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STRATEGIES FOR POLYNESIAN AGRICULTURAL DEVELOPMENT

Euan Fleming and I. Brian Hardaker

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What does the future hold for Polynesian agriculture? To judge by recent indicators of agricultural performance in most Polynesian island nations, the contribution of agriculture to economic development is weak and possibly declining. This picture of an uncertain future for agriculture is explored in this book, and some strategic recommendations are made on how resources in agricultural sectors might best be used to benefit the people of Polynesia. The final chapter of the book draws together the main strands of the discussion and formulates recommendations for national governments and the international aid agencies that substantially support development initiatives. Both governments and aid agencies need to match the strength and opportunities in agriculture with institutional capacity for strategic action. At the same time, threats to agricultural activities need to be minimised and the possible negative effects of institutional deficiencies need to be recognised, accounted for and counteracted.

The countries covered in this study are Tonga, Western Samoa, Kiribati, Tuvalu and Niue. This study is structured along similar lines to a study of strategic options for agriculture in four Melanesian countries: Fiji, Papua New Guinea, Solomon Islands and Vanuatu (Fleming and Hardaker 1994). At various points comparisons are drawn between the two sets of countries on strategic issues. At this point, it is sufficient to point out that the five countries are unlikely to be able to follow a development path exactly the same as that prescribed for the Melanesian countries.
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACIAR</td>
<td>Australian Centre for International Agricultural Research</td>
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<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AIDS</td>
<td>acquired immune deficiency syndrome</td>
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<tr>
<td>AusAID</td>
<td>Australian Agency for International Development (formerly AIDAB—Australian International Development Assistance Bureau)</td>
</tr>
<tr>
<td>COGENT</td>
<td>Coconut Genetics Resources Network</td>
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<tr>
<td>DAFF</td>
<td>Department of Agriculture, Forests and Fisheries (Western Samoa)</td>
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<tr>
<td>DAFF</td>
<td>Department of Agriculture, Forestry and Fisheries (Niue)</td>
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<tr>
<td>EEZ</td>
<td>exclusive economic zone</td>
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<tr>
<td>ESCAP</td>
<td>Economic and Social Commission for Asia and the Pacific</td>
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<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<tr>
<td>fob</td>
<td>free on board</td>
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<tr>
<td>GDP</td>
<td>gross domestic product</td>
</tr>
<tr>
<td>HTFA</td>
<td>high temperature forced air</td>
</tr>
<tr>
<td>ICLARM</td>
<td>International Center for Living Aquatic Resources Management</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
</tr>
<tr>
<td>IRETA</td>
<td>Institute for Research, Extension and Training in Agriculture</td>
</tr>
<tr>
<td>KCCS</td>
<td>Kiribati Copra Cooperative Society</td>
</tr>
<tr>
<td>MAF</td>
<td>Ministry of Agriculture and Forestry (Tonga)</td>
</tr>
<tr>
<td>MFN</td>
<td><em>Moui FakaNiue</em></td>
</tr>
<tr>
<td>MIRAB</td>
<td>migration, remittances, aid and bureaucracy</td>
</tr>
<tr>
<td>MENRD</td>
<td>Ministry of Environment, Natural Resources and Development (Kiribati)</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Name</td>
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<tr>
<td>MNRD</td>
<td>Ministry of Natural Resources and Development (Kiribati)</td>
</tr>
<tr>
<td>SPC</td>
<td>South Pacific Commission</td>
</tr>
<tr>
<td>SPREP</td>
<td>South Pacific Regional Environment Programme</td>
</tr>
<tr>
<td>TCTC</td>
<td>Tuvalu Copra Trading Cooperative</td>
</tr>
<tr>
<td>UNDAT</td>
<td>United Nations Development Advisory Team</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>USP</td>
<td>University of the South Pacific</td>
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<td>WSTEC</td>
<td>Western Samoa Trust Estates Corporation</td>
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What future for Polynesian agriculture?

To judge by recent indicators of agricultural performance in most Polynesian island nations, agriculture faces an uncertain future. It is the aim of this report to explore strategic options on how resources in agricultural sectors might best be used to the benefit of the people of Polynesia. The countries covered are Kiribati, Niue, Tonga, Tuvalu and Western Samoa. We shall refer to them collectively as the Polynesian island nations, notwithstanding the inclusion of the Micronesian nation of Kiribati in the five. Depending on the context, the term may also be used to refer to Polynesian island nations generally. The obvious diversity among these nations is sufficient to falsify, at least to some degree, many of the generalisations attempted. But there are shared characteristics that justify a broad treatment of their economies. They include: small size; open economies; MIRAB characteristics; prominent Dutch disease effects; a production system usually characterised by subsistence affluence; limited absorptive capacities for aid; widespread rent-seeking; dualistic social systems; very strong kin ties; and notions of ownership which differ from those in Western societies.

These factors weaken the incentives for Polynesians to save and invest, and cause many small family business ventures to fail. Kinship ties have also led to severe financial haemorrhaging of larger institutions. The conjunction and mutual reinforcement of the rentier nature of the economies and dualistic social systems have to date
produced outcomes incompatible with successful entrepreneurship and effective administration, and discouraged sustainable development.

The political economy of Polynesia

The Polynesian island nations include four of the five countries of direct concern—Niue, Tonga, Tuvalu, Western Samoa—as well as Cook Islands, American Samoa, French Polynesia and Tokelau. For obvious reasons, Hawaii should be regarded as a special case, as should the Polynesian Maori population of New Zealand. On the other hand, although sometimes classed as part of Melanesia (Fleming and Hardaker 1994), Fiji has many Polynesian characteristics. Kiribati, the fifth country of special concern in this study, is usually regarded as part of Micronesia, but is included here for convenience and because it shares some of the problems and characteristics of the other four. Indeed, some of the generalisations that may be made about the five island nations studied, extend with little modification to other island nations such as the Federated States of Micronesia and Marshall Islands.

Bertram and Watters (1985) characterised the economies of the South Pacific island nations as MIRAB economies, noting the dominant and distorting impacts of migration (mainly to Pacific rim metropolitan countries), remittances (sent by the migrants to family members back home), aid flows at very high levels per capita, and consequently a large bureaucracy, feeding off the aid flows. Bertram (1986) elaborated the economic aspects of the MIRAB theory, noting that these economies are driven by rents rather than by income from productive export-oriented activities. They suffer from the so-called 'Dutch disease' which, he has postulated, is an important part of the explanation for the weakness of commodity production and the failure of many development initiatives.

Dutch disease occurs because of the hefty inflows of foreign exchange from rent flows such as aid and remittances—most South Pacific
island nations had negative trade balances in 1989 of the order of 50 per cent or more of GDP (Wiseman 1993:19). These inflows keep real exchange rates artificially high and push up local costs, notably wage rates, making it difficult for domestic producers to compete in export markets. Nor is it easy for local producers to compete at home with imports made artificially cheap by distortions to real exchange rates. Agriculture, as the main sector in these countries, bears the brunt of these distortions, with the terms of trade turned against producers. At the same time, other export-oriented or import-competing industries are also disadvantaged to the extent that, without subsidies, it is usually only service industries facing no direct competition from imports that are able to thrive.

The unfavourable terms of trade for agriculture are set in the context of a production system usually characterised by 'subsistence affluence' (Fisk 1964), meaning that, provided there is adequate land available, a family can grow more than enough staple food for home use—mostly tropical root crops—with a relatively modest labour effort. This fact, combined with the warm climate, makes clothing and housing needs modest and a subsistence-oriented mode of production relatively attractive, especially if some cash is coming into the household from remittances or from a household member in wage employment, typically in the public service. The consequence is that the reservation price of labour is relatively high, militating against the commercial development of the rural sector.

Turning now to aid flows, for political, strategic and commercial reasons, several countries find it expedient to allocate aid funds to these five countries. The altruistic case for aid is relatively weak since poverty on the scale found in Sub-Saharan Africa, for example, is fortunately absent from the South Pacific. While the amounts of aid directed to the countries are not great in the overall aid allocations of most of the donor countries, they are large for the recipient nations when expressed on a per capita basis. In addition, these countries have made, and continue to make, considerable use of opportunities to obtain 'soft' loans from international agencies such as the World Bank and the Asian Development Bank. In so far as these loans are at artificially low interest rates, they embody further aid flows and often entail associated technical assistance inputs provided as grants.
The magnitudes of these aid and loan flows have generally exceeded the absorptive capacities of island nations. There have, of course, been successful aid projects in all of these countries, but much of the money has been wasted. Every country has accepted overseas-funded development projects in the past, from which there is now little or no discernible benefit. Substantial amounts of money have gone into capital-intensive construction projects, the benefits of which seem unlikely to be at all on a par with the costs. It is of particular concern that an increasing proportion of the funding for development assistance has been in the form of loans rather than grants. Even though the loans may be on soft terms, the capital does have to be repaid, so the borrowers are mortgaging their futures if the funds are invested unproductively.

The willingness of small island nations to accept aid funds beyond local absorptive capacity can be understood in terms of the rent-seeking behaviour described by Bertram (1986). Individual bureaucrats and politicians may be able to obtain direct personal benefits—legitimately or possibly illegally—from aid funds. A project may pay for a vehicle, for overseas travel, or for other benefits that 'spin off' to individual decision-makers. In addition, progress in the public service may be judged by how well individual departments or sections are able to 'milk the aid cow'. The net result is a growth in the scale of the bureaucracy which, typically, has expanded to be the main source of wage employment. The consequence is some degree of 'crowding out' of the private sector through competition for resources, especially skilled labour, as well as wasted time, effort and resources allocated to rent-seeking rather than to productive activity.

“A subsistence-oriented mode of production is relatively attractive, especially if some cash is coming into the household... The consequence is that the reservation price of labour is relatively high, militating against the commercial development of the rural sector.”

What future for Polynesian agriculture?
Polynesian social characteristics

These rent-seeking behaviours have to be seen in the context of Polynesian social systems that are typically dualistic in nature. Simplifying the great complexity and diversity of these systems, there is usually a small chiefly class that, as Watters (1987) observes, is almost identical with the bureaucratic élite. The balance of the population makes up a much larger class of ordinary people. The power and privilege of the élite comes in part from their inherited status which is usually linked with control over rural lands. But the élite are able to reinforce their positions by rent-seeking behaviour within the bureaucracy, and perhaps also by extracting ‘tribute’ from their people. This form of social organisation may be seen most clearly in the Kingdom of Tonga, which has been described as a modern-day feudalistic state. Not surprisingly, the position of the land-owning royal family and nobility in that country has come under increasing local criticism, and some concessions have had to be made to try to calm a rising tide of discontent. At the other end of the scale, Kiribati (as noted, a Micronesian country) has relatively less social differentiation, yet still has its political and bureaucratic élite.

Churches Another important influence in all five countries is the churches. The Pacific island people generally, including the peoples of these countries, have embraced Christianity with enthusiasm, and the churches have become especially powerful and potentially influential institutions. Church leaders have mostly adopted a conservative line, avoiding any challenge to the existing political systems and ruling élites—though there have been exceptions where churches have sponsored moves for reform, for example, in relation to land tenure in Tonga. The main influence of the churches, however, has been in ‘taxing’ their adherents in order to fund the expansionist efforts of the particular branch or sect. The willingness, even eagerness, of Polynesians to support churches was recognised early on. Late last century, the Methodist church in Tonga was able to collect more money for missionary work among the ‘heathen’ than could be collected by the same church in the whole of Australia! There is one report of
Tongans dancing round the kava bowl set up in front of the congregation and throwing in money in 'a frenzy of giving' (Latukefu 1967).

Depending on how one views the promotion of church work and the construction of religious infrastructure such as large and imposing places of worship, it may be argued that the rent-seeking behaviour of the churches has been counter-developmental. The majority of Polynesians have found it difficult to accumulate capital, since as soon as it is evident to a community that an individual or family is doing well, expectations about donations to the church rise accordingly—and giving is usually very public. Those who do not give in accord with expectations face social opprobrium, and so tend to comply, perhaps grudgingly, regardless of cash management problems which may result.

**Kinship**

Kin ties are very strong in Polynesian communities. Notions of ownership are different from those in Western societies. Polynesians are generous to a fault, especially where kin are concerned. One manifestation of this generosity, of course, is the strong and seemingly persistent flow of remittances from overseas kin to those back home. Another is the way food and money are shared among family members and others. Not only is a person who receives income—perhaps from wages or sale of produce—expected to share with others; that person will usually do so very readily, seemingly with no thought for his or her own future needs. A somewhat cynical explanation of this altruism is that giving builds kin ties and obligations for the recipients that can be used later when needed, perhaps when the giver is sick or old. In other words, giving may be regarded as a form of payment for social security in countries where there is no state social security system. Certainly, the generous spirit of Polynesian peoples helps to bind these societies together.

All these factors tend to weaken the incentives for Polynesians to save and invest. The saving habit has also been discouraged in the past by government-imposed interest rate restrictions that (at least in times of high inflation) may have meant a negative return on funds.
saved. The lack of savings and leakage of funds and stock to kin has doomed many small family business ventures to failure. Kinship ties have also led to severe financial haemorrhaging of larger institutions, such as government-owned corporations. A manager may find it difficult to deny a kinsman a job, or may be unable to refuse credit to such a person, however inappropriate either action may be. Moreover, when the manager is a member of the bureaucratic élite and/or of high rank (and both will often be the case), more junior members of the organisation may be unable or unwilling to speak out against any malpractice.

**Key strategic issues for Polynesian island governments**

The choice of successful strategies depends on making some hard decisions about the kind of social and economic future these Polynesian countries want to have by 2010, and hence what role agriculture is expected to play. The longer these hard choices are put off by ‘fudging’ the issue of whether productive activities (including agriculturally based activities) are to be encouraged to develop, the more difficult it will become to achieve such development.

The key strategic question, therefore, is whether Bertram (1986) is right—that no attempts to promote export-oriented commercial development can succeed in these countries, at least unless and until there is a curtailment of aid and remittance flows. If he is right, agriculture can, at best, provide a sound subsistence base for the survival of those islanders who elect or are obliged to stay at home in the villages, and who do not secure local wage employment. On the other hand, if he is wrong, the rent-seeking strategy may be seen in hindsight to have been disastrous for the welfare of island people obliged to stay at home or to return home in the future, if conditions for residence overseas are tightened. A sense of national pride, the desire for independence from overseas aid donors and growing discontent among the relatively disadvantaged inhabitants of rural villages may dictate a need to find successful avenues for commercial agricultural development.
Because the countries are so small and their economies so open, they will inevitably have to rely on considerable foreign exchange rents from a variety of sources to pay for necessary imports, if the aspirations of their people are to be met. For none of the countries would it make sense to try to cut off income from aid, remittances or other rents entirely, despite the distortion and the relative disadvantage these cause productive enterprises. The challenge is to strike the right balance between rental incomes and the development of productive activities, and this balance will be different in different circumstances.

The choice between meritocracy and communitarianism

There is no single path to development for these Polynesian island nations. There are important differences between the countries, implying that overarching prescriptions are impossible. In recognition of the options that exist within countries, and the differences that exist between them, six different development philosophies are outlined in Chapter 7. These different philosophies lead to fundamentally different strategic options. The best path to follow for individual Pacific island countries entails deciding first on the broad development philosophy or mixture of philosophies that will guide strategic decision-making.

The discussion of alternative approaches reveals an important and fundamental dichotomy between two philosophical approaches to achieving development—the meritocratic and communitarian approaches. The meritocratic approach relies on the emergence of productive activities undertaken by individuals, households and private firms to provide foreign exchange. The communitarian approach must follow one of three paths: countries either attempt to mobilise village communities to undertake productive activities, as with the meritocratic approach; retreat to a past state of autarky; or rely on sources of foreign exchange derived from rent. The path of autarky is unrealistic: the aspirations and circumstances of the populations have progressed to a state that makes autarky impossible.
In relation to rent-seeking, all the Pacific island nations have reached a stage in their development where rents are responsible for an overwhelming proportion of foreign exchange earnings. Yet the continued success of the *rentier* path relies on countries being able to maintain rents in the future—by no means a certainty. *Rentier* economies also find it hard to avoid the damage to resource efficiency that can ensue as rent-seeking at the national level cascades down to farm households seeking rents from individual agricultural projects.

None of the countries under study has so far made a clear-cut choice to adopt any single main development philosophy. To varying degrees, they are committed to all, resulting in ineffective and potentially damaging strategies. It is our view that it would be best if all five Polynesian governments embrace meritocracy as their primary development philosophy. An emphasis on this approach appears to offer the best chance of meeting the aspirations of the peoples of these countries. Meritocracy is not without dangers—it can entail replacing one élite with another unless care is taken. Hence, if it is given priority, some rent-dependence and making suitable provisions for attaining reasonable standards of equity will be necessary. A considerable reliance on aid is inevitable throughout the period to 2010. In the long term, however, the aim should be for a gradual reduction in reliance on aid and other sources of rents to maintain the welfare of the populations.

In the following sections, some recommended macro-level, intersectoral, agricultural production, agricultural marketing and institutional strategies are recommended. In many respects they are similar to the strategic options presented for agriculture in the four Melanesian countries of Fiji, Papua New Guinea, Solomon Islands and Vanuatu (Fleming and Hardaker 1994). However, the countries under study are unlikely to be able to follow the same development path as that prescribed for the Melanesian countries. The latter’s larger and less MIRAB-dominated economies, more resource-abundant agricultural sectors and different social contexts make it dangerous to apply similar remedies for overcoming agricultural stagnation. In addition, the range of prospects for the developmental role of agriculture in the Polynesian countries is much broader than we observed in Melanesia.
Macro-level strategies

A change of strategy towards more self-reliant development and away from dependency on aid and remittances presents challenges at the macro level. Due to their very smallness and geographical isolation, the Polynesian countries face special difficulties in devising and implementing a strategy for sustainable economic growth. There are no magic solutions to these difficulties. Governments need to adopt a flexible approach to strategy setting, abandoning elements that fail and putting more stress on what is found to work.

Elements of an improved set of macro-level strategies should include the following.

- Governments should look hard at the amount of aid and development loans they accept, taking account of domestic absorptive capacity.

- A more enthusiastic adoption of market-friendly strategies will enable public and private sectors to work together more effectively.

- A more favourable environment needs to be created for foreign investment.

- An essential part of a market-friendly strategy is the progressive liberalisation of international trade. Present restrictions on trade are unnecessary and likely to slow development.

- A market-friendly strategy requires substantial and more discerning efforts to improve and maintain infrastructure, including transport and communications systems.

- If more self-reliant development strategies are to be followed, high rates of population growth could become serious problems in these countries, as they are already for the Melanesian countries. Policies to reduce the birth rates therefore need to be given more priority.

- A strategy is needed to ease pressures for unsustainable wage rises by keeping down the cost of living through expanded local food production.
• Education and training need to be part of the human resource component of the macro-strategy. But the provision of advanced training is one area where self reliance can be taken too far. A sensible strategy for most Polynesian countries is to continue to rely substantially on regional and overseas tertiary educational facilities into the middle-term future.

• The smaller and more isolated countries of Tuvalu, Kiribati and Niue need to reverse the relative neglect of the subsistence sector which provides the solid foundation for a resilient mixture of cash and subsistence activities in their economies.

• Governments will need to replace unreliable aid and remittance flows with sources of rent that are more secure.

**Intersectoral strategies**

**Competition for land**
The government should play a direct role in influencing agricultural land-use patterns only where there are substantial externalities from one particular form of land use. Otherwise, agriculturalists will have to compete with other uses for access to land.

**Domestic terms of trade and relative returns to labour**
While there is little that governments can or should do to influence intersectoral resource use decisions, they can directly affect the earning potential in areas such as the public service. In all the Polynesian island nations there has been a long-term expansion in both public service employment and wage and salary rates. In contrast, returns to labour in agriculture have been stagnant. This would not be such a problem had there not been out-migration of able-bodied and enterprising people for two decades, causing shortages of labour.

If a rent-dependent path is rejected in favour of a meritocratic development path in which productive capacity is to be built up, further reductions in numbers and wages in the public service will be both necessary and unavoidable. The necessity will arise as aid
flows are cut back or directed away from bureaucratic expansion into more productive uses. The desirability of the reductions comes from the need to avoid crowding out private sector development, including agricultural development.

The main form of government intervention to turn sectoral terms of trade in favour of agriculture has so far been the provision of subsidies. Given the open nature of the economies concerned, there is little hope of raising economic welfare in the long term by subsidising purchased farm inputs, credit or farm outputs. The one circumstance in which subsidisation might be justified as a long-term measure is if it encourages more ecologically desirable behaviour by farmers; but, even here, other measures to achieve the same goal are likely to be more efficient.

**Leading sector versus balanced growth**

Only in Tonga and Western Samoa can a strong case can be made for agriculture to play the leading role in economic growth in the next couple of decades. It will not play a leading role, however, as long as it remains in its current economic straitjacket. Nevertheless, agriculture is likely to remain one of the most important sectors because it is the only one at present capable of providing employment growth to absorb the bulk of the projected new entrants to the labour force for the period up to and beyond 2010.

**Regional balance**

The potential for agricultural development is unevenly spread in three of the five countries, so that regional inequalities are of minor concern only in Western Samoa and Niue. If governments in the other three countries are serious about balanced regional development, much more needs to be done to integrate regional development initiatives into the overall development planning process.

**Allocation of public funds**

At the strategic level, priorities for spending need to be reviewed and, where necessary, revised to fit the potential for development of various sectors. If agriculture is to play a leading development role, more public funds are needed. But if it cannot be substantially developed and its performance improved, there might be little imperative to spend
relatively more public money on it. A minimal level of expenditure may be sufficient to sustain a limited subsistence base.

Evidently, the way funds allocated to agriculture are used is as important as the amount. Unfortunately, deservedly or not, agriculture ministries or departments in Polynesian governments are seldom seen as having good track records in this regard, suggesting a need to overhaul planning, management, monitoring and control.

Agricultural production strategies

Commercial development  Given the strength and flexibility of semi-subsistence systems, governments should be cautious about encouraging a transition towards fully commercial operations. Such a decision is best left to smallholders themselves, especially if such a shift leads to the premature decline of resilient semi-subsistence systems.

The choice of commodities for commercial development places Polynesian producers and governments on the horns of a dilemma. On the one hand, too much specialisation is very risky, while on the other hand diversification has efficiency costs. In these difficult circumstances, an optimal strategy should have three main elements.

• Considerable reliance should be placed on 'tried and true' products and markets for which the required knowledge and experience already exist—even though these may be less profitable than some newer alternatives.

• Both local and overseas knowledge and experience should be tapped more effectively to develop and market exotic or unfamiliar commodities. In particular, Polynesians need to become less chauvinistic about the contributions that foreign companies, especially marketing companies, can make to their development.

• As a strategic choice, official backing should be given to only a small number of commodities that experience and/or
careful consideration suggest, can be produced and marketed competitively. Governments should seek to exploit complementarities between those industries that receive public support.

Mode of production

A smallholder mode of production is to be preferred to a plantation mode because, in most circumstances, the smallholder mode is more efficient and better attuned to the resource availabilities and social circumstances of these countries. It appears that only in post-harvest processing of some crops are there significant scale advantages. Even then, many of the potential advantages of larger scale operations can be gained by smallholders operating within a nucleus estate mode.

Land ownership and use

Land tenure is a sensitive and intensely political issue throughout the South Pacific, and it is a brave outsider who dabbles in these waters with suggestions for change. Yet it is clear that these matters must be addressed as part of a coherent strategy for sustainable rural and overall development. It must be acknowledged that the tenure systems often work much better in practice than might be expected from an uninformed reading of the ‘rules’. Hence an evolutionary, rather than a revolutionary, approach to tenure reform is needed. Exactly how improvements can be made will need to be determined in each country, but some shifts to give more secure and longer term tenure to the users of land must be part of the outcome.

Agricultural research

Even the larger Polynesian island nations need to concentrate on applying existing knowledge and adapting technologies developed overseas to local conditions. Given the scale problems of national research programs, it is disappointing that there is not a greater enthusiasm among the Polynesians for cooperation within the region—most of the regional cooperation that does occur is funded by overseas donors, and most of these programs collapse as soon as the foreign support is withdrawn.

Too many people currently work in agricultural extension relative to the numbers working on research and development. An extension service cannot be effective unless it has something to extend. The
answer is to improve the cooperation between the two branches in order to mobilise the extension workers as agents for research and development. Much of this work needs to be done on farms, often by farmers, rather than on the research stations.

**Developing sustainable production systems**
If new or improved and sustainable methods of natural resource management are to be developed for the many different agro-ecosystems in the Polynesian island nations, all available skills and experience need to be brought to bear on the task. There are simply too few scientists to tackle all the problems within a reasonable time scale. Yet to delay may mean disaster for some of the more fragile ecosystems. Mobilising all available research resources certainly means involving the resource managers—the village people—in the work. They, after all, have the best fund of experience with the local ecosystems, and they are the ones who will have to make any new system work.

Management of tropical soils to maintain good levels of soil organic matter can be important, even crucial, for sustainable production. There are a number of ways to maintain soil organic matter at levels consistent with sustainable production. Agencies involved in influencing the choice of sustainable production methods by farmers need to beware of excesses in terms of too great, or too little, reliance on chemical inputs. The wise use of both organic and inorganic fertilisers may be vital to make any extractive farming system sustainable.

**Resource use in production for each industry**
The scope is limited for direct Polynesian government influence on resource use in agricultural production. Their preferred role is to provide environments in which individual producers can make rational choices about the level and combination of resources to use in order to operate as efficiently and profitably a possible. Provided prices are right, maximising private benefit will be in line with maximising benefits to the society as a whole.

Credit markets may need particular attention. Methods of lending to groups of producers have worked well elsewhere in the world and
need to be explored. The loan is guaranteed by the group as a whole; lending costs per dollar advanced are thereby lowered and the risk of default is reduced.

Agricultural marketing strategies

Choice of market outlets

The scope for future expansion of demand for domestically produced food is very limited. Consequently, a development focus on export marketing in all countries is inevitable, but with different prospects for success. In all the Polynesian economies, two MIRAB-related factors currently militate against export expansion: the difficulty for a very small country in establishing the infrastructure necessary for successful export of agricultural commodities; and the disincentives to export created by a high-wage cost structure and high value of domestic currency relative to major foreign competitors. Hence, correction of macroeconomic settings is the most valuable role that governments can play in encouraging export expansion.

Tuvalu and Kiribati do not share with Niue, Tonga and Western Samoa large expatriate populations in developed nations. Moreover, their farm sectors are not as important and the potential for agricultural development is not as great as in Tonga and Western Samoa. Yet they suffer all the other limitations these latter countries face in developing high-value niche export markets. The best approach in these countries is to concentrate on subsistence production and modest development of the domestic fresh produce marketing system, and to support exploratory analysis of a very limited number of export options based on the output of existing production activities.

“Correction of macroeconomic settings is the most valuable role that governments can play in encouraging export expansion.”

16 What future for Polynesian agriculture?
Mode of marketing and choice of marketing processes

It is inappropriate for Polynesian governments to intervene as direct participants in any mode of agricultural marketing or indeed processing.

An attractive export marketing opportunity exists by using the expatriate population as a target consumer group for a market differentiation strategy to develop agricultural exports. This opportunity is restricted to three countries—Niue, Tonga and Western Samoa. While private initiative is needed to exploit such opportunities, the government can play a supporting role through its offices. But perhaps its most important contribution is to help counter the threat of export market closure caused by failure to comply with phytosanitary requirements.

Successful agricultural exporting in the future is likely to come through small niche export markets for a small number of agricultural exports, in most cases of high quality. To date, government intervention has been of little help in fostering these markets. Private initiative, largely unaided (some might say unhindered), by government has been most successful in seeking out and establishing export niches; governments do not have a very good record in ‘picking winners’ in these endeavours. Furthermore, export niches are notoriously difficult to defend, and often it is necessary to abandon them. Here governments tend to have less flexibility than private firms in responding appropriately, and will tend to go on subsidising and defending these niches beyond what is economically justifiable.

In principle, a useful role governments can realistically play is in helping to seed such ventures through intermediation, by enticing venture capital, putting into practice policies that create a more favourable general economic environment for exporters and providing appropriate support services. To do this, they need to establish a portfolio of potential agricultural export-earning activities and a set of criteria by which each potential export activity could be assessed.

The disadvantages of smallness, remoteness, and relatively unfriendly policies towards foreign corporations, among other problems, will discourage investment in export marketing activities. It may therefore
be a matter of forging the right partnership between government and private marketers. However, history in Polynesia teaches that the institutional capability of bureaucrats in agricultural marketing has too often fallen short of the mark. Evidently, at least until events prove otherwise, it would be best to err on the side of doing too little rather than too much in terms of intervention.

**Research balance and product quality**

With their limited resources, governments cannot play a major role in market research, except in three circumstances—analysing and understanding how best to provide services in

- quarantine and product quality
- transport, handling, processing and storage
- the dissemination of agricultural market information.

**Value adding through processing and marketing**

The record of government participation in, or encouragement of, value adding through processing has been discouraging, and virtually every surviving processing industry is in private hands. Not all value-adding activities for export in the Polynesian economies are doomed to failure, for obviously some can be carried out successfully. But a warning needs to be made against the hasty assumption that almost any value-adding activity is good and deserves government support.

**Commodity stabilisation**

Export market instability and threats to the defence of export market niches make reliance on a very small number of exports risky. It is difficult for a government to do anything of a commercial nature about the defence of niche markets, but it is possible to aid producers for the export market who are susceptible to export market price uncertainty which is outside their ability to control. In the past, though, government-operated price stabilisation schemes have been of dubious value. A government would be unwise to establish any price stabilisation scheme. Where a government has been involved in developing higher value niche exports, the temptation to intervene to stabilise prices is bound to be great, but should be avoided.
Resource use in marketing

Relative to foreign competitors, high labour and capital costs and low factor productivity in Polynesian economies are likely to limit agricultural market development. Unfortunately, many marketing and processing activities are size and labour-intensive, making it difficult for agriculture-related industries involved in downstream value-adding activities to compete internationally. Very small countries with relatively high labour costs—Niue in particular—find it especially hard to compete. Governments can improve the competitive advantage of firms by actions that help raise technical efficiency and reduce factor costs artificially inflated above their border prices. Given the typical lack of commercial expertise of government personnel, however, the ability of any government to help private firms improve technical efficiency in marketing and processing is doubtful. Foreign technical assistance is probably the best bet—ideally, overseas managers of successful businesses who would be willing to share their skills with local firms of a similar type.

Employment creation and gender balance

No employment strategies in respect of gender in agricultural marketing are currently in place in any country. Women tend to have a higher representation in marketing—especially domestically—than in production. Through successful agricultural marketing strategies, governments can indirectly help to open up new employment opportunities for women.

Institutional strategies

Level of government intervention

It seems both likely and desirable that future strategies will entail a reduced role for governments in many aspects of the island economies. The rationality of leaving to private enterprise those things that the private sector can do best, is unquestionable. By leaving to the governments only those things that the public sector must or should do, and by privatising the rest, the management of a more constrained range of tasks in the public sector possibly can be improved.
The move towards a less interventionist development strategy should not be confused with a ‘hands off’ approach. Polynesian governments and administrations need to rethink what it is that they need to do to promote development. If development has been impeded by too much involvement of government in the past, it can also be impeded if there is too little. Forging the right working partnerships with the private sector becomes a major and challenging task. Unfortunately, there is little to say that is helpful about how these partnerships should operate. But first, a new focus on facilitation of private sector development, rather than on direct intervention, needs to be nurtured in the minds of politicians and senior public servants alike. That will take time.

Within the agricultural sector, privatisation and deregulation of agricultural marketing have been advancing apace in most Polynesian economies. Even though there is still some way to go in some cases, these changes are to be welcomed. They make it possible for departments of agriculture to focus their work in marketing on information gathering and dissemination, and on quarantine and quality control.

Scope for corporatisation of some traditional activities of departments of agriculture may exist, at least in the larger Polynesian island nations. Thus, the move to shift agricultural research activities to quasi-independent agricultural research institutes in Papua New Guinea may be a model for other countries to consider.

**Decentralising** There are two main reasons to doubt whether decentralised decision-making will work for agricultural development. First, national governments are loath to give up powers and control of purse strings. Second, decentralisation typically involves an additional layer of bureaucracy rather than the...
institutional relocation of existing bureaucrats. It is also important for successful decentralisation to ensure that additional people expert in their own particular activities are brought into the decision-making process, rather than spreading scarce skilled and experienced decision-makers more thinly.

**Intervention mix**
As much as possible, governments should intervene in agricultural systems in a facilitative manner rather than through regulation or by direct involvement. When regulation is needed, it should, wherever possible, be carried out with a light touch. The reason for this approach is that, given limited institutional resources, it is generally easier for governments to have a significant and positive effect on agricultural performance through facilitation. In addition, there are certain facilitating services that government must provide because of their public good nature.

**Self-reliance versus external technical assistance**
The low status of employment in agriculture discourages talented people from entering or remaining in its ranks and perpetuates reliance on external technical assistance. Efforts to remedy this situation should help reduce this reliance, but scope is limited and success is likely to be gradual. The most parsimonious approach in relation to technical support in agricultural production is for the government to mobilise more fully the skilled people already present in the country. Most of these skilled people are to be found on the farms and in markets, not in government service.

**Degree of autonomy**
Governments have made some moves towards increasing the autonomy of public institutions by undertaking some corporatisation and privatisation. However, privatisation has not been accepted in all quarters of government and corporatisation does not necessarily lead to greater autonomy. A necessary condition for corporatisation to lead to greater autonomy is the severance of decision-making from political influence which, in Polynesia, is the exception rather than the rule.

**Information**
There is a need to develop an appropriate management information system in each country and to incorporate
library facilities as part of that system. This system should then be used for strategic planning purposes by senior agricultural planning personnel. Except for export market information, much of the information needed in the system is already available—it simply needs to be processed more efficiently and made easier to access.

Negotiating the difficult path ahead

We have suggested that there is an alternative course to development generally, and to agricultural development in particular, that is different from the one currently chosen in the Polynesian island nations. It is to replace non-sustainable rents gradually with income earned from the productive use of domestic resources along meritocratic lines. If this approach is to be followed, however, there are a number of implications and requirements.

The importance of human capital needs to be better recognised, particularly the need for a wide range of entrepreneurial skills and business experience that is difficult for resident islanders to acquire under prevailing conditions. Such skills are more likely to be found, at least in the short to medium term, in expatriates and in nationals who have lived and worked overseas for prolonged periods. In particular, such people will be more likely than locals to have the required special knowledge for developing successful ventures in the processing and marketing of agricultural output produced in-country. A greater willingness to allow foreign entrepreneurs into the countries, and to enable them to operate there in a secure business environment, would be part of a strategy of promoting the growth of relevant productive activities.

The strategic emphasis in development initiatives within agriculture in all the Polynesian economies has been historically biased towards production, while evidence suggests that marketing has recently provided the greater constraints to agricultural development. The importance of marketing is likely to increase as product markets...
become more discriminating and as international competition in agricultural products increases. Physical conditions for production are quite favourable in Polynesia and enough is known by smallholders about the technical aspects of production across a fairly wide range of farming activities to suggest that this imbalance should be redressed: the main strategic emphasis by governments should be on developing private agricultural marketing capacity.

In suggesting this switch, it is not intended to imply that agricultural production issues should be neglected. Rather, the point is that efforts (especially in research and extension) to promote the production of commodities that cannot be profitably sold is a waste of time.

**Reliance on private enterprise**

Government concentration on facilitation is easier said than done because it requires plenty of (often scarce) experience, skills and sound judgment by those responsible for setting policy and providing services. With the limited resources at its disposal, and having regard for the rather small number of ways in which it can usefully intervene, each government should set priorities emphasising interventions that provide services only it can provide, leaving other tasks to the private sector.

Governments need to be careful in the way they assist agricultural production and marketing research. The special problems of conducting an effective agricultural research program in small countries suggest a strategy that mobilises all potential contributors to the development of both technology and marketing. That means involving farmers and marketers, as well as scientists and economists. Because they will be thinly spread across a broad range of activities, disciplinary specialists in research need to play a stronger role as conduits for information, especially information from overseas research, than might be normal in larger organisations.

**Reconciling meritocracy and communitarian philosophies**

If meritocracy is to be preferred to communitarianism, how then should village society fit into a meritocratic Polynesian system with its strong foundation in rural villages? The answer is not altogether clear and is beyond our competence to answer, yet this question highlights the difficult endeavour planners in all
countries have in achieving agricultural growth in an equitable fashion. Village communities at present shoulder much of the burden of ensuring equity and providing social security, often funded out of the surpluses of the better-off and usually more enterprising of their members. It is unlikely that villages as social units could continue to carry this burden in an age of meritocracy. Increasingly the burden would fall to national governments which are at present not well equipped to handle it. On the other hand, successful pursuit of meritocracy should improve the capability of a national government to provide social services in rural areas in the long term, and there is no reason why much of village members' commitment to the village should not endure in a more meritocratic society. The impact of meritocracy on the contribution of villages to a stable and equitable rural society is an empirical question yet to be tested in the countries under study.

Meritocracy in local business will mean the emergence of a class of local entrepreneurs who are able to isolate themselves sufficiently from social pressures. Meritocracy in the public service will demand some similar changes in deep-rooted attitudes and practices. Progression up the career ladder needs to be based on performance, not influence. Accountability at all levels, including the highest, will have to be improved. Incompetence and corruption will have to be weeded out.

**Governments and aid agencies**

Assuming governments are to rely substantially on a productive agricultural sector to create conditions for faster economic development, much can be done to improve the delivery of aid and technical assistance. Many of the problems associated with aid could be resolved, or at least mitigated, by rationalising aid delivery to make it more

- **efficient**: longer time frames to allow for proper absorption of resources in agriculture and specialisation by donors in particular areas of rural assistance

- **coordinated**: reduced competition between donors by coordinating preparatory discussions and negotiations, delivery of aid and loan packages, and monitoring and evaluation

*What future for Polynesian agriculture?*
• imaginative: seeking out various sections of the rural community to help in development assistance, reducing the current overwhelming reliance on governments

• sensitive: adapting aid packages to the circumstances of recipients and intended beneficiaries, acknowledging that limited numbers of skilled and experienced indigenous personnel are available to work on aid absorption in agriculture, and recognising that local staff have important duties to discharge other than to respond to the demands of aid donors and lenders.

Acknowledging the varied nature of agricultural development challenges

Deployment of a higher proportion of aid funds to increase productive capacity in sectors such as agriculture is essential, but the contributions to overall development from this expanded capacity in the agricultural sector will need to be supported by contributions from other economic sectors, notably forestry, tourism and fishing.

It has to be acknowledged that the challenges to agriculture in Kiribati, Tuvalu and Niue seem much more daunting than those in Tonga and Western Samoa, notwithstanding Western Samoa's recent difficulties. The particularly severe problems of smallness and isolation in Kiribati, Tuvalu and Niue combine to make it difficult for these nations ever to attain wholly independent and sustainable development. Yet there are certainly steps that can be taken to improve the situation. In all three cases, the starting point for a development strategy has to be a strengthening of the subsistence base, including attention to critical resource management issues such as land degradation, excessive cutting and clearing of forests, and over-utilisation of marine resources, especially of in-shore resources.

Niue is rather different from the other two in being less isolated and having close links with New Zealand, including ready access for Niueans into the New Zealand labour market. If problems can be mitigated, particularly with regard to air transport, there is a good
chance that a number of agricultural products could be profitably exported into the New Zealand market and that some growth in the tourist industry could also contribute to overall development.

For Kiribati and Tuvalu, the scope for developing agriculture through production of commodities sold into overseas niche markets is more bleak, though not entirely impossible. The outlook for development would appear to lie in better use of marine resources and in traditional handicraft production.
Agriculture in five Polynesian island economies
Demographic and economic background

The Kingdom of Tonga is made up of some 169 islands, only about 36 of which are permanently inhabited. Over 50 per cent of the population lives on the main island, Tongatapu.

The population of the Kingdom was estimated to have increased from 87,300 in 1974 to 103,000 in 1989. It is projected to be about 121,000 in 2006 (Figure 2.1; Cole 1993). As in other parts of Polynesia, however, the rate of growth of population is affected by emigration, which in the past has been high. About half of the ethnic Tongans live outside the country, mostly in New Zealand, the United States and Australia.

Politically, Tonga is a monarchy, and most political power rests with the king and the group of 30 or so hereditary nobles who make up half the parliament and occupy most of the ministerial positions. The country was never strictly speaking a colony, although from 1890 to 1970 it was a British protectorate. Recent times have seen an increasingly open campaign to limit the powers of the royalty and nobility, but no material changes have yet occurred.

In recent years, economic growth has averaged about 2 per cent annually, with most years better than that, but interspersed with a
Figure 2.1  Estimated and projected population, Tonga, 1986–2006 (‘000)

Source: South Pacific Economic and Social Database, National Centre for Development Studies, The Australian National University, Canberra.
few bad years when agricultural output was down due to climatic or market conditions. It is estimated that the economy grew by about 5 per cent in 1993, compared with a rate of about 2 per cent the year before.

In the 1990s inflation has been declining, with the rate in 1993 the lowest in three years. The annual rate in 1993 was 4.3 per cent, compared with 4.5 per cent in 1992.

The government claims to have adopted an export-led growth strategy. In an attachment to a memorandum from the Minister of Finance dated 18 February 1994, it is stated that the national objectives for the preparation of the 1994/95 Budget Estimates are

- a substantial increase in export earnings including re-exports
  (i) through increase[d] investment, employment and real incomes in agriculture, fisheries, manufacturing and other products, for markets that are readily available as well as new markets
  (ii) through [an] increase in the number of tourists to the Kingdom.
- accelerate private sector development and rationalise the size of the civil service [by]
  (i) restructur[ing] the Ministries/Departments to support expansion of the private sector
  (ii) streamlin[ing] administrative procedures and rationalis[ing] exemptions if any, to the private sector.

With respect to the export-led strategy implied by these remarks, exports grew at an average annual rate of over 20 per cent between 1987/88 and 1991/92 before falling back in 1992/93, while imports (and also remittances) grew at only about 2.5 per cent annually. However, the figures must be regarded with some suspicion. There have been and continue to be anomalies in the reported levels and values of exports, and good reason to suspect under-reporting (World Bank 1990). The same is now true for imports, with the emergence of a ‘grey’ economy in the shape of imports of container
loads of mostly second-hand household goods that are sold in local flea markets and that appear to have been undervalued in the imports data.

The financial system in Tonga has been largely deregulated. There are now three commercial banks operating in the Kingdom and, apparently, interest rates are market determined. The Tonga Development Bank remains the largest lender by far, lending about 22 million pa'anga in 1993, whereas the Bank of Tonga lent about 14 million pa'anga in that year (mostly for housing). The Tonga Development Bank does, of course, get some of its funds on soft terms from agencies such as AusAID (Australian Agency for International Development) and the Asian Development Bank (ADB). Nevertheless, because the Tonga Development Bank lends mostly working capital, whereas the ADB funds it was allocated were earmarked for fixed assets and equipment, the Tonga Development Bank has had to raise capital commercially by issuing bonds.

Tonga as a MIRAB economy

Imports to Tonga are about five times greater than exports, leaving a substantial trade deficit (Figure 2.2). The balance of payments is, however, generally sound. One explanation lies in the substantial funds coming into the country as private remittances (Figure 2.3). Another main contribution comes from foreign aid flows about which, unfortunately, reliable data are not available. Advice from the Reserve Bank of Tonga is that actual aid allocations (excluding loans) probably have totalled about US$20 million annually in recent years, although some of these funds never reach Tonga, being spent on overseas training, for example. Nevertheless, aid contributions to the Tongan balance of payments are likely to be in the order of at least 15 million pa'anga annually. It therefore appears that the amount of remittances has been about twice that of exports, while foreign aid has been at least half as much as exports.
This pattern of the balance of payments account has kept the currency relatively strong. Between December 1987 and December 1992 the Tongan pa'anga appreciated slightly in nominal terms against the Australian, Fijian, New Zealand, UK and Japanese currencies and only slightly depreciated against the US dollar. According to the World Bank (1995:11), however, the real effective exchange rate increased by close to 20 per cent between 1986 and 1992, thereby compromising the competitiveness of agricultural export industries.

A critical factor in establishing a macroeconomic strategy relates to the sustainability of remittance and aid flows. In regard to remittances, there is general agreement that at least part of the flow represents payments for agricultural goods exported from Tonga to family members overseas. This form of trade is likely to continue and may become more commercial if and when ties between expatriate Tongans and those in the country weaken. The flow of genuine remittances will depend on whether the flow of

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**Figure 2.2 Imports, exports and the balance of trade, Tonga, 1987–93 (million pa’anga)**

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<th>Year</th>
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**Source:** South Pacific Economic and Social Database, National Centre for Development Studies, The Australian National University, Canberra.
new migrants can be sustained, as well as on economic conditions for the migrants in the overseas countries.

The long-term outlook for aid flows is only fair. Tonga has been able to retain its classification by the International Development Agency of the World Bank (IDA) as a member of the group of ‘least developed countries’, even though the per capita income is above the cut-off level. This status makes the country eligible for special United Nations grants and for International Fund for Agricultural Development (IFAD) finance on especially favourable terms. It seems that this situation cannot persist and that aid will become less readily available as incomes continue to rise and as other more deserving cases are identified by donors. On the other hand, at least in relation to Tonga, there is so far not much evidence of aid fatigue amongst the major donors—Australia and New Zealand—and relatively new players such as Japan have begun to offer quite large levels of assistance.

As predicted by the MIRAB theory, growth of the bureaucracy in Tonga has been strong. The World Bank (1995:120) noted an
expansionary fiscal policy in 1989/90 stemming from a large increase in public service salaries and wages, among other expenditure items. The result was a higher rate of inflation in this period, adversely affecting agriculture. Fortunately, inflation has been reined in by improved budgetary performance since 1993.

Agricultural strategies

In the attachment to the memorandum from the Minister of Finance, referred to above, the proposed priority areas for development in the agricultural sector are to

- increase production of high value crops (e.g. vanilla and squash)
- lessen the efforts to revitalise products which cannot be produced at competitive costs (e.g. coconuts)
- promote and expand export production of new crops such as long beans, yam beans, ginger and Irish potatoes

Figure 2.4 Trends in Tongan agricultural exports, 1985–93 (pa’anga ‘000)

Source: South Pacific Economic and Social Database, National Centre for Development Studies, The Australian National University, Canberra.
• formulate and implement appropriate production, marketing, effective quarantine and quality management legislation and regulations

• ensure active market development and investigate new markets both domestic and abroad

• promote agro-processing.

Agricultural output

Almost all the growth in exports has come from a single commodity—squash—sold into the Japanese market. The expansion of squash exports took place at a time when other agricultural export industries—bananas and coconut products—were in decline (Figure 2.4). Vanilla exports have also increased, but at a more modest rate.

Despite the present focus on export marketing, the imposition of export quotas, and the rise in food crop prices as a result of the diversion of so much land into squash production, have created incentives for some farmers to expand food crop production. Such a response is a natural and desirable phenomenon, not requiring further intervention by government.

Agricultural outputs as inputs for processing

Tonga's desiccated coconut factory and the coconut oil mill have both ceased operations. Among the export crops, only vanilla undergoes much post-harvest processing. Vanilla is cured by producers (individually or cooperatively) and by marketers.

There are plans to establish a food processing laboratory within the Ministry of Agriculture and Forestry to identify further opportunities for value-adding activities. However, the Western Samoa and Fiji experiences with such laboratories suggest that it is unlikely to do much good. Food processing, and related value-adding activities, might best be encouraged by promoting investments by foreign entrepreneurs who already have access to the relevant technology. An expatriate Tongan businessman, recently returned to the Kingdom to set up a venture producing snack foods from tropical root crops, provides an example.
Commodity specialisation There is widespread concern about the excessive specialisation on only two agricultural commodities—squash and vanilla. The squash industry, in particular, seems very risky, with severe production and marketing risks. On the production side, a high proportion of the cropped land on Tongatapu is devoted to squash, and the risks of serious pest or disease outbreaks are very real. On the marketing side, a number of other countries are trying to jump on the bandwagon, and the niche in the Japanese market could close, or at least become much less lucrative. The effort of the government to keep prices high by setting a restrictive quota on exports is likely to be self-defeating in the longer run. Countries seeking to share the Japanese markets include Vanuatu, New Caledonia, and perhaps Australia and Mexico. Some of the exports from Vanuatu are said to have been organised by a Tongan-owned export company which was denied what the principal believed was a fair allocation of the Tongan export quota. There are also stories of exporters shipping squash to the United States, outside the quota, but with the suggestion that the vessels carrying the squash could well get lost on the high seas and end up in Japan!

The degree of risk exposure for squash is indicated by the situation of the Tonga Development Bank. By September 1994, with more costs still to be met, the Bank had approved loans to a total of 7.7 million pa'anga for squash production out of total loan approvals in 1993 of 22.3 million pa'anga (more than half of which went to agriculture). The loans to squash and vanilla exporters are mostly unsecured, except in so far as receipts from sales are supposed to be assigned to the Bank.

Production of vanilla has stagnated in the past couple of years, probably because many growers have turned their attention to squash production, which is seen as 'easier money'. Somewhat in contradiction, the main decline appears to have taken place in Vava'u, while vanilla production in Tongatapu, where most of the squash is grown, has been expanding. The decline in Vava'u was said to be due to marketing difficulties there, apparently
precipitated by an ill-managed buying operation of the former Commodities Board. A viral disease identified in vanilla appears not to be a serious problem at this stage and, despite some ups and downs, the world prices for vanilla have remained reasonably strong.

Efforts are being made to develop alternative crops for export within the Research Division of the Ministry of Agriculture and Forestry. It remains to be seen whether these efforts are any better directed than similar unsuccessful efforts in the past. It is interesting that some Ministry of Agriculture and Forestry officials were unwilling to disclose details of these efforts for fear that other countries in the Pacific would jump on the bandwagon. Such an attitude does not augur well for regional cooperation in agricultural research.

A new form of production diversification may be about to emerge. His Majesty the King has obtained a parcel of land in Sarawak, and has been promised another parcel in Papua New Guinea. The idea, apparently, is that Tongan farmers will be moved onto this land to produce crops for local and export markets. The King's acquisition of land is seen as a means of breaking the land constraint in Tonga, as well as a means of accessing new markets. Apparently, the possibility of obtaining land in Australia has also been investigated, but it was found that Australian immigration rules would prevent Tongan farmers from moving there to cultivate it. It would be hard to be anything other than sceptical about the chances of success of government-run ventures of this kind.

Mode of agricultural production

The Ministry of Agriculture and Forestry seems wedded to the notion of the smallholder as the main mode of production. The possibility of the emergence of a few larger scale producers, however, is at least countenanced by some of the more senior personnel. Although changes to the land tenure system make it possible for larger scale farming operations to be developed, it seems unlikely that very large-scale units operating in a plantation mode of production will eventuate.
The evolution of farm-household production in Tonga shows the error of those who have argued that smallholders lack the inclination or capacity to change and exploit new opportunities. The impact of the squash success is quite pervasive, and many growers appear to have enthusiastically embraced a more commercial orientation. Most still retain a semi-subsistence base, in part because of measures taken to discourage individuals from planting too much of their holdings to squash. Nevertheless, there are grounds for concern at the degree of officially encouraged commodity specialisation. Niche markets such as that for squash can close as quickly as they emerge, so the promotion of a more diversified approach to cash cropping would seem wise. In particular, the vanilla industry continues to offer reasonably lucrative returns, and should not be neglected. The squash boom may have diverted some growers away from opportunities for profitable production of root crops for domestic or export markets. At the beginning of 1995, agriculture in Tonga was doing well, and farmers were earning good money. Their success is promoting an overall increase in domestic economic activity and the country is thriving. At first, much of the income from squash was invested in consumption items or into ventures of dubious commercial soundness — there was a boom in sales of trucks and pickups imported from Japan. No doubt these investments have increased the availability of road transport services, but most of the vehicles should probably be regarded as people carriers and therefore as consumption goods rather than as business investments. The test for the future lies in the extent to which future squash income is diverted into more productive investments — and there are some optimistic signs in this regard. If farmers are able to identify and take up profitable investment opportunities, in agriculture or in other sectors, the present success of the agricultural sector may
Resources for agricultural development

Physical

The islands are situated only slightly north of the Tropic of Capricorn, so the climate is cooler than in some other Pacific islands. The cooler climate makes the production of temperate crops possible, especially during the winter. The main island, Tongatapu, lies to the south of the group and is towards the edge of the South Pacific region where cyclones commonly occur. There have been at least half a dozen cyclones this century that have caused considerable damage, especially on the more northerly islands of Vava’u, Ha’apai and the Niuas; storms causing lesser damage, including crop and property damage, are common. Short-term droughts also restrict agricultural production, especially on thin, rapidly draining soils overlying coral.

According to the 1985 Agricultural Census, the agricultural area of the Kingdom is about 85,000 hectares, divided into some 10,000 holdings, almost all of which are less than 6 hectares in size. Only about 5 per cent of the land is in holdings larger than 20 hectares.

Use and conservation of agro-ecosystem resources

The Tongan agricultural resource base is probably a good deal more robust than that in many other South Pacific countries. Steep slopes are rare, at least on Tongatapu, and most soils are excellent. There is concern, however, about the rates of depletion of soil organic matter under intensive cultivation, especially in squash production. Mechanical land preparation for this crop is normal, with three ploughings and one tractor-drawn cultivation. There is evidence that such methods accelerate loss of soil organic matter and lead to deteriorating soil structure. Work in the Research Division of the Ministry of Agriculture and Forestry is under way to address the negative impacts of these practices.
Initially some farmers were prepared to grow squash as a monoculture, but they soon found this impossible due to declining yields. Most now use a rotation, following squash with root crops, which are able to ‘mop up’ any fertiliser left over from the squash crop. Rotations are usually extended to include a grass fallow, but the benefit from this is less than optimal. First, because no legumes are grown, and second, the squash quotas and Tonga Development Bank credit allocations are not issued in time for proper breaking of the fallow. The grass should be ploughed in some months before the squash is to be planted. In fact, there is never time or money for this, so many growers burn off, losing much of the organic matter that might have been introduced from the grass fallow.

In addition, there is concern about the impact of heavy agricultural chemical use on ground water and on health, although few people appear to know of any definitive studies on the topic.

**Tree crop plantations**

Despite the decline of commercial processing, coconuts remain the most important tree crop in Tonga, chiefly for local consumption. Returns to labour from copra production are too low to make this an attractive activity for most smallholders, except those in the outer islands who have no alternative to copra as a cash crop.

Vanilla production was originally concentrated on Vava’u, but recently there has been significant development on other islands, including Tongatapu. Bananas and kava are also grown, mainly for local consumption.

**Livestock**

Most livestock production is in the hands of smallholders. Pigs and poultry are kept by a majority of rural households and are important in the diet. Pigs are also of considerable ceremonial importance. Attempts to sustain commercial production of pigs and poultry have met with mixed success, due to high costs of imported feeds, the variable quality of local feeds and lower-priced imports.

Some cattle are kept, mainly for beef. Horses are kept as draught animals and also for meat; however, the increased availability of vehicles has significantly reduced their use for draught purposes.
Income from squash was initially allocated to non-farm use—distributed among relatives or invested in better housing or new vehicles. More recently, a trend has emerged of investing in agriculture, and the number of tractors in private ownership has risen. It seems, however, that these investments are prompted mostly by a desire to earn income through the provision of contracting services and will not lead to pressures to seek economies of scale by acquiring more land (although this remains to be seen). The market for contract mechanisation has been opened up by the withdrawal of most of the subsidy element in the machinery services offered by the Ministry of Agriculture and Forestry. The pressure to substitute capital for labour has been increased as a result of the dominance of the squash industry, with its marked seasonal peaks in labour demand.

Perhaps because of the scope for out-migration and the demand for labour in squash production, employment creation no longer appears to be the priority issue it once was. There is a need, however, to provide training in relevant skills for the young people who will be entering farming (or fishing).

By tradition, women are not involved in farm work, but this division of labour is breaking down, especially in some jobs in vanilla production. In addition, the boom in squash production has put pressure on the labour supply and increased the incentive to involve women in farm work.

On the part of government, much is said but almost nothing is done about gender issues in agriculture. The woman heading the Women in Development program in the Ministry of Agriculture and Forestry was nominated in 1993 for a scholarship to study overseas, but the application was unsuccessful.

While domestic capacity in public agricultural institutions has improved in recent years, there is still a shortage of skilled and experienced people, made worse by a 'brain drain' to the private
sector or to overseas destinations, including South Pacific regional agencies such as the South Pacific Forum. Aid donors continue to be willing to supply technical assistance, and this continues to be accepted to help plug some of the gaps. Unfortunately, the quality of such technical assistance is mixed. Some is excellent, but some, especially when offered on a short-term basis, is poor.

A strategy to continue to build up domestic capacity is desirable, yet expensive, given the brain drain problem—a difficulty experienced by many developing countries. There is scope for more innovative use of aid in the forms of both technical assistance and training, but implementing such innovations depends on a change of heart on the part of both Tongan authorities and overseas donors.

**Infrastructure**  Tonga now has a well developed road network, particularly on the main islands. Inter-island links are maintained by sea and air services. Inevitably, these services are less frequent, less reliable, of too limited capacity and too expensive to meet the needs of many potential clients. The same may be said about air and sea transport services to overseas destinations. As Forsyth (1986) notes, however, there are dangers in efforts by governments to intervene too much in the operations of transport markets. The expansion of most services over recent years suggests that present policies are adequate and will lead to further improvements, provided demand for the services continues to grow.

**Institutional factors**

The proposed priority areas for development in the attachment to the 1994 Budget papers, in the order given, are

- agriculture
- fisheries
- manufacturing
It is not clear whether the export-led strategy with priority given to agriculture is a considered choice or whether the government is 'going with the tide'. Several of the manufacturing industries that were encouraged to start up in Tonga by various types of incentives closed down as soon as those benefits were no longer available, in some cases leaving significant unpaid debts. The Small Industries Development Scheme, into which quite a lot of ADB loan funds were poured, now looks like a failure. Certainly, there is evidence that past efforts to encourage import substitution by restricting or taxing imports have been counter-productive. 'Akau'ola (1995) has confirmed earlier work by Delforce (1992) indicating that any price distortions due to tariffs or quotas which increase the domestic prices of importables in Tonga are effectively paid for by the producers of exportables, most of whom are farmers.

On the other hand, the export boom is attributable almost wholly to squash, an industry that sprang up on the initiative of private investors with little or no initial help from government. Subsequently, the government stepped in, providing substantial amounts of credit for exporters (and through them, to growers) installing a quality control system, and issuing export licences to exporters, with a quota system in place. The quota for 1994/95 was 15 kilotonnes, with a supplement of 2,000 tonnes. Not surprisingly, the imposition and allocation of quotas caused anguish and allegations of favouritism, resulting in a court case pending against the government.

The tourism sector in Tonga has been growing only slowly. The construction of a big hotel on a site near the airport appears to be stalled. Air transportation remains a constraint, especially following the recent curtailment of services by Polynesian Airlines. The Royal Tonga Airline continues to operate, mostly on internal flights. Other constraints on growth of tourism include the lack of special attractions (no proper golf course, for example) and the
relatively high costs and rather poor quality of food, accommodation and service.

Regional development There is a strong thrust in Tonga towards regional development. The Vava’u Integrated Development Plan has been prepared and is being implemented with funding from the European Union (EU). A Ha’apai Development Plan is being funded by AusAID and an ADB project for the development of the outer islands (‘Eua and the remote Niuas) is under preparation with, it is rumoured, the extraordinary expected cost of about US$10 million. At least at this stage, there appears to be no questioning of the wisdom of spending so much money on small and remote islands with a total population of perhaps 6,000.

The regional development thrust, though clearly a strategic imperative, is very poorly coordinated, with regional development committees set up to report directly to Cabinet, not through the Central Planning Department and the Development Coordination Committee.

Allocation of funds to agriculture It is not clear just how real the new emphasis on agriculture is. The share of government recurrent expenditure allocated to the Ministry of Agriculture and Forestry has generally declined in recent years. There was a small increase in the 1994/95 estimated expenditure, but this ministry, responsible for a sector that contributes over one-third of GDP, received only 5.5 per cent of the total recurrent funding (compared with 6.4 per cent in 1985/86). On the other hand, it appears that allocations of development expenditure to the sector have been more generous, although the data are incomplete.

Land tenure While land tenure remains somewhat of a taboo subject in Tonga, the reality is that the land market, via leasing arrangements, is almost totally free at this time. There may be some weaknesses in the current system, such as the lack of incentive to sustain soil fertility for land users whose tenure term is short and uncertain, but there is almost no
pressure to change the present arrangements. Leases of up to 50 years have been negotiated and registered. Although many agreements are not registered and so are strictly ‘illegal’, it seems that a blind eye may be turned to illegal practices that nevertheless permit the land market to operate reasonably effectively.

The rules prohibiting an individual from owning more than one tax allotment remain in force, but are largely irrelevant given the operation of a leasehold market. Nevertheless, it seems likely that the current pattern of small-scale farming will persist. Apparently, some of the large-scale squash producers got into difficulty, and an area of 2 to 4 acres per farmer (0.8 to 1.6 hectares) is now regarded as ideal.

There has been considerable confusion in Tonga about the appropriate growth strategy. Lip service has been paid to the notion of an adaptive strategy favouring smallholders, yet at the same time the development of larger scale commercial farms has been encouraged (though these are small in area by standards of countries such as Australia). In part, this latter initiative appears to be a response to a concern about the entrepreneurial ability of the majority of smallholders. Certainly, in the past, many smallholders have been constrained in their business efforts by an inability to manage cash flows—income received is often spent on consumption or distributed to family and friends, so that funds for investment are not available when needed. The boom in receipts from squash may have eased capital constraints, at least for those producing this crop successfully.

It is interesting that numbers of expatriate Tongans have recently returned to the Kingdom to take up squash production. These
people, whose ties to the traditional extended family system may have been weakened by their absence from the Kingdom, may bring both investment capital and entrepreneurial skills that have been somewhat lacking in the past.

Research and extension

There appears to be no clear research strategy in place within Ministry of Agriculture and Forestry—research is largely demand driven, in the sense that the inquiries the Research Division receives determine what gets done. Individual researchers seem to have a more or less free hand to do what they want. There is no conscious priority in favour of cash versus food crops, except that the work on cash crops comprises more short-term problem solving studies, while a steady program of work on the food crops continues.

Extension work has been restructured, at least on Tongatapu, with more focus on farmer groups. The district specialisations of the past, with a focus on different crops in different parts of the island, has gone. A need to better integrate research and extension and to better tailor recommendations to individual farmer circumstances is recognised. Fertiliser recommendations, for example, are still given on a blanket basis for all soil types and all parts of the country.

It is disappointing that the farming systems approach, although officially espoused, is apparently not implemented in research or extension. This approach makes use of methods such as rapid rural appraisal and on-farm trials to develop an understanding of the farm-level realities of smallholders. It seems that on-farm trials have been mostly discontinued and, although some rapid rural appraisal methods have been used, their scope remains limited.

Agricultural information

Because information gathering and processing is expensive in both money and the time of skilled personnel, there is a persistent shortage of reliable data about agriculture in most South Pacific island nations, including Tonga. Some of the published agricultural information, including some data in the first Agricultural Census and some of the data about agricultural marketing is patently wrong, or at least seriously biased.
A more strategic approach to information gathering and use is needed. Such an approach would entail deciding which information would be most useful and could be collected reasonably cheaply and reliably. More systematic use could be made of less formal methods of data gathering, supplemented by a few, sharply focused, sample surveys. In view of their high cost and the difficulty of quality control, comprehensive censuses appear to have little merit.

A small market research unit has been established within the Ministry of Agriculture and Forestry. This unit is perhaps too new to have accomplished much. Market research on agricultural commodities is also undertaken by the Ministry of Commerce, Trade and Industry (MCTI), which is the body responsible for licensing exporters and setting quotas on exports. Evidently there is some duplication of effort, and even rivalry between the MCTI and the Ministry of Agriculture and Forestry.

Some efforts are being made to improve the reliability of data on local markets, but it is difficult to be optimistic that much will be achieved in an inherently difficult data collection task.

**Commercial environment**

Led by a director who is firmly of the view that only products that can be produced profitably are worth attention, the ethos of the Ministry of Agriculture and Forestry is changing. It may take quite some time, however, for this attitude to spread throughout the ministry. There is still a view that self-sufficiency, at least in root crops, is important. District committees and village meetings continue to operate to put pressure on individual farmers to grow an appropriate area of root crops, although there are no penalties enforced for non-compliance.

The Ministry of Agriculture and Forestry is no longer encouraging copra production, although some is still produced, mainly on the outer islands. There is also a not insignificant domestic and export trade in whole nuts. Although the view in the top levels of the Ministry of Agriculture and Forestry is that Tonga has no comparative advantage in copra production, in the Research
Division there is still talk of developing high yielding coconut trees and then introducing them to farmers via a new replanting scheme.

**Level of intervention**

While the official line is to accelerate private sector development, a tendency to favour centralised decision-making and control (as in the squash industry) continues because government officials believe they can exert some monopoly power.

Something of the flavour of the strategic orientation can be gleaned from the vision and mission statement of the Ministry of Agriculture and Forestry (see Box).

The strategic planning document, which at the time of writing was not finalised, builds on these mission statements, within a logical framework, to derive specific purposes, intended results and activities to attain those results.

Real efforts are being made to get government out of a number of areas, particularly agricultural marketing. The culture, however, continues to be in favour of intervention, often in circumstances where the merits of intervention are at best uncertain. In part, this is a hangover from the days when it was believed, perhaps validly in some respects, that activities important for development, such as agricultural marketing, could not safely be left to the private sector. In part, too, it may reflect the peculiar cultural conditions in Tonga where government is closely allied with the chiefly class. Traditionally, people have expected the chiefs to take a leadership role in most important aspects of life—an attitude that still largely persists today.

The puzzle for the future, therefore, is to redefine the proper roles for government and the private sector. More thought needs to be given to identifying what governments must or should do, and making sure that these things are done well. Similarly, government should be prepared to retire to the sidelines in relation to those activities best handled by the private sector. In cases where there is uncertainty about which sector will perform best, a dual system may be kept in place, at least for a time. So, for example, there is merit in maintaining government-owned or sponsored agricultural
The Ministry of Agriculture and Forestry: vision and mission statement

Vision
Creating prosperity from agriculture and forestry.

Mission
To accelerate agricultural and forestry productivity, market accessibility and profitability while maintaining sustainability, self-sufficiency and agricultural security.

Comment: What is meant by ‘self-sufficiency and agricultural security’? Current strategy appears to be strongly directed towards export promotion, with a focus on the lines of production in which the Kingdom has comparative advantage, combined with efforts to diversify export commodities and destinations. Maybe the latter is what is intended by agricultural security—to continue to encourage efficient production for the local market without being unduly concerned about a rising food import bill, which is seen as a natural consequence of rising incomes and the ‘Westernisation’ of the Tongan society.

Mission statements for its constituencies
- For farming communities including agri-business clients
To provide adequate, appropriate, timely and high quality technologies, services, facilities and market access to the farming communities including agri-business clients to increase their productivity and income.

Comment: What is intended by ‘services’ and ‘facilities’. It seems the Ministry of Agriculture and Forestry still sees itself doing things for farmers.

- For the Government of Tonga
To commit and account for Ministry of Agriculture and Forestry resources in the effective and efficient delivery of services, to contribute to the acceleration of economic growth and the increase in export revenues.

- For donor agencies
To be accountable for donor assistance.

Credo
To provide leadership and influence through the employment of a highly motivated, qualified and coordinated workforce, proud of its dedication to excellence and integrity and distinctively responsive to farmers’ and clients’ needs, and market forces.

General comment: Senior personnel in the Ministry seem to be more committed to an organisation more attuned to the discipline of the market than these statements imply.
marketing agencies, as long as these are not given monopoly powers but must compete with private firms. That way, they remain efficient or fail, and also provide a check on the operations of private firms.

**Modes of marketing**

The emphasis is now firmly on the private sector for agricultural marketing. Government has corporatised the Commodities Board as Primary Produce Export Ltd. Most if not all of the shares in Primary Produce Export are held by Tonga Investment Ltd—a partly government-owned company. Efforts are being made by the government to sell more shares, but investing in the company may not be attractive to private investors because of bad decisions made by the former Commodities Board in buying immature vanilla and incurring a substantial loss that is yet to be recouped.

The Commodities Board Act is now defunct and the orientation in agricultural marketing is strongly towards the private sector. Government continues to intervene in some marketing areas, chiefly by licensing exporters. So far, it appears that licences have been given only to Tongan-owned, or part-owned, companies. A number of informants expressed concern that a licence has been issued to a company that is 60 per cent foreign-owned.

Agricultural commodity stabilisation schemes mostly have been abandoned. However, given its perhaps excessive intervention in the squash industry, the government may find it hard to resist pressures to pay out growers or marketing firms, should the Japanese market collapse. Indeed, there are reports of a bail-out of some exporters who sold on the very risky spot market in the 1994 season and received very low prices.

**International marketing capacity**

The government sends a delegation to Japan every year to report on the squash marketing. It is hard to form a clear opinion about the merit of such trips, but it seems odd to send a government mission when the export trade is handled by private companies. The government is also seeking agreements on market access for farm produce in other countries, such as Fiji and the two Samoas. Negotiations have
entailed the establishment of quarantine protocols. There is a suggestion that a new technology (high temperature forced air—HTFA) can be used to treat papayas for export to New Zealand and perhaps to other countries. The method is already being used in Cook Islands on papaya for the New Zealand market, but Tonga would need to purchase the special equipment to exploit this opportunity.

That Tonga’s performance has been poorer than that of Western Samoa (until recently) in exporting root crops to the Pacific islander communities in New Zealand and elsewhere is worthy of some consideration. Apparently the Samoans have established a formal wholesale and retail network, whereas much Tongan produce is distributed through informal family and church networks. As a result, both stock management and payments are unreliable. Some sellers have to pay to travel to the destination market to solve problems and collect the money. It is not clear, however, what government could do to improve the situation, although some senior Ministry of Agriculture and Forestry staff believe that government should do something.

**Quarantine**

The Ministry of Agriculture and Forestry retains responsibility for assuring the quality of export produce and takes this seriously. Considerable effort has been made to meet new quarantine requirements in destination countries, and a number of currently closed markets may open up as quarantine procedures are improved. For example, a start has been made in exporting watermelons to New Zealand again, and tomatoes, capsicum, eggplant and other vegetables may also go to the same destination. Only registered growers may export, and their farms are subject to regular inspections by the Ministry of Agriculture and Forestry, with the whole process being monitored by New Zealand quarantine officials. How many growers will be willing to meet the stringent requirements of selling in these export markets remains an open question. Certainly, those who do will not be able to operate on an opportunistic basis, as in the past, since the costs and risks of setting up to meet the new protocols will be prohibitive.
More generally, the exploitation of several of the possible export markets for high-value fresh produce requires adequate transport capacity, usually air cargo space. This is seldom available, certainly not with the regularity and security required to found a new export industry.

Concluding comment

The current prosperity of Tongan agriculture, at least in Tongatapu, would seem contradictory to the proposition that commercial developments cannot succeed in MIRAB economies. The vanilla industry in Tonga has been modestly successful for several years, and squash is booming. The important question, however, is whether the current prosperity is the start of overall development founded on growth in the agricultural sector, or whether we are simply observing the boom before the bust of the all too familiar boom-bust pattern of so much of Polynesian island agriculture in the past. The answer probably depends on first, how long the niche market in Japan remains open and profitable for Tongan squash growers, and second, the success of efforts to diversify agricultural exports to other markets and other products. If the boom goes on long enough, and if sufficient new doors are opened, the loss of a single, albeit lucrative, market will not be serious enough to stop the momentum for development that will have been built up.

At this stage, the Tongan experience may have some lessons for other Polynesian island nations. Finding the right products to supply to the right markets is not easy but, if it can be done, the rewards can be great. In the past, many government efforts to manage such development have failed. At the same time, it is too simplistic to suggest that the private sector can do the job effectively in all cases. There is a need for a partnership between government and the private sector. Getting that partnership right, and deciding who does what, will be the key to cracking the nut of commercialising agriculture in a MIRAB economy.
Information presented in this and the next four chapters on resources available to the agricultural sectors and the contributions of the sectors to economic development in these Polynesian island nations provides the basis for analysing the strengths and weaknesses of agriculture in each country, the opportunities for agricultural development and the threats (SWOT) to such efforts. Not surprisingly, there are many similarities among the five countries, as well as some important differences. In the SWOT analysis below for Tonga, the features general to the Polynesian nations are presented, along with the features more specific to that country.

Strengths

- The generally healthy and well educated people of all of the Polynesian island nations are among their major strengths. In the case of Tonga, as in Western Samoa and Niue, the populations stretch beyond the physical boundaries of the countries. It is important to avoid what Bertram called the ‘fallacy of assuming that island societies are bounded geographic national entities, rather than organic parts of wider economic systems from which on balance they derive substantial benefits’ (1984:12).

- The combined characteristics of ‘islandness’ and smallness, (characteristics shared by all Polynesian island nations), have been argued by Shaw (1982) to bestow some positive effects for development. Shaw identified social and political cohesion, ease of monitoring development activities and freedom from pests and diseases as some of the relative advantages possessed by small island nations.

- All the Polynesian island nations, Tonga included, appear to have relatively stable political systems. These have provided less turbulent environments for agricultural development than those in many Melanesian countries, including Fiji. How much longer the political stability can be maintained remains to be seen—in both Tonga and Western Samoa there are stirrings of discontent.
POLYNESIAN AGRICULTURE

• Located in equatorial regions, most Polynesian island nations enjoy climatic conditions relatively favourable for agriculture. Temperatures are uniformly warm to hot, and rainfall mostly adequate. These climatic conditions allow the production of a wide range of agricultural products. In Tonga, the more southerly location of the main island, Tongatapu, brings a cooler season in the ‘winter’ that favours the production of a range of temperate crops.

• In all the Polynesian island nations there are well understood and practised production processes of long standing. This basis of generally sound indigenous technical knowledge means that a range of crops can be grown successfully, assuring a reasonable degree of food security for a significant proportion of the rural population.

• The small size of all of the Polynesian island nations in world markets means that export producers in these countries generally supply only a small fraction of world market demand. As a result, they usually face an almost perfectly elastic demand for their exports, meaning that feasible increases in production will have negligible impacts on prices received. This advantage, however, does not necessarily extend to niche markets, and nor is it true for production for the limited domestic market.

• The land tenure system provides a good deal of security of access to land for almost everyone, and limits the development of a landless underclass.

• The social system is one in which altruism and reciprocity, at least within extended family groups, are widely practised and valued. The result is a fairly reliable system of social support for the sick, old or otherwise disadvantaged.

• The system of production of food and other subsistence products is well developed in most Polynesian island nations to the point where most rural households are able to meet the bulk of their food needs with the expenditure of relatively little time and effort. These systems have been characterised by Fisk (1964) as subsistence affluence. Such affluence can provide a sound and secure basis for the development of commercial production.
All the above strengths are shared among the five Polynesian island nations that are the focus of this study. Tonga has some other strengths deserving mention, several of which are shared with at least some of the other countries.

- The soil in Tonga is relatively fertile in most areas. Combined with the climatic advantages, the result is the capacity to produce a relatively wide range of crops with good yields, provided only that the soil resource is properly maintained.

- In Tonga, farm access is fairly good throughout the main island of Tongatapu. The road systems in the islands of 'Eua and Vava'u are reasonably good. Most of the other inhabited islands are relatively small, so that most farmers have reasonable access to the local wharf, but all are isolated by sea from the main urban centres and terminals for overseas freight.

- Tonga has a good record in establishing successful agricultural export industries, with squash and vanilla often held up as examples for others to follow. There is also a thriving export trade in root crops as well as more modest trade in a variety of other agricultural commodities. This record of success provides a basis for confidence that other similar development efforts could be successfully put in place in future.

Weaknesses

The weaknesses of the agricultural sector with which decision-makers in government have to deal in formulating strategies for agricultural development are obvious, and have been highlighted by a number of observers (e.g. Fisk 1978 for Niue). They lead to the sorts of difficulties in trying to generate agricultural development that have plagued government decision-makers in most other South Pacific island nations (Kakazu 1994: Chs 2 and 3). These weaknesses are not inherent to the agricultural sector: many derive from the nature of the political economy of the countries as a whole. The main ones are

- a small economy, which presents agriculture with three main constraints: a small domestic market for agricultural produce exacerbated by the fact that only a minute proportion of total output enters domestic trade, leading to unstable domestic prices and a reliance on export markets for agricultural growth; an inability to diversify production in an economic
manner; and diseconomies of small scale in production, processing and marketing (including transport)

- susceptibility to uncertainty in export markets that is outside the control of people in the agricultural sector
- a narrow range of destinations for agricultural exports
- lack of a critical mass of trained and experienced personnel in key rural institutions
- the low status of agricultural employment
- a land tenure system that slightly inhibits agricultural growth—now less constraining in Tonga than previously
- a social system and culture that, however admirable in themselves, tend to dampen individual initiative—cash flow management appears to be a major problem for most would-be entrepreneurs with the demands on the extended family and norms relating to donations to churches making capital accumulation difficult
- locational disadvantages of remoteness from agricultural export markets leading to high international transport costs, often exacerbated by limited and irregular freight opportunities
- transport problems that push up the costs and may limit the availability of imported agricultural inputs
- fairly fragile agro-ecosystems that are vulnerable to degradation from agricultural intensification, reflected in reduced fallow cycles
- susceptibility to natural disasters, especially cyclones (fortunately relatively infrequent in the southern part of Tonga)
- intensified competition for resources from other activities that are not part of the productive domestic economy, in particular, those of the bureaucracy
- particularly strong indirect macroeconomic impacts of expansion in other productive sectors, the bureaucracy and aid flows
- historical reliance on agriculture to generate economic development through employment and export growth, leading
to unproductive political pressure and intervention in agriculture, and often ill-considered development initiatives.

Other weaknesses of Tonga, but not affecting all the Polynesian island nations include

- fragmentation of land mass, leading, for the outer islands of Tonga, to very costly and uncertain supply of agricultural inputs and marketing of agricultural outputs
- emigration of able-bodied and enterprising people, especially from rural occupations, leaving shortages of labour and skills for agricultural activities
- a growing imbalance in economic growth and access to infrastructure and social services between rural and urban areas, and between rural regions, associated with rural-urban or inter-regional migration
- dry spells sometimes occurring and adversely affecting crop growth due to the porosity of many soils overlying raised coral
- the high standard of living in Tonga (compared with most South Pacific countries) and opportunities for employment from migration, resulting in agriculture facing a high opportunity cost of labour.

Opportunities

- As Tonga has recently demonstrated, the strengths of islandness and smallness make it somewhat easier than would otherwise be the case to develop a small number of high-quality agricultural exports.
- There is an option of joint export arrangements with other South Pacific exporters of similar products.
- Scope exists for improving the contribution of women to agricultural production and marketing through training and assistance.

For Tonga and several other Polynesian island nations, the opportunities include

- a fairly wide range of options for new products or technologies
• scope to make use of expatriate nationals in marketing channels for developing agricultural export markets

• an expatriate population providing a target consumer group for a market differentiation strategy to develop agricultural exports (already happening to some extent with taro exports)

• an expanding domestic market for food due to economic growth at home, especially for items with relatively high income elasticities, such as fruits, some vegetables and animal products

• the possibility of increasing food sales to the tourist sector if tourism expands significantly

• so long as the present relatively high aid funds per head of population are maintained, the possibility of directing development expenditures to agriculture

• recent progress towards privatisation and some reduction of the size of the public service, making agricultural production a relatively more attractive option.

**Threats**

• Export market instability and threats to the defence of export market niches make the reliance on a very small number of exports risky.

• Soil degradation is a potentially serious problem if land is mismanaged. So too is degradation of other natural resources, such as fishery stocks, particularly inshore, and continued loss of forests and trees.

• Increased competition for land, chiefly from urban development, but also from forestry and tourism, could limit the scope for agriculture to grow.

• Failure to comply with phytosanitary requirements could restrict access to export markets, while lapses in quarantine (or plain bad luck) could severely damage the advantage of absence of some serious pests and diseases.

• Failure to carry out adequate maintenance practices in tree crop plantations, or inadequate quality control in production
and marketing of export crops, could destroy new export industry initiatives.

- Economic and technical changes in transport could mean that services become less frequent, inhibiting growth of agricultural exports, especially of perishables.

- Past failed attempts to get agriculture moving have left a legacy of doubt in the minds of many senior administrators, politicians and donors, to the extent that even sound new initiatives may not get support. Farmers too tend to be cynical about new official initiatives.

- Existing or newly introduced pests, diseases or weeds may become serious; the severe losses of *Leucaena* in Tonga, an important fallow species, to a small insect apparently carried from South America in the jet stream, illustrate the dangers.

- Polynesian island governments, including that in Tonga, still have a proclivity to intervene in agricultural production and marketing in inappropriate ways more likely to do harm than good.

- Modernisation and commercialisation of agriculture are leading to a loss of specialist indigenous knowledge as well, perhaps, of some genetic crop materials. Such losses may be regretted in the future.

- Changes in diets and lifestyles are leading to increased incidence of 'Western' diseases, such as diabetes, heart disease, alcoholism and AIDS. Should these trends continue, the human capital in agriculture will be significantly eroded.

- Almost everywhere, there are pressures to reduce the numbers and funding of agricultural support staff as part of welcome efforts to curtail the size of the bureaucracy. However, such adjustments could reduce the capacity of agriculture to respond effectively to new opportunities.

There are other threats more specific to Tonga.

- Growth of other sectors, continued emigration and/or further deterioration in the employment status of agriculture could further exacerbate the problem of attracting labour into agricultural activities.
The declining availability and increasing cost of labour in Tonga may eliminate any comparative advantage local agricultural producers have in a range of markets.

Endnote

1 The Tongan pa'anga was valued at about $US0.74 in 1993.
Western Samoa

Agriculture in five Polynesian island economies
Western Samoa is a relatively compact island nation, comprising two main islands—Upolu and Savaii, along with a few small adjacent islands. Around 70 per cent of the total resident population of about 162,000 lives on Upolu, including about 20 per cent in the capital, Apia. In addition to the resident population, there is about an equal number of Western Samoans living outside the country as the result of past migration, chiefly to New Zealand and the United States.

GDP per capita in 1992 was about US$900 in current prices, with a growth rate in total real GDP of about 1.2 per cent per annum averaged over the previous decade. This growth in GDP must be related to an average population growth rate—reduced by emigration—of about 0.25 per cent per annum (Figure 3.1). Thus, growth in GDP per capita has been disappointing at about 1 per cent per annum over the years 1982 to 1992. Moreover, the rate of growth, which had been slow but fairly steady between 1982 and 1989, has generally fallen since that time (Figure 3.2).

The economic downturn was mainly attributable to a succession of very destructive cyclones—Gina in 1989, Ofa in 1990 and Val in 1991. These inflicted severe damage and, while the country has done well to have completed much of the reconstruction work, the direct costs and lost production have had serious implications for the
macroeconomy that will continue to be felt for several more years. These problems have been exacerbated by a serious outbreak of leaf blight disease in taro (previously the main staple of the people and an important export) and by management problems in the national airline and in government administration generally.

Largely because of the need for increased spending on cyclone-related reconstruction, government expenditure rose sharply from 1991, leading to substantial fiscal deficits that had to be met by increased borrowing from overseas. Government expenditure as a proportion of GDP rose from about 40 per cent in 1989 to around 60 per cent by 1993. While efforts have been made to rein in the deficit for 1994, the cut-backs have been almost entirely confined to development expenditures—a worrying feature since it would have been better to have tackled the administrative inefficiencies underlying excessive recurrent expenditure without damaging initiatives for development.

Figure 3.1  GDP at 1982 prices, Western Samoa (million tala)

Agricultural sector strategies

Production The economy is dominated by agriculture (including forestry and fishing) which provides about 60 per cent of total employment, about 40 per cent of GDP and, until recently, 80 per cent of export earnings. Largely but not entirely due to the cyclones, exports of coconut products fell sharply between 1989 and 1991, and cocoa exports virtually ceased (Figure 3.3). Taro production, which, in addition to being the staple food, had been a growing source of exports until 1993, was virtually wiped out by the leaf blight outbreak. Although growers increased production of bananas and plantains for domestic consumption, these have not replaced taro to
any significant extent in the specialist export trade supplying traditional staples to expatriate Pacific islanders, mainly in New Zealand.

It is a mistake to attribute all the problems in Western Samoa’s developing agricultural export industries to natural disasters. Both the coconut and cocoa industries were faltering before the cyclones (Figure 3.3), and previous schemes to export bananas and passion fruit products had failed. It is not surprising that progress since the cyclones towards rehabilitation of tree cash crops has been disappointing, given that many of the pre-existing constraints on agricultural production remain. These include

- unfavourable and declining prices for the main export crops, particularly cocoa and coconut products
- high real wage rates relative to productivity due to MIRAB effects

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**Figure 3.3 Indexes of volume of main agricultural exports, Western Samoa (1982 = 100)**

![Graph showing indexes of volume of main agricultural exports, Western Samoa (1982 = 100)](image)

• forms of land tenure and social organisation unfavourable for commercial agricultural development

• weaknesses in government services for agriculture, including research and extension and official agricultural marketing agencies.

Of these, only the latter problem has been reduced. Most of the government marketing agencies, apart from the Agriculture Store, have been privatised or disbanded. Also, efforts have been made to overhaul the Department of Agriculture, Forests and Fisheries (DAFF), with what success it is impossible to judge at this stage.

In terms of support for specific agricultural industries, a bonus scheme operated for kava, coconut and cocoa production, but administrative problems led to its suspension (see Box). The scheme was replaced with modest cash prizes designed to improve grower motivation. The prizes are awarded to villages showing the best performance in crop production. The effectiveness and administrative reliability of the new scheme remain to be seen.

Destination of agricultural output

Although it may not be recognised as such, the main emphasis of policy is still on food security and self-sufficiency, because there is an unwillingness to disrupt the village system. The predominant response to the taro blight problem, for example, has been to encourage the production of other food crops, mainly for domestic use.

The Agricultural Bonus Scheme

‘Inadequate monitoring was apparent in the running of a bonus scheme to encourage the planting of certain crops. Overpayments amounted to a third of the total payout. Some bonuses went to people with no plantations; others to different people claiming the same crop and, in one case, the bonus was paid as a thank-you for letting officials use his vehicle. The scheme was halted by the current Agriculture Minister, Misa Telefoni, when he was informed of the abuses.’

There is an export finance scheme in operation as part of a policy of export promotion, but the conditions for entitlement have meant that most small-scale growers could not access this facility. The scheme has recently been revised to make it more accessible to small farmers.

**Supply of food**

Following the destruction by cyclones and disease of virtually all the agricultural export industries, present emphasis, perforce, is on self-sufficiency. Farmers are being encouraged—and obliged by circumstances—to diversify their cropping to provide substitutes for taro in their own family diets and for the domestic market. Production of green bananas, yams and cassava have all increased, and domestic food security appears still to be strong.

**Agricultural outputs as inputs to processing**

Value adding to agricultural outputs is now in the hands of the private sector. It remains to be seen how it responds. So far, there is no cause to be very optimistic. Michael Brown of the USAID-funded Commercial Agricultural Development project (being wound down at the time of writing) noted that marketing to the local tourist industry has been poor. He noted that the whole Pacific trade in agribusiness is starting to boom, with some powerful players looking to take a share of the spoils. Pacific island nations in general, and Western Samoa in particular, seem poorly positioned to tap emerging niche markets that are also being targeted by suppliers in California, Chile, Malaysia and Mexico.

**Degree of commodity specialisation**

What can one say? It is hard to be more specialised than having almost no commercial agricultural industries! Coconut production was reduced by the cyclones, and poor prices have discouraged copra production. The cocoa industry was virtually wiped out by the cyclones, and there is little interest in reviving production at prevailing world prices. The success story of taro exports was terminated by the outbreak of taro leaf blight disease, leading in turn to Fiji putting a ban on the trade in kava chips, for fear of importing the taro disease.

About the only positive feature is that coconut production is coming back a little, and two or three coconut cream exporters are operating.
Exports of green bananas to New Zealand have started. And that’s about it in 1995.

**Modes of agricultural production**

Western Samoan agriculture remains to some degree bimodal, although there has been a reduction in the scale of plantation operations with the pruning of WSTEC (Western Samoa Trust Estates Corporation). A declared strategy is to release more government-controlled land to the private sector for agricultural development. Most production, however, takes place on village lands held under customary tenure, and in relatively small farm units.

Much of the land that was operated by the unsuccessful government-owned WSTEC has been allocated to other uses. However, WSTEC continues to exist, with more narrowly focused farming operations, including a large farm on the western side of Upolu. It is of concern that the company has just invested in large-scale broiler and egg production, based on imported feeds. Experience in Polynesian island nations suggests that both will fail unless afforded protection from imports.

The Agriculture Store Corporation, another government-owned corporation, created to import farm supplies, subsequently moved into the export of green bananas to New Zealand. The supplies were too few and the quality unacceptable, so the Store acquired a 164-acre farm to grow bananas for export. It seems odd to find a new move into farming by a government-owned agency after WSTEC’s dismal record in farming activities.

**Farm household strategies**

Individual farm households have limited choice within the traditional village system. Even outside that system, the *Fa’a Samoa* (the Samoan way) inhibits individual initiative and enterprise. In Samoan society the occasions for giving are almost unconstrained and families can only achieve status by ‘playing the game’. Samoan society overseas is also governed by competitive giving. Since people have more money to give away, they are expected to pull their weight fully for the benefit of the people back home, as well as to protect their family’s position in case they themselves decide to return to the
country at some future time. All this means that capital accumulation is almost impossible for many people unless they can somehow opt out. This is easier for people who are not pure Samoans, and new entrepreneurial initiatives are most likely to emerge from this group.

It is likely that the traditional system will weaken in the future since the strains on it will increase as the inconsistency between expectations and attainments, especially in the case of young people, grows wider and more stressful. On the other hand, the élite have every reason to want to preserve the status quo. Thus, it is not easy to predict the future of the Samoan village system and of Fa'a Samoa. While clearly there will be changes, and development will occur, it is not clear how fast the change will be.

If the commercialisation of agriculture takes place, the technologies used may be very intensive, to match the small plot sizes. In this context, there is a growing interest in the cut-flower industry. A growers association has been formed, and people are looking at going into orchid production, initially for the local market, perhaps later for export. There seems, however, to be no appreciation of how difficult and competitive this might be.

The fashion of the moment in agriculture is diversification with little clear understanding of exactly what this means. Making a virtue out of necessity, farmers are being encouraged to grow crops other than the failed taro, such as green bananas, cassava and yams. If these staples are dumped onto the local market in large quantities, domestic prices will fall—a prospect ignored by the advocates of diversification.

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**Polynesian Airlines**

In September 1994 the Government Chief Auditor described Polynesian Airlines, the national carrier, as having 'reached an irrevocable situation, where it cannot repay its debts and is in a chronic state of insolvency'. The Board of Directors, headed by the Minister for Civil Aviation, was described by the Auditor as being 'completely negligent' and 'criminal' in exposing public money to massive debts, said to amount to about US$20 million, or more than half the country's foreign reserves (Islands Business Pacific, September 1994).
There is a small possibility that the taro blight might be the salvation of agriculture. Because farmers will have to learn to grow other crops, there is a chance to diversify into crops that could be commercialised. Moreover, by spreading development across a variety of crops, risk will be reduced. Growers may have learned a lesson about the dangers of specialisation.

Western Samoa as a MIRAB economy

Western Samoa shows the same general MIRAB pattern as Tonga, but more dramatically. In 1993, exports were valued at 17 million tala and imports at 247 million tala, or almost 15 times exports. Moreover, the level of exports fell significantly following the outbreak of taro leaf blight—9.5 million tala of 1993 exports (55 per cent) were taro, and the figure for 1994 will be close to zero. No compensating growth in other exports is likely in the short run.

Against the negative trade balance, in 1993 private remittances amounted to 80 million tala net and foreign aid receipts were valued at 50 million tala. Tourism contributed a net 43 million tala, and with other items being small, the overall balance of payments deficit was 21 million tala. Public external debt (to ADB, IDA etc.) rose by 44 million tala between 1992 and 1993, a high proportion of these funds on soft terms.

At the end of March 1994, the gross external assets of Western Samoa fell 11 per cent to 127.6 million tala, having declined in almost every quarter since 1990, and were sufficient to cover only a dangerously low 4.3 months of average goods and services imports. With little chance of any short-term recovery in agricultural exports and the problems of the national airline (see Box), it seems fair to describe Western Samoa as facing a crisis.

The available data on use of aid and loan funds are sparse and confusing. The central bank’s 1992 annual report notes that project grants in that year grew 20 per cent to 33 million tala and new government borrowings grew 12 per cent to 51 million tala, some 6
million tala more than in the previous year. 1992 was the fourth consecutive year that borrowings increased. The bank commented that

[t]he loans are concessional, but they will have to be serviced, and this will be a further drain in the future on Western Samoa’s earnings of foreign exchange and make more difficult attempts by the authorities to restore international reserves to a more comfortable level.

Assistance from abroad may be needed at times to build infrastructure and to help when required with recovery from natural disasters. That being said, continued reliance on foreign aid and on private remittances to cover a country’s import needs cannot be expected to go on indefinitely. Competition for overseas assistance is becoming increasingly intense...It is therefore of paramount importance that Western Samoa mobilises and develops its own resources of land, labour and capital and puts into place policies which promote domestic savings, investment and economic growth (Central Bank of Samoa 1993:13).

The large inflows of aid and remittances are likely to have kept the domestic terms of trade turned against agriculture. Apart from general macroeconomic impacts on exchange rates, wages and inflation, large aid inflows are spent mainly in the capital, Apia, promoting and strengthening urban bias. Agriculture has also been disadvantaged by some of the incentives offered for the establishment of local manufacturing. Few measures are specifically targeted either to support or to disadvantage the agriculture sector.

While the declared aim of the government is balanced growth, Western Samoa actually is an aid and remittance-led economy in the classical MIRAB mould (Bertram 1986; Bertram and Watters 1985, 1986). The bureaucracy component of the economy is high, with

"Economic management in recent times has been dominated by responses to the cyclones and the need for reconstruction and relief measures."
government spending amounting to 60 per cent of GDP. Government spending on wages and salaries increased by 43 per cent over the three and a half years from 1989 to 1992/93.

Macro-economic management in a crisis situation

Understandably, economic management in recent times has been dominated by responses to the cyclones and the need for reconstruction and relief measures. The main reconstruction work has been completed and the time has now arrived to put in place a more comprehensive strategy to deal with the serious and unsustainable fiscal and external account deficits. Indeed, while natural disasters have been important, the situation has not been improved by the neglectful management of the state-owned Polynesian Airlines, nor by the generally poor standard of administration of some government departments. The fiscal deficit can be closed only with more restraint on government spending, especially on capital works; by restricting expenditure on public service salaries and wages; and by improving revenue collection. The Polynesian Airlines case signals a need for more responsible management and closer monitoring of government-owned corporations.

The current situation implies that the central bank must maintain a strict monetary stance. The bank’s demand management strategy requires restricting the growth of government spending and domestic credit—both of which have been poorly controlled in the past.

In the present crisis situation, it is difficult to think about longer term strategic issues. Some clues to the likely longer term strategy may be gleaned from the foreword to Development Plan Seven (1992-94) where it is stated that the aim of the government is ‘to create a policy environment which releases the energy of the private sector’ (Government of Western Samoa, National Planning Office 1992). The strategy defined in Development Plan Seven had four elements.

- The consolidation of past investments, with a move away from new projects and in favour of maintaining what is already in place and making more effective use of it.

- Greater efficiency in all parts of the economy, including government. This entails human resource development at
all levels, manpower planning, rationalisation of government activities and a continuation of the policy of privatisation.

- Employment creation, with an opening of the doors to foreign investment, a policy to promote growth in the tourist and export processing sectors, and increased levels of investment in education and training.

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_Fa'a Samoa? This is no way to run a government_

The carping is constant. As recipients of foreign aid the Pacific Islanders are becoming afflicted with a hand-out mentality. Yes and no. They certainly need assistance and, more importantly, to retain the sympathy and understanding that keeps aid flowing into channels that ensure that it is used appropriately and effectively.

To win continuing assistance, the islands need to preserve their credibility as competent managers of their affairs as far as they are able to. If they lose that they will be treated with contempt.

Although in 1964 it became the South Pacific's first modern fully independent state, Western Samoa has not been a success story. Efforts to make its economy grow feature many inexcusable failures. The country's economy has been kept afloat, just, largely by the fact that so many of its people migrated that the resident population fell and by the fact that the émigrés send millions of dollars home each year.

The mess that Western Samoa so constantly makes of its affairs is its sovereign business but is not something which will earn it rewarding respect. The latest report on Western Samoan accounts by its chief auditor is an indictment of the modern practice of _Fa'a Samoa_, that now notorious Samoan way of doing things. It reports tens of millions of dollars of tax not being collected and millions more wasted appallingy. The contents of the report are so bad that they are practically comic.

At the top of the tree is the Commissioner of Inland Revenue who, the auditor notes, as issuer of business licences then engages competitively and unethically in his own private business in clear breach of the Public Service Act and blatantly evades personal and family company taxes. Also noted is the blatant abuse of the Public Trust Office funds by who else? The Public Trustee.

Western Samoa has suffered genuine major economic disasters—taro blight, hurricanes and the collapse of prices for its few traded commodities. These are bad enough but the style of administration of its government is simply a catastrophe. _Fa'a Samoa? _Samoans need to ask themselves what they now mean by that and wonder if their country has any future.

(Extract from Islands Business Pacific, September 1994.)
• Revitalisation of the primary sector, as the base of the economy and of social organisation.

The implementation of these strategies during the term of Development Plan Seven seems to have been less than wholehearted. Government-owned corporations, such as Polynesian Airlines, Western Samoa Trust Estates Corporation and the Agriculture Store Corporation, remain. (A number of government-owned agricultural ventures that were privatised, such as the coconut oil mill and the feed mill, promptly went broke.) Clearly, the management of government-owned agencies has not always been the best. Moreover, the policy of appointing cabinet ministers to senior positions on the boards or in the management of these corporations can create serious conflicts of interest.

It is notable that there is no explicit recognition of the incompatibility between seeking to preserve the Samoan social organisation and striving for development, especially, but by no means solely, in agriculture.

Resources for agricultural development

Physical  Nearly 50 per cent of the land area of Western Samoa is too steep or too rocky for arable use. Approximately 60,000 hectares, or just over 20 per cent of the total land area, is planted to crops or grazed, with a further 50 per cent of the total area under forest. The cultivated area per person has been estimated at about 0.77 hectares and the average farm size at 9.4 hectares (Hassall & Associates 1989).

The soils are mostly derived from basic volcanic rocks, are well structured and are fertile clays and clay-loams. They are, however, often low in potash, and subject to leaching of soluble nutrients under cultivation. In many areas, the land is too rocky, too steep or too isolated to be used for cultivation. Burgess (1981) analysed land use and land use potential of the main agricultural regions based on the description of soil types and environment prepared by Wright (1963).
The country experiences an equatorial climate with mean temperatures in the range 25°C to 26°C, falling to 20°C to 21°C in upland areas. There is relatively little seasonal variation in temperature or humidity. Annual rainfall is about 3,000 mm, with about 75 per cent falling between November and January. As recent experience shows, the main climatic hazard is cyclones, with three destructive cyclones striking the islands since 1989.

**Tree crop plantations**

No data could be obtained on post-cyclone tree crop areas. Prior to that, the ADB (1991) estimated about 77,000 hectares of tree crops, almost half of which was pure stands of coconuts and nearly 90 per cent was pure and mixed stands of coconuts. Over one-fifth of the total area was planted to pure or mixed stands of cocoa (including stands under coconut).

It appears that the cyclones have largely wiped out the commercial production of cocoa, though some *koko Samoa* is still produced for local use and export to Samoans overseas. Coconut production was also severely affected by the cyclones, but some regeneration has occurred. The third most important tree crop, bananas, has come to a new prominence, chiefly as a food crop for subsistence use and local sale.

**Livestock**

Livestock play an important role in village production systems, the diets of the people and in ceremony. The chief categories of stock kept are pigs, poultry and cattle. A few goats and horses are also kept. Village production systems are low intensity, apparently yielding good returns to labour. Various schemes to improve these systems through intensification have been generally ineffective.

There are some commercial cattle and poultry ventures. Commercial beef production in combination with plantation coconuts was reported to be efficient and profitable (Hassall & Associates 1989). WSTEC has recently ventured into large-scale poultry production, despite the experience in other Polynesian countries where high feed costs, poor quality local feed supplies and cheap imports have made such ventures unprofitable.
Machinery

Present production methods are mostly labour intensive. Local agricultural wage rates are about one tala per hour, which are not so high as to create an imperative to move towards broad-acre mechanised farming, even if this were possible in the rocky terrain of much of the land. On the other hand, these wage rates are much higher than those in some countries with which Western Samoa must compete in selling its farm exports. For example, the Philippines is the world's chief exporter of coconut products and its rural wage rates are only a fraction of those in Western Samoa.

Since the scope for factor substitution is limited, it is more important to find ways of raising the productivity of farm labour, so that rural income can be improved.

Human resources

There is a minimum wage, but it is apparently not enforced outside the government sector. Agriculture is so depressed at present that what is going on is best characterised as labour absorption rather than employment creation, with agriculture providing an occupation for family members who have no other job, but at less than the prevailing wage rate. Clearly, it is not desirable for this situation to persist—there is a need to get agriculture moving to generate more productive employment.

Employment in agricultural marketing is largely market determined. There can be little growth in post-harvest processing until there is more produce to process. Perhaps a further deregulation of input supply would have marginal benefits for employment.

Women are playing an increasing role in development in Western Samoa. They are on average somewhat better educated than men, and are more likely to migrate overseas. The latter fact explains the
predominance of males in almost all age groups in the resident population.

There are no specific data on gender balance in agricultural production and marketing, but overall participation of females in the labour force is about 32 per cent. Almost all young women join the labour force, on a par with the males, but in the 30 to 54 age group, participation by women drops to about a half, whereas almost all men remain in employment. It is mostly women who have been active in the formation of the cut flower association.

The traditional gender differentiation of tasks is largely maintained in the villages, although there must be some breaking down due to the disruption of families through migration. In many households the male head is overseas, leaving a female head to do everything.

It appears that there is not yet any population policy in place. Although Development Plan Seven mentions beginning the work to formulate one, it included no family planning program.

The Plan indicates that net out-migration was expected to decline, with restrictions on entry into destination countries and the return of over-stayers, leading to an increase in local population and workforce. Employment creation targets are specified in Development Plan Seven but it is not clear how these specific targets are tied to particular policy initiatives. There is growing concern about the economy's capacity to generate the required number of employment opportunities. The possibility of promoting the export of human capital is discussed in the plan but rejected, in part because of severe shortages of skilled personnel in the country.

There are doubts about the efficiency and effectiveness of the Western Samoa education system. These doubts are reflected in the aims of the national education policies, which are

- to improve the quality of education in primary and secondary schools
- to improve efficiency at both primary and secondary school levels
• to improve access to, capacity of, and the examination system in, senior secondary schools

• to improve the planning capacity of the Education Department.

There has been an increase in the proportion of government education funds allocated to tertiary education with long-term plans formulated for the National University of Samoa and the Western Samoa Polytechnic. While these developments will help ease the shortage of skilled personnel, particularly in technical and trades areas, it will be important to avoid starving the primary and secondary levels in order to develop and service expensive tertiary institutions. It is a pity that the University of the South Pacific is not seen as adequately fulfilling its intended role in serving the needs of all South Pacific island nations.

This is a society hooked on aid, so there is heavy reliance on technical assistance, including assistance in agriculture. There is a need to recruit and retain more suitably qualified locals to reduce reliance on technical assistance. According to AIDAB (1994), the government has recognised that most departments are over-staffed. Many employees have skills that are not required, yet critical skills needed to carry out analytical work, formulate policy, implement development programs, or provide social services, are deficient. Some steps have been taken, such as the introduction of selected remuneration arrangements for certain key positions and the reintroduction of bonds linked to the award of scholarships.

Infrastructure  With only two major inhabited islands, transport is less problematic than in some other island nations where land masses are more fragmented. The road system and interisland sea and air links are all reasonably well developed. So too are international air and sea services, although the recent problems of the national airline have adversely affected the former and the decline in exports may precipitate a reduction in shipping services.

It was claimed that the level of provision of social services on Savaii has now reached the same standard as in rural Upolu. Both fall well
short, of course, of the level in Apia. There are data showing very large class sizes in village schools.

**Institutional factors**

The 1994 AusAID review of the Western Samoan economy noted the challenges lying ahead.

With cyclone rehabilitation work substantially completed, Western Samoa must now make renewed efforts to tap its development potential. Here, a challenge for the medium term is to improve performance in key productive sectors, notably, agriculture, fisheries, agro-processing, tourism and selected light industries. Adequate strategies are needed to strengthen support services, to foster private sector investment, and to promote export orientation (Fairbairn Pacific Consultants Pty Ltd and Kolone Vaai and Associates 1993:65).

**Allocation of funds to agriculture**

There are some data in Development Plan Seven about the allocation of funds during the sixth planning period. In the latter there was a heavy bias towards infrastructure development, due to the implementation of two large projects—a hydroelectricity scheme and port upgrading. Rethinking the sectoral distribution of funds is a necessary prerequisite to developing agriculture.

**Land tenure**

Some 98 per cent of the land is under customary tenure. The traditional land tenure system is an integral part of the *Fa’a Samoa*. And there is no doubt that, whatever its merits, the *Fa’a Samoa* inhibits commercial development. It is said to be difficult to almost impossible for a village farmer to produce more than a modest agricultural surplus for commercial sale. Village councils, dominated by the *matai* [titled

*There is no doubt that, whatever its merits, the Fa’a Samoa inhibits commercial development.*
people], seek to dictate what farmers may plant, and can impose fines on those who don’t toe the line. The whole ethic is on producing just enough for subsistence and presentation purposes.

There is little detectable willingness to see this system break down, or at least, not in official documents such as Development Plan Seven. Indeed, it would be surprising if there were, since the village system is the foundation of the power of the ruling élite. It is mainly in relation to the need to reform access to land around the urban area that suggestions are being voiced on changing the land tenure system. The question of tenure reform has been examined by a cabinet committee, but moves towards reform appear to have stalled. Changes that will seriously threaten the matai system are unlikely to be made.

According to O’Meara

the conservatism of the land tenure system is more apparent than real. In fact, a change towards individual ownership has been taking place since shortly after World War I. This change is little known outside of the rural villages and has not been reported by previous researchers. The change to individual tenure is without legal sanction...Nevertheless, the change has proceeded to the point where villagers now control the majority of their lands as individuals, rather than as extended families (1990:129).

Yet, as Hooper (1993:337) points out, there is an obvious contradiction in this statement. If the change to individual tenure is without legal sanction, the new practices do not ensure real security of tenure to individuals and it is not surprising that there has been limited development of lands held under these terms.

There is some alienated land in Samoa, most of which belonged to WSTEC. WSTEC accumulated substantial debts and the government received many recommendations to abolish the organisation and distribute its land. As noted above, WSTEC still exists, but some 90 per cent of the land it operated has been transferred to the newly created land holding company, Samoa Land Corporation, which offers parcels for lease on a tender basis with the aim of paying off the parent corporation’s accumulated debts. Many of the successful tenderers
are more commercially minded people, often part-Samoans or non-native Samoan residents, who aim to use the land for cash cropping. Unfortunately, the rate at which the available land has been released has been disappointingly slow, supposedly due to administrative problems.

**Farm size**

The village system does permit some variation over time in the area of land a particular family can use. Apparently, it is also possible to lease village land, but there are considerable difficulties in doing so. The main land market is in alienated land, including the land leased out by the Samoa Land Corporation. Leases are up to 49 years.

**Growth pattern**

The government is dedicated to preserving the village way of life. *De facto*, this means that most growth in agriculture, if it occurs, will occur in the commercial farming sector. Note, however, that many commercial farmers may be smallholders. It seems likely that most will be part-time farmers, who are in paid employment (perhaps for the government), who have moved away from their home villages and farm small blocks of land near Apia.

**Research and extension**

Efforts have been made to strengthen the research and extension activities of the Department of Agriculture, Forestry and Fisheries (DAFF). The Department is working to keep some access to the New Zealand market. There is the Commercial Agricultural Development project which has a presence at Alafua. In addition, following a recent reorganisation, the DAFF has some upgraded capacity to provide growers with marketing advice, presumably based on some form of market research.

**Agricultural information**

Little evidence could be found on this question, but the general lack of published information about agriculture suggests a significant under-investment in information gathering. More significantly, many of the publications about agriculture in Western Samoa are found in the so-called 'grey' literature (printed but not published) and not readily accessible to most people. Certainly, the library at the Alafua Campus of the
University of the South Pacific in Western Samoa appears to have a poor collection of published material.

**Commercial environment** The government says it is in favour of corporatisation and privatisation and some progress has been made, but privatisation has been embraced with less than wholehearted enthusiasm in some quarters. After all, the incentives are wrong—since most chairs of boards of directors of government corporations are occupied by cabinet ministers, there must be a temptation to try to hang on to the attractive perks from such positions.

**Level of intervention** The level of intervention is declining, but is probably still too high in a couple of areas. On the other hand, this economy is so distorted by aid and remittance flows that a hands-off approach in agriculture may be a recipe for regression towards subsistence. The question must be asked as to whether there is anything government could effectively do to get agriculture going.

There is a lot less intervention in the mid-1990s than in the past. Government is involved in research and extension, and in quarantine and quality control (including licensing of exporters and importers). Loans for agriculture are available through the development bank, and the export finance scheme could be a help to agricultural exporters. More dubiously, the DAFF is involved in the production of breeding stock for release to farmers as a means of building up the livestock industry—a strategy that has had little success in other Polynesian island countries.

**Modes of marketing** In principle, agricultural product marketing has been privatised—the statutory agricultural marketing boards have been disbanded. A declared strategic objective is to foster greater private sector involvement in agricultural marketing.

The Agriculture Store continues to operate as a government corporation, and is the sole or main importer of most farm chemicals and equipment. In principle, there is no barrier to others entering the
trade; all they need is a licence. Much of the stock sold in the store is supplied as Japanese aid at concessionary prices, inhibiting competition by commercial traders.

**International marketing capacity**

The policy is for the promotion of agricultural exports from Western Samoa; it is not working, even allowing for events outside the control of Western Samoans. By 1994, exports had fallen to a disastrously low level. Although some efforts have been made to encourage private sector development and to promote exports, any gains have been overshadowed by the sharp decline in agricultural exports due to the cyclones, taro blight and other causes.

**Quarantine and quality control**

Quality problems have bedevilled local production in the past, for example in cocoa production and processing, and need to be addressed in the future.

**Concluding comment**

The present dismal outlook in Western Samoa should not colour too much the consideration of strategies for the development of agriculture in the longer run. The outlook for commercial agricultural development of village agriculture in Samoa is just about as bright, or as dim, as it is in Fiji, among the native Fijians living in ‘traditional’ village communities. Twenty-five years ago, one might have made an almost identically pessimistic diagnosis of the chances for development in Tongan agriculture. The changes in that country can be attributed to many causes but, almost certainly, the change in land tenure to a more market-orientated system has been important. If the land tenure issue in Western Samoa can be tackled and a better system put in place, other changes may follow, leading to a more prosperous way of life for village people.

At the same time, the MIRAB distortions in the country are severe. There is no reason to suppose that the remittance system will change quickly, though it may change in the longer term as expatriate Western
Samoans become more distant from their relatives in the homeland and more integrated into the societies of their adopted countries. In the meantime, the uses of foreign aid and borrowing need to be critically assessed, having regard for the absorptive capacity of the country and for the distortions caused by excessive and misdirected flows of funds under these headings.

SWOT analysis: Western Samoa

Strengths

Like Tonga, Western Samoa is blessed with a generally healthy population, most of whom have had a sound basic education. There are also the strengths of an apparently stable political system, a generally favourable climate for crop production, good farming skills in traditional forms of production and a land tenure system and associated social system that are reasonably equitable and provide good security. The subsistence base is strong and the demand for the main actual or potential agricultural exports is likely to be reasonably elastic. On both islands, access to farms is generally good, although some of the inland areas can be difficult or impossible to reach by vehicle.

Weaknesses

Like most of the rest of Polynesia, Western Samoa is a small and geographically isolated country. The domestic market for agricultural produce is small and the high costs and uncertainty of access to overseas markets are major constraints on many potential development initiatives. There has been a narrow range of export commodities going to only a few markets, the dangers of which have been well illustrated by recent events. Freight services to overseas destinations may well be a constraint on agricultural development, although the services might be better if there was more produce to export.

The shortage of trained and experienced personnel found in all Polynesian island nations is made worse in Western Samoa by some
reluctance to encourage education to a high level and by the brain drain through emigration. These difficulties are magnified by the common perception of agriculture as a low status occupation.

The social system of Western Samoa—the Fa’a Samoa—is central to the organisation of rural communities. But the Fa’a Samoa extends well beyond the rural communities and pervades the modern spheres of government and commerce. It is central to the political system and explains the often close links between the political and business sectors. Thus, while its roots are traditional, the Fa’a Samoa is a central element in the modern Samoan society and economy as well, the importance of which can hardly be underestimated.

Despite some undoubted merits, the Fa’a Samoa seems to dampen individual initiative (except for rent-seeking) and prevent the flowering of individual entrepreneurial spirit among the majority of farmers. It is often claimed that it is the associated land tenure system that proves to be the greatest impediment to rural development—a view that it is difficult to assess without an intimate understanding of how the system actually works in a variety of situations.

Like the other Polynesian island countries, Western Samoa has a relatively fragile ecosystem about which there is growing concern. In particular, there has been concern about the loss of trees due to a combination of the sequence of devastating cyclones, land clearing for agriculture and felling for timber.

The cyclones devastated the cocoa industry and harmed the coconut industry. Perhaps the country was unlucky to have so many cyclones in such a short span of years, and it may be many years before another one strikes. The damage to confidence has been as serious as the damage to property; growers are reluctant to invest in capital items such as tree crops for fear of another cyclone. The long history of failed development attempts in agriculture has left many people associated with the industry in a depressed frame of mind about its future.

To all these problems must be added the limitations imposed on farmers by the MIRAB-induced distortions. Wage rates are high and terms of trade unfavourable because of the large inflows of aid and remittances. The inflated bureaucracy also has negative impacts on the economy generally, and hence on the rural sector. There are too many public servants, too few of whom are competent and hard-working. Thus there is frequent administrative failure, and a tendency to urban bias in resource allocation, both of which damage growers.
Opportunities

Western Samoa shares with the other Polynesian island economies the scope to exploit small niche markets and the opportunity to use nationals overseas to facilitate the development of some of these markets.

The taro export trade was a good example of the use of a niche market. It was built on local growers' special knowledge of, and links to, expatriate Polynesian communities. It entailed the production of a commodity that was in strong demand in those communities and that could readily be produced without acquiring new skills. The unfortunate disease outbreak has destroyed this industry, at least until effective control measures for the leaf blight can be developed and put in place. Meanwhile, there may be opportunities for developing trade in other commodities to the same market, such as yams or cassava.

Opportunities are also offered by the local markets to supply both domestic consumers and the tourist trade. The price and income elasticities of the main staples suggest that the expansion of the local trade in these commodities will be constrained, but the demand for fruits, green vegetables and animal and fish products may be more buoyant. There are also good opportunities to export fruit and vegetables if the quarantine requirements of the importing countries, most likely New Zealand, can be met. In principle, it should also be possible to develop new products or technologies to suit particular export openings, even though the record to date in this respect has been weak.

Other opportunities include the relatively generous aid flows that could be directed into agricultural development, the possibility of joint export arrangements with other Polynesian economies, such as Tonga, and the scope for increasing the contribution of women to agriculture in areas such as cut flower production and marketing. The welcome moves towards greater stress on the private sector, though not yet wholehearted, do signal better opportunities for business generally, including agricultural businesses.

Threats

Perhaps the greatest threat to agricultural development is macroeconomic instability. Unless and until more responsible
management of the economy is adopted, it will be very hard to engender the confidence necessary for the development of commercial agricultural enterprises.

Climatic hazards rank second, as the recent spate of cyclones shows. There is no reason to believe that there has been a long-term shift in the vulnerability of the islands to cyclones, so, with luck, it may be many years before the next one occurs.

Third, all small exporting countries face risks in their export markets. Prices for the main exportable commodities are volatile, and periodic price slumps must be expected. Also, changes in import licensing or in quarantine provisions may effectively close off particular markets at short notice.

Resource degradation is a threat in Western Samoa, as in the other Polynesian nations, and is associated with increased competition for land with urban and other uses.

The threats attributable to lapses in quarantine are well illustrated by the outbreak of taro blight, and there are related risks in production and marketing if quality standards are not maintained.

The decline in export production may threaten the transport services to overseas destinations due to the decline in volumes. It may be difficult to get such services re-established once they are cut due to unprofitability.

The history of government intervention in agriculture in Western Samoa has left a legacy of cynicism—as a result, sound new initiatives may be inappropriately rejected. In any event, the government continues to have an unfortunate tendency to intervene in a variety of inappropriate ways that could threaten any agricultural development initiative of promise.

The loss of traditional knowledge and plant varieties is a worry, as in other Polynesian contexts. So are the changes in diets and lifestyles towards more Western patterns; not only may human health suffer, but the markets for traditional agricultural outputs, both overseas and at home, will be eroded.
Demographic and economic background

The economy of Kiribati ranks third in size among the five countries under study, but is scarcely better placed than the two smaller economies of Niue and Tuvalu to generate economic growth through production for domestic sale. Growth in the economy has come about primarily through government activity. The government’s share of GDP increased from 24 per cent to 34 per cent between 1982 and 1991 while agriculture’s share declined significantly over the same period (Fairbairn 1992:2–3). Growth in GNP has been largely attributable to earnings from the Revenue Equalisation Reserve Fund, a fund established in 1956 to invest overseas the royalties received from phosphate mining (Fairbairn 1992:5). Exports have been stagnant or declining since independence in 1979.

The rate of growth in population is around 2.1 per cent annually (World Bank 1991:156) and shows little sign of slowing (Figure 4.1) as fertility decline appears to have ceased (Bakker 1992:2). The safety valve of emigration to slow rapid population growth is not an option in Kiribati to the same degree as in some other Polynesian countries because emigration opportunities are more restricted. By 2015 the population is expected to reach 100,000 (Figure 4.1). Temporary employment overseas—in phosphate mining in Nauru and as seamen on foreign ships—has been a valuable option in the past. However, the imminent closure of the phosphate mines and technical advances

Kiribati
Figure 4.1 Population of Kiribati, 1960–2015 ('000)


in marine technology cloud the prospects of future overseas employment opportunities (Fairbairn 1992:33).

Bakker (1992) observed regional demographic differences, with far higher mortality (and fertility) in the northern group of islands than in the southern group although the physical environment of the northern group is less harsh.

Population is unevenly spread, with South Tarawa containing around one-third of the population on 2 per cent of the land and the Line Islands having 60 per cent of the land but only about 4 per cent of the population (World Bank 1991:155). The population growth rate has been, and continues to be, highest in South Tarawa and lowest on the more remote islands, reflecting rapid rural–urban migration. In 1963, just over 6,000 people lived in South Tarawa, comprising 14 per cent
of the total population (Government of Kiribati 1979:43). By 1978 this figure had risen to a little over 18,000, or 32 per cent of the population (Government of Kiribati 1979:43), and to 22,400 by 1990 (Government of Kiribati, Statistics Office 1990), also about 32 per cent of the population. If the present rapid rate of urbanisation continues, South Tarawa will have a population density approaching that of Singapore by the end of the 20th century (Thaman 1992a), although the costs of congestion and pollution of such a population density might be too high for such an outcome to be tolerable.

Trends in gross domestic product have been calculated by the authors from unpublished estimates obtained from the Ministry of Finance. These provisional data suggest that growth in real GDP per head for the period 1980 to 1993 was negative, at an estimated average of minus 2.4 per cent annually. Still more worrying, the rate over the five years since 1988 appears to be about minus 4.7 per cent a year. GDP per head, estimated at about US$440 in 1992 in nominal terms, is low by Pacific island standards. Thus, both the trend in production and the level of GDP per head are causes for concern. By comparison, average incomes per head in other countries in this study were: Western Samoa, US$930 in 1992; Tuvalu, US$1,212 in 1990; and Tonga, US$1,437 in 1992 (NCDS 1995); and Niue, US$3,088 in 1991 (Government of Niue, Statistics Unit 1993).

Kiribati has been experiencing a widening trade deficit since 1985, a trend shared with the other countries under study (Figure 4.2). A declining deficit in the mid-1980s can be attributed mainly to the copra boom in 1984–85. Following a rapid fall in copra prices after 1985, the rate of increase in the deficit has shown no sign of slackening. The deficit more than doubled between 1985 and 1992.

The growing trade discrepancy has been financed by inflows of various kinds such as aid and private remittances. The net inflow of private and official unrequited transfers more than doubled from US$19 million in 1985 to US$40 million in 1992 (NCDS 1995) after falling in 1984–85 as a result of the copra boom. These private and official inflows represent a high and increasing proportion of GDP (Figure 4.3). Aid grants as a proportion of total government revenue increased from 42 to 50 per cent between 1985 and 1992.
Kiribati shares with Niue and Tuvalu the use of a foreign currency for its domestic currency—in this case the Australian dollar. It has been able to maintain this form of monetary discipline by relying on foreign inflows other than commodity export revenue to achieve balance in the foreign sector. Inflation rates in recent years have generally been only a little higher than those in Australia.

**Contributions of agriculture to the economy**

The main outputs are products from the coconut palm (*Cocos nucifera*), root crops, bananas, breadfruit (*Artocarpus altilis*, *A. mariannensis*), pandanus (*Pandanus tectorius*), pawpaws (*Carica papaya*), native fig (*Ficus tinctoria*), pigs and poultry. Copra has been virtually the only commercial agricultural crop to date. It has a long history of production with export of coconut oil beginning about 1840, then giving way to copra around 1870 because of the greater convenience.
of handling copra and the higher efficiency of oil milling in European factories (Edwards and Trewren 1992). Copra production possesses many favourable traits as an export activity in Kiribati: easy crop maintenance; simple post-harvest methods suitable to smallholders; labour requirements that suit smallholder circumstances; and an ability of producers to direct various products of the coconut palm to both export and domestic markets (both subsistence and commercial), giving a desirable degree of flexibility.

The major root crop is giant swamp taro (*Cyrtosperma chamissonis*) which is grown in ‘pits that vary in size from a few square metres to a quarter acre or more’ (Barr 1992a:7). It has traditionally been a most prestigious crop as well as the major source of starch in the diets of the people. Sivan (1992:107) attributes the success of giant swamp taro to its qualities of being able to grow well in swamps and tolerate saline conditions better than other edible aroids. Its limitations are the long production cycle of two to five years or more, limits to its tolerance of salinity, susceptibility to *Papua*na beetles, and high labour.
requirements relative to tree crops (Sivan 1992:108). These factors have led to a decline in the cultivation of swamp taro, evidenced by a growing number of abandoned pits (Thaman 1990).

Two types of giant swamp taro are grown in Kiribati (Baiteke 1992): the smaller katutu varieties multiply around a parent tuber, while the larger, more commonly cultivated ikaraoi is the food prepared for the maneaba (meeting house) gatherings and important ceremonies. Common taro (Colocasia esculenta) is also widely grown but not on all atolls. A thorough description of these principal agricultural crops and livestock activities as well as other minor activities can be gleaned from Baiteke (1992), Thaman (1992a), Iqbal (1992) and Sivan (1992).

According to Baiteke (1992:22), most of the above crops ‘relate to the old world of plant/fish associations full of history, magic and superstition’ but bananas and pawpaws, being relatively recent introductions which flourish more in the wetter northern atolls (Barr 1992a), do not have such old-world associations. The cultivation practices for swamp taro also involve magic (Baiteke 1992).

Agriculture has figured less prominently in development plans in Kiribati than in most South Pacific countries. It has traditionally been an important sector for employment, and continues to be so. It is also a major contributor to export revenue through copra export earnings, but these earnings contribute little to covering foreign outflows. Historically agriculture has been important in providing food for the population. It was traditionally the major contributor to national output—both directly and indirectly, as a supplier of output for further processing—but now is only a minor contributor. In general, the role of agriculture in all these areas has diminished over time.

Output A decomposition of GDP from 1980 to 1992 shows the changes in sectoral importance over these years, and somewhat surprisingly, there is little discernible trend in the economic contribution of agriculture—the share of agriculture in GDP stabilised between 20 and 30 per cent (Figure 4.4). This relatively low contribution is largely a result of decades of decline until the 1980s in the face of an expanded contribution by services, particularly fishing, transport and the increasingly pervasive role of government in the economy. The absence of a downward trend in the relative economic
importance of agriculture in recent years portrays the difficulty of developing alternative economic activities or expanding existing service industries. The most noticeable trend has been a reduction in the relative contribution of services, more the result of tightening purse strings in the public sector than expansion in private sector industries.

A summary of domestic exports for the period 1980 to 1993 shows no upward trend (Figure 4.5). There were only two exports of any note throughout the period—copra and fish. Values of the traditional export, copra, oscillated considerably over the period, due partly to world price fluctuations but also to variations in volumes. The impact of the copra price boom in the 1984–85 period is clearly seen.

There were large variations in export volumes of copra between 1970 and 1993 (Figure 4.6). Most copra has come from the Tungaru (Gilbert) Islands. The share from the Line Islands varied from 7 to 40 per cent between 1970 and 1992 when the Kiribati Copra Society took over the copra cutting scheme in the Line Islands. It appears that some
atolls in the Line Islands exported directly to Western Samoa from Kiritimati (Christmas Island) prior to 1992 (de Taffin 1993). Climatic conditions in 1986–87 had a dramatic impact on copra production (Figure 4.6).

Agricultural export earnings are dwarfed by other sources of foreign inflows. On average, agricultural export revenue accounted for a mere 5 per cent of current account inflows over the period 1985–92 (NCDS 1995).

**Supply of food** A number of observers have expressed concern about the growing volume of imports, particularly food imports, into Kiribati (e.g. Hawkes 1992; Liew 1992; Thaman 1992a, b). Certainly, the ratios give cause for concern since food import costs were covered by agricultural exports in only three years between 1982 and 1992 (Figure 4.7). The proportion of total exports to food imports has oscillated widely with copra export

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**Figure 4.5 Exports of Kiribati, 1980–93 (A$ million)**

![Graph showing Exports of Kiribati, 1980–93 (A$ million)]

earning fluctuations. Yet food imports gradually increased over the period 1980–92, from A$5.2 million to A$10.7 million. They remained a fairly constant proportion of total imports at between 27 and 31 per cent, with three exceptions. In 1981 and 1982, the ratios fell to 22 and 23 per cent, respectively, because of a substantial increase in fuel import costs during the world fuel crisis. In 1992, the proportion fell to 21 per cent (NCDS 1995) again due, not to fluctuating food import costs, but to an abrupt increase in the importation of machinery and transport equipment. It is important to note, however, that this ratio by itself does not connote good or bad agricultural performance. A declining ratio would be of concern only under restrictive assumptions about the future importance of commodity exports in generating foreign inflows to pay for food imports.

The extent of reliance on domestically produced food for most or all of the diet has increasingly diverged between outer islands and South Tarawa. In the former case, many households still rely almost exclusively on subsistence production (Browne 1989:63). Fernandes

Figure 4.6  Volumes of copra exports by island group, Kiribati, 1970–93 ('000 tonnes)

(1992) described the typical lifestyle of people in the outer islands: built around subsistence gardening and copra production, and consumption of only, or predominantly, locally produced foods such as breadfruit, coconut, toddy, fish and pandanus.

**Agricultural outputs as inputs in processing**

The narrow range of commercial agricultural outputs and negligible manufacturing activity in Kiribati limit the scope for using agricultural outputs as inputs in processing in the formal sector. There is little evidence of commercial processing of agricultural products for the domestic market. Yet, if Thaman (1992a) is to be believed, there is a wide range of uses for plant species in the subsistence sector, both historically and in the present, that are officially under-reported and, most likely, under-valued. Examples cited by Thaman include toddy (especially important), coir, handicrafts, plaited ware, construction materials, medicines, decorations, parcels, perfumes, thatching, roofing, carpentry, mats, sails, cigarette wrappings, food wrappers, caulking, compost, baskets for compost, various food pastes and other food preserves. What is
not clear from Thaman’s list is the extent of these uses, trends in their frequency, and the scope for their future commercialisation.

Commercial processing of agricultural products for export has been disappointing, with only limited processing of coconut into copra as an enduring activity.

**Employment**

With rapid growth in population over the past three decades, the numbers entering the workforce have been increasing at a time when new job opportunities outside agriculture are few. The scope for employment in the private sector is limited and unlikely to change in the foreseeable future. In the mid-1990s, the ability of agriculture to absorb new entrants to the labour force was also weak, with the only significant cash crop—copra—in the doldrums and subsistence agriculture apparently stagnant (Chase 1992). As a result, unemployment is becoming a greater economic and social problem (Browne 1989; World Bank 1991).

**Agriculture as a market for other sectors**

The agricultural sector is not a major market for goods and services from other sectors. The demand for consumption goods and transport services by rural households generates some domestic economic activity. Potentially, greater processing of agricultural raw materials offers some scope for increasing final demand for domestic output in the future but, as indicated above, the level of increased demand promises not to be great.

**Kiribati as a MIRAB economy**

Kiribati exhibits some of the typical features of a MIRAB economy. In addition to aid and remittances, foreign exchange is earned from three other sources (and used to be earned from a fourth source) that could be included under the MIRAB umbrella

- fishing royalties from its large exclusive economic zone (EEZ)
- income from a revenue equalisation reserve fund that is a legacy of phosphate mining
payments made by the Japanese space agency for meteorological information

- philatelic sales, which earned considerable revenue until 1982 but virtually nothing since.

Potentially the most important of these sources of rents is the large EEZ containing marine resources. The government has found it difficult to promote increased exploitation of these resources through local efforts—a situation that is likely to continue. The more promising option is to continue to seek rents for exploitation of these resources by fishing fleets from other nations. Rents from licensing foreign fishing fleets have followed a chequered but upward path (Figure 4.8). Comparison of Figure 4.5 with Figure 4.8 shows that fishing royalties surpassed earnings from copra exports by 1986.

Sinclair (1993) found mixed evidence to support the view of Kiribati as a typical MIRAB economy. Aid and, to a lesser extent, remittances are relatively high, but other sources of income, some of them also rents, contribute to foreign exchange earnings and government revenues. On the other hand, local wage rates were found not to be strongly influenced by overseas wage rates, reflecting the limited opportunities for Kiribati nationals to migrate overseas. She found evidence of successful development of private businesses, particularly in the transport and services sectors, some of which appear to have stimulated growth in agricultural production.

Sinclair concluded that, recognising the stated desire of the government for self-reliant development, it would be worthwhile to explore further the scope for expansion of productive activities in the economy. To this end, she suggested that more of the rent incomes should be invested in economic and social infrastructure supporting the development of the productive sector. She also suggested that additional measures should be taken to create a more favourable environment for foreign investment and private sector development. Among the key areas for improvement she listed human resource development, agricultural research and development, fisheries and marine research, financial services, transport and communications and population control.
Figure 4.8  Fishing royalties earned by Kiribati, 1978–93

Note: the figure for 1982 is zero.
Source: South Pacific Economic and Social Database, National Centre for Development Studies, The Australian National University, Canberra; Government of Kiribati, Statistics Office (pers. comm.) for 1993.

Resources for agricultural development

Physical  Kiribati comprises a fragmented land mass of 33 coral atoll islands—except for Banaba which is of limestone origin (Browne 1989:61)—covering 725 square kilometres across the three island groups of the Tungaru Islands (17 islands covering 280 square kilometres), Line Islands (8 islands covering 416 square kilometres) and Phoenix Islands (8 islands covering 29 square kilometres) (Government of Kiribati 1979). This relatively small land mass exists within a massive EEZ of more than 3 million square kilometres (Browne 1989:61).

The quality of the land is uneven, and consequently there are spatial variations in the potential for agricultural development. Fernandes (1992:257–8), for instance, divided the Tungaru Islands into two classes according to their potential for development on the basis of soil fertility and rainfall. The most favoured are the northern islands, especially Butaritari and Makin. Other more southerly islands, such
as Nonouti and Beru, were considered to have less potential for agricultural development.

Thaman (1992b:8) stressed two specific characteristics critical to understanding the potential for sustainable agricultural development in Kiribati (and island ecosystems in general): its unique and fragile agro-ecosystems. The agro-ecosystems exhibit mineral and water scarcity, high salinity, poor and mostly deteriorating soils, and poor or endangered indigenous biota. Diversity in agricultural production is limited by the narrow floristic diversity of 66 indigenous plant species and less than 300 total species present on the islands (Thaman 1992a:60). This diversity has been reduced by ‘a long settlement history, some destruction and plant introduction during the war...and over a century of the monocultural expansion of coconut plantations onto almost all available land [which] has produced one of the most highly modified floras in the world’ (Thaman 1992a:57).

An understanding of the potential for agricultural development in Kiribati rests largely on understanding the physical limits imposed by small land areas and poor soils. Morrison (1992) has provided a thorough account of the properties of atoll soils such as those in Kiribati. While warning against generalising about the widely varied nature of atolls, he draws some key general conclusions in line with those made by Thaman: limited land area and few natural resources; poor soil structure; coarse-textured alkaline soils of low fertility and especially low silica content; very low water retention leading to rapidly depleted reserves without rain or irrigation; limited supplies of fresh water; and ground water that is often brackish. He stressed the importance of the production of litter, the impact of which can be considerable on wet atolls and result in well developed organic-rich soil horizons. The impact of litter production on drier atolls, however, is less significant and results in thinner, less well developed surface horizons.

Morrison (1992) cited vegetation clearance and the construction of swamp taro pits down to the water level as two factors that have changed soil profiles for the worse. Clearing has broken the production cycle for litter, so crucial to the maintenance of soil fertility and retention of moisture. In pits which have been used for cultivation
for a very long time there has been extensive mixing of surface and subsurface materials, significantly changing the soil profiles.

The agricultural sector is dominated by smallholdings. Former plantations owned by Burns Philp Ltd on Teraina (Fanning) and Tabuaeran (Washington) islands in the Northern Line group have been converted to smallholdings since independence. A comprehensive description of the land tenure system in Kiribati is provided by Crocombe (1987: Ch.2), covering the evolution of the tenure system, boundaries, leases, Land Court procedures, land laws and land taxation. Fernandes described the landowning system as follows.

In Kiribati, 'te kainga' (the clan) is the basic landowning unit. Usually this kinship group consists of 'te batua' (head of the family), his brothers and sisters and their families. Land is owned collectively through this head man who determines the various day-to-day agricultural work to be done on the land by the members of the family. For agricultural development efforts, a real problem is this collective ownership of 'kainga' land which is scattered among many islands. This land is in 'small plots' and does not cover a large enough area for efficient agricultural use. On an average one family will own land on at least two or three islands, north and south, because of maternal and paternal connections. This leads to the lands not being visited regularly and the land, though full of coconut palms, may become neglected and the yield decreases as time moves on. Improper spacing of palms may result because the plot has not been attended to regularly and volunteer coconut trees grow between those planted (Fernandes 1992).

Population density varies but is generally high, a feature common to small atoll countries. Further, Bakker (1992:3) claimed that 'the nutritional (physiological) population densities, (that is the average number of persons per unit of arable land), of these countries are very significantly higher than the crude density figures...[and] projections based on medium assumptions will also very soon lead to disastrous crude population densities on the generally marginal land of these atoll countries'.

Kiribati is prone to occasional tropical cyclones, strong winds and short periods of drought. Average annual rainfall on Tarawa is only...
1,912 mm with a standard deviation of 843 (Mosley 1992). The mean is low compared with other countries under study (the average annual rainfall on Funafuti, for example, is almost double this figure) and the standard deviation is comparatively high. Rainfall does vary throughout the country, however. Temperatures are consistently high throughout the year.

**Tree crops** Thaman described what he termed an excellent example of atoll agroforestry practised by rural households in Kiribati, where

a wide range of cultivated and protected wild trees and a more limited number of non-tree plants and livestock are raised within a relatively dense and homogeneous matrix of coconut palms...It is under these harsh conditions and a paucity of flora to choose from that I-Kiribati...have evolved their distinctive agroforestry system (1992a:60).

Trees have been an integral feature of agriculture in Kiribati, providing a range of benefits from food (both volume and diversity), beverages, 'insurance', medicine, conservation, recreation, culture, and a source of saving for rural households. They also have the advantage that their use fits well with the daily patterns of activity of rural households, especially in that they have low labour requirements for maintenance compared with annuals. Tree crops are also generally well suited to the limited soil and water resources of atolls, although the breadfruit is perhaps less resistant to drought than other trees found in Kiribati (Thaman 1992a).

The coconut tree dominates the trees used for household purposes and commercial activity. Around 80 per cent of the land area, or 27,000 hectares, is under coconuts (de Taffin 1993), principally in the Tungaru and Line Islands. Copra is sun-dried to acceptable quality, and productivity varies from 220 to 555 kilograms per hectare per year (de Taffin 1993). Despite the ubiquitous presence of coconut palms, conditions for their growth are less favourable than in many countries elsewhere in the South Pacific and stands are more heterogeneous because of variations in climatic and soil conditions. Palms have not grown well on marginal lands.
Two major coconut projects began in 1970. The first, the Coconut Improvement Scheme, provided a subsidy of A$0.09 per bearing palm left standing in the first year for up to 215 palms per hectare. Thereafter, A$0.04 per palm annually (or A$0.50 per seedling) was provided as an incentive to smallholders to remove senile palms and replant seedlings selected from large local nuts ('gapping up') (Barr 1992b, de Taffin 1993). A total of 1,382 hectares of coconut plantation was improved between 1970 and 1974 (de Taffin 1993) when the scheme was halted, despite its apparent success, because it was thought to be draining resources from the more ambitious second project, the Coconut Replanting Scheme (Barr 1992a). In the latter project, the new planting subsidy was set at an attractive A$222.40 per hectare (de Taffin 1993). Between 1970 and 1978, an estimated 1,073 hectares of new plantings had been achieved (Government of Kiribati 1979:94). A further 1,000 hectares were planted between 1979 and 1982 (de Taffin 1993). The replanting scheme was originally to be carried out on blocks of at least 8 hectares, but the minimum area was later reduced to 2 hectares and then 1.6 hectares (Barr 1992b). It was aimed not purely at increasing the number of bearing palms but also at improving spacing and maintenance techniques. (Edwards 1988 recommended 143 palms per hectare.) An annual subsidy of A$8.60/hectare for nine years was paid if proper procedures were followed by the grower in the eyes of inspecting agricultural officers (de Taffin 1993). The results of the project have been disappointing given the large investment made in it, probably unnecessarily given that 'plantations are in a permanent replanting process through gap filling or under-planting' (de Taffin 1993:13). Barr (1992a) noted that many of the palms, despite growing normally, were producing few nuts 20 years after planting. He estimated the economic benefits of the Coconut Replanting Scheme to be much less than those of the previous Coconut Improvement Scheme (Barr 1992b:47–8).

**Livestock**

Numbers of pigs and poultry are unavailable but both types of livestock are widespread in Kiribati. It is estimated that around 85 per cent of households own pigs and 65 per cent have poultry (Government of Kiribati, Statistics Office 1990). Pigs are kept by most producers for feasts and ceremonies and their manure is used as fertiliser for garden crops (ADB 1992:64). Cross-
breeding of local stock with improved stock bred by the livestock multiplication unit of the Agriculture Division has been practised since the mid-1970s to upgrade quality.

While it may seem that the key to advances in the livestock industry is through improved feeding, especially reducing reliance on expensive imported feeds, the potential gains appear largely illusory. Thorne (1992:151) reported that evidence from feed trials in Kiribati shows it is possible to use local feed inputs in combination with certain imported feeds to obtain performance levels in the pig industry comparable to those using wholly imported feeds, and this can be achieved at substantial economic benefit. Yet he doubted whether operational constraints to small-scale feed milling could be overcome. He also doubted the capacity to improve performance in the poultry industry through use of domestically produced feed inputs, and considered the economics of doing so dubious.

**Machinery, equipment and vehicles**

Simple tools and equipment are used for farming in Kiribati. The nature of land resources offers little scope for more advanced mechanical technology. Transport by motor vehicles is adequately provided for on South Tarawa.

**Human resources**

In 1973, 10,100 people were classified as ‘active in village’, or in other words predominantly agriculturalists (including subsistence fishing) (Government of Kiribati 1979:46). This represented 42 per cent of the total population of working age and 64 per cent of the active workforce. By 1985, 18,700 were self-employed in village work and a further 481 were formally employed in agriculture and fishing, implying a total of 55 per cent of the total population of working age and 75 per cent of the active workforce engaged in agriculture (World Bank 1991:180–1).

A high proportion of formal employment is in the public service; wages and salaries account for 40 per cent of government expenditure (Browne 1989:65). Employment overseas as seamen has also been a significant source of work for young males. Of those formally employed in 1977/78, 54 per cent were in the public sector, 20 per cent were employed overseas, and only 26 per cent were employed
domestically in the private sector. The need to restrict government expenditure during (and since) the 1980s meant substantial reductions in the wages and salaries bill in the public sector, achieved both by restricting wage increases and reducing numbers employed (Browne 1989:67).

A high literacy rate of around 90 per cent and primary school enrolment ratio of 84 per cent (World Bank 1991:156) should augur well for a plentiful supply of skilled and literate people to work in agriculture. Unfortunately, this is not the case as the proportion of students who complete secondary schooling is low, leading to a shortage of skilled labour and professional staff, and agriculture ranks low among job preferences. In the words of Thaman (1992b:13), 'farming is considered by the young to be beneath them'. Growing health problems, well documented by Thaman (1992b), further detract from the productive capacity of people in the agricultural sector.

Infrastructure Most of the country suffers from an inadequate infrastructure which makes the marketing of local products from rural areas expensive and erratic. Unfortunately, infrastructure is also expensive to build and maintain. It is most developed for marketing copra and fish exports, but similar support systems do not exist for other commodities and agricultural input supply (Thaman 1992b). It is one of the paradoxes of South Pacific economies that distribution channels for imported foods to even the most remote islands have developed much more effectively than for imported agricultural inputs.

The domestic road network is satisfactory on populous South Tarawa where a good sealed road runs the length of the island within easy reach of all households on the island. Elsewhere, the small land areas mean that surface transport is not a major problem.
International air links are limited, with only two flights by Air Marshall Islands to and from Fiji and Marshall Islands and one flight to and from Nauru each week. Air cargo capacity is limited and somewhat uncertain.

Inter-island shipping has historically been the main form of domestic transport, and retains its importance today. In 1995 the Kiribati Shipping Corporation was operating about five vessels and a couple of privately operated vessels were also plying between the islands. Since the late 1970s a number of airfields have been constructed throughout the country to enable flights by the national airline, Air Tungaru (Government of Kiribati 1979). The airline, which was recently renamed Air Kiribati, became a government-owned corporation in 1992. Supposedly, it was to operate on a commercial basis, but is now reported to be in a fragile financial situation and is likely to require an injection of government funds to keep operating.

The inter-island shipping and air links are both difficult and expensive to maintain. According to Liew (1986), there is a lack of safe anchorages, inadequate passages through the reef, and a shortage of land for airstrips. Talake (1992) complained of irregular inter-island transportation facilities and poor inter-island and international communication facing producers and marketers attempting to supply agricultural produce to consumers in other parts of the country, especially South Tarawa. There are no cold storage facilities for inter-island trade, making it especially difficult to grow fresh produce for urban consumers (Talake 1992), although freezer plants with ice-making facilities have recently been set up at a few strategic sites. While these were mainly intended for use in fish marketing, they may make it possible to ship a wider range of agricultural produce between certain locations.

International shipping at independence comprised four lines operating between Tarawa and Sydney, one line between Tarawa and Britain, two lines between Tarawa and Suva, and one line between Tarawa and Japan. Freight rates were considered high and to be having a substantial impact on the economics of exporting (Government of Kiribati 1979:155). Freight rates are still high, but
now the Kiribati Shipping Corporation operates its own container ship. Adequate wharfage facilities exist at the main overseas port of Betio on Tarawa and earlier problems in crane operations have been sorted out. The port, however, is too shallow to allow larger vessels to dock, entailing double handling of cargo via barges. There is a feasibility study in hand to see if deep-water berthing can be provided by blasting and dredging the bed of the lagoon.

Institutional factors

Research infrastructure is reasonably adequate given the size of the agricultural sector. Aid funds have been used to develop small livestock multiplication units and research facilities for the coconut industry and for studying farming systems in general.

The Ministry of Environment and Natural Resource Development (MENRD) is responsible for formulating and implementing development projects for the agricultural sector. Such projects are predominantly funded externally and proposals are presented to the Ministry of Finance and Planning for analysis and approval. The major agricultural projects currently approved for implementation are the Northern Line Islands Agricultural Development Program, Kiritimati Livestock Development Project (operating quite well, using stock supplied by the livestock multiplication unit), Commercial Livestock Development South Tarawa (recently completed and not very successful), Coconut Demonstration Project (recently completed), Tree and Perennial Crop Nursery (supplying various tree crop seedlings to households on outer islands), Tree Crop Development Project (rehabilitation of tree crops, completed in 1994), Atoll Research Development Unit (a farming systems analysis of the introduction of new crops into existing farming systems), and Copra Sector Study (an EU consultancy to examine processing options). It is evident from this portfolio that emphasis is currently placed on small livestock development and the integration of crops into what Ward (1982) argued to be the most appropriate system for atoll countries such as Kiribati—a tree-crop based multistorey farming system. Outer islands are mainly being targeted.
Agriculture’s share of total capital expenditure in 1992 was a mere 2.5 per cent (Government of Kiribati 1994), compared with 3.7 per cent for the four-year period 1979–82 (Government of Kiribati 1979:83) and 7.9 per cent for the five-year period 1987–91 (World Bank 1991:173). The proportion of MENRD capital projects expenditure was 20 per cent in 1992. It has since declined, to 13 per cent of the revised estimated expenditure in 1993 and 12 per cent of the 1994 capital budget (Government of Kiribati 1994).

Agriculture has suffered along with other sectors from the restraint on government recurrent expenditure which remained around A$16 million in nominal terms for most of the 1980s. Recurrent expenditure as a proportion of GDP declined from 55 per cent in 1982 to 43 per cent in 1989 (World Bank 1991:163). Agriculture’s share of the recurrent budget is low but probably not greatly out of step with the marginal potential of the sector to add to GDP as the result of additional allocations from recurrent expenditure.

Research and extension

Thaman (1992b:10) argues that Kiribati lacks ‘trained local scientists and technicians, including local agricultural scientists, who can assess new technologies and crops or cultivars before they replace existing, more appropriate, agricultural technologies and crops, many of which have evolved in response to the atoll environment over thousands of years’. The job of agricultural research is made worse by the difficulty in generalising research results across atoll environments with different soil and climatic regimes, land areas, patterns of resource use and population densities (Liew 1992). According to Liew

[a] technology which works on one atoll may not be expected to perform with similar results in another. Local and constant adaptation of technology and implementation methodology must prevail (Liew 1992).

Past research priorities in Kiribati focused chiefly on the agronomy of increasing coconut productivity by analysing spacing, fertiliser and trace element impacts (Ubaitoi 1987). This research work was undertaken in tandem with major coconut improvement and replanting schemes. Research into coconuts began in 1963 in Kiritimati (Barr 1992a) and has been undertaken intermittently since then,
despite numerous difficulties (de Taffin 1993). A lot of good work has been carried out and knowledge of nutritional and spacing requirements in coconut production is now fairly comprehensive (Barr 1992a). This information has been disseminated to growers, but variable results from the application of mineral nutrients have made their interpretation difficult (de Taffin 1993).

The earliest research in Kiritimati comprised seven trials between 1963 and 1966, but few gave successful results because of problems of remoteness, discontinuous supervision, file losses and erratic climate (Barr 1992a). Research in the Tungaru Islands did not commence until 1969. Barr (1992a) reported that a switch to vegetable research in the 1970s, prompted by observations of an absence of leafy green vegetables in people's diets, meant that no coconut trials were undertaken between 1973 and 1984. The latter date marked a return to coconut research that has continued to the present, spurred by the need to overcome the nutrient deficiencies that led to poor yielding performance by palms planted in the Coconut Replanting Scheme (Trewren 1983). Potassium was observed to be critically deficient in soils, due chiefly to their highly permeable texture (Barr 1992a).

The absence of an international research program for giant swamp taro means that any research endeavours must take place at either the national or regional level. Extremely limited national research capacity in Kiribati dictates that any significant advance in production technology for giant swamp taro depends on regional initiatives to support national research. Sivan (1992) reported on two unsuccessful attempts to establish a regional breeding program that are gloomy portents for future collaborative research. The first, in 1982, was an attempt to breed early maturing varieties of good quality and salinity tolerance. It involved collaboration between the Ministry of Natural Resources and Development in Kiribati (now MENRD), the Institute...
of Research Extension and Training in Agriculture (IRETA) and the UNDP/FAO/SPC Root Crops Project. The collaboration lapsed when collected germplasm and seedlings were lost in late 1984 (Wilson 1985). An effort to revive the program in 1985 also failed due to staff departures. Sivan (1992) identified the major causes of failure as lack of long-term commitment of resources, limited genetic diversity for developing useful traits and restricted knowledge of the scope for performance gains, especially in salinity tolerance.

Regional research in the South Pacific has also concentrated on taro research, given the absence of international research, and a number of breeding programs have achieved some success (Sivan 1992). Yet, as Sivan points out, none of these breeding programs has been undertaken with the peculiar needs of atoll agriculture in mind. Hence, while any improved genetic material from the work might be useful in Kiribati, there is no guarantee of the success of the material under atoll conditions, requiring further adaptive and evaluation work if improved varieties are to be successfully introduced. A limited amount of such evaluation work has begun (Sivan 1992).

Barr (1992a) detected a trend in research back to tree crops and away from vegetables and other small crops as the difficulties of introducing small crops into the farming system have become more evident. Along with this increased research interest in tree crops, greater attention is being given to inter-cropping which is now considered an important area for research (e.g. Thaman 1992a). According to Fernandes (1992), inter-cropping has not been widely practised in Kiribati. He felt that smallholders fear inter-cropping because of soil deficiencies but that research should help remove these fears. His conclusion was that the optimal inter-cropping system is still open to research. Thaman (1992a) stressed the importance of incorporating indigenous technical knowledge of agroforestry systems in developing a tree-crop based farming system, and demonstrated that a wealth of such knowledge currently exists. There is a crucial research role, however, in discerning the sound and unsound parts of this knowledge when combining it with introduced technology. Barr (1992b:57) showed how this indigenous knowledge can be misguided, citing the (damaging) practice of burning husks and dead fronds to counter the (correctly perceived) deficiency of potassium in the soil in coconut plantations.
The ADB (1992:64) concluded that insufficient attention had been given to reviewing the performance and results of past research into various food crops in Kiribati to work out which crops are potentially suited to production and which are not. The risk of not carrying out such a review is that future research will simply duplicate past results and, worse, be undertaken on activities that have already been studied and shown to be unsuitable for inclusion in farming systems. Poor institutional memory about previous agricultural research is characteristic of most small Pacific island nations.

A small extension section exists which works mainly in the outer islands. The main thrust of the work is to strengthen subsistence agriculture rather than to promote export crop production. Previous aid-funded coconut replanting and rehabilitation schemes have been terminated, but there is still an extension program aimed at encouraging farmers to adopt recommended practices to improve their coconut plantations. Unfortunately, following a government decision to transfer the tractors that were provided on most islands from the Agriculture Division to the respective island councils, lack of mobility has limited the effectiveness of the extension efforts. This limitation has been compounded by staffing deficiencies, especially outside Tarawa.

Agricultural information

Information on atoll agricultural production systems is not as good as it should be. This is partly a function of the deficiencies in research resources mentioned above, but also because the uniqueness and smallness of the agro-ecosystems make it difficult to summon enough resources to study them intensively. In particular, only slow progress has been made in finding out the consequences of introduced production techniques on the atoll agro-ecosystem because these consequences can be markedly different from those on upland and continental systems.

Information is also lacking on the export potential of existing species of vegetation that are well adapted to local conditions. Thaman (1992a) has provided an exhaustive list of possible uses of such species, yet little work has gone into assessing their commercial potential.
Nowhere is this lack of information more palpable than in the case of the major food crop, swamp taro. Iqbal reported that, although swamp taro is traditionally the most important crop, and is the only staple starchy food grown on many of the atolls, 'little systematic research has been carried out on its agronomy' (1992:95). This lack of research is exacerbated by the closeness with which families guard their cultivation techniques. Sivan (1992:109) observed that little is known about the agronomy and physiological requirements of swamp taro in countries such as Kiribati because techniques are generally kept secret within the family and handed down from generation to generation.

Thaman (1992b:13,15) attributed part of the blame for lack of good information on agricultural systems to the western-oriented education system which has ignored the importance of children learning about 'time-tested, ecologically conservative agricultural technologies of the past as a basis for developing sustainable atoll agricultural systems' (Thaman 1992b:13). This is not surprising given the way in which knowledge of agricultural production processes has been traditionally passed on.

Commercial services are limited in Kiribati. The financial sector comprises only a development bank, a commercial bank (49 per cent owned by the government) and the National Provident Fund. The development bank carries a negligible agricultural loan portfolio that is confined to livestock. Many of the loans made to establish poultry enterprises are not being serviced because the supply of imported feed, arranged by the Agriculture Division, was unreliable. Overall, the development bank is struggling to remain viable. The ADB (1992:4) felt it needed substantial institutional strengthening and to be placed on a more commercial basis. Browne (1989:68) reported that the commercial bank reinvested most deposit funds abroad during the 1980s. This feature reflects a 'chicken and egg' problem of whether working capital constrains private enterprise in the domestic economy due to lack of loan funds, or the commercial bank reinvests deposits abroad because of a lack of profitable ventures within Kiribati in which to invest.
Existing regulations are fairly satisfactory for commercial development although the ADB (1992:6) considered the 'establishment of facilitative private sector legal and regulatory environment which is transparent and simple' a priority. Less promising is the shortage of effective services and advice to private enterprises generally, including any wish to expand into niche agricultural export markets. The present government is not enthusiastic about privatising government-owned enterprises, and the previous government, which was more enthusiastic about privatisation, failed to attract any bids for some of the enterprises it tried to sell. The result is that most commercial activities in Kiribati remain in full or partial government ownership.

Few formal organisations exist to serve the interests of farm households. The most relevant sets of institutions are cooperatives and local councils. Cooperatives have a long history in Kiribati, especially in wholesale and retail distribution of imported consumer goods. In the national development plan 1979–1982, the government considered the Cooperative Federation to be crucial to rural development (Government of Kiribati 1979), a role it has failed to undertake with distinction. The Kiribati Copra Cooperative Society took over the copra marketing and price stabilisation functions from the Copra Board in 1975 (Government of Kiribati 1979). Its functions include the purchase of copra throughout the atolls from regional copra cooperatives at a common price, local storage, shipment of copra to Tarawa and export (de Taffin 1993). The payment of a common price, despite differential transport costs, is made in view of the interests of the regional copra cooperatives and of the government imperative to assist outer islands.

The price stabilisation function has fallen into disrepute in recent years, as in many other South Pacific countries. By August 1992, it was estimated by the ADB (1992:58) that the subsidy element of the price paid to growers—paid by the government out of STABEX funds and determined by a cost mark-up on the base price—was one-half the world price. The growers' price actually exceeded the world price in 1990 and 1991 (Figure 4.9), which is extraordinary given the high costs of domestic and international freight (over A$200 per tonne in
1992 prices) and other marketing costs (around A$70 per tonne in 1992 prices). According to the ADB (1992), the government recently advised the Kiribati Copra Cooperative Society that the subsidy ceiling is to be A$220 per tonne, but this is still massive given current world prices. The Cooperative Society is able to maintain its current policy of subsidies because of the receipt of over A$6 million in STABEX funds between 1986 and 1991. As long as the government treats STABEX funds as Cooperative Society property, the cooperative can be expected to act in growers’ interests by maximising the subsidy (ADB 1992:60).

A Farmers’ Cooperative was established by the Agriculture Division in January 1994. Its main purpose is to assist farmers (a small proportion of whom are women) in growing fruit and vegetables and marketing them to the fresh produce market in Bikenibeu on South Tarawa. The Kiribati Copra Cooperative Society has provided training and financial assistance.

Nineteen island councils were introduced in 1966, to be operated along the lines of western-style local governments. They represent a

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**Figure 4.9  Comparison of world and growers’ prices for copra, 1976–92**

Note: 1992 prices are based only on the month of August.
layer of government additional to the traditional unimane (councils of old men). Their power to influence rural economic activity is limited as they are subject to direction by the central government. Also, as Browne (1989:64) pointed out, they account for a negligible amount of public expenditure despite the professed desire of the central government to devolve its own powers. The traditional source of regulation at the local level, the unimane, continues to have a major influence over rural activities.

Quarantine

Jackson and Macfarlane (1992) considered that most atoll countries have adequate quarantine laws and regulations but inadequate ability to police them. Kiribati is no exception, having quarantine services that are under-staffed and under-financed. There is insufficient commitment to the maintenance of adequate quarantine standards, aggravated by few or no trained personnel and extension services capable of providing pest control advice to growers.

SWOT analysis: Kiribati

Strengths

The strengths of agriculture in Kiribati are a quite well educated and healthy people; ‘islandness’ and smallness; traditional, well understood and practised production processes; and a land tenure system that has so far delivered a degree of security for the poorer sections of society. The political system is apparently stable and there is a reasonably solid subsistence base for most households. Some of these strengths are under threat.

Weaknesses

Kiribati shares to varying degrees the main weaknesses that are faced by other countries in this study, namely: a small economy; uncertain
export markets; a narrow range of export destinations and product range for agricultural exports; lack of a critical mass of trained and experienced personnel in key rural institutions; low status of agriculture; a land tenure system inhibiting entrepreneurial development in agriculture; locational disadvantages; fragile agro-ecosystems; susceptibility to intensified competition for resources; unfavourable macroeconomic impacts of MIRAB activities; emigration of able-bodied and enterprising people from rural occupations; a growing imbalance in economic growth and access to infrastructure and social services between rural and urban areas, and between rural regions; fragmented land mass; occasional checks to crop growth and production from short droughts because of the porosity of the soils; and increasingly splintered parcels of land.

The greatest weakness is that both commercial and subsistence producers face many difficulties in producing beyond a very narrow range of crops and livestock, mainly because of the extremely limited land mass and difficult physical and chemical properties of atoll soils (Chase 1992:iii). Geographical isolation and the scattered location of the islands add significantly to the problems of developing commercial agricultural production.

Opportunities

The scope for agricultural development leading to general economic development is limited by resource constraints and lack of prospective new agricultural activities and technologies suited to atolls. Hawkes gets it partly right when he claims that

"the potential for foreign exchange earnings from atoll marine resources is far greater than that offered by commercial development of their limited land resources. Therefore, it seems logical to focus development of the agricultural economy toward the attainment of self-sufficiency in food and related items (1992:270)."

The first part of his statement rings true but not the second part about striving for food self-sufficiency. It is a question of comparative advantage in alternative forms of production and, given the considerable obstacles to developing agricultural export industries in Kiribati, it is conceivable that farmers have a comparative advantage in food production for subsistence use and the domestic market, given the existing economic structure. But the argument for self-sufficiency is specious since it may be that a degree of specialisation of labour
into copra production or into fishing activities will be in the best interests of particular households or communities, and hence in the national interest.

Despite difficulties in attaining agricultural development, modest opportunities exist for advancement. Chase (1992:iii) reported the emergence of successful agribusiness enterprises although they were small and often short-lived. At best, agriculture can play a supporting role through some foreign exchange earnings (from exports) and savings (through food production) and as a source of employment for the bulk of the population. For this role to be effective, the agricultural sector will need to take the opportunities available by

- exploiting small niche export markets with reasonable potential, especially those based on existing activities currently producing goods for domestic consumption
- entering into joint export arrangements with other South Pacific exporters of similar products
- capitalising more on the contribution that women can make in agricultural production and marketing, through targeted training and assistance
- making more effective use of aid funds to improve productive capacity of agriculture, as Kiribati is likely to continue receiving relatively high aid funds per head of population at least in the short term
- taking advantage of modest increases in urban demand for fresh produce by increasing production (Teotai 1992; Teangana 1992), although Sommers (1992) and Fernandes (1992) cast doubt on the extent to which this option can be exploited because production of exotic seed-type vegetables using imported labour-intensive management methods does not produce returns comparable to those from the production of longer established crops that are better suited to local conditions and circumstances.

Threats

Thaman's (1992b:9–14) outline of 17 threats to sustainable agricultural development in Kiribati provides the basis for this section. These threats are presented here in modified and amalgamated form under 12 headings.
Demography. A high population growth rate, combined with an increasingly unfavourable age structure, threatens to constrain agricultural development. Limited land resources are already showing signs of being unable to meet the food needs of the rapidly growing population given existing production technology. Also, agriculture appears ill-equipped to absorb the growing number of unskilled entrants to the job market while skilled and knowledgeable agriculturalists are becoming increasingly scarce. Chase argued dramatically that

[t]he quality of atoll life is being threatened. Rapid population growth in many atolls and the migration to atoll urban centers which are already severely limited in space have contributed to a breakdown of traditional eating habits and agricultural production (1992:iii).

Increasing landlessness. A growing population, combined with the increasing use of land for non-agricultural purposes, has meant that attachment to the land is becoming increasingly attenuated for many people. This attenuation removes the most valuable safety net for poor people of access to land which has traditionally enabled them to satisfy most of their basic needs.

Inappropriate technology. Thaman cites examples of inappropriate temperate and continental technologies introduced into the atoll agricultural system of Kiribati. They include mechanisation, inappropriate use of inorganic fertilisers and hazardous pesticides. In respect of the latter, pollution from agricultural activities has increased as a consequence of the indiscriminate use of pesticides. The presence of inappropriate agricultural production technologies can be largely attributed to ignorance of their consequences for the agro-ecosystem. Thaman (1992b:7) reasonably concluded that ‘development, especially development based on imported and adapted technologies and concepts, must be based on a firm understanding of the existing environmental and social conditions’. The absence of adequate information on the impact of introduced technologies, as pointed out above, constrains sustainable atoll agricultural development.

Agro-deforestation, soil degradation and shortage of fuelwood. Thaman documents the unabating loss of trees that provide food, timber, firewood and medicine and which serve various cultural and ecological functions. The already limited diversity of species is being further eroded. While soil erosion is not a great problem, declining soil fertility and structure are increasingly curbing farmers’ productivity.

Climatic change. Global warming, that may bring higher temperatures and sea levels, threatens to have profound effects on agriculture in Kiribati. The initial effects are likely to include ground water becoming increasingly scarce, greater saltwater intrusion in giant swamp taro
pits and greater damage from overwash and salt-laden winds. Flooding might also reduce agricultural land area. The consequences of other effects on climate such as the incidence of cyclones are more difficult to predict, but must be included as potentially threatening.

**Loss of traditional agricultural practices and knowledge, and inadequate education.** 'Deterioration of time-tested atoll agricultural systems could be one of the most serious of all constraints to sustainable development' according to Thaman (1992b:11). He regards the younger generation as being ignorant of traditional farming practices and technologies.

**Dependence on international trade and consequent export market instability.** Kiribati shares with other countries in this study an inability to develop its agriculture without increasing exports, yet it is faced with heavy reliance on one agricultural export—copra—with an uncertain future market. The agricultural sector has been unable to develop a diverse portfolio of export activities.

**Increasing importance of the constraint of remoteness and fragmentation.** Kiribati has always suffered from high marketing costs for its commercial agricultural output because of its remote location, land fragmentation and inadequate infrastructure. These drawbacks will become more damaging as competition in commercial agricultural markets intensifies. They will also make difficult even modest attempts to improve the domestic marketing of fresh produce. Already an attempt to establish a fresh produce market centre on Tarawa has failed from financial mismanagement, and attempts to transport vegetables to urban areas have suffered from unreliable and expensive transport.

**Increased risk of introduced pests and diseases.** The advantage of isolation from pests and diseases, mentioned above as a strength, is paradoxically described by Jackson and Macfarlane as also a threat because the ideal situation of a restricted flora and fauna and few indigenous pests may lead to disaster when new pests arrive, because 'insects and weeds often come without natural enemies and, as none [is] likely to be present already, populations explode' (1992:131). Jackson and Macfarlane claimed that introduced pests are becoming more frequent, largely a consequence of increased air links. Acknowledging the potential damage that can be caused by pests and diseases to the fragile agro-ecosystems in Kiribati, they also pointed to an inability to switch activities in the event of devastating outbreaks due to a lack of alternative production activities. They deduced from these observations that it is very important to protect fragile agro-ecosystems by efficient quarantine services, yet little is currently known of the pest situation on atolls.
Adverse trend in the terms of trade facing farmers. With the likely persistence of MIRAB characteristics in the economy of Kiribati, doubtful world market prospects for the major agricultural export of copra and possible growth of commercial fisheries, agriculture can be expected to come under increasing economic pressure from adverse movements in its terms of trade with the rest of the economy.

Rapid urbanisation. Rural–urban migration and centralisation of employment opportunities in urban areas deflect an increasing proportion of public expenditure away from rural areas.

Changing role of women. Current development processes, according to Thaman (1992b), have led to a serious deterioration in the historically prominent status of women in rural areas. The importance of women in agriculture is being overlooked.

Growing malnutrition and poor health. Worsening nutritional status and health of I-Kiribati is lessening the potential for improvements in agricultural productivity. The controversial issue is the cause of this trend, which has been attributed by many to a failure to seek self-sufficiency. Chase (1992:iii), for instance, blamed increasing dependence on imported foods for declining food security, especially on remote islands, and considered the local production of desirable and nutritious crops as the antidote to this decline. Thaman (1992b) argued in the same vein and, like Chase, mixed up the separate issues of nutrition and ability to import. ‘Food dependency’, according to Thaman, ‘is a particularly serious problem in Kiribati...with the value of imported foods far exceeding the total value of domestic exports’ (Thaman 1992b:7). Singapore and Hong Kong are extreme cases that surely give the lie to this view that a growing dependency on imported food threatens nutritional status and development prospects, but there are numerous other countries that have also come to rely more on imported foodstuffs as sustained economic development has taken place. Nutritional status will come under threat only if Kiribati can no longer afford to import enough food to feed the population, or if malnutrition occurs through inappropriate diets. A decline in ability to import food would presumably set in train economic forces that increase incentives to produce food domestically, a much more potent force than the exhortations by analysts and educational campaigns to grow more local food. The most influential factor in reducing domestic food production has been the distorting impacts of MIRAB characteristics that enable Kiribati to maintain an exchange rate determined by the value of the Australian dollar. This is precisely the same factor that is largely instrumental in allowing high and increasing levels of food imports.
Tuvalu has the second smallest population and economy among the five countries under study. Although smaller than Kiribati, it shares many of the economic difficulties and agricultural challenges faced by its neighbour. Since gaining independence in 1978, its population growth rate has fallen, but the population is still growing at 1.7 per cent per year (Government of Tuvalu, MFEP 1994:3). The population doubled between 1947 and 1991 (Figure 5.1) and is expected to reach 14,000 in 2015 from around 9,000 in the early 1990s (Bakker 1992). Bakker (1992:2) observed an ageing of the population structure since the 1970s, caused by a marked fall in the fertility rate.

In some respects, the situation in Tuvalu is better than that in Kiribati. Tuvalu has a much lower infant mortality rate of 43 per thousand compared with 82 per thousand; a net reproduction rate of 1.2 per cent compared with 2.1 per cent; an average life expectancy of 59 years compared with 53 years; and a dependency ratio of 66 compared with 81 (Bakker 1992:2–3). On the other hand, population density is much greater at 346 per square kilometre compared with 98 per square kilometre in Kiribati in 1990 (Bakker 1992:4). There is also an expatriate population of around 700 in Nauru that would cause difficulties for Tuvalu if for some reason all were to return home at about the same time.
A trend Tuvalu shares with Kiribati is differential rates of population growth between the main island, Funafuti, and the other eight islands. The population on Funafuti increased more than fourfold between 1968 and 1991, from 826 to 3,839 (Clarke 1993:9). At independence, only 29 per cent of the population was on Funafuti; this proportion had risen to 43 per cent by 1991 and is expected to reach 69 per cent by 2006 (Clarke 1993:9). Two other islands also experienced significant population growth over the period 1968–93: Vaitupu (51 per cent) and Nanumaga (30 per cent) (Government of Tuvalu 1992a:39), but the remaining six islands lagged behind (the populations of Nanumea and Niutao actually declined).

Growth in GDP per head in Tuvalu has been moderate, estimated at US$1,056 in 1990 (Government of Tuvalu, Statistics Division 1992), up from US$827 in 1982 (Cole and Parry 1986:19).

Figure 5.1  Population of Tuvalu, 1960–2015

Note: Figures for 2000 and 2015 are forecasts.
Figure 5.2  Trade deficit, Tuvalu, 1980–89 (A$ million)

![Bar chart showing trade deficit, Tuvalu, 1980–89 (A$ million)](chart)

Note: Deficits are deflated to 1987 Australian dollars using the CPI index (Fairbairn 1993:52).


As with the other countries under study, the trade deficit has been widening since independence. The divergence in real terms during the 1980s was smooth, punctuated only by abnormally high imports of capital items in 1980 and 1988 (Figure 5.2). Over this decade the trade deficit represented about 60 per cent of GDP (Government of Tuvalu 1992a:11).

Financing the trade deficit has been achieved through aid inflows, STABEX receipts, remittances from seamen, trust fund income and EEZ rents, allowing the government to maintain balance of payments equilibrium. Aid as a proportion of total government revenue has been high since independence when Britain provided grant-in-aid to cover government recurrent expenditure. In 1980, A$0.75 million was provided as a contribution to the government recurrent budget of A$3.3 million (Tisdell and Fairbairn 1983:344). Aid per head was

Tuvalu shares with Kiribati use of the Australian dollar for its domestic currency. Like Kiribati, it has maintained monetary discipline through foreign inflows rather than commodity export revenue, with inflation rates roughly equivalent to those in Australia in recent years. It has been recommended by the ADB (1994:4) that monetary policy—and overall macroeconomic policy—be directed towards recirculating funds within the domestic economy to generate domestic investment and growth. This presupposes the existence of profitable investment opportunities, and that the size of the public sector is kept in check, even reduced, to ensure it does not ‘crowd out’ private enterprise (ADB 1994:8).

**Contributions of agriculture to the economy**

The modest contributions of agriculture to economic growth in Tuvalu are comparable to those in Kiribati. The main outputs are products from the coconut palm, root crops, bananas, breadfruit, pandanus, native fig (on some islands), several uncultivated fruits, pigs, poultry and honey (on three islands).

Copra, toddy and fresh nuts are the most important among many coconut products—125 uses according to the South Pacific Regional Environment Programme (SPREP 1992:109). Copra has been virtually the only commercial agricultural crop to date, although some efforts have been made to grow fresh produce for commercial sale. Copra has a long history of production for export, beginning in the then Gilbert and Ellice Islands in the 1840s with the production of coconut oil and switching to the export of copra around 1870 (Edwards and Trewren 1992). Copra production as an export activity in Tuvalu possesses similar traits to those in Kiribati.

Breadfruit is no longer a fashionable food for consumption, according to Clarke (1993:13), who reported that breadfruit rots on the ground during the breadfruit season on some outer islands, and trees are
being cut down. His observations are at odds with plans by the Agriculture Division to distribute planting materials to meet a ‘growing demand for new planting materials, especially in the [outer islands]’ (Government of Tuvalu 1992a:90).

The major root crops are giant swamp taro, grown in pits, and the common taro, which is also sometimes grown in pits (Aalbersberg and Hay 1991:41). Taro is more important in Tuvalu than in Kiribati. Iqbal (1992:95) reported a decline in the cultivation and production of giant swamp taro in Tuvalu which had been noticeable for some time, evidenced by a number of abandoned pits (SPREP 1992). Unpredictable and transient invasion of pits by saline water has been a major factor causing this decline. A surge in planting of sweet potato (*Ipomea batatas*) occurred in the mid-1980s, generated partly by the possibility of commercial sale. It became an important food crop on some islands (Trewren 1984:4; Hawkes 1992:272; Sivan 1992:107) and small quantities were exported from 1989. Its commercial expansion foundered because of transport and other marketing difficulties. Some introduced vegetables are now grown on all islands, encouraged by the Division of Agriculture and a UNICEF urban gardens project.

Agriculture has become a relatively minor sector in the development planning processes in Tuvalu, as in Kiribati, because of its low production potential. In particular, there has been growing recognition that the economic future of the country lies mainly in exploiting the extensive marine resources rather than the extremely limited land resources. The role of agriculture as an employer and provider of food, however, is still considered a priority (Government of Tuvalu 1994). A conclusion reached years ago by Flynn and Makin (1976) still seems valid: efforts to improve agriculture should concentrate on those activities already proven to be suitable to the production environment.

**Output**

The contribution of agriculture to GDP has averaged around 20 per cent in recent years (Government of Tuvalu, Statistics Division 1992:28). It is difficult to gauge trends in agricultural output because the destination of most production is subsistence consumption which is notoriously difficult to measure. Tisdell and Fairbairn (1983:344) reported an estimate of subsistence
output at 19 per cent of GDP in 1977, but added that this is probably an underestimate—a true figure is more likely to be in the range of 30 per cent to 40 per cent. As Tisdell and Fairbairn (1983:358) concluded a decade ago, subsistence production will remain at the core of farming activities in the foreseeable future.

Commodity exports were dominated by copra except for the period 1982–84, when fish exports were important, and 1990, when the export of garments commenced (Figure 5.3). ² Copra export revenues fluctuated markedly in response to world prices and climatic conditions until the early 1990s when they stopped altogether due to lack of profitability and the cessation of operations by the Tuvalu Copra Trading Cooperative (TCTC). A small quantity of coconut oil was exported to Lautoka, Fiji, in 1994 and bartered for consumer goods. The impact of price was felt most dramatically in 1984 and 1985 when average fob prices rose to A$605 and A$489 per tonne, respectively. By 1986, the average fob price had plunged to A$128 per tonne, and finished the decade at just A$112 per tonne (NCDS 1995).

Figure 5.3 Commodity exports, Tuvalu, 1980–89 (A$ '000)

It is notable that contributions to copra output by island have also varied considerably over time (Figure 5.4). Most copra used to come from Nanumaga and Vaitupu. Nanumea and Nui were prominent producing islands in the early 1980s but their output declined to negligible proportions by the end of the decade. The positive impact of the price boom on national export volumes in the 1984–85 period is marked, as is the negative impact of the precipitous decline in 1986. By 1990, the depressed price had played a major part in reducing export volume to little more than one-half that at the height of the boom, despite the fact that output should have been increasing markedly in the 1980s in the wake of the coconut replanting scheme during the 1970s and 1980s.

By-products have become the most important coconut output. Toddy output in 1988 was estimated at 6,219 litres or 0.85 litres per producer (around 0.7 litres per person) (Win 1990:31). About one-half is used as syrup and most of the remainder is consumed fresh. Win (1990:27) estimated average household consumption at nine fresh nuts per day, well below the average in the Pacific of 15, but varying widely between islands.

The government predicts that, on current trends, the coconut industry will be stretched to meet the varied demands in the domestic market, with little prospect of a return to copra exports (Government of Tuvalu 1992a:89). Agricultural exports have accounted for a minuscule proportion of total foreign inflows in recent years and without contributions from copra, this situation is most unlikely to change in the foreseeable future. It is a little odd, therefore, for the ADB to conclude that ‘every effort should be made to exploit any possibilities for export of agricultural products’ (1994:13, emphasis added), given the limited scope of agricultural exports to contribute to foreign inflows.

Supply of food

Households in the outer islands are primarily engaged in food production for subsistence plus some surplus to send to Funafuti. Therefore, the supply of food remains a major economic contribution by agriculture, despite the increasing value of food imports. As in Kiribati, there is a body of opinion that considers the declining relative importance of locally
produced food in human diets as a matter of great concern (e.g. Hawkes 1992; Liew 1992; Thaman 1992a,b; Government of Tuvalu, MFEP 1994). The ratio of agricultural exports to food imports for the period 1980–89 indicates that agricultural exports make an insignificant contribution to covering food imports (Figure 5.5). Even in the boom year of 1984, the value of copra exports was less than one-third the value of food imports. Food imports have been increasing at a fairly steady rate, and have stayed around the same proportion of total imports—between 25 per cent and 30 per cent (Government of Tuvalu 1982a:28; Government of Tuvalu, Statistics Division 1992:15,22). As a proportion of GDP, food imports were in the range of 15 to 19 per cent over the period 1986 to 1989 (Government of Tuvalu, Statistics Division 1992:22), well below the range of 40 per cent at the time of independence mentioned by Tisdell and Fairbairn (1983:345).
Differences in the proportion of local food in the diet have widened between outer islands and Funafuti—similar trends were noted for Kiribati. At current income levels on Funafuti, the prospects of reversing the trend away from consumption of locally produced food and towards imported items seem slight. At best, only marginal substitution of locally produced food for imported food is likely to occur.

Agricultural outputs as processing inputs

The narrow range of commercial agricultural outputs and negligible manufacturing activity in Tuvalu limit the scope for using agricultural outputs as inputs in processing industries. There is little evidence of commercial processing of agricultural products for the domestic market although, as in Kiribati, subsistence output is put to a range of uses. No evidence exists on the current levels and values of these activities or their scope for commercialisation in the future.

**Figure 5.5 Ratio of total exports to food imports, Tuvalu, 1980–89**

Commercial processing of agricultural products for export has been exceptionally disappointing, with only limited processing of coconut into copra which, with the recent cessation of copra exports, is also under threat.

**Employment**  
Job opportunities outside agriculture and the public sector are scarce. The scope for employment in the private sector is unlikely to improve unless tourism expands. Although not experiencing the same rapid growth of population as Kiribati, but with initial higher population densities, Tuvalu shares with Kiribati an inability to absorb great numbers of new job seekers in an agricultural sector overwhelmingly relying on coconut and taro production. Unemployment and rural–urban migration are growing concerns (Government of Tuvalu 1994).

In 1973, 2,312 individuals, or 65 per cent of the working age population, were classified as active in village employment; the majority were women (Government of Tuvalu 1984:39). In the 1979 census, this proportion had dropped to 60 per cent. These figures probably under-report the true proportion, as statistics presented in the same document showed that virtually all outer island people were engaged in some farming activities: 87 per cent earned cash from copra production and a further 15 per cent of households sold fresh produce for cash (Government of Tuvalu 1984:59). About 80 per cent of the population was recently reported to participate in agriculture by the Government of Tuvalu (1992a:87), chiefly as subsistence or semi-subsistence producers. Almost all outer island households combine fishing with farming activities.

**Agriculture as a market for other sectors**  
The agricultural sector is not a major market for goods and services from other sectors in Tuvalu although the current demand for consumption goods and transport services by rural households generates some domestic economic activity. Potentially, greater processing of agricultural raw materials offers some scope for increasing final demand for domestic output, but the level of increased demand promises not to be great.
Tuvalu as a MIRAB economy

Tuvalu exhibits some of the typical features of a MIRAB economy. Apart from aid, remittance income from overseas work and fishing royalties from its large exclusive economic zone (EEZ) earn Tuvalu relatively large amounts of foreign exchange. Other important sources of foreign inflows have been from philatelic sales operated from Britain, STABEX transfers and earnings from the Tuvalu Trust Fund. Philatelic sales have declined drastically in recent years, while STABEX transfers have ended now that copra is no longer exported. Extraordinarily, STABEX funds received from the European Union between 1975 and 1994 to compensate for shortfalls in the value of copra exports were more than one-half the total value of copra exports during this period.

While its EEZ is not as extensive as that of Kiribati, Tuvalu is believed to possess large quantities of pelagic fish species and abundant economically important bottom fish resources in seamount areas that could be more intensively exploited (ADB 1994:13). Rents from licensing foreign fishing fleets are regarded as well below what could be achieved (ADB 1994:13). A comparison of fishing royalties (Figure 5.6) with copra exports (Figure 5.3) shows that fishing royalties surpassed earnings from copra exports by 1981 and, except in 1984, have remained larger every year since.

Resources for agricultural development

Physical

Tuvalu comprises nine islands which cover an area of 25 square kilometres. This tiny land mass exists in an EEZ of 0.9 million square kilometres (Government of Tuvalu, MFEP 1994:6), but there are major obstacles to national exploitation of the marine resources of the EEZ (Tisdell and Fairbairn 1983:347–8). The alternative and more simple means of exploitation is to lease fishing
rights to foreign ships, but this also has constraints (Tisdell and Fairbairn 1983:347–8).

Aalbersberg and Hay described the land resources of the islands as built of unconsolidated coralline sands and gravels derived from the adjacent reefs and lagoons. Five (Nanumea, Nui, Nukufetau, Funafuti and Nukulaelae) can be classed as true atolls given their more or less continuous rim of reef at or near the surface of the sea and surrounding a distinct and deeper lagoon...Vaitupu, by far the largest island at 530 ha, has the composite characteristics of the atoll and table reef...[as do Nanumaga, Niutao and Niulakita] (1991:7).

The quality of land is poor and infertile. Most of the land has weakly developed alkaline soils of immature profile, low clay content and
low water retention capacity, but there are pockets of ‘relatively high quality, dark and phosphatic soils’ (Aalbersberg and Hay 1991:12). Hosking and McLean (1991) observed variable distribution of these soils, from negligible amounts on Nukufetau to more than three-quarters of the land area on Niulakita. Pits for growing giant swamp taro and other crops are increasingly suffering from salinity.

Thaman’s (1992b:8) emphasis on two specific characteristics critical to understanding the potential for sustainable agricultural development in Kiribati applies equally well to Tuvalu: unique and fragile agro-ecosystems exhibiting endangered soil and biotic resources (see also Rogers 1991; SPREP 1992). Accordingly, the potential for agricultural development in Tuvalu is severely constrained, especially given the extremely limited land area.

Land is mostly under customary ownership. The agricultural sector comprises only smallholdings and the household is now the main land-using unit. Detailed descriptions of the land tenure system in Tuvalu are provided by Brady (1974) and Leupena and Lutelu (1987). Some control over land use is still exerted by chiefs and elders on outer islands although it is diminishing over time. Usufruct rights to a particular parcel of land are vested in heads of extended families and their members. Rights are passed between generations but the right of the individual to use a piece of land flows through that person’s lineage back to the first owner of the land (Leupena and Lutelu 1987). Household food security depends largely on access to land, and especially to giant swamp taro pits and coconut palms on that land.

It is preferred that land disputes are settled amicably by the parties in dispute but, if not, they are referred to a Lands Court on each of the outer islands. Members of the Court are appointed by the Island
Council subject to approval by the Lands Officer appointed by the national government (Leupena and Lutelu 1987). Leasing has become more important as absentee ownership has proliferated and absent owners seek to preserve rights for their children. Three types of land lease exist

- retention of usufruct rights and responsibility for upkeep and taxes by the lessor
- rights and responsibilities transferred to the lessee
- a combination of the first two (Leupena and Lutelu 1987).

The land-use pattern is distinctively characterised by the lateral subdivisions across islands, originally allowing each plot a variety of land types. Increases in population have led to further subdivisions. By the mid-1980s there were twice as many plots as people (Leupena and Lutelu (1987:144)—almost 20 per family group in Funafuti (Clarke 1993:19). Some splintering of plots by subdivision of land among family members has modified this pattern so that some plots now have only poor soils and others only good soils (Aalbersberg and Hay 1991:20–1). This trend has not been universal because of the differential rates of population growth between islands.

Land taxes are assessed on all plots by the island councils. Each council determines the amount of tax—usually based on the productive capacity of the land—and the method of assessment (Leupena and Lutelu 1987).

Population density varies but is generally high. Population density on Funafuti is rising fast with land per person declining from 0.11 hectares per person in 1979 to 0.06 hectares by 1991. On present trends, it will fall to a mere 0.03 hectares by 2005. In contrast, land per person on outer islands remained at around 0.4 hectares between 1979 and 1991, and is expected to increase by 2005 to 0.59 hectares (Clarke 1993:10). The pressure for extending food production onto marginal lands will grow stronger.

**Climate**

Tuvalu suffers on occasions from tropical cyclones but much more frequently from strong winds which accentuate the damage to vegetation caused by sea spray. The country...
is prone to short droughts (SPREP 1992:86) but probably less so than much of Kiribati. Average annual rainfall on Funafuti is 3,562 mm with a standard deviation of 667 (Mosley 1992:39). This mean is quite high by South Pacific standards and the standard deviation fairly low. It provides greater potential for the production of humus from vegetative growth than in Kiribati (Trewren 1984:6). Rainfall varies only slightly throughout the country, with all islands averaging at least 2,600 mm per year. Seasonality is present principally in the form of a distinct dry season, while temperatures are consistently high throughout the year.

**Tree crop plantations**

Trees in Tuvalu have fulfilled a role in farming systems similar to that in Kiribati with many types well suited to the stringent physical conditions. They provide a similar range of benefits and their use complements well the other regular activities of rural households.

The coconut tree dominates the trees used both for household purposes and commercial activity, occupying 2,028 hectares in 1986 (Win 1990:30) or around 70 per cent of cultivable land area. Copra is sun-dried to acceptable quality, yields are high by South Pacific standards, and palms are generally healthier than those in Kiribati (Trewren 1984:6). Copra output varied widely by island group between 1970 and 1993, in response to both prices and climate (Figure 5.4). While total coconut output cannot be changed in the short run in response to price changes, it is clear that a significant response in copra supply is achieved, most probably by varying harvesting intensity and the allocation of the collected nuts among alternative uses (copra production is one of many). In respect of varying intensity of collection, Trewren (1984:3) noted that undergrowth in coconut plantations varies substantially, from generally well cleared around villages to dense vegetation in more distant parts of outer islands, making collection of fallen nuts difficult or impossible.

A major coconut replanting scheme using local talls began in Tuvalu in 1969, along lines similar to the replanting scheme in Kiribati and with similar goals. A total of 115 hectares had been replanted under the scheme by 1987 (Win 1990:30). It was first established on the islands of Nukulaelae (in 1969) and Nanumea (in 1972), and extended
to all islands except Funafuti and Niulakita by 1978 (Trewren 1984). The latter two islands have experienced replanting outside the scheme—Funafuti to replace trees lost following cyclone Bebe in 1973 and Niulakita when Burns Philp operated a coconut plantation there. The minimum area for qualification for the replanting scheme began at 8 hectares before being reduced to 2 hectares in 1972 and then 1 hectare in 1980 (Trewren 1984:7). The planting subsidy was the same as in Kiribati, while the maintenance subsidy began at A$77.40 per hectare in 1969, was increased to A$96.75 per hectare in 1977, and then reduced to A$60 per hectare in 1980 (Trewren 1984:7). Subsidies were removed at the end of 1992. Teii (1987) reported that the scheme performed poorly, as in Kiribati, with less than 6 per cent of plantations improved by 1985. Lack of incentives to maintain palms and the fragmented and small size of holdings were the major factors causing poor performance (Teii 1987). In tandem with high operation costs, this made the scheme an economic failure.

Livestock

Pigs and poultry are widespread in Tuvalu. Pigs are kept by most producers for feasts and ceremonies (Government of Tuvalu 1992a:8). Both the pig and poultry industries are facing serious development problems, particularly the high costs of imported feed and chicks, and inadequate support services on outer islands (ADB 1994:11). These difficulties have been observed for many years (e.g. Tisdell and Fairbairn 1983:346). Nevertheless, numbers have been increasing. Pig numbers doubled from 5,671 in 1978 to 11,277 in 1990 (Government of Tuvalu, Statistics Division 1992:16). An even more striking picture emerges for poultry: numbers more than trebled from 10,524 to 35,130 over the same period (Government of Tuvalu, Statistics Division 1992:16). Over one-third of poultry and one-quarter of pigs were located on Funafuti in 1990.

Advances in the livestock industry may be achieved through improved feeding, especially reducing reliance on expensive imported feeds, and the uptake of better breeds. However, the potential gains from a domestic livestock feed industry appear to be illusory. Research conducted in Kiribati and reported by Thorne (1992:151) has equal relevance to Tuvalu, implying doubtful prospects for developing local sources of feed supply for the pig and poultry industries. A commercial pig breeding and distribution project using imported

**Machinery, equipment and vehicles** Simple farm tools are used because of the very small and fragmented land parcels. There is virtually no scope for advanced mechanical technology. Few vehicles are found on outer islands but there is plentiful surface transport on Funafuti.

**Human resources** As indicated above, most of the population participate in farming activities, so there is no shortage of people versed in traditional farming activities. Other than agriculture and fishing, most employment is in the public service. Public service staff numbers have been increasing, from 632 positions in 1989 to 779 in 1993 (Government of Tuvalu, MFEP 1994:5). In 1987, the public sector accounted for 69 per cent of formal employment (Fairbairn 1993:8). Employment overseas as seamen has also been a significant source of work for young males. Fairbairn (1993:31) reported up to 200 Tuvaluans employed by foreign fishing fleets.

**Infrastructure** There is an inadequate infrastructure for all products from rural areas with the possible exception of copra (SPREP 1992:53). Perhaps even more so than in Kiribati, infrastructure in the outer islands would be very expensive to build and maintain. The domestic road network is satisfactory on the populous Funafuti: all households on the island are within easy reach of roads. Elsewhere, small land areas mean that surface transport is not a huge problem but its lack is nevertheless at least a minor constraint to agricultural development.

International air links are very limited and expensive, with only two flights by Air Marshall Islands to and from Fiji and Marshall Islands via Kiribati and one flight to and from Nauru each week. Air cargo capacity is limited and uncertain.

Inter-island shipping has historically been the main form of domestic transport between the widely scattered islands, and retains its importance today. *Nivaga II* is the only ship plying inter-island routes, together with a number of smaller boats. Schedules are erratic (ADB 1994:11). Few islands have sheltered ports and inter-island shipping
links are difficult and expensive to maintain, constraining agricultural development severely because the potential for increased production is on the outer islands. Shipment of surplus sweet potato and vegetables from outer islands to Funafuti and elsewhere in the region has experienced difficulties as a result (ADB 1994:11). Thaman (1992b:13) reported on the difficulties of continuing efforts in Tuvalu to establish an export market for sweet potatoes in Kiribati and Marshall Islands. Funafuti is the only international port of entry and is in need of improvements to wharf facilities (Tisdell and Fairbairn 1983:349; Government of Tuvalu, MFEP 1994:6).

Research infrastructure is adequate given the size of the agricultural sector. Aid funds have been used to develop small livestock multiplication units, research facilities for the coconut and root crop industries and to study farming systems in general.

Institutional factors

Development planning The government of Tuvalu operates a discrete and centralised development planning process, and is currently in its fifth planning period, having begun its first development plan (1978-80) in 1978. The most recent enunciation of development goals by the government stresses increased self-reliance, preservation of the values and traditions of the Tuvaluan culture, economic growth, the benefits of which are distributed widely across all islands and maintenance of a low population growth rate (Government of Tuvalu 1994:2,11). Decentralisation of government operations and involvement of local island communities is a major plank in government plans (Government of Tuvalu, MFEP 1994:5). It will entail the physical relocation of staff and decision-making, and in time a more widespread construction of infrastructure throughout the islands. A National Integrated Rural Development Programme is to be formulated, with development plans for individual islands. There is no devolution of powers envisaged, which spells danger for the proposals. Too often decentralisation without devolution only results
in the addition of another layer of bureaucracy. Further, decentralisation will work only with adequate transport and communications facilities (Government of Tuvalu, MFEP 1994:5), and these are a long way from being achieved.

Three major agricultural programs in place are food and crop production, livestock production and agricultural support services (SPREP 1992:67). Food and crop production covers coconut improvement, horticultural promotion, sweet potato production, bee-keeping and the introduction of new species and varieties of fruit and nut trees. The livestock program covers pig, poultry and egg production, and is aimed at improving breeds, encouraging commercial production, encouraging use of local feed ingredients and better husbandry techniques. The agricultural support service program is directed towards improving extension performance and more informed decision-making on research.

A draft of the National Environment Management Strategy was being prepared in 1994 for inclusion in the medium-term plan. The Strategy contains a number of project proposals aimed at conserving natural resources and achieving sustainable development (Secretary to the Ministry of Natural Resources, personal communication, 1994), and requires that environmental impact assessments are undertaken for all development project proposals. A major, if not insurmountable, problem is envisaged in implementing the Strategy: there is only one environmental officer, and he is not well trained in this area.

**Allocation of funds to agriculture**

Current priorities for development expenditure, accounting for 60 per cent of the total expenditure, are human resources and infrastructure (especially inter-island transport and communications) (Government of Tuvalu, MFEP 1994:10). Between them, the Ministry of Home Affairs and Rural Development and Ministry of Natural Resource Development received 9 per cent of total development expenditure in 1991 (Government of Tuvalu 1992a:96). The share for natural resources and outer islands in the 1993 budget was 19 per cent, reflecting an increased emphasis on outer island development, but only a small proportion of this went directly to agricultural development.
The share of government recurrent expenditure devoted to agriculture is low but probably not greatly out of step with the potential of agriculture to increase GDP. An average of just over 1 per cent of total government recurrent expenditure was spent on agriculture during the period 1980–86 (Government of Tuvalu 1992a). In the period 1988–91, the Ministry of Home Affairs and Rural Development and Ministry of Natural Resource Development together received an average of only 8 per cent of total government recurrent expenditure (Government of Tuvalu, Statistics Division 1992:35).

Around 20 personnel make up the Agriculture Department, with a staff member resident on each outer island except Vaitupu where there are four staff members. The Government of Tuvalu (1992a:92) considered staff levels inadequate for the tasks at hand in terms of both numbers and technical proficiency.

The Government of Tuvalu (1992a:30) observed a major problem with institutional support for farmers. Of the 10 projects identified in the fourth development plan, only one was completed. This is not a reflection of poor performance by personnel in the Agriculture Department but a sober acknowledgment of the very small institutional capability to support agricultural development initiatives.

**Research and extension**  
Research activities are based on Vaitupu, and extend to both crop and livestock. Crop research was historically based on coconut production with research priorities chiefly on the agronomy of increasing coconut productivity. Greater emphasis has recently been placed on food crop production for domestic consumption, with priority given to swamp taro pits and house gardens (Government of Tuvalu 1984:63; Government of Tuvalu 1992a:90), but coconut research still retains its importance (Government of Tuvalu 1992a:89). In 1985, seven clones of taro bred in Fiji were introduced then tested over two years (Sivan 1992). Sivan reported that two were selected for multiplication and distribution along with three local cultivars, but low yields due to early harvest meant that a proper assessment was impossible. Two cultivars nevertheless showed promise for early yields. Livestock research is concerned mainly with pigs (Government of Tuvalu 1992a:88).
Research programs have been overwhelmingly oriented to production, yet arguably the most pressing constraints on agricultural development are in marketing. The example of sweet potato research highlights this misdirection of research effort. The successful introduction of sweet potato in 1984 resulted from experimentation with 25 varieties. The short-lived success with the crop can be traced largely to marketing problems, especially those related to inadequate transport and communications infrastructure and unreliable transport services, yet the research response has been to improve productivity and pest resistance (Government of Tuvalu 1992a:90).

Tuvalu shares with Kiribati a shortage of indigenous agricultural scientists for technology assessment and adaptation. According to SPREP (1992:54), ‘the biggest problem in the short run is probably the lack of trained social scientists and technicians who can assess new technologies before they replace existing, more appropriate technologies, with little involvement in research and development of appropriate technologies adapted to atoll conditions’. Tuvalu does have access to research resources in a number of regional and international agencies. They include the SPREP, the Forum Secretariat, the University of the South Pacific (USP) and Institute for Research, Extension and Training in Agriculture (IRETA), UNDP/FAO, South Pacific Commission (SPC), the International Centre for Living Aquatic Resources Management (ICLARM) and a number of bilateral agencies. Of special interest to Tuvalu given the great importance of coconut production, the establishment of the Coconut Genetic Resources Network (COGENT) in 1992 offers a useful research network for assisting in sustained productivity in the coconut industry. The role of COGENT is ‘to coordinate activities on genetic resources...and so form a basis for collaborative initiatives on broader aspects of coconut research...to support the capacity of national programs to conserve and utilise coconut genetic resources’ (Hazelman 1994:80).

As in Kiribati, however, the scarcity of national research resources is compounded by an absence of international research into improved productivity of its two main food crops, giant swamp taro and taro, and the need to provide specific research results to address the diverse agro-ecosystems of the different islands (Liew 1992), particularly the...
differences between the five atolls and four islands. As in Kiribati, production techniques tend to be kept secret within the family and passed down from generation to generation, making it difficult to develop and disseminate improved practices.

Extension activities virtually began with the coconut replanting scheme on Nukulaelae in 1969 (Trewren 1984:6). Despite the operation of useful training programs, extension services remain inadequate, and are probably the 'area of greatest institutional weakness' according to ADB (1994:11). This was recognised in the Third Development Plan when further strengthening of extension services was considered a priority to improve both coconut and root crop productivity. Infrastructure and staffing deficiencies limit the ability of the extension personnel to provide effective services on outer islands. The Government of Tuvalu (1992a:91) attributed shortcomings mainly to transport and communication difficulties. The Agriculture Department uses touring teams as a means to minimise transport difficulties. An Agricultural Stores and Supplies Project was established to make inputs such as fertiliser, seeds, fencing materials, livestock feed and veterinary supplies available to farm households on outer islands, and managing the distribution of these inputs has become a major responsibility of extension staff (Government of Tuvalu 1992a:91).

**Agricultural information**

Uncertainty exists about the nature and importance of subsistence production, traditional conservation practices, resource levels and the impacts of current production practices on resources, pollution and biodiversity loss (SPREP 1992:86). Despite the variety of uses for the outputs of traditional production activities, little is known about the commercial marketing opportunities that could potentially be exploited.

**Commercial environment**

Commercial services are limited in Tuvalu. The financial sector mirrors that in Kiribati, comprising a development bank (established only in 1993 to replace the more advice-based Business Development Advisory Bureau), the National Bank of Tuvalu (the only commercial bank), and the Tuvalu Provident Fund. The development bank is facing 'serious problems that need to be resolved if it is to be able to discharge its...
responsibilities’ (ADB 1994:10), especially poor appraisal procedures. The National Bank of Tuvalu has no agricultural loans in its portfolio (Clarke 1993:37).

Existing regulations are fairly satisfactory for commercial development but ADB (1994:9) criticised the use of price control measures which retard growth of the private sector. The commercial environment for niche agricultural exporting and domestic fresh produce marketing is hardly promising. Public services to support private initiatives in agricultural export are conspicuously absent, and there is little to show from plans to establish a fresh produce marketing system aired in the Third Development Plan (Government of Tuvalu 1984:66); a decade on, there is still an absence of suitable marketing facilities for storage, handling and exchange. Similar suggestions about developing the fresh produce marketing system are still being made (Government of Tuvalu 1992a:91).

Rural organisations and local government

Each island (except Niulakita, which is administered by the island of Niutao) has its own Island Council to discharge various administrative tasks, make decisions about development priorities, and identify and implement most development projects on the island (Government of Tuvalu 1984:49–50). Development projects affecting more than one island are coordinated by the national government.

The Tuvalu Cooperative Society has branches on all islands. It used to be responsible for buying and exporting copra (through the TCTC) until 1992 when it stopped trading in copra. It now undertakes mainly retail activities.

Quarantine

The Government of Tuvalu (1992a:91) judged current quarantine arrangements to be reasonably effective. It reported intended improvements to current facilities through new fumigation facilities. Jackson and Macfarlane (1992) were less convinced. They found the services under-staffed and under-financed, with few trained personnel and an extension service incapable of providing pest control advice to growers. SPREP (1992:56) expressed the view that quarantine services need to be improved to meet future demands.
Strengths and weaknesses

The strengths of agriculture in Tuvalu are similar to those in Kiribati: a well educated and generally healthy people, especially the women who vastly outnumber men in productive activities (SPREP 1992:56, ADB 1994:21); 'islandness' and smallness, which make it possible to undertake development activities involving and benefiting the whole population; traditional well understood and practised production processes; and a land tenure system that so far has engendered a degree of security for the poorer sections of society.

Tuvalu suffers many of the same weaknesses as Kiribati. These weaknesses are: a small economy of limited consumption potential; uncertain export markets that are difficult to penetrate; a narrow range of export destinations and product range for agricultural exports; lack of a critical mass of trained and experienced personnel in key rural institutions; low status of agriculture; a land tenure system that inhibits agricultural growth and is under pressure from population growth, causing small fragmented parcels of land; locational disadvantages; fragile agro-ecosystems; susceptibility to intensified competition for resources and indirect macroeconomic impacts of MIRAB activities; out-migration of able-bodied and enterprising people from rural occupations on some of the outer islands; a growing imbalance in economic growth and access to infrastructure and social services between Funafuti and other islands, exacerbated by a fragmented land mass with far-flung islands; and occasional checks to crop growth from short droughts because of soil porosity. Tuvalu also suffers acutely from diseconomies of scale in public administration (Tisdell and Fairbairn 1983:355) which, combined with a high degree of centralisation and reliance on the public service, has detracted from agricultural performance. It is doubtful whether current plans for decentralisation will remedy this situation.

Opportunities

Opportunities for economic growth through agricultural advancement are limited. At best, agriculture can play a supporting role through some foreign exchange earnings (from exports) and savings (through food production) and as a source of employment for the bulk of the
population. For this role to be effective, the agricultural sector will need to take the opportunities available by

- exploiting small niche export markets with reasonable potential, especially those relying on existing activities producing goods for domestic consumption
- entering into joint export arrangements with other South Pacific exporters of similar products
- capitalising more on the contribution that women can make in agricultural production and marketing through targeted training and assistance
- making more effective use of aid funds to improve the productive capacity of agriculture, especially in overcoming the current short-term orientation and tight timetables of aid projects (SPREP 1992)
- taking advantage of modest increases in urban demand for fresh produce by increasing production through improved productive capacity and transport and communications infrastructure.

**Threats**

The many threats to agricultural development are a function of the continuing, and in some cases deteriorating, weaknesses of the agricultural sector. The same framework used for Kiribati is applied here, and many of the following threats are derived from the list provided by Thaman (1992b:9–14).

**Demography.** Although population can be expected to grow at only a moderate rate, an already high population density, possible return of expatriates from Nauru and an increasingly unfavourable age structure threaten to constrain agricultural development. Limited land resources are already showing signs of being unable to meet the food needs of the population given existing production technology. Also, agriculture appears ill-equipped to absorb the growing number of unskilled entrants to the job market while skilled and knowledgeable agriculturalists are becoming increasingly scarce.

**Increasing landlessness.** Landlessness is becoming an increasing problem in Tuvalu as more people lose their access to land or are members of families that have access to only small areas of land (Government of Tuvalu 1992b:xx; SPREP 1992:54). Population growth
and greater non-agricultural use of land, most acutely felt on Funafuti, have reduced attachment to the land for many Tuvaluans who consequently have lost their ‘safety net’ in the event that they lose other entitlements to food and other basic needs.

**Inappropriate technology.** SPREP (1992) and Clarke (1993:45) observed that inappropriate use of inorganic fertilisers can degrade soil structure and quality, and pollute scarce groundwater resources (Government of Tuvalu 1992b:xx). As in Kiribati, inappropriate agricultural production technologies are due mainly to producers’ ignorance of the consequences of their actions on the agro-ecosystem. Farmers in Tuvalu have been less disposed than their counterparts in Kiribati to degrade their soils by burning undergrowth and coconut debris (Trewren 1984:6), but this practice is still prevalent.

**Agro-deforestation, soil degradation and shortage of fuelwood.** The Government of Tuvalu (1992b) lamented the continuing loss of trees that provide food, timber, firewood and medicine and which serve various cultural and ecological functions. The already limited diversity of species is being further eroded. While soil erosion is not a great problem, declining soil fertility and soil structure caused by deforestation over the years (Clarke 1993:13) are increasingly curbing the productivity of farmers.

**Climatic change.** Global warming threatens to have profound effects on agriculture in Tuvalu. Aalbersberg and Hay (1991) predicted that groundwater would become increasingly scarce due to higher temperatures and sea levels. There may also be greater saltwater intrusion in giant swamp taro pits, and greater damage to crops from overwash and salt-laden winds. Flooding might also reduce agricultural land area and higher temperatures may induce more heat stress in some vegetation. On the positive side, greater carbon dioxide in the atmosphere would encourage plant growth.

**Loss of traditional agricultural practices and knowledge, and inadequate education.** Thaman’s (1992b:11) concern that the ‘deterioration of time-tested atoll agricultural systems could be one of the most serious of all constraints to sustainable development’ in Kiribati applies also to Tuvalu, with evidence of waning interest in and knowledge of traditional farming practices and technologies. According to SPREP ‘almost 2000 years of human...experimentation...empirical education—is being cast aside for imperfect, untested models’ (1992:59).

**Increasing importance of the constraint of remoteness and fragmentation.** Economic distance and unreliability of inter-island transport services remain the main constraints to increased production of fresh food to urban Funafuti and establishment of some niche export
Some support services have been, and are being, developed by government and private enterprises (including non-government organisations) but not enough to penetrate export markets. For those concerned about the decreasing ability of Tuvalu to feed its own population, improved infrastructure and transport services bring their own threat. Such improvements potentially counteract prospects for greater food production by reducing demand through better access to imported foodstuffs by people on more remote islands, making food imports relatively cheaper and more reliably available and thereby increasing their substitution for locally produced foods.

**Increased risk of introduced pests and diseases.** As in Kiribati, isolation from pests and diseases and the few indigenous pests also constitutes a threat because the arrival of new pests may lead to disaster through the absence of natural enemies and alternative agricultural activities. Rats are becoming a greater pest in coconut plantations.

**Adverse trend in the terms of trade facing farmers.** Agriculture has traditionally been a major source of earnings of foreign exchange, yet its ability to fulfil this role in Tuvalu has become almost hopelessly inadequate. Tuvalu shares with other countries in this study an inability to develop its agriculture greatly without increasing exports, yet is faced with heavy reliance on one agricultural export—copra—with a highly uncertain and bleak market outlook. Moreover, there is not the incentive to strive to achieve a diverse portfolio of export activities so long as foreign inflows other than commodity exports enable the government to maintain a strong exchange rate. MIRAS characteristics will continue to dominate the economy of Tuvalu in the foreseeable future which, combined with the gloomy prospects for world copra prices, promises further adverse movements in the terms of trade of agriculture.

**Rapid urbanisation.** Rural–urban migration and centralised employment opportunities and government activities continue to draw public expenditure away from rural areas. As the ADB observed, the 'need to decentralise has become increasingly apparent...[especially in] a number of aspects of Government operation' (1994:6).

**Changing role of women.** SPREP (1992:56) reported an apparent deterioration in the status of women with modern development processes. This has been especially marked in terms of the additional time and effort needed by women to carry out their traditional chores of obtaining food and firewood, which have limited their opportunities for other productive activities and leisure.

**Growing malnutrition and poor health.** The worsening nutritional status and health of the people of Tuvalu is lessening the potential for improvements in agricultural productivity (SPREP 1992).
Increasing inability to meet food needs. This threat sits oddly with the opportunity, mentioned above, to take advantage of modest increases in urban demand to increase output of fresh produce. It reflects an almost schizophrenic attitude by some analysts to increased population and the growing number of mouths to feed, on one hand, and, on the other, the need to make better use of locally produced food and fertilisers to substitute for imports. The alarmist reports about growing food imports seem to have been perpetuated as conventional wisdom. Even the ADB saw fit to declare a growing need to ‘address the alarming and continually increasing demand for imported foodstuffs’ (1994:8). In fact, as reported above, increases in food imports have about kept pace with increases in total imports and, as a proportion of GDP, it appears that food imports have declined since independence. With moderate population growth predicted, the key to increased food consumption of locally produced foodstuffs is a pronounced and favourable trend in their terms of trade relative to food imports. This is most likely to occur if the MIRAB characteristics in the economy—the main factors allowing increases in food imports since independence—are diminished. Yet, of course, if these sources of finance were to disappear too suddenly, the ability to fund food imports would fall sharply, threatening food security.

Endnotes
1 These eight islands are referred to here as the outer islands. Outer island development is treated as equivalent to rural development (Government of Tuvalu 1984:47).

2 Royalties from foreign fishing fleets are excluded.

3 See comments on the shortcomings of this ratio in Chapter 4, Kiribati.

4 It is reasonable to assume that Tuvalu will continue receiving relatively high per capita aid funds until the late 1990s.
Demographic and economic background

The economy of Niue is exceptionally small, and consequently the scope for economic growth through production for domestic sale is minuscule. This scope has been diminishing with rapid population decline through out-migration since 1966 (the female population has been declining slightly faster than the male population) (Figure 6.1). The downward trend in population is expected to be reversed, and Lane (1994:5) reported an estimated population of 2,443 in June 1993, slightly above the census estimate of 2,239 in 1991. Nevertheless, no matter how quickly population recovers, it is through increased foreign receipts from exports and other means that economic growth must largely occur, which implies that the Niuean economy is bound to remain very open to external influences.

The most striking feature of the economy is its external relations: a widening trade deficit is common to all Polynesian countries but is especially marked in Niue (Figure 6.2). This divergence has not been smooth due to fluctuations in export volumes and prices, and the impact of imports of large capital items, but the trend is unmistakable and shows no sign of abating.

The viewpoint expressed by Kakazu (1994:41), that the growing discrepancy between exports and imports has thus far been resolved through inflows of aid and remittances, among other 'invisible trade
Figure 6.1  Population of Niue, selected years, 1961–91

receipts', is widespread. This is correct as far as it goes, but is an incomplete explanation of the causal relationship between inflows and the deficit. The former also contributes substantially to the latter through the 'Dutch disease' effects (Corden 1984). Inflows from aid and remittances lead to a higher exchange rate, discouraging exports and encouraging imports.

It is mainly aid receipts that are important in Niue, as net remittances are much less significant than in other Polynesian countries. The major aid donor, New Zealand, has recently reduced its aid package and converted a significant proportion from general program aid to project aid, but aid remains the dominant source of finance in the economy.

In Niue the 'Dutch disease' effect is not directly reflected through an overvalued domestic currency because New Zealand dollars are used. Indirectly, however, the government has been able to continue using the New Zealand dollar without incurring balance of payments problems because of the inflow of aid. Inflation rates have approximated those in New Zealand.

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Figure 6.2  Trade deficit, Niue, 1970–93 ($NZ)

It would be useful to report on trends in national production, but time series data on national income are lacking. Estimates of GDP made for 1990/91 nevertheless reveal something of the composition of economic activity.

The contributions of agriculture to the economy

The main agricultural production activities in Niue are coconuts, bananas, root crops, breadfruit, pawpaws, honey, pandanus, pigs, and poultry. Passionfruit and limes have assumed considerable importance in the past but in the mid-1990s are not major production activities. Coconuts occupied 401 hectares in 1989; bananas, 33 hectares; taro, 422 hectares; and other root crops, 24 hectares (Government of Niue, Statistics Unit/DAFF 1990:10).

Agriculture has generally been placed at the forefront of plans by governments of South Pacific countries to help generate economic development. It has traditionally been the sector that provides the bulk of both employment opportunities and export earnings as well as contributing a significant proportion of GDP. This situation applied in Niue in the past, but the role of agriculture has diminished over time and its recent performance has been disappointing.

Output

GDP was estimated at NZ$11.75 million in 1990–91, of which three-quarters was attributed to the public sector (Figure 6.3). Agricultural domestic product was estimated to be NZ$1.9 million, or 16 per cent of GDP.

Total GDP figures are available for 1977/78, but exclude subsistence agricultural output. Even so, in 1990/91 dollars, GDP was NZ$10.63 million (NZ$2.65 million in 1977/78 dollars), probably greater than in 1990/91 after subsistence output is included.

Although a time series of GDP figures is not available, it appears that there has been a marked decline in the share of agriculture in total output, punctuated by short-lived booms in new agricultural industries. Such an underlying trend is common in other countries as manufacturing and service industries grow in economic importance.
at the expense of primary industries such as agriculture, fisheries and forestry; but Niue has not followed this typical growth path. The decline in the contribution of agriculture to GDP has largely been caused by the rise of bureaucracy, associated with the public tasks of running a national government with an extremely small economic base. Growth in tourism has also helped. In the future, increased activity in the other primary industries of forestry and fisheries is likely to play a more prominent role.

An Australian project is being implemented in which it is planned to plant 100 hectares of trees for commercial forestry per year over the next 40 years. Commercial fishing probably has only limited scope for expansion, as there are risks of over-exploitation of inshore resources (Lane 1994:43) and the capital costs of establishing a viable off-shore industry are high. But Taiwanese vessels were granted licences in 1993 to operate in the EEZ for a fee of NZ$45,000 per year (Lane 1994:43), and earnings from licences could be expanded with increased knowledge of fishery resources in the EEZ and greater ability to enforce licences.

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**Figure 6.3  Sectoral shares of GDP, Niue, 1990–91 (per cent)**

![Sectoral shares of GDP, Niue, 1990–91](chart)

Reduction in the size of the public service in the 1990s would have had a marked impact on the share of GDP contributed by the public sector although no evidence is available to gauge this impact. Private sector output in secondary and tertiary industries is likely to have benefited most, although some expansion in agricultural output should also have taken place.

Secondary and tertiary output is nevertheless a small proportion of total output because of the limits placed on expansion by the small domestic market size. The three industries in these sectors with the potential to break the shackles imposed by private domestic demand are construction (through projects funded by aid), and tourism and handicrafts (through increased foreign demand).

Despite the likely recent impetus from slimming the public service, there is considerable doubt on whether the value of agricultural production has risen in real terms. Some insight can be derived from the combined facts of a falling population (and therefore demand for food, other things being equal) and stagnant agricultural exports since the 1970s (notwithstanding a short-lived export boom in the early 1980s). The lack of growth in exports has been a major factor contributing to the growing balance of trade deficit.

To a large extent the trend in total exports could reasonably be expected to approximate the trend in output. Exports have been on a downward trend since the early 1980s with one recent exception of taro exports (Figure 6.4). Export values are dominated by agricultural products although manufactured footballs briefly threatened to replace them in importance in the period 1980–84.

A boom–bust syndrome of agricultural exports is evident, with four short-lived commodity export booms (in passionfruit products, lime products, coconut cream and pawpaw) during this period, and a fifth boom (root crops) currently in progress (Figure 6.4).

The largest boom was in coconut cream exports, with almost NZ$1 million of exports at their peak from 1981 to 1983, eclipsing the copra industry and being a major cause of its demise. The coconut cream industry was unique in that it was based on private enterprise, but it was also short-lived, beginning in 1980 and collapsing in 1988 with
the closure of the coconut cream processing plant (Varnakulasingam 1991:27). A shortage of coconuts due to drought contributed to the collapse but the main reason was a dispute between growers, who felt they were not being paid enough for their nuts, and the processor who then moved his operations to Cook Islands (S. Talagi, personal communication, 1994).

Exports of passionfruit products took place over a longer period, commencing in 1965, reaching a peak of NZ$194,000 in 1979 when there were 220 listed growers who had planted about 135 acres (54 hectares) (Government of Niue 1979), and disappearing by 1985. Three types of product were exported—fresh passionfruit, pulp and juice—with a good niche market exploited in Japan for fresh fruit. The failure of the industry was due in part to production problems, namely poor selection of planting materials, the incidence of pests
and diseases and inadequate pollination procedures; but the main problems in the final years were in management and poor economic prospects in processing and marketing.

The lime export industry followed a somewhat similar pattern. It also existed for a long period—from 1973 to 1988—and peaked twice: at NZ$32,000 in 1979 and NZ$34,000 in 1984. At its height in 1979 there were 225 growers farming 155 acres (62 hectares) (Government of Niue 1979:39). The lime industry had three important production advantages over passionfruit: no pollination requirements, easier maintenance and less labour intensive. There was also a relative disadvantage in that growers had to wait longer to get returns from their investment. Cyclone Ofa precipitated problems in the industry when a large number of trees was uprooted. The overriding cause of industry failure was a lack of economic outlets for exports of limes or lime juice and oil, attributable to transport constraints and the dubious economics of processing (GRM International 1994).

Finally, pawpaw purée was exported between 1977 and 1983, and reached a peak annual value of NZ$23,000 in 1980. The major reasons for failure of the export industry were, again, processing and marketing limitations. These dangers were already foreseen by the Government of Niue (1979:40) when the industry was approaching its zenith.

The boom–bust syndrome presents governments pursuing export-oriented development strategies with four main obstacles to overcome

- the demanding requirements of export markets
- the fragile nature of many niche export markets which can be difficult to defend
- comparative advantage in production of agricultural export commodities not matched by comparative advantage in downstream value-adding activities and marketing
- the onerous limits placed on exporting by inadequate transport facilities.

These obstacles are often compounded by production constraints, namely, climatic factors, strict maintenance requirements, and pests.
and diseases. (Production constraints are dealt with in greater detail in Chapter 8.)

Extensive damage to crops caused by cyclone Ofa in February 1990 largely explains the poor export performance in the period 1990–91. But the successful expansion of taro exports, beginning in 1992, masks the fact that export performance has shown little sign of recovery after the effects of the cyclone dissipated.

The recent expansion of root crop exports occurred primarily in response to shortages of taro in New Zealand. Shortages in turn arose from the cessation of taro exports from Western Samoa as a result of the incidence of taro leaf blight and coincided with a one-off increase in the number of farmers in Niue (because of public service cutbacks) looking for export opportunities. The long-term future for expanded taro exports to New Zealand is problematic. On the positive side, Niue looks set to emulate the performance of farmers in Western Samoa in developing what was for the Samoans a lucrative agricultural export market until the incidence of leaf blight. Three clouds are on the horizon, though. First, if Western Samoa overcomes its disease problems, it should return to the New Zealand taro market, and the current high prices would disappear. Second, in the long term, increased substitution of domestically produced starchy food products for taro by the next generation of the expatriate Polynesian population in New Zealand would reduce overall demand for taro imports. Third, a lapse in quarantine could see Niue facing the same disease problems in taro as those experienced in Western Samoa. If these clouds begin to close in, taro could join the list of boom–bust exports from Niue, confirming the very dismal prospects for the sustainable development of new agricultural industries.

Supply of food

Statistics are unavailable on the amount of food produced in the agricultural sector to meet the demands of domestic consumers, but some idea of the performance of agriculture in this regard can be gauged by examining food imports. Food accounts for around 40 per cent of total imports, an equally important category as fuel and transport equipment and parts (Government of Niue, Statistics Unit 1993:30). The importance of food imports is not surprising as it is difficult for such a small economy to
possess food processing industries which can satisfy the varied food demands of a population that has been widely exposed to Western food consumption habits. The nature of the local demand for food means that the scope for satisfying demand by increasing raw food production is very restricted. It makes more economic sense to aim to satisfy this demand by increasing agricultural or other exports to pay for growing food imports.

The proportion of total exports to food imports has been declining rapidly since the early 1980s (Figure 6.5). Growth in agricultural exports in the late 1970s and early 1980s augured well for meeting increases in food imports, and the proportion of exports to food imports actually increased from 0.56 in 1972/73 to 0.65 in 1982/83. The precipitous decline in the ratio to 0.18 over the next decade, though, is alarming.

This decline would appear all the more alarming as the population declined by around one-third over this period. The impact on

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<th>Figure 6.5</th>
<th>Ratio of total exports to food imports, Niue, selected years, 1971–93</th>
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1972-73 1982-83 1992-93

domestic food consumption of this decline has been largely offset by increased tourist numbers, up from 361 in 1988 to 1,668 in 1992 (Government of Niue, Statistics Unit 1993). In fact, food imports increased moderately in real terms between 1982/83 and 1992/93 by a little over 12 per cent (Government of Niue, Statistics Unit 1993, 1994).\(^1\) This increase in food imports is not a problem in itself, but the growing inability of exports—which virtually means agricultural exports—to pay for food imports spells trouble in the future unless either agricultural export values increase or an alternative means is found to increase foreign inflows.

**Agricultural outputs as inputs**

The strengthening of linkages between agriculture and other industries can be an effective way of improving agricultural incomes through vertical diversification. Agricultural income increases as the derived demand for agricultural commodities increases from the emergence of high value-adding industries, such as processing and tourism. The crucial question is whether such industries do indeed add value in a sustained profitable fashion.

The processing of agricultural products for export has unfortunately had a patchy record in Niue where it is dictated largely by the transience of international markets for semi-processed exports. Examples include lime products, passionfruit products and coconut cream. Only a less intensive form of processing coconut (into copra) was sustained for a long time, but even that activity died out in the 1980s as the higher value-adding coconut cream industry became a more profitable destination for coconuts than the copra industry. Two other industries which require processing of the raw material have been more sustained: honey and handicrafts.\(^2\) Both industries reached their peak during the export boom of the late 1970s and early 1980s. The export market shares of processed products in both industries, however, have been under pressure in the 1990s (Figure 6.4), mainly because of marketing difficulties. In the tourist market, the handicraft industry is also experiencing difficulties in adapting to tourists’ needs. Despite their recognised high technical quality, handicraft producers have not provided goods that can be easily transported back to the home country of the tourist. But the initial decline in handicraft exports began over a decade ago in 1981 when the value of exports...
declined by one-third from the peak in 1980; it halved again in 1981, and then more than halved again between 1985 and 1986. This precipitous fall in handicraft exports coincided with the brief emergence of manufactured footballs as a major export commodity. It confirms the concern expressed by the Government of Niue (1979:45) that 'current industrial projects (e.g., soccer-ball factory) may divert some of the [handicraft] producers from their present work'.

There is little evidence of processing agricultural products for the domestic market. Some recent activity has occurred in meat processing and some crops such as bananas made into chips. But this is almost totally due to a single recent initiative rather than embryonic industrial expansion.

The tourist industry is a major source of revenue, estimated at NZ$167,000 in 1992 (Government of Niue, Statistics Unit 1993:6). It is difficult to obtain data on the extent to which changes in the tourist industry influence the derived demand for food and for raw materials used in the handicraft industry. In the case of food demand, leakages to food imports are high among the more formal institutions catering for tourists, with the exception of fish, but linkages are likely to be stronger in the village-based sector of the industry. Evidence of growing food imports in the face of a declining population suggests that most demand for food by tourists is being met from imports, but this remains a hypothesis to be tested.

**Employment** Remunerative employment opportunities are a precondition for enticing expatriate Niueans back home to stay and for meeting the job aspirations of school leavers. While emigration has historically been the safety valve preventing large unemployment, the number of jobless has grown in recent years with a 5.5 per cent unemployment rate recorded in 1989 (Government of Niue, Statistics Unit 1993:36). As the most important employer of labour historically, agriculture might be imagined as a candidate for providing jobs to new entrants to the labour force as well as returned migrants, but the reality is different. While the following quote from Kakazu (1994) was made in relation to the Commonwealth of
Northern Mariana Islands, it can be applied equally well to the recent history of Niue, substituting foreign aid for federal grants.

[T]he increasingly heavy proportion of the public sector, supported by federal grants [foreign aid], has encouraged locals to seek the relatively high-paid and more prestigious government jobs and has naturally discouraged them from engaging in agricultural development...farmers rapidly lost their interest in farming and as a result, during the 1980s commercial agriculture...virtually disappeared (Kakazu 1994:76).

The crowding out effect of public sector employment on the private sector is significant in Niue (Figure 6.6). High recruitment levels in the public service in the period 1975-77 and again in 1982 coincided with scarcely any leavers entering private employment. Cuts to public service employment and no recruitment in 1990, combined with government inducements to enter private enterprise, saw an upsurge

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Figure 6.6  Destination of secondary school leavers, Niue, 1975-90 (per cent)

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in private sector employment in that year. The latter event however
did not include an increase in those working in the household, which
would include farmers.

Agriculture has not been a popular vocation for young people entering
the workforce in Niue, with its popularity eroded by emigration—
either to work or for further study—and public employment. It is
probable, then, that it will not play a major role in providing
employment opportunities in the future unless

- New Zealand aid funds are further reduced
- drastic reductions in aid funds cause large-scale redundancies among public servants
- more positively from a development perspective, profitable and sustainable export industries emerge which offset the current image of agriculture as an inferior occupation.

The export boom from 1979 to 1983 might have had some impact on
the vocations chosen by school leavers because a high proportion
chose to enter private employment in 1980 and 1981, with presumably
a good many going to agriculture-related activities (Figure 6.6). But
it did little to stem emigration and, in fact, a higher proportion
emigrated during this period than before. The proportion of those
staying at home, including those working the land, also declined a
good deal initially, but recovered in the early 1980s as commodity
prices rose. From 1986, the household proportion began to fall and
by the end of the decade reached levels well below those prevailing
prior to the export boom, in line with deteriorating agricultural export
performance.

**Agriculture as a market for other sectors**

Limited demand exists for agricultural inputs with the exception of herbicides, which are used by 87 per cent of farmers, and fertiliser, used by 47 per cent of farmers (Government of Niue, Statistics Unit/DAFF 1990:36); and those used are imported with few value-adding activities in-country. The main market demand provided by farm households is for domestically produced goods and services for consumption but, given the relatively small number of full-time farm families, this demand is fairly limited.
Niue as a MIRAB economy

On the surface, Niue is the archetypal MIRAB economy (Bertram and Watters 1985). Emigration to New Zealand over the years has meant there are now many more Niueans there than in Niue. According to the 1991 New Zealand Census there were 14,556 Niueans in New Zealand in 1991 compared with 2,219 in Niue (Government of Niue, Statistics Unit 1993:9).

Some remittances have followed from this emigration, although they have not been as great per head of population as in other Polynesian countries such as Tonga and Western Samoa, and have dried up somewhat in the past few years with difficult economic conditions in New Zealand (Figure 6.7). On average, remittances from Niue were actually larger over this period than inward remittances. Another feature of note is the large variability in net remittances, ranging from a net inflow of NZ$1.06 million in 1990 to a net outflow of NZ$5.35 million in 1988. This variation is brought about primarily by the initial

Figure 6.7 Remittances through savings bank facilities, Niue, 1987–90 ($NZ)

Note: Unfortunately, later figures could not be obtained.
movement of people, payments in informal exchanges of goods, investment capital transferred between Niue and New Zealand, and the fulfilment of social obligations.

Aid has dominated inflows. In 1990/91, aid funds received from New Zealand totalled NZ$7.5 million out of total government revenue of NZ$9.7 million (which also included aid funds from other donors) (Government of Niue, Statistics Unit 1993:11). These funds were 64 per cent of the estimated GDP in that year. Government expenditure was around NZ$7 million—less than New Zealand aid (Government of Niue, Statistics Unit 1993:11). To this point New Zealand aid was given in the form of program assistance, but more recently around 30 per cent has been provided as project support. New Zealand also has been cutting back on total aid provided in recent years, beginning with a reduction to NZ$6.3 million in 1991/92 (Government of Niue, Statistics Unit 1993:11). Finally, although the bureaucracy had been overwhelmingly the most important employer in the formal sector in Niue until 1991 when its size was reduced in response to the reduction in New Zealand aid, it remains the most important source of formal employment.

Government macroeconomic policy is largely dictated by the country’s economic relations with New Zealand. The level of government expenditure depends on the level of aid provided by New Zealand, and wage levels are influenced primarily by wage levels and job opportunities for emigrant Niueans in New Zealand.

Like most other Polynesian and Micronesian countries, Niue has a large EEZ containing marine resources that the country cannot hope to exploit to anywhere near their full extent on its own. As Lane observed, the government of Niue has the opportunity to ‘seek foreign tenders for fishing licences which could incorporate conditions relating to reporting, monitoring and enforcement’ (1994:17). Rents from fishing licences add to other types of rents received by MIRAB nations.

"Government macroeconomic policy is largely dictated by the country's economic relations with New Zealand."

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Physical

Unlike some other Polynesian countries (notably Tonga and Tuvalu), Niue does not have a fragmented land mass. It comprises ‘a single up-thrust coral atoll which over many thousands of years has emerged in stages out of the ocean...[due either to] internal volcanic activity...[or] buckling of the Pacific tectonic plate’ (Lane 1994:6). The land area is 259 square kilometres of which, in 1981, 46 per cent was light and scattered forest, 30 per cent open areas, and coastal forest and merchantable forests accounting for 12 per cent each (Government of Niue, DAFF 1993). Between 1966 and 1981, the open areas had increased by 144 per cent while merchantable forest had declined by 42 per cent and light and scattered forest by 14 per cent (Government of Niue, DAFF 1993). Unfortunately, more up-to-date figures on vegetation are unavailable.

Lane describes the soils as

in general...limited in availability, often too alkaline for many agricultural plants, porous, and low in some chemical elements critical to soil fertility (particularly nitrogen, potassium and the trace element zinc) and, as such...typical of most coral islands. A combination of large areas of exposed rock (boulders and pinnacles) and poor quality soils means that about 30 to 40 per cent of Niue is unsuitable for agriculture. Broad scale agricultural production is limited, although good quality forests and typical Pacific food plants are successfully grown.

Soil improvement, usually through mulching of plant material (to keep the organic material in the soil high), is required to support horticultural use. Under the traditional slash and burn agricultural techniques (still the usual farming practice), cropped areas must be left for up to ten years before being re-used. Use of chemical fertiliser is encouraging shorter rotation periods (1994:9). The generally loamy soils are somewhat uneven in depth (Wright and van Westerndorp 1965). They drain very easily and there are no rivers or creeks on the island. During the 1960s considerable soil damage over wide areas resulted from the use of discing for cultivation, a practice long since stopped—but the legacy remains.
People rely on groundwater resources for domestic use. These resources are susceptible to pollution because of the porosity of soils, and hence there is a risk that vegetation clearance and intensive agricultural practices involving the use of chemicals could cause deterioration of water quality. A negative impact of vegetation clearance is suspected, due to increased inflow rates and deterioration in quality, but evidence is lacking at present (Lane 1994:9).

Lane's contention that slash and burn cultivation techniques are still the usual farming practice is belied by statistics produced in the 1989 Agricultural Census (Figure 6.8). The loss in popularity of the traditional slash and burn method of clearance for cultivation has its roots in the economics of labour use in a country in which farm labour has become increasingly scarce, the reservation price of labour is high and the farm population is ageing. Use of a bulldozer offers a quick, labour-saving alternative to manual land clearing at a subsidised rate of NZ$75 per hour. Like fertiliser use, it also probably reduces fallow periods by enabling a larger area of land to be cultivated with available labour than is possible with slash and burn techniques. It

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**Figure 6.8** Method used for land clearance, Niue, 1990
(per cent)

- **Bulldozer** 81%
- **Slash and burn** 18%
- **Other** 1%

**Source:** Government of Niue, Statistics Unit/DAFF, 1990. *Agricultural Census*, Administrative Services Department, Alofi.
can also be used for clearing in the wet season when slashing and burning is ineffective.

The agricultural sector is predominantly smallholdings, yet the average size of farms is quite large by smallholder standards. It was estimated to be 15 acres (6 hectares) excluding coconut and fallow land in 1989 (Government of Niue, Statistics Unit/DAFF 1990:41). Farm size is not particularly skewed, and only 8 per cent of household farm areas are greater than 24 acres (10 hectares).

The agricultural land-population ratio has been declining with the decline in population. In 1971, the population density per square kilometre was 20; by 1990 it had declined to 9. By South Pacific standards, this ratio is now quite favourable in terms of pressure on the land, although fallow cycles are still becoming shorter. In 1989, the ratio of fallow to cultivated land (excluding land under coconuts) was about 1:3, implying average fallow periods of around three years (Government of Niue, Statistics Unit/DAFF 1990:46). There is considerable variation between districts, ranging from 11 per cent of land under crops in Makefu to 62 per cent of land under crops in Lakepa. But the conclusion drawn by Government of Niue, Statistics Unit/DAFF (1990:46) that 'there appear to be few signs of land pressure in Niue' appears justified even though Lane (1994:9) observed that '[u]nder the traditional slash and burn agricultural techniques...cropped areas must be left for up to ten years before being reused'.

A high proportion of agricultural land is family owned—94 per cent of all parcels in 1989, according to the Government of Niue, Statistics Unit/DAFF (1990). Lane described the customary land system as follows.

Most land in Niue stays in the ownership of extended families...and is managed on behalf of the family by the...trustee/s or guardian/s of the land on behalf of all the members of the family with an interest in the land...Disputes are dealt with by the Land Court which has exclusive jurisdiction over all land matters. This includes issues of ownership, possession, occupation, use, rights to proceeds from sale or lease, and boundary disputes.
Land ownership and land-use rights are complex in Niue. Owners have significant rights over what they do with their land. Government intervention is generally limited to acquisition for public purposes (1994:40).

Most disputes over land for agricultural purposes have arisen within families, and so land titling is unlikely to have a great impact on agricultural land use. But the increased use of bulldozing for land clearance has destroyed many boundary landmarks, raising the possibility of boundary disputes in the future.

Land ownership and use patterns are fairly consistent throughout the island. The most identifiable source of differentiation of landholders is their location, as many owners live in New Zealand. Unless the land of absentee owners is used by relatives, it may lie underutilised for long periods.

**Climate**

Climate is characterised by moderate but variable rainfall of around 2,000 mm per year, with 68 per cent occurring during the wet season, and maximum (minimum) daily temperatures that average 30° (23°) in the wet season and 26° (19°) in the dry season (Lane 1994:11). It is thus quite favourable for agriculture, with year-round production possible. The one, albeit dramatic and significant, negative aspect is the irregular but frequent occurrence of cyclones. A chronicle of cyclones shows that one severe cyclone can be expected each decade, causing massive damage to crops (Lane 1994:11).

**Tree crop plantations**

According to the Government of Niue, Statistics Unit/DAFF (1990), around half of the agricultural area was under cultivation in 1989. Of those parcels not fallow, 396 hectares were under coconuts, with 255 hectares planted to coconuts, 94 hectares scattered coconuts outside parcels of land, 45 hectares scattered coconuts within parcels of land, and 2 hectares of minor household coconuts. The second most populous tree crop is breadfruit; there were an estimated 3,656 breadfruit trees in 1989, or 7 per household (Government of Niue, Statistics Unit/DAFF 1990:48). Significant numbers of lime trees, pandanus, pawpaw, chestnut, guava, mango and spondias are also present.
The production potential of coconut plantations has been enhanced substantially as a result of a UNDP-funded coconut rehabilitation project initiated in 1985. This project led to the planting of 13,912 coconut palms, which represent almost one-quarter of the total number of 63,386 in 1989 (Varnakulasingam 1991:1).

A consequence of the rehabilitation project is that coconut output is projected to double from 285 tonnes (in copra equivalent) in 1990 to 574 tonnes by 1995, reversing the declining trend of the 1980s. Given current patterns of coconut utilisation, there will be a surplus of 152 tonnes by 1995 (Varnakulasingam 1991:25).

Livestock

There is a relatively large number of pigs and poultry, with an estimated 80 per cent of agricultural households having some livestock and around two-thirds keeping pigs and slightly more keeping poultry. Total numbers in 1989 were estimated to be 1,527 pigs and 9,715 poultry (Government of Niue, Statistics Unit/DAFF 1990:31). Distribution among households is skewed for both types of livestock: 2.5 per cent of households owned 17 per cent of the pig population and 6 per cent of the households kept 25 per cent of the poultry in 1989 (Government of Niue, Statistics Unit/DAFF 1990:31-2).

Unlike pigs and poultry, whose numbers have increased over time, cattle have been declining in number. In the mid-1970s there were around 700 head, but this number had declined to 129 by 1989 (Government of Niue, Statistics Unit/DAFF 1990:49) and to 98 by 1993 (Misikea 1993:3).

Machinery, equipment and vehicles

Most farm households use simple tools and equipment for farming apart from the few who draw water from bores. The major—and most contentious—item of machinery is the bulldozer which is used on a communal basis for land clearing. It is owned by the government and responsibility for its operation is spread across three institutions: the Civil Division of the Public Works Department, the Department of Agriculture, Forestry and Fisheries (DAFF) and Moui FakaNiue (MFN). The MFN decides on areas to be bulldozed according to demand by farmers and the forestry sector, while the Public Works
Department controls machinery use. Use of the bulldozer is contentious for three reasons. First, some people still have doubts about the soundness of its use from an environmental standpoint: it leads to the felling of many large trees and enables farmers to clear the more inaccessible land adjacent to traditional forest reserves that is less ecologically robust. Second, its frequent mechanical failures mean it is idle for considerable periods of time, upsetting farmers’ planting plans. These failures are purported to have reduced the quantity of taro exported to New Zealand in the past year by a considerable amount. The Growers Association Executive Committee (personal communication, 1994) reckoned that the latest shipment of 153 bags of taro would have been in excess of 1,000 bags if the bulldozer had been in regular service. Third, concern has been expressed by the Growers Association Executive Committee that the machine could be diverted to other uses in the future, further restricting farmers’ access to it.

The country is well served for transport by motor vehicles. A total of 580 vehicles was registered in 1990/91 of which 177 were pickups or vans (Government of Niue, Statistics Unit 1993:11), enabling easy access to production sites and town.

Considerable investment took place in the 1970s in a factory housing machinery for processing passionfruit, coconuts, pawpaw and limes. Unfortunately, the equipment was abandoned following the collapse of the limes industry, and its salvage value is probably negligible (GRM International 1994:22).

**Human resources**

Total numbers employed in agriculture and fishing in 1991 were 21 in paid employment and 294 of self-employed or unpaid status. Together these represented just over 30 per cent of the total labour force (excluding unemployed). Although 85 per cent of households claim to be active in agriculture, only 17 per cent earned cash income from agriculture and only 4 per cent were described as fully commercial in 1989 (Government of Niue, Statistics Unit/DAFF 1990:29). A mere 7 per cent get more than one-quarter of their cash income from agriculture. Farming, then, is predominantly a part-time occupation.
The low status of agriculture relative to employment in the public sector largely explains the relatively small number fully employed in farming. An initiative to reduce numbers employed by the government was commenced in 1990/91, and the number of government employees as well as their share of total employment declined markedly between 1982 and 1991 (Figure 6.9).


Two direct consequences of this cutback, with opposing effects for agriculture, are that it led to an increase in the number of farmers since the 1989 Agricultural Census as some retired public servants turned to full-time farming (Government of Niue, Statistics Unit/DAFF 1990). Second, cuts in the public service affected numbers in public institutions serving agriculture, especially in the DAFF, and reduced their ability to support agricultural development.

**Figure 6.9**  Paid employment by sector, Niue, 1971–91

![Paid employment by sector, Niue, 1971–91](image)

The two principal features of the agricultural labour force are that it is predominantly male (88 per cent) and ageing (Figure 6.10). By 1989, over 60 per cent of farmers were 45 years of age or older. This proportion is likely to have increased in the succeeding years as a number of retired public servants have become full-time farmers. Only 6 per cent were aged 24 or younger—less than half the proportion aged 65 or over. This effect is accentuated by the fact that a high proportion of male farmers under 55 hold full-time paid jobs, so that their involvement in farming is part-time. On the other hand, 63 per cent of operators with no paid employment were over 65 and 65 per cent of female operators had no paid employment (Government of Niue, Statistics Unit/DAFF 1990:39).

The population in Niue has a high literacy rate and is, by developing country standards, very well educated. It is also healthy, with no evident malnutrition. Links with New Zealand and the University of the South Pacific have meant that technical and higher education standards available to students have been strong. It also means that the bulk of the farm population is capable of using quite advanced production methods, gaining and using knowledge of product requirements for marketing, and managing risks inherent in farming.

**Figure 6.10** Composition of the agricultural labour force by sex and age, Niue, 1989

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<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>15-24</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>25-44</td>
<td>160</td>
<td>40</td>
</tr>
<tr>
<td>45-64</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>65+</td>
<td>20</td>
<td>10</td>
</tr>
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Two negative issues are the danger of losing traditional knowledge and skills in farming with the passing of the current generation of older farmers; and past inadequacies in providing agricultural education.

**Infrastructure**

The island is ringed by a main road with several inland roads reaching every village. All villages are electrified and have good access to telecommunications facilities, with one telephone for every eight people and a television receiver for every seven people. There are two important implications for commercial agricultural development.

- Internal transfer of agricultural inputs and outputs is not a great problem: goods can be transferred between farms and port and domestic consumer markets quickly, easily and at little cost given the plentiful supply of pickups and vans.

- Farm households have a fairly good knowledge of the outside world and can communicate quite easily with people in nearby countries such as New Zealand, Australia and other South Pacific countries.

International air links are very limited, currently comprising one weekly flight by Air Nauru between Auckland and Niue. Air freight services are consequently also very limited, more so as there are restrictions on loads imposed by the short length of the runway. Equally of concern, the volume of freight on each flight is uncertain: it is difficult for exporters to know in advance how much they can send on each flight, making the air freighting of perishable produce very risky.

International shipping is also very limited. There is a monthly cargo service provided by the Cook Islands National Line from Auckland to Niue to Rarotonga and back to Auckland.

**Quarantine**

Fumigation facilities are currently not in operation. Other, more sophisticated equipment for using advanced technology for treatment of produce is not available.
Research

Two research farms are operated by the DAFF. Vaiea Research Farm is set up for livestock research. Few research facilities exist at present. Research activities at Vaipapahi Research Farm are directed towards improving crop productivity. Assets include a shade house, other buildings, various trees and some laboratory equipment. Facilities are comparatively modest, but this is to be expected given the small size of the agricultural sector.

Institutional factors

Allocation of funds

Access to the resources of public institutions by farmers and agricultural marketers depends chiefly on the number of skilled and experienced public service personnel who deal with agricultural issues, the allocation of funds by government and aid agencies to the agricultural sector, and information about the agricultural sector.

Apart from the squeeze on public service positions that affects all government departments, agriculture is coming under increasing pressure for personnel within the DAFF from the developing forestry and fishing industries (9 of the 28 permanent positions in the Department are now allocated to fisheries and forestry sections compared with 12 in plant protection, crops and research, advisory and livestock sections) as well as from outside the department from the greater involvement by the government in environmental issues. The DAFF especially lacks marketing and economic analysts. Even though it currently has a competent trade and marketing officer, plans are afoot for this person to be only partly available to work on agricultural marketing issues and to be relocated in central planning (Government of Niue, PSC 1994).

The share of government recurrent expenditure going to agriculture over the four-year period 1973–76 was 12.1 per cent (UNDAT 1977) but less than a decade later it had almost halved, with a three-year average for the 1980–82 period of 6.7 per cent. This share has since declined to 4.5 per cent in 1993/94 (Government of Niue 1994), and is well below the estimated GDP share of agriculture of 16 per cent in
Transport shortages have become particularly acute for agricultural public servants (Government of Niue, PSC 1994:8).

The share of capital expenditure going to agriculture was substantial in the early 1980s, coinciding with the boom in some export crops. In 1980/81, for example, 39 per cent of capital expenditure by the government for economic sectors, and 9 per cent of the total capital budget, was allocated to agriculture (Government of Niue 1979:147). In addition, the agricultural sector shared substantially in the capital expenditure on transport which was 38 per cent of the total capital budget in that year. In recent years, the share of capital expenditure allocated to the agricultural sector has been much less as development expenditure by the government has increased in sectors such as tourism, forestry and fisheries. Even the land titling project being funded by the New Zealand government is oriented more towards forestry development than agricultural development. The major proposed expenditure in infrastructure is in extending the runway. This could have significant ramifications for agricultural exporting.

Research and extension

Given the limited research infrastructure and small number of research personnel, it is difficult to undertake useful research other than small applied tasks. A wide range of activities is researched given the resources available.

Availability of relevant information about the agricultural sector depends crucially upon the extent to which an institutional memory, particularly in the DAFF, has enabled its accumulation, and on the systems for processing and disseminating such information to key decision-makers.

Commercial regulations

The existence of a good legal system enables commercial transactions to be carried out in an equitable way, providing a sound framework for commercial development. One commercial bank provides financial services, but farming activities account for a minuscule share of them.

Two institutions have been established to assist agricultural production and marketing: a Growers Association and the MFN. The Growers Association is active, and provides a useful forum for...
disseminating new ideas and getting feedback on factors constraining agricultural development. Although not an official government body, the MFN was established by the government with the responsibility of trying to get private enterprise moving to compensate for the cut in public service jobs. It seems to have had limited success to date in establishing a role for itself, and faces an uncertain future.

Local government A well established local government capability exists where each village has its own village council (Government of Niue, Statistics Unit 1993:5). This helps in the implementation of village-level agricultural and other rural-based projects. Village councils have played a positive role in the distribution of small loans to villagers. As in most Pacific countries, absence of pests and diseases is a major advantage possessed by the agricultural sector in Niue, making quarantine services critically important, and of obvious concern in DAFF activities. They have two main purposes: keeping out pests and diseases and meeting quarantine protocols in export destinations. The top priority in the latter case is meeting the phytosanitary requirements for imports into New Zealand, because it is the major export destination as well as having very strict entry rules. DAFF quarantine officers have been working with the New Zealand Ministry of Agriculture, Forestry and Fisheries to refine operations and clarify requirements (e.g., Talagi 1993:3).

Geopolitical Kakazu (1994:61) identified ‘political ties, strategic locations, international security, and goodwill’ as factors that can be used by small South Pacific island countries to obtain remittances, particularly in the form of overseas development assistance from Pacific rim countries, which can be used for development purposes. Niue has put its geopolitical resources to good effect.

Services of regional institutions to which Niue has access include those provided by the South Pacific Commission, Forum Secretariat, South Pacific Regional Environment Programme, the University of the South Pacific and ESCAP.
Strengths

The generally healthy and well educated people of Niue are its major strength, and they stretch beyond the physical boundaries of Niue. Other strengths of agriculture shared with other Polynesian economies include ‘islandness’ and smallness; traditional, well understood and practised production processes; and a land tenure system that has so far engendered a degree of security for the poorer sections of society. The political system is apparently stable and there is a reasonably solid subsistence base for most households.

Physical characteristics advantageous to Niuean agriculture are climate (despite some unreliability in rainfall and cyclones) and the land–person ratio. The climate allows the production of a wide range of agricultural products. The favourable land–person ratio means that production pressures on the land are low relative to many other South Pacific countries.

Unlike the situation in some other Polynesian contexts, farm access is almost universally good throughout the country. Moreover, the farm population is supported by organisations such as the Growers Association, the MFN and well trained staff in the DAFF. Considerable potential exists for the expansion of agricultural activities which can produce high-quality output. Examples are limes, passionfruit and vanilla.

Weaknesses

The weaknesses of the agricultural sector have been highlighted by a number of observers (e.g. Fisk 1978). The main ones are: a small economy; uncertain export markets; a narrow range of export destinations and product range for agricultural exports; lack of a critical mass of trained and experienced personnel in key rural institutions; low status of agriculture; a land tenure system inhibiting entrepreneurial development in agriculture; locational disadvantages; fragile agro-ecosystems; susceptibility to intensified competition for resources and unfavourable macroeconomic impacts of MIRAB activities; emigration of able-bodied and enterprising people from rural occupations; and susceptibility to natural disasters, especially cyclones and occasional short-term droughts.
Perhaps the main weakness is the locational disadvantages of remoteness from agricultural export markets and suppliers of agricultural inputs that leads to high international transport costs exacerbated, acutely in the case of Niue, by limited and irregular freight opportunities. In addition, there is the historical reliance on agriculture to generate economic development through employment and export growth, which has led to unproductive political pressures and interventions in that sector, and often ill-considered development initiatives.

Two further weaknesses specific to Niue are the high standard of living (compared with most South Pacific countries) and opportunities for employment from migration. Both mean that agriculture faces a high opportunity cost of labour.

Opportunities

Opportunities include the scope to exploit small niche markets, and the high rates of aid receipts per capita that could be used to promote agricultural development. There is also an opportunity to make use of expatriate Niueans in marketing channels for developing agricultural export markets, while the expatriate population provides a target consumer group for a market differentiation strategy to develop agricultural exports (already happening to some extent with taro exports).

There is a possibility to increase food sales to the tourist sector if tourism expands significantly and an option of joint export arrangements with other South Pacific exporters of similar products. There is also scope for more involvement of women in agricultural production and marketing through training and assistance.

The recent reduction of the size of the public service has made agricultural production a relatively more attractive option.

Threats

Threats include the usual ones for Polynesian economies: export market instability; soil degradation; increased competition for land from other uses; risks of quarantine lapses or failures in quality, pest and disease control in production or marketing; and possible deterioration in transport services.

More specific to Niue are continued emigration and/or deterioration in the employment status of agriculture further exacerbating the problem...
of attracting labour into agricultural activities; increased substitution for domestically produced food products by consumers in Niue and the expatriate population in New Zealand reducing overall demand for them; and reduction in numbers and funding of agricultural support staff reducing the capacity of agriculture effectively to respond to new opportunities.

Finally, failed development initiatives that have left the farm population cynical about new development projects make it difficult to get farmer cooperation for new export-oriented agricultural activities.

Endnotes

1 The consumer price index (Government of Niue, Statistics Unit 1993) was used to deflate 1992/93 food import values to enable comparison with 1982/83 values. This index was also used elsewhere in the study when values are recorded in real terms.

2 Handicrafts are treated as a processed agricultural output because they are the output of a cottage industry based on raw material derived from vegetation—principally, pandanus leaves and coconut frond ribs—planted and maintained by households. Major items produced are mats, baskets, bowls and woven trays which are for subsistence and commercial use. There are two commercial outlets: as exports and sales to tourists.

3 There is also an old privately owned machine, but it is little used because the owner finds it too expensive to keep in operation.

4 Mōui FakaNiue (MFN) is not a statutory body, but was set up by the government as a committee to deal with the fallout following the reduction in numbers of public servants in 1990.
Before selecting a strategy for agricultural development, governments need to sort out the potentially reinforcing or conflicting, but not necessarily mutually exclusive, strands of development philosophy that permeate agricultural development planning processes. Six strands of development philosophy stand out:

- meritocracy
- communitarianism
- autarky
- modified collectivism
- environmentalism
- rent-dependence.

Some strands are more explicit in development objectives than others: autarky and resource conservation aspirations are explicitly included in many development plans. The meritocratic, communitarian, collectivist and rent-dependent strands are seldom explicitly stated in development documents but can be gleaned from the actions of...
the principal actors in the development planning processes and their sponsors (Table 7.1).

**Meritocracy** Meritocracy is consistent with liberalism; it 'advances social justice, by treating people as individuals, rather than just as representatives of social groups, but it also promotes economic efficiency, by allocating jobs to those most capable of doing them' (Anon. 1994b:31). Consistent with meritocracy, liberals favour commerce, not simply for its own sake but 'for the contribution that it would make, through the relief of want and hunger, to the sum of human happiness' (Anon. 1994a:67).

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<thead>
<tr>
<th>Development philosophies for agriculture</th>
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<th>Principal actors</th>
<th>Principal sponsors</th>
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<tr>
<td>Meritocracy</td>
<td>International agencies, governments (partly)</td>
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<tr>
<td>Communitarianism</td>
<td>Politicians, chiefs, non-government organisations</td>
</tr>
<tr>
<td>Autarky</td>
<td>Politicians, non-government organisations</td>
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<td>Collectivism</td>
<td>Aid agencies</td>
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<td>Non-government organisations, aid agencies</td>
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<tr>
<td>Rent-dependence</td>
<td>Aid agencies, foreign governments</td>
</tr>
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**Table 7.1 Principal actors and sponsors of development philosophies found in South Pacific development planning processes**
The chiefly system that exists in several of the Polynesian island nations, at least to the extent that rank is inherited rather than earned, is the antithesis of meritocracy.

Meritocracy's principal actors are individual units, either individuals, households or private firms. The major sponsors are some, but not all, international development agencies (examples are the ADB and the World Bank) and sections of national governments which, as a whole, tend to be somewhat reluctant supporters.

Communitarianism  Communitarianism is deeply rooted in village life and in the sentiments of many chiefs and politicians. It is also favoured by some non-government organisations in the countries under study. It is at odds with meritocracy, favouring the subordination of the individual (or household) to the social group and traditional social order. Self-determination, individual values and autonomy are inhibited by communal values (often articulated by ruling élites); there is an emphasis on the past, manifested in nostalgia for tradition and a 'neurotic fear of the future' (Anon. 1994a:65). Change and an orientation to the future are both opposed. Social differentiation is discouraged, except in so far as it reflects traditional social stratification. The result is a diminution of the division of labour rather than its refinement. Social mobility is restrained rather than encouraged (with the possible exception of international migration) and loyalty to a social group is encouraged, promoting rivalry among different types or levels of aggregation of groups (Anon. 1994a, b). For example, rivalry may be evident between villages and national governments in that people's loyalty and obedience to the rules of village élites may take precedence over loyalty and obedience to national government.

According to one of the foremost proponents of communitarianism, Professor Amitai Etzioni, quoted in *The Economist*, communitarians are 'people committed to creating a new moral, social and public order based on restored communities' (1994a:65). For South Pacific countries, communitarians are concerned not so much with restoration but with perpetuating and strengthening existing social hierarchies, village organisations and communal activities. The main sponsors of a communitarian approach to development tend to be
some chiefs and politicians, especially those whose power largely emanates from their positions in rural communities, and some of the more ideologically driven non-government organisations.

**Autarky**

Autarky as a major plank in development thinking is manifested in a drive for self-sufficiency or, at least, near self-sufficiency. It is usually viewed from a national viewpoint but, in its more extreme form, is also taken to apply to the individual village or even household. Implementation rests mainly with the behaviour and actions of individual rural households whose production and consumption patterns may be influenced or directed by village councils or local élites. Some of the more populist politicians and non-government organisations are the most vociferous supporters of autarky as an end in itself. The growing concerns about dietary and health problems of Pacific islanders, and about the degradation of island ecosystems lead, in the extreme, to prescriptions for a return to traditional subsistence-oriented systems of resource use.

**Modified collectivism**

Skidelsky suggested that ‘the five principal measures of the degree of collectivism in any society [are] state ownership of industry, central planning, state spending as a share of national income, regulation, and state control of the movement of goods, services, capital and labour across frontiers’ (1995:15).

He observed (in respect, it seems, of European countries) that the regulating and spending measures persist strongly (especially true of the countries under study), ownership of industry is almost extinct (again, true) as is planning (not so), and that control of movements by governments is limited (largely true). Skidelsky (1995:15) concluded that the higher these measures, ‘the greater the opportunity for the choices of officials to prevail over those of individuals and households’ and, it could be added, village organisations.

Skidelsky argued that

[b]y collectivism I mean what the jurist Dicey meant 80 years ago: ‘Government for the good of the people by experts or officials...’ A collectivist society is one in which bureaucratic
purposes have replaced private purposes in shaping economic and social life (1995:15).

Despite the modern trend in thinking away from collectivism, following the collapse of centrally planned economies, chiefly in Eastern Europe, elements of the philosophy are alive and well, albeit in modified form, in the countries under study. The very smallness of the Polynesian island nations seemingly makes it possible for those at the administrative centre to take more control—a tendency reinforced by the chiefly status of many ruling élites who see it as their right, even duty, to direct the lives of their peoples. Unfortunately, the problems of collectivism may be more acutely felt in these economies because of the strong diseconomies of small size in government—ambitions about taking control tend to exceed capacity.

Within the Polynesian island nations, the modified form of collectivism sponsored by political and bureaucratic élites wishing to have a pervasive influence over what their constituents choose to do is supported, often unwittingly, by aid agencies which find it easier to deal with a centralised bureaucracy than a large number of individuals and organisations.

**Environmentalism** The most recent strand of development philosophy to emerge is that of environmentalism, whereby the conservation of the resources of a country is made an essential element of development planning. It goes beyond the selection of a strategy as a means to the attainment of sustainable development for the benefit of present and future human generations, to being an end in itself with ecological concepts of sustainability being given precedence over an anthropocentric perspective. There are different shades of environmentalism in the beliefs, attitudes and values of its main sponsors—non-government organisations and aid agencies. At its extreme, it means preserving all resources at least in their current state and restoring certain parts of the existing resource base to a former state. More rationally, there is an increasing recognition that environmental and sustainability considerations have been neglected in the past, that the ecosystems of small islands are often fragile and that more thought needs to be given to improving resource use practices.
The proponents of environmentalism are seldom in a position to dictate to either resource managers—chiefly rural households—or to policymakers. They therefore seek to exert their influence through actions to change attitudes, beliefs and values, using the mass media, the education system and lobbying. In these activities they may be sponsored by ‘green’ non-government organisations (often overseas-based) and by some national and international aid agencies.

Rent-dependence A rent-seeking development philosophy means that a country relies predominantly on foreigners or expatriates to pay rents to finance improved welfare of its people rather than on the productive use by those people of national resources. Rents in these Polynesian island economies come mainly from aid and remittances, but also from foreign exploitation of minerals, forest and marine resources. Aid agencies have been the major sponsors to date (perhaps unwittingly) of rents in the form of aid, but foreign governments (who can influence migration, for example) and foreign corporations (which have greater capability to exploit natural resources, such as marine and forest resources) are also potentially important contributors.

Because rent seeking, at least in the form of aid flows, creates opportunities for benefit and advancement of politicians and senior bureaucrats, they too have generally been enthusiastic proponents of rent-dependence. In extreme cases, bribery by foreign interests is not unknown, providing a further impetus for those among the ruling élites who accept such inducements to promote this line of action.

On the other hand, from the perspective of individual households, it makes good sense to assign household members to employment opportunities according to their individual comparative advantage. Some of the best opportunities may well be overseas or in the public service. The ‘farming’ of overseas opportunities has generated the strong remittance flows found in most of the countries under study.

All five Polynesian island economies match to a greater or lesser degree the model of rent-dependent MIRAB economies (Bertram and Watters 1985, 1986; Bertram 1986). Bertram appears to hold the view that such an orientation is inevitable, perhaps even rational.
Assessment

The first problem with the incorporation of all six strands of development philosophy in the strategic planning processes—the mechanism of practical pursuit of development goals—is that they conflict with each other, probably more than they are complementary (Table 7.2).

Only some of the relationships are discussed here, simply to highlight the fact that it is self-defeating to attempt to cater to all strands. The most obvious conflict is that between meritocracy and communitarianism. Meritocracy is also inconsistent to varying degrees with autarky, collectivism and rent-dependence. Of the other strands, only environmentalism is potentially consistent with meritocracy, and then not with any degree of certainty: it depends on whether or not environmental goods are deemed to have finite value and the implementation practicalities of environmental policies.

Communitarianism is likely to be in conflict with collectivism to the extent that major decisions lie with village élites in the former case whereas collective decisions are centralised within the national bureaucracy. There is an apparent exception in the case of Western Samoa where the village is the main source of national political power; yet, even here, there is a clash between the interests of villages and national bureaucrats. An attempt to implement a national rural development program in Western Samoa in the late 1970s and early 1980s foundered on an inability to reconcile village and national interests, among other factors. On the other hand, communitarianism is consistent with the ideal of village-level autarky, and can also be helpful in the enforcement of rules about use of common property resources (Runge 1986), reinforcing resource conservation.

Autarky is unlikely to serve the ideals of development philosophies other than communitarianism. It is likely to be counterproductive to bureaucracy by limiting the potential for agricultural surplus to finance government activities. Contrary to what some might think, autarky is also unlikely to be conducive to sustainable resource use. It may have been so generations ago, but not now or in the future—increased pressures on resources from growing populations and
Table 7.2  Relations between development philosophies

<table>
<thead>
<tr>
<th>From →</th>
<th>Meritocracy</th>
<th>Communitarianism</th>
<th>Autarky</th>
<th>Modified collectivism</th>
<th>Environmentalism</th>
<th>Rent-dependence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meritocracy</td>
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<td>+,-</td>
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<td>Communitarianism</td>
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</tr>
<tr>
<td>Autarky</td>
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<tr>
<td>Modified collectivism</td>
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</tr>
<tr>
<td>Environmentalism</td>
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<tr>
<td>Rent-dependence</td>
<td>-</td>
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</tbody>
</table>

Note: + complementary; - conflicting; +,- complementary and conflicting, depending on how they are put into practice; ? unknown, probably negligible.

aspirations make autarky a non-viable proposition. Nor are the more extreme forms of environmentalism necessarily consistent with village-level autarky when they limit the ability of farm households to intensify resource use to meet growing consumption needs. Autarky, on the other hand, is likely to be made easier in a rentier society where funds emanating from sources outside the village sector provide the bulk of earnings needed to sustain living standards.

Finally, collectivism reinforces rent-dependence in that a strong central bureaucracy is needed to negotiate with aid agencies, foreign governments and foreign corporations to secure rents. The relationship between collectivism and environmentalism is less obvious. On the plus side, a strong bureaucracy can take actions to enforce measures for resource conservation. On the other hand, large bureaucracies put a strain on the economies, and consequently the
resources, of small countries such as those under study. Nor are bureaucracies notably successful in either managing resources well or in imposing better management on private resource owners.

None of the countries under study has so far made a clear-cut choice to adopt any one of these main development philosophies; to varying degrees, they are committed to all, resulting in a 'mishmash' of macroeconomic, agricultural and rural development strategies. So long as consideration is given by planners to all these philosophies, the strategies selected will almost certainly be ineffective and, perhaps, damaging. An all too likely outcome is that the worst features of each approach will be accentuated and the impact of their best features muted as they pull strategic planning processes in different directions.

It is our view that it would be best if the governments of all five Polynesian island nations would embrace meritocracy as their primary development philosophy. An emphasis on this approach appears to offer the best chance of meeting the aspirations of the peoples of these countries. Meritocracy is a seductive concept but is not without dangers—especially the danger of replacing one élite with another unless care is taken. It is unlikely, however, that in the foreseeable future any of the five countries could follow a meritocratic path exclusively, without some rent-dependence and making suitable provisions for attaining reasonable standards of equity. A considerable reliance on aid is inevitable throughout the period to 2010. In the long term, however, heavy reliance on aid and other sources of rents to maintain the welfare of the populations is risky because there is no guarantee that these rents will continue at near current levels. Also, there are costs as well as benefits from a rentier status.

**Macro-level strategies**

The key strategic question for the macroeconomic management of most of the Polynesian island nations is to decide whether to try to continue heavy reliance on rents, mainly in the forms of aid and remittances, or whether to strive for more self-reliant economic
development based on expansion of productive activities. This is primarily a choice between a meritocratic philosophy versus rent-dependence. The attitude taken to this question depends initially on the extent to which aid and remittance flows are expected to be sustainable in the long run.

At least for the smaller Pacific economies, it may be reasonable to expect a continuing flow of aid funds for many years. The high geopolitical importance of these microstates relative to their size makes it realistic to contemplate high per capita levels of aid receipts into the medium-term future. For the two larger countries, Tonga and Western Samoa, both of which are small by international standards, some of the same considerations apply. Yet there is a smaller chance of sustaining present high per capita flows into the long-run future for these two countries. In Tonga, where incomes are rising, the declining need for aid will be increasingly recognised by donors. In Western Samoa, where the problems of lack of growth of incomes can be attributed to mismanagement and distortions from aid dependency, the willingness of donors to go on supplying funds may well decline, at least among the more responsible donors. Moreover, the growing tendency for funds to be allocated as loans rather than grants may mean in time that the inflows of funds are largely offset by debt servicing charges. In addition, there is reason to suspect growing aid fatigue in many donor countries, especially if the recipient countries show little willingness to take steps to make sure the aid is used effectively. Finally, the needs of other countries with much worse conditions of poverty, or of more strategic importance to the donors, may mean that the Polynesian island nations, especially Tonga and Western Samoa, will get a progressively falling share of shrinking aid budgets.

The sustainability of remittance flows must also be questionable. According to Wiseman (1993:31), a study in 1992 found that remittances would be unlikely to grow in the longer term at a sufficiently rapid pace to enable even a modest growth in living standards in the highly remittance-dependent countries of the South Pacific. A strategy based on promoting remittances will inevitably require continued high rates of migration. Otherwise, a tailing off in remittances seems inevitable as new generations of overseas-born
Polynesians come along, with more tenuous ties to family back home. Yet continuing high rates of migration may not be feasible, depending on the entry conditions in destination countries. And even if that hurdle can be jumped, the remittance flows may be vulnerable to the consequences of whole families relocating, leaving no-one back home in need of support.

On these grounds alone, the wisdom of a rent-seeking strategy looks dubious. It becomes more so when the distorting effects of aid and remittance flows are recognised. Both types of flows tend to cause a Dutch disease effect and to promote wasteful rent-seeking behaviour within the public and private sectors. Heavy reliance on continuing migration means a haemorrhaging of the stock of talented, trained and experienced people, with serious consequences for general development.

On these grounds, a change of strategy in all five Polynesian island economies towards more self-reliant development and away from dependency on aid and remittances may be appropriate. Yet, their smallness and geographical isolation mean these economies face special difficulties in devising and implementing a strategy for sustainable economic growth. There are no magic solutions to these difficulties, and the recommendations that follow are offered somewhat tentatively. It will be important for governments to adopt a flexible approach to strategy setting, abandoning elements that fail and putting more stress on what is found to work—elsewhere we have called this, referring to Melanesian countries, ‘an emergent strategy’ (Fleming and Hardaker 1994).

Re-thinking aid

First, it would seem wise for all the Polynesian island nations (and for aid donors) to look hard at the amount of aid and development loans they accept, taking account of domestic absorptive capacity. Within a perhaps curtailed total aid budget, they

> ‘A change of strategy in all five Polynesian island economies towards more self-reliant development and away from dependency on aid and remittances may be appropriate.’
should also do more to try to ensure that only socially or economically worthwhile projects are funded. The attitude that grants are costless is wrong because of their distorting effects. Those Polynesian political leaders and senior administrators who still hold this misguided perception need to be encouraged to re-think.

**Market-friendly strategies**

According to Lim (1993), the experience of small island economies in other parts of the world shows that the problems of small size and remoteness are not insurmountable. As he argues, a more enthusiastic adoption of market-friendly strategies will enable public and private sectors to work together more effectively. There is a need for sound macroeconomic policies in terms of controlled inflation and positive interest rates to encourage savings. Public administration needs to be efficient and effective. A more favourable environment needs to be created for foreign investment. Of course, there need to be controls on the extent of such investment and on the behaviour of the investors, but present attitudes towards foreign investment in some Polynesian islands seem excessively cautious. Too many controls may create a form of ‘adverse selection’ in the sense that dishonest investors who are prepared to bribe to overcome the excessive controls may be disproportionately present in some cases. Such people are unlikely to contribute much, if anything, to sustainable development of the island economies.

An essential part of a market-friendly strategy is the progressive liberalisation of international trade. Present restrictions on trade, such as licensing of imports or exports, generally seem unnecessary and are likely to slow development. Arguably, there is a case for some protection from cheap imports for selected infant industries, but such protection should not be of a long-term nature—it is best if a specific time schedule for phasing out protection is set and followed. Governments do need to be involved in international trade activities through participating in bilateral and multilateral negotiations to protect or improve access to overseas markets for exports. They also must attend to the maintenance of proper quarantine standards, both for exports and to avoid the importation of exotic pests and diseases. Similarly, there is a strong case for some official monitoring of quality standards on certain traded commodities, both to protect export...
markets and to protect local consumers from inferior or dangerous imports.

**Infrastructure**  A market-friendly strategy requires substantial efforts to improve and maintain infrastructure, including transport and communications systems. (But the emphasis on the need for good transportation systems should not be taken as an endorsement of the operation of inefficient and loss-making national airlines.) Forsyth (1986) has discussed some of the key issues in relation to the problems of international transport systems in the South Pacific islands, in particular drawing attention to the counterproductive nature of ill-conceived subsidies and of almost all restrictions on transport operations. The main message seems to be that governments should desist from many of the unfortunate interventions in the market for transport services that they currently attempt (such as giving monopoly rights to national carriers), and should concentrate on doing a better job in relation to those things that only governments can do, such as regulating to prevent unreliable or unsafe operations and the provision and maintenance of capital works for roads, airports and seaports.

Much has already been done in all the Polynesian island nations to develop transport infrastructure over the past couple of decades, but more needs to be done. Aid and loan funds might continue to be directed to capital works to improve infrastructure, but with a couple of provisos. First, the investment should be carefully appraised and only worthwhile projects implemented. Second, there needs to be certainty that whatever is built can be properly maintained and operated.

**Population**

The birth rates in most Polynesian countries are high, with population growth moderated only by migration. If more self-reliant development strategies are to be followed, high rates of population growth could become serious problems in these countries, as they already are for the Melanesian countries. Policies to reduce the birth
rates therefore need to be given more priority than they presently receive. In addition, if migration flows are to be stemmed, there needs to be growth in productive employment in tune with growth in labour supply. In the longer term, growth in real per capita incomes is the most effective means of bringing about lower rates of population growth.

Employment

The formulation of a full-blown employment strategy is outside the scope of this study. However, an important element in the present context relates to wages policy, particularly the need for a strategy to ease pressures for unsustainable wage rises by keeping down the cost of living through expanded local food production. More importantly, in most cases, agriculture is the only sector large enough to provide employment growth to absorb the bulk of the projected new entrants to the labour force for the period up to and beyond 2010. The capital costs to achieve the required growth of jobs in other sectors, such as tourism, would almost certainly exceed the funds likely to be available. This is not to suggest that these other sectors should not be expected to contribute to employment growth, especially if foreign investment can be attracted to ease the domestic capital shortage.

A further important dimension of a strategy of self-reliant development with a meritocratic orientation is the need to provide rewarding and fulfilling employment opportunities for trained, experienced workers. Measures to stem the brain drain may include a number of elements such as the imposition of bonds on public sector employees trained at government expense, offering special employment packages to selected key personnel and improving personnel management practices to raise job satisfaction for workers. The privatisation or corporatisation of parts of the public service may make it possible to offer attractive employment to able nationals. Also, a growing private sector will create opportunities for those with initiative who find the public service too constraining.
Education and training obviously need to be part of the human resource component of the macro-strategy. But the provision of advanced training is one area where self-reliance can be taken too far. The costs of tertiary-level education are high and the quality of training that can be provided may therefore suffer unless these activities are funded to a level that may be beyond the resources that can be spared, at least for several years into the future. In addition, the productivity of investments in expensive tertiary education may be low unless the loss of trained people overseas can be significantly reduced. A sensible strategy for most Polynesian nations is to continue to rely substantially on regional and overseas tertiary educational facilities into the middle-term future. It is of concern that Western Samoa has apparently rejected the notion of a regional University of the South Pacific in favour of the establishment of a National University of Samoa.

Semi-subsistence security

The smaller and more isolated countries of Tuvalu, Kiribati and Niue face special problems in strategy selection because the prospects for expansion of productive activities are more constrained. For these countries in particular, but for other South Pacific island nations generally, the relative neglect of the subsistence sector should be reversed. This sector provides the solid foundation for a mixed cash and subsistence economy of great resilience. Building on a healthy and food-secure semi-subsistence economy, and with better management of aid flows, the microstates can work to improve the provision of social services for their peoples, attaining better living standards, even in the absence of substantial growth in cash-earning activities.

Sustainable rents

If rent-seeking is to be a part of a long-run strategy, particularly for the smaller island nations, the governments concerned will need to
replace unreliable aid and remittance flows with more secure sources of rent, such as income from EEZ licences. Off-shore resources would need to be very carefully managed to avoid over-exploitation by licensees and to ensure the sustainability of the fees. Another potentially effective approach to ensuring long-term rent income is to invest current foreign inflows off-shore so that people could live off the proceeds, as currently happens in Nauru. Similarly, recognising the possibility that aid funds may eventually run dry, the Government of Tuvalu has secured the cooperation of a number of donors to establish a trust fund to be invested off-shore and to generate continuing and sustainable contributions to recurrent expenditure. Kiribati is directing returns from phosphate mining into a similar initiative. These strategies make good sense, given the limited production bases in these small and isolated countries.

**Intersectoral strategies**

**Competition for land**

Land areas are small in all the Polynesian nations, certainly smaller than in Melanesian countries, and agriculture is facing increased competition from non-agricultural uses (especially, but not exclusively, in those countries with substantially increasing populations). The most intense competition comes from urbanisation, forestry and tourism. To the extent that these other sectors compete on an even plane with agriculture, there might seem to be little justification for government intervention to influence this competition. However, because changes in land use can often lead to degradation of the environment, especially in fragile island ecosystems, there may be a stronger case than in other countries for governments to intervene in land markets and to put in place some system of land-use planning.

Agricultural sectors in Western Samoa and Tonga experience moderate intersectoral competition for land—from uses for residential and other urban purposes and for forestry. Competition is greater in the other three countries. According to Lane (1994:9), about 40 per cent of land in Niue is not suitable for farming. This means that, although there has been a lot of clearing of vegetation for agriculture...
in the past, the limit to this practice has just about been reached and there will be rapidly increasing costs at the margin of further clearance and use of such land. There are plans to implement a land-use classification system (Government of Niue, DAFF 1993). This is likely to lead to an expansion of commercial forestry because this activity is more suitable to the rocky terrain than agriculture.

With their populations increasing and having very limited land areas, Tuvalu and Kiribati are experiencing an acute trade-off between agricultural and other forms of land use, especially use for residential purposes. The trade-off is most keenly felt on the densely populated main islands of Funafuti and South Tarawa, respectively. Here, the scope for agricultural development in the coming decades is negligible. Quite a different picture emerges on outer islands: there the competition for land from other sectors is not an important factor. Some of the more remote islands are experiencing declining populations and virtually all experience out-migration. There is scope for moderate agricultural intensification if other constraints on production and marketing can be overcome.

In summary, only where there are substantial externalities from one particular form of land use (as discussed below) does the government need to have a direct role in influencing agricultural land-use patterns. Indirect strategic decisions, though, can be influential. Urbanisation is a major factor affecting land-use patterns, and government can take steps to influence its rate and regulate modifications to urban land-use patterns. Otherwise, agriculturalists will have to compete with other uses for access to land.

**Domestic terms of trade and relative returns to labour**

The domestic terms of trade of the agricultural sector of a country are usually reflected in the ratio of farm output prices to the prices of agricultural inputs and goods and services consumed by farm households. Assessment of government strategies influencing the terms of trade facing agriculture in Polynesian countries, however, needs to take into account the fact that in none of these countries are manufacturing industries either the main competitor for resources used in agriculture or the main suppliers of
inputs to farm households. Even the scope of local service industries is less than would be normal in larger economies.

In Western Samoa, the large inflows of aid and remittances, along with incentives offered for establishing local manufacturing, have kept the domestic terms of trade turned against agriculture. Yet there are few measures targeted to support agriculture as part of a 'second best' policy. A similar situation faces agriculture in Niue and Tonga. In all three countries, the two most important measures of agriculture-industry terms of trade are returns to labour in agriculture relative to wages overseas, chiefly in New Zealand, and wages in the public service. The first measure may be approximated by an index of agricultural returns to labour relative to returns from wages in New Zealand multiplied by the probability of the emigrant getting a job there. It may also be appropriate to factor in the New Zealand unemployment benefit and the probability of a migrant receiving that benefit. The second measure of terms of trade may be approximated by an index of returns to agricultural labour relative to public sector wages multiplied by the probability of getting a job in the public service.

Intersectoral terms of trade in Kiribati and Tuvalu require similar sorts of analyses. Agriculture's main competitor for labour and capital in Kiribati is the public sector; in Tuvalu, the public sector and merchant navy are the main competitors for labour and the public sector the main competitor for capital. Insufficient information is available on trends, making it difficult to assess whether agriculture is facing increased competition for resources.

Clearly, there is little that Polynesian governments can do to influence the earning potential of their nationals in New Zealand or other overseas employment. They can, however, directly affect the earning potential in the public service. As predicted in the MIRAB theory, in all the Polynesian island nations there has been a long-term trend of expansion in both public service employment and wage and salary rates. Such expansion has been made possible, in large part, by aid flows (and perhaps has been necessary to the extent that a well established bureaucracy is essential for rent-seeking at the national
level). It is only recently that some Polynesian governments, with the encouragement of some aid agencies, have begun to take measures to curtail bureaucratic growth. To date, successes in these efforts have been limited. For example, while the number of public service employees in Niue was cut back from 1990, remuneration per public servant was not: it increased in real terms by 17 per cent between 1989/90 and 1992/93. The following year saw a fall in average remuneration of around 10 per cent, but the 1993/94 figure was still 8 per cent above the 1989/90 figure in real terms. In contrast, returns to labour in agriculture have been stagnant subsequent to the collapse of all significant export industries (with the exception of taro production) in the past two years. This would not be such a problem had there not been out-migration of able-bodied and enterprising people for two decades, causing shortages of labour.

A third relevant measure of agricultural terms of trade in all the Polynesian economies is an index of relative returns to labour from farming and fishing as most farm households also fish. In Niue, for instance, 61 per cent of agricultural households engaged in fishing in the months prior to the agricultural census (Government of Niue, Statistics Unit/DAFF 1990:34). Lack of statistics precludes an analysis of trends in this index, especially as most of the fish caught are for domestic consumption purposes, so it is necessary to rely on anecdotal evidence which suggests that fishing is an increasingly more remunerative task than agriculture, although this varies according to physical conditions. It is evident, however, that most farm households still treat the two activities as complementary, and any set of agricultural strategies would need to be framed with this relationship in mind.

While in other countries, the relevant current comparison is usually between returns to farming and subsistence fishing, in Tonga,
particularly in villages with good access to marine resources, there has been an expansion in small-scale commercial fishing. Similarly, in both Kiribati and Tuvalu, the commercial exploitation of marine resources may offer better prospects than agriculture for expansion of productive activities. Such expansion may be in the form of small-scale artisanal operations or through larger scale deep-sea fishing, perhaps entailing foreign investment, or both. For example, there is a current Australian Centre for International Agricultural Research (ACIAR) project examining the scope for introducing a cultured pearl industry to Kiribati along the lines of the very successful industry now operating in Cook Islands.

The choice between fishing and agriculture should be left to the market (externalities aside), as the current arrangements provide for an efficient solution to the allocation of time that members of village households are in the best position to resolve. It may be, however, that governments will need to play a role in facilitating and regulating foreign investment in fishing, especially if this is to entail joint ventures. In particular, there is a need to be alert to the common practice of transfer pricing that may be used by foreign partners to deny the due share of profits to the Polynesian partner.

In summary, if a rent-dependent path is rejected in favour of a meritocratic development path in which productive capacity is to be built up, then further reductions in numbers and wages in the public service will be both necessary and unavoidable. The necessity will arise as aid flows are cut back or are directed away from bureaucratic expansion into more productive uses. The desirability of the reductions comes from the importance of avoiding crowding out private sector development, including agricultural development.

On the other hand, competition between public and private sectors is only a small part of the problem. Attempting to change the relations between agricultural returns and returns to other forms of rent activities, notably remittances from migrant labour, is extremely difficult. The challenge is especially stark in Niue. Short of drastic steps taken in association with the New Zealand government to restrict the employment opportunities open to Niueans in New Zealand (a highly unlikely and very unpopular measure), nothing
can be done. Both Western Samoa and Tonga also face a situation where it is relatively easy for their nationals to gain at least temporary access to overseas employment opportunities. Among the five countries studied, only in Kiribati and Tuvalu is there fairly strong isolation from overseas labour markets (even though, in these two countries, the need to find overseas employment is arguably the greatest). Strategists in Niue, Western Samoa and Tonga will have to live with a high opportunity cost of labour by developing country standards.

Finally, the main form of government intervention to turn sectoral terms of trade in favour of agriculture has so far been the provision of subsidies. Given the open nature of the economies concerned, there is little hope of raising economic welfare in the long term by subsidising purchased farm inputs, credit or farm outputs. The one circumstance in which subsidisation might be justified as a long-term measure is if it encourages more ecologically desirable behaviour by farmers. A key ecological issue is vegetation clearance, and it has been argued in Niue, for instance, that use of a bulldozer is more environmentally suitable than other methods (Growers Association Executive Committee, personal communication, 1994). A transparent bounty (i.e. arranged so that the extent of the subsidy is clear to all) could be made available if the government considers that a subsidy on bulldozer use is desirable on the grounds that it reduces damage to the agro-ecosystem. Yet, even here there are probably other less distorting and more effective means of combatting damage. At the very least, more rigorous justification of the ecological advantages would need to be made than the flimsy evidence currently available. Similarly, in Tonga, where the current practice in land preparation for squash is causing concern about possible damage to soil structure, the government may need to take measures to speed up (or eliminate) the allocation of quotas and to ensure that credit is available in good time to finance better land preparation methods.

**Leading sector versus balanced growth**

It is unwise to generalise across the five Polynesian economies on the future economic role of agriculture. In Tonga and Western Samoa, a strong case can be made for agriculture to play the leading role in economic
growth in the next couple of decades. It will not play a leading role as long as it remains in its current economic straitjacket.

In Tonga, planning documents suggest a change of heart on the part of government. Agriculture is now supposed to receive the highest priority for development, with more favourable treatment in the allocation of development expenditure to the agricultural sector even though, until recently, its share of public recurrent expenditure had been falling. It is not clear whether this is a considered strategic choice or whether it reflects the reality that agriculture is booming, while other industries subsidised by government in the past, notably through the Small Industries Development Scheme, have mostly failed.

The extreme limitations on land for agricultural purposes in Kiribati, Tuvalu and Niue suggest that agriculture does not have the leading role to play in the development of these economies. Its capacity to change the face of the economy radically is limited, and tourism, forestry and fishing will have equal or more important economic roles to play in the future. A balanced growth strategy is essential but, regardless of which country is examined, it will remain well out of reach as long as the economy is grossly unbalanced by aid and other rent flows.

Regional balance

The potential for agricultural development is unevenly spread in three of the five countries, being of minor concern only in Western Samoa and Niue. Although there is a strong thrust in Tonga towards regional development as a strategic imperative, this thrust is not well integrated into the overall development planning process. Regional development committees have been set up to report directly to cabinet, not through the Central Planning Department or the Development Coordination Committee.

In Kiribati and Tuvalu, regional balance among islands is a professed aim of both governments, and efforts are being made to target more remote islands in allocating development funds. The immense challenge of transport and communications costs is unlikely ever to allow spatially balanced development: the islands are too spread out and populations too sparse to justify the expenditure needed.
The issue of allocation of public funds depends very much on projections about future levels of aid, and the nature of this aid. In the short term, all countries will probably continue to receive relatively high aid funds per head, but pessimistic projections for the long term dictate that more funds must be allocated now to investments that boost the capacity to maintain at least current levels of foreign exchange earnings. In none of the countries does agriculture receive a share of development and recurrent expenditure by governments commensurate with its relative importance as a productive sector. Yet, it is not average returns to public expenditure that are relevant but marginal returns. If agriculture cannot be substantially developed and its performance improved, there might be little imperative to spend relatively more public money on it. A minimal level of expenditure would be sufficient to sustain a limited subsistence base. The use of funds allocated to agriculture is as important as the amount. Unfortunately, deservedly or not, agriculture ministries or departments in Polynesian governments are seldom seen as having good track records in this regard, suggesting a need to overhaul planning, management, monitoring and control. At the strategic level, priorities for spending need to be reviewed and, where necessary, revised.

Of course, not all spending to promote agricultural development will necessarily pass through the hands of an agriculture ministry. Another area for government spending deserving priority consideration is transport infrastructure and associated facilities. In all five countries, remoteness from markets makes international transport costly and uncertain. In all cases except Niue and Western Samoa, fragmented land masses mean that international transport constraints are compounded by inter-island transport and communication difficulties. Unfortunately, there are pitfalls in attempts by governments to subsidise transport services. On the other hand, evidence accumulated by the World Bank shows that rural development projects based on the construction of well designed rural infrastructure have a good success rate (World Bank 1989; Donaldson 1991). This is because they have a direct impact on farmers’ terms of trade, increasing the farm gate prices for produce sold and reducing the costs of inputs and supplies brought in. Moreover, such
infrastructure improvements may have benefits for other productive sectors and may improve the access of rural people to important services such as health and education.

Endnote

1 Chee-Wah Cheah (1986) discusses telecommunications in the region.
The strategic emphasis in development initiatives within agriculture in all the Polynesian economies has been historically biased towards production while evidence suggests that marketing has recently provided the greater constraints to agricultural development. The importance of marketing is likely to increase as product markets become more discriminating and as international competition in agricultural products increases. Physical conditions for production are quite favourable in Polynesia and enough is known by smallholders about the technical aspects of production across a fairly wide range of farming activities to suggest that this imbalance should be redressed: the main strategic emphasis by governments should be on developing agricultural marketing capacity.

An interesting case study in Niue is the proposed project to rehabilitate the limes industry. In 1992, the Department of Agriculture, Forestry and Fisheries prepared a Limes Rehabilitation project proposal for which funding was sought from AusAID. The project duration was to be three years, with a budget of A$158,000—quite large by Niuean standards. A recent appraisal of the project recommended that it was not worth pursuing (GRM International 1994). This conclusion was reached despite acknowledgment that 'Niue has a natural advantage over most of its Pacific neighbours in
the production of West Indian or Mexican limes...in that it is free of
the very serious *Trista* virus disease*, has ‘demonstrated that limes
can be grown well on the island and that their quality is recognised
elsewhere in the Pacific’, and ‘has sufficient areas of land to produce
limes’ (GRM International 1994:1).

There are many good features of the proposal, and limes are certainly
one of the agricultural commodities with potential for commercial
production in Niue. But there is a fundamental flaw in the proposal
that exemplifies the dangers of concentrating agricultural
development primarily on production to the neglect of marketing
issues. Problems with the export marketing of limes were mentioned
in the report by GRM International, notably the vagaries, limited
options and expense of transport, and the thinness of the two major
market destinations, Sydney and Auckland. GRM International (1994)
also pointed to the lack of financial and economic viability of the
proposed project. Their appraisal is unduly pessimistic as they include
export sales in the cash flow even in months in which there would be
an net loss from such sales. Clearly, no produce would be marketed at
such times. Nevertheless, at best, the proposed project as specified
would be marginally profitable.

Lime exports may well be a good export bet for Niue, but the
marketing problems need to be tackled. Concentrating on production
is unlikely to prove anything—a lot is already known about how limes
can be successfully grown—and can prove an expensive flop if
marketing constraints are overriding.

Agricultural development projects in Kiribati and Tuvalu have been
similarly biased. A review of the development projects in Kiribati in
the 1994 budget estimates shows that they focus on crop nursery,
production and rehabilitation projects, farming systems analysis, and
livestock multiplication and production projects. A project to analyse
the copra industry does have a component entailing an assessment
of processing options, which is the closest to a marketing analysis.
Yet, even here, the emphasis is on production in downstream
processing. In Tuvalu, virtually all development projects are oriented
towards production. A couple—an input supply project and a fresh
produce marketing project—have been directed towards solving
marketing problems, but with few insights about how to provide long-term marketing improvements. Instead, they were formulated with a view to short-term solutions with an overemphasis on government involvement in marketing activities.

This does not mean production issues should be neglected. Sometimes there will be production problems that need to be tackled in parallel with the market investigations. In almost all agricultural marketing research some pilot production will be required for in-market testing of results of ‘desk analysis’ of export markets.

**Strategic issues in production**

Agricultural production strategies are considered at five levels or tiers, progressing from the more aggregated or general to the more disaggregated or specific levels. The tiers are, in order

- strategic choices of agricultural industries
- the choice of production mode for each industry
- production and growth attributes
- production processes
- resource use in production.

**Choice of agricultural industries**

There are two aspects relating to the choice of agricultural production activities worthy of consideration by Polynesian island governments. The first is the balance between commercial and subsistence production, and the second relates to the mix of commodities within each of these two production areas.

The evolution of farming systems from a wholly subsistence orientation to an almost wholly commercial aspect is a normal process that reflects the general development of agriculture in a maturing economy. It makes no sense in the modern world for everyone to try to grow their own food, so it is necessary that farmers produce for market enough to feed those who have directed their attention to
other work. Thus, calls for a return in the islands to 'traditional' subsistence systems, as in the more extreme manifestations of the autarky philosophy, are romantic nonsense, often propagated by people who have never lived a subsistence lifestyle and who never will. On the other hand, Polynesian semi-subsistence smallholder systems have many advantages. They provide productive employment and a reasonable standard of nutrition and cash income for the majority of the people in most of these countries. Such systems are relatively resilient in the face of spells of unfavourable climatic conditions or unfavourable product prices. Yet the systems also provide a platform from which initiatives can be launched to take advantage of favourable commercial opportunities that may open up—the response of so many Tongan growers to the opening up of the Japanese market for squash is just one example.

Given the strength and flexibility of semi-subsistence systems, governments need to be cautious about encouraging a transition towards fully commercial operations. These decisions are best made by smallholders themselves, especially if such a shift will entail the replacement of numerous small-scale producers with fewer larger scale operators. This caution is especially warranted in cases where commercialisation is based on just one or two commodities, perhaps sold into niche export markets. The collapse of the market opportunity (or the loss of production due to a pest or disease outbreak) could mean considerable hardship for the people involved in the industry, as well as creating significant welfare and macroeconomic problems for the country as a whole. The collapse of the Western Samoa taro export industry is but one of many examples from the islands that show what can happen.

It follows that governments should be careful about adopting measures that may lead to the premature decline of the semi-subsistence systems. Strategies for technology development and support services provision need to be set with this caution in mind. Policies and programs can unwittingly discriminate against those operating on a limited scale. For example, the transaction costs of time and trouble to get a loan from a bank or other credit agency are much the same for a small loan or a large one, making the costs per dollar borrowed much higher in the former case. Only if institutional
lenders maintain a sensitivity to smallholder needs and circumstances will these extra costs be kept in check. Because public bureaucracies tend to be more responsive to the requests of the relatively rich and well connected, there is a constant need to monitor the cultural orientation of organisations such as agricultural extension services or development banks to make sure they are responsive to their smallholder clients.

**Choice of commodity mix.** The choice of commodities for commercial development places Polynesian producers and governments on the horns of a dilemma. On the one hand, too much specialisation is very risky, in terms of both production and marketing risks. Yet, on the other hand, small countries find it difficult to sustain the inputs into technology development and improvement, into market research and development, and into quarantine and quality control, all of which may be vital to develop and defend the production and export of a single commodity. It is therefore difficult if not impossible for these countries to tackle the production and export of more than a few commodities, especially if they entail high levels of unfamiliar technology for production, or have onerous market requirements.

In these difficult circumstances, an optimal strategy might have a number of elements

- Putting considerable reliance on ‘tried and true’ products and markets for which the required knowledge and experience already exist—even though these may be less profitable than some newer alternatives. Thus, supply of root crops to domestic or overseas Polynesian markets may be an activity with considerable comparative advantage for some producers and countries. And even copra, though generating poor returns to effort at prevailing prices, can be a useful stand-by when all else fails.

- Mobilising both local and overseas knowledge and experience to develop and market exotic or unfamiliar commodities. That means tapping sources of technical information through the international agricultural research systems—something that the national agricultural research services have not always done well. It also means tapping overseas marketing skills and experience, almost always held
by private firms—the Polynesian countries need to become less chauvinistic about the contributions that foreign companies, especially marketing companies, can make to their development.

- As a strategic choice, providing official backing through the provision of public goods for a relatively small number of commodities that experience and/or careful consideration suggest can be produced and marketed competitively. While it is almost unavoidable to have to try to ‘pick a few horses to back’ in this way, it is also necessary to appreciate that some of these choices will turn out to be failures, so efforts need to be made to have some fallback options in the pipeline. Modest research and development programs on alternative commodities are therefore also justified in national agricultural research allocations. Nevertheless, every encouragement (and certainly no unnecessary discouragement) should be given to private innovators exploring additional new opportunities.

Related to the above point, governments should seek to exploit complementarities between industries receiving public support. For example, it makes good sense in small countries to support industries that will largely use the same infrastructure. Support for complementary industries also helps in building up institutional knowledge about what works and what doesn’t, by developing competence and experience in production and marketing in specific areas. Were the Tongan squash industry suddenly to fail tomorrow, for instance, would all the knowledge built up about exporting niche products to Japan be lost?

The main reason to favour a smallholder mode of production in Polynesian countries over a plantation mode is that, in most circumstances, the smallholder mode is more efficient and better attuned to the resource availabilities and social circumstances of these countries. It appears that only in post-harvest processing of some crops, such as oil palm or sugar cane, are there significant scale advantages. Even then, many of the potential advantages of a larger scale operation can be gained using a nucleus estate mode, with numbers of smallholder producers scattered around a central processing unit.
Of course, as economic conditions in the countries change, and particularly as wage rates rise, some existing smallholder units may prove to be too small to be viable. Thus, there needs to be a strategy in place allowing for structural adjustment in agriculture, for example through the amalgamation of small-scale units. Polynesian governments need to give thought to the long-term strategic impact of restrictive land tenure laws or customary practices that may prevent or seriously slow the process of structural adjustment in agriculture.

Quite apart from differences in efficiency and resilience between small and large-scale farming operations in the islands, there are significant disadvantages of maintaining a dualistic system of agriculture, with many small-scale producers and a smaller number of much larger scale plantations. These disadvantages come from the power and influence of the plantation owners, often leading to a distortion of both the provision of research, extension and agricultural support services, and of agricultural and related policies generally, in favour of the plantation sector.

Both Tonga and Western Samoa have somewhat dualistic systems, with the churches and nobility in Tonga often operating quite large areas, and with WSTEC in Western Samoa still operating a few large-scale units, though on a much smaller scale than before. In both countries, therefore, there is a need for a firm strategic choice to be made on whether such large holdings are to be preserved and encouraged, or whether the focus is to be on the dominant smallholder sector.

**Production and growth attributes**

Land tenure systems existing today in the Polynesian island nations are modern adaptations of so-called ‘traditional’ systems. Perhaps in Tonga, among the five countries, the evolution to a more commercial system has advanced the most. In Tonga, following the relaxation of the rules for leasing of land, a vigorous market for land has emerged. This evolution of a land market may have contributed most to the current prosperity of agriculture in that country.

Some moves have been made in Western Samoa to free up access to land and to take land transfers outside the *matai* system, but progress
has been predictably slow. It is hardly coincidental that agricultural development has lagged in this country. The explanation may lie both in the difficulty of getting land and in the ties to the traditional power system that go with obtaining land under the customary system.

Land tenure arrangements in the three smaller countries lie somewhere between those in Western Samoa and Tonga, but closer to the former. The lack of interest among Niuean farmers has meant land tenure is not a burning issue there. Kiribati and Tuvalu can be expected to face increasing pressures for modifications to land tenure systems as their populations increase if economically viable farm sizes are to be possible in the future. Otherwise, the limited potential for commercial agricultural development in Kiribati and Tuvalu probably makes land tenure a less contentious long-term issue than in Tonga and Western Samoa.

Under a leasehold system and under systems where land is allocated by local chiefs, there is a degree of flexibility in the amount of land individuals can control. However, the scope for flexible adjustment in size of holdings is likely to be greater under the former option.

The most serious defect of the customary land allocation systems is that users of land generally lack secure legal tenure. In the extreme, users who are not members of the landowning group may be granted only tenancies at will, that may be terminated without notice. Almost inevitably, insecurity of tenure means that investment in the land is curtailed. It also means that the current land users may not have full incentive to use the land in a sustainable way. They may judge that it is not worthwhile to give up opportunities to earn income today for the dubious prospect of higher income from the land in the future. It is no wonder, therefore, that there is growing concern about the sustainability of land-use practices on customarily (or chiefly) owned land in these countries.

Land tenure is a sensitive and intensely political issue throughout the South Pacific, and it is a brave outsider who dabbles in these waters with suggestions for change. Yet it is clear that these matters must be addressed as part of a coherent strategy for sustainable rural and overall development. It must be acknowledged that the tenure
systems often work much better in practice than might be expected from an uninformed reading of the 'rules'—by a variety of means, sometimes 'legal' and sometimes not, it is often possible for those who can make good use of land to be able to get it. Hence an evolutionary, rather than a revolutionary, approach to tenure reform may be what is needed. Exactly how improvements can be made will need to be determined in each country, but some shifts to give more secure and longer term tenure to the users of land must be part of the outcome.

Production processes

Funding a realistic and coherent program of agricultural research is difficult for all small countries. The Polynesian island nations are certainly no exception. Their task is made no easier by lack of skilled personnel, both directly and due to the loss of trained nationals to other employment or to emigration. It is not feasible for even the larger Polynesian countries to attempt anything in the way of basic research. They need to concentrate on applying existing knowledge and adapting technologies developed overseas to local conditions. We have written elsewhere about the strategic issues in agricultural research in small Pacific island nations, and that discussion will not be repeated in full here (Hardaker and Fleming 1989; Fleming and Hardaker 1994). A few key points, however, are worth emphasising.

First, given the scale problems of national research programs, it is disappointing that there is not greater enthusiasm for cooperation within the Polynesian region. Most of the regional cooperation that does occur is funded by overseas donors, and most of these programs collapse as soon as the foreign support is withdrawn.

Second, in Polynesia, as in neighbouring Melanesia, there are too many people working in agricultural extension relative to the numbers working on research and development. An extension service cannot be effective unless it has something to extend. The answer is not necessarily to transfer staff from the extension branch to the research branch; rather, it is to improve the cooperation between the two branches in order to mobilise the extension workers as agents for research and development. Moreover, much of this work needs to be done on farms, often by farmers, not on the research stations.
That implies adopting an approach variously called ‘farming systems research’, ‘farming systems research and extension’, or ‘farming systems development’ (here we shall use the term farming systems research to refer to all of these methods). All entail enrolling farmers as contributors to the process of technology development, working in partnership with research and extension staff.

Third, farming systems research starts and ends with farmers. It starts with them in the sense that it is their problems and priorities that govern what work is undertaken. It ends with them in that the success of development efforts is judged not by publications in scientific journals, but by whether improved technologies are taken up by farmers. The farming systems research approach therefore guarantees a focus of research efforts on the development of technologies appropriate to the circumstances of the target group of farmers—presumably smallholders in Polynesia. The approach is adaptive and recursive, in the sense that the starting point is the current farming system. The process of trial-and-error development of better production methods enables, and requires, farmers and professionals to learn progressively more about the target farming system. Only in that way can improvements be identified and successfully implemented.

**Developing sustainable production systems.** A farming systems research approach is especially important if questions of the sustainability of farming systems need to be addressed. Due to the long time horizons implied, and therefore the great uncertainty entailed, investigations of sustainability questions are much more difficult than short-term investigations of production. Yet nowhere are issues of sustainability so starkly important than in the small Polynesian island nations.

If new or improved, and sustainable, methods of natural resource management are to be developed for the many different ecosystems in Polynesia, all available skills and experience need to be brought to bear on the task. There are simply too few scientists to tackle all the problems within a reasonable time scale. Yet to delay may mean disaster for some of the more fragile ecosystems. Mobilising all available research resources certainly means involving the resource managers—the village people—in the work. They, after all, have the
best fund of experience with the local ecosystems, and they are the ones who will have to make any new system work. The farming systems research framework, in one or other of its advocated forms, therefore seems to be the only feasible way to go. What Eyzaguirre (1994) termed a research portfolio approach—concentrating research on specific areas of complementarity in production (and perhaps marketing)—may also help make more efficient use of scarce research resources.

There is a strong thrust among some groups in the Polynesian countries against the use of chemicals in agriculture. The thrust seems to have more to do with emotion than with scientific logic. The attitude seems to have gained currency due to ‘green’ propaganda coupled with a Polynesian emotional response to imported and Western ideas and materials. Of course, excessive use of chemicals is undesirable, and the use of dangerous chemicals such as some insecticides is, or has been, a matter for great concern in the South Pacific. The free distribution of the now banned DDT to Tongan banana growers some years ago without proper warnings about the dangers can now be seen, with hindsight, as seriously wrong. It was scattered about like snow, and even used as a plaything by children. (One informant remembers moistening the DDT powder to make ‘snowballs’ to throw at his friends!)

The chemicals used today are much less dangerous than those used in the past. It is accepted that chemicals should be used with care and that, where there is a risk to human health or to the environment, their use should be minimised. That is not to say that there is not a proper place in South Pacific farming systems for a variety of agricultural chemicals, used in a properly controlled way. For example, high labour costs in Samoa relative to wage rates in some competing exporting countries signal a need for selective substitution of capital for labour in farm production. However, the nature of the terrain limits the extent to which mechanised cultivation is possible. The proper and selective use of herbicides to save labour for weeding makes good sense in these circumstances, and indeed, is widely adopted.
Similarly, if a farmer ‘exports’ plant nutrients and trace elements from the land by shipping agricultural produce overseas, to the local market or even just to the family house in the village, then it is necessary to ask how these nutrients are to be replenished in the soil if the farming system is to be sustainable. Composting will help, but may not be viable if the removed material, which is almost inevitably bulky, has been taken far from the farm land. Mineral fertilisers, used and applied appropriately may be the best answer. There is no special merit in nutrients in compost. Indeed, some ‘organic’ fertilisers are not without their problems. Use of untreated human waste as a fertiliser is not unknown in the region, raising serious concerns about health. Even one case of cholera in an export market traced to a Pacific island source could sound the death knell of fresh produce exports! Tourism earnings are also vulnerable to health scares stemming from local outbreaks of such diseases. Other organic wastes, depending on their origin and treatment, may be contaminated with crop pests or diseases, or with poisons such as heavy metals.

The management of tropical soils to maintain good levels of soil organic matter can be important, even crucial, for sustainable production. Plant nutrients, especially nitrogen, tied up in soil organic matter are somewhat protected from leaching out of the root zone, yet may be released slowly to the growing crop as the organic matter breaks down. Perhaps equally importantly, soil organic matter directly affects the soil structure, usually making the soil easier to cultivate and more suitable for plants to grow while reducing erodibility. The shortening of bush fallows, the lengthening of the cropping phase between fallows, and the use of mechanical cultivation will all tend to lead to depletion of soil organic matter.

There are a number of ways to maintain soil organic matter at levels consistent with sustainable production. One is to minimise mechanical disturbance of the soil using ‘minimum-till’ methods. Usually these methods entail a variety of techniques to replace ploughing, including selective use of chemical herbicides. By closing their eyes to the use of all chemicals, the anti-chemical advocates may be missing an important option in the design of sustainable farming systems.
In summary, departments of agriculture and other agencies involved in influencing the choice of sustainable production methods by farmers need to beware of excesses in terms of too great or too little reliance on chemical inputs. The wise use of both organic and inorganic fertilisers may be vital to make any extractive farming system sustainable.

Resource use

The scope for Polynesian governments directly to influence resource use in agricultural production is limited. Rather, they need to provide environments in which individual producers can make rational choices about the level and combination of resources to use, in order to operate as efficiently and profitably as possible. Provided prices are right, maximising private benefit will be in line with maximising benefits to the society as a whole.

In the past, governments have interfered in some of these resource allocation decisions, with dubious benefits. Chiefly, they have done this by changing prices. Some inputs, such as machinery services, have been subsidised, creating a risk of promoting the too rapid mechanisation of production at the cost of local jobs. Minimum wage rates have also been set in several countries, and continue to be set in some—albeit usually with a low level of enforcement in rural areas. Such a policy may also lead to the loss of productive employment opportunities in agriculture. Capital may be provided at subsidised rates to some favoured producers, usually at the cost of limiting the access to institutional credit by those not so favoured, again distorting the balance between labour and capital in production, and leading to both over and under-investment in land improvements.

In general, a market-friendly strategy that extends to the agricultural sector will entail removal or reduction of both subsidies and differential taxes on resources and farming inputs. Governments will aim to get out of factor markets, except to the extent necessary to ensure fair trading. For example, discrimination in labour markets based on sex, race or other personal characteristics may be made illegal.
Credit markets may need particular attention. For a number of reasons, smallholder producers often have difficulty accessing credit from institutional lenders. Lenders find it expensive to make large numbers of small loans and, as elsewhere, default rates among small-scale borrowers have often been unacceptably high. Government involvement in credit provision has usually entailed subsidising loans to farmers. Unfortunately, however well intended, such subsidies may have had the unforeseen and undesirable side effects of inhibiting the growth of a fully functional financial system. Most Polynesian governments have cut back on interest rate subsidies and have encouraged the development of commercial banking, so that the past repression of the financial sectors is being overcome. On the other hand, these welcome developments leave unanswered the question of how large numbers of geographically dispersed small-scale producers can obtain access to credit at reasonable cost. In other parts of the world, methods of lending to groups of producers have been pioneered, wherein the loan is guaranteed by the group as a whole. Lending costs per dollar advanced are thereby lowered, and the risk of default is reduced. Such schemes may be worth experimenting with in Polynesia.
Marketing strategies are considered in terms of tiers. This time there are four tiers: strategic choice of market outlets, mode of marketing, marketing processes and resource use in marketing.

**Choice of market outlet**

Choice of market outlet for agricultural products between own consumption (subsistence production), the domestic market and the export market is largely predetermined by the choice of agricultural industries in production and shaped by the smallness of the domestic market for agricultural produce. The scope for future expansion of demand for domestically produced food (even including demand by tourists) is also very limited as it is likely that these raw materials will contribute an increasingly smaller proportion of total value added in the food industry. Most increased spending on food will go to food processors, many of whom will be overseas. The present focus is on export marketing in all countries but with different prospects for success.
In all countries, two MIRAB-related factors currently militate against export expansion: the difficulty for a very small country of establishing the infrastructure necessary for successful export of agricultural commodities, and the disincentives to export created by a high wage cost structure and high value of domestic currency relative to major foreign competitors. The small scale of the economies also restricts the range of destinations for agricultural exports: it would be uneconomic and managerially difficult to attempt to export significant amounts to a large number of markets.

An example of excessive concentration in agricultural exports is to be found in Tonga where there is concern about the reliance on the single niche market for squash in Japan. It is also worrying that the squash boom has led to a relative neglect of vanilla, a crop for which Tonga has established some comparative advantage. Although efforts are being made to open up export opportunities in other countries for squash and other products, the relative roles of the government and the private sector in these efforts appear not to have been given sufficient thought.

On the other hand, the recent relatively rapid economic growth in Tonga, attributable in part to the growth of the squash industry, has strengthened demand for food to the benefit of those growers who find it necessary due to quota restrictions, or prudent for crop rotation reasons, to diversify into food crop production.

Western Samoa has experienced agricultural export decline in recent times, with stagnant to declining markets for coconut products and cocoa and cessation of taro exports due to leaf blight, contrary to official expectations of export expansion. Although it may not be recognised as such, the main strategic emphasis is still on food security and self-sufficiency in the sense that there is an unwillingness to disrupt the village system. A predominant response to the taro leaf blight problem has been to encourage the production of other food crops; few seem to have recognised the need also to find alternative export crops.

With the agricultural export industry in disarray in Western Samoa, there is perhaps an opportunity to review strategy and to restructure.
One positive move is the proposed revision of the export finance scheme to make it more accessible to small-scale growers. Other ways to encourage exports need to be considered. The fact that a large part of agricultural marketing in Western Samoa has only recently been privatised may signal a need to encourage new players to enter the field. For example, some of the larger trading and financial institutions have strong commercial links to overseas countries. They might be encouraged to build on those links to develop export marketing in addition to the present emphasis on importing.

A factor in favour of export expansion in Niue, Tonga and Western Samoa lies in their respective expatriate populations—notably in New Zealand—who can make use of overseas infrastructure and institutional services to build value-adding activities to agricultural products produced back home. In Niue it appears that this opportunity has not been effectively utilised to date, and there have been severe official misgivings about using expatriate Niueans in marketing channels for agricultural exports.

Exporting produce via Niueans in Auckland has proven a pain to recover payments within a week, even within 3 months...[It is recommended to] curtail the practice of selling export produce via Niueans in New Zealand (Alapaki 1993:2).

This view might be short-sighted given other evidence of successful use of New Zealand-based islanders as marketing intermediaries, notably Western Samoans. It is worthwhile exploring marketing measures—especially means of payment for consignments—to overcome current deficiencies.

Unlike Niue, Tonga and Western Samoa, Tuvalu and Kiribati do not have large expatriate populations in industrialised nations. Moreover, their farm sectors are not as important, and the potential for agricultural development is not as great as in Tonga and Western Samoa. Yet they suffer all the other limitations these latter countries face in developing high-value niche export markets. No economic analysis has been undertaken in either Kiribati or Tuvalu to compare the relative efficiency of subsistence, copra and niche export activities, and there has been virtually no niche export activity to allow such a comparison. Making a definitive recommendation about the best
market destination is therefore difficult. The best guess-approach in Kiribati and Tuvalu (in the absence of accurate information) is to

- concentrate on subsistence production and modest development of the domestic fresh produce marketing system

- support exploratory analysis of a very limited number of export options based on the output of existing production activities (certainly no more than three).

**Mode of marketing**

Unlike modes of agricultural production where competition between producers is not an important factor influencing efficiency, it is possible that the presence of more than one mode of marketing agricultural products might make for more efficient marketing through competition. Agricultural marketing has been multi-modal in all five countries although not for individual commodities.

There are, or have been in recent times, six modes of agricultural marketing in the countries under study.

- **Small independent producer/sellers trade in both the domestic and export markets.** Produce traded includes root crops (for both markets), other fresh produce (mainly for the domestic market), bananas, honey and handicrafts. The taro export industry in Western Samoa (until recently) is the best known example. Private taro exporters have also mushroomed in the past couple of years in Niue. The Samoans had established a formal wholesale and retail network, whereas Tongan and Niuean produce is mostly distributed through informal networks such as family and churches. The result is that payments are often delayed or never made, stocks are held too long and may rot (or be claimed to have rotted), and individual sellers may have to incur high marketing costs, often travelling to the destination market themselves to solve problems and collect the money.

- **Private exporters not involved in agricultural production are fairly rare.** Tonga has a number of well established and
profitable private exporters in the vanilla and squash industries. Western Samoa has had successful examples in koko Samoa and kava. In Niue, only one private exporter was licensed by the government in 1995 to market taro to New Zealand (reflecting a lack of confidence by the government in private exporting).

- Private processor/sellers are also quite rare but some have been fairly successful. In all countries there are a few very small firms producing processed livestock and crop products for sale predominantly through domestic retail outlets but also (in small quantities) through export channels. In Western Samoa, a small number of coconut cream processors are producing for the export market. A firm also manufactured coconut cream for export in Niue, but switched its base to Cook Islands a few years ago. There are a number of private traders marketing vanilla from Tonga, some operating their own curing facilities.

- Statutory marketing authorities with monopoly powers to acquire and export cash crops formerly dominated the agricultural export subsector. Their marketing performance has been uniformly poor, and they have fallen from official favour in recent years for the usual failings afflicting marketing boards throughout the world (see Antony and Fleming 1991). There is nevertheless a residue of official thinking favouring these forms of institutions despite the compelling evidence against them. A recent indirect form of participation by the government of Niue has been through the involvement of Moui FakaNuie (MFN) in taro export marketing. The role of MFN was to organise export marketing which, after difficulties in the early stages of its existence, it did through the appointment of a sole agent in Niue with other operations in New Zealand. It is hard to imagine what long-run advantages this organisation could bring to export marketing although there might have been good reasons for the government to intervene directly to fix problems in the early days of expansion of the taro export market.

In Tonga, the squash industry began at the initiative of a New Zealand company. That company was soon excluded from the market and some well-connected locals were given licences to handle exports. The government also became actively involved, in several ways, including provision of
credit through the Tonga Development Bank, research support, market research, participation in negotiating forward contracts, quality control, assisting with packing and shipping, setting and distributing quotas to limit exports, and the operation of a de facto guaranteed price scheme. Although the industry has been a success till now, it would have been better if government had taken a less active role. Risky niche marketing operations are really better left largely in the hands of the private sector.

• Cooperative enterprises set up for the purpose of exporting a cash crop have not been widespread. Such cooperatives have been operating in Kiribati (KCCS) and Tuvalu (TCTC, until 1992) for the export of copra. They are distinguished from true cooperatives by the degree of government involvement in their establishment and operation, and differ little from statutory marketing authorities. Their fortunes have been tied to a single crop, and they suffered badly in recent years with the copra market in the doldrums. They have suffered also from the same deficiencies as statutory marketing authorities without any of the redeeming features of true cooperatives.

• A few government-owned processor/exporters have operated over the past couple of decades, but their success was short lived. Examples include coconut oil milling in Tonga and Western Samoa, desiccated coconut in Tonga (operated by the Commodities Board), and fruit processing in Niue and Western Samoa. Experiences in Niue have been instructive on the perils of government involvement in agricultural processing and marketing. The government of Niue became involved in downstream processing through the operation of the Niue Development Board. The Board was established in 1966 by statute and 'controlled by a Board appointed by Cabinet under the administrative framework of the Agriculture Department until 31 March 1977...[when it became] an autonomous body responsible to Cabinet' (Government of Niue 1979:34). The Board was required to provide 'guaranteed purchase, processing and marketing' of these products (Government of Niue 1979:35). Its brief was to encourage development through projects which required it to become involved in processing and input and product marketing as well as production. Its role in product marketing, however, was not well thought through and
attention to product marketing and processing issues was inadequate. Major projects in which it was involved were the production and processing of passionfruit, limes and pawpaw, as well being responsible for the export of copra—
that is, all of the major exports of Niue during the period of export boom in the 1980s except coconut cream.

**Appropriate modes** From the experiences outlined above, it is inappropriate for governments to intervene as direct participants in any mode of marketing or processing. While statutory authorities are currently out of favour, the sporadic involvement by governments in various modes in the past and the residue of official backing for further government intervention suggest that they might contemplate re-entry if the opportunity arises in the future. Past disappointments of these authorities, and marketing boards elsewhere in the South Pacific (see Fleming and Hardaker 1994), point clearly to the dangers of doing so. Given limited resources and lack of marketing expertise, it would be better for Polynesian governments to confine their role to facilitating private export marketing and resist the temptation to become a market participant.

Some institutions have escaped privatisation. For example, the Agriculture Store in Western Samoa continues to operate as a government corporation and is virtually the sole importer of most farm chemicals and equipment. While there are no official barriers to others entering the trade—they need a government-issued licence—most imports of agricultural inputs are supplied as Japanese aid at concessionary prices, making it almost impossible for other traders to compete.

The future for private export marketing in a variety of forms looks more promising and the emphasis is now firmly on the private sector for agricultural marketing. The record of private export processing and marketing firms is not uniformly good; but then neither would one expect it to be, given that agricultural exporting is an inherently risky business. In good times, some firms will make high profits, which should be seen as a reward for their enterprise and risk taking, not as profiteering at farmers’ expense. When markets wane, some operators will go bankrupt—an inescapable possibility as a consequence of participation in such a high-risk game. It is the
inability, or disinclination, of governments to bankrupt their own institutions that enables inefficient and uncompetitive government-owned ventures to persist, to the serious disadvantage of producers and also, sometimes, taxpayers.

**Choice of marketing processes**

An attractive export marketing opportunity exists for targeting the expatriate population as a consumer group for a market differentiation strategy to develop agricultural exports. This opportunity is restricted to three countries—Niue, Tonga and Western Samoa—and is exemplified by successful taro export ventures. Admittedly, private initiative is needed to exploit such opportunities, but the government can play a supporting role. Perhaps its most important contribution is to help counter the threat of export market closure caused by failure to comply with phytosanitary requirements. A priority item for development expenditure, then, is appropriate quarantine facilities, staffing and training to guard against lapses in quarantine and improved relations and protocols with customs officials in key export destinations. For some commodities and some destinations, the required protocols will extend to the specification and monitoring of appropriate phytosanitary measures during crop production and harvesting.

Successful agricultural exporting in the future is likely to come through small niche export markets for a small number of agricultural exports, in most cases of high quality. The rise of the squash export industry in Tonga is an interesting example. At first sight, it appears to be an example of a success story based on a relatively high degree of government involvement in association with private marketers. Yet it can be argued that the Tongan authorities have over-stepped the mark in a number of respects, especially bearing in mind the risky and transient nature of such niche markets.

- The government-owned Tonga Development Bank is bearing a very large risk by financing a large part of the production and marketing risk capital. The lending portfolio of the bank
is heavily weighted to investments in the one risky industry. Such risk exposure seems less than prudent.

- It is unlikely that direct involvement of government officials in negotiations with private buyers in Japan will produce better outcomes than a *laissez faire* approach. Government officials are less likely to succeed in tough negotiations than exporters who have the profit motive to spur them on.

- Attempts to drive up prices in Japan by artificially restricting supplies from Tonga via export quotas are unlikely to succeed. First, it is best that decisions on how much to ship are made by commercial exporters whose decisions will be guided by their assessments of what will pay. Second, should the prices in fact be raised, there is a stronger incentive for other suppliers to enter the market, with the likelihood that the special position of Tonga in the market will be eroded more quickly.

- Last, because government has been seen to be a strong backer of the squash industry, it may be very difficult for it to withdraw its support when the market collapses, as it almost certainly will, sooner or later. Propping up a failed industry will be both expensive and will delay the transfer of resources to other emerging opportunities. Yet it is in the nature of the niche marketing business that producers and traders need to be able to enter *and leave* niches as they open and then close.

More generally, the reasons governments are not of much direct help to firms developing niche markets are as follows.

- Evidence throughout the South Pacific shows that it has been private initiative largely unaided (some might say unhindered) by government that has been most successful in seeking out and establishing export niches.

- Governments do not have a very good record in ‘picking winners’.

- Export niches are notoriously difficult to defend, and often it is necessary to abandon them; governments tend to have less flexibility than private firms in responding appropriately here, and will tend to go on subsidising and defending these niches beyond what is economically justifiable.
In principle, a useful role governments can realistically play is in helping to seed such ventures through intermediation, by enticing venture capital, putting into practice policies that create a more favourable general economic environment for exporters and providing better support services of a public good nature. To do this, they need to establish a portfolio of potential agricultural export-earning activities and a set of criteria by which each potential export activity could be assessed. The criteria would include ease of production; profitability in production; suitability to smallholder production methods; industry complementarity; suitability for small-scale simple post-harvest processing; profitability in processing and marketing; identification of a remunerative and reasonably sustainable export market; ease of transport; susceptibility to degradation in post-harvest state; shelf life; value-weight ratio; depth of target export market; quarantine regulations; and other import restrictions. The need for confining support to a very small number of industries is well demonstrated by what is currently happening in Tongan agriculture. The vanilla industry, which has proved to be a valuable small export market for many years, has been neglected as a result of the preoccupation with the squash export industry.

By assessing each export activity according to these criteria, the government need not indulge in picking winners among exporters but, necessarily, it must make choices between alternative export activities. It needs to ensure it does not waste money by providing support to activities with little hope of long-term export success, while understanding and helping to relieve the obstacles faced by exporters of promising products. It can also use its portfolio to acquaint potential investors with existing export opportunities.

In this respect, governments may have a role in helping local exporters combine forces with exporters of similar products from other South Pacific countries. It may be possible to reduce marketing costs or to share market development costs. For example, Niuean and other exporters in the South Pacific could develop strategic vanilla exporting alliances with Tongan exporters. Exporters from several countries might combine in developing export markets in Asia or America for root crops. But major challenges, such as ensuring adequate supply, transport arrangements, communications and
product quality assurance would need to be tackled before an effective alliance could be put in place. Perhaps more to the point, government licensing rules could encourage rather than discourage other exporters in the region to trade in their country. For example, the Tongan government still restricts the export of some commodities to licensed exporters. Moreover, it appears that licences are normally issued only to Tongan-owned (or part-owned) companies. Such a policy clearly denies Tongan producers access to the special skills, knowledge and market contacts that foreign-owned companies have, especially about foreign marketing opportunities.

One important reservation remains. It may be that if governments withdraw completely from agricultural export marketing, there could be limited spontaneous market development by private interests. The disadvantages of smallness, remoteness, and relatively unfriendly policies towards foreign corporations, among other problems, will discourage investment in export marketing activities. The best strategy may therefore involve forging the right partnership between government and private marketers. As noted, there are some things that governments must do, such as providing proper quarantine services, conducting production and some types of market research and so on. Then there are various other proactive measures that governments might take, as illustrated in the case of the Tongan squash industry. Since there is no evidence from a counterfactual situation, we cannot be sure what would have happened with less government involvement. Decisions will have to be made on a case-by-case basis about just how much help governments need to provide to get agricultural marketing going. History in the Polynesian island nations teaches that the institutional capability of bureaucrats in agricultural marketing has too often fallen short of the mark. At least until events prove otherwise, it would be best to err on the side of doing too little rather than too much in terms of intervention.

With their limited resources, governments cannot play a major role in market research except in three circumstances associated with analysing and understanding how best to provide services of a public good nature to agricultural marketers. One is allied to the issue of quarantine and product quality, mentioned above; another
is concerned with transport, handling, processing and storage; and the third is how best to obtain and disseminate agricultural market information.

First, there is likely to be an important marketing research function for governments in improving export quality assurance. This means exploring ways of preventing post-harvest deterioration in products due to pests and diseases that might endanger entry into export markets. Improvement or rehabilitation of fumigation facilities is one avenue, yet in 1995 fumigation is not really acceptable in New Zealand and other markets, and is likely to become less so in the future. While it can be used, there must be a near-zero trace of fumigant when the produce reaches New Zealand. This means an extended period of ventilation in an insect-free environment prior to shipping, and presents obvious problems for perishable produce. Produce found to have insect pests used to be able to be fumigated on arrival in New Zealand, but this is no longer possible. Therefore the search is on for better ways to guarantee that exported produce meets the quarantine requirements of the importing countries.

Solutions may be found by two complementary routes. First, there may be other acceptable methods of treating produce prior to shipment. A high temperature forced air (HTFA) treatment for some types of fruit has been developed and is already being used in Cook Islands on papaya going to New Zealand. Various forms of radiation may also be used. Unfortunately, the equipment for these types of treatments is likely to be expensive.

Second, there will need to be changes in the ways produce intended for export is grown and handled. Importing countries such as New Zealand are already specifying protocols to prevent crops destined for their markets being infected with unwanted pests. Polynesian government departments will need to extend these protocols to growers and monitor their implementation. This will entail costs for both government and producers—made worse by the fact that different importing countries may specify different and perhaps even conflicting protocols.

Inter-island and international transport, handling and storage facilities and services comprise the second area of considerable
Concern in agricultural marketing where there is a need for careful research. An example is air freight. The exploitation of several of the possible export markets for high-value fresh produce requires adequate transport capacity, usually air cargo space. The latter is seldom available, certainly not with the regularity and security required to found a new export industry. Forsyth (1986:201) pointed out that transport costs are inherently high in the South Pacific and any gains from subsidising them are illusory. Of special importance are his observations on international air cargo, concluding that it is seldom economic to remove the uncertainty of cargo space from international flights.

Air freight is either expensive and reliable, or relatively cheap and unreliable. There is little prospect of it becoming cheap and reliable relative to shipping rates or air freight rates on dense major routes (Forsyth 1986:204).

Forsyth's assessment is especially binding on very small island countries such as those under study.

Third, to the extent that a government has the capacity to fulfil such a role, it can help in identifying and developing new marketing opportunities through market research. The Polynesian countries as a whole presently have very limited capability to provide information (especially in a timely way) to potential agricultural exporters—a situation made worse in at least two countries (Tonga and Niue) where there is confusion about which ministry or department should have responsibility for this activity.

Value adding The record of governments participating in, or encouraging, value adding through processing has been discouraging and virtually every surviving processing industry is in private hands. The government-owned desiccated coconut factory and the coconut oil mill in Tonga have both ceased operations, and the experiences of government involvement in developing food processing in Western Samoa, Niue and Fiji suggest that any contemplated similar projects in other countries are also unlikely to succeed. Yet all governments see value adding as a crucial element in development processes, as exemplified by plans in Tonga to establish
a food processing laboratory within the Ministry of Agriculture and Forestry despite negative experiences elsewhere.

The imperative for governments to initiate more value-adding activities comes from four main sources. First, specifically in relation to the coconut products industry (in Niue, in particular, but possibly also in other countries), past coconut rehabilitation schemes and the collapse of copra exports threaten to leave large quantities of coconuts surplus to current domestic consumption needs. The probable outcome will be an increasing number of nuts unharvested, undermining the goals of schemes to rehabilitate and revitalise the coconut industry. This imperative is based on a bad rationale unless a value-adding industry can be established that is both privately profitable, as well as economically and socially desirable. The analyses of prospective industries carried out for Niue by Varnakulasingam (1991) offer little hope for success. Even though Varnakulasingam argued in favour of coconut oil milling, his economic analyses were simplistic and his interpretation of results unduly optimistic given experiences elsewhere in the South Pacific.

If any government does intend to encourage a coconut processing industry, perhaps retention of (or, in Niue and Tuvalu, a return to) copra processing would be the best bet despite its low returns to labour and fairly dismal long-term market outlook. Of course, market conditions would still need to pick up somewhat from their current depressed state to make any initiative even marginally attractive. Even then, production would be likely to pay only on recently planted stands of high productivity. The advantages of a return to copra exporting are that processing methods are simple, well known and can be undertaken by smallholders themselves. The risks of substantial financial loss from capital investment are much less than for alternative coconut value-adding industries. In addition, the large domestic market for coconuts and their by-products continues to provide an excellent means of diversifying market outlets and reducing market risk. Alternatively, new small-scale processing methods that can be used at the village level to extract coconut oil for use as a diesel substitute for expensive oil imports could be explored to assess their profitability. Johns (1994) reported that this process...
has drawn interest from about 35 countries, and further research in Papua New Guinea is planned this year.

The second and third imperatives for more value adding are more plausible. The second is that it reduces the risk of refusal of entry into export markets on the grounds of non-compliance with quarantine regulations. Third, international freight shortages, uncertainties and high costs militate in favour of exporting processed products that are generally less perishable and have higher value-weight ratio than in fresh form. Even granting the validity of these observations, it is still necessary to find processing activities that are privately and socially profitable, and this is achieved better through private enterprise than by a government trying to pick winners among firms undertaking value-adding activities.

The fourth imperative is the belief that value-adding activities provide higher returns to labour in the long term than can be achieved through export of the raw materials of agricultural production activities. With relatively high wage rates in the countries under study, this sentiment is understandable but probably wrong for four reasons. First, there is no guarantee that downstream processing is adding value just because it is associated with a production activity in which a country has a comparative advantage. It could be value-subtracting if it makes large demands on imported capital. Second, the Polynesian island economies are much more likely to suffer from diseconomies of small size in processing than in agricultural production. Third, many processing activities are labour and capital-intensive, placing processors in all five countries at a comparative disadvantage to competitors with better access to finance in low-wage economies in Asia. An example here is coconut cream processing (Vamakulasingam 1991), even though private companies in Western Samoa have succeeded to date in this competitive market. Finally, the scope for introducing new agricultural processing activities to add value to agricultural products is limited by a lack of agribusiness management and marketing skills relative to foreign competitors.

These remarks are not intended to imply that all value-adding activities for export in the Polynesian countries are doomed to failure, for some can be carried out successfully, as with vanilla curing in
Tonga. Rather they are intended as a warning against the too ready assumption that almost any value-adding activity is good and deserves government support.

Some modest value-adding activities should be possible through food sales, especially to the tourist sector if tourism expands significantly. Governments can assist these activities to develop at little cost, and encourage a reasonably high local content in food sold in the domestic market. Yet even here there is no reason for great optimism since the performance to date of local producers in catering to the needs of the tourist industry has generally been disappointing.

Commodity stabilisation

Export market instability and threats to the defence of export market niches make the reliance on a very small number of exports risky. It is difficult for a government to do anything of a commercial nature about the defence of niche markets, but it is possible to aid producers for the export market who are susceptible to price uncertainty in export markets which is outside their ability to control. In the past, governments operated copra price stabilisation schemes similar to those operated in Melanesian agriculture (see Fleming and Hardaker 1994). In Niue and Tuvalu these schemes ceased operation with the failure of the copra export industry, and the schemes in Tonga and Western Samoa also appear to have been abandoned. The scheme in Kiribati continues to operate, courtesy of STABEX payments, but has been a subsidy scheme rather than a true (self-financing) stabilisation scheme for many years.

No other agricultural export is currently a candidate for a stabilisation scheme; yet, were one to materialise, evidence from South Pacific countries suggests governments would be unwise to re-establish any schemes (Fleming 1992). Where a government has been involved in developing higher value niche exports, the temptation to intervene is bound to be great. For example, given its perhaps excessive intervention in the squash industry, the Tongan government has found it hard to resist pressures to rescue exporters and producers disadvantaged by low squash prices on the Japanese market.

Development of domestic fresh-produce marketing systems is hindered by thinness of the markets—because only a minute
The proportion of fresh produce is traded domestically, domestic prices are unstable. The best way for the government to help reduce this instability is by promoting the expansion of market throughput, by assisting marketers to make their products and services more attractive to consumers. It can do this in two ways: by providing technical assistance to marketers; and by improving marketing infrastructure. Not advisable are ill-considered production-oriented projects which cause temporary output increases that disrupt market trading, causing further instability.

**Resource use in marketing**

Factor prices and the technical efficiency with which factors are used in agricultural processing and marketing are crucial elements influencing the competitive advantage of local firms. Yet no Polynesian government appears to have given much thought to the combinations in which factors are used in agricultural marketing and processing.

Relative to foreign competitors, high labour and capital costs and low factor productivity in all the countries under study are likely to limit agricultural market development. Unfortunately, many marketing and processing activities are size and labour-intensive, making it difficult for agriculture-related industries involved in downstream value-adding activities to compete internationally. Very small countries with relatively high labour costs—in particular, Niue—find it especially hard to compete. Governments can improve the competitive advantage of firms by actions that help raise technical efficiency and reduce factor costs artificially inflated above their border prices. Some scope exists in the latter case through actions such as reduction in the size of the public sector, preventing over-valued exchange rates, removal of minimum wage legislation and reduction of financial transactions costs. But, given a lack of commercial expertise among government personnel, the ability of any government to help private firms improve technical efficiency in marketing and processing is doubtful. Foreign technical assistance is probably the best bet—ideally, overseas managers of successful
businesses would be willing to share their skills with local firms of a similar type.

Agricultural marketing and processing industries have some potential to meet the long-term need to create employment opportunities, but no employment strategies based on these industries are evident. In Niue, labour shortages are the major concern; similarly, seasonal shortages (mainly due to recent expansion of the squash industry) exist in Tonga. Countries have relied on migration (in Niue, Tonga and Western Samoa) and employment in merchant navies and phosphate mining on Nauru (Kiribati and Tuvalu) to provide an alternative to employment strategies. Another potentially limiting factor is the need for capital, especially to establish successful processing industries. One option is to concentrate on small-scale processing with little reliance on capital input. Another is joint ventures between local firms and foreign companies which hold the most potential to provide local enterprises with access to large amounts of funds. A third strategy is the provision of finance through a development bank, but experiences in both Polynesian and Melanesian countries indicate that this avenue is full of pitfalls. Provision of subsidised finance through development banks does little to develop domestic financial facilities, and poorly performing loans threaten their financial viability.

Institutional change

Most Polynesian governments have at least paid lip service to the notion of less government intervention in their economies. To what extent these attitudes are genuine or have been imposed on the governments by international agencies offering loans or grants with conditions attached, is a matter for speculation. Nevertheless, it seems both likely and desirable that future strategies will entail a reduced role for governments in many aspects of the island economies.

To some extent, such a shift in emphasis is a natural outcome of the improved general level of development of the Polynesian island
nations. In the past, there was little or no private sector in many areas of activity for governments to defer to. As development has taken place, those deficiencies have been remedied, assisted by a voluntary withdrawal of governments from several activities.

The rationality of leaving to private enterprise those things that the private sector can do best is unquestionable. By leaving to governments only those things that the public sector must or should do, and by privatising the rest, there is a chance that the management of the more constrained range of tasks in the public sector can be improved. Administrative failures can afflict all public services, but this disease has been rife in Polynesia.

The move towards a less interventionist development strategy should not be confused with a hands-off approach. Polynesian governments and administrations need to rethink what it is that they need to do to promote development. If development has been impeded by too much involvement of government in the past, it can also be impeded if there is too little. Forging the right working partnerships with the private sector becomes a major and challenging task. And unfortunately, there is little that can be said that is helpful about how these partnerships should operate. What will be possible and most effective will be determined by socioeconomic and cultural conditions in individual countries. But first, a new focus on facilitation of private sector development, rather than on direct intervention, needs to be nurtured in the minds of politicians and senior public servants alike. That will take time.

Within the agricultural sector, the privatisation and deregulation of agricultural marketing have been advancing apace in most Polynesian economies. Even though there is still some way to go in some cases, these changes are to be welcomed. They make it possible for departments of agriculture to focus their work in marketing on information gathering and dissemination, and on quarantine and quality control.

Scope for corporatisation of some traditional activities of departments of agriculture may exist, at least in the larger Polynesian countries. The move to shift agricultural research activities to quasi-independent
agricultural research institutes in Papua New Guinea, which has generally been seen as successful, may be a model for other countries to consider.

**Decentralising** In all countries there is a tendency to centralise public decision-making, despite public commitments to decentralisation of planning decisions. The need to achieve some regional balance in agricultural development is explicitly recognised in Kiribati, Tuvalu and Tonga, and some powers and responsibilities are given to island councils (Kiribati and Tuvalu) and managers of regional development programs (Tonga). The government of Tuvalu plans further decentralisation. There are two main reasons to doubt whether decentralised decision-making will work for agricultural development. First, national governments are loath to give up powers and control of purse strings: deconcentration or physical relocation of some national departments are soft options more likely to be taken by national governments. Second, decentralisation in the form of devolution typically involves an additional layer of bureaucracy rather than the institutional relocation of existing bureaucrats. It is important for successful decentralisation to ensure that additional people, expert in their own particular activities, are brought into the decision-making process, rather than spreading existing scarce skilled and experienced decision-makers more thinly. A more market-oriented approach helps in the latter respect.

**Intervention** It was pointed out in respect of Melanesian countries (Fleming and Hardaker 1994) that governments should intervene in agricultural systems in a facilitative manner as much as possible, rather than through regulation (or by direct involvement). When regulation is needed, it should, whenever possible, be carried out with a light touch. The reason for this approach is that, if its own institutional resources are limited (as is universally the case in the South Pacific, especially in the very small Polynesian island nations), it is generally easier for a government to have a significant and positive effect on agricultural performance through facilitation. In addition, there are certain facilitating services that government must provide because of their public good nature. It is far better for a public institution with limited resources to deliver
effectively the key services that help farmers and marketers, than to be involved in broad-ranging forms of intervention that stretch their resources and, consequently, lead to nothing being done effectively. Despite some movement towards less direct intervention and greater reliance on facilitation, there is still scope for reducing heavy and misdirected regulation in areas such as licensing exporters.

Besides improving the mix between regulation and facilitation, important facilitative functions could be integrated better. In particular, there is considerable scope for integrating research and extension activities and tailoring recommendations to the circumstances of individual farm households or groups of households. For example, in Tonga, fertiliser recommendations are still given on a blanket basis for all soil types and all parts of the country. Also, greater effort—and thought about more innovative methods—should be directed to getting credit to farmers. This demands a critical review of the mode of operation of development banks which, in their present form, have been somewhat discredited. Such a review may even lead to their abolition in favour of more effective ways of delivering credit to those who can make best use of it—based, perhaps, on commercial lenders and cooperative credit unions.

Self-reliance versus external technical assistance

The low status of employment in agriculture discourages talented people from entering or remaining in its ranks and perpetuates reliance on external technical assistance. Efforts to remedy this situation should help reduce this reliance, but the scope is limited and success is likely to be gradual.

The most parsimonious approach to technical support in agricultural production is for the government to mobilise more fully the skilled people already present in the country. Most of these people are to be found on the farms, not in government service. Ways exist of mobilising these skills more fully for the benefits of all producers, including the use of farmer groups and securing the collaboration of producer organisations. As noted, the farm systems research approach is designed to build on the indigenous technical knowledge of
farmers. In addition, governments will need to continue to support training staff in agriculture departments, but this is unlikely to be sufficient. If farmers are to get effective support from public institutions, full use will have to be made of regionally available technical assistance.

Domestic marketing can be helped by involving consumers more in simple marketing research activities, and export marketing can be advanced by inviting greater participation from foreign companies.

**Employment creation and gender balance**

No employment strategies in respect of gender are currently in place. Women tend to be more involved in agricultural marketing, especially domestic marketing, than in agricultural production. By concentrating agricultural strategies more on marketing and providing further assistance to the handicraft industry, governments can indirectly open up new employment opportunities for women.

**Degree of autonomy**

Governments have made some moves towards increasing the autonomy of public institutions by undertaking some corporatisation and privatisation. Privatisation, however, has not been accepted in all quarters of government and corporatisation does not necessarily lead to greater autonomy. Ellis summarised well the preconditions for effective operation of autonomous government agricultural agencies as

(i) genuine autonomy from government, (ii) management appointments made on the basis of merit rather than political patronage, (iii) salary and reward structures different from civil service conditions, (iv) capacity to dispense with the services of ineffective or corrupt personnel, (v) formal mechanisms for participation and feedback from farmers, (vi) an overseeing framework... independent of government (1992:18).

These preconditions have been grossly violated in the countries under study, and there is little optimism that rolling back the tide of privatisation would lead to an improved performance by public corporations in the future. In particular, a necessary condition for corporatisation to lead to greater autonomy is the severance of
decision-making from political influence. In the Polynesian context such separation has been the exception rather than the rule. Where politicians, especially cabinet ministers, hold senior positions in public corporations (as they do in Western Samoa, for example) the ability and incentives to act independently of political preferences are restricted.

**Information** Success has been limited in developing an institutional memory to provide timely and convenient access to information about the agricultural sector and its place in the economy. It is difficult to generalise across countries, but the most apt description is that agricultural information is inadequate and poorly organised, and there is a willingness by agricultural planners and policymakers to accept at face value information that is often wrong. An example of a deficiency of information is the budgetary detail on relevant farming activities, which varies from widely available but patchy and disorganised in Tonga and Western Samoa, to virtually absent in Niue. In Niue information concerning the choice between bulldozers and traditional methods for vegetation clearance is unavailable. In Kiribati and Tuvalu there is an almost complete absence of information on the economics of exporting a range of agricultural products that could readily be produced.

There is a need to develop an appropriate management information system in each country, and to incorporate library facilities as part of that system. This system should then be used for strategic planning purposes by senior agricultural planning personnel. Except for export market information, much of the information needed in the system is already available—it simply needs to be processed more efficiently. The agricultural sectors in all countries are small enough, and the range of farming systems narrow enough, for it to be possible for strategists to have an intimate knowledge of farming resources, constraints and activities through the establishment of quite simple management information systems. The only major difficulty is in the export sector where it can be especially difficult to get accurate and timely information on the demand for export products. Here again, where a commodity is being exported to a country (notably New
Zealand) with a large expatriate population, these people can be used as conduits for information on consumer demand.

Endnotes

1 Taro exports to New Zealand have succeeded partly because there are few problems in meeting these requirements. Root crops do not suffer from fruit fly which is perhaps the major pest limiting access of fresh produce to New Zealand.

2 Rondinelli and Nellis (1986:6) defined deconcentration as 'the handing over of some administrative authority or responsibility to lower levels within central government ministries and agencies—a shifting of workload from centrally located officials to staff and officers outside the national capital'.
Negotiating the difficult path ahead

The best way forward

To sum up the discussion in the previous chapter, the choice of strategies that will be successful depends on making some hard decisions about the kind of social and economic future these Polynesian island nations want to have by 2010 and hence what role agriculture is expected to play. The longer these hard choices are put off by ‘fudging’ the issue of whether productive activities, including particularly agriculturally based activities, are to be encouraged to develop, the more difficult it will become to achieve such development.

We have argued that the rentier status of these countries is both economically and socially distorting. Yet we have also noted that probably none of the countries can manage, at least for the present, without such rents. Much depends on the sustainability of the rents. We suspect that neither aid flows nor remittances will persist for long periods. Rents from fishing licences may also be ephemeral if the fish stocks on which they are based are over-exploited. Moreover, because the main species sought are migratory, the proper management of the resources is largely outside the control of individual countries.
All three of these rental incomes can be thought of as being derived from capital stock

- the stock of capital invested in human capital and in forging kinship ties in the case of remittances
- the stock of international goodwill in the case of aid
- fish stocks in the case of fishing licences.

If this view is correct, it would seem to be most unwise for Polynesian nations to continue to fritter away their assets in current consumption of the flows from these sources (which in that case should not be regarded as true rents), especially if the flows are counter-developmental.

We suggest that there is an alternative course to development generally and to agricultural development in particular. It is gradually to replace non-sustainable rents with income earned from the productive use of domestic resources along meritocratic lines. However, if this approach is to be followed, there are a number of implications and requirements.

First, the importance of human capital needs to be recognised, particularly the need for a wide range of entrepreneurial skills and business experience that is difficult for resident islanders to acquire under prevailing conditions. Such skills are more likely to be found, at least in the short to medium term, in expatriates and in nationals who have lived and worked overseas for prolonged periods. In particular, such people will be more likely than locals to have the required special knowledge for developing successful ventures in the processing and marketing of agricultural output produced in-country. A greater willingness to allow foreign entrepreneurs into the countries, and to enable their operation there in a secure business environment, would be part of a strategy of promoting the growth of relevant productive activities. Presently, in most of the countries, strong chauvinistic attitudes surface as a range of measures to inhibit or prevent the involvement of expatriates in local commerce.

The usual reason given for denying foreign investors the chance to set up in business in the Polynesian islands is that they will export
profits back home. This may be so, and there is nothing economically or morally wrong with that as they are entitled to earn profits on their input of capital or skills. The extent of such transfers can be minimised by a number of measures, including the creation of an environment in which the re-investment of profits in business in the particular Polynesian country is more attractive than sending the funds elsewhere. But even if some profits are repatriated, the foreign investment will have increased local employment and may have opened up new market opportunities, brought in new technologies and added to local skills and knowledge. Of course, this is not an advocacy for unbridled access to Polynesian economies by foreign investors; some selectivity as to the types of ventures to be allowed may be appropriate, and procedures need to be in place to stop unfair or dishonest business practices.

Measures to facilitate foreign investment may include adjustments to a range of legal and administrative matters, such as land tenure, foreign exchange rules, taxation and licensing arrangements. It is not so much a matter of providing incentives to foreign investment as of removing the disincentives and constraints that presently exist. Regrettably, it may be no accident that some of these constraints create opportunities for rent-seeking by those in charge of their administration, who must be ‘paid off’, one way or another, for facilitating certain commercial developments.

In addition, of course, measures need to be taken on a consistent basis to improve the education and training of nationals in a wide variety of fields related to improvement of capacity. Unfortunately, for reasons discussed above, this is likely to be a relatively slow, difficult and expensive process. In-country training in specialist areas may not be affordable, and direct and opportunity costs of sending nationals overseas for training are high. Moreover, the stock of trained and experienced personnel is likely to be eroded by promotions and other in-country transfers, and by ‘brain drain’ to jobs overseas.

On the positive side, there is the option to deploy a much higher proportion of aid funds to increase productive capacity in sectors such as agriculture—something that would be essential in order to follow this path. The contributions to overall development from this
expanded capacity in the agricultural sector will need to be supported by contributions from other economic sectors, notably forestry, tourism and fishing.

Substantial reliance by governments on agriculture to increase national productive capacity makes most sense in Tonga and Western Samoa. Adoption of such a strategy will mean that they must be prepared to put more funds into capital and recurrent expenditure in the sector in the short run, perhaps entailing measures to raise government revenue internally through taxation. It simply will not do to rely substantially on aid funds to 'top up' meagre allocations to the sector from domestic sources. But, equally, better use must be made of allocated funds than in the past: too many failed agricultural projects and export ventures have reduced confidence in the capacity of agriculture to lead the way to a more prosperous future.

The most important change needed in governments' approach is a switch in strategic emphasis and project planning from solving technical problems in production to solving marketing ones and ensuring that the economics of production, processing and marketing are rigorously analysed in an integrated way.

There is a naive expectation among some agriculturalists that marketing research is a simple job that can produce clear recommendations about which products can be sold at attractive prices into the long-term future. Unfortunately, the vagaries of markets, particularly export markets, are such that generalisations are impossible. The recent history of South Pacific agriculture should have taught the hard lesson that agricultural marketing is a risky business. Government agencies, such as market research sections of departments of agriculture, are probably at a disadvantage in trying to predict the future relative to market participants who have a vested interest in the operation of the market. That is not to say that there is no role for government in agricultural market research. Rather, the research activity should be set in a broader systems context to identify those constraints and opportunities where government action can help. Such assistance may involve providing needed infrastructure, supplying information or removing unnecessary constraints and restrictions on fair trading.
Government support for agriculture should be concentrated on facilitating the advancement of the private sector, rather than on direct participation in production or marketing. Such a concentration is easier said than done because facilitation requires plenty of (often scarce) experience, skills and sound judgment by those responsible for setting policy and providing services. With the limited resources at its disposal, and having regard to the rather small number of ways in which it can usefully intervene, each government should set priorities emphasising interventions that provide services only it can provide. Given that agricultural exports are planned to be an integral part of agricultural development efforts, chief among these priorities should be improved accessibility to export markets by encouraging and promoting the development of effective marketing and transport services. As noted, much of this development is best left to the private sector but there are areas where government intervention is vital, such as integrated and stringently enforced quarantine and crop protection measures.

There are a few other ways in which the government can help private industry—be it local or foreign—to exploit niche export markets, but it should be wary of becoming too directly involved. By their nature, niche export markets are tricky to tap and defend. If a government becomes too closely identified with a particular niche marketing venture, the failure of that market could mortally wound its credibility. The worst scenario is when a government persists in trying to defend an indefensible niche market, at considerable cost to growers and taxpayers. Risky niche marketing is best left as much as possible to the private sector.

In suggesting a shift in emphasis away from production aspects of agriculture towards marketing, it is not intended to imply that agricultural production research and extension should be neglected. Rather, the point is that research and extension efforts promoting production of commodities that cannot be sold profitably is a waste of time. Therefore, production and marketing aspects of agricultural development efforts need to be integrated.

The special problems of conducting an effective agricultural research program in small countries have been considered. Key elements of
the suggested strategy are to mobilise all potential contributors to the development of both technology and marketing. That means involving farmers and marketers, as well as scientists and economists. Because they will be thinly spread across a broad range of activities, disciplinary specialists in research need to play a stronger role as conduits for information, especially information from overseas research, than might be normal in larger organisations.

It has to be acknowledged that the challenges facing Kiribati, Tuvalu and Niue seem more daunting than those of Tonga and Western Samoa, notwithstanding Western Samoa's present difficulties. The particularly severe problems of smallness and isolation in Kiribati, Tuvalu and Niue combine to make it difficult to see how these nations can ever attain wholly independent and sustainable development. Yet there are certainly steps that can be taken to improve their situations. In all three cases, the starting point for a development strategy has to be a strengthening of the subsistence base, including giving attention to critical resource management issues such as land degradation, excessive cutting and clearing of forests, and overutilisation of marine resources, especially in-shore resources.

Niue is rather different from the other two in being not quite so isolated and in having close links with New Zealand, including ready access for Niueans into the New Zealand labour market. If problems can be mitigated, particularly with regard to air transport, there is a good chance that a number of agricultural products could be profitably exported into the New Zealand market and that some growth in the tourist industry could also contribute to overall development.

For Kiribati and Tuvalu, the scope for developing agriculture through production of commodities sold into overseas niche markets is much bleaker (though not entirely impossible). Copra and other coconut products may have to remain a standby export commodity for these two nations for some time yet. Although outside the scope of our competence and terms of reference, the outlook for development would appear to lie in better use of marine resources. For example, a cultured pearl oyster industry, if it could be successfully established, would fit the bill very well. Another opportunity may open up in
traditional handicraft production, such as woven pandanus products. These tend to be very labour intensive and, as female formal employment and wage rates rise in other Pacific island countries where such products are traditionally produced and used, production of handicrafts may decline. Kiribati and Tuvalu producers may be able to fill part of the shortfall in export markets or even in other Pacific island nations, both for use by locals and for sale to tourists. Indeed, this trend is already apparent, with handicraft exports from Tuvalu going into both Auckland and Fiji markets. However, good market research to determine needs in terms of design and quality would be an obvious precondition for these market opportunities to be more fully developed.

Because export commodities from isolated production areas ideally need to have a high value to weight ratio, attention is often focused on spice crops. The problem is that the markets for most spices pay a high premium for quality, and it is difficult for inexperienced suppliers to establish the required quality standards in production, processing and presentation to attract the quality premiums that make spice production profitable. Nevertheless, it may be worthwhile exploring the possibilities for spices or vegetable dyes, flavourings and pharmaceutical products. Here too, good market research would be a prerequisite for success.

**Meritocracy and social organisation in the Polynesian island nations**

If meritocracy is to be preferred to communitarianism, how then should village society fit into a meritocratic Polynesian system with its strong foundation in rural villages? The answer is not altogether clear and is beyond our competence to answer, yet this question highlights the difficult endeavour planners in all countries have set of achieving agricultural growth in an equitable fashion. Village communities at present shoulder much of the burden of ensuring equity and providing social security, often funded out of the surpluses of the better-off and usually more enterprising of their members. It is
unlikely that villages, as social units, could continue to carry this burden in an age of meritocracy, and increasingly the burden would fall to national governments which are at present not well equipped to handle it. On the other hand, successful pursuit of meritocracy should improve the capability of a national government to provide social services in rural areas in the long term, and there is no reason why much of the commitment to the village currently made by its members should not endure in a more meritocratic society. But the impact of meritocracy on the contribution of villages to a stable and equitable rural society is an empirical question yet to be tested in the countries under study.

Meritocracy in local business will mean the emergence of a class of local entrepreneurs who are able to isolate themselves sufficiently from social pressures to be able to manage their cash effectively, to avoid supplying too many goods and services 'on tick' that is never paid off, and not to have to employ kin in businesses if those people don't earn their keep. Of course, there are such businesspeople already in Polynesia, but it may take time for their numbers to swell to a point where local business is booming.

Meritocracy in the public service will demand some similar changes in deep-rooted attitudes and practices. Progression up the career ladder needs to be based on performance, not influence. Accountability at all levels, including the highest, will have to be improved. Incompetence and corruption will have to be weeded out. The attitude that it is acceptable to divert government resources to private use needs to be changed, again from the highest to the lowest levels. Such far-reaching changes should not be too hard to make in countries where Christian values are supposedly strong—the politician who accepts a bribe is stealing; so is the worker who idles away the day instead of doing his or her assigned task. Of course, not all Polynesian government public servants are lazy and corrupt, but too many of those who are not become discouraged and disillusioned. Until political leaders are prepared to lead by example and take a new broom to sweep away the many bad practices in Polynesian bureaucracies, we fear that progress towards more meritocratic and effective administrations will remain too slow.
Improving relations between governments and aid agencies

Assuming governments are to rely substantially on a productive agricultural sector to create conditions for faster economic development, a lot can be done to improve the delivery of aid and technical assistance in the countries under study. At present, there is little evidence that aid has done much good, and some indications—widespread rent-seeking, failed development projects, incidence of ‘Dutch disease’, centralisation of services and crowding out of private enterprise—that it has been harmful. Aid weariness and an inability to provide the institutional resources to deal with aid disbursement are symptomatic of too many aid donors competing with each other to get too few people in government to formulate, implement, monitor and evaluate projects, each of which is of too short duration and commonly unconnected with other development initiatives. And yet it is evident that government bureaucracies are already too large to be sustained in the long term.

A lot of the problems associated with aid could be resolved, or at least mitigated, by rationalising aid delivery to make it more

- **efficient**: longer time frames to allow for proper absorption of resources in agriculture and specialisation by donors in particular areas of rural assistance
- **coordinated**: reduced competition between donors by coordinating preparatory discussions and negotiations, delivery of aid and loan packages, and monitoring and evaluation
- **imaginative**: seeking out various sections of the rural community to help in development assistance, reducing the current overwhelming reliance on governments
- **sensitive**: adapting aid packages to the circumstances of recipients and intended beneficiaries, acknowledging the fact that limited numbers of skilled and experienced indigenous personnel are available to work on aid absorption in agriculture, and recognising that local staff have important duties to discharge other than to respond to the demands of aid donors and lenders.
Concluding comment

The range of prospects for development of agriculture in the five countries that are the focus of this study is much broader than we observed in Melanesia (Fleming and Hardaker 1994). At least on present indications, agriculture in Tonga is booming, that in Western Samoa is in decline and the agricultural sectors in the other three countries are largely stagnant. We are optimistic enough to believe that there is scope for real development of agriculture in all the countries. To attain it will require some fundamental changes in thinking. Countries need to open up more to new ideas and to overseas investors and traders. Governments need to have the confidence to hand over more of their commercial activities to others while concentrating on doing a lot better those things that must remain in government hands. Politicians, senior bureaucrats and aid donors all need to reconsider their behaviours, recognising the harm, as well as the potential good, that aid can do. Finally, rural people need to be encouraged, persuaded, cajoled and empowered to take more responsibility for their own, and their children’s futures. A MIRAB economy tends to engender an ethos of dependence. Only if people come to recognise that they can and should take control of their own lives will that ethos change and, with it, prospects for agricultural development.

Endnote

1 One option is to impose a land tax, set at a significant level, as a means of extracting revenue from absentee landowners, thereby essentially creating some compulsory remittances.
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What does the future hold for Polynesian agriculture?

To judge by recent indicators of agricultural performance in most Polynesian island nations, the contribution of agriculture to economic development is weak and possibly declining. This picture of an uncertain future for agriculture is explored in this book, and some strategic recommendations are made on how resources in agricultural sectors might best be used to benefit the people of Polynesia. The countries covered are Kiribati, Niue, Tonga, Tuvalu and Western Samoa.

The range of prospects for development of agriculture in these five countries is much broader than in the Melanesian countries discussed in Pacific Policy Paper 13. The authors believe there is scope for real development of agriculture in all the Polynesian countries, but to attain it will require some fundamental changes in thinking.

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