

# THE FOOD AND NUTRITION

## SITUATION IN

### TUVALU

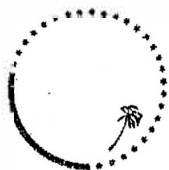
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#### THE NEED FOR A NATIONAL

#### FOOD AND NUTRITION POLICY

South Pacific Commission

Noumea, New Caledonia.



March, 1994.

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## A. PREFACE

The author would like to acknowledge that none of this work is the result of his own investigation, observation or survey work. Rather, it is the result of reviewing many information sources, which have all been appropriately referenced, in order to have one document summarising the current food and nutrition situation in Tuvalu.

It is intended that this will give insight into the food and nutrition problems in Tuvalu that a NFNP needs to address.

The major sources used in preparing this document, *The Food and Nutrition Situation in Tuvalu*, include:

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# 1. THE FOOD SUPPLY SITUATION IN TUVALU

## 1.1 Introduction.

Tuvalu is a chain of nine low-lying coral atolls totalling twenty-six square kilometres of land. As the Islands are small and of coral origin, they have limited resources and are sensitive to environmental problems. Water is one of the most vulnerable resources in Tuvalu, land area is limited, and the soils, being very sandy, lack the water holding capacity needed to support plant life through prolonged dry periods.

## 1.2 The Traditional Food Supply Situation.

Yet Tuvalu has had a heritage of good nutrition. The traditional diet consisted of a great variety of fish, other seafoods (such as crabs, mussels, sea snails, turtles and turtle eggs), wild birds and pigs, the latter being used primarily for festive occasions.

Many of the food crops (coconut, sweet potato, pandanus, banana, plantain, breadfruit and pawpaw) have adapted reasonably well to the atoll environment with little or no additional inputs required from the farmer. For other crops (pulaka and other types of taro), the islanders have developed the pit cultivation technique.

Thus the traditional food systems have been sound, resulting in little or no evidence of infant malnutrition, anaemia, dental caries, obesity, diabetes or heart disease. Today, however, these nutrition related-problems are increasingly common and seem to be related to the deterioration of Tuvalu's time tested food system and the increasing dependence on imported foods.

### 1.3 The Current Domestic Food Supply and Diet.

As in most Pacific Island countries, figures on agricultural production are sparse. The nation's trade, consumer price index (CPI) and gross domestic product (GDP) also give a good indication of the current food supply situation.

Fisheries and agriculture are still, respectively, the first and second major economic and life-supporting activities in Tuvalu and so form the basis of its food supply. Most of this food is for subsistence consumption, the remainder is for the domestic market. The third source of food is through the cash economy by purchase of imported fresh and processed produce from the village store (the *fusi*).

Most people are involved or are dependent to some extent upon subsistence and semi-subsistence agriculture and fisheries. Even on Funafuti, the most advanced cash-economy island in the country, there is a dynamic and functional mix of both subsistent and cash-economy food procurement activities.

Whilst fish caught through the subsistence sector and small-scale commercial fisheries remains the principal protein source in Tuvalu, some tinned fish and tinned meat is available and being consumed. Deo (1991) observes that after the fish market at Funafuti wharf opened in 1980, the amount of fish being caught and offered for sale increased whilst imported tinned fish and tinned meat remained relatively stable. No further production figures could be obtained. Currently USAID is funding a project to improve Tuvalu's exploitation of the deep-slope marine resource; the Australians, a community fishing centre development program and the Japanese may aid the redevelopment of the Funafuti fish market.

For the past two decades, pork has been produced for regular food consumption along with poultry and ducks. This is to a greater degree in areas with high populations or where fish catches are not always sufficient to meet local needs. In fact, the recent establishment of a sausage processing plant in Funafuti has given further impetus to raising pigs. In 1989, 11,155 pigs were produced and this has been rising at an annual average of 8.5% since 1980.

In the same year, 30,558 poultry were produced (increasing 15.6% annually), and 2,262 ducks.

**Table 1.1**  
**Tuvalu Livestock Numbers**

| <b>Year</b> | <b>Pig</b> | <b>Poultry</b> | <b>Duck</b> |
|-------------|------------|----------------|-------------|
| <b>1980</b> | 6 320      | 12 729         | 0           |
| <b>1981</b> | 5 803      | 16 558         | 0           |
| <b>1982</b> | 7 092      | 18 631         | 0           |
| <b>1983</b> | 6 617      | 16 429         | 73          |
| <b>1984</b> | 7 882      | 16 222         | 0           |
| <b>1985</b> | 9 138      | 21 015         | 0           |
| <b>1986</b> | 9 133      | 22 512         | 60          |
| <b>1987</b> | 8 200      | 23 836         | 254         |
| <b>1988</b> | 8 134      | 24 560         | 916         |
| <b>1989</b> | 11 155     | 30 558         | 2 262       |

**Source:** Win, 1990.

The production of broiler bird varied greatly from 1985 to 1989 with an average annual production of 26,851 birds. Poultry eggs also contribute to protein in the Tuvaluan diet with an average annual production of 204,153 eggs during the same period (Win, 1990).

Traditional crops have been replaced or supplemented with rice and flour products. Much of the production of pulaka is diminishing as little work has been carried out to assist communities with the renovation of abandoned or damaged pulaka pits. In Tuvalu in 1986,

there were only 66.6 hectares of pulaka pits. However the Ministry of Agriculture is seeking to renovate the pits through the Atoll Agriculture project funded by PRAP. The pits will be terraced to enable a variety of food crops to grow.

Despite the increasing preference for easy-to-store and easy-to-prepare rice and flour products, new varieties of taro have been introduced and increasing sweet potato production may help compensate for the lack of pulaka. Unfortunately there is no figure available regarding the area of taro under cultivation now but in 1986 there was 6.3 hectares of sweet potato land.

Agriculture production is still dominated by the coconut palm (2028.3 ha coconut land in 1986) which provides one of the main components of the daily diet. It also provides drinks, copra for export, timber for houses, leaves for thatching, string and materials for handicrafts.

Coconut cream is still a high energy, key ingredient in most meals despite changing food patterns, but other fats such as butter and margarine on bread and oil for frying have also been included in the diet. Coconut toddy, produced by tapping the flower spathe of the coconut tree and consumed as either fresh, boiled or fermented, is still a common drink. However, canned, soft drinks and cordials have become popular drinks among younger people despite their cost. Traditional forms of sugar produced from toddy have mostly been replaced by imported refined sugar.

**Table 1.2**

Tuvalu Coconut, Pulaka and Sweet Potato Land (1986)

| <b>CROP</b>      | <b>COCONUT</b> | <b>PULAKA</b> | <b>SWEET<br/>POTATO</b> |
|------------------|----------------|---------------|-------------------------|
| <b>LAND (ha)</b> | 2 028.28       | 66.56         | 6.31                    |

Source: Win, 1990.

Fruit and vegetable consumption and production has always been poor in Tuvalu. Pandanus and banana are the most commonly consumed fruits, the vitamin rich pawpaw being fed mainly to babies and older children. Imported fruit, such as watermelon, mango, pineapple, apples and oranges are becoming increasingly popular. Younger adults have a definite preference for imported fruits, they drink less coconut toddy and juice than older adults and are particularly "at risk" of low fruit and vegetable consumption. Vegetable consumption has recently been limited to the tinned variety but now fresh vegetables are also becoming popular and so are included in the diet.

The UNICEF Family Food Production and Nutrition Project has been encouraging householders to grow vegetables, especially green-leafy, vitamin-rich plants since 1986. This has been successful to some extent. The 221 gardens in 1986 rose to 509 by the following year but this had fallen to 374 by 1990 (Schoeffel, 1991). There is, however, a difficulty in sustaining such projects which take a lot of time and effort to maintain enthusiasm, soil quality and to limit pest infestation. The Ministry of Agriculture is prepared, even now, to rekindle the enthusiasm to develop home gardens with four hundred sets of household gardening tools ready for distribution.

The prison garden on Funafuti operates a fruit and vegetable garden which sells produce to residents. However, market supply is well below demand.

Bee-keeping and honey production appear to be an important activity but the honey production has been fluctuating with the average annual production between 1984 and 1989 being 666.2 kg (Win, 1990). In the medium term, it should be geared towards the urban domestic market, the long term, towards exports for Fiji, New Zealand or Australia.

Many sweet snacks are now consumed such as sweet biscuits, ice blocks, lollies and ice creams. Other snack foods such as potato chips, "Twisties" and other cheese-flavoured snacks are also popular among school children. These snacks have a poor nutritive value especially in comparison to traditional snacks of island fruits, berries, coconut and coconut water.

#### 1.4 The Current Food Trade Situation.

Lockett (1984) states that one of the primary causes of poor nutrition is the greater reliance on imported foods. From 1985-1989, about 30% of imports were attributable to food, beverages and tobacco, their cost per annum increasing steadily due mainly to an increase in prices in the exporting countries. Whilst this predicts the 7.3% average annual increase in CPI, it makes it difficult to estimate whether the volume of food imports per capita is going up or down (see also Tables A1 and A2 in the appendix). However, it is estimated to be increasing (Deo, 1991).

**Table 1.3**  
**Tuvalu's International Trade**

|                  | 1985  | 1986  | 1987 * | 1988  | 1989  |
|------------------|-------|-------|--------|-------|-------|
| <b>FOOD</b>      |       |       |        |       |       |
| <b>IMPORT\$</b>  | 1 098 | 1 195 | 1 513  | 1 654 | 1 514 |
| <b>\$000 Aus</b> |       |       |        |       |       |
| <b>FOOD AS</b>   |       |       |        |       |       |
| <b>%TOTAL</b>    | 26.6  | 29.5  | 28.3   | 26.3  | 29.3  |
| <b>IMPORT</b>    |       |       |        |       |       |
| <b>BEV/TOB</b>   |       |       |        |       |       |
| <b>IMPORT</b>    | 123   | 282   | -      | 248   | 202   |
| <b>\$000 Aus</b> |       |       |        |       |       |
| <b>BEV/TOB</b>   |       |       |        |       |       |
| <b>%TOTAL</b>    | 3.0   | 7.0   | -      | 3.9   | 3.9   |
| <b>IMPORT</b>    |       |       |        |       |       |
| <b>OIL/FAT</b>   |       |       |        |       |       |
| <b>IMPORT</b>    | 10    | 7     | -      | 28    | 21    |
| <b>\$000 Aus</b> |       |       |        |       |       |
| <b>OIL/FAT</b>   |       |       |        |       |       |
| <b>%TOTAL</b>    | 0.2   | 0.2   | -      | 0.4   | 0.4   |
| <b>IMPORT</b>    |       |       |        |       |       |
| <b>TOTAL</b>     |       |       |        |       |       |
| <b>IMPORT</b>    | 4 125 | 4 056 | 5 337  | 6 287 | 5 170 |
| <b>\$000 Aus</b> |       |       |        |       |       |

|                                   |       |       |       |       |       |
|-----------------------------------|-------|-------|-------|-------|-------|
| <b>TOTAL EXPORT</b><br>\$000 Aus  | 156   | 22    | 232   | 261   | 312   |
| <b>TRADE DEFICIT</b><br>\$000 Aus | 3 969 | 4 034 | 5 105 | 6 026 | 4 858 |
| <b>CPI #</b>                      | 3.8   | 8.6   | 9.1   | 7.4   | 2.9   |

**Source:** South Pacific Commission, 1987, 1991, 1993.

\* 1987: Win, 1990. Substitute "food, beverages and tobacco" for "food".

# CPI : Powell, 1991.

From the balance of trade statistics, it is possible to see that to reduce the dependency on imported foods, there will have to be investments in, and increasing production of, crops, livestock and fisheries. Initially, the emphasis should be on subsistence production, then the domestic urban market, then finally the export markets, although the Ministry of Agriculture is determined for the emphasis to be on subsistence and domestic production rather than exportation.

A compromise between the national goals of self-sufficiency and the desire and ability to participate in the international economy must, however, be reached. The GDP is a way of assessing in monetary terms the value of goods and services produced by a country during a particular year. Raising the GDP per capita with the goal to raising the family income in real terms, is one way of combating poor nutrition. With increased buying power, families can buy the nutritious foods required for good health. In addition as more families have the bare essentials, the government can spend more money on long term health measures such as education.

**Table 1.4**  
**Tuvalu's GDP**

|  | 1986  | 1987  | 1988  | 1989  | 1990   |
|--|-------|-------|-------|-------|--------|
| <b>GDP</b><br><b>\$000 Aus</b>                     | 5 432 | 7 033 | 9 024 | 9 948 | 11 202 |
| <b>POPULAT.</b><br><b>(No.)</b>                    | 9 098 | 8 504 | 8 602 | 8 803 | 8 917  |
| <b>GDP Per</b><br><b>CAPITA</b><br><b>(\$ Aus)</b> | 597   | 827   | 1 049 | 1 130 | 1 245  |

**Source:** South Pacific Commission, 1987, 1991, 1993.

Internal trade in fish and local agricultural produce has been on the increase through the Funafuti fish market and the co-operative societies located on each island except Niulakita. However, its full potential is restrained by the traditional bartering of goods between kin group members on the capital island and outer islands. Internal freight is subsidised but this applies only to imported goods shipped by the Tuvalu Co-operative Society on Funafuti to its retail outlets on the outer islands. The subsidy is covered by the government's Import Levy Fund.

The level of business being carried out by the main retail outlets (the co-operatives) has grown over recent years and there is currently no control on what can be imported and sold with respect to foodstuffs. There are increasing numbers of licensed hawkers, vendors and ice block sales outlets particularly on Funafuti. In 1994 there were ? ice block outlets, ? cafe and goods stalls, ? candy outlets and ? ice cream vendors on Funafuti. All these outlets rely very heavily on imported goods and tend to sell sweet or savory snack foods high in less nutritious elements such as sugar, salt and fat.

## 2. THE NUTRITION SITUATION IN TUVALU

A person's nutritional status depends on the balance between their food intake and their nutritional requirements. As the previous section has discussed the food supply situation, this section will discuss the resultant nutrition situation in Tuvalu.

The data that follows comes mainly from a survey that was conducted on Nui, Nukufetau and Funafuti from April-July 1983 in preparation for the Primary Health Care plan (Save the Children Federation, 1984). This was funded by the Save the Children Federation and will be referred to as the PHCS.

### 2.1 In General.

i) **Sores, scabies and skin and eye infections.** The PHCS showed a very high incidence of sores, scabies and skin and eye infections in all population groups and especially in the under five year olds and school age children. These and other infections are closely related to personal and public hygiene but resistance may be lowered if the population is suffering from vitamin deficiencies.

Changing dietary patterns and the low fresh fruit and vegetable consumption have caused vitamin and mineral deficiencies. Although fruit and vegetable consumption has always been low, the high intake of starchy crops (such as pulaka, taro, breadfruit, bananas and pandanus and coconuts) have provided adequate vitamins and minerals. Replacement of many fresh foods with less nutritious, imported foods (such as highly processed rice, flour and sugar products), necessitates an increased fruit and vegetable consumption to provide the essential vitamins and minerals formerly provided by traditional foods.

Schoeffel (1991) reports that the connection between nutrition and health and the importance of "protective" food in the diet seems to be widely understood. Positive changes in dietary practices are gradually occurring.

ii) **Anaemia.** The PHCS showed some anaemia in all population groups but most especially in the school age children where 77% were anaemic. The main causes of anaemia were most likely the:

- \* low consumption of iron-rich foods especially green leafy vegetables.
- \* lack of vitamin C in the diet from fresh fruit and vegetables, as vitamin C is known to enhance the body's absorption of iron.
- \* infection with hookworm in endemic areas as it, along with other intestinal parasites, causes blood loss from the stomach and intestines. Poor sanitation and environmental health is the primary cause of a high prevalence of intestinal parasites. In Nukufetau, 89% of school children with hookworm were anaemic but only 23% of the anaemic school children had hookworm (ie 17% of all school children). This suggests that whilst hookworm is one of the contributing factors causing anaemia, other factors, including diet, may be more important.
- \* diarrhoeal disease which increases the secretion of ingested iron. In Tuvalu the incidence of diarrhoeal disease is high due to the poor water supply and the low standard of personal hygiene and public sanitation.

The most "at risk" population group for anaemia is women of child-bearing age and this is especially so in Tuvalu where the birth rate is high. The PHCS recorded the incidence of anaemia in this group to be 23%. Anaemia can cause weakness and tiredness and many infants have anaemia due to their mother's poor iron supplies (coupled with their poor dietary intake of iron-rich foods).

The fact that many infants and school children in Tuvalu had anaemia means that there will continue to be anaemia among child-bearing women as the children reach adulthood suggesting a vicious cycle that needs to be broken.

iii) **Dental caries.** The high incidence of dental caries in all population groups was related to poor oral hygiene and the sugar/starch content of foods. The diet of Tuvaluans has changed from one with large amounts of fibrous, carbohydrate fruits and vegetables (containing the vitamins and minerals needed to strengthen the tissues surrounding the hard structure of the teeth) to one with large amounts of unrefined carbohydrate - ie sugar. In particular, school children are excessive in their consumption of sweet snacks and drinks and when combined with poor dental hygiene, the incidence of dental caries rises.

## 2.2 Under Five Year Olds.

The 1989 Annual Reports for the Tuvalu Ministry of Health show that although the infant mortality rate is relatively high (38 per 1000 live-births), the average birth weight is high (3.5kg) and only 3% of infants have a low birth-weight (Annual Reports, Ministry of Health, Tuvalu. In Deo, 1991).

With this good start in life and breast-feeding still being practised by most mothers, it is not surprising that underweight was not a problem of public health significance in either the PHCS or the Report of Tuvalu Islands Weight for Age Survey conducted by the Ministry of Health through it's maternal and child health services in 1981. In fact, apart from the high incidence of sores, scabies and skin and eye diseases as already mentioned, the problem with this age group is:

i) **Apparent overweight in the first six months of life.** Thirty percent of babies under six months are overweight, and the majority of remaining babies follow the upper limits of normal weight. Whilst, it is not well understood whether this overweight in early infancy is detrimental to health or not, non-communicable diseases are a serious problem in adults and it is thus important to prevent the development of over weight in children.

The tendency towards overweight is partly accounted for by the cultural preference for fat babies and the practice of giving supplementary foods (including toddy, fruit juices and sweetened condensed milk) as well as breast milk soon after birth. This has been actively discouraged by health staff until the infant is four months, so the tendency towards overweight may be decreasing.

### 2.3 School-age Children.

The analysis of school health records in Funafuti and the results of the PHCS determined the growth with respect to weight and height in school children as normal compared to WHO standards. Of more concern are nutrition related problems (already mentioned in the general section) that arise from the increasing consumption of snack foods low in nutritional value but high in energy (e.g. ice cream, lollies, ice blocks, sweet biscuits). This replaces the traditional snacks and drinks such as fruit, pandanus and coconut products which provide some essential vitamins and minerals and it means that proper meals (containing vegetables and fish) are often not eaten.

### 2.4 Adult Females.

i) **Obesity.** Overweight is defined as any weight  $\geq 120\%$  the normal reference weight or a BMI  $\geq 25$ . Obesity is similarly defined as  $\geq 140\%$  the normal reference weight or a BMI  $\geq 30$ . However, it is not clear at what level of overweight amongst Pacific Islanders becomes a health risk. Further work needs to be undertaken to decide on the most appropriate cut-off points for overweight and obesity for different Pacific populations (Badcock, 1984 and Badcock et al., 1993).

Obesity is prevalent in the 20-29 year females and its prevalence and severity increases with age (i.e. throughout the child-bearing years). The PHCS showed that 75% of all women over 29 years of age were overweight (in comparison with the international

standards defined above) and 50% were considered to be obese. By 40-49 years of age, 88% of all women examined were found to be overweight of which 67% were obese.

Causes of obesity in the female population are many and complex, but are related largely to:

- \* a change from traditional carbohydrate foods (breadfruit, pulaka and cooking bananas), which tend to be bulky and have a high fibre content, to imported carbohydrate foods (white rice, white flour, sugar and sugar products), which are low in fibre and bulk and much more energy dense. Fats, like butter or margarine that is often spread on bread, or oil used in frying and roasting are now a common part of the diet.

- \* a cultural tendency to give extra food (beyond what is necessary) to pregnant and breast-feeding women because of a lack of understanding regarding their increased needs. The high birth rate means many women are repeatedly overfed during their child-bearing years

- \* a cultural tendency for women to eat last in the family which means that they are more likely to eat a large quantity of carbohydrate staple often prepared in coconut cream.

- \* a low level of physical activity and exercise, especially among older women.

The tendency towards obesity in the female population poses a major health risk. Obesity is a risk factor for non-communicable diseases such as high blood pressure, heart diseases and diabetes and the younger the onset of obesity, the greater the risk of such diseases (Wicking et al., 1981). Until the last two decades, high blood pressure (11.1% prevalence in 1980, Zimmet et al.) and heart diseases were not commonly reported in Tuvalu, but they are becoming increasingly common today.

Diabetes, however, is the nutritionally-related disease of greatest concern to the Health Department (Schoeffel, 1991). A study in 1976 reported diabetes in 8% of people over

10 years of age and 10.1% in those over 20 (Zimmet et al., 1979). In addition to obesity, the high sugar consumption (55kg per person per annum (Lockett, 1984), which in itself contributes to obesity) is another predisposing factor towards a high rate of diabetes.

## **2.5 Adult Males.**

i) **Obesity.** While there is a tendency towards overweight among men in older age groups, the problem is considerably less than among adult women (14% amongst the oldest men). This is primarily due to men being more physically active but perhaps also because they eat first, thus consuming more protein and protective foods. The incidence of diabetes is lower among adult men. However, the lower level of obesity does not completely explain this (Taylor & Zimmet 1981).

ii) **Alcohol over use and abuse.** Homasi (1982) noted that 38% of men drank alcohol, compared with 2% of women. In addition they drank a lot of alcohol in one sitting leading to social and health problems.

### 3. WHY HAVE A NATIONAL FOOD AND NUTRITION POLICY IN TUVALU?

The provision of the appropriate amounts of the right kinds of foods to the whole population is fundamental to the health and well being of any nation. Whilst the people of Tuvalu are not subject to serious, life-threatening food scarcity or famine, their health, which has been maintained at a high standard in the past, has been declining over the last two decades. The 1983 PHC survey and much of the work by Zimmet confirmed this decline and Naylor (1991) has reported its progression by showing an increase in diseases such as obesity, diabetes, high blood pressure, heart disease, anaemia and dental caries. All of these diseases are primarily the result of poor nutrition and not enough exercise.

Apart from being sicknesses that cause people to feel unwell and often lead to an early death, these diseases are a costly burden on the health service. If they continue to increase, they can only mean an increased expenditure for health services at the expense of other government services and development initiatives. Therefore in order to prevent this, guidelines and clear directions on food and nutrition are needed. There can be no significant improvement in the general health status of Tuvaluans without improving their diets (Lockett, 1984).

Currently, improvement of nutritional status is primarily being addressed through Tuvalu's Primary Health Care Program. Nutrition is often an area that is thought of as belonging to the Health Department but clearly the responsibility for nutrition improvement activities belongs to a number of sectors. These include agriculture, education, fisheries, economics, youth and women's development programs.

The NPHCAC, through the *Tuvalu Improved Nutrition Program* (1985), has made an important attempt to develop a team or integrated approach to creating a wider awareness amongst Tuvaluan people of the importance of good nutrition. It could, however, be expanded to include NGOs and other people related to food and nutrition programs in Tuvalu. This would further enhance it's ability to address pertinent issues relating to food and nutrition in Tuvalu and to coordinate food and nutrition programs and research and information gathering, analysis and dissemination.

A National Food and Nutrition Policy is needed to provide clear guidelines on how best to implement a comprehensive and well-integrated national nutrition program. It should define goals, objectives and the role of each division and organisation and provide the implementation strategies and financial implications of carrying out such a nutrition program. The policy should also provide the national government with policy guidelines for the inclusion of nutritional considerations in all its development plans and strategies.

It is essential that food and nutrition policy planning be carried out by individuals who accept and share the value system of a particular society as any analysis presumes some form of a model and all models are culturally based (Jackson, 1989). Dignan (1) has also stated that whilst the policy document itself is important as a clear guide for action, the process of developing it is just as important, as the people in the relevant sectors will "own" the policy and be committed to its implementation.

For this reason it is proposed that the draft policy that accompanies this paper be circulated amongst members of the NPHCAC and anyone else who would be involved in the development of the NFNP for their input, revision and addition. Following this, it is proposed that a workshop be held in early July 1994 amongst all those involved in the development of the NFNP in order to finalise the policy.

Each ministry will then be aware of their responsibility regarding the implementation of the policy and will be able to go ahead with the necessary plans and programs to see these fulfilled.

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## 5. APPENDIX

### Table A1

**Imports of Food, Beverages, Tobacco,  
Fats and Oils in \$000 Aus**

| <b>IMPORT</b>                          | <b>1985</b>  | <b>1986</b>  |
|--|--------------|--------------|
| Live Animals                           | 10           | 16           |
| Meats and meat preparations            | 215          | 177          |
| Dairy products and eggs                | 71           | 77           |
| Fish and fish preparations             | 14           | 13           |
| Cereals and cereal preparations        | 459          | 436          |
| Fruits and vegetables                  | 46           | 72           |
| Sugar, honey, etc...                   | 139          | 168          |
| Coffee, tea, cocoa, spices, etc...     | 37           | 57           |
| Feeding stuff for animals              | 32           | 76           |
| Miscellaneous food preparations        | 75           | 100          |
| <b>TOTAL FOR FOOD AND LIVE ANIMALS</b> | <b>1 098</b> | <b>1 195</b> |
| Beverages                              | 50           | 202          |
| Tobacco                                | 73           | 80           |
| <b>TOTAL FOR BEVERAGES AND TOBACCO</b> | <b>123</b>   | <b>282</b>   |
| Animal oils and Fats                   | -            | 2            |
| Fixed vegetable oils and fats          | 10           | 5            |
| Processed oils and fats, waxes, etc... | -            | -            |
| <b>TOTAL FOR OILS AND FATS</b>         | <b>10</b>    | <b>7</b>     |

**Source:** South Pacific Commission, 1988 & 1989.

Table A2  
**Value of Major Food Imports**  
in \$000 Aus

|   | 1985  | 1986  | 1987  | 1988  | 1989  |
|---|-------|-------|-------|-------|-------|
| <b>Bovine animal meat</b>                                 | 46.5  | 14.2  | 6.7   | 24.2  | 14.1  |
| <b>Sheep &amp; goat meat- fresh, chilled or frozen</b>    | 4.4   | 5.1   | 3.8   | 14.9  | 15.6  |
| <b>Swine meat</b>   | -     | 2.7   | 18.2  | 0.5   | 0.6   |
| <b>Dead poultry</b>                                       | 27.4  | 2.2   | 16.5  | 6.3   | 36.8  |
| <b>Meat &amp; offal, salted in brine, dried or smoked</b> | 24.3  | 31.9  | 40.8  | 40.9  | 28.9  |
| <b>Sausages &amp; like, offal or blood</b>                | 12.0  | 11.7  | 23.5  | 27.7  | 28.4  |
| <b>Other prepared or preserved meat or offal</b>          | 132.3 | 105.6 | 111.5 | 201.7 | 169.6 |
| <b>Prepared or preserved fish</b>                         | 13.8  | 13.0  | 27.7  | 27.2  | 15.3  |
| <b>Semi- or wholly-milled &amp; broken rice</b>           | 110.3 | 117.2 | 92.8  | 253.4 | 236.4 |
| <b>Wheat or meslin flour</b>                              | 192.1 | 140.1 | 80.8  | 117.0 | 165.7 |

Source: Win, 1990.