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## A GEOGRAPHICAL SKETCH OF TAIWAN

S. O'DONNELL

Portuguese mariners sailing off the coast of Taiwan in 1583 A.D. named it "Ilha Formosa" or "Beautiful Island". The name Formosa became internationally known although it was not used by the inhabitants of the island. The political status of Taiwan in relation to the mainland state, the People's Republic of China, is rather an anomalous one. Both Peking and Taipei claim jurisdiction over China as a whole; the former sees Taiwan as the 'thirteenth special municipality of the Republic of China', whereas the latter considers its position as the "temporary capital of China". Until recently the Nationalist government of Taipei was the sole representative of China in the United Nations. In view of the disparities in population size alone, this was untenable in the field of international politics. Taiwan in 1974 had an estimated population of about 15,7 million persons compared with 809 million in the Republic of China (World Bank Atlas, 1976). In territorial terms, assuming that China includes both the mainland area and Taiwan, Taipei effectively controls 0,3 per cent of China contrasted with 99,7 per cent under the rule of Peking (Fisher, 1974). A further contrast occurs between the per capita incomes; the per capita income in Taiwan in 1974 was \$810 (U.S.) compared with an estimate of \$300 (U.S.) for the Republic of China (World Bank Atlas, 1976).

Taiwan is about 216 kilometres off the south eastern coast of the Chinese mainland (Fig. 1). A number of islands belong to Taiwan including Lu Foa, Lan Hsu and the Penghu Islands less than 50 kilometres from the main island. Two islands, Quemoy and Matsu, are within "sight and sound" of the mainland and are bombarded frequently from the mainland. The island is 380 kms by 140 kms in extent with an approximate area of 38, 600 square kilometres. In outline the island resembles a tobacco leaf.

### PHYSICAL FEATURES

There is a close relationship between relief and geological structure on Taiwan (Figs. 2 and 3). A broad mountain range — the Chung Yang Shan Mo — extends up the eastern part of the island, with a general altitude in excess of 1,000 metres. The highest peak is Yushan (3,997 metres) in the central part of the mountain ranges. Rivers drain east and west off these mountains which are composed mainly of Eocene, Oligocene, Mesozoic and Palaeozoic rocks. A narrow plain a few kilometres wide occurs along the eastern coast; this plain is interrupted between Huaien and Taitung where andesite outcrops to form a mountain range reaching a maximum altitude of 1,682 metres on Hsinchiangshan. Andesite also outcrops to the north of Taipei forming hill lands. The western part of the island is characterized by broad plains up to 45 kilometres wide and covered with alluvial deposits. The main cultivable lands occur in this area and are used for rice paddies and dryland farming. The upland areas are under hardwood forests with spruce, hemlock and cypress forests at higher altitudes.

Much of the island receives more than 2,000 millimetres of rainfall per annum, with up to 5,000 millimetres in mountain areas. The west coast lies in a partial rainshadow area with less than 1500 millimetres of precipitation per annum. The higher precipitation in the mountains with short fast-flowing streams means that there is considerable potential for hydro-electric power.

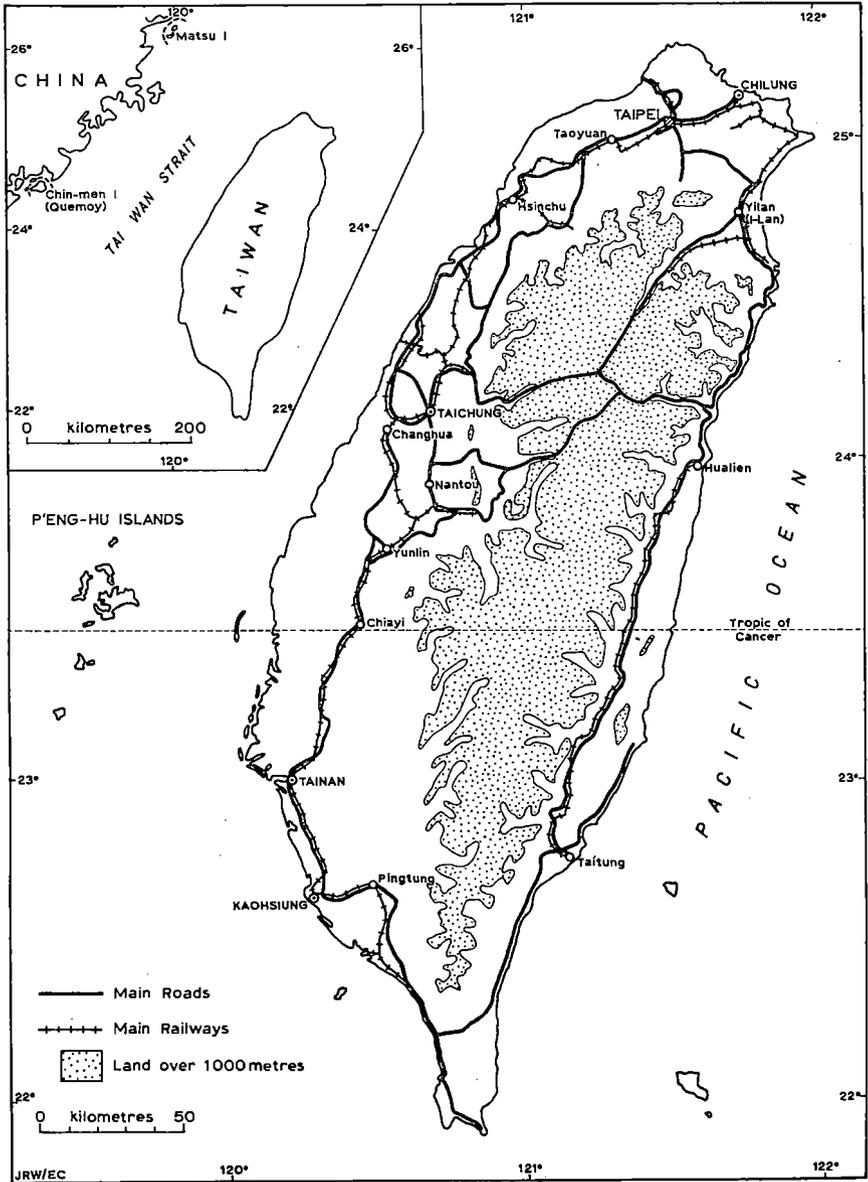


Figure 1: Location, Towns and Communications in Taiwan

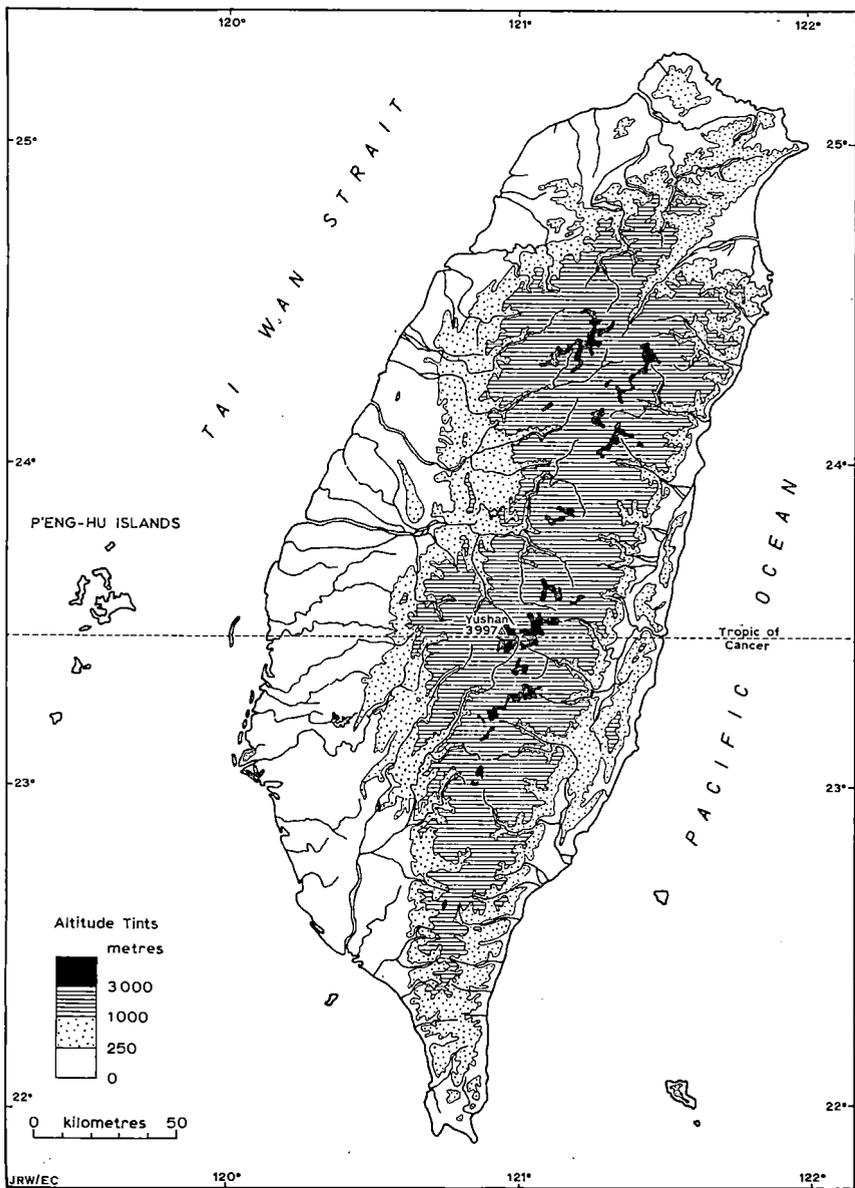


Figure 2: Taiwan: Relief and Drainage

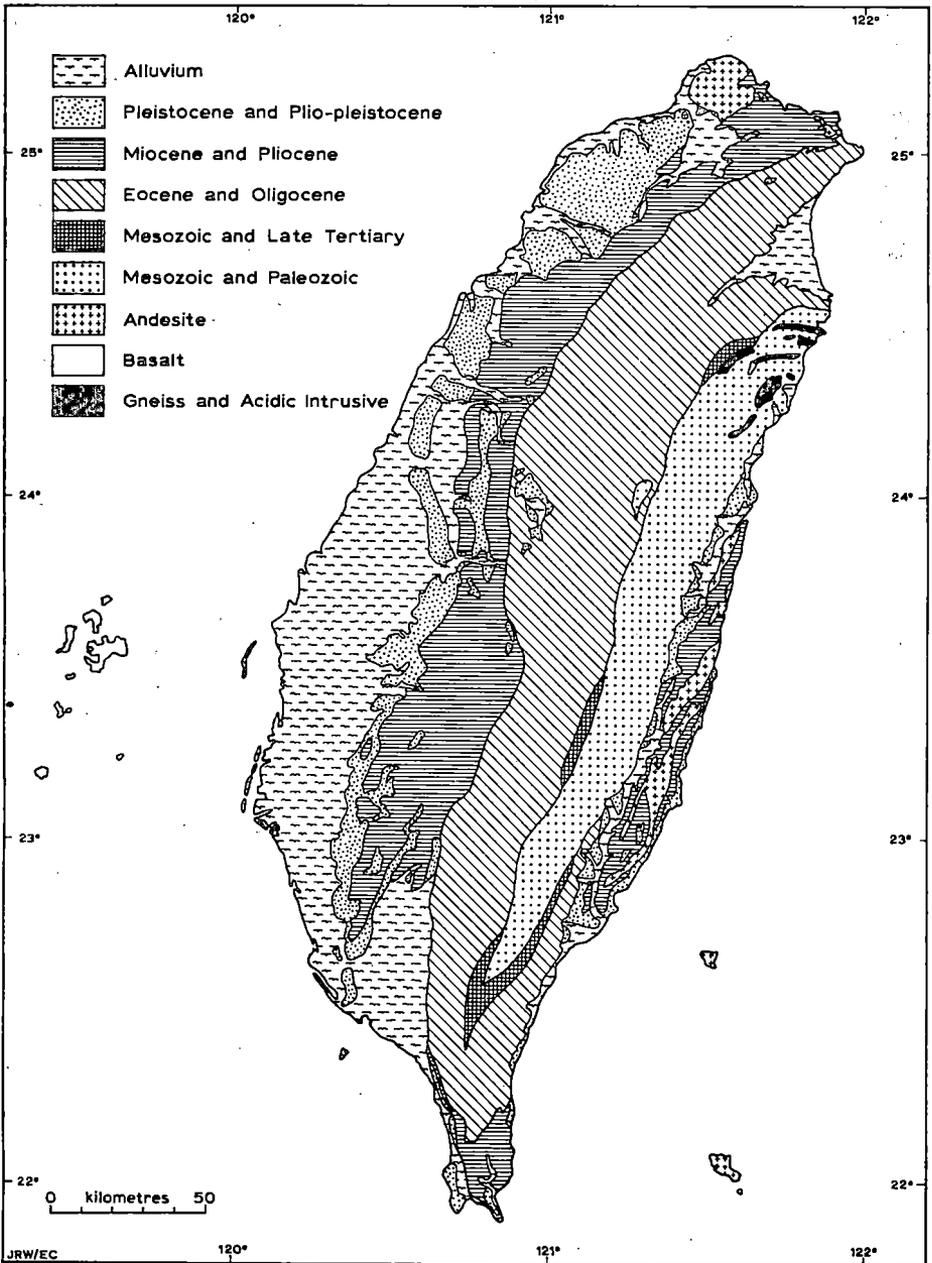


Figure 3: Geological Map of Taiwan

Most of the HEP stations with a generating capacity in excess of 10,000 kilowatts are located in the northern part of the island, but are connected to a 154KV transmission network that reaches the southern areas. HEP is an important energy source supplementing limited reserves of coal, oil and gas which occur in the west and north of Taiwan.

The seasonal temperature regime is greatly modified by maritime and montane influences. In winter the thermal gradient is from north to south, with temperatures of less than 12°C in the north and greater than 20°C in the south. Temperatures in the mountain areas average about 14°C during this period. In contrast the summer period exhibits a thermal gradient closely related to altitude. Coastal areas experience temperatures of greater than 28°C compared with 22°C in the montane regions. In general temperatures do not pose limitations for crop growth and the contrasts between the mountain and coastal areas allow a range of agricultural and forestry activities to be carried out.

### **HISTORY OF SETTLEMENT**

The first settlers on the island were aborigines who came from the South Pacific. These people were displaced into the mountain regions when colonisation by the mainland Chinese occurred from 400 A.D. Most of the present day Taiwanese are descendants of the immigrant Chinese "who had left the overcrowded non-Mandarin-speaking southern provinces to better themselves in a pioneer land", (Fisher, 1974, p.532).

Taiwan was subjected to foreign conquest a number of times during her history; for example the Dutch took over the island in 1624 A.D. only to be overthrown by the Spanish two years later. The Dutch, however, regained the island by 1641 A.D. but in 1661 A.D. the Ming Dynasty was overthrown and the remnants came to Taiwan. After 1683 A.D. Taiwan was included as part of the Fukien province in South Eastern China, but by 1887 A.D. it had become a separate province with its own governor. After the Sino-Japanese war in 1894-95 the island was taken over by the Japanese. The Japanese conquest had a stabilizing influence on the island and considerable improvements in infrastructure and agricultural methods were achieved under Japanese rule (1894-1945). During this period of paternalistic administration there was an emphasis on improving the standard of living of the peasant farmers, especially with respect to hygiene and sanitation. Agricultural production was intensified by means of irrigation, application of fertilizers and the use of new varieties of crops. Agricultural produce was exported to Japan after supplying the needs of the domestic market. Although extensive progress was achieved under Japanese rule the Taiwanese still considered their overlords as being invaders. The Japanese initially thought of Taiwan as an outlet for Japanese settlers; this, however, did not occur to any great extent and by 1945 the Japanese population on Taiwan numbered about 356,000 persons, or 5.4 per cent of the total population. The Japanese "settlers" were mainly administrators and technicians and were repatriated to Japan after 1945. This had a retarding influence on the post-war economic development in Taiwan since there were few Taiwanese to take over the posts vacated by the Japanese.

Taiwan experienced further set-backs with the political upheavals in the Republic of China in the mid 1940's. About 1.5 million Nationalist refugees came to Taiwan from the mainland which had succumbed to the forces of

the communist party. These refugees posed a burden on an already struggling economy and moreover there were few administrators, technicians and professional workers amongst the refugees. For political and strategic reasons the United States gave large aid grants to Taiwan to support the ailing economy. From 1951 to 1965 over \$1,400 million (U.S.) were given to Taiwan to demonstrate "the superiority of the free-enterprise over the communist system" (Fisher, 1974, p.536). Aid from the United States ceased in 1965 when Taiwan was capable of attracting her own sources of foreign investment; for example the Taiwan government has created customs-free manufacturing zones to attract foreign investors.

### POPULATION OF TAIWAN

The present population of Taiwan totals about 16 million with a current annual growth rate of 2.2 per cent. The population in 1968 was 13,6 million people of whom 1,6 million lived in Greater Taipei and a further 1,86 million people lived in the cities of Kaohsiung, Tainan, Taichung and Keelung. Apart from the refugees from mainland China there is only one large minority group notably the Aborigines who number about 210,000.

The population density of the western coastal plains is greater than 200 persons per square kilometre, reaching densities of over 600 persons per square kilometre in three main areas — in the south around Kaohsiung, in central-western Taiwan around Yuanlin and Luchiang, and in the north around Taipei. The central mountain range is sparsely populated. The narrow east coast has a moderate population density of less than 200 persons per square kilometre.

In addition to its 16 million inhabitants Taiwan receives support politically and financially from some 20 million Chinese people in overseas countries. The achievements of the state is in no small measure due to financial support from this source; in this respect Taiwan has a similar position to Israel in the Middle East. In 1973 foreign investment in Taiwan amounted to \$193,7 million (U.S.) and investment from overseas Chinese amounted to \$55,2 million (U.S.).

### AGRICULTURE

The agricultural reforms introduced by the Japanese in the 1894-1945 period have been briefly mentioned above. Only 24 per cent of the island is suitable for cultivation, a total area of 930,780 hectares. The agricultural or 'green revolution' in post-war Taiwan has therefore required a more intensive use of land rather than an extension of cultivated areas. There have, however, been recent advances in reclaiming land from the sea for industrial and agricultural purposes. Prior to the implementations of Sun Yat-Sen's policy of "land to the tiller" in 1949, agricultural reform was hindered by an archaic land ownership system. There were disparities in the sizes of holdings and widespread subdivision and fragmentation of farms. The objectives of land reform policies were to establish owners on economically viable farm units. From 1953 the maximum size of a farm was fixed at 2,9 hectares. The government purchased land from the owners of large estates and used this for settlement schemes. Part of the compensation paid to landowners was in the form of stocks in industries; this capital financed the modernization of the industrial sector. By 1960 about 30 per cent of the arable land

was owned by the tillers. The tillers who bought the land from the government had to pay for their farms over a period of ten years. At present 88 per cent of the land is owner-occupied, and 40 per cent of the Taiwanese are living off the land. The majority of farms are small with over half of them being less than one hectare. This has posed problems in the intensification of agriculture by irrigation and mechanisation. A recent trend encouraged by the government is the formation of co-operative groups of farms.

Crops are varied including rice, sugar cane, bananas, pineapples, citrus, soybeans, tea and a range of others. A common practice is the inter-cropping of rice and vegetables on the same land producing two crops of rice and three of other crops each year. The western coastal plain with its fertile soils and irrigation schemes is the main location of agricultural activity. Certain crops are locally distributed in this area; for example tea is mainly grown in the north whereas bananas are grown in the central and southern regions. Paddy rice, sweet potatoes and peanuts are grown throughout the cultivable lands.

## INDUSTRY AND TRADE

Manufacturing activities developed initially in response to demands from the home market and have become of major importance in recent years. The gross national product increased from \$1,327 million (U.S.) in 1952 to \$9,343 million (U.S.) in 1973 — a sevenfold increase in twenty years! The development of manufacturing was dependent on improvements in infrastructure and provision of power. Consumer-goods industries are primarily located around Taipei with heavy industries, including steel and petro-chemicals, located around Kaohsiung in the south. Industrial expansion has been fostered by the creation of a customs-free manufacturing zone at Kaohsing whose role is “to produce goods from imported materials and parts exclusively for the export trade”. (Fisher, 1974, p.539). The success of this industrial estate can be judged from its records; after two years in existence, with eighty plants established, the value of exports had reached \$24 million. Perhaps more significantly this estate provides employment for the local Taiwanese and stimulates further growth in the economy.

Taiwan, with its limited resource base, is to some extent dependent on the processing of imported raw materials and the export of manufactured goods. Foreign trade in 1973 was as follows — imports, \$3,793 million (Taiwan) exports \$4,483 million (Taiwan). This provides a surplus on the balance of payments of \$690 million (Taiwan). Data are given by Fisher (1974) on overseas trade in 1967. These are summarised in Table 1 below.

**TABLE 1 — FOREIGN TRADE IN TAIWAN (1967)**  
(value in million U. S. Dollars)

### IMPORTS

Items	Value (million U.S. Dollars)	Main Sources	Value (million U.S. Dollars)
1. Capital equipment	297,9	Japan	318,7
2. Raw materials	388,7	United States	298,0
(Ores and metals)	123,8	West Germany	29,4
3. Consumer goods	149,4	Oceania	28,6
Total	836,0		

## EXPORTS

1. Industrial products	..... 398,1	United States	..... 147,1
(Textiles	..... 118,4)	Japan	..... 133,7
2. Processed agricultural		Vietnam	..... 76,7
products	..... 145,9	Hong Kong	..... 48,6
3. Agricultural products	..... 123,9		
(Bananas	..... 63,7)		
Total	..... 667,9		

Since 1967 the foreign trade position has altered with the changing political circumstances in South-east Asia. The general pattern of trade with Japan and the United States remains largely unchanged today. In view of the discussion on agriculture and industry given above the figures shown in Table 1 need little explanation. What is significant is that Taiwan from being a somewhat backward country dependent on agriculture in the late 19th century has become a prosperous state with a broad-based economy. This is in no small measure due to the initiative and endeavour of her sixteen million people. It has been stated that on "economic grounds alone Taiwan must be accounted one of the succes stories of post-war Asia". (Fisher, 1974, p.541).

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