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# ASSISTANCE TO FOOD PROCESSING INDUSTRY

SI/SOI/85/801

SOLOMON ISLANDS

## Technical report: Assessment of the potential for the development of food processing and agro-industries *

Prepared for the Government of the Solomon Islands
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

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United Nations Industrial Development Organization
Vienna

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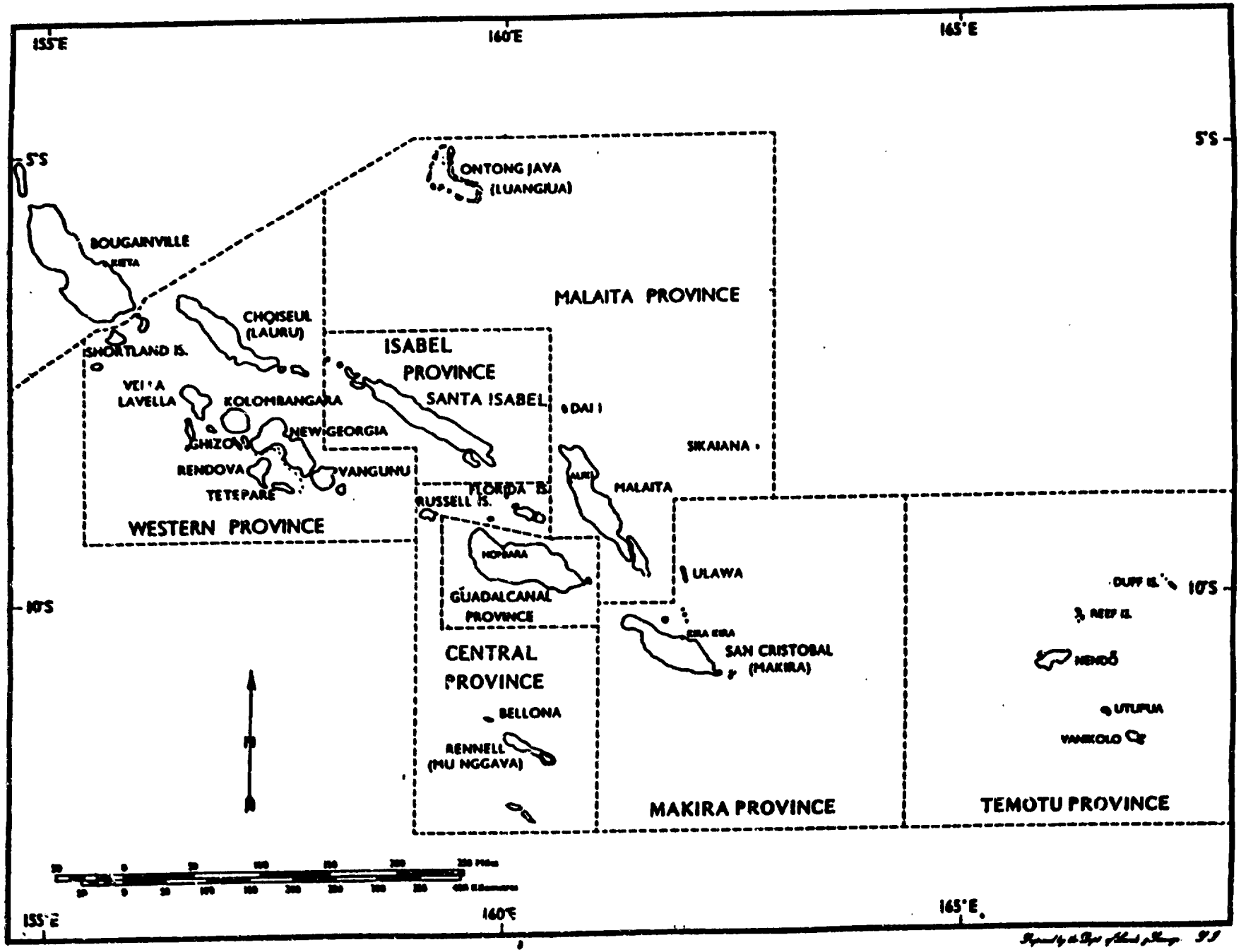
SOLOMON ISLANDS
155°E
160°E
165°E
5°S
10°S
ONTONG JAVA (LUANGIUA)
BOUGAINVILLE
KIETA
CHOISEUL (LAURU)
SHORTLAND IS.
MALAITA PROVINCE
ISABEL PROVINCE
SANTA ISABEL
VEI'A LAVELLA
KOLOMBANGARA
NEW GEORGIA
GHIZO
RENDOVA
VANGUNU
TETEPARE
WESTERN PROVINCE
FLORIDA IS.
RUSSELL IS.
DAI I
SIKAIANA
MALAITA
ULAWA
GUADALCANAL PROVINCE
CENTRAL PROVINCE
BELLONA
RENNELL (MU NGGAVA)
SAN CRISTOBAL (MAKIRA)
MAKIRA PROVINCE
DUFF IS.
REEF IS.
NENDÖ
UTUPUA
VANIKOLO
TEMOTU PROVINCE

(1)

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## SUMMARY AND CONCLUSION

The initial purpose of this study was to assess the present state of the fruit and vegetable processing industries, and the availability of raw materials, with the objective in mind to define methods for improving this sub-sector. However, in the absence of such industries and the extremely low levels of production of the corresponding raw materials, it has been necessary to modify the terms of reference for this study. An attempt has been made to determine the theoretical potential for agro-based industries in the Solomon Islands, predicated on the substitution of imports, at such time when the unsatisfied demand in the fresh market has been met and sufficient raw materials can be produced to sustain industries.

The absence of commercial-scale food crops at the present time indicates that the agricultural base will have to be developed before the establishment of food processing industries can be seriously considered.

The volume and value of current imports of processed food and beverage products, which are increasing annually, give some idea as to the scope and scale of agro-industrial possibilities; however, it should be kept in mind that if an increase in food production sufficient to meet the fresh market demand can be realized, there would be corresponding decreases in the need to import certain processed foods. A possible exception to this would be canned meats, which because of long storage life and the relative ease of distribution will be an important item in the food supply for some years to come. As indicated by import statistics, many of the individual items of processed food products reflect a very small market for which processing facilities at corresponding scales would be too small to be economically viable. Two notable exceptions are beverages (soft drinks and beer) and canned meat.

The annual imports of soft drinks are reported to be nearly 1.5 million liters at a cost of SI$808,000 and beer at nearly 4 million liters at a cost of $1.8 million. The imports of canned meat are 1,235 tons at a cost of more than $3.6 million.

The manufacture of beverages would not require inputs from the domestic agriculture base and consequently the expansion of the existing soft drink industry and the establishment of a brewery need not be delayed by the time required to develop that base. Necessarily, ingredients and containers for beverages would have to be imported, but the savings in freight costs for transporting the high water content of these products suggests that the potential for these industries should be given further consideration and study.

While a meat processing industry appears to merit further study, it is faced with the problem at the moment of an inadequate beef cattle population compounded by an annual decline in numbers. The possibility for this industry will be delayed for some years until the trend of diminishing numbers can be reversed from the present head count of less than 20,000 to something in excess of 50,000 head and, preferably 100,000 head, to sustain an industry capable of eliminating the need to import canned meat.

The remaining food processing industries tentatively identified in this study are mainly conjectural at this time and have no scope for implementation in the immediate future. Whether or not they become real possibilities in the future will depend on the further development of the agricultural base and increased internal market demand for their products.

These include:

1. Slaughtering: poultry
2. Slaughtering: beef and swine
3. Animal-Feeds Mixing
4. Nut Processing: roasting and packaging
5. Meat Processing: canning, smoking, freezing, bacon, ham and sausages.
6. Fish Processing: freezing, drying and fish meal
7. Oil and Fat Processing: vegetable oil, margarine and lard
8. Dairy Products: milk, cream, butter and cheese
9. Soft Drinks Manufacturing
10. Beer Manufacturing
11. Fruit Processing: canned/bottled fruits, juices, jams, jellies, marmalades and juice concentrates.

Because of the highly fragmented distribution pattern of the population, which is engaged primarily in a subsistence level of food production, the wide dispersion of the islands and the lack of adequate communications infrastructures, produce, mostly perishable, needed by food processing industries should come from centralized growing areas located within reasonable distance of the processing facilities. The principal market and distribution center for processed products being in Honiara suggests that the production area be located mainly on Guadalcanal.

Planning for development in the agricultural sector should provide for solving such constraining factors as:

(a) The land tenure system, which poses difficulties in land acquisition. The long gestation periods required to clear and prepare land for tree crops and cattle ranching discourages many investors, particularly foreign investors during recessionary periods, from investing in agricultural development. This, coupled with time consuming red tape in obtaining land-use titles, is considered a major obstacle to investments in estate agriculture. It may be necessary for the Solomon Islands Government to initiate the development of the tree crop and market garden projects to overcome inertia.

(b) The scarcity of skilled manpower and managerial skills.

(c) Limited entrepreneurship. Due to a scarcity of private venture capital, the number of potential investors from within the country is quite small.

(d) The stage of development of physical infrastructure. Transportation and the movement of goods is a major bottleneck. Road networks are at a very early stage of development and water transport is costly in both time and money.

In addition, it is recommended that serious consideration be given to the establishment of a governmental agency with powers of enforcement to monitor standards of quality, sanitation and weights and measures of imported agricultural products. This would apply equally to agricultural raw products, semi-processed and processed products.

This programme would require the adoption of a set of quality standards and the training of personnel to perform the functions of inspection and determination of compliance with the standards.

The creation of an inspection service during the present stage of development would provide consumer protection and some assurance of full value for monies paid for imports. Equally important, quality standards would be in place as and when the domestic agro-industrial sector is further developed, the application of which would help to assume the market acceptance of local products.

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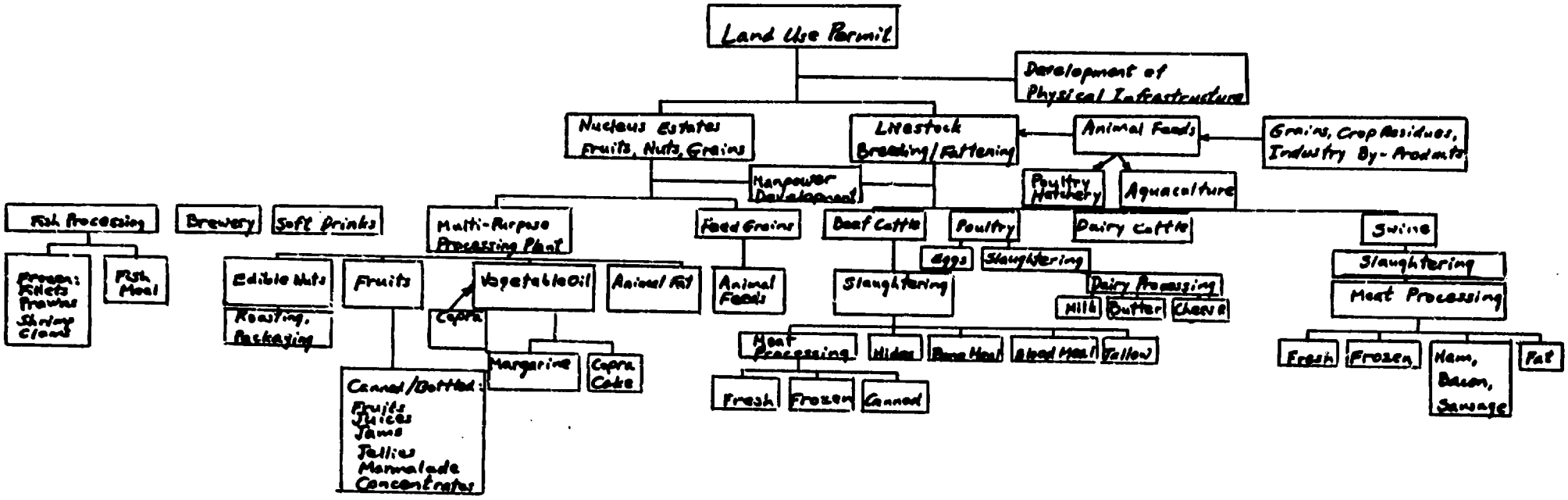
Following is a schematic chart illustrating the development of agricultural production on a commercial scale as a base for agro-industries.

## Schematic of Agricultural Extensification and Potential Agro-Industrial Development

## Solomon Islands



## 1. Current Situation

### Background

### General

The Solomon Islands is an independent Commonwealth nation located between 155° to 170° east and 5° to 12° south of the equator. The Solomon Islands form an archipelago in the Southwest Pacific about 1,900 kilometers (1,200 mi.) northeast of Australia. With terrain ranging from ruggedly mountainous islands to low-lying coral atolls, the Solomons stretch in a 1,450 kilometer (900 mi.) chain southeast from Papua New Guinea across the Coral Sea to Vanuatu.

The main islands of Choiseul, New Georgia, Santa Isabel, Guadalcanal, Malaita and Makira have rain-forested mountain ranges of mainly volcanic origin, deep narrow valleys and coastal belts lined with coconut palms and ringed by reefs. The smaller islands are atolls and raised coral reefs. The Solomon Island region is geologically active and earth tremors are frequent.

The islands' ocean equatorial climate is pleasant most of the year, with a mean temperature of 27°C (80°F.) and few extremes of temperature or weather. Though seasons are not pronounced, the northwesterly winds of November through April bring frequent rainfall and occasional squalls or cyclones. The annual rainfall is about 3050 milimeters (120°in.).

More than 90 percent of the islands is forested. The coastal strips are sheltered by mangrove and coconut trees. The interiors of the large islands are heavily forested. The quality of the soil ranges from rich volcanic to relatively infertile limestone.

The Solomon Islanders comprise diverse cultures, languages and customs. Of the 258,00 persons estimated in 1984, 93.3 percent were classed as Melanesian, 4 percent as Polynesian and 1.5 percent as Micronesian. In addition, small numbers of Europeans and Chineses were registered. About 90 vernaculars are spoken with English as the official language. Most people reside in small, widely dispensed settlements along the coasts. Eighty percent live in localities with less than 200 persons and only 9 percent live in urban areas. Overall population density in the Solomons is about 9.4 persons per square kilometer.

The capital city of Honiara, situated on Guadalcanal, the largest island, has 24,000 inhabitants and a population density of 705 persons per square kilometer.

The other principal towns - Gizo, Auki and Kira Kira - have fewer than 2,000 inhabitants each.

Most Solomon Islanders are Christian, with the Anglican, Roman Catholic and the South Seas Evangelical faiths predominating. About 5 percent of the population maintain traditional beliefs.

The chief characteristics of the traditional Melanesia social structure are: the practice of subsistence economy; the recognition of bonds of kinship, with important obligations extending beyond the immediate family group; and, a strong attachment of the people to the land. Most Solomon Islanders maintain this traditional social structure and find their roots in village life.

Government

The Solomon Islands is a parlimentary democracy within the Commonwealth, with a unicarmeral Parliament and a ministerial system of government. The British monarch is represented by a governor-general, chosen by the Parliament. The national Parliament has 38 members, elected for 4-year terms. The Prime Minister elected by Parliament, choses the other 14 members of the Cabinet. Each ministry is headed by a Cabinet member, who is assisted by a permanent secretary, usually a career public servant, who directs the staff of the ministry.

For local government, the country is divided into eight administrative areas, of which seven are provinces administered by elected provincial assemblies, and the eighth is the town of Honiara, administered by the Honiara Town Council. The government policy is to give more responsibility to these assemblies, as they are more closely in touch with the people and in many remote areas, constitute the only real government presence. Local government activities include public health, sanitation services, schools, supervision of markets and buildings, and construction of roads and bridges. Finance is obtained through local taxes and through grants from the central government, which supervises through the Ministry of Home Affairs.

Land Ownership

Land ownership is reserved for Solomon Islanders. Land generally is still held on a family or village basis and may be handed down from mother or father according to local custom. The islanders are reluctant to provide land for non-traditional economic undertakings, and this has resulted in some disputes over land ownership.

Economy

The Solomon Island economy includes subsistence and market sectors. About 85 percent of the population engage to some extent in subsistence (non-cash)

production, accounting for 35-40 percent of gross domestic product, which has declined from a previous level of 52 percent in 1973. Most persons in the subsistence sector live in rural and isolated settlements, obtain food by root-crop gardening and fishing, and have relatively little involvement in the cash economy. Most people work for money only intermittently. It is estimated that 21 percent of persons in the 15-54 age group work for wages. An additional 7 percent are self-employed, mostly as copra farmers or market gardeners.

The market economy depends on primary commodity production for export principally timber, fish, copra, palm oil and smaller amounts of cocoa and spices. Cattle and rice are also produced for domestic markets, both of which are at present in a state of decline.

From 1973 to 1979, real income grew at an annual rate of about 8 percent, which, even allowing for the country's unusually high annual population growth rate of about 3.4 percent, resulted in an increase in real per capita income of more than 4 percent annually. During this period, fish and palm oil developed into major exports, diversifying the traditional export base of copra and timber. Unfortunately, real per capita GDP fell by 3.7 percent per year during the period 1979-83. The GDP reached $159 million in 1982. (See Table 1).

Agriculture, including forestry, livestock and fisheries, is the mainstay of the economy, accounting for about 70 percent of GDP, 90 percent of exports, and about one-third of all total paid employment. Much of the land is forested, with only a small proportion cultivated for subsistence food production and cash crops. Timber is a major industry. The climate and generally fertile soils are conducive to most tropical crops, and, with the generally low population density, suitable land is ample for further cultivation and cattle raising. The fishing industry has considerable potential, although commercial development has begun.

Real incomes in the rural areas have not increased significantly since the early 1970s. The government recognizes that the most effective way of raising rural incomes at a satisfactory pace and of creating sufficient cash earning opportunities would be through increased participation of the rural population in commercial agriculture. The government is working, with aid from donor countries, to promote economic development in rural areas through such measures as credit expansion, stronger marketing, and improved road transportation and inter-island shipping.

Table ..1: GROSS DOMESTIC PRODUCT, 1974-82
(SI$'000)

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
|---|---|---|---|---|---|---|---|---|---|
| Monetary Sector | | | | | | | | | |
| 1. Wages and salaries | 11,133 | 14,600 | 18,200 | 21,700 | 25,200 | 27,100 | 31,300 | 39,200 | 45,200 |
| 2. Operating surplus | | | | | | | | | |
| Business | 6,611 | 3,209 | 5,212 | 7,696 | 9,500 | 20,700 | 15,100 | 12,700 | 8,600 |
| Companies | (4,065) | (4,000) | (4,500) | (5,000) | (8,000) | (17,000) | (16,600) | (13,300) | (9,000) |
| Cooperatives | (298) | (253) | (292) | (440) | (500) | (300) | (300) | (300) | (300) |
| Public enterprises | (2,248) | (-1,044) | (420) | (2,256) | (1,500) | (3,400) | (-1,800) | (-900) | (-700) |
| Government | 152 | 133 | 547 | 746 | 775 | 657 | 814 | 788 | 900 |
| Rents | (125) | (118) | (525) | (731) | (751) | (643) | (728) | (658) | (700) |
| Timber royalty | (27) | (15) | (22) | (15) | (24) | (14) | (86) | (130) | (200) |
| Households | 3,955 | 1,516 | 1,380 | 2,770 | 3,561 | 6,171 | 5,639 | 5,689 | 4,800 |
| Copra | (3,768) | (1,258) | (1,089) | (2,428) | (3,112) | (5,603) | (4,900) | (4,900) | (4,000) |
| Other | (227) | (258) | (291) | (342) | (449) | (568) | (789) | (789) | (800) |
| Total | 10,718 | 4,858 | 7,139 | 11,212 | 13,836 | 27,528 | 21,603 | 19,177 | 14,360 |
| Incomes (monetary at factor cost (1+2) | 21,851 | 19,458 | 25,339 | 32,912 | 39,036 | 54,628 | 52,903 | 58,377 | 59,500 |
| 3. Depreciation | 3,846 | 4,681 | 5,229 | 6,160 | 7,500 | 10,911 | 14,247 | 18,052 | 22,000 |
| GDP (monetary) at factor cost (1+2+3) | 25,697 | 24,139 | 30,568 | 39,072 | 46,536 | 65,539 | 67,150 | 76,429 | 81,500 |
| 4. Indirect taxes less subsidies | 4,121 | 3,430 | 4,000 | 5,408 | 6,200 | 10,546 | 10,795 | 14,450 | 18,000 |
| GDP (monetary) at market prices (1+2+3+4) | 29,818 | 27,569 | 34,568 | 44,480 | 52,736 | 76,085 | 77,945 | 90,879 | 99,500 |
| Nonmonetary Sector | | | | | | | | | |
| 5. Subsistence product (gross) | 21,100 | 23,675 | 26,078 | 29,050 | 33,225 | 36,583 | 41,440 | 49,700 | 59,000 |
| Monetary and Nonmonetary Sectors | | | | | | | | | |
| GDP at factor cost 1+2+3+5) | 46,797 | 47,814 | 56,646 | 68,122 | 79,761 | 102,122 | 108,590 | 126,129 | 140,500 |
| GDP at market prices (1 to 5) | 50,918 | 51,244 | 60,646 | 73,530 | 85,961 | 112,668 | 119,385 | 140,579 | 158,500 |
| GDP in constant 1977 dollars | 61,345 | 61,005 | 68,916 | 73,530 | 78,863 | 93,890 | 85,888 | 88,414 | 90,888 |

Sources: 1982 Statistical Yearbook, IMF and Bank staff estimates.

## TABLE 2. LAND AREA BY POPULATION AT THE 1970 - 1976 CENSUSES

| | | LAND AREA | | POPULATION | | POPULATION DENSITY |
|---|---|---|---|---|---|---|
| | | SQ. KMS. | % TOTAL | 1970 | 1976 | PER SQ. KM. 1976 |
| (i) | WESTERN | 8573 | 31.1 | 32231 | 40329 | 4.7 |
| | of which: | | | | | |
| | Shortland Islands | 413 | 1.5 | 1950 | 2101 | 5.1 |
| | Vella Lavella | 677 | 2.5 | 9227 | 11407 | 16.8 |
| | Choiseul | 3454 | 12.5 | 8017 | 10349 | 3.0 |
| | Roviana | 2320 | 8.4 | 8499 | 10911 | 4.7 |
| | Marovo | 1709 | 6.2 | 4538 | 5561 | 3.3 |
| (ii) | SANTA YSABEL | 4014 | 14.6 | 8653 | 10420 | 2.6 |
| (iii) | CENTRAL ISLANDS | 1276 | 4.6 | 10922 | 13576 | 10.6 |
| | of which: | | | | | |
| | Rennell/Bellona | 650 | 2.4 | 1504 | 1895 | 2.9 |
| | Russell Islands | 210 | 0.7 | 2715 | 3070 | 14.6 |
| | Savo | 30 | 0.1 | 1352 | 1569 | 52.3 |
| | Nggela | 386 | 1.4 | 5351 | 7044 | 18.2 |
| (iv) | GUADALCANAL | 5302 | 19.2 | 23996 | 31677 | 6.0 |
| (v) | HONIARA | 34 | 0.1 | 11191 | 14942 | 439.4 |
| (vi) | MALAITA | 4243 | 15.4 | 51722 | 60043 | 14.2 |
| (vii) | MAKIRA/ULAWA | 3188 | 11.5 | 12390 | 14891 | 4.7 |
| | of which: | | | | | |
| | Makira | 3125 | 11.3 | 10921 | 13034 | 4.2 |
| | Ulawa | 63 | 0.2 | 1469 | 1857 | 29.5 |
| (viii) | EASTERN ISLANDS | 926 | 3.4 | 9078 | 10945 | 11.8 |
| | of which: | | | | | |
| | Reef Islands | 29 | 0.1 | 4053 | 4255 | 146.7 |
| | Santa Cruz | 647 | 2.4 | 3433 | 4854 | 7.5 |
| | Utupua | 69 | 0.3 | 232 | 300 | 4.4 |
| | Vanikolo | 174 | 0.6 | 163 | 267 | 1.5 |
| | Tikopia | 4 | ... | 1040 | 1115 | 278.8 |
| | Anuta | 3 | ... | 157 | 154 | 51.3 |
| | TOTAL | 27556 | 100.0 | 160183* | 196823 | 7.1 |

* 815 people were counted as on ships in 1970.
Note: The land areas have been revised in 1979.

TABLE 3. HOUSEHOLDS AND AVERAGE HOUSEHOLD SIZE 1976 CENSUS

| Province | No. of Households | Population Male | Female | Total | Average Household Size |
|---|---|---|---|---|---|
| Western | 6358 | 21414 | 18915 | 40329 | 6.3 |
| Santa Ysabel | 1951 | 5282 | 5138 | 10420 | 5.3 |
| Central Islands | 2701 | 7330 | 6246 | 13576 | 5.0 |
| Guadalcanal | 5957 | 16889 | 14788 | 31677 | 5.3 |
| Honiara | 2734 | 8905 | 6037 | 14942 | 5.5 |
| Malaita | 10564 | 29679 | 30364 | 60043 | 5.7 |
| Makira/Ulawa | 2556 | 7792 | 7099 | 14891 | 5.8 |
| Eastern Islands | 2028 | 5517 | 5428 | 10945 | 5.4 |
| TOTAL | 34849 | 102808 | 94015 | 196823 | 5.6 |

TABLE 4. DISTRIBUTION OF LOCALITIES (VILLAGES) BY SIZE CLASSES IN EACH PROVINCE

| Province | POPULATION SIZE CLASSES | | | | | | | | | | Mean Size of Locality |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0-9 | 10-19 | 20-49 | 50-99 | 100-199 | 200-299 | 300-499 | 500-4999 | 5000 + | all Classes | |
| Western | 229 | 188 | 219 | 97 | 75 | 21 | 11 | 2 | - | 842 | 48 |
| Santa. Ysabel | 53 | 35 | 42 | 28 | 32 | 6 | 1 | - | - | 202 | 52 |
| Central Islands | 167 | 90 | 91 | 58 | 73 | 3 | - | 1 | - | 433 | 31 |
| Guadalcanal | 332 | 359 | 413 | 101 | 19 | 4 | - | 2 | - | 1230 | 26 |
| Honiara | - | - | - | - | - | - | - | - | 1 | 1 | 14942 |
| Malaita | 582 | 438 | 428 | 213 | 92 | 19 | 11 | 2 | - | 1785 | 34 |
| Makira/Ulawa | 91 | 63 | 104 | 55 | 30 | 4 | 1 | 1 | - | 349 | 43 |
| Eastern Islands | 23 | 30 | 45 | 40 | 21 | 13 | - | - | - | 172 | 64 |
| TOTAL | 1482 | 1203 | 1342 | 592 | 292 | 70 | 24 | 8 | 1 | 5014 | 39 |
| Cumulative % | 29.6 | 53.6 | 80.3 | 92.1 | 97.9 | 99.3 | 99.8 | 99.9 | 100.0 | - | - |

Although the country's small manufacturing sector has shown growth in recent years, industries are still few and rudimentary. The main areas of growth have been in agro-based industries such as palm oil milling, fish canning and sawmilling. The country's other industries include boats, rattan and wood furniture, fibreglass watertanks and canoes, shell jewellry, tobacco, clothing, soap, nails and a small amount of handicrafts such as carving and weaving.

## 1.1. Resource Base

### 1.1.1. Soils

Topography is the main factor in determining agricultural potential for both subsistence and cash crop production. Flat or gently undulated land is limited in the Solomon Islands. Hansell and Hall (1976) identified 54 such areas ranging in size from 10 to 337 square kilometers throughout the country and referred to as agricultural opportunity areas (AOA). (See Table 5). These areas of level or low hilly land with fair to good agricultural potential totalled 338,000 hectares and represent about 12 percent of the total land area in the country. Surveys indicated that on the average, 84 percent of this potential agricultural land is unused, which would suggest that suitable land in itself should not be a constraint to expanding production for some time to come.

Aside from the Guadalcanal Plain, the main areas of potential agricultural land are on limited coastal flats or on lower hill slopes. The remaining landscape is mainly comprised of steep moutains or hilly land composed of dissected volcanic and sedimentary materials. Except for Malaita, where a large percentage of the population lives in the interior region of the island, most of the country's population occupy pockets of flat land near the coast. The atoll islands have limited agricultural potential due to the nature of the topography.

Although many soils are physically good, potassium deficiency is generally found on soils over calcareous material and limestone, while phosphorus deficiency occurs in soils derived from volcanic rock. The use of inorganic fertilizers will generally alleviate these deficiencies.

Table 5. Agricultural Opportunity Areas (AOA) in the Solomon Islands - Sq. Km.

| District | Total Land Area | AOA Total | % | Used | Unused | %Unused |
|---|---|---|---|---|---|---|
| Western | 8,573 | 1,555 | 18 | 193 | 1,362 | 88 |
| Santa Isabel | 4,573 | 90 | 2 | 11 | 79 | 88 |
| Central Islands | 1,276 | 42 | 3 | 5 | 37 | 87 |
| Guadalcanal/Honiara | 5,336 | 746 | 14 | 120 | 626 | 84 |
| Malaita | 4,243 | 536 | 13 | 149 | 387 | 72 |
| Makira | 3,188 | 228 | 7 | 27 | 201 | 88 |
| Eastern Islands | 926 | 183 | 20 | 29 | 154 | 84 |
| Total | 27,556 | 3,380 | 12 | 534 | 2,846 | 84 |

Source: Specialist Information compiled by J.R.F. Hansell and J.R.D. Wall, 1976.

Climate/Water Supply

1.1.2. Seasonal and diurnal temperature variations at low elevations are small. In coastal areas the mean January maxima are rarely above 32°C and the minima below 29°C. The corresponding figures for July would be 29°C and 23°C respectively. These temperatures would suit the growth of most tropical crops.

Except for parts of the Guadalcanal plains and occasionally on some of the atolls, moisture stress is unlikely. Irrigation may be necessary on such Guadalcanal areas, particularly in crop nurseries. In high rainfall areas insolation may be limited and high humidities are common. In these situations, production of some crops can be reduced and severe disease problems (e.g. stem canker and black pod in cocoa) can preclude commercial production of some crops. Crops that require a dry period to induce adequate flowering are limited to restricted parts of the Solomon Islands.

Annual rainfall recorded from 1971-1981 in various parts of the country shows average ranges of 80 inches in Honiara to 168 inches in the Eastern Islands with extremes of 51 to 214 inches recorded. (See Table 6).

Cyclones occur frequently in the Pacific. While the effects of a particular cyclone may be confined to a small area, effects can be severe in that area as happened in May of 1986. Some tree crops may be ruled out completely as potential crops because of potential damage by cyclones. A study by Harrison and Fleming (1980) precluded rubber production for that reason.

TABLE 6. RAINFALL - ANNUAL TOTALS

INCHES

| Year | Honiara | Kira Kira (Makira/Ulawa) | Auki (Malaita) | Munda (Western) | Graciosa Bay (Eastern Islands) |
|---|---|---|---|---|---|
| 1971 | 95 | 165 | 152 | 127 | 166 |
| 1972 | 114 | 131 | 122 | 156 | 162 |
| 1973 | 72 | 124 | 143 | 129 | 146 |
| 1974 | 81 | 137 | 117 | 110 | 147 |
| 1975 | 76 | 168 | 146 | 143 | 169 |
| 1976 | 112 | 157 | 133 | 159 | 214 |
| 1977 | 83 | 124 | 148 | 157 | 183 |
| 1978 | 50 | 109 | 108 | 141 | 171 |
| 1979 | 75 | 116 | 114 | 154 | 182 |
| 1980 | 76 | 123 | 126 | 162 | 165 |
| 1981 | 51 | 109 | 110 | 136 | 143 |

### 1.1.3. Land Tenure

Land in the Solomon Islands can be classified into two categories, according to the system of tenure governing ownership of rights and interest in land:

a) Customary Land - where the system of tenure is governed by customary use. The customary land tenure system characteristically regards the descent group as the land holding unit, relating the interest of the individuals in the group to their social obligations status and political power. However, the system prevents an individual developer from holding title to a particular parcel of land. Every man is born a land-owner, but the land he owns is also owned in common by other member of his descent group.

b) Alienated Land - land that has been removed from customary use and where the system of tenure is determined by the Lands and Titles Act. Title to 97 percent of such land is registered, title to the remaining 3 percent is pending registration. The Solomon Island Government and Non-Solomon Islanders are not permitted to own interests in Customary Land. Since 1977, only Solomon Islanders and the Solomon Island Government are permitted to own a perpetual estate (equivalent to a freehold interest) in alienated land. Perpetual estate owned by Solomon Islanders or by the Solomon Island Government may be leased, and in the case of Perpetual Estate owned by the Government, such a lease is known as a fixed-term estate. The perpetual estate in town lands is held by Government, and private developers may be granted fixed-term estate in the land.

An estimated 23,838 square kilometers (83 percent of the total land area) is customary land held by tribal or extended family groups. Of the remaining 3,668 sq. km. of non-customary, or alienated land, about 67 percent belongs to the Government and 33 percent to Solomon Islanders. (See Table 7).

The ownership as well as the right-to-use customary land have been, and continue to be, subject to frequent dispute, especially when the land is being considered for commercial development. The problem can be attributed to the absence of land boundary surveys, which makes the determination of ownership a virtually impossible task. If different tribal or extended family groups are involved, the dispute become drawn-out affairs and may be intractable because of inter-tribal rivalry and jealousies.

Table 7. LAND TENURE BY PROVINCE, 1980 /a
(sq km)

| | Western | Santa Isabel | Central Islands | Guadal-canal | Honiara | Malaita | Makira/ Ulawa | Eastern Islands | Total |
|---|---|---|---|---|---|---|---|---|---|
| Customary land | 7,079.0 | 2,813.0 | 889.0 | 5,023.0 | - | 4,168.0 | 3,129.0 | 787.0 | 23,888.0 |
| Alienated land | | | | | | | | | |
| Perpetural estate owned by government | | | | | | | | | |
| Leased to towns | 1.8 | 0.2 | 2.0 | - | 34.0 | 1.0 | 0.5 | 0.2 | 39.7 |
| Leased to Solomon Islanders | 19.6 | 6.2 | 1.1 | 9.4 | - | 24.0 | 4.1 | - | 64.4 |
| Leased to non-Solomon Islanders | 169.3 | 94.3 | 102.2 | 138.8 | - | 11.4 | 19.5 | 0.6 | 536.1 |
| Unencumbered land /b | 1,058.3 | 286.3 | 273.7 | 43.8 | - | 15.6 | 4.9 | 137.2 | 1,819.8 |
| Subtotal | 1,249.0 | 387.0 | 379.0 | 192.0 | 34.0 | 52.0 | 29.0 | 138.0 | 2,460.0 |
| Perpetual estate owned by Solomon Islanders | | | | | | | | | |
| Leased to government | 42.6 | - | - | 23.7 | - | 1.8 | 0.9 | - | 69.0 |
| Leased to Solomon Islanders | - | 0.2 | 0.3 | 0.2 | - | 0.9 | 4.3 | 0.1 | 6.0 |
| Leased to non-Solomon Islanders | 1.9 | 4.3 | 2.1 | 31.7 | - | 4.1 | - | 0.5 | 44.6 |
| Unencumbered land | 200.5 | 809.5 | 5.6 | 31.4 | - | 16.2 | 24.8 | 0.4 | 1,088.4 |
| Subtotal | 245.0 | 814.0 | 8.0 | 87.0 | - | 23.0 | 30.0 | 1.0 | 1,208.0 |
| Total Alienated Land | 1,494.0 | 1,201.0 | 387.0 | 279.0 | 34.0 | 75.0 | 59.0 | 139.0 | 3,668.0 |
| Total Area | 8,573.0 | 4,014.0 | 1,276.0 | 5,302.0 | 34.0 | 4,243.0 | 3,188.0 | 926.0 | 27,556.0 |

/a At November 30, 1980.
/b Designated for mining, forestry or smallholder schemes.

Source: 1982 Statistical Yearbook.

Registration of such land is being encouraged in the hope that this will reduce the frequency of disputes and make more land available for agricultural development. However, because increasing use of customary land for commercial production is essential to any significant future development of the agricultural sector, the Government will need to take appropriate measures at an early date to deal with the problem.

The land tenure system, as it is presently structured appears to be a major obstacle to development.

### 1.1.4. Manpower

The present distribution of population is such that an estimated 60 percent live in villages with fewer than 100 inhabitants and more than 80 percent in locations with fewer than 200. The provision of services (including agricultural extension services) to such a scattered population is obviously difficult and costly. Any major increase in crop production would therefore presumably have to come from large plantations, which will require resttlement schemes. Substantial development will necessarily have to be restricted to suitable and accesable lands in the Agricultural opportunity areas and if the resident population in such areas is low (as would be the case in most areas), manpower would have to be imported.

Compounding the problem of the lack of a centralized labor pool is the scarcity of management and technical skills which have not had opportunities to develop in the absence of commercial scale agricultural activities. This applies also to the limited entrepreneurship in the country attributable to a scarcity of private venture capital. (See tables 8,9 and 10 containing employment statistics).

Table 8. EMPLOYMENT BY SECTOR, 1975-83

| | 1976 /a | | 1977 /b | | 1978 /b | | 1979 /b | | 1980 /b | | 1981 /b | | 1982 /b | | 1983 /b | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Agriculture, forestry and fishing | 4,540 | 27.7 | 4,680 | 27.9 | 5,918 | 32.6 | 6,045 | 31.8 | 6,076 | 29.8 | 7,173 | 32.9 | 6,714 | 31.5 | 7,022 | 32.0 |
| Construction | 1,450 | 8.8 | 1,460 | 8.7 | 1,065 | 5.9 | 1,238 | 6.5 | 1,585 | 7.8 | 1,979 | 9.1 | 1,226 | 5.7 | 1,327 | 6.1 |
| Mining | 40 | 0.2 | 40 | 0.2 | 17 | 0.1 | 7 | - | 2 | - | 1 | - | - | - | - | - |
| Manufacturing | 1,380 | 8.4 | 1,430 | 8.5 | 1,104 | 6.1 | 1,651 | 8.7 | 2,071 | 10.2 | 1,762 | 8.1 | 1,832 | 8.6 | 1,846 | 8.4 |
| Utilities | 170 | 1.0 | 180 | 1.1 | 211 | 1.2 | 242 | 1.3 | 266 | 1.3 | 283 | 1.3 | 269 | 1.3 | 284 | 1.3 |
| Commerce | 1,740 | 10.6 | 1,800 | 10.7 | 1,863 | 10.3 | 1,817 | 9.6 | 1,975 | 9.7 | 2,085 | 9.6 | 2,178 | 10.2 | 2,081 | 9.5 |
| Transport and communications | 1,350 | 8.2 | 1,400 | 8.3 | 1,261 | 6.9 | 1,107 | 5.8 | 1,472 | 7.2 | 1,397 | 6.4 | 1,895 | 8.9 | 1,925 | 8.8 |
| Financial services | 130 | 0.8 | 130 | 0.8 | 222 | 1.2 | 246 | 1.3 | 301 | 1.5 | 327 | 1.5 | 444 | 2.1 | 418 | 1.9 |
| Social and domestic services, etc. | 5,610 | 34.3 | 5,680 | 33.8 | 6,501 | 35.7 | 6,659 | 35.0 | 6,619 | 32.5 | 6,781 | 31.1 | 6,748 | 31.6 | 7,029 | 32.0 |
| Total | 16,410 | 100.0 | 16,300 | 100.0 | 18,162 | 100.0 | 19,012 | 100.0 | 20,367 | 100.0 | 21,788 | 100.0 | 21,333 | 100.0 | 21,932 | 100.0 |

/a February.
/b June.

Source: Statistical Yearbook 1982, Government Statistics Office.

TABLE 9. EMPLOYMENT BY PROVINCE AND MAJOR CLASSIFICATION

(AT 30TH JUNE 1981)

| | Major Industrial Classification | Western | Santa Isabel | Central Islands | Guadalcanal | Honiara | Malaita | Makira Ulawa | Eastern Islands | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Agriculture, Forestry Fishing | 2259 | 190 | 1443 | 2818 | 88 | 148 | 94 | 133 | 7173 |
| 2 | Mining | - | - | - | - | 1 | - | - | - | 1 |
| 3 | Manufacturing | 200 | 14 | 366 | 434 | 634 | 104 | 10 | - | 1762 |
| 4 | Electricity & Water | 20 | 3 | 5 | 53 | 157 | 21 | 11 | 13 | 283 |
| 5 | Construction | 203 | 26 | 35 | 21 | 1448 | 130 | 60 | 56 | 1979 |
| 6 | Wholesale & Retail Trade | 319 | 69 | 53 | 83 | 1324 | 134 | 54 | 39 | 2085 |
| 7 | Transport & Communication | 156 | 9 | 75 | 20 | 1042 | 46 | 27 | 22 | 1397 |
| 8 | Financial Services | 11 | 1 | - | - | 303 | 8 | 4 | - | 327 |
| 9 | Community, Social and Personal Services | 891 | 247 | 234 | 590 | 2563 | 902 | 320 | 234 | 5981 |
| | TOTAL | 4059 | 559 | 2221 | 4019 | 7560 | 1493 | 580 | 497 | 20988 |

## TABLE 10. EMPLOYMENT OF SOLOMON ISLANDERS/NON-SOLOMON ISLANDERS B Y SEX AND INDUSTRIAL CLASSIFICATION

(AT 30TH JUNE 1981)

| INDUSTIRAL CLASSIFICATION | | SOLOMON ISLANDERS | | | NON-SOLOMON ISLANDERS | | | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | | MALES | FEMALES | TOTAL | MALES | FEMALES | TOTAL | |
| 111 | Agriculture & Livestock Production | 3636 | 624 | 4260 | 47 | 8 | 55 | 4315 |
| 112 | Agricultural Services | 372 | 21 | 393 | 19 | 2 | 21 | 414 |
| 121 | Forestry | 622 | 6 | 628 | 2 | - | 2 | 630 |
| 122 | Logging | 1032 | 38 | 1070 | 42 | 1 | 43 | 1113 |
| 130 | Fishing | 521 | - | 521 | 180 | - | 180 | 701 |
| | AGRICULTURE, FORESTRY, FISHING | 6183 | 689 | 6872 | 290 | 11 | 301 | 7173 |
| 230 | Mining | - | 1 | 1 | - | - | - | 1 |
| | Mining | - | 1 | 1 | - | - | - | 1 |
| 311 | Food Manufacturing | 668 | 18 | 686 | 35 | - | 35 | 721 |
| 314 | Tobacco Manufacturing | 85 | - | 85 | 1 | 1 | 2 | 87 |
| 322 | Clothing Manufacturing | 14 | 35 | 49 | 1 | 1 | 2 | 51 |
| 331 | Saw Milling | 457 | 5 | 462 | 13 | 1 | 14 | 476 |
| 332 | Furniture Manufacturing | 115 | 1 | 116 | 3 | - | 3 | 119 |
| 342 | Printing | 26 | 9 | 35 | - | - | - | 35 |
| 390 | Other Manufacturing | 258 | 2 | 260 | 10 | 3 | 13 | 273 |
| | Manufacturing | 1623 | 70 | 1693 | 61 | 6 | 69 | 1762 |

TABLE 10. (Con..) EMPLOYMENT OF SOLOMON ISLANDERS/NON-SOLOMON ISLANDERS BY SEX AND INDUSTIRAL CLASSIFICATION

| INDUSTRIAL CLASSIFICATION | | SOLOMON ISLANDERS | | | NON-SOLOMON ISLANDERS | | | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | | MALES | FEMALES | TOTAL | MALES | FEMALES | TOTAL | |
| 410 | Electri.ity | 164 | 8 | 172 | 9 | - | 9 | 181 |
| 420 | Water | 101 | - | 101 | 1 | - | 1 | 102 |
| | Electricity and Water | 265 | 8 | 273 | 10 | - | 10 | 283 |
| 500 | Construction | 1909 | 12 | 1921 | 56 | 2 | 58 | 1979 |
| | Construction | 1909 | 12 | 1921 | 56 | 2 | 58 | 1979 |
| 610 | Wholesale Trade | 245 | 25 | 270 | 8 | 1 | 9 | 279 |
| 620 | Retail Trade | 1256 | 231 | 1487 | 53 | 13 | 66 | 1553 |
| 631 | Restaurants | 32 | 26 | 58 | 1 | 1 | 2 | 60 |
| 632 | Hotels | 144 | 42 | 186 | 5 | 2 | 7 | 193 |
| | Wholesale & Retail Trade | 1677 | 324 | 2001 | 67 | 17 | 84 | 2085 |
| 711 | Land Transport | 75 | 7 | 82 | 1 | - | 1 | 83 |
| 712 | Water Transport | 878 | 16 | 894 | 27 | 3 | 30 | 924 |
| 713 | Air Transport | 69 | 16 | 85 | 16 | 1 | 17 | 102 |
| 719 | Transport Services | 200 | 7 | 207 | 5 | - | 5 | 212 |
| 720 | Communication | 66 | 6 | 72 | 4 | - | 4 | 76 |
| | Transport & Communications | 1288 | 52 | 1340 | 53 | 4 | 57 | 1397 |

TABLE 10. (Cont.) EMPLOYMENT OF SOLOMON ISLANDERS/NON-SOLOMON ISLANDERS BY SEX AND INDUSTRIAL CLASSIFICATION

| INDUSTRIAL CLASSIFICATION | | SOLOMON ISLANDERS | | | NON-SOLOMON ISLANDERS | | | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | | MALES | FEMALES | TOTAL | MALES | FEMALES | TOTAL | |
| 810 | Banking | 142 | 77 | 219 | 31 | 1 | 32 | 251 |
| 830 | Real Estate and Business Services | 42 | 10 | 52 | 21 | 3 | 24 | 76 |
| | Financial Services | 184 | 87 | 271 | 52 | 4 | 56 | 327 |
| 910 | Public Administration | 2199 | 243 | 2442 | 87 | 9 | 96 | 2538 |
| 931 | Education Services | 1242 | 392 | 1634 | 103 | 75 | 178 | 1812 |
| 933 | Health Services | 542 | 425 | 967 | 26 | 14 | 40 | 1007 |
| 939 | Religion | 393 | 45 | 438 | 9 | 5 | 14 | 452 |
| 93 | Other Social Services n.e.s. | 39 | 8 | 47 | 1 | - | 1 | 48 |
| 94 | Welfare Services | 93 | 14 | 107 | 7 | - | 7 | 114 |
| 95 | Personal Household Services | 4 | 6 | 10 | - | - | - | 10 |
| | Community Social and Personal Services | 4512 | 1133 | 5645 | 233 | 103 | 336 | 5981 |
| | GRAND TOTAL | 17641 | 2376 | 20017 | 824 | 147 | 971 | 20988 |

## 1.2. The Agricultural Base

### 1.2.1. Food Crops

With approximately 90 percent of the population living in rural areas, most food crops are grown by subsistence farmers employing the method of shifting cultivation in which forest is cleared and crops are grown for a limited period. When crop yields decline, the plot of land is abandoned and allowed to lie follow and to regenerate with a bush growth.

A large number of crops are grown in such gardens, although sweet potato usually predominates. Others include yams, taro, cabbage, maize, melons, beans, shallots, peanuts, tomatoes, tobacco, bananas, pineapple, sugarcane and papaya. The relative importance of these crop varies considerably between sites.

Shifting cultivation is an appropriate method for production of food crops for much of the Solomon Islands environment. However, the system depends on abundant land resources to be successful. Pressure is being put on the system in some parts of the Solomons as a result of increasing population and the development of cash crops.

The production of rice, which has been solely in the hands of Solrice Limited, owned by the Government, but has recently been suspended as a result of land damage caused by flooding and subsequent silting following this years cyclone. In 1980, milled rice production had reached it's peak at 8,302 tons, allowing roughly half of this amount for export. Rice production went into a decline after this time, which was attributed to a number of problems such as frequent breakdowns of planting equipment, soil damage, lack of well-trained operators and labor, and the high incidence of pests and diseases. (See Table 11).

Food production, and the logisties problems associated with collection and transporting to urban markets has necessitated an ever growing need to import most foodstuff as reflected in import statistics, reaching a preliminary figure of SI$15.7 million, or approximately 15 percent of the total import bill for 1985.

While the subsistence agricultural production of food crops provides adequately for the basic food requirements of most of the country, the value of food imported suggests considerable opportunities for expanding food production to meet the total need. As yet there are no production surpluses to provide a reliable and continuing supply of raw materials for fruit and vegetable processing.

## TABLE 11. RICE CULTIVATION

| YEAR | CULTIVATED AREA (Ha.) DRY | CULTIVATED AREA (Ha.) IRRIGATED | HARVESTED AREA[1] (Ha.) | DRY PADDY RICE HARVESTED (m.ton) |
|---|---|---|---|---|
| 1971 | 1,052 | 89 | n.a. | 3,000 |
| 1972 | 16 | 378 | n.a. | 1,320 |
| 1973 | 16 | 378 | n.a. | 1,220 |
| 1974 | 16 | 378 | n.a. | 1,220 |
| 1975 | - | 451 | 599 | 1,237 |
| 1976 | - | 779 | 1,297 | 3,829 |
| 1977 | - | 845 | 1,940 | 6,269 |
| 1978 | - | 1,020 | 2,663 | 7,658 |
| 1979 | - | 1,327 | 2,997 | 10,224 |
| 1980 | - | 1,481 | 3,869 | 14,253 |
| 1981 | - | 1,637 | 4,029 | 13,866 |

(1) More than one crop can be harvest each year

## RICE MILLING

| YEAR | PADDY RICE INPUT (m.ton) | POLISHED RICE OUTPUT (m.ton) | BROWN RICE OUTPUT (m.ton) | BY PRODUCT[2] OUTPUT (m.ton) |
|---|---|---|---|---|
| 1971 | 2,950[1] | 1,680[1] | n.a. | 620[1] |
| 1972 | 1,180[1] | 670 | n.a. | 250[1] |
| 1973 | 1,120[1] | 640 | n.a. | 240[1] |
| 1974 | 1,090[1] | 620 | n.a. | 234[1] |
| 1975 | 1,099 | 623 | n.a. | 234 |
| 1976 | 3,217 | 1,850 | n.a. | 719 |
| 1977 | 5,802 | 3,308 | 8 | 1,178 |
| 1978 | 6,864 | 2,320 | 2,056 | 1,130 |
| 1979 | 9,985 | 5,128 | 726 | 1,896 |
| 1980 | 13,091 | 5,524 | 2,778 | 2,126 |
| 1981 | 13,374 | 6,856 | 1,426 | 2,189 |

(1) Estimated

(2) Brown, Chips and Broken Rice

Attempts to increase productivity of the land and to result in marketable surpluses through the introduction of new and high yielding varities will require considerable strengthening of the existing research, extension and marketing support.

## 1.2.2. Plantation Crops

The principal plantation crops, or cash crops grown in the Solomon Islands are coconuts, oil palm and cocoa. Export of copra, palm oil and cocoa beans in 1983 represented about 28 percent of the value of all principal exports which also includes logs and sawn timber; fresh, frozen, canned and smoked fish, marine shells and other minor products. (See Table 12).

Table 12. Composition of Exports, 1977 - 1983
(SI$ millions)

| | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|
| Copra | 8.0 | 7.9 | 16.1 | 10.5 | 8.1 | 8.1 | 8.4 |
| Palm Oil & Kernels | 3.2 | 5.1 | 7.2 | 7.0 | 7.5 | 7.3 | 8.8 |
| Cocoa Beans | 0.6 | 0.6 | 0.6 | 0.6 | 0.9 | 0.9 | 2.3 |
| Logs & Sawn Timber | 7.9 | 7.3 | 15.3 | 15.2 | 15.2 | 22.9 | 20.0 |
| Fish, Fresh and Frozen | 6.4 | 5.0 | 14.6 | 19.8 | 19.0 | 9.9 | 24.4 |
| Fish, canned and smoked | 1.9 | 2.3 | 2.3 | 2.3 | 3.4 | 2.9 | 4.9 |
| Rice | 0.3 | 0.8 | 1.0 | 1.5 | 0.9 | 0.9 | - |
| All other | 1.3 | 2.1 | 3.1 | 2.8 | 3.1 | 2.5 | 2.4 |
| Totals | 29.6 | 31.1 | 60.2 | 60.8 | 57.6 | 56.6 | 71.2 |

Source: 1982 Statistical year book, SI Statistics Office

The value of exports of cash crops was led by Palm Oil and Kernels at SI.$8.8 million, overtaking copra for the first time since its introduction into the export market in 1976. This represents not only in an increase in palm oil and kernel production as palm oil trees continue to mature, but it is also a reflection of lower prices for copra and the small-holders negative response to poor market conditions. From 1975 to 1983, the volume of exports of cocoa beans has increased on an average of 11 percent per year although the value per kg has shown considerable fluctuations.

Tables 15 through 18 have been included in this section to show production statistics for the three plantation crops for a series of years.

Small holders accounted for 22,450 tons of copra production in 1982 while the plantation sector accounted for 9,723 tons. The small holders share of production increased steadily from about 56 percent in 1971 to about 70 percent in 1982. This suggests the significance of the small holders contribution to the copra export from the Solomon Islands.

Table 13. Principal Exports, 1975 - 1983

| | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|---|---|
| **Copra** | | | | | | | | | |
| Value (SI$'000) | 4,661 | 3,634 | 7,988 | 10,212 | 16,067 | 10,476 | 8,050 | 8 078 | 8,375 |
| Volume ('000 MT) | 27.5 | 23.0 | 26.9 | 26.1 | 31.6 | 31.7 | 31.8 | 33.9 | 25.5 |
| Unit value (SI$/MT) | 170 | 158 | 297 | 391 | 508 | 330 | 253 | 238 | 328.4 |
| **Logs** | | | | | | | | | |
| Value (SI$'000) | 3,026 | 6,062 | 7,725 | 6,837 | 14,721 | 14,904 | 14,673 | 21,385 | 18,792 |
| Volume ('000 cu m) | 216 | 241 | 238 | 246 | 258 | 258 | 315 | 333 | 337 |
| Unit value (SI$/cu m) | 14.0 | 25.1 | 32.4 | 27.8 | 57.1 | 57.8 | 46.6 | 64.2 | 55.8 |
| **Cocoa Beans** | | | | | | | | | |
| Value (SI$'000) | 112 | 201 | 553 | 596 | 648 | 637 | 893 | 895 | 2,259 |
| Volume (MT) | 160 | 125 | 164 | 240 | 286 | 365 | 586 | 624 | 1,235 |
| Unit value (SI$/kg) | 0.70 | 1.61 | 3.37 | 2.48 | 2.27 | 1.75 | 1.52 | 1.43 | 1.83 |
| **Rice and Rice Products** | | | | | | | | | |
| Value (SI$'000) | 2 | 12 | 297 | 809 | 950 | 1,510 | 901 | 879 | n.a. |
| Volume (MT) | 43 | 130 | 1,664 | 3,070 | 4,161 | 5,703 | 3,499 | 3,688 | n.a. |
| Unit value (SI$/MT) | 56 | 96 | 179 | 263 | 228 | 265 | 258 | 238 | n.a. |
| **Marine Shells** | | | | | | | | | |
| Value (SI$'000) | 163 | 203 | 179 | 165 | 278 | 326 | 403 | 333 | 530 |
| Volume (MT) | 533 | 606 | 418 | 313 | 341 | 399 | 421 | 579 | 468 |
| Unit value (SI$/MT) | 306 | 335 | 429 | 528 | 815 | 817 | 957 | 879 | 1,132 |
| **Sawn Timber** | | | | | | | | | |
| Value (SI$'000) | 105 | 174 | 163 | 287 | 1,146 | 1,080 | 1,334 | 1,436 | 1,183 |
| Volume (cu m) | 1,003 | 1,586 | 1,627 | 2,666 | 8,849 | 6,716 | 7,226 | 7,106 | 5,756 |
| Unit value (SI$/cu m) | 104 | 110 | 100 | 108 | 130 | 161 | 185 | 204 | 206 |
| **Fresh and Frozen Fish** | | | | | | | | | |
| Value (SI$'000) | 1,271 | 5,965 | 6,375 | 5,311 | 14,588 | 19,757 | 19,047 | 9,886 | 24,350 |
| Volume ('000 MT) | 3.6 | 12.1 | 9.8 | 10.3 | 23.4 | 21.5 | 23.7 | 15.3 | 30.8 |
| Unit value (SI$/MT) | 348 | 493 | 652 | 514 | 623 | 919 | 804 | 646 | 791 |
| **Canned Fish** | | | | | | | | | |
| Value (SI$'000) | 1,188 | 1,195 | 1,520 | 1,522 | 1,906 | 2,641 | 2,573 | 2,933 | 3,588 |
| Volume (MT) | 891 | 672 | 671 | 666 | 761 | 772 | 752 | 939 | 1,288 |
| Unit value (SI$/MT) | 1,334 | 1,778 | 2,267 | 2,285 | 2,505 | 3,421 | 3,422 | 3,123 | 2,786 |
| **Smoked Fish** | | | | | | | | | |
| Value (SI$'000) | 319 | 225 | 388 | 721 | 438 | 781 | 345 | 1,147 | 1,261 |
| Volume (MT) | 162 | 140 | 106 | 223 | 142 | 187 | 70 | 272 | 302 |
| Unit value (SI$/MT) | 1,967 | 1,609 | 3,663 | 3,235 | 3,085 | 4,176 | 493 | 4,217 | 4,175 |
| **Palm Oil** | | | | | | | | | |
| Value (SI$'000) | - | 1,160 | 2,895 | 4,653 | 6,590 | 5,832 | 7,080 | 6,820 | 7,789 |
| Volume ('000 MT) | - | 3.5 | 6.2 | 10.3 | 12.8 | 15.7 | 16.9 | 18.6 | 20.0 |
| Unit value (SI$/MT) | - | 327 | 463 | 450 | 515 | 371 | 419 | 338 | 389 |
| **Palm Kernels** | | | | | | | | | |
| Value (SI$'000) | - | 53 | 282 | 421 | 616 | 386 | 433 | 520 | 1,007 |
| Volume (MT) | - | 250 | 1,300 | 2,050 | 2,045 | 2,550 | 2,900 | 3,442 | 4,450 |
| Unit value (SI$/MT) | - | 210 | 217 | 205 | 301 | 151 | 149 | 151 | 226 |

Sources: 1982 Statistical Yearbook, SI Statistics Office.

## TABLE 14. EXPORTS - MAJOR COMMODITIES BY PROVINCIAL AREA OF PORTS 1981

| COMMODITIES | UNIT | HONIARA | | CENTRAL IS. | | WESTERN | | EASTERN IS. | | TOTAL ALL PORTS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q | V $'000 | Q | V $'000 | Q | V $'000 | Q | V $'000 | Q | V $'000 |
| Fish, Fresh & Frozen | mt | - | - | 9368 | 8563 | 14353 | 11484 | - | - | 23720 | 19047 |
| Fish Smoked | mt | - | - | 44 | 228 | 26 | 117 | - | - | 70 | 345 |
| Fish Canned | mt | 752 | 2573 | - | - | - | - | - | - | 752 | 2573 |
| Rice and Rice Products | mt | 3499 | 901 | - | - | - | - | - | - | 3499 | 901 |
| Cocoa Beans | mt | 364 | 540 | 222 | 353 | - | - | - | - | 586 | 893 |
| Copra | mt | 15202 | 3898 | 11641 | 2825 | 4967 | 1327 | - | - | 31810 | 8050 |
| Palm Kernels | mt | 2900 | 433 | - | - | - | - | - | - | 2900 | 433 |
| Wood in the Rough (Logs) | (XX) cu m | 4 | 18 | - | - | 315 | 14709 | - | - | 319 | 14728 |
| Sawn Timber | (XX) cu m | 7 | 1342 | - | - | - | - | - | - | 7 | 1342 |
| Scrap Metal | mt | 5 | 2 | - | - | - | - | - | - | 5 | 2 |
| Marine Shells | mt | 405 | 334 | - | - | 19 | 69 | - | - | 425 | 403 |
| Palm Oil | mt | 16914 | 7094 | - | - | - | - | - | - | 16914 | 7094 |
| Gold | g. | 41959 | 520 | - | - | - | - | - | - | 41959 | 520 |
| TOTAL | | | 17655 | | 10969 | | 27706 | | | | 56331 |
| Other Domestic Exports (Port not specified) | | - | - | - | - | - | - | - | - | - | 1224 |
| Total Domestic Exports | | - | - | - | - | - | - | - | - | - | 57555 |

Statistics on the total area of copra production by both the smallholders (including co-operative farms) and the plantation sectors are not available. However, an estimate of the area planted in coconut in 1976 was 60,500 ha.

Lever's Plantation Ltd, in the Solomon Islands is by far the largest single producer of copra (as well as cocoa) in the country. In the 1970's this company began a program of replanting coconut using dwarf hybirds through Government funding, which will enable the Government to acquire 40 percent ownership of the company.

There has never been a commercial scale copra processing facility in the Solomon Islands. Copra has traditionally been exported to Europe, Japan and Singapore. A series of feasibility studies, the majority of which tend to agree, indicate that a regional copra crushing plant or local small plants would operate at a loss because of generally low prices paid for coconut oil and copra cake on the world market, aggravated by the high cost of inter-island and export freight.

The successful trial planting of oil palm in Solomon Islands during the 1965-1970 period resulted in the establishment of Solomon Islands Plantation Ltd. (SIPL) in 1971, which was jointly owned by the Commonwealth Development Corp. (CDC), Government and local Landowners. Production began in 1976 with an initial production of 3,549 tons of palm oil and 250 tons of palm kernel. The export of these commodities has since increased steadily in the ensuing years. By 1983, palm oil production rose to 20,000 tons and palm kernels to 4,450 tons.

Cocoa was introduced to the country in the early 1900's. Early planters and missionaries planted cocoa trees in isolated small plots. Large-scale plantations were not started until 1951 when cocoa was considered a suitable crop to diversify cash crops in this country.

The production and export of cocoa beans was small in the early years; however, cocoa production has steadily increased in recent years. Exports have increased from 89 tons in 1971 to 1,235 tons in 1983. Although cocoa bean export is comparatively small to the overall export earnings (3.2 percent in 1983) there is good potential for increased production and earnings in the future. Cocoa can be inter-planted with coconut, which provide shading necessary for the trees, provided that fertilizers essential for maintaining reasonable yields are applied and precautions against erosion are taken. The advantage of cocoa under coconuts is that extra land is not required.

## TABLE 15. COPRA PRODUCTION BY PROVINCE AND TYPE OF PRODUCER

### 1971 - 1981

(Metric tons)

| YEAR | PRODUCER | PROVINCE | | | |
|---|---|---|---|---|---|
| | | WESTERN | SANTA YSABEL | CENTRAL ISLANDS | GUADALCANAL |
| 1971 | Smallholder | 6,305 | 1,206 | 1,131 | 1,803 |
| | Plantation | 1,263 | 1,050 | 5,279 | 3,287 |
| | Total | 7,568 | 2,256 | 6,410 | 5,090 |
| 1972 | Smallholder | 5,761 | 806 | 871 | 1,266 |
| | Plantation | 978 | 875 | 4,387 | 2,326 |
| | Total | 6,739 | 1,681 | 5,258 | 3,592 |
| 1973 | Smallholder | 4,756 | 162 | 418 | 931 |
| | Plantation | 684 | 234 | 3,557 | 1,995 |
| | Total | 5,440 | 395 | 3,975 | 2,926 |
| 1974 | Smallholder | 8,552 | 1,239 | 927 | 2,517 |
| | Plantation | 1,230 | 865 | 4,841 | 2,759 |
| | Total | 9,782 | 2,103 | 5,768 | 5,275 |
| 1975 | Smallholder | 6,028 | 1,078 | 875 | 1,952 |
| | Plantation | 1,194 | 1,002 | 6,800 | 2,721 |
| | Total | 7,222 | 2,080 | 7,675 | 4,673 |
| 1976 | Smallholder | 5,978 | 1,117 | 932 | 2,084 |
| | Plantation | 944 | 870 | 5,466 | 2,547 |
| | Total | 6,922 | 1,986 | 6,398 | 4,631 |
| 1977 | Smallholder | 6,569 | 1,719 | 1,616 | 2,969 |
| | Plantation | 1,136 | 882 | 5,641 | 2,642 |
| | Total | 7,705 | 2,601 | 7,257 | 5,611 |
| 1978 | Smallholder | 6,956 | 1,217 | 1,359 | 3,076 |
| | Plantation | 1,091 | 528 | 5,263 | 2,316 |
| | Total | 8,047 | 1,746 | 6,623 | 5,392 |
| 1979 | Smallholder | 9,637 | 2,036 | 1,542 | 3,819 |
| | Plantation | 992 | 730 | 6,142 | 2,132 |
| | Total | 10,630 | 2,768 | 7,685 | 5,951 |
| 1980 | Smallholder | 7,899 | 1,745 | 1,525 | 3,819 |
| | Plantation | 784 | 469 | 5,031 | 1,955 |
| | Total | 8,680 | 2,214 | 6,557 | 5,776 |
| 1981 | Smallholder | 9,228 | 1,816 | 1,637 | 4,369 |
| | Plantation | 772 | 551 | 6,269 | 1,828 |
| | Total | 10,000 | 2,366 | 7,907 | 6,195 |

TABLE 15. CTD. COPRA PRODUCTION BY PROVINCE AND TYPE OF PRODUCER

1971 - 1981

(Metric tons)

| YEAR | PRODUCER | PROVINCE | | | |
|---|---|---|---|---|---|
| | | MALAITA | MAKIRA/ULAWA | EASTERN ISLANDS | SOLOMON TOTAL |
| 1971 | Smallholder | 1,712 | 1,782 | 615 | 14,561 |
| | Plantation | 195 | 440 | - | 11,507 |
| | Total | 1,907 | 2,222 | 615 | 26,068 |
| 1972 | Smallholder | 1,357 | 1,345 | 567 | 11,973 |
| | Plantation | 224 | 395 | - | 9,185 |
| | Total | 1,581 | 1,740 | 567 | 21,158 |
| 1973 | Smallholder | 1,226 | 988 | 632 | 9,112 |
| | Plantation | 193 | 311 | - | 6,973 |
| | Total | 1,419 | 1,299 | 632 | 16,086 |
| 1974 | Smallholder | 2,469 | 1,469 | 919 | 18,091 |
| | Plantation | 252 | 513 | - | 10,460 |
| | Total | 2,721 | 1,982 | 919 | 28,551 |
| 1975 | Smallholder | 2,188 | 1,240 | 598 | 13,958 |
| | Plantation | 231 | 563 | - | 12,511 |
| | Total | 2,418 | 1,802 | 598 | 26,469 |
| 1976 | Smallholder | 1,798 | 1,024 | 431 | 13,364 |
| | Plantation | 122 | 497 | - | 19,446 |
| | Total | 1,920 | 1,521 | 431 | 23,810 |
| 1977 | Smallholder | 2,733 | 1,874 | 652 | 18,131 |
| | Plantation | 236 | 536 | - | 11,073 |
| | Total | 2,969 | 2,410 | 652 | 29,205 |
| 1978 | Smallholder | 2,753 | 1,871 | 426 | 17,657 |
| | Plantation | 210 | 463 | - | 9,871 |
| | Total | 2,963 | 2,334 | 426 | 27,529 |
| 1979 | Smallholder | 3,775 | 1,454 | 888 | 23,155 |
| | Plantation | 187 | 277 | - | 10,460 |
| | Total | 3,965 | 1,731 | 888 | 33,616 |
| 1980 | Smallholder | 4,082 | 842 | 529 | 20,439 |
| | Plantation | 315 | 198 | - | 8,732 |
| | Total | 4,375 | 1,041 | 529 | 29,169 |
| 1981 | Smallholder | 4,570 | 1,283 | 798 | 23,701 |
| | Plantation | 193 | 360 | - | 9,970 |
| | Total | 4,763 | 1,643 | 798 | 33,673 |

Table 16. PALM OIL PRODUCTION, 1977-83

| | Acreage at end of period (hectares) | | Production (metric tons) | |
|---|---|---|---|---|
| | Cultivated area | Production area | Palm oil | Palm kernels |
| 1974 | 1,959 | 9 | - | - |
| 1975 | 2,680 | 9 | - | - |
| 1976 | 3,215 | 1,019 | 4,535 | 358 |
| 1977 | 3,335 | 2,464 | 7,044 | 1,435 |
| 1978 | 3,335 | 2,994 | 10,865 | 1,963 |
| 1979 | 3,335 | 3,286 | 13,010 | 2,258 |
| 1980 | 3,335 | 3,335 | 14,228 | 2,349 |
| 1981 | 3,335 | 3,335 | 18,081 | 3,163 |
| 1982 | 3,600 | 3,332 | 19,238 | 3,603 |
| 1983 | n.a. | 3,332 | 19,654 | 4,004 |

Sources: 1982 Statistical Yearbook, Statistical Bulletin (No. 10/84).

## TABLE 17. OIL PALM CULTIVATION, PALM OIL AND KERNEL PRODUCTION

(1971 - 1981)

| Year | Area Cultivated During Year (Ha.) | Cumulative Area 31 Dec. (Ha.) | Mature Area 31 Dec. (Ha.) | Palm Fruit Collected 31 Dec. (m.ton) | Palm Oil Production (m.ton) | Palm Kernel Production (m.ton) |
|---|---|---|---|---|---|---|
| 1971 | 49 | 58 | 9 | - | - | - |
| 1972 | 633 | 691 | 9 | - | - | - |
| 1973 | 568 | 1,259 | 9 | - | - | - |
| 1974 | 700 | 1,959 | 9 | - | - | - |
| 1975 | 721 | 2,680 | 9 | - | - | - |
| 1976 | 535 | 3,215 | 1,019 | 21,220 | 4,535 | 358 |
| 1977 | 120 | 3,335 | 2,464 | 32,085 | 7,044 | 1,435 |
| 1978 | - | 3,335 | 2,994 | 47,616 | 10,865 | 1,963 |
| 1979 | - | 3,335 | 3,286 | 55,908 | 13,010 | 2,258 |
| 1980 | - | 3,335 | 3,335 | 64,768 | 14,228 | 2,349 |
| 1981 | - | 3,335 | 3,335 | 82,968 | 18,081 | 3,163 |

TABLE 18. COCOA PRODUCTION BY PROVINCE AND TYPE OF PRODUCER 1971 - 1981

(Metric tons)

| PROVINCE | 1977 | | | 1978 | | | 1979 | | | 1980 | | | 1981 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sm.H | Ptn. | Total | Sm.H | Ptn. | Total | Sm.H | Ptn. | Total | Sm.H | Ptn. | Total | Sm.H | Ptn. | Total |
| Western | 5.6 | 14.7 | 20.3 | 8.9 | 21.1 | 30.0 | 3.0 | 15.1 | 18.1 | - | 17.1 | 17.1 | 6.11 | 11.78 | 17.89 |
| Santa Ysabel | 1.3 | 3.7 | 5.0 | 5.3 | 1.6 | 6.9 | 10.3 | 0.7 | 11.0 | 13.3 | 2.5 | 15.8 | 17.31 | 0.62 | 17.93 |
| Central Islands | - | 36.7 | 36.7 | - | 65.0 | 65.0 | - | 83.4 | 83.4 | - | 105.5 | 105.5 | - | 247 | 247 |
| Guadalcanal | 22.3 | 21.8 | 44.1 | 29.4 | 39.0 | 68.4 | 19.6 | 81.4 | 101.0 | 61.8 | 49.8 | 111.6 | 76.16 | 121.99 | 198.15 |
| Malaita | 55.8 | 0.7 | 56.5 | 58.6 | - | 58.6 | 40.7 | 14.6 | 55.3 | 80.9 | - | 80.9 | 109.95 | - | 109.95 |
| Makira/Ulawa | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Eastern Islands | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Area Unspecified | - | - | - | 5.6 | - | 5.6 | 40.0(1) | - | 40.0(1) | 14.8 | - | 14.8 | - | - | - |
| TOTAL | 85.0 | 77.6 | 162.6 | 107.8 | 126.7 | 234.5 | 113.6 | 195.2 | 308.8 | 170.8 | 174.9 | 345.7 | 209.53 | 381.39 | 590.92 |

(1) Estimated

### 1.2.3. Animal Husbandry

Data on livestock production in SI is limited to cattle population. Cattle are spread throughout all provinces although the main concentrations are in Guadalcanal (32 percent), Western (25 percent), Malaita (19 percent) and Central (10 percent), according to 1985 cattle population figures. Over the 1976 - 1985 period, cattle numbers have shown a downward trend with the exception of Western Province, due mainly to the build-up in Government owned and Livestock Development Authority (LDA) herds, including cattle under trees. The total cattle population rose from 8,786 head in 1976 to a peak of 25,184 head in 1978 through efforts by the Government to import cattle for distribution to small holders, by establishing breeding herds and by offering credit and subsidies to cattle producers. From 1978 to 1985, the total cattle population has declined significantly to 19,750 head (about 22 percent), which compares to the 1973-74 population. The decline in cattle population is thought to be result of a combination of destocking plantations and price control measures introduced in 1983, (See Tables 19 to 23).

Smallholder herds are generally small in size, averaging about 13 head. Overall, the average herd size, including plantation, mission and Government/ LDA herds is about 30 head. There were 597 smallholder projects in 1985, down from 738 in 1979, many of which are owned by groups, thus the level of Solomon Islander participation is declining and suggests that efforts to establish smallholders as the basis for a cattle industry has not been entirely successful. Individual cash returns, given the small average herd sizes are probably discouragingly low. (See Table 23).

The spread of the cattle industry throughout all of the provinces and the involvement of so many individuals may have contributed significantly to its poor overall performances in recent years. Not only are average transport costs high, given the dispersion of herds throughout the islands, but the small and scattered nature of smallholder herds also increases the cost of providing extension services.

The proposal advanced by LDA advisers to transport weaners, while they are still well below slaughtering size, to a regional holding area in the abandoned rice fields on the Guadalcanal Plain for final weight gain is an idea that merits full consideration and support. A 400 ha. plot of ground out of 1,800 ha, now considered to be available could quickly be converted with a minimum of development expense to a cattle fattening area and in the process improve the quality of the beef going to slaughter. Locally produced beef of a higher quality could be substituted for imports which in 1985 amounted to more than 1.2 million kg. at a cost of more than $1.3.6 million.

TABLE 19. DISTRIBUTION OF CATTLE BY DISTRICTS 1967-1985

| | CENTRAL | | EASTERN | | MALAITA | | WESTERN | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Herds | Cattle | Herds | Cattle | Herds | Cattle | Herds | Cattle | Herds | Cattle |
| 1967 | 52 | 7,398 | 14 | 541 | 66 | 603 | 24 | 244 | 156 | 8,786 |
| 1969 | 55 | 9,163 | 28 | 769 | 136 | 913 | 31 | 475 | 250 | 11,320 |
| 1970 | 65 | 9,713 | 32 | 757 | 154 | 1,088 | 29 | 541 | 280 | 12,099 |
| 1971 | 66 | 10,841 | 32 | 841 | 167 | 1,370 | 37 | 602 | 302 | 13,654 |
| 1972 | 72 | 12,644 | 43 | 831 | 186 | 1,584 | 37 | 739 | 338 | 15,798 |
| 1973 | 85 | 13,423 | 46 | 931 | 221 | 2,032 | 45 | 806 | 397 | 17,192 |
| 1974 | 137 | 16,102 | 55 | 1,040 | 305 | 3,042 | 77 | 1,044 | 574 | 21,228 |
| 1975 | 162 | 15,490 | 79 | 1,208 | 322 | 4,653 | 87 | 1,317 | 650 | 22,668 |
| 1976 | 191 | 15,660 | 106 | 1,381 | 358 | 5,448 | 113 | 1,621 | 768 | 24,110 |
| 1977 | 204 | 15,892 | 105 | 1,640 | 360 | 5,426 | 121 | 1,817 | 790 | 24,775 |
| 1978 | 219 | 16,689 | 106 | 1,656 | 367 | 4,985 | 138 | 1,854 | 830 | 25,184 |
| 1979 | 227 | 14,252 | 106 | 1,773 | 363 | 4,765 | 127 | 1,794 | 823 | 22,584 |
| 1980 | 218 | 13,389 | 110 | 1,745 | 360 | 4,606 | 135 | 3,255 | 823 | 22,995 |
| 1981 | 207 | 13,173 | 107 | 1,955 | 367 | 4,915 | 106 | 3,293 | 787 | 23,336 |
| 1982 | 205 | 12,267 | 121 | 1,904 | 349 | 5,331 | 124 | 4,169 | 799 | 23,671 |
| 1983 | 187 | 12,152 | 120 | 1,858 | 317 | 4,637 | 115 | 4,259 | 739 | 22,906 |
| 1984 | 198 | 12,844 | 125 | 1,850 | 239 | 3,428 | 102 | 4,600 | 664 | 22,722 |
| 1985 | 186 | 9,420 | 126 | 1,679 | 255 | 3,810 | 99 | 4,841 | 666 | 19,750 |

NOTE: The Geographical breakdown of the herd is only available by Province from 1975 (T2)
Central District comprises Santa Isabel, Central and Guadalcanal Provinces
Eastern District comprises Makira and Temotu Provinces
Malaita and Western are identical with the Provinces of the same name

TABLE 20. PERCENTAGE ANNUAL GROSS GROWTH RATE IN SIZE OF HERD BY DISTRICTS 1967 - 1985

| | CENTRAL | EASTERN | MALAITA | WESTERN | TOTAL |
|---|---|---|---|---|---|
| 1967 - 1969 | 11.3 | 19.2 | 23.0 | 39.5 | 13.5* |
| 1969 - 1970 | 6.0 | -1.6 | 19.2 | 13.9 | 6.9 |
| 1970 - 1971 | 11.6 | 11.1 | 25.9 | 11.3 | 12.9 |
| 1971 - 1972 | 16.6 | -1.2 | 15.6 | 22.8 | 15.7 |
| 1972 - 1973 | 6.2 | 12.0 | 28.3 | 9.1 | 8.8 |
| 1973 - 1974 | 20.0 | 11.7 | 49.7 | 29.5 | 23.5 |
| 1974 - 1975 | -3.8 | 16.2 | 53.0 | 26.1 | 6.8 |
| 1975 - 1976 | 1.1 | 14.3 | 17.1 | 23.1 | 6.4 |
| 1976 - 1977 | 1.5 | 18.8 | -0.4 | 12.1 | 2.8 |
| 1977 - 1978 | 5.0 | 1.0 | -8.1 | 2.0 | 1.7 |
| 1978 - 1979 | -14.6 | 7.1 | -4.4 | -3.2 | -10.3 |
| 1979 - 1980 | -6.1 | -1.6 | -3.3 | 81.4 | 1.8 |
| 1980 - 1981 | -1.6 | 12.0 | 6.7 | 1.2 | 1.5 |
| 1981 - 1982 | -6.9 | -2.6 | 9.5 | 26.6 | 1.4 |
| 1982 - 1983 | -0.9 | -2.4 | -13.0 | 2.2 | -3.2 |
| 1983 - 1984 | 5.7 | -0.4 | -26.1 | 8.0 | -0.8 |
| 1984 - 1985 | -26.7 | -9.2 | 11.1 | 5.2 | -13.1 |
| Average 1967 - 1985 | 1.4 | 6.5 | 10.8 | 18.1 | 4.6 |

NOTE: *Average of two years' actual increase

ABLE 21. DISTRIBUTION OF CATTLE AND ANNUAL GROSS GROWTH RATES BY PROVINCE 1976 - 1985

| | WESTERN | | SANTA ISABEL | | CENTRAL | | GUADALCANAL | | MALAITA | | MAKIRA | | TEMOTU | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Herds | Cattle | Herds | Cattle | Herds | Cattle | Herds | Cattle | Herds | Cattle | Herds | Cattle | Herds | Cattle | Herds | Cattle |
| 1976 | 113 | 1,621 | 59 | 1,714 | 13 | 5,150 | 119 | 8,796 | 358 | 5,448 | 101 | 1,251 | 5 | 130 | 768 | 24,110 |
| (Growth) | | +12.1% | | +7.9% | | +2.4% | | -0.3% | | -0.4% | | +21.7% | | -9.2% | | +2.8% |
| 1977 | 121 | 1,817 | 65 | 1,849 | 13 | 5,272 | 126 | 8,771 | 360 | 5,426 | 99 | 1,522 | 6 | 118 | 790 | 24,775 |
| (Growth) | | +2.0% | | +17.3% | | -1.2% | | +6.2% | | -8.1% | | -3.0% | | +52.5% | | +1.7% |
| 1978 | 138 | 1,854 | 67 | 2,168 | 17 | 5,209 | 135 | 9,312 | 367 | 4,985 | 99 | 1,476 | 7 | 180 | 830 | 25,184 |
| (Growth) | | -3.2% | | -10.7% | | -16.9% | | -14.2% | | -4.4% | | +7.6% | | +2.8% | | -10.3% |
| 1979 | 127 | 1,794 | 70 | 1,935 | 17 | 4,328 | 140 | 7,989 | 363 | 4,765 | 99 | 1,588 | 7 | 185 | 823 | 22,584 |
| (Growth) | | +81.4% | | -12.3% | | +0.7% | | -8.2% | | -3.3% | | -1.3% | | -3.8% | | +1.8% |
| 1980 | 135 | 3,255 | 72 | 1,697 | 19 | 4,360 | 127 | 7,332 | 360 | 4,606 | 103 | 1,567 | 7 | 178 | 823 | 22,995 |
| (Growth) | | +1.2% | | -11.0% | | +6.7% | | -4.4% | | +6.7% | | +12.5% | | +7.9% | | +1.5% |
| 1981 | 106 | 3,293 | 70 | 1,511 | 17 | 4,653 | 120 | 7,009 | 367 | 4,915 | 100 | 1,763 | 7 | 192 | 787 | 23,336 |
| (Growth) | | +26.6% | | +2.7% | | -4.9% | | -10.2% | | +8.5% | | -0.9% | | -18.8% | | +1.4% |
| 1982 | 124 | 4,169 | 71 | 1,552 | 15 | 4,424 | 119 | 6,291 | 349 | 5,331 | 115 | 1,748 | 6 | 156 | 799 | 23,671 |
| (Growth) | | +2.2% | | -14.4% | | -2.2% | | +3.3% | | -13.0% | | -2.3% | | -3.8% | | -3.2% |
| 1983 | 115 | 4,259 | 66 | 1,329 | 8 | 4,325 | 113 | 6,498 | 317 | 4,637 | 112 | 1,708 | 8 | 150 | 739 | 22,906 |
| (Growth) | | +8.0% | | +0.4% | | +5.7% | | +6.8% | | -26.1% | | +1.5% | | -22.0% | | -0.8% |
| 1984 | 102 | 4,600 | 68 | 1,334 | 11 | 4,571 | 119 | 6,939 | 239 | 3,428 | 117 | 1,733 | 8 | 117 | 664 | 22,722 |
| (Growth) | | +5.2% | | -16.8% | | -55.9% | | -9.3% | | +11.1% | | -15.6% | | +85.5% | | -13.1% |
| 1985 | 99 | 4,841 | 67 | 1,110 | 10 | 2,018 | 109 | 6,292 | 255 | 3,810 | 113 | 1,462 | 13 | 217 | 666 | 19,750 |

TABLE 22. DISTRIBUTION OF CATTLE BY OWNERSHIP 1967 - 1985

| | PLANTATION | | MISSION | | SOL. ISLANDERS | | GOVT./LDA | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Herds | Cattle | Herds | Cattle | Herds | Cattle | Herds | Cattle | Herds | Cattle |
| 1967 | 21 | 7,160 | 33 | 883 | 97 | 661 | 5 | 82 | 156 | 8,786 |
| 1970 | 31 | 9,697 | 31 | 1,024 | 212 | 1,222 | 6 | 156 | 280 | 12,099 |
| 1971 | 23 | 10,538 | 32 | 1,236 | 246 | 1,574 | 7 | 306 | 308 | 13,654 |
| 1972 | 21 | 11,933 | 31 | 1,328 | 278 | 1,846 | 8 | 691 | 338 | 15,798 |
| 1973 | 20 | 12,549 | 32 | 1,560 | 338 | 2,564 | 7 | 519 | 397 | 17,192 |
| 1974 | 24 | 13,144 | 35 | 1,529 | 502 | 4,618 | 13 | 1,937 | 574 | 21,228 |
| 1975 | 26 | 12,023 | 36 | 1,751 | 577 | 6,859 | 11 | 2,035 | 650 | 22,668 |
| 1976 | 27 | 11,875 | 39 | 1,902 | 688 | 8,723 | 14 | 1,610 | 768 | 24,110 |
| 1977 | 30 | 11,553 | 36 | 1,634 | 712 | 9,786 | 12 | 1,803 | 790 | 24,776 |
| 1978 | 31 | 12,006 | 36 | 1,331 | 747 | 9,441 | 16 | 2,407 | 830 | 25,185 |
| 1979 | 36 | 10,390 | 33 | 1,217 | 738 | 9,059 | 17 | 1,918 | 824 | 22,584 |
| 1980 | 29 | 9,134 | 38 | 1,236 | 737 | 8,723 | 19 | 3,902 | 823 | 22,995 |
| 1981 | 23 | 8,279 | 32 | 1,075 | 711 | 9,014 | 21 | 4,968 | 787 | 23,336 |
| 1982 | 21 | 7,279 | 33 | 1,018 | 723 | 9,761 | 22 | 5,613 | 799 | 23,671 |
| 1983 | 20 | 7,255 | 34 | 1,103 | 659 | 8,562 | 26 | 5,986 | 739 | 22,906 |
| 1984 | 22 | 7,262 | 27 | 788 | 592 | 7,941 | 23 | 6,731 | 664 | 22,722 |
| 1985 | 19 | 4,068 | 24 | 723 | 597 | 7,612 | 26 | 7,347 | 666 | 19,750 |

TABLE 23. COMPOSITION OF HERD BY SIZE OF HERD AND PROVINCE 1985

| Size of Herd | Herds | Bulls | Steers | Male Calves | Cows | Heifers | Female Calves | Not Stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Western Province** | | | | | | | | | |
| 1 - 10 | 67 | 34 | 61 | 25 | 110 | 41 | 19 | - | 290 |
| 11 - 20 | 18 | 26 | 35 | 12 | 102 | 36 | 32 | 20 | 263 |
| 21 - 50 | 9 | 11 | 22 | 24 | 54 | 25 | 35 | 88 | 259 |
| 51 - 100 | 2 | 2 | 6 | 7 | 33 | 13 | 10 | 60 | 131 |
| 101 - 500 | 2 | 12 | 188 | 23 | 164 | 121 | 16 | - | 524 |
| > 500 | 1 | 183 | 713 | 275 | 907 | 1021 | 275 | - | 3374 |
| TOTAL | 99 | 268 | 1025 | 366 | 1370 | 1257 | 387 | 168 | 1841 |
| **Isabel Province** | | | | | | | | | |
| 1 - 10 | 37 | 32 | 17 | 9 | 76 | 44 | 13 | - | 191 |
| 11 - 20 | 14 | 28 | 15 | 11 | 84 | 40 | 16 | - | 194 |
| 21 50 | 13 | 39 | 34 | 34 | 164 | 70 | 36 | - | 379 |
| 51 - 100 | 2 | 4 | 45 | 16 | 72 | 13 | 18 | - | 168 |
| 101 - 500 | 1 | 2 | 29 | 8 | 89 | 44 | 6 | - | 178 |
| > 500 | - | - | - | - | - | - | - | - | - |
| TOTAL | 67 | 105 | 142 | 76 | 485 | 211 | 89 | - | 1110 |
| **Central Province** | | | | | | | | | |
| 1 - 10 | 9 | 4 | 25 | 3 | 7 | 7 | - | - | 46 |
| 11 - 20 | - | - | - | - | - | - | - | - | - |
| 21 - 50 | - | - | - | - | - | - | - | - | - |
| 51 - 100 | - | - | - | - | - | - | - | - | - |
| 101 - 500 | - | - | - | - | - | - | - | - | - |
| > 500 | 1 | 88 | 322 | 87 | 164 | 1228 | 83 | - | 1972 |
| TOTAL | 10 | 92 | 347 | 90 | 171 | 1235 | 83 | - | 2018 |
| **Guadalcanal Province** | | | | | | | | | |
| 1 - 10 | 47 | 29 | 93 | 11 | 43 | 48 | 10 | 1 | 235 |
| 11 - 20 | 22 | 26 | 89 | 25 | 76 | 69 | 24 | 20 | 329 |
| 21 - 50 | 20 | 36 | 209 | 51 | 131 | 71 | 66 | 27 | 591 |
| 51 - 100 | 9 | 18 | 243 | 63 | 204 | 66 | 44 | - | 638 |
| 101 - 500 | 8 | 152 | 788 | 183 | 530 | 281 | 175 | - | 2109 |
| > 500 | 3 | 133 | 380 | 183 | 811 | 730 | 153 | - | 2390 |
| TOTAL | 109 | 394 | 1802 | 516 | 1795 | 1265 | 472 | 48 | 6292 |

The number of cattle currently being scheduled for slaughter in Honiara each year will yield approximately the equivalent of one-third of the tonnage of imported beef; accordingly there is potential for increasing beef production 400 percent to meet internal demand at its present level.

Existing dairy cattle are not enumerated; however, one herd of less than 50 head located at Betikama outside of Honiara is reportedly the only dairy cattle herd in the Solomon Islands. Of this number, 20 or so are presently producing 50 to 80 liters of milk per day. The low rate of milk production is said to be the result of over-grazing during a period of low rainfall and high daytime temperatures.

Swine also are not enumerated, but one piggery on the Western part of Guadalcanal reportedly has 2,000 head, which is probably the largest in Solomon Islands. The abattoir of Kamara outside of Honiara is presently scheduling the slaughter of 400 to 500 head per year, which with its scheduled slaughter of 1,800 head of cattle is operating at 20 percent, or less, of installed capacity.

There are no figures for poultry. However, at various Government and Livestock Development Authority breeding stations, chickens and ducks are being raised in small numbers for distribution to smallholders.

The poultry ranch at Ulala outside Honiara, which is a joint venture between a Chinese group and Guadalcanal Province currently has 3,300 layers producing eggs at a rate of 70 percent per day, which is insufficient to meet local market demand. Future planning at this operation includes increasing the layer population to 10,000 birds; establish a population of up to 100,000 broilers; an on-site hatchery to eliminate the need for importation of day-old chicks; a poultry feed mixing facility; and a poultry slaughter house. If all of these plans are realized, egg and poultry meat production should more than satisfy the local market.

## 1.2.4. Fisheries

Significant development of the fisheries sector began in 1973 when Solomon Taiyo Ltd. (STL) was established to export fish and fish products from Solomon Islands. STL is a joint venture company between the Taiyo Fishing Company of Japan and the Solomon Islands Government. STL operates tuna fishing bases in Tulagi and Noro, with facilities for the smoking of tuna, which is exported to Japan. A cannery at Tulagi operating at near full capacity processes approximately 6 percent of the tuna catch, which is presently estimated at 40,000 tons per year, up considerably from previously published data for the years 1971 to 1981. (See Table 24). Canned tuna is marketed in Europe, Japan and Thailand while the whole frozen, representing more than 90 percent of the catch goes to Japan for processing. A new and larger canning plant is planned for construction in Noro with capacity to process 15,000 to 20,000 tons per year. The fishing operations are carried out by a fleet of boats owned by individual Japanese who fish for STL under contract. Substantial fishing resources including skipjack tuna, which have yet to be fully exploited, are thought to exist.

For 1983, the percentage share of fish exported in the form of fresh, frozen, canned and smoked exceeded 41 percent, representing the largest share of export earnings of total exports from Solomon Islands.

The Government is encouraging the expansion of the fishing industry and measures have been undertaken to assist the development of local fisheries and encourage fishermen to increase their fish catch and incomes. This is to be achieved with the development of fish markets, provision of credit facilities to local fishermen through the Development Bank of Solomon Islands (DBSI), and encouraging fishermen to fish in deep waters using motorized boats.

The present depressed state of the world market for tuna is having a dampening effect on the implementation of projects to expand fishing operations and to install new fish processing facilities.

## TABLE 24. FISH CATCH AND UTILISATION (metric tons)

| Year | Total Catch | Canned | Smoked | Frozen/Exported | Frozen/Local Sales | Other Disposal |
|---|---|---|---|---|---|---|
| 1971 | 4165 | - | - | 4165 | - | n.a. |
| 1972 | 12138 | - | - | 12138 | - | n.a. |
| 1973 | 5511 | 321 | - | 5091 | 91 | n.a. |
| 1974 | 10958 | 1836 | 429 | 8400 | 248 | n.a. |
| 1975 | 7526 | 2619 | 1006 | 3641 | 172 | n.a. |
| 1976 | 15464 | 2076 | 1120 | 12052 | 145 | n.a. |
| 1977 | 12056 | 1745 | 964 | 9773 | 195 | n.a. |
| 1978 | 17453 | 2056 | 1003 | 14518 | 132 | n.a. |
| 1979 | 23804 | 2267 | 786 | 21918 | 136 | 84 |
| 1980 | 22755 | 2162 | 905 | 18111 | 225 | 180 |
| 1981 | 25317 | 2060 | 843 | 23246 | 291 | 154 |

Note: (1) The figures relate to the catch of Tuna type fish in the Solomon waters.

(2) The figures for export of frozen fish are not exactly comparable with those in section 3 due to different recording times.

A pilot project to determine the viability of fresh water prawn farming on Guadalcanal has been conducted by South Pacific Acquaculture Ltd. Trials have shown that yields of up to 2,500kg of live prawns per acre pond per year can be obtained by feeding with locally compounded rations. Also, the applicability of this technique to smallholders has been demonstrated. The company at this time is proceeding with plans to enlarge the operation and to include brackish water ponds for growing salt water prawns as well, which reportedly show greater weight gains per unit of feed-stuffs.

Two new projects, both in their initial stages, by the Fisheries Division of Solomon Islands are the cultivation of giant clams and the growing of seaweed.

Research conducted by the International Center for Living Aquatic Resources Management (ICLARM) has determined that it is technically feasible to cultivate clams in the South Pacific both for local food production and for export on a non-intensive, non-commercial level.

The cultivation and harvesting of seaweed in shallow coastal waters is expected to offer a diversification of activities to islanders in remote areas with the possibility of export earnings from dried seaweed, which has a market value in the range of US$1,500 per ton.

## 1.3. Existing Agro-Industries

In the absence of an industrial census in Solomon Islands, it is difficult to determine the exact number, size, location etc of all agro-based industries; however, by way of observation of such industries in and around Honiara on Guadalcanal, by far the largest population center in Solomon Islands, several such industries can be listed. These range in size from extremely small-scale to medium-scale, and may use imported raw-materials and supplies entirely, or a combination of imported and domestic raw materials and supplies.

The list is as follows:

Palm Oil Milling - Solomon Islands Plantation Ltd.
Rice Milling - Solrice Ltd.
Cattle and Swine Slaughtering - Livestock Development Authority, Mamara Abattoir.
Animal Feeds Mixing Plant - Livestock Development Authority, Mamara.
Dairy - Betikama Adventist High School
Soap Manufacturing - Solomon Islands Soaps Ltd.
Bakeries - Solomon Delite Bakery
- The Hot Bread Kitchen
- Joy Biscuit Manufacturers
- Honiara Cake and Biscuit Supply

Snack Food Manufacturers - Honiara Snack Foods Ltd.
Fish Canning/Smoking/Freezing - Solomon Taiyo Ltd. (Lunggai and Noro)
Tobacco Manufacturing - Solomon Islands Tobacco Co. Ltd.

## 1.4: Agro-Industrial Support Facilities

### 1.4.1 Roads

Total motorable road in 1980 was reported to be 2,100km. Of this, 800km were roads constructed by private companies for logging and plantation use. About 100km of roads in the urban areas of Honiara, Auki and Gizo are bitumen sealed, while rural roads are mostly coral and gravel surfaced.

Table 25. Motorable Road, By Province - 1980

| Province | Government Road (km) |
|---|---|
| Western | 260 |
| Santa Isabel | 15 |
| Central | 40 |
| Guadalcanal | 410 |
| Honiara | 110 |
| Malaita | 350 |
| Makira | 70 |
| Eastern | 45 |
| TOTAL | 1,300 |

Outside Honiara, road development is limited, with over 90 percent of vehicles registered in Honiara. Total licensed vehicles numbered approximately 3,000 in 1980.

### 1.4.2. Domestic Shipping

A high percentage of shipping in the Solomon Islands is not registered. Unregistered shipping is largely wooden vessels, mainly canoes less than 6 meters in length, which play a role in both fishing and transport, especially in islands with population centers around lagoons. These vessels transport copra to collection ports, or to cargo ships at anchor.

In 1981, the registered shipping fleet, which excludes fishing vessels, totalled 133 vessels, two being ocean-going.

Twenty-seven of the larger vessels are of steel construction, but most are wooden.

The total tonnage of the fleet for which details were available is about 5,500 gross tons with a cargo carrying capacity of 3,200 metric tons and total passenger capacity of about 3,500 (89 vessels).

Table 26. Composition of Inter-Island Fleet

| Size Class (length in meters) | No. of Ships | Gross Tons | Cargo Capacity (m.T.) | Passenger Capacity |
|---|---|---|---|---|
| 5-10.4 | 25 | 174 | 26 | 268 |
| 10.5-15 | 18 | 420 | 74 | 301 |
| 15.1-25 | 25 | 1,320 | 416 | 888 |
| 25.1-35 | 16 | 2,277 | 1,689 | 1,338 |
| 35.1-over | 5 | 1,269 | 790 | 668 |
| Total | 89 | 5,460 | 3,195 | 3,463 |

Ownership of the registered is divided among the Government (39 percent); Expatriates (39 percent); and Solomon Islanders and Church Missions who own mainly small vessels of less than 100 gross tons, suitable for short routes.

While the numbers of vessels in the Solomon Islands is regarded as adequate, distribution of goods generally suffers from the combined lack of landing facilities and low volumes of most products, making it uneconomic for collection vessels to call. Services to many areas are irregular, but sometimes over-lap. Many services appear to offer rates which are less than economic.

An example of freight rates quoted in 1982 for one cubic meter by volume or one metric ton from - to Honiara was:

| Honiara To: | (SI$) |
|---|---|
| Yandina | 21.00 |
| Bunikalo | 28.00 |
| Batuna | 28.00 |
| Patutiva | 28.00 |
| Viru | 35.00 |
| Ughele | 35.00 |
| Munda | 35.00 |
| Noro | 39.00 |
| Ringi | 39.00 |
| Gizo | 39.00 |

The Solomon Islands is relatively well served by international shipping, with Honiara being the dominant post receiving imports. In 1981, Honiara handled 84 percent of in-coming cargo, but only 11.4 percent of out-going. The largest shipping point for out-going cargo was Ringi Cove with 58 percent of the total.

1.4.3. Marketing and Distribution Systems

Marketing and distribution systems in the Solomon Islands are, for the most part, simple. Outside of Honiara in particular, markets reflect the lack of development of a cash economy.

Central to the distribution system are the 150 or so retail/wholesale establishments in Honiara. These organizations import directly break bulk and distribute locally and to retailers in other islands. These retailers also purchase produce when available from their customers and may sell to co-operatives and traders.

Government involvement in marketing is principally through the Copra Board, a state export monopoly, which can use export agents to market on its behalf. Export marketing of other produce is currently in the hands of private enterprise, apart from Lever Solomons Ltd and Solomon Taiyo Ltd.

Other significant structures in marketing are the rural trading centers and co-operatives. The former were set up for marketing of food-stuffs in rural areas. The principal objective in establishing these was to encourage good food hygiene, but they were also planned to act as a catalyst to increase commercial activity. They are owned and operated locally, with Government assistance in the form of construction, training and management advice.

The 1982 Statistical Yearbook of SI reports a total of 246 Primary Co-operatives in 1980 and 5 Secondary Co-operatives. Most primary Co-operatives are involved in marketing of agricultural produce generally, while a few are specialized in activities such as cocoa processing and marketing, land purchase, land development, saving and lending, sawmilling, gold mining, fishing and transport.

Membership of primary Co-operatives is individual, while secondary societies are composed of primary societies. Secondary societies normally act as wholesale purchasing or marketing agencies.

## 2. Potential and Opportunities

### 2.1. Agricultural Commodities Offering Possibilities for Industrial Applications.

Favourable climatic and soil conditions of the major islands make it possible for the Solomon Islanders to cultivate a wide range of tropical crops. However, because of the scattered farm units, the dispersed nature of islands and lack of adequate communication systems, the production of many readily cultivated perishable products needed for processing has very dim prospects.

To overcome these drawbacks, it is recommended that an increase in the supply of agricultural products can best be accomplished by the establishment of nucleus estates in close proximity to the main marketing center of Honiara.

In order to reach an optimum level of production that will assure adequate supplies of raw materials to industrial plants, it will be necessary in most cases that the processor have positive control. This can be effected by the plant management being involved to a high degree in the growing and harvesting operations. Total intergration of the growing and processing functions is viewed as an indispensable condition.

The level of increased production and processing can be reasonably well established for the first stage of development by the volume and value of imported foodstuffs that could be grown and processed domestically. Selected products from the reported list of imported foods, both processed and fresh, for the years 1982 and 1985 indicate that opportunities are present to grow and process up to SI$8.5 million in products. (See Table 27) Based on the foregoing, the following merit further consideration.

#### 2.1.1 Livestock

Import substitution of canned beef and fresh meat is the equivalent of roughly 13,000 head of cattle. The current rate of slaughter in the Honiara abattoir is in the range of 1,500-1,800 head per year, which utilizes the facility at something like a rate of

20 percent. There is obviously sufficient unused slaughtering capacity that could be utilized to eliminate imports of beef by providing supplies of meat to a small-scale meat processing plant with an annual output worth approximately $153.6 million. The present trend of declining cattle populations will have to be reversed to increase the present head count of less than 20,000 to a count in the range of 90,000-100,000 head in order to supply a meat canning facility capable of producing 1200-1300 tons of canned beef per year.

Under a scheme envisioned by advisers to the Livestock Development Authority, cattle for this purpose could be collected from smallholders before they are fully grown and placed on an intensive feeding station of 400 hectares on the Guadalcanal Plain. The programme would also include cattle breeding, improved pasture and the production of maize and sorghum for inclusion in animal feed formulations. It is estimated that the area required for the cultivation of maize and sorghum would be roughly 500ha based on an assumed annual yield of 3.7 tons per ha. (2 crops/yr). Considering the low yields of grain crops in the tropics and their low value, this could not be considered the highest and best use of agricultural land.

In 1965, the importation of poultry eggs in shell amounted to 22,436 dozen at a cost of $1,18,766. This represents the annual egg production from roughly 1,100 layers. The number of imported day-old chicks is not given, but their cost was reported to be $75,022. Poultry meat imported was 119,461kg. at a cost of $296,369, which represents approximately 65,000 birds.

Future planning at the Ulala poultry ranch, if fully realized, should eliminate the need to import poultry eggs, chicks and meat; however, the growing need for mixed rations will expand the opportunity for animal feed production. In 1965, 1,047 tons of animal feeds were imported at a cost of $368,128. To eliminate the need to import and to provide feeds for increased beef and poultry production will require approximately 4,000 tons of mixed feed, calculated on the basis of 3.5kg. of feed in each 6 month period for poultry (65.7 percent grain component) and 250kg. of feed for final weight gain of 50kg. per head of cattle (41.4 percent grain component).

The animal feed mixing plant owned by the Livestock Development Authority at Manara, now standing idle, would be able to process the 4,000 tons working 290 days per year on a two shift basis.

### 2.1.2 Fisheries

The 1985 imports of fish (fresh, chilled, frozen and fish preparations) amounted to 702 tons at a cost of $1 million. Opportunities exist to increase the domestic fish catch for internal consumption as well as to produce frozen fillets for export.

Table 27. Internal Marketing Potential of Processed Agricultural Products Based on 1982 and 1985 Import Statistics.

| | (kg.) | (SI$) |
|---|---|---|
| Fresh Meat | 33,538 | 80,608 |
| Canned Meat | 1,235,065 | 3,611,489 |
| Sausage | 32,135 | 96,242 |
| Bacon | 8,696 | 50,919 |
| Milk and Cream | 161,901 | 448,389 |
| Butter | 54,604 | 100,157 |
| Cheeses | 21,943 | 72,303 |
| Fish and Fish Preparations | 672,287 | 971,143 |
| Fish, fresh, chilled or frozen | 29,309 | 35,169 |
| Fruit, dried | 4,825 | 12,649 |
| Jams, marmalades, fruit jellies | 30,528 | 37,284 |
| Fruit and Vegetable Juices | n.a. | 175,700 |
| Fruit, canned or bottled | 22,389 | 24,201 |
| Fruit, frozen | 51,331 | 42,532 |
| Vegetables, preserved | 49,702 | 97,541 |
| Edible Nuts, fresh and dried | n.a. | 26,098 |
| Vegetable Oils, coconut & palm (liters) | 80,185 | 121,536 |
| Beverages, non-alcoholic (liters) | 1,496,497 | 807,899 |
| Beer, ale, stout (liters) | 3,927,590 | 1,756,861 |
| TOTAL: | | 8,568,720 |

In addition the culture of prawns, shrimps, clams and seaweed that is applicable to smallholder conditions, will increase the potential for packaging and freezing new commodities for export.

2.1.3. Edible Nuts

While the small volume of imports of edible nuts does not suggest an opportunity for import substitution, the potential for exports warrants attention. The low volume/weight to value ratio of nuts compares favourably to the category in which spices fall and which are under consideration as non-traditional export commodities.

Nali nuts which are harvested randomly could be grown on a commercial scale along with Macadamia nuts and cashews. Cashew was introduced in 1966 at Dala and proved to be quite successful. The cashew is suitable for dry areas in Guadalcanal Plains and other possible areas having the characteristic of a dry period.

The world demand is increasing annually with world supplies estimated at 73,000tons. The major importers of cashew kernels are the U.S.A., the U.S.S.R., G.D.R., E.E.C. and Japan. The U.S. absorbs 55 percent of the world total; U.S.S.R. 25 percent. India dominates the world export market as the principal source of cashews, supplying nearly 80 percent. Mozambique, the principal producer of raw nuts supplies 16 percent, followed by Brazil, China and Kenya.

A nut processing facility could perhaps be incorporated with another small-scale processing plant such as fruit processing and food grade oil processing.

2.1.4 Fruits

Fresh fruits and fruits processed in various forms were imported, according to 1982 and 1985 data, at a cost of nearly $345,000. This volume, coupled with an unsatisfied internal market for fresh fruits, presents an opportunity for cultivating a variety of tropical fruits on a commercial scale. Plantings could include such fruits as mango, citrus fruits, papaya, guava,

passion fruit and pineapple, to name a few.

A small-scale fruit processing plant utilizing fruits culled from the fresh market and market surpluses could manufacture such items as canned fruits, juices, jams, jellies and juice concentrates in combination, as before mentioned, with edible nut roasting and packaging and edible oil production for better utilization of plant facilities.

2.1.5. Beverages

Although no impact would be felt on agricultural production in the Solomon Islands, import figures for soft drinks and beer indicate considerable scope for increasing domestic production of soft drinks and establishing a brewery. Soft drinks imports are running at nearly 1.5 million liters annually at a cost of $808,000 and beer at 4 million liters at a cost of $1.8 million.

Imported beer with an alcoholic content of 4.9 percent could be substituted with a domestic product containing a much lower percentage of alcohol, which should help to overcome moral and religious objections to the establishment of a brewery within the country.

2.1.6. Oils and Fats

The imports of vegetable oils and butter in the years of 1982 and 1985 were running about 135 tons for a cost of roughly $222,000.

These quantities would not justify a processing plant devoted exclusively to the manufacture of vegetable oils and margarine, rather, it would be anticipated that a department within a fruit processing facility expressing and clarifying copra oil might make economic sense. Oil extraction equipment scaled down to a rate of production of 1 ton per day is available from Japan.

## 2.2. Determination of Agricultural Production Priorities.

Recognizing the need for increased agricultural productivity in order to improve export earnings, import substitution for certain food items, and the base for general economic growth, it will be of benefit to rationalize agricultural production within the framework of present constraints and potentials found in the Solomon Islands.

After an evaluation of the resource base (soils, climate/water supply, land tenure and manpower), the agricultural base, imports and exports of agricultural products, and the status of exisiting agro-industries with supporting infrastructure, value judgements can be applied to ascertain the relative economic significance of selected agricultural commodities. In this way, a ranking of priorities for encouraging an increase in the production of these commodities can be established. With the purpose in mind to exploit exisiting opportunities and potentials, consideration is given to such factors as the need to satisfy self-sufficiency, marketing prospects, existing know-how and the applicability to smallholder farming conditions. Data contained in Section 1 of this report (current situation) and information from the Tables have been used to make judgements in scoring the factors considered.

## 2.3. Determination of the Relative Importance of Selected Commodities.

Ten criteria have been applied in scoring each commodity. Criteria have been grouped according to their importance into 3 weighted categories. The scoring of category I has been multiplied by a factor of 3; category II by a factor of 2; and category III by a factor of 1. The relevance of criteria for each commodity has been graded high, medium or low and valued a follows: high = 2 points; medium = 1; and low = 0.

The criteria, by category, are explained as follows:

### Category I

1. Self-Supply: is particularly important for essential food commodities. Crops in short supply and which have to be

imported are graded as high; medium where local demand is not satisfied and/or prospects for exports are fair to good; low where local supply is satisfied and/or prospects for export are poor.

2. Profitability: crops generating a farm income above the average with a good return on labour are rated high; medium for crops with average returns; low for crops with below average returns.

3. Soil Conservation/Crop Rotation: High for crops with ability for soil conservation, fertility improvement, erosion protection and crops with particular value in crop rotations; medium for crops with modest abilities; low for crops with little or no ability.

Category II

4. Soil availability: High in case of crops for which suitable soils are available; low in case of non-availability or hampered by land tenure restriction; medium for all others.

5. Existing know-how: high for crops widely disseminated and for which know-how is available; medium for localized crops; low for crops for which little or no traditional know-how is available.

6. Applicability to Smallholders: high for crops particularly suited to smallholder conditions; medium for crops suffering substantial yield or quality decreases under smallholder conditions; low for crops not suited to smallholder conditions.

Category III

7. Crop Diversification: High for crops with good possibilities for diversification of agricultural production and for making farm income more regular throughout the year and less subject to price fluctuations; medium and low for

crops with respectively lower abilities.

8. Capital Inputs: high in case of crops with low capital investment requirements; medium and low in case of respectively higher capital requirements.

9. Transportability/Marketability: high in case of produce with good storage and keeping characteristics and a favourable volume/weight to value ratio ; medium and low in cases of respectively lower characteristics.

10. Foreign Exchange Earner: high in case of crops with good scope for export and/or substitution of imports; medium and low in case of crops with restricted or no scope for export and/or import substitution.

Result:

On this basis, the following agricultural production list can be ranked in the following order: (See Table 28).

1. Beef Cattle/Swine/Poultry/Tumeric
2. Nali Nuts/Papaya
3. Mango/Cardamom
4. Chillies
5. Potatoes/Guava
6. Coconut/Citrus/Cocoa/Vanilla
7. Oil Palm/Macadamia Nuts/Prawns
8. Passion Fruit
9. Maize/Sorghum
10. Cashew Nuts/Pineapple
11. Dairy Cattle
12. Cassava/Yams/Taro

## Table 28. Ranking of Agricultural Production Priorities

| Commodity | Self-Supply | Profitability | Soil Conservation /Crop Rotation | Soil Availability | Existing Know-how | Applicability to Smallholders | Crop Diversification | Capital Inputs | Transportability/ Marketability | Foreign Exchange | Sum of Criteria Grade x Category Weighting | Priority |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cat.I x 3 | | | Cat.II x 2 | | | Cat.III x 1 | | | | Total | Rank |
| Beef Cattle | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 0 | 1 | 2 | 25 | 1 |
| Swine | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 0 | 1 | 2 | 25 | 1 |
| Poultry(meat, egg) | 2 | 2 | 0 | 2 | 1 | 1 | 2 | 0 | 1 | 2 | 25 | 1 |
| Tumeric | 1 | 2 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 25 | 1 |
| Ngali Nuts | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 24 | 2 |
| Papaya | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 0 | 1 | 24 | 2 |
| Mango | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 0 | 1 | 23 | 3 |
| Cardamom | 1 | 2 | 1 | 1 | 0 | 1 | 2 | 1 | 2 | 2 | 23 | 3 |
| Chillie | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 2 | 22 | 4 |
| Maize | 2 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 17 | 9 |
| Sorghum | 2 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 17 | 9 |
| Potatoes | 1 | 1 | 0 | 1 | 2 | 2 | 2 | 2 | 0 | 1 | 21 | 5 |
| Guava | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 0 | 1 | 21 | 5 |
| Coconut | 1 | 0 | 1 | 1 | 2 | 2 | 2 | 1 | 0 | 1 | 20 | 6 |
| Citrus | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 20 | 6 |
| Cocoa | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 20 | 6 |
| Vanilla | 1 | 2 | 1 | 1 | 0 | 0 | 2 | 0 | 2 | 2 | 20 | 6 |
| Oil Palm | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 19 | 7 |
| Macadamia Nuts | 1 | 0 | 1 | 1 | 0 | 2 | 2 | 1 | 2 | 2 | 19 | 7 |
| Prawns/Clams | 1 | 2 | 0 | 2 | 0 | 1 | 2 | 0 | 0 | 2 | 19 | 7 |
| Passion Fruit | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 1 | 0 | 1 | 18 | 8 |
| Cashew Nuts | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 1 | 2 | 2 | 16 | 10 |
| Pineapple | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 2 | 1 | 1 | 16 | 10 |
| Dairy Cattle | 2 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 15 | 11 |
| Cassava | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 0 | 0 | 14 | 12 |
| Yams | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 0 | 0 | 14 | 12 |
| Taro | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 0 | 0 | 14 | 12 |

## 2.4. Industrial Possibilities offered by the Existing/ Potential Resources.

### Criteria for Ranking Agro-Industrial Possibilities

In the determination of the relative viability of various agro-industries, fifteen criteria have been applied to those industries under consideration. The criteria have been grouped into 3 weighted categories according to their impact in making value judgements. Assigned scores for criteria in Category I are multiplied by a factor of 3; Category II by a factor of 2; and Category III by a factor of 1.

The relevance of criteria for each industry has been graded high, medium or low and valued as follows: high = 2 points; medium = 1 point; and low = 0.

The criteria, by categorys, are explained as follows:

### Category I

1. Market Potential: high for industries producing products which are in short supply and have to be imported; medium where internal demand is not fully satisfied and the prospects for export are at least fair; low where internal demand is satisfied and the prospects for export are dim.

2. Availability of raw-materials: high for raw materials that are readily available and transportable from reliable local sources; medium and low for raw materials exhibiting these characteristics in lesser degrees.

3. Potential for integration: high for industrial outputs with good potential for horizontal or vertical linkage with existing, planned or future industrial processing facilities, medium for outputs with modest potential; poor for those with little or no potential.

4. Economy of scale: high for industries that demonstrate viability at minimum scale and which is appropriate to existing conditions; medium and low for industries requiring greater size for viability.

5. Profitability: high for industries with a good scope for a return on invested capital; medium for industries indicating a less than average return; low for industries indicating a negative cash flow.

Category II

6. Availability and quality of manpower: High for situations where unskilled and semi-skilled manpower is adequate for the purpose and which is available; medium where necessary skills must be developed and/or imported; low for situations where manpower is scarce at competitive wages, or a high level of technology is indicated.

7. Compatibility with governmental priorities: high for industrial development projects which coincide with national and regional objectives and priorities or which can exploit regional advantages; medium and low for industries exhibiting the characteristics in lesser degrees.

8. Existing level of utilization of industrial capacity: high for industry in which rate of utilization is above average or for which no facilities presently exist; medium for industry in which rate of utilization is average or in which modernization of equipment and process is indicated; low in industry having an excess of idle capacity.

9. Value added: High for industry that has the inherent ability for a comparatively high addition of value, operating under typical Solomon Islands conditions; medium for industry with average ability; low for industry with below average ability.

Category III

10. Employment generation: high for labour-intensive industry; medium for moderately labour-intensive industry; low for capital intensive industry.

11. Capital outlay for job created: high for industry in which required capital investment in fixed assets for each direct worker is comparatively low; medium for industry requiring an average investment per worker; low for industry requiring a higher than average investment per worker.

12. Availability of energy and water: high for industry located in an area of available, adequate and reliable electrical and water supplies; medium for industry located in an area where energy and water can be self-supplied at reasonable cost; low for industry in an area where required energy or water supplies are not feasible.

13. Attraction of capital: high for investment in an industry that is supported by Government in such areas as land use permits, tax incentives, market protection and direct participation, and that otherwise have attractive aspects for investors; medium and low for investments with lesser qualities.

14. Availability of packaging materials: high for packaging materials that are readily available from local sources; medium for packaging that can be semi-processed from imported materials; low for pre-fabricated packaging that must be imported.

15 Foreign exchange earnings/savings: high in case of products with good scope for either export or substitution of imports; medium or low in case of products with a restricted or no scope for export or substitution of imports.

Result:

On the basis of this evaluation, the following agro-industrial priority ranking has been determined: (See Table 29).

1. Slaughtering, Poultry
2. Slaughtering, Cattle/Swine
3. Animal Feeds Mixing
4. Nut Processing
5. Meat Processing/Fish Processing
6. Vegetable Oil/Margarine
7. Dairy Products
8. Soft Drinks/Beer
9. Fruit Processing

Table 29. Ranking of Agro-Industrial Possibilities Offered by the Existing/Potential Resources.

| Industry/Product | Market Potential | Availability of Raw Materials | Potential for Integration | Economy of Scale | Profitability | Availability and Quality of Manpower | Compatability with Govt. Priorities | Existing Level of Utilization | Value Added | Employment Generation | Capital Investment per Job created | Availability of Energy and Water | Attraction of Capital | Availability of Packaging Materials | Foreign Exchange Earnings/Savings | Sum of Criteria Grade X Category Weighting | Priority |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Category I x 3 | | | | | Cat. II x 2 | | | | Category III x 1 | | | | | | Total | Ranking |
| Slaughtering, Poultry | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 47 | 1 |
| Slaughtering, Cattle/Swine | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 0 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 46 | 2 |
| Animal Feeds Mixing | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 0 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 43 | 3 |
| Nut Processing | 2 | 1 | 0 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 39 | 4 |
| Meat Processing | 2 | 1 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 1 | 0 | 2 | 2 | 0 | 2 | 36 | 5 |
| Fish Processing | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 0 | 1 | 1 | 2 | 1 | 1 | 2 | 36 | 5 |
| Vegetable Oil/Margarine | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 2 | 37 | 6 |
| Dairy Products | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 1 | 2 | 34 | 7 |
| Soft Drinks | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 1 | 0 | 2 | 28 | 8 |
| Beer | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 1 | 0 | 2 | 28 | 8 |
| Fruit Processing | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 2 | 25 | 9 |