill), liabilities of the subsidiary as well as any related non-controlling interests at their carrying amounts at the date when control is lost, as gain or loss in profit or loss. When the Group loses control of its subsidiary, it accounts for all amounts previously recognized in other comprehensive income in relation to that subsidiary on the same basis as would be required if it had directly disposed of the related assets or liabilities.

2. List of subsidiaries in the consolidated financial statements:

			Percentage of Ownership		
Name of Investor	**Name of subsidiary**	**Business**	**2019.12.31**	**2018.12.31**	**Note**
Sino-American Silicon Products Inc.	Sino Silicon Technology Inc. (SSTI)	Investment and triangular trade center with subsidiaries in China	100%	100%	
Sino-American Silicon Products Inc.	GlobalWafers	Manufacturing and trading of semiconductor silicon materials and components,	51.17%	51.17%	
Sino-American Silicon Products Inc.	Aleo Solar GmbH (Aleo Solar)	Solar cell manufacturing and sale and wholesale of electronic materials	100%	100%	
Sino-American Silicon Products Inc.	SAS Sunrise Inc.	Investment activities	100%	100%	

Sino-American Silicon Products Inc.	Sunrise PV World Co. (Sunrise PV World)	Power generating business	100%	100%	
Sino-American Silicon Products Inc.	Sunrise PV Electric Power Five Co., Ltd. (Sunrise PV Electric Power Five)	Power generating business	100%	-	Note6
SAS Sunrise Inc.	SAS Sunrise Pte. Ltd.	Investment activities	100%	100%	
SAS Sunrise Pte.Ltd.	Sulu Electric Power and Light Inc.(Sulu)	Power generating business	40%	40%	Note 1
SAS Sunrise Pte.Ltd.	AMLED International Systems Inc.(AMLED)	Reinvestments in various businesses	-	-	Note 2
AMLED	Sulu	Power generating business	45%	45%	
Aleo Solar	Aleo Solar Distribuzione Italia S.r.l	Solar cell manufacturing and sale and wholesale of electronic materials	100%	100%	
Aleo Solar	Aleo Sunrise GmbH (Aleo Sunrise)	Manufacturing of solar cell as well as sale and wholesale of electronic materials	-	100%	Note3 (1)
Sunrise PV World Co.	Sunrise PV Two Co., Ltd. (Sunrise PV Two)	Power generating business	-	100%	Note5
Sunrise PV World Co.	Sunrise PV Electric Power Two (Sunrise PV Electric)	Power generating business	-	100%	Note4
Sunrise PV World Co.	Sunrise PV Three Co., Ltd. (Sunrise PV Three)	Power generating business	100%	100%	
Sunrise PV World Co.	Sunrise PV Four Co., Ltd. (Sunrise PV Four)	Power generating business	100%	100%	
Sunrise PV World Co.	Sunrise PV Five Co., Ltd. (Sunrise PV Five)	Power generating business	100%	100%	Note4
GlobalWafers	GlobalSemiconductor Inc. (GSI)	Investment activities	100%	100%	
GlobalWafers	GlobalWafers Inc. (GWI)	Investment activities	100%	100%	
GlobalWafers	GlobalWafers Japan Co., Ltd. (GWJ)	Manufacturing and trading of silicon wafers	100%	-	
GlobalWafers	GWafers Singapore Pte. Ltd.(GWafers Singapore)	Investment activities	67.2%	67.2%	
GlobalWafers	Topsil GlobalWafers A/S (Topsil A/S)	Manufacturing and trading of silicon wafers	100%	100%	
GlobalWafers	Taisil Electronic Materials Corp. (Taisil)	Manufacturing and trading of silicon wafers	99.99%	99.98%	
GSI	Kunshan Sino Silicon Technology Co., Ltd. (SST)	Processing and trading of ingots and wafers	100%	100%	
GWI	GWafers Singapore	Investment activities	32.8%	32.8%	
GWJ	MEMC Japan Ltd. (MEMC Japan)	Manufacturing and trading of silicon wafers	100%	100%	
Kunshan Sino	Shanghai GrowFast Semiconductor Technology Co., Ltd.	Sale and marketing	60%	60%	
Topsil A/S	Topsil Semiconductor sp z o.o. (Topsil PL)	Manufacturing and trading of silicon wafers	100%	100%	

GWafers Singapore	GlobalWafers Singapore Pte. Ltd. (Formerly known as SunEdison Semiconductor Limited, GWS)	Investment, marketing and trading activities	100%	100%	
GWS	GlobalWafers B.V. (Formerly known as SunEdison Semiconductor B.V., GWBV)	Investment activities	100%	100%	
GWBV	MEMC Electronic Materials, SpA (MEMC SpA)	Manufacturing and trading of silicon wafers	100%	100%	
MEMC SpA	MEMC Electronic Materials France SarL(MEMC SarL)	Trading	100%	100%	
MEMC SpA	MEMC Electronic Materials GmbH (MEMC GmbH)	Trading	100%	100%	
MEMC SpA	MEMC Holding B.V. (MEMC BV)	Investment activities	-	100%	Note3 (2)
GWBV、MEMC BV	MEMC Korea Company (MEMC Korea)	Manufacturing and trading of silicon wafers	-	100%	Note3 (3)
GWBV	MEMC Korea	Manufacturing and trading of silicon wafers	100%	-	Note3 (3)
GWBV	MEMC Electronic Materials, Sdn Bhd (MEMC Sdn Bhd)	Research and development, manufacturing and trading of silicon wafers	100%	100%	
GWBV	SunEdison Semiconductor Technology (Shanghai) Ltd. (SunEdison Shanghai)	Trading	100%	100%	
GWBV	MEMC Ipoh Sdn Bnd (MEMC Ipoh)	Manufacturing and trading of silicon wafers	100%	100%	
GWBV	GTI	Manufacturing of epitaxial wafers and silicon wafers	100%	100%	
GTI	MEMC LLC	Research and development and manufacturing and trading of silicon wafers	100%	100%	

Note 1: The consolidated company is able to control the financial and operating strategies of Sulu through effective agreements with its other investors, so Sulu is considered as a subsidiary.

Note 2: The consolidated company does not hold the interests of the AMLED owners, but the consolidated company can control the financial and operating strategies of AMLED and obtain all the benefits of its operations and net assets in accordance with the terms of the agreements entered into, so AMLED is considered as a subsidiary.

Note 3: The consolidated company adjusted its organizational structure as follows:

(1) Aleo Sunrise was transferred to SAS since March, 2019, and was liquidated in June 2019.

(2) MEMC BV was transferred from MEMC SpA to GWBV since June 18, 2019, and was liquidated in September 2019;

(3) MEMC Korea was transferred from GWBV and MEMC BV to GWBV.

Note 4: The Group sold Sunrise PV Five and Sunrise PV Electric in March and July 2019 respectively due to operating strategy.

Note 5: Sunrise PV Two was liquidated in May 2019 due to operating strategy.

Note 6: SAS established Sunrise PV Electric Power Five in December 2019 due to operating strategy

3. Subsidiaries not included in the consolidated financial statements: None.

(4) Foreign currencies

1. Foreign currency transactions

Transactions in foreign currencies are translated into the respective functional currencies of Group entities at the exchange rates at the dates of the transactions. At the end of each subsequent reporting period, monetary items denominated in foreign currencies are translated into the functional currencies using the exchange rate at that date.

Non monetary items denominated in foreign currencies that are measured at fair value are translated into the functional currencies using the exchange rate at the date that the fair value was determined. Non monetary items denominated in foreign currencies that are measured based on historical cost are translated using the exchange rate at the date of the transaction.

Exchange differences are generally recognized in profit or loss, except for an equity investment in equity securities designated as at fair value through other comprehensive income, which are recognized in other comprehensive income.

2. Foreign operations

The assets and liabilities of foreign operations, including goodwill and fair value adjustments arising on acquisition, are translated into New Taiwan Dollars at the exchange rates at the reporting date. The income and expenses of foreign operations are translated into New Taiwan Dollars at the average rate. Exchange differences are recognized in other comprehensive income.

When a foreign operation is disposed of such that control, significant influence, or joint control is lost, the cumulative amount in the translation reserve related to that foreign operation is reclassified to profit or loss as part of the gain or loss on disposal. When the Group disposes of only part of its interest in a subsidiary that includes a foreign operation while retaining control, the relevant proportion of the cumulative amount is reattributed to non controlling interests. When the Group disposes of only part of its investment in an associate or joint venture that includes a foreign operation while retaining significant influence or joint control, the relevant proportion of the cumulative amount is reclassified to profit or loss.

When the settlement of a monetary receivable from or payable to a foreign operation is neither planned nor likely to occur in the foreseeable future, exchange differences arising from such a monetary item that are considered to form part of the net investment in the foreign operation are recognized in other comprehensive income.

(5) Classification of current and non-current assets and liabilities

An asset is classified as current under one of the following criteria, and all other assets are classified as non-current:

A. It is expected to be realized, or intended to be sold or consumed, in the normal operating cycle;

B. It is held primarily for the purpose of trading;

C. It is expected to be realized within twelve months after the reporting period; or

D. The asset is cash or cash equivalent unless the asset is restricted from being exchanged or used to settle a liability for at least twelve months after the reporting period.

A liability is classified as current under one of the following criteria, and all other liabilities are classified as non-current:

A. It is expected to be settled in the normal operating cycle;

B. It is held primarily for the purpose of trading;

C. It is due to be settled within twelve months after the reporting period; or

D. The Group does not have an unconditional right to defer settlement of the liability for at least twelve months after the reporting period. Terms of a liability that could, at the option of the counterparty, result in its settlement by issuing equity instruments do not affect its classification.

(6) Cash and cash equivalent

Cash comprises cash on hand and demand deposits. Cash equivalents are short-term, highly liquid investments that are readily convertible to known amounts of cash and are subject to an insignificant risk of changes in value. Time deposits which meet the above definition and are held for the purpose of meeting short-term cash commitments rather than for investment or other purposes should be recognized as cash equivalents.

(7) Financial instruments

1. Trade receivables and debt securities issued are initially recognized when they are originated. All other financial assets and financial liabilities are initially recognized when the Group becomes a party to the contractual provisions of the instrument. A financial asset (unless it is a trade receivable without a significant financing component) or financial liability is initially measured at fair value plus, for an item not at fair value through profit or loss (FVTPL), transaction costs that are directly attributable to its acquisition or issue. A trade receivable without a significant financing component is initially measured at the transaction price.

(1) Financial assets measured at amortized cost

A financial asset is measured at amortized cost if it meets both of the following conditions and is not designated as at FVTPL:

• it is held within a business model whose objective is to hold assets to collect contractual cash flows; and

• its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

These assets are subsequently measured at amortized cost, which is the amount at which the financial asset is measured at initial recognition, plus/minus, the cumulative amortization using the effective interest method, adjusted for any loss allowance. Interest income, foreign exchange gains and losses, as well as impairment, are recognized in profit or loss. Any gain or loss on derecognition is recognized in profit or loss.

(2) Fair value through other comprehensive income (FVTOCI)

A debt investment is measured at FVOCI if it meets both of the following conditions and is not designated as at FVTPL：

• it is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets; and

• its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Debt instrument investment meeting the following conditions and not specified to be measured at fair value through gain or loss, are measured at fair value through other comprehensive gain or loss

On initial recognition of an equity investment that is not held for trading, the Group may irrevocably elect to present subsequent changes in the investment's fair value in other comprehensive income. This election is made on an instrument by instrument basis.

Equity investments at FVTOCI are subsequently measured at fair value. Dividends are recognized as income in profit or loss unless the dividend clearly represents a recovery of part of the cost of the investment. Other net gains and losses are recognized in other comprehensive income and are never reclassified to profit or loss.

Dividend income is recognized in profit or loss on the date on which the Group's right to receive payment is established.

(3) Fair value through profit or loss (FVTPL)

All financial assets not classified as amortized cost or FVOCI described as above are measured at FVTPL, including derivative financial assets. Trade receivables that the Group intends to sell immediately or in the near term are measured at FVTPL; however, they are included in the 'trade receivables' line item. On initial recognition, the Group may irrevocably designate a financial asset, which meets the requirements to be measured at amortized cost or at FVOCI, as at FVTPL if doing so eliminates or significantly reduces an accounting mismatch that would otherwise arise.

These assets are subsequently measured at fair value. Net gains and losses, including any interest or dividend income, are recognized in profit or loss.

(4) Assessment whether contractual cash flows are solely payments of principal and interest

For the purposes of this assessment, 'principal' is defined as the fair value of the financial assets on initial recognition. 'Interest' is defined as consideration for the time value of money and for the credit risk associated with the principal amount outstanding during a particular period of time and for other basic lending risks and costs, as well as a profit margin.

In assessing whether the contractual cash flows are solely payments of principal and interest, the Group considers the contractual terms of the instrument. This includes assessing whether the financial asset contains a contractual term that could change the timing or amount of contractual cash flows such that it would not meet this condition. In making this assessment, the Group considers:

- contingent events that would change the amount or timing of cash flows；
- terms that may adjust the contractual coupon rate, including variable rate features；
- prepayment and extension features；and
- terms that limit the Group's claim to cash flows from specified assets（e.g. non-recourse features.

(5) Impairment of financial assets

The Group recognizes loss allowances for expected credit losses (ECL) on financial assets measured at amortized cost (including cash and cash equivalents, notes and accounts receivables, guarantee deposit paid and other financial assets).

The Group measures loss allowances at an amount equal to lifetime ECL, except for the following which are measured by 12 month ECL:

・ debt securities that are determined to have low credit risk at the reporting date； and

・ other debt securities and bank balances for which credit risk (i.e. the risk of default occurring over the expected life of the financial instrument) has not increased significantly since initial recognition.

Loss allowance for trade receivables and contract assets are always measured at an amount equal to lifetime ECL.

When determining whether the credit risk of a financial asset has increased significantly since initial recognition and when estimating ECL, the Group considers reasonable and supportable information that is relevant and available without undue cost or effort. This includes both quantitative and qualitative information and analysis based on the Group's historical experience and informed credit assessment as well as forward looking information.

The Group considers a debt security to have low credit risk when its credit risk rating is equivalent to the globally understood definition of 'investment grade which is considered to be BBB- or higher per Standard & Poor's, Baa3 or higher per Moody's or twA or higher per Taiwan Ratings'.

The Group assumes that the credit risk on a financial asset has increased significantly if it is more than 30 days past due.

The Group considers a financial asset to be in default when the financial asset is more than 180 days past due or the debtor is unlikely to pay its credit obligations to the Group in full.

Lifetime ECL are the ECL that result from all possible default events over the expected life of a financial instrument.

12-month ECL are the portion of ECL that result from default events that are possible within the 12 month after the reporting date (or a shorter period if the expected life of the instrument is less than 12 months).

The maximum period considered when estimating ECL is the maximum contractual period over which the Group is exposed to credit risk.

ECL are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (i.e the difference between the cash flows due to the Group in accordance with the contract and the cash flows that the Group expects to receive). ECL are discounted at the effective interest rate of the financial asset.

At each reporting date, the Group assesses whether financial assets carried at amortized cost and debt securities at FVOCI are credit-impaired. A financial asset is 'credit-impaired' when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred. Evidence that a financial assets is credit-impaired includes the following observable data:

- significant financial difficulty of the borrower or issuer；
- a breach of contract such as a default or being more than 90 days past due
- the lender of the borrower, for economic or contractual reasons relating to the borrower's financial difficulty, having granted to the borrower a concession that the lender would not otherwise consider
- it is probable that the borrower will enter bankruptcy or other financial reorganization；or
- the disappearance of an active market for a security because of financial difficulties.

Loss allowances for financial assets measured at amortized cost are deducted from the gross carrying amount of the assets.

The gross carrying amount of a financial asset is written off when the Group has no reasonable expectations of recovering a financial asset in its entirety or a portion thereof. For corporate customers, the Group individually makes an assessment with respect to the timing and amount of write off based on whether there is a reasonable expectation of recovery. The Group expects no significant recovery from the amount written off. However, financial assets that are written off could still be subject to enforcement activities in order to comply with the Group's procedures for recovery of amounts due.

(6) Derecognition of financial assets

The Group derecognizes a financial asset when the contractual rights to the cash flows from the financial asset expire, or it transfers the rights to receive the contractual cash flows in a transaction in which substantially all of the risks and rewards of ownership of the financial asset are transferred or in which the Group neither transfers nor retains substantially all of the risks and rewards of ownership and it does not retain control of the financial asset.

The Group enters into transactions whereby it transfers assets recognized in its statement of balance sheet, but retains either all or substantially all of the risks and rewards of the transferred assets. In these cases, the transferred assets are not derecognized.

2. Financial liabilities and equity instruments

(a) Classification of debt or equity

Debt and equity instruments issued by the Company are classified as financial liabilities or equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and an equity instrument.

(b) Equity instrument

An equity instrument is any contract that evidences residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued are recognized as the amount of consideration received, less the direct cost of issuing.

(c) Treasury shares

When shares recognized as equity are repurchased, the amount of the consideration paid, which includes directly attributable costs, is recognized as a deduction from equity. Repurchased shares are classified as treasury shares. When treasury shares are sold or reissued subsequently, the amount received is recognized as an increase in equity, and the resulting surplus or deficit on the transaction is recognized in capital surplus or retained earnings (if the capital surplus is not sufficient to be written down).

(d) Financial liabilities

Financial liabilities are classified as measured at amortized cost or FVTPL. A financial liability is classified as at FVTPL if it is classified as held-for-trading, it is a derivative or it is designated as such on initial recognition. Financial liabilities at FVTPL are measured at fair value and net gains and losses, including any interest expense, are recognized in profit or loss.

Other financial liabilities are subsequently measured at amortized cost using the effective interest method. Interest expense and foreign exchange gains and losses are recognized in profit or loss. Any gain or loss on derecognition is also recognized in profit or loss.

(e) Derecognition of financial liabilities

The Group derecognizes a financial liability when its contractual obligations are discharged or cancelled, or expire. The Group also derecognizes a financial liability when its terms are modified and the cash flows of the modified liability are substantially different, in which case a new financial liability based on the modified terms is recognized at fair value.

On derecognition of a financial liability, the difference between the carrying amount of a financial liability extinguished and the consideration paid (including any non-cash assets transferred or liabilities assumed) is recognized in profit or loss.

(f) Offsetting of financial assets and liabilities

Financial assets and financial liabilities are offset and the net amount presented in the statement of balance sheet when, and only when, the Group currently has a legally enforceable right to set off the amounts and it intends either to settle them on a net basis or to realize the asset and settle the liability simultaneously.

C. Derivative financial instruments and hedge accounting

The Group holds derivative financial instruments to hedge its foreign currency and interest rate exposures. Embedded derivatives are separated from the host contract and accounted for separately if the host contract is not a financial asset and certain criteria are met.

Derivatives are initially measured at fair value. Subsequent to initial recognition, derivatives are measured at fair value, and changes therein are generally recognized in profit or loss.

(8) Inventories

Inventories are measured at the lower of cost or net realizable value. The cost of inventories is based on the weighted average cost method and includes expenditure incurred in acquiring the inventories, production or conversion cost, and other costs incurred in bringing them to their present location and condition. In the case of manufactured inventories and work in progress, cost includes an appropriate share of production overheads based on operating capacity.

Net realizable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and selling expenses necessary to make the sale.

(9) Investment in associates

Associates are those entities in which the Group has significant influence, but not control or joint control, over their financial and operating policies.

Investments in associates are accounted for using the equity method and are recognized initially at cost. The cost of the investment includes transaction costs. The carrying amount of the investment in associates includes goodwill arising from the acquisition, less any accumulated impairment losses.

The consolidated financial statements include the Group’s share of the profit or loss and other comprehensive income of those associates, after adjustments to align their accounting policies with those of the Group, from the date on which significant influence commences until the date on which significant influence ceases. The Group recognizes any changes of its proportionate share in the investee within capital surplus, when an associate’s equity changes due to reasons other than profit and loss or comprehensive income, which did not result in changes in actual significant influence.

Gains and losses resulting from transactions between the Group and an associate are recognized only to the extent of unrelated Group’s interests in the associate.

When the Group’s share of losses of an associate equals or exceeds its interests in an associate, it discontinues recognizing its share of further losses. After the recognized interest is reduced to zero, additional losses are provided for, and a liability is recognized, only to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the associate.

When the Group subscribes to additional shares in an associate at a percentage different from its existing ownership percentage, the resulting carrying amount of the investment will differ from the amount of the Group’s proportionate interest in the net assets of the associate. The Group records such a difference as an adjustment to investments, with the corresponding amount charged or credited to capital surplus. The aforesaid adjustment should first be adjusted under additional paid in capital. If the additional paid in capital resulting from changes in ownership interest is not sufficient, the remaining difference is debited to retained earnings. If the Group’s ownership interest is reduced due to the additional subscription to the shares of the associate by other investors, the proportionate amount of the gains or losses previously recognized in other comprehensive income in relation to that associate will be reclassified to profit or loss on the same basis as would be required if the associate had directly disposed of the related assets or liabilities.

(10) Property, plant and equipment

1. Recognition and measurement

Items of property, plant and equipment are measured at cost, which includes capitalized borrowing costs, less accumulated depreciation and any accumulated impairment losses.

If significant parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Any gain or loss on disposal of an item of property, plant and equipment is recognized in profit or loss.

B. Subsequent cost

Subsequent expenditure is capitalized only if it is probable that the future economic benefits associated with the expenditure will flow to the Group.

C. Depreciation

Depreciation is calculated on the cost of an asset less its residual value and is recognized in profit or loss on a straight line basis over the estimated useful lives of each component of an item of property, plant and equipment.
Land is not depreciated.

The estimated useful lives of property, plant and equipment for current and comparative periods are as follows:

(a) Buildings: 2 to 50 years

(b) Machinery and equipment: 1 to 15 years

(c) Other equipment and leased assets: 1 to 25 years

(d) Buildings constitute mainly buildings, mechanical and electrical power equipment, and related engineering, wastewater treatment and sewage system, etc. Each such part is depreciated based on its useful life of 25 to 50 years, 25 years, and 4 to 25 years, respectively.

Depreciation methods, useful lives and residual values are reviewed at each reporting date and adjusted if appropriate.

(11) Lessee
Applicable from January 1, 2019

A. Identifying a lease

At inception of a contract, the Group assesses whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. To assess whether a contract conveys the right to control the use of an identified asset, the Group assesses whether:

(a) the contract involves the use of an identified asset – this may be specified explicitly or implicitly, and should be physically distinct or represent substantially all of the capacity of a physically distinct asset. If the supplier has a substantive substitution right, then the asset is not identified; and

(b) the customer has the right to obtain substantially all of the economic benefits from use of the asset throughout the period of use; and

(c) the customer has the right to direct the use of the asset throughout the period of use only if either:

- the customer has the right to direct how and for what purpose the asset is used throughout the period of use; or

- the relevant decisions about how and for what purpose the asset is used are predetermined and:
  - the customer has the right to operate the asset throughout the period of use, without the supplier having the right to change those operating instructions; or
  - the customer designed the asset in a way that predetermines how and for what purpose it will be used throughout the period of use.

At inception or on reassessment of a contract that contains a lease component, the Group allocates the consideration in the contract to each lease component on the basis of their relative stand-alone prices. However, for the leases of land and buildings in which it is a lessee, the Group has elected not to separate non-lease components and account for the lease and non-lease components as a single lease component.

B. As a leasee

The Group recognizes a right-of-use asset and a lease liability at the lease commencement date. The right-of-use asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term. In addition, the right-of-use asset is periodically reduced by impairment losses, if any, and adjusted for certain remeasurements of the lease liability.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease or, if that rate cannot be reliably determined, the Group’s incremental borrowing rate. Generally, the Group uses its incremental borrowing rate as the discount rate.

Lease payments included in the measurement of the lease liability comprise the following:

(a) fixed payments, including in-substance fixed payments;

(b) variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date;

(c) amounts expected to be payable under a residual value guarantee; and

(d) payments for purchase or termination options that are reasonably certain to be exercised.

The lease liability is measured at amortized cost using the effective interest method. It is remeasured when:

(a) there is a change in future lease payments arising from the change in an index or rate; or

(b) there is a change in the Group's estimate of the amount expected to be payable under a residual value guarantee; or

(c) there is a change in the lease term resulting from a change of its assessment on whether it will exercise an option to purchase the underlying asset, or

(d) there is a change of its assessment on whether it will exercise a extension or termination option; or

(e) there are any lease modifications

When the lease liability is remeasured, other than lease modifications, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or in profit and loss if the carrying amount of the right-of-use asset has been reduced to zero.

When the lease liability is remeasured to reflect the partial or full termination of the lease for lease modifications that decrease the scope of the lease, the Group accounts for the remeasurement of the lease liability by decreasing the carrying amount of the right-of-use asset to reflect the partial or full termination of the lease, and recognize in profit or loss any gain or loss relating to the partial or full termination of the lease.

The Group has elected not to recognize right-of-use assets and lease liabilities for short-term leases with 12 months or less and leases of low-value assets, including other equipment. The Group recognizes the lease payments associated with these leases as an expense on a straight-line basis over the lease term.

C. As a lessor

When the Group acts as a lessor, it determines at lease commencement whether each lease is a finance lease or an operating lease. To classify each lease, the Group makes an overall assessment of whether the lease transfers to the lessee substantially all of the risks and rewards of ownership incidental to ownership of the underlying asset. If this is the case, then the lease is a finance lease; if not, then the lease is an operating lease. As part of this assessment, the Group considers certain indicators such as whether the lease is for the major part of the economic life of the asset.

If an arrangement contains lease and non-lease components, the Group applies IFRS15 to allocate the consideration in the contract.

Applicable before January 1, 2019

Leases in which the Group assumes substantially all of the risks and rewards of ownership are classified as finance leases. On initial recognition, the lease asset is measured at an amount equal to the lower of its fair value or the present value of the minimum lease payments. Subsequent to initial recognition, the asset is accounted for in accordance with the accounting policy applicable to the asset.

Minimum lease payments made under finance leases are apportioned between the finance cost and the reduction of the outstanding liability. The finance cost is allocated to each period during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability.

Other leases are operating leases and are not recognized in the Group's consolidated statements of balance sheets.

Payments made under an operating lease (excluding insurance and maintenance expenses) are recognized in profit or loss on a straight-line basis over the term of the lease.

Expenditures for obtaining land use rights are recognized as acquisition cost. Based on the shorter of the contract period or the estimated useful life, the cost of land use rights is amortized over 50 or 99 years.

(12) Intangible Assets

1. Recognition and measurement

Goodwill arising on the acquisition of subsidiaries is measured at cost, less accumulated impairment losses.

Expenditure on research activities is recognized in profit or loss as incurred.

Development expenditure is capitalized only if the expenditure can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable and the Group intends to, and has sufficient resources to, complete development and to use or sell the asset. Otherwise, it is recognized in profit or loss as incurred. Subsequent to initial recognition, development expenditure is measured at cost, less accumulated amortization and any accumulated impairment losses.

2. Other intangible assets

Other intangible assets that are acquired by the Group and have finite useful lives are measured at cost less accumulated amortization and any accumulated impairment losses.

3. Subsequent expenditure

Subsequent expenditure is capitalized only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure, including expenditure on internally generated goodwill and brands, is recognized in profit or loss as incurred.

4. Amortization

Amortization is calculated over the cost of the asset, less its residual value, and is recognized in profit or loss on a straight line basis over the estimated useful lives of intangible assets, other than goodwill, from the date that they are available for use.

(a) Patents and trademarks: 4 to 6 years
(b) Development costs: 10 years

Amortization methods, useful lives and residual values are reviewed at each reporting date and adjusted if appropriate.

(13) Impairment of non-financial assets

At each reporting date, the Group reviews the carrying amounts of its non-financial assets (other than inventories and deferred tax assets) to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. Goodwill is tested annually for impairment.

For impairment testing, assets are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other assets or cash-generating units ("CGUs"). Goodwill arising from a business combination is allocated to CGUs or groups of CGUs that are expected to benefit from the synergies of the combination.

The recoverable amount of an asset or a cash-generating unit ("CGU") is the greater of its value in use and its fair value less costs to sell. Value in use is based on the estimated future cash flows, discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or a CGU.

An impairment loss is recognized if the carrying amount of an asset or a CGU exceeds its recoverable amount.

Impairment losses are recognized in profit or loss. They are allocated first to reduce the carrying amount of any goodwill allocated to the CGU, and then to reduce the carrying amounts of the other assets in the CGU on a pro rata basis.

An impairment loss in respect of goodwill is not reversed. For other assets, an impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

(14) Provisions

A provision is recognized if, as a result of a past event, the Group has a present obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects the current market assessments of the time value of money and the risks specific to the liability. The unwinding of the discount is recognized as interest expense.

A. Site restoration

In accordance with the Group's published environmental policy and applicable legal requirements, a provision for site restoration in respect of contaminated land and the related expense are recognized when the land is contaminated. A provision for site restoration of lease land and the related expense are recognized over the term of the lease.

B. Onerous contracts

A provision for onerous contracts is recognized when the expected benefits to be derived by the Group from a contract are lower than the unavoidable cost of meeting its obligations under the contract. The provision is measured at the present value of the lower of the expected cost of terminating the contract or the expected net cost of continuing with the contract. Before a provision is established, the Group recognizes any impairment loss on the assets associated with that contract.

(15) Revenue recognition

1. Revenue from contracts with customers

Revenue is measured based on the consideration to which the Group expects to be entitled in exchange for transferring goods or services to a customer. The Group recognizes revenue when it satisfies a performance obligation by transferring control of a good or a service to a customer.

The accounting policies for the Group's main types of revenue are explained below.

A. Sale of goods

The Group engages mainly in the research, development, production, design, and sales of semiconductor ingots and wafers, varistors, optoelectronics and communication wafer materials. The Group recognizes revenue when control of the products has been transferred, being when the products are delivered to the customer, the customer has full discretion over the channel and price to sell the products, and there is no unfulfilled obligation that could affect the customer's acceptance of the products. Delivery occurs when the products have been shipped to the specific location, the risks of obsolescence and loss have been transferred to the customer, and either the customer has accepted the products in accordance with the sales contract, the acceptance provisions have lapsed, or the Group has objective evidence that all criteria for acceptance have been satisfied.

A receivable is recognized when the goods are delivered, as this is the point in time that the Group has a right to an amount of consideration that is unconditional.

B. Product Processing Services

The Group provides processing of the company's products and recognizes the relevant Revenue during the financial reporting period of the labor service.

Revenue recognition for fixed-price contracts is based on the ratio of services actually provided to total services as of the reporting date, which is determined by the percentage of labor performed to the total amount of labor to be performed.

If the situation changes, the estimates of revenue, cost, and degree of completion will be revised, and the increase or decrease in the period when the management is aware of the change in the situation will be reflected in profit or loss.

Under the fixed price contract, the customer pays a fixed amount in accordance with the agreed time schedule. When the services provided exceed the payment, the contract assets are recognized; if the payment exceeds the services provided, the contract liabilities are recognized.

If the contract is valued based on the number of hours in which the service is provided, the Revenue is recognized by the amount in which the consolidated company has the right to open an invoice. The consolidated company will ask for a monthly payment from the customer and will receive the consideration after opening the invoice.

The Group recognizes the accounts receivable when the goods are delivered, because the consolidated company has the right to unconditionally collect the consideration at that time.

C. Engineering contract

The Group is engaged in the contracting business of solar power plants. Since the assets are controlled by the customers at the time of construction, the revenue is gradually recognized over time based on the proportion of the engineering costs incurred to date to the estimated total contract costs. A fixed amount paid by the customer in accordance with the agreed time schedule. Certain changes in consideration are estimated using expectations from past experience; other changes are estimated at the most probable amount. The consolidated company recognizes revenue only within the scope of the cumulative Revenue level where it is highly probable that no significant reversal will occur. If the amount of Revenue recognized has not been requested, it is recognized as a contract asset and the contract asset is transferred to the accounts receivable when there is an unconditional right to the consideration.

If the degree of completion of the performance obligation of the construction contract cannot be reasonably measured, the contract revenue is recognized only within the range of expected recoverable costs.

When the consolidated company expects that the inevitable cost of performance of an engineering contract exceeds the economic benefit expected from the contract, the liability provision for the loss-making contract is recognized.

If the circumstances change, the estimates of revenue, cost and completion will be revised and the changes will be reflected in gain or loss when the management is informed of the change in circumstances and the amendment is made.

D. Services

The Group provides services to its customers. Revenue from services rendered is recognized in profit or loss in proportion to the stage of completion of the transaction at the reporting date.

Revenue recognition for fixed-price contracts is based on the ratio of services actually provided to total services as of the reporting date, which is determined by the percentage of labor performed to the total amount of labor to be performed.

If the situation changes, the estimates of revenue, cost, and degree of completion will be revised, and the increase or decrease in the period when the management is aware of the change in the situation will be reflected in profit or loss.

E. Power electric revenue

The company recognized the Power electric revenue is base on the actual electric units and electric rate.

2. Financing components

The company does not expect to have any contracts where the period between the transfer of the promised goods or services to the customer and payment by the customer exceeds one year. As a consequence, the company does not adjust any of the transaction prices for the time value of money.

(16) Employee Benefits

1. Defined contribution plans

Obligations for contributions to defined contribution pension plans are expensed as the related service is provided. Prepaid contributions are recognized as an asset to the extent that a cash refund or a reduction in future payments is available.

2. Defined benefit plans

The Group's net obligation in respect of defined benefit plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in the current and prior periods, discounting that amount and deducting the fair value of any plan assets.

The calculation of defined benefit obligations is performed annually by a qualified actuary using the projected unit credit method. When the calculation results in a potential asset for the Group, the recognized asset is limited to the present value of economic benefits available in the form of any future refunds from the plan or reductions in future contributions to the plan. To calculate the present value of economic benefits, consideration is given to any applicable minimum funding requirements.
Remeasurements of the net defined benefit liability, which comprise actuarial gains and losses, the return on plan assets (excluding interest) and the effect of the asset ceiling (if any, excluding interest), are recognized immediately in other comprehensive income, and accumulated in retained earnings within equity. The Group determines the net interest expense (income) on the net defined benefit liability (asset) for the period by applying the discount rate used to measure the defined benefit obligation at the beginning of the annual period to the net defined benefit liability (asset). Net interest expense and other expenses related to defined benefit plans are recognized in profit or loss.

When the benefits of a plan are changed or when a plan is curtailed, the resulting change in benefit that relates to past service or the gain or loss on curtailment is recognized immediately in profit or loss. The Group recognizes gains and losses on the settlement of a defined benefit plan when the settlement occurs.

3. Short term employee benefits

Short-term employee benefit are expensed as the related service is provided.

A liability is recognized for the amount expected to be paid if the Group has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee and the obligation can be estimated reliably.

(17) Share based payment

The grant date fair value of share based payment awards granted to employees is recognized as employee expenses, with a corresponding increase in equity, over the period that the employees become unconditionally entitled to the awards. The amount recognized as an expense is adjusted to reflect the number of awards whose related services are expected to be met, such that the amount ultimately recognized as an expense is based on the number of awards that meet the related services at the vesting date.

The non-vested conditions relating to the share-based payment incentives are reflected in the measurement of the fair value of the share-based payment and the difference between the expected and actual results is not subject to verification adjustment.

The fair value of the amount payable to employees in respect of share appreciation rights, which are settled in cash, is recognized as an expense with a corresponding increase in liabilities, over the period during which the employees become unconditionally entitled to payment. The liability is remeasured at each reporting date and at settlement date based onthe fair value of the share appreciation rights. Any changes in the liability are recognized in profit or loss.

Please refer to note 6(23) for grant date of a share-based payment award.

(18) Income tax

Income taxes comprise current taxes and deferred taxes. Except for items related to business combinations, or items recognized directly in equity or other comprehensive income, all current and deferred taxes are recognized in profit or loss.

The Group has determined that interest and penalties related to income taxes, including uncertain tax treatment, do not meet the definition of income taxes, and therefore accounted for them under IAS37.

Current taxes comprise the expected tax payables or receivables on the taxable profits (losses) for the year and any adjustment to the tax payable or receivable in respect of previous years. The amount of current tax payables or receivables are the best estimate of the tax amount expected to be paid or received that reflects uncertainty related to income taxes, if any. It is measured using tax rates enacted or substantively enacted at the reporting date.

Deferred taxes arise due to temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and their respective tax bases. Deferred taxes are not recognized except for the following:

A. temporary differences on the initial recognition of assets and liabilities in a transaction that is not a business combination and that affects neither accounting nor taxable profits (losses) at the time of the transaction;

B. temporary differences related to investments in subsidiaries and associates to the extent that the Group is able to control the timing of the reversal of the temporary differences and it is probable that they will not reverse in the foreseeable future; and

C. taxable temporary differences arising on the initial recognition of goodwill.

Deferred taxes are measured at tax rates that are expected to be applied to temporary differences when they reserve, using tax rates enacted or substantively enacted at the reporting date, and reflect uncertainty related to income taxes, if any.

Deferred tax assets and liabilities are offset if the following criteria are met:

A. the Group has a legally enforceable right to set off current tax assets against current tax liabilities; and

B. the deferred tax assets and the deferred tax liabilities relate to income taxes levied by the same taxation authority on either:

(a) the same taxable entity; or

(b) different taxable entities which intend to settle current tax assets and liabilities on a net basis, or to realize the assets and liabilities simultaneously, in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

Deferred tax assets are recognized for the carry forward of unused tax losses, unused tax credits, and deductible temporary differences to the extent that it is probable that future taxable profits will be available against which they can be utilized. Deferred tax assets are reviewed at each reporting date and are reduced to the extent that it is no longer probable that the related tax benefits will be realized; such reductions are reversed when the probability of future taxable profits improves.

(19) Earnings per share

The Group discloses the Company’s basic and diluted earnings per share attributable to ordinary shareholders of the Company. Basic earnings per share is calculated as the profit attributable to ordinary shareholders of the Company divided by the weighted-average number of ordinary shares outstanding. Diluted earnings per share is calculated as the profit attributable to ordinary shareholders of the Company divided by the weighted-average number of ordinary shares outstanding after adjustment for the effects of all potentially dilutive ordinary shares, such as employee remuneration that could be settled in the form of stock. The Company's potential diluted ordinary share includes non-vested shares of restricted employee right and employee remuneration that has not been resolved by the board of directors and has been issued in the form of shares.

(20) Operating segment

An operating segment is a component of the Group that engages in business activities from which it may earn revenues and incur expenses (including revenues and expenses relating to transactions with other components of the Group). Operating results of the operating segment are regularly reviewed by the Group’s chief operating decision maker to make decisions about resources to be allocated to the segment and to assess its performance. Each operating segment consists of standalone financial information.

5. Significant accounting assumptions and judgments, and major sources of estimation uncertainty

The preparation of the consolidated financial statements in conformity with the IFRSs endorsed by the FSC requires management to make judgments, estimations and assumptions that affect the application of the accounting policies and the reported amount of assets, liabilities, income and expenses. Actual results may differ from these estimates.

The management continues to monitor the accounting estimates and assumptions. The management recognizes any changes in the accounting estimates during the period and the impact of those changes in the following period.

Information about judgments made in applying accounting policies that have the most significant effects on the amounts recognized in the consolidated financial statements is as follows:

(1) Impairment of property, plant and equipment, and intangible assets

In the process of evaluating the potential impairment of tangible and intangible assets other than goodwill, the Group is required to make subjective judgments in determining the independent cash flows, useful lives, expected future income and expenses related to the specific asset groups considering of the nature of the industry. Any changes in these estimates based on changed economic conditions or business strategies and could result in significant impairment charges or reversal in future years. Refer to note 6(11) for further description of the key assumptions used to determine the recoverable amount.

(2) Impairment assessment of goodwill

The assessment of impairment of goodwill requires the Group to make subjective judgments to identify CGUs, allocate the goodwill to relevant CGUs, and estimate the recoverable amount of relevant CGUs. Refer to note 6(13) for further description of the impairment of goodwill.

The Group's financial instrument valuation group conducts independent verification on fair value by using data sources that are independent, reliable, and representative of exercise prices. This financial instrument valuation group also periodically adjusts valuation models, conducts back testing, renews input data for valuation models, and makes all other necessary fair value adjustments to assure the rationality of fair value.

The Group strives to use the observable market inputs when measuring assets and liabilities. The hierarchy of the fair value categorized by the valuation techniques used is as follows:

Level 1: quoted prices (unadjusted) in active markets for identified assets or liabilities.
Level 2: inputs other than quoted prices included within Level 1 that are observable for the assets or liabilities, either directly (i.e. as prices) or indirectly (i.e. derived from prices).
Level 3: inputs for the assets or liabilities that are not based on observable market data (unobservable inputs).

For any transfer within the fair value hierarchy, the Group recognizes the transfer on the reporting date. For the assumption used in fair value measurement, please refer to note 6(30) of the financial instruments.

6. Explanation of significant accounts

(1) Cash and cash equivalents

	2019.12.31	2018.12.31
Cash on hand	$ 12,884	12,175
Demand deposits	20,497,057	10,475,332
Time deposits	13,646,957	26,267,152
Repurchase agreement	744,527	74,472
	$ 34,901,425	**36,829,131**

Please refer to note 6(25) for the interest rate risk and sensitivity analysis of the financial assets and liabilities of the Group.

(2) Financial assets and liabilities at fair value through profit or loss

	2019.12.31	2018.12.31
Mandatorily measured at fair value through profit or loss-current:		
Overseas securities held	$ 1,876,656	-
Privately offered funds	-	64,697
Forward exchange contracts	6,920	81,798
Stocks listed on domestic markets	-	177,053
	$ 1,883,576	**323,548**
Mandatorily measured at fair value through profit or loss- non current:		
Privately offered funds	**$ 95,163**	**-**
Financial liabilities designated as at fair value through profit or loss:		
Forward exchange contract	$ 216,632	119
Swap exchange contract	68	-
	$ 216,700	**119**

The Group uses derivative instruments to hedge certain currency risk arising from the Group’s operating activities. The Group held the following derivative instruments not used for hedging and accounted them as mandatorily measured at fair value through profit or loss and held-for-trading financial liabilities as of December 31, 2019 and 2018:

	2019.12.31			
	Contract amount (in thousands)		**Currency**	**Maturity date**
Forward exchange contracts:				
Forward exchange contracts sold	USD	21,050	USD against EUR	2020.01.24-2020.02.26
Forward exchange contracts sold	USD	2,838	USD against KRW	2020.01.23
Forward exchange contracts purchased	JPY	19,000,000	JPY against NTD	2020.01.23
Forward exchange contracts purchased	JPY	50,000	JPY against KRW	2020.02.26
Forward exchange contracts purchased	EUR	3,508	EUR against KRW	2020.01.23
Forward exchange contracts purchased	JPY	17,000,000	JPY against NTD	2019.01.15-2019.6.14
Swap exchange contracts:				
Currency exchange	USD	3,000	USD against NTD	2020.3.17

	2018.12.31			
	Contract amount (in thousands)		**Currency**	**Maturity date**
Forward exchange contracts sold	USD	17,850	USD against EUR	2019.01.24-2019.02.26
Forward exchange contracts sold	USD	10,197	USD against KRW	2019.01.24
Forward exchange contracts purchased	JPY	50,000	JPY against EUR	2019.02.26
Forward exchange contracts purchased	EUR	18	EUR against KRW	2019.01.24
Forward exchange contracts purchased	JPY	100,412	JPY against KRW	2019.01.24
Forward exchange contracts purchased	JPY	17,000,000	JPY against NTD	2019.01.15-2019.6.14

Please refer to Note 6 (31) for the remeasured amount recognized in gain or loss at fair value.
Please refer to Note 6 (31) for market risk information.
The financial assets mentioned above were not pledged as collateral.

(3) Financial assets at fair value through other comprehensive income

	2019.12.31	2018.12.31
Equity instruments measured at fair value through other comprehensive gain or loss:		
Domestic booked (OTC) company stock - Actron Technology Corporation	$ -	319,427
Domestic booked (counter) company stock – United Renewable Energy Co., Ltd.	-	270,073
Domestic booked (OTC) company stock – Phoenix Silicon International Corporation	-	127,920
Domestic non-booked (OTC) company stock - SILFAB SPA stock	326,090	352,282
Domestic non-booked (OTC) company stock – Powertech Energy Corp.	-	130,764
Domestic non-booked (OTC) company stock - GIGA Electronic Technology Corporation	6,095	4,458
Total	**$ 322,185**	**1,204,924**

The Group's investments in these equity instruments are long-term strategic investments and are not held for trading purposes and have been designated as measured at fair value through other comprehensive gain or loss.

Solartech Energy Corp. (hereinafter referred to as Solartech Energy) and Gintech Energy Corporation (hereinafter referred to as Gintech Energy Corporation) and Neo Solar Power Corporation (hereinafter referred to as Neo Solar Power) jointly signed the merger contract on January 29, 2018. The Neo Solar Power was the existing company (the name of the company after the merger was changed to United Renewable Energy Co., Ltd., hereinafter referred to as URE), and Gintech Energy and Solartech Energy were cancelled. The base date for the merger is October 1, 2018. Solartech Energy’s shareholders, in accordance with the issued ordinary shares (including private placement of shares and restrictions on employee rights shares, if issued) they hold, renewed 1.17 shares of Neo Solar Power’s shares per share.

The Group was deemed to have sold the shares of Solartech Energy, which were measured at fair value through other comprehensive gain or loss, for the above reasons on October 1, 2018. The fair value of the disposition was NT$ 348,730 thousand and the cumulative loss was NT$ 1,558,196 thousand. The aforementioned cumulative disposed losses have been transferred from other equity to retained earnings.

Based on the Group's operating performance considerations, the Group sold the shares of URE and Phoenix Silicon International Corporation, which were measured at fair value through other comprehensive gain or loss. The fair value of the disposition was NT$ 313,622 thousand with cumulative disposal loss NT$34,708 thousand and 239,723 thousand with cumulative disposal gain NT$126,095 respectively. The aforementioned cumulative disposed gain and loss have been transferred from other equity to retained earnings.

Dividend Revenue recognized in 2019 and 2018 were NT$5,248 and NT$ 12,776 thousands respectively.

The Group's investments in Actron Technology Corporation has transferred as investment in using the equity method, please refer to Note6(7).

Powtec ElectroChemical Corp. (hereinafter referred to as Powtec ElectroChemical) filed for bankruptcy on February 26, 2020.The Group assessed the Powtec ElectroChemical financial difficulties and recognized the unrealized loss on financial assets at fair value through other comprehensive income of Powtec ElectroChemical.

For market risk information, please refer to Note 6 (31).

The above financial assets are not pledged as collateral.

(4) Financial assets measured at amortized cost

	2019.12.31	2018.12.31
Current:		
Corporate debt - Crystalwise Technology	$ 240,068	-
Non-Current:		
Corporate debt - Crystalwise Technology	$ 267,612	281,366

The Group's assessment is to hold the assets to the maturity date to collect the contractual cash flow, and the cash flows of these financial assets are solely for the payment of the principal and the interest on the outstanding principal amount. Therefore, since January 1, 2018 financial assets measured at amortized cost are recognized.

In January 2019, the Group purchased the private equity corporate bonds of Crystalwise Technology Inc. for a one-year period at a nominal amount of NT$ 250,000 thousands. The coupon rate and effective interest rate were 2.00%, which mature on January, 2020.

The impairment loss of the financial assets measured at amortized cost in 2019 was NT$25,973 thousand.

Please refer to Note 6 (31) for credit risk information.

The above financial assets are not pledged as collateral.

(5) Notes and accounts receivable, net

	2019.12.31	2018.12.31
Notes receivable	$ 168,881	187,522
Accounts receivable	8.315,492	9,598,538
Accounts receivable-fair value through other comprehensive income	7,487	42,578
Less: Allowance for doubtful accounts	(57,611)	(61,221)

Allowance for sales discounts and returns	-	-
	$ 8,434,249	9,767,417

The Group has assessed a portion of its accounts receivables that was held within a business model whose objective is achieved by selling financial assets; therefore, such accounts receivables were measured at fair value through other comprehensive income.

The Group applied the simplified approach to provide for its expected credit losses, i.e. the use of lifetime expected loss provision for all receivables. To measure the expected credit losses, accounts receivable have been grouped based on shared credit risk characteristics and the days past due, as well as incorporated forward looking information.

The loss allowance provision of solar energy business (including related parties) was determined as follows:

	2019.12.31		
	Carrying amount of receivables	**Weighted average loss rate**	**Loss allowance provision**
Current	$ 327,675	0%	-
1 to 30 days past due	35,248	0%-2.41%	-
More than 91 days past due	43,482	52.55%-100%	41,935
Total	$ 406,405		41,935

	2018.12.31		
	Carrying amount of receivables	**Weighted average loss rate**	**Loss allowance provision**
Current	$ 627,514	0%	-
1 to 30 days past due	21,981	0%-1.43%	-
31 to 60 days past due	2,009	0%-9.44%	-
More than 91 days past due	53,045	59.09%-100%	50,023
Total	$ 704,549		50,023

The loss allowance provision of semiconductor business (including related parties) was determined as follows:

	2019.12.31		
	Carrying amount of receivables	**Weighted average loss rate**	**Loss allowance provision**
Current	$ 7,871,268	0%	-
1 to 30 days past due	241,061	0%	-

31 to 60 days past due	17,797	0%-15%	325
61 to 90 days past due	1,385	30%	416
91 to 120 days past due	13,626	50%	6,806
More than 151 days past due	8,269	90%-100%	8,129
Total	$ 8,153,406		15,676

	2018.12.31		
	Carrying amount of receivables	**Weighted average loss rate**	**Loss allowance provision**
Current	$ 8,696,346	0%	-
1 to 30 days past due	480,384	0%	-
31 to 60 days past due	46,169	0%-15%	3,507
61 to 90 days past due	464	25%	120
91 to 120 days past due	231	50%	115
121 to 150 days past due	408	70%	286
More than 151 days past due	7,170	90%-100%	7,170
Total	$ 9,231,172		11,198

The movements in the allowance for doubtful accounts related to notes and accounts receivable were as follows:

	2019	2018
Balance on January 1	$ 61,221	$ 99,852
Impairment losses recognized(reversed)	(2,643)	35,446
Amounts written off	-	(73,536)
Foreign exchange losses	(967)	(541)
Balance on December 31	$ 57,61	$ 61,221

The other receivable loss allowance provision of the Group was NT$67,292 thousand in 2017.

The Group factored its accounts receivable to manage credit risks as of each reporting date as follows:

The Group entered into an agreement with banks to factor certain of its accounts receivable without recourse. According to the agreement, within the factoring line, the Group does not have to ensure the ability of debtors to pay when transferring the rights and obligations. The Group derecognized the above accounts receivables because it has transferred substantially all of the risks and rewards of their ownership, and it does not have any continuing involvement in them.

As of the reporting dates, details of accounts receivable factoring were as follows:

(Unit: Foreign currency/JPY in thousands)

December 31, 2019

Purchaser	**Amounts derecognized**	**Factoring Line**	**Advanced Amount**		**Range of Interest Rate**	**Collateral**
Mitsubishi UFJ, etc.	$ 329,440	-	329,440	-	1.175% 1.475%	None

December 31, 2018

Purchaser	**Amounts derecognized**	**Factoring Line**	**Advanced Amount**		**Range of Interest Rate**	**Collateral**
Mitsubishi UFJ, etc.	$ 502,978	-	502,978	-	1.175% 1.475%	None

The factoring agreements above include a factoring line that is intended for revolving use.

The notes and accounts receivable mentioned above were not pledged as collateral.

(6) Inventories

	2019.12.31	**2018.12.31**
Finished goods and products	$ 2,096,373	2,047,805
Work in progress	2,085,206	2,160,209
Raw materials	3,216,714	3,673,353
	$ 7,398,293	**7,881,367**

Component of operating cost are as follows:

		2019	2018
Cost of sales	$	42,202,259	48,156,805
Accrual of impairment loss of property, plant and equipment (Note 6 (11))		-	1,497,261
Reversal of inventory valuation		(109,158)	(37,345)
Unallocated fixed manufacturing expense		266,522	536,967
Provision (Note 6 (18))		3,883,063	443,404
	$	46,242,686	50,597,092

The inventories mentioned above were not pledged as collateral.

(7) Investments accounted for using equity method

A summary of financial information for investments accounted for using the equity method at the reporting date is as follows:

Names of affiliated companies	Relationship with the Company	Main location/ country registered in	Percentage of equity ownership interests and voting rights 2019.12.31	2018.12.31
Actron Technology Corporation.	Mainly engages in the manufacturing of electronic component .	Taiwan	15.50%	-
Taiwan Special Chemicals Corporation (hereinafter referred to as Taiwan Special Chemicals)	The main business is manufacturing of semiconductor special gas and chemical materials.	Taiwan	30.93%	30.93%
Cathy Sunrise Corporation (hereinafter referred to as Cathy Sunrise)	The main business is manufacturing of power generation, transmission and distribution machinery.	Taiwan	30.00%	30.00%
Crystalwise Technology Inc.	Mainly engages in the manufacturing and trading of optoelectronic wafers and substrate material.	Taiwan	41.93%	40.11%
Hongwang Investment Co., Ltd. (Hereinafter referred to as Hongwang)(Note)	The main business is general trading	Taiwan	30.98%	24.39%

Accu Solar Corporation (Hereinafter referred to as TSCS)	The main business is providing solar modules.	Taiwan	24.70%	24.70%

Note: It is transferred from GlobalWafers' investment.

1. The affiliated companies that are significant to the parent company and booked with TPEX.

	2019.12.31	2018.12.31
Crystalwise Technology Inc.	$ 1,030,041	791,079

The following consolidated financial information of significant affiliates has been adjusted according to individually prepared IFRS financial statements of these affiliates:

Financial Summary of Crystalwise Technology:

	2019.12.31	2018.12.31
Current Assets	$ 1,069,050	1,055,915
Non-current Assets	1,513,959	2,134,030
Current Liabilities	(1,027,371)	(1,225,269)
Non-current Liabilities	(843,098)	(872,017)
Net assets attributed to owner of the investee parent company	$ 712,540	1,092,659

	2019	2018
Operating revenues	$ 617,436	1,317,193
Loss from continuing operations	$ (751,496)	(449,780)
Other comprehensive income	(49,885)	(59,599)
Total comprehensive income attributed to the Group	$ (801,381)	(509,379)
Share of net assets of affiliates as of January 1	$ 415,391	849,211
Recognized change in equity net worth of affiliated companies under equity method this period	204,960	-
Change in equity of affiliates accounted for using equity method	(12,106)	124
Operating income attributed to the Group and impairment loss	(307,020)	(410,495)
Comprehensive income attributed to the Group and other	(20,671)	(23,449)
Share of net assets of affiliates as of December 31	$ 280,554	415,391

2. The Group's financial information for investments accounted for using the equity method that are individually insignificant was as follows:

	2019.12.31	2018.12.31
Carrying amount of individually insignificant associates' equity	$ 2,967,983	1,626,505

In 2019 and 2018, the Group's share of the net income of associates was as follows

	2019	2018
Attributable to the Group:		
Net loss of the period	$ (37,410)	(53,306)
Other comprehensive income (loss)	291,516	(149,273)
Total comprehensive income	$ (254,106)	(202,579)

3. The difference in the investment cost of the newly added investment and the fair value of the identifiable net assets of the investee is mainly attributable to the intangible assets.

4. Based on the group's operating performance considerations, the Group increased Crystalwise Technology Inc. capital by $204,960 thousand in May 2019. The difference between the investment cost and the net equity value of $12,101 thousand was recognized as capital surplus, and the shares held increased from 40.13% to 41.93%.

5. The Group obtained significant influence since it was elected as corporate director of Actron Technology Corporation in May 2019. Therefore, the original account under fair value through other comprehensive income financial assets was removed and reclassified as investment accounted for using the equity method at fair value. The amount of profit related to the investment that was previously recognized in other comprehensive income NT$237,118 thousand that will not be reclassified to profit or loss was reclassified to retained earnings. In addition, between October and December 2019, the Group increased capital to Actron Technology Corporation by cash and continued to purchase its shares, and the difference between the investment cost and the net equity value was NT$376,638 thousand recognized as capital surplus.

6. The Group acquired equity interests of Hongwang Investment Co., Ltd. for $109,760 thousand in 2019, which was recognized as additions to investments accounted for using the equity method. The difference of $4,063 thousand between the investment cost and the equity is recognized in additional paid in capital. Ownership increased from 24.39% to 30.98% as a result of the acquisition.

7. For the years ended December 31, 2019 and 2018, the cash dividends of the invested companies were $55,068 thousand and $6,422 thousand, respectively, which were recognized as deductions of investments accounted for using the equity method.

8. The investments accounted for using equity method mentioned above were not pledged as collateral as of December 31, 2019 and 2018

(8) Changes in a parent's ownership interest in a subsidiary

1. Acquisitions of additional shares of the subsidiary

The Group did not have any transaction with non-controlling interests in 2018.In March 2019, the Group acquired an additional interest in GlobalWafers for NT$91,006 in cash, increasing its ownership from 50.84 to 50.94%.

The effects of the changes in shareholdings were as follows:

		2018
Carrying amount of non-controlling interests purchased	$	41,341
Consideration paid to non-controlling interests and other equity		(92,445)
Capital surplus differences between consideration and carrying amounts subsidiaries acquired	**$**	**(51,104)**

2. The subsidiary bought back the treasury shares did not result in the Group loss of control

GlobalWafers implemented the treasury stock in 2018 and bought back the company's shares at Taiwan Stock Exchange, which increased the company's interest in GlobalWafers by 0.23%.

The impact of the changes of the Company's equity of GlobalWafers on the equity attributable to the parent company is as follows:

		2018
Equity deduction after the subsidiary buying treasury shares	**$**	**194,600**
Capital surplus - change of investments accounted for using equity method	**$**	**(194,600)**

(9) Material non-controlling interests of subsidiaries

The material non-controlling interests of subsidiaries were as follows:

Name of subsidiary	Main business place / company registered country	% of ownership interests under non-controlling interests as well as the voting rights	
		2019.12.31	2018.12.31
GlobalWafers	Taiwan	48.83%	48.83%

The following information of the aforementioned subsidiaries have been prepared in accordance with the Regulations Governing the Preparation of Financial Reports by Securities Issuers. Included in these information are the fair value adjustment made during the acquisition and relevant difference in accounting principles between the Group as at the acquisition date. Intragroup transactions were not eliminated in this information.

	2019.12.31	2018.12.31
Current assets	$ 51,492,745	53,200,515
Non-current assets	45,093,008	36,621,606
Current liabilities	(26,910,651)	(24,422,441)
Non- current liabilities	(24,601,852)	(22,243,567)
Net assets	$ 45,067,015	43,156,113
Non-controlling interests	$ 6,235	16,658

	2019	2018
Sales revenue	$ 58,094,331	59,063,510
Net income	$ 13,635,656	13,633,771
Other comprehensive income	(841,189)	431,248
Comprehensive income	$ 12,794,467	14,065,019
Profit, attributable to non-controlling interests	$ (8,439)	3,098
Comprehensive income, attributable to non-controlling interests	$ (9,996)	9,762

	2019	2018
Net cash flows from operating activities	$ 17,388,898	36,178,722
Net cash flows from investing activities	(12,434,497)	(6,368,165)
Net cash flows from financing activities	(6,784,347)	(13,767,728)
Effect of exchange rate changes on cash and cash equivalents	(562,865)	377,132
Net increase (loss) in cash and cash equivalents	$ (2,392,811)	16,419,961

(10) Loss control of subsidiaries

The Group disposed all of its shares in Sunrise PV Five with a consideration of NT$144,241 thousand at the end of March 2019 and recognized net gain on disposal of NT$69,104 thousand under other gains and losses in consolidated statements of comprehensive income.

The carrying amount of assets and liabilities of Sunrise PV Five at the end of March 2019 was as follow:

Cash and cash equivalents	$	6,564
Trade receivables		1,976
Current assets		302
Property, plant and equipment		231,584
Non-current Assets		36,202
Current liabilities		(165,269)
Non-current liabilities		(36,222)
Carrying amount of net assets	**$**	**75,137**

The Group disposed all of its shares in Sunrise PV Electric Power Two with a consideration of NT$47,770 thousand at the end of March 2019 and recognized net gain on disposal of NT$3.480 thousand under other gains and losses in consolidated statements of comprehensive income.

The carrying amount of assets and liabilities of Sunrise PV Five at the end of March 2019 was as follow:

Cash and cash equivalents	$	18,779
Trade receivables		1,265
Current assets		5,988
Property, plant and equipment		121,932
Non-current Assets		36,812
Current liabilities		(104,050)
Non-current liabilities		(36,436)
Carrying amount of net assets	**$**	**44,290**

For related parties transactions, please refer to Note 7.

(11) Property, plant and equipment

1. The movements of cost and depreciation of the property, plant and equipment of the Group were as follows:

		Land	Building	Machinery equipment	Other equipment	Construction in progress and quarantined equipment	Total
Cost:							
Balance of January 1, 2019	$	3,466,034	18,593,462	60,038,560	4,634,177	3,379,135	90,111,368
Additions		-	16,715	143,401	416,447	8,514,621	9,091,184
Disposals		-	(41,964)	(4,364,736)	(80,522)	(9,845)	(4,497,067)
Reclassification		3,238	521,618	1,328,505	223,099	(2,765,898)	(689,438)
Transfer and other		-	-	(345)	56,945	(739)	55,861
Effect of changes in exchange rates		(61,912)	(309,943)	(929,293)	(79,999)	(266,903)	(1,648,050)
Balance of December 31, 2019	$	3,407,360	18,779,888	56,216,092	5,170,147	8,850,371	92,423,858
Balance of January 1, 2018	$	3,408,791	17,896,097	56,760,858	4,280,713	2,548,249	84,894,708
Additions		-	20,569	423,930	538,618	5,786,780	6,769,897
Disposition		(49,905)	(292,307)	(2,630,918)	(553,415)	(2,352)	(3,528,897)
Reclassification		-	319,147	3,656,152	254,317	(4,229,616)	-
Transfer and other		-	68,307	452,284	26,512	(725,585)	(178,482)
Effect of changes in exchange rates		107,148	581,649	1,376,254	87,432	1,659	2,154,142
Balance of December 31, 2018	$	3,466,034	18,593,462	60,038,560	4,634,177	3,379,135	90,111,368
Depreciation and impairment loss:							
Balance of January 1, 2019	$	-	9,150,708	41,208,206	2,312,194	1,705	52,672,813
Depreciation for the year		-	763,046	3,653,004	422,887	-	4,838,937
Disposals		-	(41,716)	(3,906,267)	(65,238)	(1,705)	(4,014,926)
Reclassification		-	177	(686,600)	(3,015)	-	(689,438)
Transfer and other		-	-	(345)	14,476	-	14,131
Effect of changes in exchange rates		-	(106,477)	(505,674)	(62,223)	-	(674,374)
Balance of December 31, 2019	$	-	9,765,738	39,762,324	2,619,081	-	52,147,143
Balance of January 1, 2018	$	-	8,026,379	37,081,741	2,257,780	-	47,365,900
Depreciation for the year		-	759,686	4,397,963	470,584	-	5,628,233
Impairment loss			328,088	1,128,814	38,654	1,705	1,497,261
Disposal		-	(285,851)	(2,524,419)	(526,912)	-	(3,337,182)
Transfer and other		-	(8,548)	(147,653)	57,877	-	(98,324)
Effect of changes in exchange rates		-	330,954	1,271,760	14,211	-	1,616,925
Balance of December 31, 2018	$	-	9,150,708	41,208,206	2,312,194	1,705	52,672,813
Carrying amounts:							
December 31, 2019	$	3,407,360	9,014,150	16,453,768	2,551,066	8,850,371	40,276,715
January 1, 2019	$	3,408,791	9,869,718	19,679,117	2,022,933	2,548,249	37,528,808
December 31, 2018	$	3,466,034	9,442,754	18,830,354	2,321,983	3,377,430	37,438,555

2. Impairment loss

   In the fourth quarter of 2018, the consolidated company evaluated that as the production line of the solar energy division was affected by the global economy, the production output declined. Therefore, the recoverable amount of the production line must be evaluated.

   The solar energy production line of the consolidated company is a cash-generating unit whose recoverable amount is based on its value in use as of December 31, 2018. The carrying amount of the property, plant and equipment is higher than its recoverable amount, so the impairment loss is recognized as NT$ 1,497,261 thousands, which is included in the operating cost of the consolidated income statement.

   Based on the assessment in 2019, the recoverable amount was higher than its carrying amount and no impairment loss was recognized.

   The pre-tax discount rate of estimated value in 2019 and 2018 were 7.39% and 8.94%, respectively.

3. Guarantees

   Property, plant and equipment was pledged as collateral for long term borrowings, short term borrowings and credit lines. Please refer to note 8.

(12) Right-of-use assets

The Group leases many assets including land, buildings, machinery and other equipment. The carrying amounts about leases were presented below:

	Land	Buildings	Machinery	Other equipment	Total
Carrying amounts:					
Balance at December 31, 2019	$ 569,244	238,606	27,257	78,502	913,609

	2019
Additions	$ 10,464
Depreciation expense of right-of-use assets	
Land	$ 44,069
Buildings	54,700
Machinery	11,316
Other equipment	81,404
	$ 191,489

The Group leases buildings, machinery and equipment classified as property, plant and equipment under the finance lease for the year ended December 31, 2018. Please refer to note 6(17). The Group leases lands, offices, warehouses and factory facilities under an operating lease. Please refer to note 6(19).

The impairment loss assessment, please refer to note 6(11).

(13) Intangible assets

The cost and amortization of the intangible assets of the Group were as follows:

		Goodwill	Patent and trademark	Development cost	Total
Costs:					
Balance of January 1, 2019	$	2,488,317	1,704,483	160,515	4,353,315
Disposals		-	-	(50,711)	(50,711)
Effect of changes in exchange rates		(67,261)	(1,738)	(5,133)	(74,132)
Balance of December 31, 2019	$	2,421,056	1,702,745	104,671	4,228,472
Balance of January 1, 2018	$	2,429,026	1,702,225	164,472	4,295,723
Effect of changes in exchange rates		59,291	2,258	(3,957)	57,592
Balance of December 31, 2018	$	2,488,317	1,704,483	160,515	4,353,315
Amortization:					
Balance of January 1, 2019	$	-	666,222	37,696	703,918
Current amortization		-	332,113	15,767	347,880
Disposals		-	-	(49,570)	(49,570)
Effect of changes in exchange rates		-	(1,154)	(185)	(1,339)
Balance of December 31, 2019	$	-	997,181	3,708	1,000,889
Balance of January 1, 2018	$	-	333,694	22,895	356,589
Current amortization		-	331,763	16,576	348,339
Effect of changes in exchange rates		-	765	(1,775)	(1,010)
Balance of December 31, 2018	$	-	666,222	37,696	703,918
Carrying amount:					
December 31, 2019	$	2,421,056	705,564	100,963	3,227,583
January 1, 2019	$	2,429,026	1,368,531	141,577	3,939,134
December 31, 2018	$	2,488,317	1,038,261	122,819	3,649,397

During the years ended December 31, 2019 and 2018, the amortization expenses of intangibles assets recognized under operating expenses in the statements of comprehensive income amounted to $347,880 thousand, and $348,339 thousand, respectively.

For the purpose of impairment testing, goodwill was allocated to the semiconductor business. The Group's goodwill has been tested for impairment at least once at the end of each annual reporting period and the recoverable amount is determined based on discounted cash flows.

Based on the result of the Group's assessment, there is no indication of goodwill impairment.

The intangible assets mentioned above were not pledged as collateral.

(14) Short-term borrowings

	2019.12.31	2018.12.31
Unsecured bank loans	$ 10,465,075	9,217,684
Purchase of materials loan	-	117,125
	$ 11,465,075	9,334,809
Unused credit lines	$ 28,430,716	23,333,968
Range of interest rates at year end	0.70% -3.00%	0.76% -3.88%

For assets pledged as collateral for borrowings, please refer to note 8.

(15) Long-term borrowings

The details were as follows:

	2019.12.31
	Amount
Unused credit lines	$ 400,000

	2018.12.31			
	Currency	Range of interest rates at year end	expiry date	Amount
Unsecured bank loans	NTD	1.04%-1.18%	2020.06-2020.11	$ 1,159,000
Secured Bank Loans	NTD	1.28%	2022.01-2033.01	881,200
Total				$ 2,040,200
Unused credit lines				$ 301,000

For assets pledged as collateral for borrowings, please refer to note 8.

(16) Lease liabilities

The carrying amounts of lease liabilities of the Group were as follows:

	December 31, 2019
Current(recognized under other current liabilities)	$ 178,913
Non-current (recognized under other non-current liabilities)	$ 752,484

For the maturity analysis, please refer to note 6(30) “Financial instruments”.

The amounts recognized in profit or loss were as follows:

	For the year ended December 31, 2019
Interest on lease liabilities	$ 12,051
Variable lease payments not included in the measurement of lease liabilities	$ 880
Expenses relating to short-term leases	$ 15,564
Expenses relating to leases of low-value assets, excluding short-term leases of low-value assets	$ 6,054

The amounts recognized in the statement of cash flows was as follows:

	For the year ended December 31, 2019
Total cash outflow for leases	$ 235,576

1. Land and Buildings lease

   The Group leases land and buildings for its facility and office space. The leases of office space typically run for a period of 20 years. Some leases include an option to renew the lease for an additional period of the same duration after the end of the contract term.

   Land leases' additional rent payments that are based on changes in local price indices and the public facilities construction costs re-invested annually in each park will be adjusted after being assessed.

2. Other leases

   The Group leases vehicles and equipment, with lease terms of two to five years. In some cases, the Group has options to purchase the assets at the end of the contract term; in other cases, it guarantees the residual value of the leased assets at the end of the contract term.

(17) Financial lease liabilities

The Group acquired portion of its property, plant and equipment through finance lease. Related finance lease liabilities were recognized as other current liabilities and non-current liabilities as follows:

	2018.12.31			
		Future minimum lease payments	**Interest**	**Present value of minimum lease payments**
Within 1 year	$	9,102	(1,315)	7,787
1-5 years		21,995	(1,390)	20,605
	$	**31,097**	**(2,705)**	**28,392**

(18) Provision

The details of the changes in the Group's provision were as follows:

		Site restoration	**Onerous contract**	**Total**
Balance of January 1, 2019	$	64,651	960,292	1,024,943
Provisions made during the year		9,688	4,193,975	4,203,663
Provisions used during the year		(11,232)	(309,368)	(320,600)
Effect of changes in exchange rates		(1,102)	-	(1,102)
Balance of December 31, 2019	**$**	**62,005**	**4,844,899**	**4,906,904**
Current	$	10,307	221,949	232,256
Non-current		51,698	4,622,950	4,674,648
Total	**$**	**62,005**	**4,844,899**	**4,906,904**
Balance of January 1, 2018	$	62,895	513,377	576,272
Provisions made during the year		5,620	533,292	538,912
Provisions used during the year		(6,255)	(89,253)	(95,508)
Effect of changes in exchange rates		2,391	2,876	5,267
Balance of December 31, 2018	**$**	**64,651**	**960,292**	**1,024,943**
Current	$	10,074	-	10,074
Non-current		54,577	960,292	1,014,869
Total	**$**	**64,651**	**960,292**	**1,024,943**

1. Site restoration

Under the lease contract, if the Group does not intend to extend its leasehold, the Group needs to restore the plants. The Group estimates the provision based on the lease terms and in accordance with the Group's published environmental policy and applicable legal requirements. A provision for site restoration is made in respect of environmental cleanup costs.

2. Onerous contract

The Group entered into several non cancellable long term material supply agreements with the suppliers of silicon materials. The Group agrees to purchase the required quantity of raw materials on schedule based on the contractual price during the commitment periods and makes a non refundable prepayment to the suppliers. The suppliers need to deliver the required quantity of raw materials to the Group according to the contract. Provisions for the onerous contracts were made based on contractual terms and were recognized as cost of sales. For the related agreement, please refer to note 9.

(19) Operating lease

1. Lease of lessee

The rent payment of the irrevocable operating leases is as follows:

		2018.12.31
Within 1 year	$	199,460
1-5 years		680,949
Over 5 years		539,558
	$	**1,419,967**

For the year 2018, rental costs from operating leases of $249,592 thousand were recognized as expenses in profit or loss.

The Group entered into operating lease agreements with Covalent Materials Corporation for the rental of land, buildings, and other equipment in Oguni, Taino and Tokuyama. All the lease agreements covered the period from November 30, 2011 to March 31, 2035. The aggregate future rental payment is $30,155 thousand each year.

The Group entered into a land lease agreement with the Hsinchu Science Park Administration for the plant located in the Hsinchu Science Park. The land lease agreement has a lease term covering a period from October 1, 2000 to December 31, 2037. According to the lease agreement, rent is subject to adjustment based on the current land value which is announced by the government. The annual rental is approximately $41,764 thousand.

The consolidated company leased land and building materials from Ming Yang Co., Ltd. for the expansion of production capacity and the factory. The lease period lasted from July 2015 to July, 2025 for a total of ten years. Pursuant to the lease term, the rent is reviewed every two years. The rent payment is around NT$ 1,890 thousands per month.

To set up solar power plant, the consolidated company lease the roof of buildings and land to install solar power equipment. The lease period was from December 2016 to June 2038. Part of the agreed rental expenses are based on a certain percentage of the revenue generated. For a fixed-rate lease, the annual rent is about NT$ 3,344 thousands.

2. Prepaid Rent – Long Term

In 2018, the Group entered into operating lease agreements for land use right, with the lease terms of 50 years and 99 years, respectively, and rentals were paid once. The land use right of one of the subsidiaries was transferred to the assets to be sold in the fourth quarter of 2017 due to the expected sale of property, plant and equipment, and was accounted for under other current assets. The expenses for profit and loss reported in 2018 were NT$ 225 thousands. As of December 31, 2018, the balance that had not been amortized was NT$ 7,538 thousand. The above assets to be sold were sold in the first quarter of 2018.

(20) Employee benefits

1. Defined benefit plan

Reconciliation of defined benefit obligation at present value and plan asset at fair value was as follows:

		2019.12.31	2018.12.31
Total present value of obligations	$	(8,436,845)	(8,164,777)
Fair value of plan assets		5,489,559	4,994,981
Recognized liabilities for defined benefit obligations	$	(2,947,286)	(3,169,796)

The details of the account are as follows:

		2019.12.31	2018.12.31
Recognized assets for defined benefit obligations	$	3,104	3,233
Recognized liabilities for defined benefit obligations		(2,950,390)	(3,173,029)
	$	(2,947,286)	(2,898,535)

The plans entitle a retired employee to receive a pension benefit based on years of service prior to retirement.

(1) Movements in present value of the defined benefit obligations

The movements in present value of the defined benefit obligations of the Group were as follows:

		2019	2018
Defined benefit obligations at January 1	$	8,164,777	8,176,190
Current service cost and interest cost		489,118	463,686
Re measurements for defined benefit obligations			
- Actuarial gains and losses arising from experience adjustments		11,528	(25,922)
- Actuarial gains and losses resulting from changes in demographic assumptions		371,933	(172,289)

- Actuarial gains and losses resulting from changes in financial assumptions	78,187	72,519
Benefits paid	(493,490)	(573,870)
Effect of changes in exchange rates	(185,208)	224,463
Defined benefit obligations at December 31	$ 8,436,845	8,164,777

(2) Movements in fair value of defined benefit plan assets

The movements in fair value of the defined benefit plan assets of the Group were as follows:

	2019	2019
Fair value of the plan assets at January 1	$ 4,994,981	5,277,655
Interest income	160,435	144,935
Re measurements for defined benefit obligations		
- Return on plan asset (excluding interest revenue)	641,034	(391,115)
Contributions made	174,797	221,095
Benefits paid	(336,313)	(416,105)
Effect of changes in exchange rates	(145,375)	158,516
Fair value of the plan assets at December 31	$ 5,489,559	4,994,981

The Group allocates pension funds in accordance with the Regulations for Revenues, Expenditures, Safeguard and Utilization of the Labor Retirement Fund, and such funds are managed by the Bureau of Labor Funds, Ministry of Labor. With regard to the utilization of the funds, minimum earnings shall be no less than the earnings attainable from two year time deposits with interest rates offered by local banks.

The Group's Bank of Taiwan labor pension reserve account balance amounted to $249,111 thousand, as of December 31, 2019. For information on the utilization of the labor pension fund assets, including the asset allocation and yield of the fund, please refer to the website of the Bureau of Labor Funds, Ministry of Labor.

Under the employee defined benefit plans of a Group subsidiary in Korea, plan assets comprised of time deposits bearing annual interest rates ranging from 1.74%~2.20%.

In Italy, the Group' s subsidiary contributes an amount to the National Social Security Pension Fund (INPS) for the employee defined benefit plan.

Under the employee defined benefit plans of the entities located in the United States, plan assets are comprised of trust funds with different grades of risks and returns. Plan asset portfolio consists of a variety of financial instruments including cash, equity securities, and income funds.

(3) Changes in the effect of the asset ceiling

As of December 31, 2019 and 2018, there was no effect of the asset ceiling.

(4) Expenses recognized in profit or loss

The expenses recognized in profit or loss for the Group were as follows:

		2019	2018
Current service costs	$	472,005	445,871
Net interest of net liabilities for defined benefit obligation		(143,322)	(127,120)
	$	**328,683**	**318,751**
Operating Costs	$	282,476	270,245
Selling expenses		27,854	13,750
Administrative expenses		8,847	19,318
Research and development expenses		9,506	15,438
	$	**328,683**	**318,751**

(5) Actuarial assumptions

The principal actuarial assumptions at the reporting date were as follows:

	2019.12.31	2018.12.31
Discount rate	0.32%-3.04%	0.26%-4.05%
Future salary increase rate	1.33%-9.96%	1.33%-9.96%

The estimated amount of contribution to be made by the Group to the defined benefit plans for the one year period after the reporting date is $635,969 thousand.

The weighted average durations of the defined benefit obligation are 4 years to 17.87 years

(7) Sensitivity analysis

When the actuarial assumptions had changed 0.25% as of the December 31, 2019 and 2018, the impact on the present value of the defined benefit obligation would be as follows:

		The impact to the defined benefit obligations	
		Increased by 0.25%	**Decreased by 0.25%**
December 31, 2019			
Discount rate	$	(203,951)	212,482
Future salary increase rate		93,533	(87,128)
December 31, 2018			
Discount rate	$	(183,551)	192,481
Future salary increase rate		80,785	(76,787)

Reasonably possible changes at the reporting date to one of the relevant actuarial assumptions, assuming other assumptions remain constant, would have affected the defined benefit obligation by the amounts shown above. The method used in the sensitivity analysis is consistent with the calculation of pension liabilities in previous periods.

There was no change in the method and assumptions used in the preparation of sensitivity analysis for 2019 and 2018.

2. Defined Contribution Plan

The Group contributes at the rate of 6% of each employee's monthly wages to the labor pension personal account at the Bureau of Labor Insurance in accordance with the provisions of the Labor Pension Act. Under this defined contribution plan, the Company's contribution to the Bureau of Labor Insurance requires no additional legal or constructive obligations thereafter.

The pension costs of the Group's Taiwan companies incurred from contributions to the defined contribution plan were $85,230 thousand and $99,148 thousand for the years 2019 and 2018, respectively. Such contributions were made to the Bureau of the Labor Insurance.

The total periodic pension costs of other subsidiaries were recognized as current expenses in accordance with the local regulations of their respective jurisdictions where they are domiciled.

The foreign subsidiaries recognized the pension costs of $97,203 thousand and $80,721 thousand for the years 2019 and 2018, respectively.

(21) Income tax

1. Income tax expenses

The components of income tax expenses in 2019 and 2018 were as follows:

	2019	2018
Current tax expense	$ 4,117,829	2,640,682
Deferred tax expense		
Temporary differences	910,995	1,908,161
Adjustment in tax rate	-	133,910
	910,995	2,042,071
Income tax expenses	$ 5,028,824	4,682,753

The amounts of income tax (benefit) recognized in other comprehensive income in 2019 and 2018 were as follows:

	2019	2018
Items that will not be reclassified subsequently to profit or loss:		
Remeasurement from defined benefit obligations	$ 120,951	(68,152)
Items that may be reclassified subsequently to profit or loss		
Exchange differences on translation of foreign financial statements	$ (305,271)	102,154

Reconciliations of income tax and income before income tax for 2019 and 2018 are as follows:

	2019	2018
Income before income tax	$ 13,924,169	$ 13,318,233
Income tax using the Company's domestic tax rate	2,784,834	2,663,647
Effect of tax rates in foreign jurisdiction	504,291	353,279
Shares of profit of foreign subsidiaries accounted for using equity method	1,697,507	2,022,449
Tax effect of permanent differences	163,919	391,720
Adjustment in tax rate	-	133,910
Basic income tax	4,840	-
Tax preference of Returning Overseas Funds to Taiwan	(390,785)	-
Investment tax credits	(144,840)	(198,951)
Changes in unrecognized temporary differences and others	409,058	(683,301)
	$ 5,028,824	$ 4,682,753

2. Deferred Income tax assets and liabilities

(1) The deferred tax assets have not been recognized in respect of the following items:

		2019.12.31	2018.12.31
Tax effect of deductible temporary differences	$	1,721,216	1,444,153
Tax loss		679,200	611,452
	$	2,400,416	2,055,605

The R.O.C. Income Tax Act allows net losses, as assessed by the tax authorities, to offset taxable income over a period of ten years for local tax reporting purposes. Deferred tax assets have not been recognized in respect of these items because it is not probable that future taxable profit will be available against which the Company can utilize the benefits therefrom.

As of December 31, 2019, the information of the Group's unused tax losses for which no deferred tax assets were recognized are as follows:

Annual losses		Loss to be deducted	Deadline for deduction
2012 (verified)	$	1,403,648	2022
2013 (verified)		9,728	2023
2017 (verified)		1,021,784	2027
2018(declared)		960,839	2028
	$	3,395,999	

(2) The deferred tax liabilities have not been recognized in respect of the following items:

		2019.12.31	2018.12.31
Aggregate amount of temporary differences related to investments in subsidiaries	$	(997,762)	(673,788)

The Group is able to control the timing of the reversal of the temporary differences associated with investments in subsidiaries as at December 31, 2019 and 2018. Also, it is probable that the temporary differences will not reverse in the foreseeable future. Hence, such temporary differences were not recognized as deferred tax liabilities.

(3) Recognized deferred tax assets and liabilities

	2019.1.1	Recognized in profit or loss	Recognized in other comprehensive income	Effect of changes in exchange rates	2019.12.31
Assets:					
Allowance for inventory valuation	$ 198,554	(16,189)	-	(4,687)	177,678
Tax loss	29,726	83,084	-	(3,768)	109,042
Defined benefit obligations	395,594	(44,377)	101,353	(3,912)	448,658
Investment accounted for using equity method	109,783	40,399	20,490	-	170,672
Expected credit loss of accounts receivable	112,479	(13,458)	-	(5,741)	93,280
Depreciation life differences of property, plant and equipment	166,495	107	-	(3,035)	163,567
Unrealized exchange losses	114,144	17,625	-	(1,323)	130,446
Other	388,068	258,352	-	(12,127)	634,293
	$ 1,514,843	**325,543**	**121,843**	**(34,593)**	**1,927,636**

	2019.1.1	Recognized in profit or loss	Recognized in other comprehensive income	Effect of changes in exchange rates	2019.12.31
Liabilities:					
Investment accounted for using equity method	$ (2,487,625)	(710,856)	265,915	-	(2,932,566)
Depreciation life differences of property, plant and equipment	(729,816)	(148,850)	-	26,633	(852,033)
Fair value adjustment for the net assets acquired in business combinations	(435,519)	15,224	-	9,963	(410,332)
Other	(11,704)	(392,056)	(203,438)	(11,747)	(618,945)
	$ (3,664,664)	(1,236,538)	62,477	24,849	(4,813,876)

	2018.1.1	Recognized in the Revenue statement	Recognized in other comprehensive Revenue statement	Effect of changes in exchange rates	2018.12.31
Assets:					
Allowance for inventory valuation	$ 178,021	20,693	-	(160)	198,554
Tax loss	408,709	(369,057)	-	(9,926)	29,726
Defined benefit obligations	294,438	44,631	43,731	12,794	395,594
Equity method investments	427,265	21,813	(339,295)	-	109,783
Expected credit loss of accounts receivable	9,987	100,992	-	1,500	112,479
Depreciation life differences of property, plant and equipment	265,569	(97,796)	-	(1,278)	166,495
Unrealized exchange losses	88,052	24,793	-	1,299	114,144
Other	342,691	38,731	-	6,646	388,068

	$ 2,014,732	**(215,200)**	**(295,564)**	**10,875**	**1,514,843**
Liabilities:					
Investment accounted for using equity method	$ (1,073,051)	(1,676,136)	261,562	-	(2,487,625)
Depreciation life differences of property, plant and equipment	(547,537)	(163,177)	-	(19,102)	(729,816)
Fair value adjustment for the net assets acquired in business combinations	(436,625)	14,842	-	(13,736)	(435,519)
Other	(9,058)	(2,400)	-	(246)	(11,704)
	$ (2,066,271)	**(1,826,871)**	**261,562**	**(33,084)**	**(3,664,664)**

3. Assessment of tax filings

As of December 31, 2019, income tax returns of the Company for the years through 2017 were assessed by the tax authority.

(22) Capital and other equity

As of December 31, 2019 and 2018, the authorized common stock of the Company amounted to NT$8,000,000 thousand, which was divided into 800,000 thousand shares, with a par value of $10 per share, of which $200,000 thousand was reserved for employee stock options, convertible preferred stock, and convertible corporate bonds. The issued and outstanding shares of common stock amounted to NT$5,862,367 thousand and NT$ 5,863,207 thousand respectively.

Reconciliation of shares outstanding for 2019 and 2018 was as follows:

	Common stock	
	2019	**2018**
Opening balance at January 1	582,845	580,504
new shares with restricting employee rights, restriction lifted	1,646	2,341
Closing balance at December 31	**584,491**	**582,845**

1. Issuance of common stock

The Company increased capital in GDRs of $610,000 thousand, and issued 61,000 thousand shares of common stock on the Luxembourg on September 9, 2010. The price issued per share was US$2.9048. The total issuance amount is US$177,193 thousand. The cash increase was approved by the Financial Supervisory Commission No. 0990041383

Letter on August 13, 2010. All shares issued were paid and registered on September 9, 2010. The total amount issued was US$177,193. The net amount issued was US$174,931 thousand after deducting the related agent cost US$2,262 thousand, was equivalent to NT$5,580,288 thousand on the day's closing exchange rates. The total premium amounting to $4,958,757 thousand was recognized on capital surplus after deducting the related issuance cost of $11,531 thousand.

As of December 31, 2018 and 2017, due to the resignation of employees, the recovered and written off restricted employee shares were 371 thousand shares and 251 thousand shares respectively. As of December 31, 2018, there were still 15 thousand shares whose legal registration procedures are unfinished and recognized as pending share capital.

2. Capital surplus

The balances of capital surplus were as follows:

		2019.12.31	2018.12.31
Additional paid in capital	$	11,641,320	11,862,668
Difference between the consideration and the carrying amount of subsidiaries' share acquired or disposed		2,065,254	2,441,893
Capital surplus recognized under the equity method		6,665,682	6,568,293
Treasury stock transactions		33,314	33,314
New restricted employee shares		60,522	244,849
Employee stock options, etc.		606,503	606,275
	$	21,072,595	21,757,292

According to the R.O.C Company Act, capital surplus can only be used to offset a deficit, and only the realized capital surplus can be used to increase the common stock or be distributed as cash dividends. The aforementioned realized capital surplus includes capital surplus arising from premium on issuance of capital stock and the fair value of donated assets received. According to the Regulations Governing the Offering and Issuance of Securities by Securities Issuers, to increase common stock by transferring paid in capital in excess of par value should not exceed 10% of the total common stock outstanding.

The Company distributed out of capital reserve cash of NT$ 401,900 thousands (NT$ 0.6855 per share) and NT$ 1,759,511 thousands (NT$ 3 per share) approved the shareholders' meeting resolution on June 27, 2019 and June 26, 2018. Relevant information can be found on the Market Observation Post System website

3. Legal reserve

When a company incurs no loss, it may, pursuant to a resolution by a shareholders' meeting, distribute its legal reserve by issuing new shares or by distributing cash, and only the portion of legal reserve which exceeds 25% of capital stock may be distributed.

4. Special reserve

When the parent company adopted the international financial reporting standards (IFRSs) approved by the FSC for the first time, the parent company had chosen to apply IFRS 1 "First-time Adoption of the IFRSs" exemptions, retained earnings was increased by NT$ 161,317 thousand due to the accumulated conversion adjustment (profit) under the shareholders' equity, which exceeding the net increase of NT$ 102,349 thousand in retained earnings on the conversion date for the first-time adoption of IFRSs approved by the FSC. In accordance with Regulatory Permit No. 1010012865 as issued by the FSC on April 6, 2012, a special reserve is appropriated from retained earnings based on the aforementioned requirement. Under such regulation, the Company is also required to set aside an additional special reserve, as part of the distribution of its annual earnings, equal to the difference between the amount of the above-mentioned special reserve and the net debit balance of other components of the stockholders' equity. The only distributable special reserve is the portion that exceeds the net debit balance of the other components of the shareholders' equity. The carrying amounts of special reserve both were $102,349 thousand as of December 31, 2019 and 2018.

According to the Order referred to above, while distributing the distributable earnings, the parent company had additional special reserve appropriated from the current gain or loss and unappropriated earnings of the prior period for the difference between the net amount debited to other shareholder's equity and the balance of the special reserve appropriated in the preceding paragraph. For the amount debited to other shareholders' equity attributable to prior period accumulation, the special reserve was appropriated from the unappropriated earnings of the prior period and could not be distributed. The amount debited to the shareholders' equity reversed subsequently can be distributed as earnings.

3. Earnings distribution and dividend policy

The Company's article of incorporation stipulate that Company's net earnings should first be used to offset the prior years' deficits, if any, before paying any income taxes. Of the remaining balance, 10% is to be appropriated as legal reserve, and then any remaining profit together with any undistributed retained earnings shall be distributed according to the distribution plan proposed by the Board of Directors and submitted to the stockholders' meeting for approval.

After considering both the long term development of the business and the goal of stable growth of earnings per share, the distribution of dividends to shareholders should not be less than 50% of the distributable earnings, which is calculated using the net income of the current year, minus, legal reserve and special reserve. Distribution of cash dividends should not be less than 50% of the total dividends.

The Company 's shareholder meeting decided to offset the prior years' deficits on June 26, 2018, which did not differ from the proposed content of the board of directors.. Relevant information can be accessed from the Market Observation Post System website.

The distributions of dividends per share for the years 2018 approved by the stockholders during their meetings on June 27, 2019 was as follows:

	2018
Dividends distributed to ordinary shareholders:	
Cash (dividends per share was $2.3145)	$ 1,356,963

The above-mentioned earnings distribution is consistent with the resolution approved by the board of directors. The information is available on the Market Observation Post System website.

The board of directors proposed the 2019 annual earnings distribution on March 19, 2020. The above earrings distribution will be resolved by shareholders' meeting. After the resolution of the relevant meeting of the Company, the information can be accessed from the Market Observation Post System website.

4. Treasury share

The treasury shares bought back by the Company had been deregistered in 2018.

Unit: Thousand shares

	2018			
Reasons for buy back	**Beginning shareholdings**	**Increase of the year**	**Decrease of the year**	**Ending shareholdings**
Transferred to employee	5,555	-	5,555	-

Note : The deregistration was done in 2019 third quarter.

5. Other interests (net after tax)

	Exchange differences on translation of foreign operations	**Gains (losses)from equity instruments measured at fair value through other comprehensive income**	**Unrealized gains (losses) on available for sale financial assets**	**Remuneration unearned by employees**	**Other**	**Total**
January 1, 2019	$(1,586,241)	(1,406,132)	-	(75,334)	(3,380)	(3,071,087)
Foreign exchange differences (net of tax)	(631,106)	-	-	-	-	(631,106)
Exchange differences on subsidiaries accounted for using equity method	(6,997)	-	-	-	112	(6,885)

Unrealized losses from financial assets measured at fair value through other comprehensive income	-	(24,230)	-	-	-	(24,230)
Unrealized losses from financial assets measured at fair value through other comprehensive income of associates accounted for using equity method	-	158,135	-	-	-	158,135
Cost of shares issued with restrictions on employee rights	-	-	-	56,726	-	56,726
Disposition of equity instruments measured at fair value through other comprehensive income	-	(313,015)	-	-	-	(313,015)
Balance of December 31, 2019	**$(2,224,344)**	**(1,585,242)**	**-**	**(18,608)**	**(3,268)**	**(3,831,462)**

	Exchange differences on translation of foreign financial statements	**Unrealized gain or loss on financial assets measured at fair value through other comprehensive gain or loss**	**Unrealized gains (losses) on available for sale financial assets**	**Remuneration unearned by employees**	**Other**	**Total**
Balance of January 1, 2018	$(1,973,334)	-	(1,109,281	(236,020)	(4,302)	(3,322,937)
Effects of retrospective application of new standards	-	(2,338,298)	1,109,28	-	-	(1,229,017)
January 1, 2018 after adjusted	(1,973,334)	(2,338,298)	-	(236,020)	(4,302)	(4,551,954)
Foreign exchange differences (net of tax)	391,255	-	-	-	-	391,255
Exchange differences on subsidiaries accounted for using equity method	(4,162)	-	-	-	922	(3,240)
Unrealized losses from financial assets measured at fair value through other comprehensive income	-	(529,832)	-	-	-	(529,832)

Unrealized losses from financial assets measured at fair value through other comprehensive income of associates accounted for using equity method	-	(96,198)	-	-	-	(96,198)
Disposition of equity instruments measured at fair value through other comprehensive income	-	1,558,196	-	-	-	1,558,196
Cost of shares issued with restrictions on employee rights	-	-	-	160,686	-	160,686
Balance of December 31, 2018	**$(1,586,241)**	**(1,406,132)**	**-**	**(75,334)**	**(3,380)**	**(3,071,087)**

(23) Share-based payment

1. New Restricted stock

On June 27, 2017, the Company resolved through the shareholders' meeting to issue 6,000 thousand new restricted employee shares. The object is limited to manager-level (including) above supervisors and full-time employees with special contributions who have served for more than one year at the company since the granting day. The company has filed a declaration with the Securities and Futures Commission of FSC and all the shares were issued by the board of directors resolution on October 5, 2017. The fair value of the grant was NT$ 67.2.

The employees who have been allocated the above-mentioned new restricted employee shares will be able to subscribe for the shares allocated for NT$20 each. The vested condition is that after receiving the new restricted employee shares, they are still in service according to the following schedule, and their performance reaches A (including) above, then they can obtain the share percentage of the vested condition respectively:
(1) 1 year of service: 40%
(2) 2 year of service: 70%
(3) 3 year of service: 100%

After the employees subscribe for the new shares, they may not sell, pledge, transfer, donate, set or do other disposition of their shares until the vested conditions are fulfilled; new restricted employee shares are subject to the right to participate in the distribution of dividends, and the dividends they receive are not subject to the vested period; the proposal, speech, voting rights and other relevant shareholders' equity of the shareholders meeting of the Company before the vested conditions are the same as the other ordinary shares of the Company; after the issuance, the new restricted employee shares should be immediately delivered to the trust or custody and must not be returned to the trustee for any reason or manner until the vested conditions are fulfilled. If the employee is not eligible for the vested condition after the new share is subscribed, the shares will be bought back by the Company at the issue price.

Details of the restricted stock of the Company are as follows:

Unit: Thousand shares

	2019	**2018**
Outstanding at 1 January (number)	3,408	5,965
Vested during the year (number)	(1,646)	(2,341)
Forfeited during the year (number)	(66)	(216)
Outstanding at 31 December (number)	**1,696**	**3,408**

The remuneration costs recognized by the Company in 2019 and 2018 were NT$ 53,611 thousands and NT$ 151,199 thousands respectively, and recognized as the operating costs and operating expenses. The balance of the unpaid employee remuneration of the Company as of December 31, 2019 and 2018 were NT$ 18,608 thousands and NT$ 75,334 thousands, accounted for in reductions of other equity.

2. Cash delivery share-based payment

The Group issued a cash delivery share-based payment for a period of four years. The assigned employees are entitled to future cash payments when performing the conditions of service. The condition of the plan requires that employees who are entitled to the above share appreciation rights must be in service on each vested date at the consolidated company (February 28, 2019, February 28, 2020, February 28, 2021 and February 28, 2022) On each vested day employee is entitled to a 25% share appreciation right. In addition, the share appreciation rights are determined by the stock price of GlobalWafers on each vested day and individual performance.

As of December 31, 2019 and 2018, the price of GlobalWafers stock was NT$ 382.5 and NT$280.5 respectively, and the number of non-acquired shares was 1,000 thousand. As of December 31, 2019 and 2018, the consolidated company has recognized the remuneration cost amounted NT$92,739 thousand and NT$ 70,125 thousand respectively.

(24) Earnings per share

1. Basic earnings per share

	2019	**2018**
Net income attributable to the shareholders of the Company	**$ 2,248,386**	**1,950,503**
Weighted-average number of ordinary shares outstanding during the year (in thousands of shares)	**583,210**	**580,508**
Basic earnings per share (dollars)	**$ 3.86**	**3.36**

2. Diluted earnings per share

	2019	2018
Net income attributable to the shareholders of the Company	$ 2,248,386	$ 1,950,503
Weighted-average number of ordinary shares outstanding during the year (in thousands of shares)	581,210	581,058
Impact of dilution of potential ordinary shares (shares in thousands)	3,899	3,672
Weighted average number of outstanding common stock (shares in thousands)(diluted)	587,109	584,730
Diluted earnings per share (dollars)	$ 3.83	$ 3.34

(25) Revenue from contracts with customers

1. Details of revenues

	2019			2018		
	Semiconductor Department	Solar energy Department	Total	Semiconductor Department	Solar energy Department	Total
Primary geographical markets:						
Taiwan	$ 12,568,540	1,721,425	14,289,965	13,429,594	3,190,990	16,620,584
Northeast Asia (Japan and Korea)	17,852,401	1,104,253	18,956,654	17,263,975	1,420,473	18,684,448
Asia－others	9,100,112	1,311,136	10,411,248	9,676,930	2,034,623	11,711,553
America	8,410,577	1,511,115	9,921,692	8,340,541	1,421,750	9,762,291
Europe	7,165,983	1,697,439	8,863,422	6,971,277	1,601,502	8,572,779
Other areas	2,992,340	74,904	3,067,244	3,361,777	525,513	3,887,290
	$ 58,089,953	7,420,272	65,510,225	59,044,094	10,194,851	69,238,945
Major product categories:						
Semiconductor wafers	$ 57,721,510	-	57,721,510	58,447,151	-	58,447,151
Solar cell	-	2,877,421	2,877,421	-	3,141,457	3,141,457
Solar module	-	1,553,577	1,553,577	-	2,066,427	2,066,427
Solar ingot	-	792,922	792,922	-	1,608,721	1,608,721
Semiconductor ingot	275,284	-	275,284	492,114	-	492,114
Solar wafer	-	144,716	144,716	-	581,924	581,924
Other	93,159	2,051,636	2,144,795	104,829	2,796,322	2,901,151
	$ 58,089,953	7,420,272	65,510,225	59,044,094	10,194,851	69,238,945

2. Contract balance

	2019.12.31	**2018.12.31**	**2018.1.1**
Notes and accounts receivable(including related parties)	$ 8,502,200	$ 9,874,500	8,827,642
Contract liabilities	$ 21,409,237	$ 20,374,971	8,591,453

The major change in the balance of contract liabilities is the advance consideration received from customers for the contracts, in which revenue is recognized when products are delivered to customers. The amount of revenue recognized for the years ended December 31, 2019 and 2018, which was included in the contract liability balance at the beginning of the period, was NT$2,310,280 thousand and NT$1,676,859 thousand, respectively.

The contract liabilities primarily relate to the advance consideration received from customers for the semiconductor and soar products sales contracts, in which revenue is recognized when products are delivered to customers.

(26) Remuneration to employees and directors

In accordance with the articles of association of the Company if there is profit in the year, the company shall accrue 3%- 15% of the profit as employee's remuneration. The board of directors decides to distribute it by stock or cash, and the object of distribution includes employees meeting certain conditions; and the board of directors decides to accrue up to 3% of the above profit as directors' remuneration. The distribution of remuneration of employees and directors should be submitted and reported to the shareholders' meeting. In case the parent company has cumulative losses, it should reserve amount to make up losses before distributing remuneration to the employees and directors in pursuant to the percentage mentioned in the preceding paragraph.

For the years ended December 31, 2019 and 2018, the Company accrued and recognized its employee remuneration amounting to $622,810 thousand and $504,801 thousand and directors' amounting to $49,200 thousand and $50,060 thousand, respectively. These amounts were calculated by using the Company's pre-tax net profit for the period before deducting the amounts of the remuneration to employees and directors, multiplied by the distribution of ratio of the remuneration to employees and directors based on the Company's articles of incorporation, and expensed under operating costs or expenses. If there would be any changes in accounting estimates the changes shall be accounted for as profit or lost in the following year. If, however, the shareholders determine that the employee remuneration is to be distributed through stock dividends, the calculation, based on the shares, shall be calculated using the stock price on the day before the board of directors. If there would be any changes in accounting estimates the changes shall be accounted for as profit or lost in the following year

The amounts as stated in the consolidated financial statements are identical to those of the actual distributions for 2019 and 2018.Relevant information can be accessed from the

Market Observation Post System website.

(27) Other income

	2019	2018
Interest income	$ 757,732	482,902
Dividend income	9,477	34,994
	$ 767,209	**517,896**

(28) Other gains and losses

	2019	2018
Foreign exchange gains (losses)	$ (235,553)	(39,184)
Impairment loss of investments accounted for using equity method	-	(227,392)
Unrealized gains (losses) on financial assets (liabilities) measured at fair value through profit or loss	(286,287)	67,241
Realized gains (losses) on financial assets (liabilities) measured at fair value through profit or loss	378,105	79,466
Impairment loss on financial assets measured at amortized cost	(25,973)	-
Gain on disposal of subsidiaries	72,584	-
Other	233,500	191,113
	$ 136,376	**71,244**

(29) Share of other comprehensive income of associates and joint ventures accounted for using equity method

	2019	2018
Exchange differences on translation of foreign operations	$ (6,997)	(4,162)
Unrealized gains (losses) from investments in equity instruments measured at fair value through other comprehensive income	276,597	(169,482)
	$ 269,600	**(173,644)**

(30) Financial instruments

1. Credit Risk

(1) Credit risk exposure

The carrying amount of financial assets represents the maximum amount exposed to credit risk.

(2) Concentration of credit risk

The main customers of the Group are from the solar and silicon wafer industries. The Group generally sets credit limits to its customers according to their credit evaluations. Therefore, the credit risk of the Group is mainly influenced by the solar and silicon wafer industry. As of December 31, 2019 and 2018, 53% and 43%, respectively, of the Group's accounts receivable (including related parties) were from the top 10 customers. Although there is a potential for concentration of credit risk, the Group routinely assesses the collectability of the accounts receivable and makes a corresponding allowance for doubtful accounts.

(3) Receivables and debt securities

For credit risk exposure of notes and trade receivables, please refer to note 6(5).Other financial assets at amortized cost includes other receivables, investments in corporate bonds. Impairment loss on financial assets measured at amortized cost, please refer to note 6(4).

All of these financial assets are considered to have low risk, and thus, the impairment provision recognized during the period was limited to 12 months expected losses. Regarding how the financial instruments are considered to have low credit risk, please refer to note 4(7).

2. Liquidity Risk

The following table shows the contractual maturities of financial liabilities, including estimated interest payments and excluding the impact of netting agreements.

	Carrying Amount	Contractual cash flows	6 months within	6-12 months	1-2 years	2-5 years or more
December 31, 2019						
Non-derivative financial liabilities						
Short term borrowings	$ 11,465,075	(11,490,667)	(11,490,667)	-	-	-
Notes and accounts payable (including related parties)	4,179,695	(4,179,695)	(4,179,695)	-	-	-
Lease liabilities	931,397	(993,458)	(92,567)	(97,254)	(115,633)	(688,004)
Finance lease liabilities						
Swap exchange contracts:						
Inflow	68	(90,465)	(90,465)	-	-	-
Outflow	-	90,075	90,075	-		
Forward exchange contracts:						
Inflow	209,712	(6,745,031)	(6,745,031)	-	-	-
Outflow	-	6,535,319	6,535,319	-	-	-
	$ 16,785,947	(16,873,922)	(15,973,031)	(97,254)	(115,633)	(688,004)
December 31, 2018						
Non-derivative financial liabilities						
Short term borrowings	$ 9,334,809	(9,384,817)	(9,083,378)	(301,439)	-	-

Notes and accounts payable (including related parties)	5,236,231	(5,236,231)	(5,236,231)	-	-	-
Long term borrowings	2,040,200	(2,185,438)	(21,056)	(21,056)	(1,178,479)	(964,847)
Finance lease liabilities	28,392	(31,098)	(4,551)	(4,551)	(9,102)	(12,894)
Forward foreign exchange contracts:						
Inflow	-	(5,559,495)	(5,559,495)	-	-	-
Outflow	81,679	5,638,200	5,638,200	-	-	-
	$ 16,721,311	(16,758,879)	(14,266,511)	(327,046)	(1,187,581)	(977,741)

The Group does not expect the cash flows included in the maturity analysis to occur significantly earlier or at significantly different amounts.

3. Currency risk

(1) Exposure to foreign currency risk

The Group's significant exposure to foreign currency risk was as follows:

	2019.12.31		
	Foreign currency	**Exchange rate**	**NTD**
Financial assets			
Monetary items			
USD	$ 488,134	29.980	14,634,257
JPY	259,534	0.2760	71,631
EUR	14,666	33.590	492,631
Non-monetary items			
USD	22,238	29.980	Note
JPY	2,632,949	0.2760	Note
EUR	3,508	33.590	Note
Financial liabilities			
Monetary items			
USD	42,249	29.980	1,266,625
JPY	2,413,109	0.2760	666,018
EUR	18,246	33.590	612,883
Non-monetary items			
USD	4,650	29.980	Note
JPY	18,050,000	0.2760	Note

	2018.12.31		
	Foreign currency	**Exchange rate**	**NTD**
Financial assets			
Monetary items			
USD	$ 353,183	30.715	10,848,016
JPY	541,424	0.2782	150,624
EUR	23,098	35.200	813,049
Non-monetary items			
USD	24,747	30.715	Note
JPY	17,150,412	0.2782	Note
Financial liabilities			
Monetary items			
USD	45,953	30.715	1,411,446
JPY	1,036,822	0.2782	288,444
EUR	6,732	35.200	236,966
Non-monetary items			
USD	33,000	30.715	Note
EUR	18	35.200	Note

Note: The fair value of forward exchange contracts was measured at the reporting date. For related information, please refer to note 6.

(2) Sensitivity analysis

The Group's exposure to foreign currency risk arises from the translation of the foreign currency exchange gains and losses on cash and cash equivalents, notes and accounts receivable, long and short-term loans, and note and accounts payables that are denominated in foreign currency. A weakening (strengthening) of 1% of the NTD against the USD, JPY and EUR as of December 31, 2019 and 2018, would have increased (decreased) the net income before income tax by $126,530 thousand and $98,748 thousand, respectively. The analysis is based on foreign currency exchange rate variances that the Group considered to be reasonably possible at the reporting date. The analysis assumes that all other variables remain constant and ignores any impact of forecasted sales and purchases. The analysis was performed on the same basis for comparative years.

(3) Foreign exchange gain and loss on monetary items

Since the Group has many kinds of functional currency, the information on foreign exchange gain (loss) on monetary items is disclosed by total amount. For years 2019 and 2018, foreign exchange gain (loss) (including realized and unrealized portions) amounted to NT$(235,553) thousand and NT$(39,184) thousand, respectively.

4. Interest rate analysis

Please refer to the notes on liquidity risk management and interest rate exposure of the Group's financial liabilities.

The following sensitivity analysis is based on the exposure to interest rates. Regarding liabilities with variable interest rates, the analysis is based on the assumption that the amount of liabilities outstanding at the reporting date was outstanding throughout the year.

If the interest rate had increased or decreased by 0.25%, the Group's net income would have increased or decreased by NT$22,580 thousand and NT$2,219 thousand, for the years ended December 31, 2019 and 2018, respectively, assuming all other variable factors remain constant. This is mainly due to the Group's bank deposits and borrowings with variable rates.

5. Other price risk

For the years ended December 31, 2019 and 2018, the sensitivity analyses for the changes in the securities price at the reporting date were performed using the same basis for the profit and loss as illustrated below:

	2019		**2018**	
Prices of securities at the reporting date	**Other comprehensive income after tax**	**Net income**	**Other comprehensive income after tax**	**Net income**
Increasing 5%	$ 16,609	93,833	60,247	8,853
Decreasing 5%	(16,609)	(93,833)	(60,247)	(8,853)

6. Fair value of financial instruments

(1) Fair value hierarchy

The fair value of financial assets and liabilities at fair value through profit or loss and financial assets at fair value through other comprehensive income is measured on a recurring basis. The carrying amount and fair value of the Group's financial assets and liabilities, including the information on fair value hierarchy were as follows; however, except as described in the following paragraphs, for financial instruments not measured at fair value whose carrying amount is reasonably close to the fair value, and lease liabilities, disclosure of fair value information is not required:

	2019.12.31				
		Fair value			
	Carrying Amount	Level I	Level II	Level III	Total
Financial assets measured at fair value through gain or loss					
Forward exchange contract	$ 6,920	-	6,920	-	6,920
Overseas securities held	1,876,656	1,876,656	-	-	1,876,656
Subtotal	**$ 1,883,576**	**1,876,656**	**6,920**	**-**	**1,883,576**
Financial assets at fair value through profit or loss－non current	**$ 95,163**	**-**	**-**	**95,163**	**95,163**
Financial assets at fair value through other comprehensive income					
Non-public offer equity instrument measured at fair value	**$ 332,185**	**-**	**-**	**332,185**	**332,185**
Financial assets measured at amortized cost					
Cash and cash equivalents	$ 34,901,425	-	-	-	-
Notes and accounts receivable (including related parties)	8,507,214	-	-	-	-
Other financial assets - current and non-current	4,054,629	-	-	-	-
Corporate bonds - current and non-current	507,680	-	507,680	-	507,680
Subtotal	**$ 47,970,948**	**-**	**507,680**	**-**	**507,680**
Financial liabilities measured at fair value through profit or loss					
Swap exchange contracts	$ 68	-	68	-	68
Forward exchange contracts	216,632	-	216,632	-	216,632
Subtotal	**$ 216,700**	**-**	**216,700**	**-**	**216,700**
Financial liabilities measured with amortized costs					
Short term borrowings	$ 11,465,075	-	-	-	-
Notes and accounts payable (including related parties)	4,179,695	-	-	-	-
Lease liabilities-current and non-current	931,397	-	-	-	-
Subtotal	**$ 16,576,167**	**-**	**-**	**-**	**-**

	2018.12.31				
		Fair value			
	Carrying Amount	**Level I**	**Level II**	**Level III**	**Total**
Financial assets measured at fair value through gain or loss					
Forward exchange contract	$ 81,798	-	81,798	-	81,798
Stock listed on domestic market	177,053	177,053	-	-	177,053
Privately offered fund	64,697	-	-	64,697	64,697
Subtotal	$ 323,548	177,053	81,798	64,697	323,548
Financial assets at fair value through other comprehensive income					
Stock listed on domestic market	$ 717,420	717,420	-	-	717,420
Non-public offer equity instrument measured at fair value	487,504	-	-	487,504	487,504
	$ 1,204,924	717,420	-	487,504	1,204,924
Financial assets measured at amortized cost					
Corporate bonds	$ 281,366	-	285,466	-	285,466
Cash and cash equivalents	36,829,131	-	-	-	-
Notes and accounts receivable (including related parties)	9,881,332	-	-	-	-
Other financial assets - current and non-current	1,095,777	-	-	-	-
Subtotal	$ 48,087,606	-	285,466	-	285,466
Financial liabilities measured at fair value through other comprehensive gain or loss	$ 119	-	119	-	119
Financial liabilities measured with amortized costs					
Short term borrowings	$ 9,334,809	-	-	-	9,334,809
Notes and accounts payable (including related parties)	5,236,231	-	-	-	5,236,231
Long term borrowings (including current portion of long term borrowings payable)	2,040,200	-	-	-	2,040,200
Finance lease payable (current and non-current)	27,868	-	27,868	-	27,868
Subtotal	$ 16,639,108	-	27,868	-	16,639,108

(2) Valuation techniques for financial instruments not measured at fair value

The Group’s valuation techniques and assumptions used for financial instruments not measured at fair value are as follows:

Financial assets measured at amortized cost

If the quoted prices in active markets are available, the market price is established as the fair value. However, if quoted prices in active markets are not available, the estimated valuation or prices used by competitors are adopted.

(3) Valuation techniques for financial instruments measured at fair value

A. Non derivative financial instruments

A financial instrument is regarded as being quoted in an active market if quoted prices are readily and regularly available from an exchange, dealer, broker, industry group, pricing service, or regulatory agency, and those prices represent actual and regularly occurring market transactions on an arm's length basis. Whether transactions are taking place 'regularly' is a matter of judgment and depends on the facts and circumstances of the market for the instrument.

Quoted market prices may not be indicative of the fair value of an instrument if the activity in the market is infrequent, the market is not well established, only small volumes are traded, or bid ask spreads are very wide. Determining whether a market is active involves judgment.

If the financial instruments held by the consolidated company belong to an active market, the fair value is booked as follows by category and attribute:

For financial assets and financial liabilities of the listed company's stocks, notes of exchange and corporate bonds, which are subject to standard terms and conditions and are traded in the active market, the fair value is determined by reference to market quotations.

In addition to the above-mentioned financial instruments with active markets, the fair value of the remaining financial instruments is obtained by means of evaluation technologies or reference to counterparty quotes. The fair value obtained through the evaluation technology can be based on the current fair value of other financial instruments with similar characteristics and characteristics, the discounted cash flow method or other evaluation technology, including the calculation with the model and the market information available on the consolidated balance sheet date (such as the reference yield curve of Taiwan Stock Exchange, Reuters commercial promissory interest rate average offer).

If the financial instruments held by the consolidated company are in the non-active market, the fair value is booked as follows by category and attribute:

Equity instruments without public quotation: Estimates of fair value using the market comparable company method, the main assumptions are based on the earnings multiplier derived from the investee's net worth per share and the EV/EBIT comparable listed companies' quotes. The estimate has adjusted the depreciation impact of the lack of market liquidity of the equity securities.

B. Derivative financial instruments

Measurement of the fair value of derivative instruments are based on the valuation techniques generally accepted by market participants, such as the discounted cash flow or option pricing models. The fair value of forward currency is usually determined based by the forward currency exchange rate.

(4) Reconciliation of Level 3 fair value

The Group's financial instruments which were belongs to Level 3 fair value were financial assets measured at fair value through other comprehensive income and financial assets measured at fair value through profit or loss. The movement as follows:

	Financial assets measured at fair value through profit or loss	Financial assets measured at fair value through other comprehensive income
January 1, 2019	$ 64,697	487,504
Addition	31,195	1,636
Recognized in profit or loss	(729)	-
Recognized in other comprehensive income	-	(119,960)
Refund	-	(28,239)
Effect of changes in exchange rates	-	(8,756)
December 31, 2019	**$ 95,163**	**332,185**
January 1, 2018	$ -	838,181
Effects of retrospective application of new accounting standards	-	(12,254)
Restatement balance at January 1, 2018	-	825,927
Addition/ refund	-	33,977
Recognized in profit or loss	(481)	-
Recognized in other comprehensive income	-	(320,470)
Reclassification	65,178	(65,178)
Effect of changes in exchange rates	-	13,248
December 31, 2018	**$ 64,697**	**487,504**

(5) Quantified information on significant unobservable inputs (Level 3) used in fair value measurement

The Group's financial instruments that use Level 3 inputs to measure fair value include "fair value through other comprehensive income – equity investments".

The favorable and unfavorable effects represent the changes in fair value, and fair value is based on a variety of unobservable inputs calculated using a valuation technique. The analysis above only reflects the effects of changes in a single input, and it does not include the interrelationships with another input.

Quantified information of significant unobservable inputs was as follows:

Item	**Evaluation technology**	**Significant unobservable input value**	**Relations between significant unobservable input value and fair value**
Financial assets at fair value through other comprehensive income equity investments without an active market	Comparable listed company method	• Equity value multiplier (Decemeber.31.2019 and 2018 are 0.73%-18.08% and 0.13-2.14 respectively) • Discount on lack of market liquidity (December.31 2019 and 2018 are 22.45%-28% and 19.4%-50.57% respectively)	• The higher the multiplier, the higher the fair value • The higher discount on lack of market liquidity, the lower the fair value

(6) The fair value of the Group's financial instruments that use Level 3 inputs to measure fair value was based on the price of the third party. The Group did not disclose quantified information and sensitivity analysis on significant unobservable inputs because the unobservable inputs used in fair value measurement were not established by the Group.

(7) As of December 31, 2019 and 2018, there were no transfers at fair value level

(31) Financial risk management

1. Overview

The Group has exposures to the following risks from its financial instruments:

(a) Credit risk

(b) Liquidity risk

(c) Market risk

The following likewise discusses the Group's objectives, policies and processes for measuring and managing the above-mentioned risks. For more disclosures about the quantitative effects of these risk exposures, please refer to the respective notes in the accompanying consolidated financial statements.

2. Structure of risk management

The board of directors has overall responsibility for the establishment and oversight of the risk management framework. The board is responsible for developing and monitoring company's risk management policies. Internal auditors assist the board of directors to monitor and review the risk management control and internal procedures regularly and report them to the board of directors.

The Group's risk management policies are established to identify and analyze the risks faced by the Group, to set appropriate risk limits and controls, and to monitor risks and adherence to limits. Risk management policies and systems are reviewed regularly to reflect changes in market conditions and the Group's activities. The Group, through its training and management standards and procedures, aims to develop a disciplined and constructive control environment in which all employees understand their roles and obligations.

The Group's audit Committee oversees how management monitors compliance with the Group's risk management policies and procedures and reviews the adequacy of the risk management framework in relation to the risks faced by the Group. The Group audit committee is assisted in its oversight role by Internal Audit. Internal Audit undertakes both regular and ad hoc reviews of risk management controls and procedures, the results of which are reported to the audit committee.

3. Credit Risk

Credit risk is the risk of financial loss to the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations, and arises principally from the Group's receivables from customers and investments in debt securities.

(1) Accounts receivables and other receivables

The Group has established a credit policy under which each new customer is analyzed individually for creditworthiness before the Group's standard payment and delivery terms and conditions are offered. Purchase limits are established for each customer and reviewed quarterly. Customers that fail to meet the Group's benchmark creditworthiness may transact with the Group only on a prepayment basis.

(2) Investment

The exposure to credit risk for the bank deposits, fixed income investments, and other financial instruments is measured and monitored by the Group's finance department. The Group only deals with banks, other external parties, corporate organizations, government agencies and financial institutions with good credit rating. The Group does not expect any counterparty above fails to meet its obligations hence there is no significant credit risk arising from these counterparties.

(3) Guarantee

According to the Group's policy, the Group can only provide endorsements for companies with business dealing, the companies directly or indirectly owned more than 50% shares with voting right by the Group, or the companies directly or indirectly owned more than 50% shares with voting right of the Group. As of December 31, 2019 and 20178 the Group did not provide any endorsement guarantees except to its subsidiaries.

4. Liquidity Risk

There is no liquidity risk of being unable to raise capital to settle contract obligations since the Group has sufficient capital and working capital to fulfill contract obligations.

Loans and borrowings from the bank form an important source of liquidity for the Group. As of December 31, 2019 and 2018, the Group's unused credit line were amounted to NT$28,830,716 thousand and NT$23,634,968 thousand, respectively.

5. Market Risk

Market risk is the risk that changes in market prices, such as foreign exchange rates, interest rates and equity prices, which will affect the Group’s income or the value of its holdings of financial instruments. The objective of market risk management is to manage and control market risk exposures within acceptable parameters, while optimizing the return.

(1) Currency risk

The Group is exposed to currency risk on sales, purchases and borrowings that are denominated in currencies other than the respective functional currencies of the Group’s entities, primarily the New Taiwan Dollar (NTD), but also include the Chinese Yen (CNY), US Dollar (USD), Japanese Yen (JPY) and Euro (EUR). These transactions are denominated in NTD, USD, JPY and EUR.

Interest is denominated in the currency used in borrowings. Generally, borrowings are denominated in currencies that match the cash flows generated by the underlying operations of the Group, primarily NTD, but also include USD.

In respect of other monetary assets and liabilities denominated in foreign currencies, the Group ensures that its net exposure is kept to an acceptable level by buying or selling foreign currencies at spot rates when it is necessary to address short term imbalances.

(2) Interest rate risk

The Group holds variable rate assets and liabilities, which cause the exposure to interest rate risk in cash flows.

(3) Equity instrument price

The Group is exposed to equity price risk due to the investments in equity securities. This is a strategic investment and is not held for trading.

Please refer to Note 6 (30) for the risk of change.

(32) Capital Management

The board of directors' policy is to maintain a strong capital base in order to maintain investor, creditor and market confidence and to sustain future development of the business. Capital consists of share capital, capital surplus, retained earnings and non controlling interests of the Group. The board of directors monitors the return on capital as well as the level of dividends to ordinary stockholders.

The Group's debt to equity ratios at the end of the reporting periods were as follows:

	2019.12.31	2018.12.31
Total Liabilities	$ 60,767,455	56,071,450
Less: Cash and cash equivalent	(34,901,425)	(36,829,131)
Net liabilities	**$ 25,866,030**	**19,242,319**
Total Equity	**$ 48,616,041**	**47,913,865**
Debt to equity ratio	**53.20%**	**40.16%**

Due to an increase in provision, the debt to equity ratio increased.

(33) Investing and financing activities not affecting current cash flow

A. For acquiring right-of-use assets by lease, please refer to note 6(12).

B. Reconciliations of liabilities arising from financing activities were as follows:

	January 1, 2019	Cash flows	Foreign exchange movement and others	December 31, 2019
Short -term borrowings	$ 9,334,809	2,163,041	(32,775)	11,465,075
Long-term borrowings	2,040,200	(2,040,200)	-	-
Lease liabilities	1,179,268	(201,027)	(46,844)	931,397
Guarantee deposit received	342,861	(145,179)	(4,187)	193,495
Total liabilities from financing activities	**$ 12,897,138**	**(223,365)**	**(83,806)**	**12,589,967**

	January 1, 2018	Cash flows	Foreign exchange movement and others	December 31, 2018
Short -term borrowings	$ 13,753,204	(4,464,007)	45,612	9,334,809
Long-term borrowings	5,646,872	(3,606,672)	-	2,040,200
Guarantee deposit received	910,098	17,858	(585,095)	342,861
Total liabilities from financing activities	**$ 20,310,174**	**(8,052,821)**	**(539,483)**	**11,717,870**

7. Related party transactions

(1) Names and relationships of related parties

The parties involved in the transaction of the consolidated company during the period of the consolidated financial report are as follows:

Names of related parties	Relationships between the consolidated company
Solartech Energy Corp.	Main management of SAS. (Note 1)
URE	Main management of SAS. (Note 1)
Sunshine PV. Corporation (hereinafter referred to as Sunshine PV.)	Associate of URE
Song Long Electronics Corporation (hereinafter referred to Song Long Eletronics)	SAS's management is the director of the company
Actron Technology Corporation (hereinafter referred to as Actron Technology)	SAS's management is the director of the company/ Associate of the Group
Accu Solar Corporation	Associate of the Group
TSCS	Associate of the Group
Crystalwise Technology Inc.	Associate of the Group
Cathy Sunrise Corporation	Associate of the Group
Cathy Sunrise One Co., Ltd.	Subsidiary of the Group associate
Cathy Sunrise Two Co., Ltd.	Subsidiary of the Group associate
Cathy Sunrise Electric Power One Co., Ltd.	Subsidiary of the Group associate
Cathy Sunrise Electric Power Two Co., Ltd.	Subsidiary of the Group associate
Sunrise PV One Co., Ltd.	Subsidiary of the Group associate
Sunrise PV Five Co., Ltd.	Subsidiary of the Group associate(Note 2)

Note 1: Solartech Energy was merged and cancelled in October 2018. The existing company was renamed URE.
Note 2: Sunrise PV Five Co., Ltd was sold to Cathy Sunrise Corporation in 2019.

(2) Significant transactions with related parties

1. Sales

The amount of significant sales and engineering contract revenue by the Group related parties were as follows:

	2019	2018
Associate	$ 918,154	956,605
Other related parties	120,007	439,403
	$ 1,038,161	**1,396,008**

The sales price for sales and engineering to the related parties was determined by market value and adjusted according to the sales area and sales volume.

The credit terms for third parties were 0 to 210 days in 2019 and 2018, while those for related parties were 30 days after month-end, receipt in advanced to 180 days after month-end and 30 days after month-end to 180 days after shipment in 2019 and 2018.

The engineering sales of the Group and associate was refunded in 2018 due to the withdrawal of the project. The amount of the project received and returned was NT$ 50,227 thousands. As of December 31, 2018, it was booked under the item of related parties.

2. Purchase and outsourced processing

The amounts of purchases and process outsourcing by the Group from related parties were as follows:

	2019	2018
Associate	$ 79	12,949
Other related parties	11,248	25,324
	$ 11,327	38,273

The prices of purchases and process outsourcing were determined by market rates.

The payment terms to third parties were 0 to 150 days after month end both in 2019 and 2018, while those to related parties were prepayment to 90 days after month end and 15 to 60 days after month end in 2019 and 2018.

For the purchase of raw materials, the Company's prepayment to other related parties was NT$ 1,179 thousands, which is accounted for under the prepaid materials.

3. Receivables from related parties

The receivables from related parties were as follows:

Account	Categories	2019.12.31	2018.12.31
Receivables from related parties	Associate	$ 61,303	42,133
Receivables from related parties	Other related parties	6,648	64,950
		$ 67,951	107,083

In order to maintain a stable supply of raw materials required for production, the related parties successively signed short-term and long-term supply contracts with the Group, and the details of the receipts in advance to the related parties (recognized as contract liabilities - current / non-current) were as follows:

	2019.12.31	2018.12.31
Other related party-URE	$ 883,220	883,697

4. Payables to related parties

The payables to related parties were as follows:

Account	Categories	2019.12.31	2018.12.31
Receivable from related parties	Associate	$ 7,052	319

5. Transactions of property, plant and equipment

Disposals of property, plant and equipment to related parties are summarized as follows:

	2019		2018	
	Disposal price	Receivable from related parties	Disposal price	Receivable from related parties
Associate	$ 35,616	4,859	-	-

For the year end December 31, 2019 and 2018, the gain from disposal property, plant and equipment were NT$1,006 thousand and NT$0 thousand respectively.

Purchase amounts of property, plant and equipment from related parties were summarized as follows:

	2019		2018	
	Amount	Payable to related parties	Amount	Payable to related parties
Associate	$ -	-	5,092	-

6. Corporate bonds

In October 2016 and January 2019, the Group purchased the five-year private issued corporate bonds and the one-year private issued corporate bonds of Crystalwise Technology, by NT$ 280,000 thousand and NT$ 250,000 thousand respectively. The interest rate and the coupon rate were both 2%.

Interest income for the year 2019 and 2018 were NT$ 11,753 thousands and NT$ 5,600 thousands respectively. As of December 31, 2019 and 2018, the accumulated investment cost and interest receivable were NT$ 507,680 thousand and NT$ 281,366 thousand respectively, recognized as financial assets measured at amortized cost - current and non-current.

7. Payment on behalf of others

The receivables from related parties and payables to related parties generated from material purchases, insurance and utilities payments and manpower support of related parties as of December 31, 2019 and 2018 were as follows:

	2019.12.31	2018.12.31
Associate	$ 155	6,832
Associate	(956)	(796)
	$ (801)	6,036

8. Others

The Group signed the plant lease contract with the related parties. The details of rental expenses and payables to the related parties were as follows:

	2019	2018
Associate	$ -	2,142

As of December 31, 2019 and 2018, the payable of the above transactions had been fully paid.

(2) The Group signed the plant lease contract with the related parties. The details of rental income and receivables to the related parties were as follows:

	2019	2018
Associate	$ 310	225

As of December 31, 2019 and 2018, the receivable from the above transactions had been fully received.

(3) Key management

Key management personnel compensation comprised of:

	2019	2018
Short-term employee benefits	$ 380,118	314,161
Post-employment benefits	1,460	1,590
Share-based payments	14,844	73,612
	$ 396,422	389,363

The Group provided two cars costing $3,000 thousand, and four cars costing $4,444 thousand, for key management use in 2019 and 2018, respectively.

8. Pledged Assets

The carrying values of pledged assets were as follows:

Assets	Pledge or Mortgage underlying subject	2018.12.31	2017.12.31
Property, plant and equipment	Borrowings payable	$ 3,155,429	3,475,408
Time deposits (recognized in other financial assets - current)	Guarantees of acceptances bill	39,977	22,393
Refundable deposits (recognized in other financial assets－non-current)	Guarantee for the lease contract with the Hsinchu Science Industrial Park Bureau	48,571	40,838
Time deposits (recognized in other financial assets－non-current)	Guarantee for gas consumption from CPC Corporation	6,700	6,700
Time deposits (recognized in other financial assets－non-current))	Government grant	2,353	13,597
Time deposits (recognized in other financial assets－non-current))	Guarantee payment for import VAT	5,000	5,000
Time deposits (recognized in other financial assets－non-current))	Court guarantee	10,748	10,748
Time deposits (recognized in other financial assets－non-current)	Tax-Refunded Restricted Deposits for Returning Overseas Funds to Taiwan	2,998,120	-
Refundable deposits (recognized in other financial assets-non-current))	Deposits of material purchase	-	167,125
Refundable deposits (recognized in other financial assets-non-current))	Court litigation	22,020	22,440
		$ 6,288,918	3,764,249

9. Significant commitments and contingencies

Except as stated in Note 6 (21), other significant contingencies liabilities and unrecognized contractual commitments were as follows:

(1) Significant unrecognized contractual commitments

1. The purchase amounts for future delivery from suppliers under the existing agreements and the negotiated agreement were as follows:

(Expressed in thousands of foreign currency)

	2019.12.31	2018.12.31
USD	$ 942,387	1,236,606

EUR	**$ 3,779**	**12,157**
JPY	**$ -**	**2,145,137**

Silicon supplier Hemlock Semiconductor Pte. Ltd. (hereinafter referred to as Hemlock) sent a notice requesting that Sino-American Silicon Products Inc.'s confiscated prepayment, payment for goods not received and the interest related to the late payment in accordance with to the long-term purchase contract be accumulated to December 31 2018 was US$ 615,982 thousands. The Company and Hemlock renegotiated in June 2019 to amend the important terms of the long-term procurement contract, pending agreement between the parties.

2. In response to the long-term purchase contract referred above, the Company has silicon wafer long-term sales contracts signed with the customers since the year 2005. These companies agree to pay the non-refundable funds to the Company. The two parties agreed to have silicon wafers sold in accordance with the agreed quantity and price from January 1, 2006 to December 31, 2019. If the delivery has not been made in compliance with the contract signed, a sales discount or an amount equivalent to 1.5-4 times of the advance sales receipts from customers as remuneration should be granted. If the delay of shipment has not been resolved for more than three months, the outstanding pre-payment should be refunded. In addition, in response to the price decline arising from the falling demand, solar energy battery customers and the Company will negotiate the selling price and adjusting the average selling price in accordance with market conditions.

   The amount of delivery according to the existing contracts and current market conditions is as follows:

(Expressed in thousands of foreign currency)

	2019.12.31	**2018.12.31**
USD	**$ 29,852**	**91,640**
EUR	**$ 25,695**	**68,815**
NTD	**$ 54,845**	**54,845**

3. As of December 31, 2019 and 2018, the significant outstanding commitments for construction and purchase of property, plant and equipment amounted to NT$ 6,669,493 thousand and NT$9,738,372 thousand, respectively.

4. On December 31, 2019 and 2018, the total amount of promissory notes deposited by the Group at the bank for acquiring bank financing were NT$ 12,869,060 thousand and NT$ 11,549,325 thousand respectively.

5. As of December 31, 2019 and 2018, a guarantee letter for the Customs Administration and Research and Development which was the Group requested a bank to issue amounted NT$ 23,230 thousand and NT$ 50,400 thousand respectively.

6. On December 31, 2019 and 2018, the Group’s outstanding standby letters of credit were as follows:

(Expressed in thousands of foreign currency)

	2019.12.31	2018.12.31
USD	$ 10,269	3,191
DKK	$ -	3,750

7. The Group had a long term sales contract with some customers and received the advance payment. The customer is required to order minimum quantity according to the contract. As of December 31, 2019 and 2018, a guarantee letter for the customer which was the Group requested a bank to issue amounted NT$111,871 thousand and NT$117,233 thousand, respectively.

8. The Group has made an application of the Management, Utilization, and Taxation of Repatriated Offshore Funds Act to the tax authorities on November 28, 2019 and February 21, 2020. The application was approved and the fund was repatriated. Up to 5% of the funds could be withdrawn and freely utilized. The remaining 95% can only be withdrawn for the investments approved by the Ministry of Economic Affairs, R.O.C. upon the elapse of five full years after the date of depositing the fund into a segregated foreign exchange deposit account The Group has made an application to utilize the fund for capital investment. The fund is planned to utilize for factory extension, purchase of factory's facilities and other related capital expenditure.

(2) Contingent liabilities

Hemlock filed summons and complaints against the Company and were delivered to the Company on May 12, 2015. Both parties reached an agreement in May 2016 then signed STIPULATION OF DISCONTINUANCE and SETTLEMENT AGREEMENT, where the Company needs to purchase certain amount of polysilicon from Hemlock and its related companies based on SETTLEMENT AGREEMENT. Also, two parties signed an additional agreement of Accommodation Letter to amend SETTLEMENT AGREEMENT and extend the date of litigation termination under STIPULATION OF DISCONTINUANCE against the Company until April 30, 2019, which Hemlock agreed in December 2019 to further extend the extension to December 31, 2019. In June 2019, both parties agreed to amend the important terms such as price and quantity of the original contract. The Company, in accordance with the terms of the proposed revised contract, recognized provision for loss-making contract liabilities. As of December 31, 2019, the above-mentioned provision for loss-making contract liabilities amounted to $4,069,986 thousand.

10. Losses due to major disaster: None.

11. Subsequent Events

(1) In order to streamline the corporate structure, it was resolved by the Board of Directors on December 12, 2019 to merge the 100% held subsidiary, Sunrise PV World Co. After the merger, the Company was the survival company while Sunrise PV World Co. was the eliminated company. The consolidated base date for this merger was January 31, 2020.

(2) Globalwafer's board of directors approved on December 27, 2019 a plan of reorganization so that Globalwafer would merge with Taisil, a 99.99% equity held subsidiary. Globalwafer would be the existing company and Taisil was dissolved after merging, on February 1, 2020.

(3) By resolution of the Board of Directors on December 12, 2019, in order to meet the operating needs, the Group intended to purchase plant and equipment from Crystalwise Technology Inc. for $860,000 thousand. The deposit of $250,000 thousand was paid at the time of signing the sale contract in January 2020, and the remaining price will be paid after completing the ownership transfer registration.

12. Others

A summary of the employee benefits, depreciation, and amortization expenses, by function is as follows:

By Function / By Item	2019			2018		
	Cost of goods sold	Operating expenses	Total	Cost of goods sold	Operating expenses	Total
Employee benefits						
Salary	7,483,089	2,654,512	10,137,601	7,693,736	2,404,588	10,098,324
Labor and health insurance	1,275,343	291,481	1,566,824	1,215,231	272,420	1,487,651
Pension	419,537	91,579	511,116	393,155	105,465	498,620
Others	626,980	133,916	760,896	620,301	141,123	761,424
Depreciation	4,827,331	203,095	5,030,426	5,396,123	232,110	5,628,233
Amortization	358,628	6,202	364,830	361,354	3,425	364,779

13. Other disclosures

(1) Information on significant transactions

The following is the information on significant transactions required by the “Regulations Governing the Preparation of Financial Reports by Securities Issuers” for the Group:

1. Loans to other parties: Please refer to Table 1.

2. Guarantees and endorsements for other parties: Please refer to Table 2.

3. Securities held as of December 31, 2019 (excluding investment in subsidiaries, associates and joint ventures): Please refer to Table 3.

4. Individual securities acquired or disposed of with accumulated amounts exceeding the lower of NT$300 million or 20% of the capital stock: Please refer to Table 4.

5. Acquisition of individual real estate with amount exceeding the lower of NT$300 million

or 20% of the capital stock: Please refer to Table 5.

6. Disposal of individual real estate with amount exceeding the lower of NT$300 million or 20% of the capital stock: None

7. Related-party transactions for purchases and sales with amounts exceeding the lower of NT$100 million or 20% of the capital stock: Please refer to Table 6.

8. Receivables from related parties with amounts exceeding the lower of NT$100 million or 20% of the capital stock: Please refer to Table 7.

9. Trading in derivative instruments: Please refer to notes 6(2).

10. Business relationships and significant intercompany transactions: Please refer to Table 8.

(2) Information on investees: Please refer to Table 9.

(3) Information on investment in Mainland China:

1. The names of investees in Mainland China, the main businesses and products and other information: Please refer to Table 10(1).

2. Limitation on investment in Mainland China: Please refer to Table 10(2).

3. Significant transactions:
   The significant inter company transactions with the subsidiary in Mainland China, which were eliminated in the preparation of consolidated financial statements, are disclosed in the "Information on significant transactions"

14. Segment information

(1) Segment information

Reconciliation for segment Revenue (loss):

	2019			
	Semiconductor Department	**Solar energy Department**	**Reconciliation and elimination**	**Total**
Revenues				
Revenue from external customers	$ 58,089,953	7,420,272	-	65,510,225
Intersegment revenues	4,378	877,825	(882,203)	-
Total revenue	$ 58,094,331	8,298,097	(882,203)	65,510,225
Interest expenses	$ 71,714	78,693	-	150,407
Depreciation and amortization	$ 4,734,770	660,486	-	5,395,256
Reportable segment profit or loss	$ 13,635,656	(4,395,881)	-	9,239,775

Share of profit (loss) of associates and joint ventures accounted for using equity method				(344,430)
				$ 8,895,345
Reportable segment Assets	**$ 96,013,824**	**10,368,378**	**(247,243)**	106,134,959
Investments accounted for using equity method				3,248,537
				$ 109,383,49(
Reportable segment liabilities	**$ 51,512,503**	**9,502,195**	**(247,243)**	**60,767,455**

	2018			
	Semiconductor Department	**Solar energy Department**	**Adjustment and elimination**	**Total**
Revenues				
Revenue from external customers	$ 59,044,094	10,194,851	-	69,238,945
Intersegment revenues	19,416	677,097	(696,513)	-
Total revenue	**$ 59,063,510**	**10,871,948**	**(696,513)**	**69,238,945**
Interest expenses	**$ 108,013**	**103,990**	**-**	**212,003**
Depreciation and amortization	**$ 4,812,838**	**1,170,174**	**-**	**5,983,012**
Reportable segment profit or loss	**$ 13,616,234**	**(4,744,345)**	**-**	8,871,889
Share of profit (loss) of associates and joint ventures accounted for using equity method				(236,409)
				$ 8,635,480
Reportable segment Assets	**$ 89,664,721**	**12,455,852**	**(177,154)**	101,943,419
Investments accounted for using equity method				2,041,896
				$ 103,985,315
Reportable segment liabilities	**$ 46,494,941**	**9,753,663**	**(177,154)**	**56,071,450**

(2) Information by product:

The Group's revenue from external customers and the relevant customer contract revenue, please refer to note 6(25).

(3) Geographical information:

Segment revenue is presented by the geographical location of customers and non-current assets are presented by the geographical location of the assets as follows:

A. The Group's revenue from external customers and the relevant customer contract revenue, please refer to note 6(25).

1. Non current assets:

Area	**2019.12.31**	**2018.12.31**
Korea	$ 12,564,394	8,398,373
Taiwan	9,403,083	10,331,375
United States	8,621,899	6,548,067
Japan	6,989,861	6,333,308
Italy	3,382,102	3,557,669
Philippines	2,124,841	2,307,955
Others	1,947,597	3,646,316
	$ 45,033,777	**41,123,063**

(4) Major customers information

Sales to individual customers representing greater than 10% of net sales of the Group :

	2019	**2018**
Customer C group	**$ 10,253,312**	**9,494,244**

Sino-American Silicon Products Inc.
Loans to other parties
For the year ended December 31, 2019

Attachment 1

Unit: NT$ Thousand

No.	Name of lender	Name of borrower	Account name	Related party	Highest balance of financing to other parties during the period	Ending balance	Actual usage amount during the period	Range of interest rates during the period	Purposes of fund financing for the borrower (Note 1)	Transaction amount for business between two parties	Reasons for short term financing	Loss allowance	Collateral		Individual funding loan limits (Note 2)	Maximum limit of fund financing (Note 3)
													Item	Value		
0	Sino-American Silicon Products Inc.	Sulu	Loan receivable – related party	Yes	948,000 (USD30,000)	899,400 (USD30,000)	298,901 (USD9,970)	2.00%	2	-	Working capital	-		-	10,668,096	10,668,096
0	Sino-American Silicon Products Inc.	Sunrise PV World Co.	Loan receivable – related party	Yes	500,000	500,000	-	2.50%	2	-	Working capital	-		-	10,668,096	10,668,096
0	Sino-American Silicon Products Inc.	Sunrise PV Five	Loan receivable – related party	Yes	300,000	-	-	2.50%	2	-	Working capital	-		-	10,668,096	10,668,096
0	Sino-American Silicon Products Inc.	Sunrise PV Electric	Loan receivable – related party	Yes	200,000	-	-	2.50%	2	-	Working capital	-		-	10,668,096	10,668,096
0	Sino-American Silicon Products Inc.	Sunrise PV Three Energy	Loan receivable – related party	Yes	300,000	300,000	52,000	2.50%	2	-	Working capital	-		-	10,668,096	10,668,096
0	Sino-American Silicon Products Inc.	Aleo Solar	Loan receivable – related party	Yes	283,040 (EUR8,000)	-	-	2.00%	2	-	Working capital	-		-	10,668,096	10,668,096
1	SSTI	Sulu	Loan receivable – related party	Yes	419,269 (USD13,268)	317,788 (USD10,600)	317,788 (USD10,600)	2.00%	2	-	Working capital	-		-	1,943,776	1,943,776
1	SSTI	AMLED	Loan receivable – related party	Yes	339,709 (USD11,138)	333,917 (USD11,138)	333,917 (USD11,138)	2.00%	2	-	Working capital	-		-	1,943,776	1,943,776

No.	Name of lender	Name of borrower	Account name	Related party	Highest balance of financing to other parties during the period	Ending balance	Actual usage amount during the period	Range of interest rates during the period	Purposes of fund financing for the borrower (Note 1)	Transaction amount for business between two parties	Reasons for short term financing	Loss allowance	Collateral		Individual funding loan limits (Note 2)	Maximum limit of fund financing (Note 3)
													Item	Value		
2	SAS Sunrise Inc.	Sulu	Loan receivable – related party	Yes	191,084 (USD6,200)	-	-	4.00%	2	-	Working capital	-		-	922,234	922,234
3	Aleo Solar	Aleo Sunrise	Loan receivable – related party	Yes	282,560 (EUR8,000)	-	-	2.00%	2	-	Working capital	-		-	385,238	385,238
4	Aleo Solar	Aleo Sunrise	Loan receivable – related party	Yes	219,936 (USD6,960)	-	-	2.00%~ 4.00%	2	-	Working capital	-		-	1,098,202	1,098,202
5	Sunrise PV World Co.	Sunrise PV Four	Loan receivable – related party	Yes	30,000	-	-	2.00%	2	-	Working capital	-		-	110,532	110,532
6	GWJ	GlobalWafers	Loan receivable – related party	Yes	4,420,500	4,140,000	4,140,000	0.47909%~ 0.53909%	1	5,998,428	Business transactions	-		-	5,998,428	15,279,926
6	GWJ	MEMC Japan	Loan receivable – related party	Yes	294,700	276,000	-	0.56909%	2	-	Working capital	-		-	15,279,926	15,279,926
7	MEMC SpA	GWS	Loan receivable – related party	Yes	2,759,640	2,620,020	2,047,302	3.559%	2	-	Working capital	-		-	11,849,317	11,849,317
8	Taisil	GlobalWafers	Loan receivable – related party	Yes	6,400,000	6,400,000	6,400,000	1.50%	2	-	Business transactions	-		-	7,091,890	7,091,890
9	GTI	MEMC LLC	Loan receivable – related party	Yes	632,000	599,600	-	3.51%	2	-	Working capital	-		-	9,486,787	9,486,787

No.	Name of lender	Name of borrower	Account name	Related party	Highest balance of financing to other parties during the period	Ending balance	Actual usage amount during the period	Range of interest rates during the period	Purposes of fund financing for the borrower (Note 1)	Transaction amount for business between two parties	Reasons for short term financing	Loss allowance	Collateral		Individual funding loan limits (Note 2)	Maximum limit of fund financing (Note 3)
													Item	Value		
10	GWS	GWBV	Loan receivable – related party	Yes	3,050,000	2,998,000	2,998,000	2.50%	2	-	Working capital	-		-	25,151,706	25,151,706
10	GWS	GlobalWafers	Loan receivable – related party	Yes	10,792,800	10,792,800	-	2.50%	2	-	Working capital	-		-	6,434,620	6,434,620
10	GWS	GWI	Loan receivable – related party	Yes	3,258,826	3,258,826	3,258,826	2.50%	2	-	Working capital	-		-	3,492,437	3,492,437

Note 1: The entry method for the loaning of funds is as follows:

(1) For business transactions, please fill in 1.

(2) Necessary for short-term financing, please fill in 2.

Note 2: (1) For the Company's loan of funds to those having business transactions, the individual loan is limited to the trade amount between the two parties in the most recent year; for the loan of funds to companies necessary for short-term financing, the individual loan is limited to 40% of the net worth of the company that lends loan; for loan of funds among foreign companies that the Company directly and indirectly holds 100% of the voting shares, the individual loan is limited to 40% of the net worth of the company that lends loan.

(2)For GlobalWafers and its subsidiaries’ loan of funds to those having business transactions, the individual loan is limited to the trade amount between the two parties in the most recent year; for the loan of funds to companies necessary for short-term financing, the individual loan is limited to 40% of the net worth of GlobalWafers; the fund-lendings between the foreign companies whose voting shares are 100% owned, directly or indirectly, by the Company, or from the foreign companies whose voting shares are 100% owned, directly or indirectly, by the Company to the Company are not subject to the previous provision of net worth and not subject to the one-year limit of the term of funds in Article 4, Paragraph 1, but should still specify in its internal operating procedures for fund-lending limit and period.

Note 3: (1) For the Company's loan of funds to those having business transactions, the total loan is limited to 40% of the company that lends loan; for the loan of funds to companies necessary for short-term financing, the total loan is limited to 40% of the net worth of the company that lends loan; the fund-lendings between the foreign companies whose voting shares are 100% owned, directly or indirectly, by the Company, or from the foreign companies whose voting shares are 100% owned, directly or indirectly, by the Company to the Company are not subject to the previous provision of net worth and not subject to the one-year limit of the term of funds in Article 4, Paragraph 1, but should still specify in its internal operating procedures for fund-lending limit and period.

(2) For GlobalWafers and its subsidiaries' loan of funds to those having business transactions, the total loan is limited to 40% of the company that lends loan; for the loan of funds to companies necessary for short-term financing, the total loan is limited to 40% of the net worth of the company that lends loan; for loan of funds among foreign companies that GlobalWafers directly and indirectly holds 100% of the voting shares, or between the foreign companies and GlobalWafers, the total loan is limited to 2 times of the net worth of GlobalWafers.

(3) For loan of funds of Aleo Solar, the total loan is limited to 100% of the net worth of the company that lends loan.

(4) For loan of funds of Sulu and Sunrise PV World to those having business transactions, the total loan is limited to 40% of the company that lends loan; for the loan of funds to companies necessary for short-term financing, the total loan is limited to 40% of the net worth of the company that lends loan; for loan of funds among foreign companies that the company that lends loan directly and indirectly holds 100% of the voting shares, the total loan is limited to 40% of the net worth of the company that lends loan.

(5) For loan of funds of SSTI、 SAS Sunrise Inc. and SAS Sunrise Pte Ltd. to those having business transactions, the total loan is limited to 2 times of the company that lends loan;

for the loan of funds to companies necessary for short-term financing, the total loan is limited to 2 times of the net worth of the company that lends loan; for loan of funds among foreign companies that the company that lends loan directly and indirectly holds 100% of the voting shares, the total loan is limited to 40% of the net worth of the company that lends loan.

Note 4: Transactions with standalone parties as mentioned above were eliminated when preparing the standalone reports.

Sino-American Silicon Products Inc.
Guarantees and endorsements for other parties
For the year ended December 31, 2019

Attachment 2

Unit: NT$ Thousand

No.	Name of guarantor	Counter party of guarantee and endorsement		Limitation on amount of guarantees and endorsements for a specific enterprise	Highest balance for guarantees and endorsements during the period (Notes 3, 8 and 9)	Balance of guarantees and endorsements as of reporting date	Actual usage amount during the period	Property pledged for guarantees and endorsements (Amount)	Ratio of accumulated amounts of guarantees and endorsements to net worth of the latest financial statements	Maximum amount for guarantees and endorsements	Parent company endorsements/ guarantees to third parties on behalf of subsidiary (Notes 3, 8and 9)	Subsidiary endorsements/ guarantees to third parties on behalf of parent company	Endorsements/ guarantees to third parties on behalf of companies in Mainland China
		Name	Relationship with the Company (Note 2)										
0	Sino-American Silicon Products Inc.	SAS Sunrise Inc.	2	26,670,241	252,800 (USD8,000) (note4)	-	-	-	-	26,670,241	Y	N	N
0	Sino-American Silicon Products Inc.	Sulu	2	1,545,758 (note7)	1,453,600 (USD46,000) (note6)	1,379,080 (USD46,000)	1,379,080 (USD46,000) (note6)	-	5.17%	1,545,758 (note7)	Y (note5)	N	N
0	Sino-American Silicon Products Inc.	Sunrise PV World Co.	2	26,670,241	200,000	200,000	4,230	-	0.75%	26,670,241	Y	N	N
0	Sino-American Silicon Products Inc.	Sunrise PV World and its 100% owned subsidiaries	2	26,670,241	500,000	500,000	-	-	1.87%	26,670,241	Y	N	N
0	Sino-American Silicon Products Inc.	Sunrise PV World Co	2	26,670,241	100,000	-	-	-	-	26,670,241	Y	N	N
1	GlobalWafers	Topsil A/S	2	45,067,015	117,950	112,250	33,675	-	0.25%	135,201,045	N	N	N
1	GlobalWafers	GWS	2	45,067,015	1,896,000	1,798,800	384,827	-	3.99%	135,201,045	N	N	N
2	GTI	MEMC LLC	2	47,433,935	474,000	449,700	97,831	-	4.74%	47,433,935	N	N	N

No.	Name of guarantor	Counter party of guarantee and endorsement		Limitation on amount of guarantees and endorsements for a specific enterprise	Highest balance for guarantees and endorsements during the period (Notes 3, 8 and 9)	Balance of guarantees and endorsements as of reporting date	Actual usage amount during the period	Property pledged for guarantees and endorsements (Amount)	Ratio of accumulated amounts of guarantees and endorsements to net worth of the latest financial statements	Maximum amount for guarantees and endorsements	Parent company endorsements/ guarantees to third parties on behalf of subsidiary (Notes 3, 8and 9)	Subsidiary endorsements/ guarantees to third parties on behalf of parent company	Endorsements/ guarantees to third parties on behalf of companies in Mainland China
		Name	Relationship with the Company (Note 2)										
3	Sunrise PV World Co.	Sunrise PV Four	2	1,105,320	170	170	170	-	0.06%	1,105,320	N	N	N
3	Sunrise PV World Co.	Sunrise PV Three	2	1,105,320	421	421	421	-	0.15%	1,105,320	N	N	N

Note 1: The method of filling the nature of endorsement guarantee is as follows:
(1) The issuer fills in 0.
(2) The investee company is numbered sequentially by the company starting from the Arabic number 1.

Note 2: There are the following seven types of relationship between the endorsement guarantor and the endorsed object:
(1) A company with business transactions.
(2) Companies that the Company directly and indirectly holds more than 50% of the voting shares.
(3) Companies that directly and indirectly holds more than 50% of the voting shares of the Company.
(4) Among companies that the Company directly and indirectly holds more than 90% of the voting shares.
(5) Companies in the same industry or joint constructors that are mutually guaranteed under contractual requirements based on the needs of contracting project.
(6) A company that is endorsed by all the contributing shareholders in accordance with their shareholding ratio due to the joint investment relationship.
(7) The joint performance guarantee of the pre-sale house sales contract among companies in the same industry in accordance with Consumer protection law.

Note 3: (1)The amount of endorsements/guarantees provided by the endorsement guarantor company for a single enterprise is limited to 10% of the net worth of the company providing the endorsements/guarantees, but for the subsidiary company, limited to one time of the net worth of the company providing the endorsements/guarantees. The total amount of accumulated endorsements/guarantees shall not exceed the net worth of the Company. The total amount of the Company's endorsements/guarantees and that for a single enterprise shall not exceed five times the net worth of the company providing endorsements/guarantees. The aforesaid net worth is based on the financial statements recently audited or reviewed by an accountant. For endorsements/guarantees due to business transactions, except subject to the provisions of the preceding item, the endorsement guarantee amount should be equal to the higher of the purchase or sales amount.
(2) The Company’s performance bond for duty paid after customs release is NT$ 10,000 thousands

Note 4: This amount is USD 8,000 thousands individual quota for SAS Sunrise Inc..

Note 5: The Company controls the financial and operating strategies of Sulu through effective agreements with other investors of Sulu, so Sulu is considered as a subsidiary.

Note 6: Sulu shares with the company a quota of USD 10,000 thousands and Sulu's individual quota is USD 36,000 thousands. The Company resolved on October 14, 2016 by the board of directors to repay part of the loan, and reduce the endorsements/guarantees quota to USD 46,000 thousands and repay the bank loan on October 19, 2016. The actual disbursement amount was reduced to USD 46,000 thousands.

Note 7: The endorsements/guarantees quota for Sulu is calculated as US$ 46,211 thousands, the amount of sales at the time of endorsements/guarantees.

Note 8: The method of endorsements/guarantees of GlobalWafers and its subsidiaries s are as follows:
(1) The total amount of accumulated endorsements/guarantees of GlobalWafers shall not exceed three times the net worth of the most recent financial statements of GlobalWafers.
(2) The amount of endorsements/guarantees of GlobalWafers for a single enterprise shall not exceed 10% of the net worth of the most recent financial statements of GlobalWafers. For subsidiaries, 1 time of the net worth of GlobalWafers.
(3) GlobalWafers’s performance bond for duty paid after customs release is NT$ 9,000 thousands.

(3) Taisil's performance bond for duty paid after customs release is NT$ 5,000 thousands.

Note 9: The method of endorsements/guarantees of Sunrise PV World and its subsidiaries s are as follows:

(1) The total amount of accumulated endorsements/guarantees of Sunrise PV World shall not exceed four times the net worth of the most recent financial statements of Sunrise PV World.

(2) The amount of endorsements/guarantees of Sunrise PV World for a single enterprise shall not exceed 10% of the net worth of the most recent financial statements of Sunrise PV World. For subsidiaries, 4 times of the net worth of Sunrise PV World.

(3) The total amount of Sunrise PV World's endorsements/guarantees and that for a single enterprise shall not exceed five times the net worth of the most recent financial statements of Sunrise PV World.

(4) For endorsements/guarantees due to business transactions, except subject to the provisions of the preceding item, the endorsement guarantee amount of Sunrise PV World should be equal to the higher of the purchase or sales amount.

Sino-American Silicon Products Inc.

Securities held as of December 31, 2018 (excluding investment in subsidiaries, associates and joint ventures)

December 31, 2019

Attachment 3

Unit: NT$ thousand / thousand shares / thousand sheets; thousand units

Name of holder	Category and name of security	Relationship with the Company	Account title	Ending balance				Remarks
				Shares/Units (thousands)	Carrying value	Percentage of ownership (%)	Fair value	
Sino-American Silicon Products Inc.	Corporate bonds of Crystalwise Technology	Affiliated companies	Financial assets measured at amortized cost-current and non-current	530	507,680	-	507,680	
Sino-American Silicon Products Inc.	Stock of Powertec Energy Corporation	-	Financial assets at fair value through other comprehensive income	30,410	-	2.31%	-	
Sino-American Silicon Products Inc.	Stock of Giga Epitaxy Technology Corp.	-	Financial assets at fair value through other comprehensive income	531	6,095	1.61%	6,095	
Sino-American Silicon Products Inc.	Stock of Big Sun	-	Financial assets at fair value through other comprehensive income	7,500	-	4.12%	-	
SSTI	Stock of SILFAB SPA	-	Financial assets at fair value through other comprehensive income	300	326,090	15.00%	326,090	
Sino-American Silicon Products Inc.	Stock of SONGLONG ELECTRONICS CO., LTD.	Sino-American Silicon Products Inc.'s management is the director of the company	Financial assets at fair value through profit or loss-non current	221	-	13.81%	-	
Sino-American Silicon Products Inc.	Stock of 21-Century Silicon Inc.	-	Financial assets at fair value through profit or loss-non current	1,000	-	-	-	
SSTI	Stock of Clean Venture 21 Corporation	-	Financial assets at fair value through profit or loss-non current	10	-	7.20%	-	
GlobalWafers	CDIB Capital Growh Partners L.P	-	Financial assets at fair value through profit or loss-non current	-	95,163	3.85%	95,163	
GWBV	Overseas securities held	-	Financial assets at fair value through profit or loss-current	-	1,876,656	-	1,876,656	

Sino-American Silicon Products Inc.

Accumulatively buy or sell the same marketable securities amounting to NT$ 300 million or 20% of paid-in capital

For the year ended December 31, 2019

Attachment 4

Unit: thousand shares /NT$ thousand

Buying and selling companies	Types and names of securities	Account titles	Counter party	Relationship	Beginning of the period		Buy		Sell				End of the period	
					Number of shares	Amount	Number of shares	Amount	Number of shares	Selling price	Carrying cost	Disposition gain or loss	Number of shares	Amount
Sino-American Silicon Products Inc.	Stock of URE	Financial assets at fair value through other comprehensive income	-	-	34,492	270,073 (note)	-	-	34,492	313,662	348,370	(34,708)	-	-
Sino-American Silicon Products Inc.	Stock of Actron	Financial assets at fair value through other comprehensive income/investment in equity method	-	-	3,210	319,427 (note)	10,975	1,009,500	-	-	-	-	14,185	1,031,956 (note)
GWBV	Overseas securities held	Financial assets at fair value through profit or loss	-	-	-	-	-	1,876,656	-	-	-	-		1,876,656

Note: including the unrealized valuation gain or loss measured by Fair value and investment gain or loss under equity method.

Sino-American Silicon Products Inc.

Acquisition of individual real estate with amount exceeding the lower than NT$300 million or 20% of the capital stock

For the year ended December 31, 2019

Attachment 5

Unit: NT$ Thousand

Name of company	Name of property	Transaction date	Transaction amount	Status of payment	Counter-party	Relationship with the Company	If the counter party is a related party, disclose the previous transfer information				References for determining price	acquisition and current condition	Other
							Owner	Relationship with the Company	Date of transfer	Amount			
MEMC Korea	Property, plant and equipment	October 5, 2018	1,788,848	To the progress of the project	Sungdo Eng. Company	Non-parties Company	-	-	-	-	Fair value	For operating purpose	None
MEMC Korea	Property, plant and equipment	September 2018	323,297	To the progress of the project	L.Keeley Construction	Non-parties Company	-	-	-	-	Fair value	For operating purpose	None
Sino-American Silicon Products Inc.	Stock of Actron	December 12,2019	860,000	-	Crystalwise	Parent company	-	-	-	-	Accounted for at fair value	For operational use	The deposit of $250,000 thousand was paid at the time of signing the sale contract, and the remaining price will be paid after completing the ownership transfer registration.

Sino-American Silicon Products Inc.

Related party transactions for purchases and sales with amounts exceeding the lower than NT$ 300 million or 20% of the capital stock

For the year ended December 31, 2019

Attachment 6 Unit: NT$ Thousand

Name of company	Related party	Nature of relationship	Transaction situation				Transactions with terms different from others		Notes/Accounts receivable (payable)		Remarks
			Purchase/Sale	Amount	Percentage of total purchases/sales	Payment terms	Unit price	Payment terms	Ending balance	Percentage of total notes/accounts receivable (payable)	
Sino-American Silicon Products Inc.	Aleo Solar	Subsidiaries directly held by the parent company.	Sales	(142,736)	(2)%	Net 90 days	-		-	-%	
Aleo Solar	Aleo Solar Distribuzion Italia S.r.l	Subsidiaries indirectly held by the parent company.	Sales	(268,427)	(19)%	Net 60 days	-		88,870	66%	Note
Sunrise PV World Co.	Sunrise PV One	Chairman of the parent company is also the Chairman of Sino-American Silicon Products Inc.	Sales	(713,625)	(88)%	15 days after the contract is agreed	-		13,191	99%	Note
GlobalWafers	Sino-American Silicon Products Inc.	Subsidiaries directly held by the parent company.	Purchase	877,825	6%	O/A 30 days EOM	-		(220,875)	(9)%	Note
GlobalWafers	GTI	Subsidiary and affiliated enterprise of Sino-American Silicon Products Inc.	Purchase	2,074,272	14%	O/A 60 days	-		(310,922)	(12)%	
GlobalWafers	Kunshan Sino	Subsidiaries directly held by the parent company.	Purchase	1,969,639	13%	O/A 60 days	-		(265,059)	(10)%	Note
GlobalWafers	GWJ	Subsidiaries indirectly held by the parent company.	Purchase	5,998,428	40%	O/A 60-90 days	-		(1,365,605)	(53)%	Note

Name of company	Related party	Nature of relationship	Transaction situation				Transactions with terms different from others		Notes/Accounts receivable (payable)		Remarks
			Purchase/Sale	Amount	Percentage of total purchases/sales	Payment terms	Unit price	Payment terms	Ending balance	Percentage of total notes/accounts receivable (payable)	
GlobalWafers	Topsil A/S	Subsidiaries indirectly held by the parent company.	Purchase	620,593	4%	O/A 30-60 days	-		(42,126)	(2)%	Note
GlobalWafers	GWS	Subsidiaries indirectly held by the parent company.	Purchase	585,759	4%	O/A 60 days	-		(58,237)	(2)%	Note
Taisil	GlobalWafers	Subsidiaries indirectly held by the parent company.	Purchase	1,324,609	11%	O/A 60 days	-		(249,946)	(8)%	Note
GWS	GlobalWafers	Subsidiaries indirectly held by the parent company.	Purchase	549,011	4%	O/A 60 days	-		(177,954)	(6)%	Note
Actron Technology Corporation	GlobalWafers	Chairman of the parent company is also the Chairman of Sino-American Silicon Products Inc.	Purchase	229,325	2%	O/A 60 days EOM	-		(48,111)	(2)%	Note
MEMC Korea	GlobalWafers	Subsidiaries indirectly held by the parent company.	Purchase	778,020	6%	O/A 60 days	-		(109,525)	(4)%	Note
MEMC SpA	GlobalWafers	Subsidiaries indirectly held by the parent company.	Purchase	847,708	7%	O/A 60 days	-		(139,596)	(5)%	Note
GTI	GlobalWafers	Subsidiaries indirectly held by the parent company.	Purchase	3,294,333	26%	O/A 45 days	-		(256,098)	(9)%	Note
Kunshan Sino	GlobalWafers	Subsidiaries indirectly held by the parent company.	Purchase	886,190	7%	O/A 30 days	-		(72,513)	(2)%	Note
GWJ	GlobalWafers	Subsidiaries indirectly held by the parent company.	Purchase	1,681,018	13%	O/A 60-90 days	-		(426,609)	(14)%	Note

Name of company	Related party	Nature of relationship	Transaction situation				Transactions with terms different from others		Notes/Accounts receivable (payable)		Remarks
			Purchase/Sale	Amount	Percentage of total purchases/sales	Payment terms	Unit price	Payment terms	Ending balance	Percentage of total notes/accounts receivable (payable)	
Topsil A/S	GlobalWafers	Subsidiaries indirectly held by the parent company.	Purchase	442,842	3%	O/A 30-60 days	-		(62,464)	(2)%	Note
GWS	MEMC LLC	Subsidiaries indirectly held by the parent company.	Purchase	1,113,615	6%	O/A 60 days	-		(210,402)	(7)%	Note
GWS	MEMC LLC		Sales	(556,291)	(2)%	O/A 60 days	-		75,379	2%	
GWS	MEMC Sdn Bhd	Subsidiaries indirectly held by the parent company.	Purchase	1,686,518	8%	O/A 60 days	-		(221,284)	(7)%	Note
GWS	MEMC Sdn Bhd	Subsidiaries indirectly held by the parent company.	Sales	(661,023)	(3)%	O/A 60 days	-		75,452	2%	Note
GWS	MEMC SpA	Subsidiaries indirectly held by the parent company.	Purchase	3,831,532	19%	O/A 60 days	-		(509,008)	(17)%	Note
GWS	MEMC SpA	Subsidiaries indirectly held by the parent company.	Sales	(3,436,429)	(15)%	O/A 60 days	-		593,826	19%	Note
GWS	MEMC Korea	Subsidiaries indirectly held by the parent company.	Purrchase	1,486,461	7%	O/A 60 days	-		(201,533)	(7)%	Note
GWS	MEMC Japan	Subsidiaries indirectly held by the parent company.	Purchase	4,382,815	22%	O/A 60 days	-		(707,117)	(23)%	Note
GWS	MEMC Japan	Subsidiaries indirectly held by the parent company.	Sales	(1,572,917)	(7)%	O/A 60 days	-		210,912	7%	Note
GWS	Taisil	Subsidiaries indirectly held by the parent company.	Purchase	6,982,787	35	O/A 60 days	-		(1,041,120)	(34)%	Note

Name of company	Related party	Nature of relationship	Transaction situation				Transactions with terms different from others		Notes/Accounts receivable (payable)		Remarks
			Purchase/Sale	Amount	Percentage of total purchases/sales	Payment terms	Unit price	Payment terms	Ending balance	Percentage of total notes/accounts receivable (payable)	
GWS	Taisil	Subsidiaries indirectly held by the parent company.	Sales	(524,118)	(2)%	O/A 60 days	-		173,631	5%	Note

Note: Transactions with standalone parties as mentioned above were eliminated when preparing the standalone reports.

Sino-American Silicon Products Inc.

Receivables from related parties with amounts exceeding the lower than NT$ 100 million or 20% of the capital stock

December 31, 2019

Attachment 7

Unit: NT$ Thousand

Name of company	Counter party	Nature of relationship	Ending balance	Turnover rate	Overdue		Amounts received in subsequent period (Note 1)	Allowance for bad debts
					Amount	Action taken		
Sino-American Silicon Products Inc.	Sulu	Subsidiaries indirectly held by the parent company.	299,621	note2	-		-	-
SSTI	AMLED	Subsidiaries indirectly held by the parent company.	334,686	note2	-		-	-
SSTI	Sulu	Subsidiaries indirectly held by the parent company.	317,927	note2	-		-	-
GlobalWafers	GTI	Subsidiaries indirectly held by the parent company.	256,098	11.33	-		256,098	-
GlobalWafers	GWJ	Subsidiaries indirectly held by the parent company.	426,609	3.80	-		181,827	-
GlobalWafers	GWS	Subsidiaries indirectly held by the parent company.	177,954	5.72	-		177,954	-
GlobalWafers	MEMC Korea	Subsidiaries indirectly held by the parent company.	109,525	3.66	-		79,480	-
GlobalWafers	MEMC SpA	Subsidiaries indirectly held by the parent company.	139,596	5.24	-		139,596	-
GlobalWafers	Taisil	Subsidiaries indirectly held by the parent company.	249,946	8.21	-		249,946	-
Taisil	GlobalWafers	Subsidiaries indirectly held by the parent company.	6,400,000	note2	-		-	-
Sino-American Silicon Products Inc.Aleo Solar	GlobalWafers	Subsidiaries indirectly held by the parent company.	220,875	4.59	-		220,875	-
GTI	GlobalWafers	Subsidiaries indirectly held by the parent company.	310,922	6.65	-		310,922	-
Kunshan Sino	GlobalWafers	Subsidiaries indirectly held by the parent company.	265,059	4.85	-		236,851	-

Name of company	Counter party	Nature of relationship	Ending balance	Turnover rate	Overdue		Amounts received in subsequent period (Note 1)	Allowance for bad debts
					Amount	Action taken		
GWJ	GlobalWafers	Subsidiaries indirectly held by the parent company.	1,365,605	3.89	-		857,018	-
GWJ	GlobalWafers	Subsidiaries indirectly held by the parent company.	4,140,000	note2	-		-	-
GWS	GWBV	Subsidiaries indirectly held by the parent company.	2,998,000	note2	-		-	-
GWS	MEMC Japan	Subsidiaries indirectly held by the parent company.	210,912	8.89	-		210,912	-
GWS	MEMC SpA	Subsidiaries indirectly held by the parent company.	593,826	7.67	-		593,826	-
GWS	GWI	Subsidiaries indirectly held by the parent company.	3,258,826	note2	-		-	-
GWS	MEMC LLC	Subsidiaries indirectly held by the parent company.	173,631	3.42	-		173,631	-
MEMC Sdn Bhd	GWS	Subsidiaries indirectly held by the parent company.	221,284	8.33	-		221,284	-
MEMC SpA	GWS	Subsidiaries indirectly held by the parent company.	509,008	8.16	-		509,008	-
MEMC SpA	GWS	Subsidiaries indirectly held by the parent company.	2,047,302	note2	-		-	-
MEMC Korea	GWS	Subsidiaries indirectly held by the parent company.	201,533	7.63	-		201,533	-
MEMC Japan	GWS	Subsidiaries indirectly held by the parent company.	707,117	4.94	-		-	-
Taisil	GWS	Subsidiaries indirectly held by the parent company.	1,041,120	7.34	-		-	-
MEMC LLC	GWS	Subsidiaries indirectly held by the parent company.	210,402	6.74	-		210,402	-

Note 1: The amount recovered after February 26, 2019.
Note 2: Receivables from related parties generated by financing.
Note 3: The above transactions related to the standalone standalone have been written off when preparing the standalone financial statements.

Sino-American Silicon Products Inc.

Information on investees (excluding information on investees in Mainland China)

For the year ended December 31, 2019

Attachment 8 Unit: NT$ Thousand

Name of investor	Name of investee	Location	Main businesses and products	Original investment amount		Balance as of December 31, 2019			Net income (losses) of investee	Share of profits/losses of investee	Remarks
				December 31, 2019	December 31, 2018	Shares (thousands)	Percentage of Ownership	Carrying value			
Sino-American Silicon Products Inc.	SSTI	British Virgin Islands	Investment and triangular trade center with subsidiaries in China	1,425,603 (USD 45,255)	1,425,603 (USD 45,255)	48,526	100.00%	971,888	11,694	11,694	Subsidiary Note 5
Sino-American Silicon Products Inc.	GlobalWafers	Taiwan	Semiconductor silicon wafer materials and components manufacturing and trade	8,955,952	8,955,952	222,727	51.17%	23,060,434	13,644,095	6,981,683	Subsidiary
Sino-American Silicon Products Inc.	Aleo Solar	Prenzlau	Solar module manufacturing and sale and wholesale of electronic materials	558,139 (EUR 13,500)	558,139 (EUR 13,500)	Note 1	100.00%	385,238	161,178	161,178	Subsidiary Note 2
Sino-American Silicon Products Inc.	Aleo Sunrise	Germany	Manufacturing of solar cell as well as sale and wholesale of electronic materials	-		Note 1	100.00%	-	(251,617)	(194,488)	Subsidiary Note 4
Sino-American Silicon Products Inc.	SAS Sunrise Inc.	Cayman	Reinvestments in various businesses	794,373 (USD 24,500)	794,373 (USD 24,500)	24,500	100.00%	461,117	(52,533)	(52,533)	Subsidiary
Sino-American Silicon Products Inc.	Sunrise PV World Co.	Taiwan	Power generating business	300,000	300,000	30,000	100.00%	276,330	29,842	29,597	Subsidiary
Sino-American Silicon Products Inc.	Sunrise PV Five Electric	Taiwan	Power generating business	1,000	-	100	100.00%	989	(11)	(11)	Subsidiary
Sino-American Silicon Products Inc.	Crystalwise Technology Inc.	Taiwan	Optical wafer and substrate manufacturing and trade	2,215,803	2,010,843	86,923	41.93%	280,554	(751,496)	(307,020)	Affiliated companies Note 2

Name of investor	Name of investee	Location	Main businesses and products	Original investment amount		Balance as of December 31, 2019			Net income (losses) of investee	Share of profits/losses of investee	Remarks
				December 31, 2019	December 31, 2018	Shares (thousands)	Percentage of Ownership	Carrying value			
Sino-American Silicon Products Inc.	Accu Solar Corporation	Taiwan	Solar energy system provider	112,193	112,193	7,452	24.70%		(5,488)	(713)	Affiliated companies
Sino-American Silicon Products Inc.	Cathy Sunrise	Taiwan	Power generating business	450,000	450,000	45,000	30.00%	459,333	25,615	8,847	Affiliated companies
Sino-American Silicon Products Inc.	TSCS	Taiwan	Semiconductor special gas and chemical material manufacturer	990,000	900,000	90,000	30.93%	839,830	(150,029)	(78,333)	Affiliated companies Note 2
Sino-American Silicon Products Inc.	Actron Technology Corporation	Taiwan	Semiconductor electric wafer materials and components manufacturing and trade	1,147,715	-	14,185	15.50%	1,031,956	323,478	12,458	Affiliated companies Note 2
Sunrise PV World Co.	Sunrise PV Electric	Taiwan	Power generating business	-	42,000	-	-	-	415	-	Subsidiary Note 7
Sunrise PV World Co.	Sunrise PV Two	Taiwan	Power generating business	-	15,000	-	-	-	(123)	-	Subsidiary Note 7
Sunrise PV World Co.	Sunrise PV Three	Taiwan	Power generating business	15,000	100,000	1,500	100.00%	16,623	1,488	-	Subsidiary Note 7
Sunrise PV World Co.	Sunrise PV Four	Taiwan	Power generating business	100,000	100,000	10,000	100.00%	15,490	449	-	Subsidiary Note 7
Sunrise PV World Co.	Sunrise PV Five	Taiwan	Power generating business	-	65,000	-	-	-	266	-	Subsidiary Note 7
SAS Sunrise Inc.	SAS Sunrise Pte.Ltd.	Singapore	Reinvestments in various businesses	719,292 (USD 22,000)	719,292 (USD 22,000)	30,934	100.00%	549,101	(25,460)	-	Subsidiary Note 7
SAS Sunrise Pte.Ltd.	AMLED	Philippines	Reinvestments in various businesses	-	-	-	-	-	-	-	Subsidiary Note 6 and 7
SAS Sunrise Pte.Ltd.	Sulu	Philippines	Power generating business	440,667 (USD 13,435)	440,667 (USD 13,435)	420,000	40.00%	306,658	(46,753)	-	Subsidiary Note 7
AMLED	Sulu	Philippines	Power generating business	297,229 (USD 9,065)	297,229 (USD 9,065)	472,500	45.00%	173,902	(46,753)	-	Subsidiary Note 7
Aleo Solar	Aleo Solar Distribuzione Italia S.r.l	Italy	Solar module sale and wholesale of electronic materials	4,078 (EUR 100)	4,078 (EUR 100)	Note 1	100.00%	2,994	4,652	-	Subsidiary Note 7

Name of investor	Name of investee	Location	Main businesses and products	Original investment amount		Balance as of December 31, 2019			Net income (losses) of investee	Share of profits/losses of investee	Remarks
				December 31, 2019	December 31, 2018	Shares (thousands)	Percentage of Ownership	Carrying value			
GlobalWafers	GWI	Cayman	Reinvestments in various businesses	2,241,668 (USD 73,423)	2,241,668 (USD 73,423)	90,000	100.00%	4,360,907	2,074,206	-	Subsidiary Note 7
GlobalWafers	GSI	Cayman	Business investment and triangular trade center with subsidiaries in China	756,809 (USD 26,555)	756,809 (USD 26,555)	25,000	100.00%	1,521,431	202,929	-	Subsidiary Note 7
GlobalWafers	GWJ	Japan	Semiconductor silicon wafer manufacturing and trading	5,448,015	5,448,015	128	100.00%	15,262,418	1,904,017	-	Subsidiary Note 3 and 7
GlobalWafers	GWafers Singapore	Singapore	Reinvestments in various businesses	11,966,930	11,966,930	364,000	67.20%	23,271,556	5,553,670	-	Subsidiary Note 7
GlobalWafers	Topsil A/S	Denmark	Semiconductor silicon wafer manufacturing and trading	1,964,069 (DKK407,600)	1,964,069 (DKK407,600)	1,000	100.00%	1,660,861	64,061	-	Subsidiary Note 7
GlobalWafers	Whole Global Investment Corporation	Taiwan	Reinvestments in various businesses	309,760	200,000	30,976	30.98%	571,929	65,636	20,331	Affiliated companies
GlobalWafers	Taisil	Taiwan	Semiconductor silicon wafer manufacturing and sales	14,504,663	14,504,663	9,999	99.99%	17,705,613	3,546,184	-	Subsidiary
GWI	GWafers Singapore	Singapore	Reinvestments in various businesses	5,411,947	5,411,947	177,674	32.80%	4,360,907	5,553,670	-	Subsidiary Note 3 and 7
GWJ	MEMC Japan	Japan	Semiconductor silicon wafer manufacturing and sales	373,413 (JPY 100,000)	373,413 (JPY 100,000)	750	100.00%	3,066,944	227,673	-	Subsidiary Note 3 and 7
Topsil A/S	Topsil PL	Poland	Semiconductor silicon wafer manufacturing and trading	-	-	0.1	100.00%	-	13,719	-	Subsidiary Note 3 and 7
GWafers Singapore	GWS	Singapore	Investment, marketing and trading business	14,671,320 (USD 436,398)	14,671,320 (USD 436,398)	299,445	100.00%	25,151,706	6,223,239	-	Subsidiary Note 3 and 7
GWS	GWBV	Netherlands	Reinvestments in various businesses	6,413,892 (USD 162,723)	6,413,892 (USD 162,723)	0.1	100.00%	40,918,549	3,547,609	-	Subsidiary Note 3 and 7
GWBV	MEMC SpA	Italy	Semiconductor silicon wafer manufacturing and sales	6,732,641 (USD 204,788)	6,732,641 (USD 204,788)	65,000	100.00%	11,849,317	1,425,916	-	Subsidiary Note 3 and 7

Name of investor	Name of investee	Location	Main businesses and products	Original investment amount		Balance as of December 31, 2019			Net income (losses) of investee	Share of profits/losses of investee	Remarks
				December 31, 2019	December 31, 2018	Shares (thousands)	Percentage of Ownership	Carrying value			
GWBV	MEMC BV	Singapore	Reinvestments in various businesses	-	-	-	-	-	414,476	-	Subsidiary Note 3 and 7
MEMC SpA	MEMC SarL	France	Trading business	1,316 (USD 40)	1,316 (USD 40)	0.5	100.00%	807	753	-	Subsidiary Note 3 and 7
MEMC SpA	MEMC GmbH	Germany	Trading business	4,622 (USD 141)	4,622 (USD 141)	0.002	100.00%	4,817	(617)	-	Subsidiary Note 3 and 7
MEMC SpA	MEMC BV	Netherlands	Reinvestments in various businesses	-	2,430,141 (USD 73,918)	-	-	-	414,476	-	Subsidiary Note 3 and 7
MEMC BV	MEMC Korea	Korea	Semiconductor silicon wafer manufacturing and sales	-	2,427,650 (USD 73,842)	-	-	-	1,270,737	-	Subsidiary Note 3 and 7
GWBV	MEMC Korea	Korea	Semiconductor silicon wafer manufacturing and sales	3,641,474 (USD 110,763)	3,641,474 (USD 110,763)	25,200	100%	15,373,703	1,270,737	-	Subsidiary Note 3 and 7
GWBV	GTI	U.S.A.	Epitaxial silicon wafer production and trade of epitaxy foundry business	2,779,849 (USD 91,262)	2,779,849 (USD 91,262)	1	100.00%	9,486,787	947,639	-	Subsidiary Note 3 and 7
GWBV	MEMC Sdn Bhd	Malaysia	Semiconductor silicon wafer R&D, manufacturing and sales	898,016 (USD 27,315)	898,016 (USD 27,315)	1,036	100.00%	740,576	75,835	-	Subsidiary Note3 and 7
GWBV	MEMC Ipoh	Malaysia	Semiconductor silicon wafer manufacturing and sales	93,907 (USD 1,323)	146,624 (USD 3,020)	612,300	100.00%	3,807	236	-	Subsidiary Note 3 and 7
GTI	MEMC LLC	U.S.A.	Semiconductor silicon wafer R&D, manufacturing and sales	543,384 (USD 17,839)	543,384 (USD 17,839)	-	100.00%	4,263,233	178,816	-	Subsidiary Note 3 and 7

Note:1 Corporation limited

Note 2: The investment gain or loss recognition includes the investment cost and the amortization of the net equity acquired.

Note 3: The investees are indirect subsidiaries of the Company. GWafer Singapore had been restructured so the Company and GWI held 67.2 %and 32.8 p%, respectively, of its shares on July 1, 2018. In addition, GTI was transferred to GWBV; and MEMC LLC was transferred to GTI. In June 18, 2019, MEMC BV was transferred to GWBV and was liquidated in September 2019. MEMC Korea was transferred from GWBV and MEMC BV to GWBV.

Note 4: Aleo sunrise was100% owned by Sino-American Silicon Products Inc from March, 2019.

Note 5: Not including earnings transferred to capital increase.

Note 6: The Company does not hold the ownership interests of AMLED, but the Company can control the financial and operating strategies of AMLED and obtain all the benefits of its operations and net assets in accordance with the terms of the agreements with such standalone, so AMLED is considered as a subsidiary.

Note 7: The profit and loss of the investee company is included in its investment company. To avoid confusion, it will not be expressed here.

Note 8: The above transactions relating to the standalone standalone have been written off when preparing the standalone financial statements.

Sino-American Silicon Products Inc.

Information on investment in mainland China

For the year ended December 31, 2019

Attachment 9 | Unit: NT$ Thousand

(I) The names of investees in Mainland China, the main businesses and products, and other information

Name of investee	Main businesses and products	Total amount of paid in capital	Method Of investment	Accumulated outflow of investment from Taiwan as of January 1, 2017	Investment flows		Accumulated outflow of investment from Taiwan as of December 31, 2018	Net income (losses) of the investee	Shareholding ratio of direct or indirect investment of GlobalWafers	Investment income (losses) (Note 4)	Book value	Accumulated remittance of earnings in current period
					Outflow	Inflow						
Kunshan Sino	Silicon rods and silicon wafer processing and trade	769,177 (Note 7)	(Note 1)	713,300 (USD 21,729)	-	-	713,300 (USD21,729)	195,307	100.00%	195,307	1,425,100	-
SunEdison Shanghai	Trading business	7,527 (RMB 1,500)	(Note 2)	(Note 2)	-	-	(Note 2)	(557)	100.00%	(557)	8,914	-
Shanghai GROWFAST Semiconductor Technology Co. Ltd.	Sales and marketing business	9,756 (RMB 2,000)	(Note 3)	-	-	-	-	(21,528)	60.00%	(12,917)	7,627	-

(II) Limitation on investment in Mainland China

Company Name	Accumulated Investment in Mainland China as of December 31, 2018	Investment Amounts Authorized by Investment Commission, MOEA	Upper Limit on Investment
GlobalWafers	713,300 (USD 21,729)	818,233 (USD 25,000)(Note 5)	27,043,950 (Note 6)

Note 1: Investments through GSI registered in mainland China.
Note 2: Investments through GWBV registered in mainland China which is acquired from the acquisition of GWS (SSL).
Note 3: Kunshan Sino was invested by Shanghai GROWFAST in mainland China, without limit on investment, due to not having any investment from Taiwan.
Note 4: The basis for investment income (loss) recognition is from the financial statements audited.
Note 5: Initial investment amounts denominated in foreign currencies are translated into New Taiwan Dollars using the Historical Foreign Exchange Rate.
Note 6: Calculated by 60% of the quota of the "Review Principles of Investment or Technical Cooperation in Mainland China" August 29, 2008, multiplied by the net worth of GlobalWafers on December 31, 2018.
Note 7: Retained earnings Transferred to Capital was included.