

# TAIWAN

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For the past decade, Taiwan has enjoyed the kind of growth that many countries envy. In 2000, weakening global demand for electronic products, which accounted for more than 30% of Taiwan's exports, had a major impact on the island's economy. In 2000, however, the gross domestic product recorded an increase of 6% compared with that of 1999. In the last 4 months of 2000, the domestic economy entered into a downturn cycle, and 4,995 plants closed their operations; of those plants, about 20% were in the high technology sector, 12% were in the metal sector, and 10% were in the machinery sector (Taiwan Headlines, December 28, 2000, Economic indicators reveal deteriorating conditions, accessed December 28, 2000, at URL <http://www.taiwanheadlines.gov.tw/20001228/20001228bl.html>).

Between March and yearend 2000, the stock market had lost about 40% of its value. The unemployment rate was posted at 3%, which was the highest in the past 5 years. This affected consumers' confidence in spending. The Taiwan authorities expected that the island's economy would continue to slow down in 2001 and proposed an eight-point economic reform plan to provide a better investment environment. The plan included loosening regulations on land and property ownership by foreign investors and allowing foreign wholly owned financial institutions and foreign technical experts to work on the island. A \$700 million water reservoir project was approved so that an adequate water supply could be provided to industrial and agriculture industries in central and southern Taiwan by 2008. A committee that included Government officials, economists, and industry experts was set up to promote the development of a knowledge-based economy in Taiwan. The committee will develop plans to upgrade industrial infrastructure and to ensure the sustained growth of the biotechnology and information technology sectors in an increasingly competitive environment. To improve competitiveness in the global market, the Ministries of Economic Affairs and Finance reached a consensus to allow manufacturing enterprises to merge and spread premerger acquisition losses over a period of 10 years. Merged companies were eligible for the exemption of stamp and deed taxes and the deferred payment of the land increment value tax (Taipei Journal, 2001).

The Taiwan authorities amended the Waste Disposal Act that was to be in effect in 2001. Taiwan's chemical producers must comply with stiffer laws on waste disposal. Companies that violate the laws would face criminal charges, and the maximum sentence would be life imprisonment and/or fines depending on the severity of the crime. Before the act came into effect, companies were only fined (Asian Chemical News, 2000a). A revision of the Business Tax Law was sent to the Legislature for ratification in 2000. Imported products would be levied immediately after entering the port. Under the revised law, the 2% business tax for banks, insurance companies, and financial institutions would be eliminated (Taipei Journal, 2000).

In 2000, Taiwan's total trade increased by 19% to \$276.5 billion. Exports rose by 18% to \$143.5 billion, and imports increased by 20% to \$133.0 billion. Values of minerals imports and exports rose by 5.8% and 1.2% to \$13.8 billion and \$1.7 billion, respectively. Crude oil remained the leading imported commodity, followed by coal, natural gas, iron ore, marble, and kaolin. Owing to the trade expansion in the Southeast Asian and European markets, the value of Taiwan's exports to the United States dropped to 23.5% in 2000 from the peak of 48.8% in 1984. Because of the improvement in living standards on the island, the value of imports from the United States increased to 27.6% in 2000 (Ministry of Finance, 2000a, b).

Owing to the slowdown in the construction sector, demand for cement remained sluggish. Domestic cement output was mainly for internal consumption. Cement producers relocated their plants to the east coast because limestone mining rights on the west coast expired. According to the Taiwan Cement Association, the total cement output capacity was 21.5 million metric tons (Mt) (8 Mt on the west coast and 13.5 Mt on the east coast) at yearend 2000. In 2003, cement output capacity on the west coast will decrease to 4 Mt, and the east coast will increase to 18.4 Mt. The Association estimated that domestic demand for cement for the following 3 years would remain at the level of 21 Mt (Economic Daily News, 2000, p. 412).

Owing to the slow demand for stainless steel products in the Asia and Pacific region in 2000, Taiwan's stainless steel producers faced the challenge by cutting production to stabilize the decline in steel prices in the region. Grade 304 cold-rolled stainless coil fell to \$1,200 per metric ton in December from \$1,600 per ton or higher in the first half of the year. The two major stainless steel producers Tang Eng Iron and Steel Work Co. Ltd. and Yieh United Steel Corp. reduced their output capacities to about 60% in the second half of 2000. Weak demand for stainless steel products in the European market led to a large quantity of European products being shipped to the oversupplied Asian market. Taiwanese stainless steel producers were expected to face weak demand and an uncertain market outlook in 2001 (Metal Bulletin, 2000c, d, 2001b).

In 2000, China Steel Corp. reached an agreement to acquire a 70% stake in Ornasteel Enterprise Corp. Sdn. Bhd. and 60% in Group Steel Corp. Sdn. Bhd (both located in Melaka, Malaysia) from their shareholders at a total cost of about \$55 million. Ornasteel had an output capacity of 35,000 metric tons per month (t/mo) of cold-rolled coil, and Group Steel produced 20,000 t/mo of galvanized sheet and 10,000 t/mo of prepainted sheet. China Steel believed that overseas expansion would be the future of the company because it had used almost all available space in its facilities in Kaohsiung and would have difficulties in finding space on the island for expansion. China Steel has been trying to establish integrated steelworks in Southeast Asia for more than a decade (Financial Times, 2000; Metal Bulletin, 2000a). China Steel announced that the company and Vietnam Steel Corp. had reached an agreement to

build a 300,000-metric-ton-per-year (t/yr) cold-rolled mill in Vietnam (Metal Bulletin, 2000b).

After completion of the relining and upgrading the No. 3 blast furnace in February 2000, China Steel intended to increase its crude steel output to 10.3 Mt in 2001 from 10.25 Mt in 2000 (Metal Bulletin, 2001a). The company reached an agreement with Nippon Steel Corp. and other Japanese steel producers to supply from 30,000 to 50,000 t/mo of slabs to its hot-rolled coil subsidiary Yieh Loong Enterprises. China Steel's 39.34% shares of Yieh Loong required 2.4 million metric tons per year (Mt/yr) of slabs for its hot-rolled coil operation. Yieh Loong also sourced its slab from China and Russia (Metal Bulletin, 2001c).

Tosoh Quartz Taiwan Co. Ltd. (a subsidiary of Tosoh Corp. of Japan) began construction of its \$14 million quartz plant in the Tainan Science Industrial Park and was scheduled to be completed in May 2001. The new plant will manufacture quartz components from natural quartz crystal, which will be imported from the United States, for the electronic sector (Industrial Minerals, 2000).

Taiwan has very limited energy resources and relies on imports for most needs. Each year, because of the shortage of energy, the island's industries lose billions of dollars. The construction of the fourth nuclear powerplant project was put on hold in late 2000 because of the change in administration on the island and objections from environmental groups that cited the risk of radiation leakage and issues on handling nuclear wastes (Taiwan Headlines, January 17, 2001, Nuclear project 'suspended,' not cancelled—Spokesman, accessed January 17, 2000, at URL <http://www.taiwanheadlines.gov.tw/20010117/20010117p2.html>). Nearly one-half of Taiwan's power demand was in the northern part of the island, and only a quarter of the electricity was generated there. In 2000, the situation worsened because the demand for electricity at the Hsinchu Science-based Industrial Park (Taiwan's Silicon Valley) rose by 50%, and electricity supply was interrupted 40 times. Power generation from the fourth nuclear powerplant and two independent fossil-fuel plants that were under construction could correct the imbalance of supply in the north by 2006.

Chinese Petroleum Corp. (CPC) was the dominant player in all upstream and downstream petroleum activities. In 1999, Formosa Petrochemical Corp. (FPC) (a subsidiary of Formosa Plastics Group) commissioned its refinery in Mailiao, Yunlin County, which ended the CPC monopoly on domestic production and sale of diesel oil and gasoline. FPC intended to control one-half of the island's gasoline market by 2001. In May, FPC's refinery began the throughput of 150,000 barrels per day (bbl/d) and was expected to reach its full capacity of 450,000 bbl/d by the end of the year. The Energy Commission of the Ministry of Economic Affairs approved FPC to export diesel fuel (Taiwan Headlines, December 15, 2000, Formosa making inroads into diesel oil market, accessed December 15, 2000, at URL <http://www.taiwanheadlines.gov.tw/20001215/20001215b5.html>).

FPC intended to invest \$6 billion to build a petrochemical complex in mainland China at either Taichang in Jiangsu Province or Ningbo in Zhejiang Province. The complex will include a 1-Mt/yr ethylene cracker and a coal-fired plant, and downstream product will include acrylic acid, acrylic ester, acrylonitrile, and polyvinyl chloride units. The Zhejiang Government allotted land near Ningbo on Meishan Island for the FPC project. A key hurdle for FPC will be securing the

Taiwan authorities' approval because of restriction on investments in mainland China (Asian Chemical News, 2001).

The Taiwan authorities were considering the merger of the island's No. 7 and No. 8 petroleum cracking projects into one because of environmental concerns. Also, owing to lack of land and water resources, building two cracking plants with capacities of 800,000 t/yr and 1.2 Mt/yr at the Tainan site would be difficult. The Tuntex Group's No. 7 project had secured conditional environmental impact assessment approval, but Tuntex did not have the necessary funds to proceed with the project. CPC and Grand Pacific Petrochemical Corp. wanted to build the No. 8 cracking plant in Kaohsiung (Asian Chemical News, 2000b).

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Bureau of Mines  
2 Chenkiang Street, Taipei, Taiwan

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TABLE 1  
TAIWAN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1996	1997	1998	1999	2000
<b>METALS</b>						
Gold, primary	kilograms	11	9	9	13	9
Iron and steel, metal:						
Pig iron	thousand tons	6,050	8,870	9,374	9,020	10,927
Ferroalloys:						
Ferromanganese		14,059	12,130	12,532	--	--
Ferrosilicon		2,481	3,391	3,775	3,212	2,975
Steel, crude	thousand tons	12,655	15,478	17,192	16,027	17,302
Nickel, refined e/		10,000	10,500	9,700	10,000	10,000
<b>INDUSTRIAL MINERALS</b>						
Cement, hydraulic	thousand tons	21,537	21,522	19,652	18,283	17,572
Clays:						
Fire clay		9,230	5,045	2,967	3,703	3,666
Kaolin		95,000 e/	80,000 e/	-- r/	-- r/	--
Feldspar		20	--	--	171	409
Gypsum, precipitated		2,603	2,317	2,221	1,747 r/	1,884
Lime e/		650,000	650,000	800,000	800,000	800,000
Mica		8,510	7,806	7,750	6,966 r/	6,862
Nitrogen, N content of ammonia		251,850	289,490	231,419	146,228	11,004
Salt, marine		233,321	62,484	7,425	76,916	69,521
Sodium compounds, n.e.s.:						
Caustic soda		196,980	204,470	230,620	329,640	481,290
Soda ash e/		128,000	127,000	126,000	140,000	140,000
Stone:						
Dolomite	thousand tons	116	198	181	201	119
Limestone	do.	11,332	15,447	2,927	2,819	3,505
Marble	do.	17,528	18,071	17,519	17,755	17,831
Serpentine	do.	526	436	421	358	395
Sulfur		181,600	163,964	184,324	194,812	205,588
Talc		1,500	1,331	73	201	--
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Carbon black		100,234	103,450	100,000 e/	100,000 e/	100,000
Coal, bituminous		147,497	98,203	79,310	91,673	83,380
Gas, natural:						
Gross	million cubic meters	874	849	870	848	742
Marketed e/	do.	810	780	790	780	670
Petroleum:						
Crude	thousand 42-gallon barrels	358	319	340	296	234
Refinery products e/	do.	227,000	233,000	227,000	230,000	240,000

e/ Estimated. r/ Revised. -- Zero.

1/ Includes data available through July 16, 2001.

TABLE 2  
TAIWAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2000

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity e/	
Cement	Asia Cement Corp.	Hsinchu	1,800	
Do.	do.	Hualien	4,020	
Do.	Chia Hsin Cement Corp.	Kaohsiung	1,860	
Do.	Lucky Cement Corp.	Tungao	2,000	
Do.	Chien Tai Cement Co. Ltd.	Kaohsiung	1,758	
Do.	Hsing Tai Cement Co. Ltd.	Taipei	1,300	
Do.	Taiwan Cement Corp.	Chutung	1,400	
Do.	do.	Hualien	280	
Do.	do.	Kaohsiung	1,900	
Do.	do.	Suao	3,400	
Do.	Universal Cement Corp.	Kaohsiung	1,550	
Coal, bituminous	Numerous independent operators	Taipei Prefecture (12 pits)	200	
Marble	Taiwan Marble Co., Ltd.	Panchiao	10	
Nickel	Taiwan Nickel Refinery	Kaohsiung	14	
Petroleum:				
Crude	thousand barrels per year	Chinese Petroleum Corp.	Chuhuangkeng and Tungtzuohiao	850
Refinery products	thousand barrels per day	do.	Kaohsiung	570
Do.	do.	do.	Taoyuan	200
Do.	do.	Formosa Plastics Group	Yunlin	450
Steel		China Steel Corp.	Kaohsiung	10,000
Do.		Feng Hsin Iron and Steel Co. Ltd.	Taichung Hsien	1,000
Do.		Tang Eng Iron Work Co. Ltd.	Kaohsiung	288
Do.		Yieh United Steel Co.	do.	1,000
Sulfur		China Petrochemical Development Corp.	Taipei	50

e/ Estimated.