

General Discussion of Taiwan

Taiwan is located in a delicate and unique geographical position. It is situated in subtropics between the Asian continent and the Pacific Ocean. It receives influences from both the continent and the ocean. Near half of the land is more than 1000 meters above sea level. Seasonal change can be observed vertically within short distances. Taiwan also serves as an important winter habitat for many migrating species. The near extinct Blackfaced Spoonbill is one among many migrating birds. No wonder the 17th century Portuguese sailors exclaimed 'Ilha Formosa' when they set their first sight on it.

Taiwan consists of 86 islands, with total area of 36,006 km², and coastline of 1566.3 kms. Taiwan island is the main island, and Penghu archipelago contains the most islands, 64 of them. The percentage of land which is below 100 meters above sea level is 26.31%. Percentage of land between 100 m to 1000 meters is 27.31%. About half of the land, 45.99%, belongs to the mountain region. (Ministry of Interior, and Council of Agriculture, Taiwan).

Arable land is 23.74% (as of 1999) of the total land. Half are for paddy fields and half for upland. (Council of Agriculture, Taiwan). Although Taiwan possesses real natural beauty, it has few natural resources and its environment is submitted to high stress, due to high population density, fast economic development, pollution, etc.

Total population increased from 10.792 millions in 1960 to 22.034 millions in 1999. Population growth rate decreased 3.5 % in 1960, 2.4% in the 1970, 1.9% in the 1980, 1.2 % in 1990, and to 0.7% in 1999. Therefore, Taiwan's population density is one of the highest in the world, 611.95 persons per square kilometer in 1999. (Ministry of Interior). Taking into consideration that near half of the land are mountains, actual population density is much higher. Population density in Taipei City is 9713 per square kilometer, while that of Kaoshiung is 9556 per square kilometer in 1997. It is not expected to be much growth in population in the near future.

Rate of illiteracy decreased from 12.26% in 1980 to 5.08% in 1998 (Ministry of Education). As of 1998, education level for person aged 15 and over is 17.68% with primary education, 53.48% with secondary education, and 23.01% with higher education.

The rate of economic growth changed from 11.1% in 1965, 13.9% in 1976, 11.6% in 1986, 6.4% in 1995, to 5.7% in 1999. Given a fast economic growth associated with high population density, the local environment has been stretched very thin. Followings are some of the statistics:

Road traffic: The car ownership is 204 cars per 1000 people. In terms of the number of cars per kilometer of road, the number is 229 per kilometer. This number is only second to that of Hong Kong, 276 cars / km (the Economist, 1999). In addition, there are motorcycles which represent 2.4 times more vehicles than passenger cars.

Fertilizer use: Application of nitrogen fertilizer on per square kilometer arable land is 49.5 tons. It is about 30% more than that in Netherland, 35.6 tons. Total chemical fertilizer consumed per square kilometer is 137.8 tons, which is only second to that of Singapore, 324.7 tons (The World Bank, 2000).

Pesticide use: The average amount of pesticide applied to the cultivated land is 4098 Kg per square kilometer. It is much higher than in all OECD countries.

Cement consumption: Annual per capita consumption of cement is 992 Kg. Comparing with countries in the similar earthquake zone, It is about 1/3 higher than that in Japan. (as of 1995, United State Geological Survey).

No wonder, a nationwide environmental survey indicated 45% of the residents feel the environment is either bad or very bad. Fifty percent of the people say it is normal. Only five

percent feel it is good. Seventy five percent people believe govern-ment policy should put more emphasis on environmental protection instead of industrial development. Only 5 percent chose more industrial development over environmental protection (Hsu et. al., 2000).

In the following sections, several Sustainable Energy Watch indicators are calculated. Detailed explanations are given in most cases, followed by summary.