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# **Smallholder Agricultural Development in Tonga**

**Proceedings of a workshop held at the Institute for Rural  
Development, University of the South Pacific, Tonga,  
12-13 May 1988**

**Kenneth M. Menz, *Editor***

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***Hosted by:***

Institute for Rural Development, University of the South Pacific, Nuku'alofa, Tonga.

***Sponsored by:***

Australian Centre for International Agricultural Research, Canberra, Australia.

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## Foreword

The subject of this Workshop was the constraints on, and opportunities for, the development of smallholder agriculture in the South Pacific. The workshop was one product of a collaborative research project between the Ministry of Agriculture, Forests and Fisheries of The Kingdom of Tonga and the Department of Agricultural Economics and Business Management of the University of New England in Australia. The project began in January 1984 with the aim of examining the scope for the smallholder agricultural sector to be a more dynamic component of economic development in Tonga. The underlying belief is that the agricultural sector, and smallholders in particular, if provided with the right technologies, infrastructure and incentives, could contribute substantially to agricultural and economic growth.

The smallholder project is one of five which ACIAR currently has underway in Tonga. Altogether ACIAR has 16 projects operating in seven countries in the South Pacific. The guiding principle in these projects is that research and technological change in subsistence, semisubsistence and commercial agriculture is vital to the development process. This is especially so in the South Pacific where agriculture still represents the bulk of the gross domestic product, employment and export income. Research and technological change leads to increased agricultural productivity with attendant increases in employment and incomes. The cost savings which result then allow consumers to benefit by way of slowing price increases in the case of domestic food crops, and by allowing additional production and consumption which results in increased incomes for farmers at the same time as lower prices. For export crops from small countries of the South Pacific, cost savings from research and technological change are primarily reflected in enhanced incomes for producers.

The additional income streams resulting from technological change in agriculture are spent partly on additional food and partly on nonagricultural goods, thus providing a further stimulus to investment and employment growth. Resources saved from productivity growth in agriculture are then freed for employment in the nonagricultural sector.

Such a transfer of resources from agriculture to other sectors of the economy has occurred in (so-called) developed countries. The process cannot be short-circuited except by some sacrifice in economic growth. The relative decline in the share of agriculture as a proportion of GDP and employment in developed countries is the *end result* of the process described above. It is not a short-cut. By deemphasising agriculture in an attempt to reflect its status in developed countries, developing countries mistake the *end result* of economic growth as the *means* of enhancing economic growth.

Research in, and development of, agriculture are the mechanisms by which agricultural and general economic growth can be achieved. ACIAR is pleased to be a part of this process in Tonga. In particular, it is appropriate that the focus of the Workshop is on smallholder constraints and opportunities. These pose particular challenges for policymakers and agricultural researchers, yet they are the backbone of South Pacific agriculture and have been ignored for too long!

ACIAR is grateful to Dr George Moengangongo and his colleagues at the Institute for Rural Development of the University of the South Pacific in Nuku'alofa for hosting the Workshop. Mr Tomasi Simiki and Mr Simione Sefania of the Ministry of Agriculture, Forests and Fisheries lent their support and assistance to ensure the workshop's success, and we thank them most sincerely.

Dr Ken Menz of ACIAR, together with Associate Professor Brian Hardaker and Dr Euan Fleming of the University of New England, Armidale, were responsible for the conduct of the Workshop. They and I acknowledge however that it would not have been possible without the energy and organisational skills of Mrs Pam Chapman of ACIAR. The assistance of the Australian High Commissioner to Tonga, Dr Rodney Hills, and his wife Gillian was also appreciated.

Finally, ACIAR was honoured to welcome Her Royal Highness, Princess Salote Mafie'o Pilolevu Tuita to the closing sessions of the Workshop. Her thoughtful remarks were a fitting climax to the productive interchange of ideas which characterised the Workshop.

**James G. Ryan**  
*Deputy Director*  
*ACIAR*

# Workshop Highlights: a Tongan Perspective

**Aleki Sisifa\***

THE Smallholder Project involved four case study villages, and hence there are limits to the interpretation of the results. Admittedly, the project established useful baseline data. I am sure that further analysis will be undertaken after the end of the project. I would like to see these results conveyed to the appropriate authorities in Tonga.

The workshop reached a consensus, which was confirmed by the results of the study, that although many constraints faced the smallholder sector (particularly the rural sector), nevertheless:

1. smallholders make a substantial contribution to the general economy of Tonga, as clearly indicated by the sector's contribution of about 40–50% to gross domestic product and the multiplier effects;
2. there is still a great potential within the sector to make further contributions to the economy through increased productivity.

The results of the study have far-reaching implications for policymakers:

1. It is essential that policymakers are made aware of the results of the study. This may be done through team visits to targeted decision-makers, or a follow up meeting, or through the Development Coordinating Committee to Cabinet.
2. There should be a more realistic allocation of resources at the national level directed to the rural sector. It is essential that key people who are involved directly with the development of the sector should participate actively in the resource allocation for the sector. Moreover, they should be included in the process of project preparation from the grassroots up to the highest level.
3. The appropriate strategies should be adopted in order to increase productivity and improve farmers' terms of trade. Strategies must be based on exports since such commodities have a high demand elasticity. Research should furthermore focus on this so results can be justified.

The workshop reached a consensus on a number of issues:

- the need to strengthen links between research and extension, and additionally to marketing;
- the need to intensify training to improve the competence of both staff and farmers;
- the need to make rural living and employment more attractive.

Finally, the study was initiated as a response to the suggestion of the ADB South Pacific Agricultural Survey that there might be a case to undertake investigative work on the feasibility of the plantation mode of management. There is a possibility that the plantation mode and the smallholder mode are complementary and could foster the development of market-led industries.

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## Workshop Highlights: an Australian Perspective

James G. Ryan\*

WORKSHOP participants unanimously agreed that the smallholder agricultural sector in Tonga has an unrealised potential to contribute to increased economic growth in the country. Government, however, must first acknowledge this potential, and then nurture it with incentives such as the following:

- an increased share of the development and recurrent budgets devoted to the agricultural sector, which is more in keeping with agriculture's contribution to gross domestic product, employment and export earnings. Of late, agriculture's share has declined to only 10.9% of the development budget and 5.7% of the recurrent.
- further revisions to the land tenure arrangements to allow better access to land to those best able to use it for producing family food and cash crops. At least 60% of male Tongans over the age of 16 years do not own a tax allotment at present. The smallholder project found that most cash tree crops in the study villages were grown only on registered land; annual food crops were concentrated on nonregistered land. This implies that lack of secure access to land discourages investment by smallholders in tree crops and land improvements.
- better access to credit and mobilisation of rural savings. This could begin by the encouragement of the concept of prudent financial management in rural areas and extension of branch savings accounts.
- closer linkages between research and advisory services to reduce the lag between the design of improved technologies and their adoption. There is also scope, as found in the smallholder study, for improving the performance of farmers whose productivity can be well below the best farmers in the village.
- more emphasis on the marketing of agricultural products, especially the encouragement of private participation in the agricultural marketing system.
- recognition of the important role of women in smallholder agricultural production and more explicit planning for their participation in future. The women in the study villages worked longer hours than men and a significant part of this work of women was in rural production.

ACIAR has been reinforced in its view that smallholder agriculture, and its surrounding agroecological and economic environment, is an appropriate focus for its collaborative research activities in the South Pacific. The Workshop has helped to further identify smallholder agriculture's strengths and weaknesses, from which challenges and opportunities can be pursued.

As a follow-up to the Workshop, ACIAR will explore the possibility of holding a policy forum in Tonga to which Government Ministers and high level officials would be invited for a briefing and discussion of the outcome of the smallholder project and of the conclusions of the Workshop. This would focus on how to improve the performance of the smallholder sector in Tonga so that it can realise its untapped potential. The policy forum would be timed at the convenience of the Government of the Kingdom of Tonga, but would be soon after the publication of the proceedings of the Workshop.

Research on the constraints on and potentials for smallholder agriculture in Tonga by the University of New England will continue beyond the formal life of

the ACIAR Smallholder Project. There is a large body of undigested data yet to be subjected to further analysis. ACIAR will ensure that adequate support is available to the University to allow a satisfactory conclusion to the study. For example, provision will be made for a special study of the economics of the vanilla industry in the ongoing project on farming systems in Tonga. Another possibility is a study of remittances and the mobilisation of rural savings for agricultural development.

It is understood that there will be some major changes in the senior management of the Ministry of Agriculture, Forests and Fisheries in the near future, which may impair its ability to maintain the momentum of research into the problems of smallholder agriculture. ACIAR and AIDAB have had some preliminary discussions with the Ministry about this problem and are exploring the possibility of an initiative under the Australian Staffing Assistance Scheme to provide some supplementary support.

ACIAR will be pleased to consider additional proposals from the Ministry for collaborative research in both economics and other agricultural research topics to replace and/or supplement those already in place. We note however that the budget of the Ministry is severely constrained and this is impacting on the ability of the Research Division to undertake its programs. These constraints can make it difficult for ACIAR to develop new initiatives.

The small size of South Pacific countries means that it is difficult if not impossible for each of them to resource viable research programs on all of the important agricultural problems they face. This reemphasises the importance of identifying and pursuing regional research and information opportunities wherever possible. Such regional initiatives allow economies of scale and specialisation to be realised. However these will only be possible if mechanisms are put in place to ensure that benefits from the research accrue to all countries of the region.

The Workshop served to highlight the importance of agricultural research and development to economic growth in Tonga and the South Pacific generally. It is a clear message to aid donors to bias their programs in this direction, and I will certainly recommend that ACIAR follow this course.

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## Discussion and Recommendations

THE Workshop participants were divided into four discussion groups to address the following issues:

1. Is it agreed that more priority should be given to the rural sector in development efforts in Tonga? Has agriculture the capacity to be an engine of overall economic growth?
2. If so, what overall and agricultural development strategies are needed?
3. What are the main constraints on agricultural development and how could they be relaxed?
4. What are the main opportunities for agricultural development and how could they be exploited?
5. What changes to existing policies, or what new policies are needed?
6. If policy changes are needed, how can they best be promoted?

George Moengangongo summarises the views of the Workshop participants in the paragraphs which follow.

All the groups agreed that the rural sector should be given more priority in the development efforts of Tonga. In the development plans, the indications have always been that agriculture is very important. Furthermore, the intention is to develop the rural sector. However, the allocation of resources for development does not reflect the importance of the sector nor of agriculture to the economy. This very issue has been raised on a number of previous occasions, and it was felt that there was a need to establish the appropriate mechanism to ensure that the sector receives a fair share of development resources.

The justification for the development of the sector can be based on a number of factors, among which are: a) it is the largest single sector; b) it contributes 40% of the gross domestic product; c) it provides the largest source of employment, as the census showed that 66% of Tongan households are actively involved in agriculture; d) it is the main source of export earnings.

Whether agriculture has the capacity to be an engine for economic growth was viewed from different angles by the meeting. It was considered that perhaps it was more correct to consider whether agriculture has the potential to be an engine of economic growth. It appeared that most groups addressed the question along these lines.

Generally, the workshop deemed it vital that for the sector to develop, it is critical that a fair share of national resources are allocated for the development of the sector. Without these resource allocations, the sector will stagnate further.

The workshop went on to examine the strategies required to develop agriculture. A number of issues were highlighted. These included:

- the need for reinvestment in agriculture. The current practice is that profit from agriculture is utilised for the development of other sectors. An example is that STABEX is mostly used for recurrent costs or for the development of other sectors instead of being directed back to the development of vanilla or copra.
- the need for recognition and development of agricultural training in Tonga. At present, there is no effort to encourage the existing training institutions such as Hango Agricultural College. Most government initiatives are

directed mainly at meeting manpower requirements and farmer training is lacking.

- the need for a greater flow of market information to reach the right people.
- the necessity for a more effective structure and organisation to promote agriculture. This requires greater recognition of MAFF's role in research and extension. It was also felt that perhaps some research activities can be regionalised through institutions such as IRETA in order to optimise the benefits from the limited resources available. At the same time, high priority research programs should be identified and initiated at the national level.
- the need to review the role of subsidies. It was felt that input subsidies have created farmers whose participation wanes once the assistance is removed. Alternative types of subsidies were discussed and it was suggested that output subsidies might be more relevant than input subsidies. Other incentives to foster the agricultural sector include duty exemption for agricultural inputs and favourable agricultural credit policies.

The following constraints were also enumerated.

- Tonga is a price taker and in many instances is under the influence of international agreements.
- Tonga is a great distance from overseas markets.
- The archipelagic nature of the land which affects transport cost. Perhaps it is useful to consider alternative technologies which have a high value/volume ratio, and which do not involve perishables.
- Social obligations were regarded by many as a disincentive to agricultural development. At the same time, others considered it as a possible driving force in mobilising the smallholder producer.
- The existing land tenure system was still thought to have some restricting effect on agricultural development. This is especially so with the subsistence producer and for long-term crops. The existing legislation however now permits commercial producers to have tenure of up to 20 years.
- Marketing, especially of exports, is still considered a problem. It was therefore suggested that the monopoly of the Commodities Board be relaxed. This will allow commercial producers to enter the market at will. However, it was felt that the Commodities Board can still perform an important role for the subsistence producer.
- There is a need to address the lack of effective marketing information. It is vital that the right information gets to the producer to assist in planning.
- There is a lack of agricultural technological choices. Currently, there is a limited choice for commercial agricultural activities. Only vanilla, coconut, and banana are actively pursued by the government. Therefore it is important that research be undertaken focusing on cropping systems, and possible alternative technologies.
- The people normally have a negative attitude towards agriculture. This is because of its low status in society. Therefore, there is an expressed need for re-education and a reorientation of the approaches to agricultural education.
- The high cost of labour, which is a reflection of its unavailability, has been a concern recently, especially with the focus on labour-intensive initiatives. What may be required is to investigate labour-saving technologies or to increase productivity per unit area.
- There is a need to improve the existing institutions and organisations which are active in the development of the rural sector. Moreover, the smallholder must be encouraged to participate in the planning process. This is essential for the smallholder's self esteem. In addition, MAFF should be strengthened in order to fulfill its responsibilities in research,

extension and planning. The Land Utilisation unit should be promoted and fostered to increase its effectiveness.

- Ceilings on interest rates, which are currently less than inflation rates, adversely affect savings mobilisation.

The discussion highlighted the lack of national policy relating to agriculture. Indeed, many of the constraints which seems to hinder the development of the rural sector could be alleviated if there are substantive and documented agricultural development policies. In particular, it was felt that:

1. MAFF should have the sole authority on the allocation and selection of candidates for training in agriculture. In addition, opportunities should be given to the private sector for formal training of farmers.
2. There is a need to look at the structure and the organisation of MAFF. Because of the heavy work load, especially when there is no separate Minister, it would facilitate planning and operations if there was another Deputy Director appointed. The new Deputy Director would be responsible for policies and developmental activities.
3. Encouragement should be given to a participatory approach to rural development.
4. The government should allocate adequate resources for the development of the rural sector.
5. A high-level meeting based on the findings of the study and targeted for policymakers be convened at a later date.
6. Some of the problems of MAFF could be alleviated if there was a substantive Minister in post. This is especially important considering the significance of the Ministry to the overall development of the Kingdom.

# Origins, Orientation and Organisation of the South Pacific Smallholder Project

Julie Delforce and Euan Fleming\*

THE South Pacific Smallholder Project came into being because of concerns expressed throughout the South Pacific about the seemingly poor performance of the agricultural sector. The smallholder agricultural subsector in particular had become the target for criticism in the 1970s and early 1980s over its alleged failure to contribute to economic development.

The result of disillusionment with the prospects for smallholder agricultural development was predictable — a reorientation of development planning efforts away from smallholdings, and/or the agricultural sector in general. The alternative is a more industrially-oriented policy. Such a shift would mean that a majority of the populations in these countries would be consigned to a future of limited opportunities for economic growth, and would have to search for greater economic opportunity elsewhere in the economy, most likely in the urban areas.

Rejection of smallholder agriculture as a leading sector in economic growth would be of little consequence were there other sectors offering as good or better income-earning opportunities for the rural populations. It was evident, however, no such opportunities would arise, except in the long term and this led to the recommendation that agriculture had to remain the key sector indefinitely. Some major reorganisation was necessary in that sector if it were to fulfil such a key role (e.g. Ward and Proctor 1980). Influential commentators such as Ward and Proctor foresaw a greater future in a 'plantation mode of production and management'.

The acceptance of recommendations of people such as Ward and Proctor would mean a change in agricultural development strategy away from the village-based semisubsistence smallholder improvement approach to either a smallholder nucleus estate transformation approach or a plantation transformation approach. The implications of these recommendations were that agricultural policies would be redirected, and more public

resources channelled, towards encouraging growth in estate or plantation agriculture. Another unwritten implication was that policies consistent with a smallholder semisubsistence improvement strategy had been in place in these countries for a long time and had failed. This view still prevails among many people of influence in South Pacific countries.

ACIAR's involvement came as a response to the anxieties expressed by people in some South Pacific countries, who felt there was much to lose by forsaking smallholders without some research into the reasons behind their apparently poor recent economic performance. This was the genesis of the South Pacific Smallholder Project.

Has this poor performance been because smallholders have been so constrained by sociocultural factors and are so disadvantaged by remoteness from markets that their mode of production has no potential for meeting their income aspirations and production needs? Or is there scope for appreciably increasing their productivity and incomes through feasible improvements in economic incentives such as better marketing and provision of improved technologies (and associated inputs)? If the latter case were found to be more accurate, questions would need to be raised about the appropriateness of current agricultural policies. Most countries in the region have espoused the cause of smallholder improvement as the centrepiece of their agricultural development strategy. It does not necessarily follow, however, that the set of agricultural policies that they have been instituting are consistent with that strategy.

## Orientation

The study was undertaken in two countries, Tonga and Solomon Islands, and its focus has been at two levels. First, analyses at the farm level have formed the major part of the study. Their purpose was to understand better the circumstances of smallholder families, the constraints under which they operate, and the ways in which they respond to economic opportunities. This set of analyses was undertaken to examine the scope

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for smallholder development should constraints on their operations be lifted.

The analyses were centred on a number of key aspects of the smallholder agricultural system. These aspects include: the farm resource base; input-output relations; employment patterns and time allocation; innovations and choice of technology; household consumption and expenditure patterns; farm household income levels; supply response to changes in product prices; farmer attitudes; the nature of fresh produce and cash crop marketing systems.

The second focus of the study was at a more aggregated level. The project team assessed the likely impact of smallholder agricultural development, studying the overall development of rural areas, in particular, and the Tongan economy, in general. This broader part of the study entailed an analysis of linkages between the agricultural sector and other sectors in a rural regional economy. Project workers also investigated the contributions of the agricultural sector to Tongan economic growth and the sectoral distribution of public expenditure, especially in terms of the level and types of expenditure directed towards the rural areas.

### Organisation

Staff of the Ministry of Agriculture, Fisheries and Forests (MAFF) in Tonga with members of the Department of Agricultural Economics and Business Management, University of New England (UNE) in Armidale implemented the Tongan component of the project. The project leaders were Drs Brian Hardaker and Euan Fleming. Mrs Julie Delforce was employed to organise project activities in Tonga, in collaboration with Mr Simone Sefanaia of MAFF.

A project advisory committee, formed in Tonga, consisted of Mr Tomasi Simiki, Mr Aleki Sisifa, Mr Tevita Holo and Mrs 'Elenoa 'Amanaki of MAFF, Miss Meleseini Faletau of the Central Planning Department, Mr George Moengangongo of the Institute for Rural Development and Miss Seini Tonga of the Statistics Department. Meetings were also held with MAFF staff in Vava'u whenever possible.

Four villages were chosen for intensive study: Navutoka (northeast Tongatapu), Ha'akame-Ha'alalo (two contiguous villages in southwest Tongatapu, treated as one for survey purposes), Mataika (Vava'u) and Ha'ano (Ha'apai). The thoroughness needed for data collection made it unfeasible to work in more than four locations. The villages chosen were intended to represent a range of production environments and various degrees of access to resources and market centres.

A sample of 30 households was randomly selected in each village.

Four Tongan field assistants were recruited to live in the study villages for 12 months. They were supervised by local MAFF staff, where possible, and by regular visits from Julie Delforce and Simone Sefanaia. Two office workers were also employed, one of whom was trained to operate the project computer. An additional field assistant and a locally-resident American (with good command of Tongan) helped with major surveys in all four villages. Outside consultants were also brought in for specific studies.

The village-based assistants had a schedule of interviews to conduct with the 30 households. The following regular surveys were carried out: (a) household composition; (b) income and expenditure; (c) time allocation; (d) food consumption; (e) crop activities; (f) other productive activities.

Surveys (a) and (b) were undertaken weekly for one month in every three, with 10 households interviewed each week. Surveys (c) and (d) were conducted daily for one week in every three months, with two households interviewed each day. Surveys (e) and (f) were undertaken throughout the year, with 30 households interviewed each week.

Other major data-recording activities during the year included:

- (a) a resource-base survey, conducted at the beginning of the 12-month survey period and updated twice at six-monthly intervals;
- (b) the mapping of all tax allotments ('*api 'uta*) used by sample households, to show cropped and fallow areas, important trees, etc.;
- (c) attitudinal surveys which were (i) general, and (ii) pertaining specifically to agriculture;
- (d) investigation of nutritional knowledge and status;
- (e) investigation of the role of women in the village economy;
- (f) collection and analysis of soil samples from some of the allotments of farm households.

Completed survey questionnaires were coded by field or office assistants, checked by Julie Delforce, and then entered as text files on floppy disks using an Apple IIE microcomputer located at MAFF headquarters. The microcomputer was not powerful enough for data analysis, so disks were periodically sent to Armidale where the data were transferred onto the University's DEC 2060 mainframe computer. Further checks of the integrity of the data were carried out, following which a wide range of analyses were undertaken. The digested databases are now available for use in Tonga.

Many of the results from the project have been published in the Project Report. Several Research Notes and Occasional Papers have also been written, dealing with specific aspects of the project. A list of these publications can be found elsewhere in these Proceedings.

#### **Reference**

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# Development Objective and Strategies in Tonga

Paula Lavulo\*

THIS paper will be confined to the objectives and strategies as stated in the series of national development plans prepared by Tonga to guide its development since 1965. The series include five development plans, each on a five year basis. Too many objectives and strategies have been covered in these plans, both on a macro and on a micro basis and the limited space for this paper will not permit a comprehensive coverage of all objectives and strategies. However the word objective in the above title given for the preparation of this paper is in the singular, implying the investigation of just one objective and related strategies in the Tongan development planning effort. Accordingly this paper will concentrate on the one central objective to all the Tongan development plans — economic growth. A brief survey of the economic literature on this objective and also associated strategies will be undertaken. The effectiveness of the Tongan economic growth strategies are then investigated in the light of what is prescribed in the literature.

## The Objective: Economic Growth

The First Five Year Development Plan (DPI) 1965–70 was essentially a list of public investment projects to be implemented over the period. However it emphasised that the central objective of the Plan was to stimulate production and this meant at that stage of Tonga's development growth in agricultural production (DPI 1966, 5). By the Second Development Plan 1970–75 the statement or commitment to this objective was even stronger when it stated that its principal objective was to develop the economic potential of the Kingdom so as to raise the standard of living of the fast-growing population and to reduce dependence on external economic assistance (DPII 1970, 35). In the list of objectives that were indicated in the Third Development Plan 1975–80, the achievement of a faster rate of growth and a more equitable distribution of

national income was the first to be listed (DPIII 1976, 50). In DPIV 1980–85 and V (1986–90) again the first national objective was the achievement of a sustained increase in the production of goods and services and the real incomes of the people.

Consistently, economic growth was linked to raising the standard of living or welfare of the people. DPIII was more specific about the reason for adopting this objective when it stated that the best way to contribute to the long term objective of the nation, i.e. raising the standard of living of the people, was through an acceleration of economic growth. Economic growth was seen as the means of meeting the educational, health and social needs of the people and enabling them to lead fuller and more satisfying lives.

This view on economic growth is based on the belief, popular in the early post-war period, that the aim of growth was increased welfare for all citizens. It was assumed that if production could be increased, the distribution of income would take care of itself. Advocates of growth-oriented strategies have assumed that increased income would be shared by the poor as well as the rich. Once incomes rise, even if among the advantaged groups, their increased demand for goods and services provides opportunities for the poorer members of society to obtain wage employment or to sell more of their farm output (the trickle-down effect). Furthermore governments concerned with redistribution of income are better placed to use fiscal mechanisms to distribute the gains of development, the more rapid the growth of output. Although this view has come under much criticism lately, growth remains central to all development plans in underdeveloped countries.

## Growth Strategies in the Literature

The simplest and most durable model of economic growth is the Harrod-Domar model. In this model, capital is the only factor of production and growth depends on two parameters: the ratio of saving to national income and the productivity of capital, both of which must be increased to

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achieve higher growth with a given level of saving. The simplicity and elegance of the model made it the basis for many later contributions to the theory of development. The model directed the attention of economists to means of mobilising *domestic saving* and planning *investment* to increase the productivity of capital. Development plans were directed principally to these issues, and the popularity of *project appraisal* is, in my opinion, a result of its particular facility for ensuring the most productive utilisation of a given flow of investment.

The focus on *mobilisation of saving* explains several concerns of planners. To induce the private sector — households and businesses — to save more, governments try to modernise banks and other financial institutions and, in a few cases, to raise interest rates so that savers obtain an attractive return net of inflation. To increase government saving, economists prescribe higher, more progressive tax rates and improved tax administration. Once government generates saving, it can be directed either to private sector (through direct or indirect loans) or to the government's own development expenditures.

If domestic saving is a constraint on growth, then *foreign saving*, whether private investment or official aid, can be used to increase growth. The Marshall Plan's success and the popularity of the Harrod-Domar view of growth both pointed to foreign capital as a way out of the bind created by inadequate saving. Development planning and foreign aid programs have been devised to a considerable extent on this reasoning because donors are keen to see that their aid is used productively.

The Harrod-Domar model reflects only one constraint on growth. During the 1950s, Prebisch and other students of Latin American development noted the structural bind into which many of these economies had fallen. Unable to increase their export earnings because they depend on slowly growing demand for raw materials and foodstuffs, yet dependent on imports of capital and intermediate goods, these countries cannot grow because they lack adequate foreign exchange earnings. The *foreign exchange constraint* to growth was enshrined as an impediment equal to the savings constraint in a series of 'two-gap' models by McKinnon (1964), Chenery and Strout (1966) and others in the early 1960s.

Even if savings and export earnings were abundant, for example in the petroleum exporting countries, economic development would be constrained by the availability of the human skills necessary to direct these material inputs. The term *absorptive capacity* was coined for this skill and

management constraint and in *two-gap models* it can be represented by a limit to the growth of investment. A more fundamental concept, *human capital*, has emerged to explain the role of education, as well as health and nutrition, in economic development. It is based on the observation that expenditure of time and money on education of individuals enhances their ability to participate in and contribute to development. Hence education creates human capital in much the same way that saving creates physical capital, and both are required for development.

In the above brief analysis the role of saving, investment and the human capital in economic growth and development were highlighted. The next section deals with the strategies adopted by Tonga with regard to these three essential factors in economic growth.

## Growth Strategies in Tonga

### Savings

Strategies to mobilise saving and to raise the ratio of domestic saving to national income have been quite weak in Tongan development plans. The only plan that emphasised the importance of domestic saving was the Third Development Plan (DPIII 1976, 61). A target was set for the ratio of domestic saving to National Disposable Income (NDI). It was to be raised from 17.8% of National Disposable Income (NDI) in 1974/75 to 19.3% by 1979/80. This modest increase was not expected to be easily achieved since sluggish growth was expected in incomes from copra and also from transfer receipts over the plan period. Measures or strategies to raise company savings were concentrated on profitability and investment opportunities. Company taxation was to be set at a rate that would permit an adequate level of corporate saving. Meanwhile an incentive package to create an attractive climate for investment were to be introduced to encourage local investment of corporate saving.

Personal savings constitute the largest proportion of total domestic savings in Tonga. The only avenue for personal monetary savings is in saving accounts, which are at call and offer a rate or interest of about 5%, and term deposit accounts with slightly higher rates. Policy on personal saving was to be concentrated on incentives for saving by providing a variety of saving opportunities to meet the varying needs of individuals. The investments suggested included the issue of local developments loans by the government, thrift societies which were encouraged by the Co-operative Department, development of credit unions and the setting up of a national insurance

scheme on the line of Fiji's or Western Samoa's National Provident Funds.

The Third Plan also indicated that if the response of the people to the need for a higher level of personal and corporate saving is inadequate, the Government will take appropriate steps to raise its own share of total saving, either through reducing current expenditure, raising additional revenue or by a combination of the two.

The target ratio of 19.3% of saving to national disposable income was not reached. In fact the ratio fell to 12.5%. The required technical and professional people to manage these strategies were lacking in essential ministries and departments. Provision of regular data and statistics to monitor the growth of saving was not achieved. Strategies to raise corporate saving and personal saving were not implemented.

In DPIV and V there were hardly any substantive measures to mobilise domestic savings. Tendency now is to rely entirely on foreign savings or aid to support development. Obviously, since Tonga is unable to harness its optimal level of domestic saving to be supplemented by foreign saving, the rate of growth of the economy (following Harrod-Domar prescription) is lower than it ought to be.

## Investment

The strategy on investment in Tonga's development plans has consistently been to give highest priority to the productive sectors of the economy. Thus in the First Development Plan it was stated that 'the central objective of the Plan is to stimulate economic production through the systematic reorganisation and modernisation of the agricultural services' (DPI 1966, 5). The Second Plan also indicated that 'it is to the agricultural sector that the country must look for any appreciable economic growth during the plan period 1970-75' (DPII 1970, 35). Investment in the agricultural sector was given highest priority and an allocation of 23.6% out of the total available resources was planned for this sector. The next development plan stated that 'the emphasis during the third Development Plan will be on laying the foundation for a more rapid rate of economic and social development during 1980s. Considerable investment will be directed to the productive sectors of the economy, particularly agriculture and manufacturing, and a major upgrading and expansion of the infrastructure will be carried out' (DPIII 1976, 51). One of the main components of the strategy of DPIV was the direction of a significantly larger share of total resources towards the productive sectors, particularly agriculture, fisheries and manufacturing. Finally DPV (1987,

4) stated that one of the main strategies of this plan was 'to focus attention on the production sectors of the economy, especially industry, agriculture and fisheries'.

The emphasis and priority given to the productive sectors, however, were not always matched by the planned resource allocation. Out of the five development plans, two — the first and the fifth—allocated greater resources to projects and investments in the infrastructure sector (airports, wharves, roads, etc.).

In order to ensure that resources utilised in the productive sector yield a good return, appraisal of projects, programs and policies were required to be done in DPIV and V. Project appraisal was not indicated in the earlier development plans but was undertaken in major projects especially those in DPIII. A project was required to generate an acceptable rate of return or be otherwise cost-effective to justify the capital invested.

The record on the implementation of these strategies is quite poor. Actual investment has been consistently higher in the infrastructure sector than in the productive sector in all of the plans that have been implemented up to now. The use of the project appraisal technique has also been rather limited. The effectiveness of these strategies has been hampered by the lack of high level technical and professional people in both the government and the private sector in Tonga.

## Human Capital and the Absorptive Capacity

Shortage of people skilled and experienced in management and administrative techniques places a constraint on the absorptive capacity of the economy and hence on the rate of economic growth. This shortage also places a very heavy burden on the relatively few people with capability in these fields. The basic problem is lack of depth within departments, public corporations, statutory boards and in some enterprises within the private sector. Of all the national development plans, only the Third Plan addressed this constraint on the growth of the economy in some detail.

The Third Plan gave high priority to overcoming this major constraint. It recognised that the acquisition of skills is a slow process. Therefore in the short term the strategy was to rely on the services of expatriate staff and advisors to supplement local people in the Government. In the private sector locals were to be encouraged to go into joint ventures with skilled overseas investors and to learn the skills from their partners. The long-term strategy was based on a policy of localisation through the provision of scholarships abroad, an in-service training program and the

setting up of a vocational and technical training institute. However, this training institute was not implemented.

Inconsistency in development plans on strategies to deal with the critical shortage of skilled and experienced people in management and administration meant that this problem is still very much a major constraint to economic growth in Tonga.

### Conclusion

From the foregoing investigation, it seems clear that strategies to optimise domestic savings are lacking. Public sector investment is financed almost entirely by foreign savings or aid. Investment in the private sector has also been affected by lack of strategies to encourage such savings. Strategies on the allocation of available investment resources to the productive sectors of the economy and the use of project appraisal techniques to ensure a good return on investment have not been implemented effectively. Lack of skilled personnel at the technical, professional and management levels is still a major constraint on economic growth. Inconsistency in strategies to alleviate these problems means that they continue to constrain economic growth.

It is not surprising therefore to find that the economic growth targets set by DPIII and DPIV have not been achieved. The growth targets set by these plans for average annual growth rates of GDP were 5.5% and 5.7% in their respective plan periods. The achievements, respectively, were 4.5% and 3.4%.

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# Potential Contribution of the Rural Sector in Tonga, and the Need to Review Priorities and Strategies

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Two propositions form the basis of this paper: (1) that the rural sector in Tonga is vital if the country is to achieve real and sustainable development; (2) that present policies are not conducive to the development of the rural sector and therefore disadvantage the majority of the people of Tonga. The case for these propositions is based on evidence about Tonga from the South Pacific Smallholder Project, from secondary sources, and from published experience of, and debate about, development efforts in many other countries. Mellor (1986) provides a more complete explanation of the economic arguments outlined below.

## Importance of the Rural Sector

The development of the rural sector is a prerequisite to overall development for several reasons. First, the majority of the people of Tonga still depend on primary production (chiefly farming or fishing) for their main means of livelihood (Sefanaia, these proceedings). If development is to improve the ways of life of these people, rural incomes must rise.

Second, the high birth rate in Tonga in the recent past means that large numbers of young people are joining the workforce of Tonga every year. If they are to be found productive and fulfilling employment in the Kingdom, no other sector offers the possibility of creating new jobs at the required rate. The capital required to develop other sectors such as industry or tourism fast enough to absorb all or most of the new entrants is beyond the resources of the Kingdom. The alternative is yet more out-migration which may be neither sustainable in the long run nor consistent with the maintenance of a sense of national identity and independence.

Third, if Tonga is to compete on increasingly competitive world markets in selling exports and in offering services such as tourism, local wage rates must be kept within bounds. The chief

determinant of wage levels is food prices. Unless local production of food for sale in the market is expanded faster than the rate of growth in demand, there will continue to be upward pressure on wage rates and Tonga will find it increasingly difficult to compete internationally.

Finally, the role of increased rural demand in providing an engine for growth of local, employment-intensive industries (including service industries) is vital. Rural people spend a high proportion of any increased incomes on goods and services, which are or can be locally produced using labour-intensive methods, thereby generating a second round of development benefits.

## Evidence about the Rural Sector

Evidence from the South Pacific Smallholder Project confirms many of these generalisations (Hardaker et al. 1987). The importance of rural sources of income for the welfare of village families is established by the survey results. The subsistence component of incomes remains strong in most village households, but a significant proportion of households also earn substantial cash income from agriculture.

The capacity of the rural sector to generate employment is also demonstrated. The survey findings show that workers in rural households are very fully employed, while more recent investigations (Gyles et al. 1988) confirm the labour-intensive nature of crop production in the Kingdom.

An analysis of food prices in Tonga shows that, in recent years, local market prices have been almost wholly determined by the prices of imported substitutes (Delforce et al. 1988). In other words, Tongan agriculture is able to fill only a part of the demand for food. This reality is reflected in the growing food imports bill as well as in increased incidence of 'western' diseases related to excessive consumption of animal fats, sugar and refined flour. The adverse balance of trade in foods, which conflicts with the aim of developing the local economy, is reversible only by significant and sustained increases in the productivity of local food production. The extra supplies to the local

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market would contain food prices, replace some food imports, and allow real wages to be kept internationally competitive.

The South Pacific Smallholder Project data on household spending patterns confirm that the spending of rural producers is an important potential generator of overall economic development, provided farm incomes can be raised (Delforce et al. 1988). However, a study of the regional economy of Vava'u (Faletau et al. 1984) shows that more needs to be done to promote local industries if more of increased local spending is to be captured in the domestic economy, and especially in the local rural economy.

### Priorities and Strategies

The need for a review of priorities and strategies for development of the rural sector in Tonga is somewhat harder to establish. One problem is to distinguish between the rhetoric of the various planning documents, chiefly the Development Plans, and the reality. What gets done is often very different from what is proposed. For example, in the execution of almost every Development Plan to date, the actual spending on the rural sector has been well below the planned levels (Sefanaia, these proceedings).

The rural sector in Tonga is discriminated against in a variety of ways. Sometimes the discrimination may be deliberate but more often it is the unintended consequence of policies directed to other objectives. Government needs to be aware of the problems it may be making for the crucial agricultural sector and may need to find ways of correcting the bias if the sector is to play its vital role in the development of the nation.

One serious consequence of biases that prevail against the sector is that agriculture is too often seen as a dead-end job that only people who cannot make the grade in other activities enter. The consequences of such thinking are pervasive and extend, for example, to effects on the quality of entrants to agricultural employment. In Tonga, as in so many countries, the best students are encouraged to contemplate almost any other career but agriculture.

In addition, the 'poor relation' image of agriculture extends all too readily from the sector to the Ministry, so that, in the division of the Government budget, the resources provided are curtailed more severely than for other more fashionable ministries (Sefanaia, these proceedings). Moreover, the process tends to be circular and cumulative. A resource-starved ministry can do little and, because it has few conspicuous successes, gets still less of the revenue cake. Ultimately, farmers

wrongly get the blame when plans for development of the sector do not live up to expectations. It is a very human failure to lay the blame on the policies themselves or on the mode of execution.

### Elements of an Improved Strategy

If these prejudices are to be changed so that agriculture in Tonga can play its role in national development, the first need is to raise rural incomes. So long as farming and relative poverty are equated in people's minds, no progress will be made. There are basically only two ways in which the incomes of farmers can be raised:

- by lifting the productivity of farming. Usually this simply means raising yields, although in Tonga these days it may be more appropriate to look at yield per unit of labour used rather than yield per unit of land.
- by improving farmers' 'terms of trade' by increasing prices received for things that farmers sell, or reducing the prices they pay for what they have to buy.

An effective agricultural development strategy must embrace both aspects. Productivity can be raised by introducing new and more productive crops, higher yielding varieties of existing crops or by finding other 'new' technologies that allow more to be produced from the same or less inputs. It can also be improved by raising the standards of management of the mass of producers to those of the best or to what can be shown to be both possible and profitable under prevailing conditions. The South Pacific Smallholder Project data reveal big gaps between average and best farm performance and between best farm performance and what should be attainable (work in progress). Thus, there are essential contributions to be made by extension in closing the productivity gaps that already exist, and by research in pushing out the production possibility frontier. Both areas of work therefore need to be strengthened.

Making prices more attractive is essentially a matter of better marketing, and this too has been the subject of considerable study in the South Pacific Smallholder Project. Prescriptions boil down to the three I's: infrastructure, information and institutions.

First, better rural infrastructure is vital to link producers to markets and to reduce the costs of transporting goods to and from markets. Moreover, what is needed is often small-scale, local improvements, rather than the large-scale, prestige developments too much favoured by some aid donors and some people in Government.

Second, there has to be a better flow of informa-

tion between producers and potential buyers about what is needed. This requirement is most obvious in export markets. For example, there is a trend in higher income countries to 'gourmet' consumption wherein 'different' and special foods are in strong demand. These trends create market niches that Tonga might fill very profitably, but generally does not fill at present because the information about the opportunities does not filter back to growers. There is imperfect flow of information in local markets too. Knowing what the buyers want and when they want it can allow producers to match production more closely to demand and so reap higher prices.

Third, it follows from the above that there is a need to review the institutional arrangements for agricultural marketing. Is the present setup ideal, or could it be improved? Studies of marketing throughout the region indicate that marketing bodies such as the Commodities Board can bring advantages in operating in overseas export markets. They can, however, have their drawbacks, especially if monopoly powers mean that they do not face the stimulus of competition to remain sharply efficient (Hardaker and Fleming 1986). Moreover, the market situation and opportunities have changed over the years and it is likely that agricultural marketing institutions also need to change to make the most of these opportunities.

The examination of institutional arrangements should also embrace such aspects as exchange rate policy and general taxation. For example, depending on the view one takes about the role of aid and remittance flows in the Tongan economy, it can be argued that the pa'anga is grossly overvalued (Sevele 1984). In any event, if uncoupled from the Australian dollar and related instead to a bundle of currencies, the pa'anga would probably devalue somewhat. A policy of maintaining an overvalued pa'anga has the effect of artificially making exports relatively less attractive and imports cheaper. It clearly discriminates against agriculture on both counts.

## In Conclusion

It is the aim in this Workshop to discuss these issues. Starting with an assessment of where Tonga stands today and where the nation is headed, we can discuss whether the strategies being followed are suitable for promoting agricultural development and for converting the benefits of such development into overall advancement for the whole society.

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# Organisation of Agriculture in Tonga

Simione Sefanaia\*

THE 'Organisation of Agriculture in Tonga' is a very wide topic and extends from production to marketing. Issues that should be covered include potentials and constraints with regards to production, agricultural inputs, and marketing. Policy issues, institutional framework, Government objectives and strategies as well as the involvement of the private sector are also relevant issues.

## Agriculture in the Economy

Agricultural production is still the predominant activity in the economy. The agricultural sector is important as a source of domestic food supply, employment, cash income, foreign exchange earnings and raw materials for processing and handicrafts.

According to the 1985 Agricultural Census, about 66% of households in Tonga specify agriculture as the main occupation of the household head. Therefore these households depend primarily on agriculture for their livelihood.

As a source of foreign exchange, through exports, agriculture is by far the most important sector. Over the 10-year period, 1975-85, agricultural and agrobased products consistently accounted for at least 80% of total export earnings. Coconuts and coconut products still form the bulk of Tonga's exports.

Apart from coconuts, bananas and vanilla, production for domestic consumption takes first priority. However the current trend is for more farmers to participate in the cash economy.

## Institutional Framework

The Ministry of Agriculture, Fisheries and Forests (MAFF) is primarily responsible for the formulation and implementation of government agricultural policies. The exceptions are issues relating to land tenure, which are the responsibility of the Ministry of Lands Survey and Natural Resources, and export marketing which is the responsibility of the Commodities Board. The

Central Planning Department has the overall responsibility for the coordination of development planning and project monitoring to ensure that agricultural policies, programs and projects are consistent with the national development objectives.

The Ministry has to assume responsibility for many services, for example tractor hire, which are not adequately provided for by the private sector. While some of these services are still provided at subsidised rates, the broad policy objective is to move to full commercialisation so as not to deter the private sector and to promote efficient allocation of resources and appropriate choice of technology.

The Tonga Development Bank (TDB) has emerged as the major source for agricultural credit. The TDB has contributed to the implementation of major agricultural projects by making available loan funds.

The Institute for Rural Development of the University of the South Pacific (IRD) has contributed through an ongoing program known as Small Projects Management Training, as well as other training and meetings.

Churches also provide agricultural training through the establishment of agricultural training schools.

## Agricultural Input Supply

Importation and sale of agricultural inputs are being conducted by the private sector. Currently, the major importers are the Commodities Board, Tonga Co-operative Federation and the Fua 'oe Fonua Farm Store. There are also other importers but to a small degree. The services provided for the outer islands in this area are still poor and unreliable.

## Marketing

### Domestic

The domestic market for agricultural products is well established for Tongatapu and Vava'u with the construction of the Talamahu and Sailoame Markets. There is still a need to develop the markets in Ha'apai and 'Eua.

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The local fresh produce market is largely unregulated. Commodity prices are determined by the forces of supply and demand.

## Export

The export of most agricultural produce is regulated by the Commodities Board, which has sole trading rights in copra and bananas and licenses exporters of other commodities such as vanilla. The export of root crops is processed mainly by individuals.

Apart from bananas, which have an assured price in the export market, all fresh produce exported is subjected to a great fluctuation in price. There is a need to improve market information so that this can be used as a basis for better coordination between production and marketing.

## Credits

The TDB is the main financing institute for the provision of credits for development in the agricultural sector. During the period 1981-85 more than 50% of the Bank's lending to agriculture was for working capital and about 23% was for transportation vehicles. The total amount of funds involved during this period was T\$8.12 million.

The Bank of Tonga is now involved in lending for agricultural development, especially in Vava'u.

## Production Units

The first Agricultural Census for Tonga was conducted in 1985. Tabulation and analysis is now complete and ready for publication. Some of the results are presented and discussed below in Tables 1-3.

**Table 1.** The total area of land in hectares recorded for households engaged in agricultural activities.

Tongatapu	19810	'Eua	3171
Vava'u	6166	Niuas	1556
Ha'apai	2962		

**Table 2.** Size of agricultural holdings in Tonga.

Area	No. of Households	Percentage
Less than 4 ha	7751	76
4-6 ha	1276	12
6-8 ha	684	7
More than 8 ha	493	5

**Table 3.** Percentage of households owning land in the different island groups in Tonga.

Tongatapu	43	Ha'apai	50
Nuku'alofa	32	Niuas	80
Vava'u	50	'Eua	75

The distribution of the size of agricultural holdings in Table 2 shows clearly the predominance of smallholder farming in Tonga. It would be interesting to know the households with more than 6 hectares and whether these areas have been registered as tax allotments. If not, will the land be available for distribution and when.

Approximately half of the households in Tonga own land (49%) as compared to 51% who do not own land (Table 3). This indicates that at least 60% of the male Tongans above the age of 16 years do not own a tax allotment.

The percentage of households not owning land in Nuku'alofa is very high, indicating that the urban area is attracting the landless, i.e. those without tax allotments.

It is very important to note the very high percentage of males without tax allotments. One of the questions to be raised here is whether there is still land available for distribution. If so, then who is still holding on to the land. Another question is whether further subdivision of tax allotments is possible.

## Households Participating in Agricultural Activity

About 29% of all households were found to be non-operational in terms of an agricultural holding. In Tongatapu, 37% of households were non-operational. The highest percentage of non-operational households (56%) was located in Nuku'alofa.

The high proportion of non-operational households in Nuku'alofa reflects the pattern of urbanisation. It also signifies the need for operational households to produce a surplus in order to feed the households who do not produce their own food for subsistence. Surpluses are either sold or given away.

Table 4 shows the number of males in households throughout Tonga, thereby signifying the potential labour force.

## Priority for Agriculture

An indication of the priorities attached to the various sectors in policy making is the allocation of Government's financial resources, shown in Table 5.

The sector's share of development expenditure ranges from 9.5 to 23.9%. There was a marked decrease from 21.7% in 1986/87 to 10.9% in 1987/88.

It should be noted that actual funds received for development could be substantially less than the printed estimated figure.

The share of MAFF in the Recurrent Estimate has decreased from the 8.6% share in the 1981/82

**Table 4.** Potential labour force in Tonga.

	Under 15	15-49	50-64	65 & above
<i>Male</i>				
Tongatapu	8560	10492	2190	613
Vava'u	2810	2704	633	240
Ha'apai	1652	1580	405	181
'Eua	883	1112	197	61
Niuas	503	650	107	24
The estimated percentage without tax allotment is at least 60%. This is equivalent to about 12700 males above the age of 16 years.				
<i>Female</i>				
Tongatapu	8149	10250	2015	528
Vava'u	2558	2781	587	205
Ha'apai	1659	1681	371	163
'Eua	814	1014	197	64
Niuas	381	656	74	20

**Table 5.** MAFF recurrent and development estimates (T\$'000,000).

	81/82	82/83	83/84	84/85	85/86	86/87	87/88
MAFF recurrent	1.4	1.2	1.2	1.4	1.4	1.6	1.7
Total recurrent	16.3	17.0	17.8	19.1	22.8	26.1	29.8
% MAFF	8.6	7.1	6.7	7.3	6.1	6.1	5.7
MAFF devel	1.4	3.2	2.3	3.7	1.9	2.5	1.6
Total devel	14.7	14.2	19.2	15.5	13.9	11.5	14.7
% MAFF	9.5	22.5	12.0	23.9	13.7	21.7	10.9

Financial Year. This indicates a shift of emphasis away from the agricultural sector.

### Conclusions

The available data signify that smallholder farming is still the predominant farming system in Tonga. It is evident that an increasing number of males do not have access to a tax allotment,

therefore there is an increasing pressure to produce more per unit area.

There is an indication that Government's development priority is shifting away from agriculture, fisheries and forests to other sectors of the economy. This paper briefly raises some issues with the intention of bringing them to light and of creating an awareness of what is actually happening in the agricultural sector in Tonga.

# The Smallholder Economy: Preliminary Results from the South Pacific Smallholder Project

Julie Delforce \*

KEY features of the smallholder economy, as revealed in data collected by the South Pacific Smallholder Project, are briefly summarised in this paper. More details can be found in the South Pacific Smallholder Project Report (Hardaker et al. 1987) and in other project publications, such as Research Note 4 on food crop production (1987) (Delforce 1988), which are listed at the end of these Proceedings.

## Household Composition and Labour Supply

Average household compositions in the four villages are shown in Table 1. It can be seen that households in Navutoka were on average larger than those in the other villages, while average household size in Ha'ano was much below that elsewhere. Some insights into the factors causing these differences can be obtained from Fig. 1 which shows the size distributions of households in the four villages. The Navutoka sample included two large households but no small households, while the Ha'ano sample included eight small households.

Table 1 also shows the dependency ratios in the four villages, calculated for this purpose as total household size divided by the number of males aged 15 to 55. The table shows that these dependency ratios are most favourable in Navutoka and least favourable in Mataika. Intravillage variation in dependency ratios is much greater than intervillage variation.

## Access to Land

Access to land on a household basis according to type of tenure is shown in Table 2. Households in Navutoka have the largest amount of land available, while those in Ha'ano have the least. The differences shown in total land areas reflect the general level of land availability in the study areas.

A somewhat different picture emerges, however, when access to land is examined in relation to size of household (Table 2). The differences between the villages in land access are considerably less on a per person basis than on a per household basis, showing that family sizes tend to be positively correlated with land available. A notable feature of the distributional data in Table 2 is that in Ha'ano,

Table 1. Average household composition by village.

	Ha'akame/Ha'alalo		Ha'ano		Mataika		Navutoka	
	Males	Females	Males	Females	Males	Females	Males	Females
	no.	no.	no.	no.	no.	no.	no.	no.
< 15	1.60	1.73	.82	1.08	1.53	1.34	1.52	1.49
> 15, < 55	1.35	1.42	.94	1.13	1.11	1.73	1.92	2.03
> 55	.17	.12	.34	.30	.34	.16	.27	.33
Total	3.12	3.27	2.09	2.50	2.98	3.23	3.71	3.85
Total males and females	6.39		4.60		6.20		7.57	
Adult equivalents	4.91		3.70		4.87		6.09	
Dependency ratio	4.74		4.91		5.60		3.94	

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despite an average land availability comparable with the other villages, some 43% of households have less than 0.5 ha of land per person — a much higher proportion of land-scarce households than elsewhere.

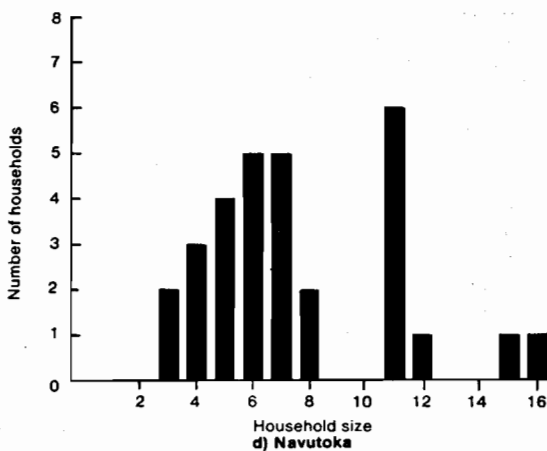
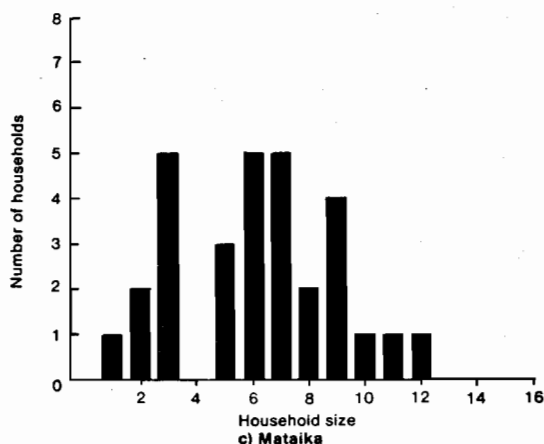
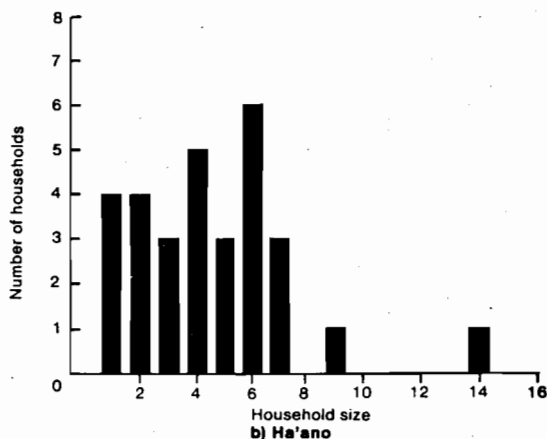
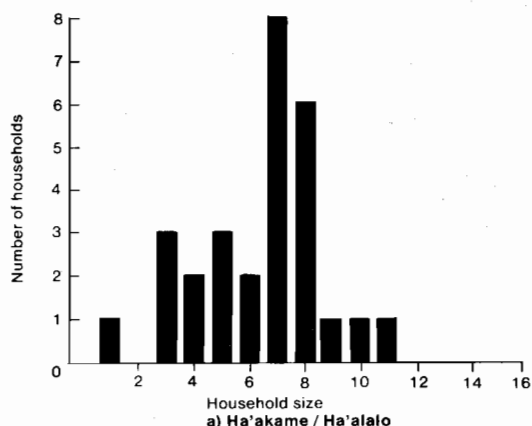


Fig. 1. Distribution of household size by village.

There are some important differences between villages in security of access to land. It is clear from the data in Table 2 that more of the land in Navutoka is held in relatively secure tenure (own or relative's land) than in the other villages. The position appears to be least favourable in this respect in Ha'akame/Ha'alalo.

#### Assets and Liabilities

The values per household of productive assets are shown in Table 3. These assets are net of the value of land and perennial crops. Per household asset values are greatest in Mataika and least in Ha'ano. Navutoka households on average own more assets than those in Ha'akame/Ha'alalo. Measured in value terms, the main productive assets are livestock and transport equipment. Not surprisingly, investment in fishing equipment was greatest in Navutoka, the main fishing village of

those studied. Investment in agricultural equipment (both for production and processing) is very low, averaging less than \$70 per household across the whole sample.

The savings and debt positions of the average households in the four villages are also summarised in Table 3. Most households had some savings, although the average amount saved was generally small. About half the households also had debts.

#### Land Use

Table 4 gives details of the land available to the survey households and of the use of that land. Land areas per household are greatest in Mataika and Navutoka and least in Ha'ano. However, the proportion of fallow land is also highest in the two villages with the largest land areas per household.

On the cropped areas, root crops are the main land use, either as sole crops or often in combin-

**Table 2.** Household land areas by tenure type (ha per household).

Land ownership	Ha'akame-Ha'alalo	Ha'ano	Mataika	Navutoka
Self-owned	.732	.558	1.148	1.612
Relatives' land	1.981	1.476	2.515	2.905
Other land	.940	.107	.810	.189
Unknown ownership	.000	.049	.267	.115
Total per household	3.654	2.190	4.740	4.822
Total per adult equiv.	.813	.823	.986	.991

**Table 3.** Household assets and liabilities.

Item	Ha'akame-Ha'alalo	Ha'ano	Mataika	Navutoka
Livestock	963.71	1097.60	1812.10	1431.80
Farm equipment	68.27	34.07	62.13	57.69
Processing equipment	22.32	0.67	10.50	3.93
Fishing equipment	54.09	52.21	7.30	169.59
Transport equipment	358.21	53.33	518.00	207.17
Handicraft equipment	45.89	32.73	40.33	55.20
Household equipment	444.96	36.73	187.85	277.90
Other	2.14	0.00	21.17	0.83
Total asset value	1959.59	1307.34	2659.38	2213.42
No. households with deposits	20	27	19	20
Average deposits (\$)	188.27	31.38	211.41	137.64
No. households with debts	10	11	19	14
Average debts (\$)	304.88	173.99	540.38	329.20

**Table 4.** Use of land operated by surveyed households.\*

	Ha'akame-Ha'alalo	Ha'ano	Mataika	Navutoka
Total land per household (ha)	3.654	2.190	4.740	4.822
Total land use:	%	%	%	%
Land cropped by household	35.04	35.14	25.54	20.97
Fallow land	64.96	64.86	74.46	79.03
Total land	100.00	100.00	100.00	100.00
Use of cropped land:	%	%	%	%
Root crops	63.01	63.70	24.77	58.13
Banana/plantain	10.44	3.89	.43	2.88
Vanilla	.09	.00	26.33	3.56
Other	3.37	3.73	5.77	10.87
Roots + banana/plantain	8.54	23.65	17.03	11.05
Roots + vanilla	.00	.00	1.92	.63
Roots + other	10.46	2.17	7.71	3.88
Banana + vanilla	.00	.00	4.20	.24
Banana + other	.30	.13	.00	2.42
Vanilla + other	.00	.00	4.20	.24
Other mixed	3.80	2.72	11.85	2.45
Total	100.00	100.00	100.00	100.00
Sole + mixed roots	82.01	89.53	51.42	73.69
Sole + mixed bananas/plantain	19.27	27.67	17.46	20.24
Sole + mixed vanilla	.09	.00	32.45	4.44

\* Based on those households for which detailed land-use maps were prepared.

ation with other crops. Bananas and plantains have a fairly uniform distribution across the four villages, but sole-cropped bananas, which may be presumed to be mainly grown for sale, are important only in Ha'akame/Ha'alalo. Vanilla is a significant crop only in Mataika.

The relationship between land use and tenure was investigated and found to be complex. Preliminary analysis does indicate the existence of the expected association between security of tenure and willingness of land users to invest in long-term crops. For example, of all the vanilla growing on the land of surveyed smallholders, 96% was on the farmers' own land (registered tax allotments) or on the land of relatives. Most of the relatives' land was borrowed 'forever'.

### Household Labour Use

The use of non-leisure time of men and women by age group is shown in Fig. 2. The most notable

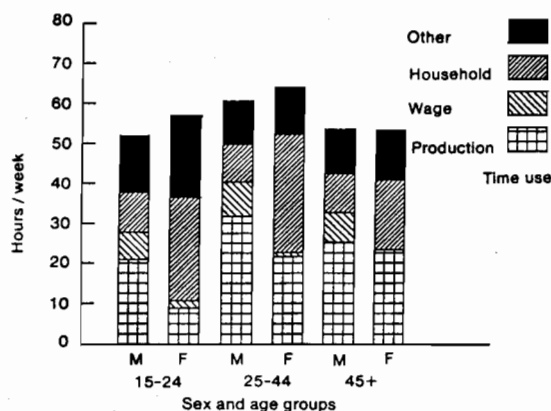


Fig. 2. Use of non-leisure time by sex and age group.

Table 5. Weekly household incomes by source (T\$).

Item	Ha'akame-Ha'alalo	Ha'ano	Mataika	Navutoka
Coconuts	2.39	8.04	2.93	4.93
Other crops	9.27	0.97	16.97	4.03
Fish	0.16	1.83	0.93	10.93
Handicrafts	1.95	0.70	2.42	1.68
Livestock	1.25	0.36	2.37	1.34
Wages	8.39	1.34	11.15	9.49
Gifts	31.21	2.30	7.09	53.58
Other	2.10	0.07	3.42	1.03
Total cash	56.71	15.61	46.44	87.01
Subsistence*	30.	39.	37.	30.
Total cash & subsistence	87.	55.	83.	117.

\* The figures for subsistence income reported here are rough estimates only. See Appendix 1 of the project report for details of estimation procedures.

feature of these results is the evidence that most of the adults in the sampled households are fairly fully occupied. Men in their middle years spend on average over 40 hours per week on production and wage employment. Women in the same age group are even harder worked, and neither men nor women in the 25-44 age category appear to have much spare time that could be allocated to additional income-enhancing schemes.

Women spend less time than men on production and are far less involved in wage employment. On the other hand, they do the bulk of the work in the home. Young women take on the main burden of housework while older women spend a higher proportion of their time on production, chiefly of handicrafts. By contrast, young men are the least occupied of any of the categories shown in Fig. 2. They do little work in the household and spend less than 28 hours per week on production and wage employment. It would appear that some people in this category are underutilised and are a possible source of extra labour.

### Household Incomes

Average weekly cash incomes from the main sources are shown in Table 5. Cash income from crop production is highest in Mataika. Income from other production, chiefly fish, is significant in Navutoka, but not in Ha'ano, the other 'fishing' village, presumably because of lack of access to markets. Gifts and remittances are a major source of cash in the two Tongatapu villages, especially Navutoka, but are much less important in the outer island villages. Indeed, the lack of cash in Ha'ano is emphasised in these data since households in this village also earn little in the form of wages. Estimates of the value of subsistence

production and the effects of variations in average household size are also shown in Table 5.

Fig. 3 shows the locations where cash incomes were earned. The high level of remittances from overseas is again evident. Most other income is earned in the main town nearest to the village, often from market sales or wage employment.

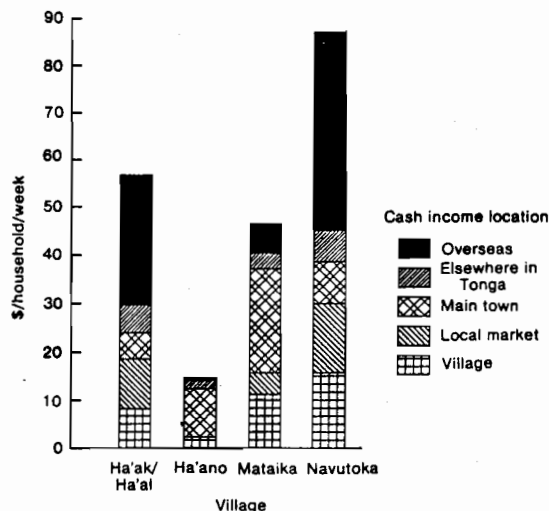


Fig. 3. Household cash income by location for the four villages.

### Food Consumption

Data on household food consumption per adult equivalent are presented in Table 6. These data relate to estimates of food quantities brought into the household; they cannot be related to individual intakes. Considerable difficulties were experienced in obtaining complete records for all food categories, especially for foods eaten outside normal meals. Thus, some categories of food are understated.

Despite these deficiencies, the table does reveal the main features of food consumption patterns in the four villages. The predominance of root crops can be seen, as can the greater reliance on imported staples in the two Tongatapu villages relative to the two villages on outer islands. By contrast, in the outer villages of Ha'ano and Mataika there is greater consumption of other local staples such as bananas, plantains and breadfruit. Total reported consumption of meat and fish is highest in Mataika, followed by Ha'ano, Navutoka and Ha'akame/Ha'alalo. In Ha'ano, consumption of local seafood predominates, while the high consumption of local meats and fish in Mataika is probably a reflection of the large number of funerals and feasts which took place during the recording period. Purchased meats and fish are most significant in Ha'akame/Ha'alalo, where local reef resources are very poor and where there is relatively easy access to the stores of Nuku'alofa to buy meat or tinned foods. The level of consumption of imported meat and fish in Mataika no doubt reflects the money coming into the village from vanilla production.

### Expenditure Patterns

Average patterns of household cash expenditure on the main categories are given in Table 7. Main items of expenditure are food and fees (particularly school fees). Gifts, donations and purchases of major items for the house or farm are important in Mataika. The low level of intensity of production in all four villages is indicated by the small expenditure on production inputs. Very few people spend much on seeds, agricultural chemicals, labour or machine hire.

### Other Project Results

The project report also contains analyses of patterns of inequality in the availability and

Table 6. Food consumption per week per adult equivalent (kg).\*

Food category	Ha'akame-Ha'alalo	Ha'ano	Mataika	Navutoka
Root crops	13.81	17.25	13.41	6.02
Other local staples	3.39	6.11	5.75	1.85
Imported staples	1.61	.59	.69	1.50
Local fruit and vegetables	10.63	9.41	.63	2.59
Local meat/fish	.98	3.28	3.02	1.43
Imported meat/fish	1.16	.09	.98	.92
Other	.62	.18	.18	.99

\* In interpreting the data on kilograms consumed, it should be kept in mind that imported staples such as flour and sugar generally have much lower moisture contents than root crops.

**Table 7.** Weekly household expenditure by category (T\$).

Item	Ha'akame-Ha'alalo	Ha'ano	Mataika	Navutoka
Food and beverages	24.24	5.26	24.02	26.46
Household supplies	3.97	.97	3.84	2.85
Clothing and accessories	2.22	.33	2.69	2.29
Productive inputs	4.05	.19	8.25	1.72
Major capital items	5.92	.13	23.01	1.55
Fees	15.00	5.36	21.91	15.02
Gifts and donations	6.24	.79	10.45	7.44
Other payments	.43	.60	.79	.96
Total*	62.05	13.63	94.95	58.28

\* The average weekly cash incomes reported in Table 5 are lower than the average weekly expenditures reported in Table 7 for Ha'akame-Ha'alalo and Mataika villages. This may be attributable to the fact that data were recorded for sample periods only, and income frequently takes the form of relatively large, irregular receipts. Consequently, average incomes may have been somewhat underestimated if, by chance, such large items were underrepresented during the sample periods. It is also possible that some expenditures were financed from loans, which are not included in Table 5.

productivity of resources, both between villages and between households within villages. Considerable inequalities were found in the distribution of resources and in participation in agricultural activities. Substantial variations in factor

productivity were also evident. This suggests that potential exists for expanding agricultural production through the dissemination of successful techniques and work practices from farmer to farmer.

# **Agricultural Research and the Economic Development of Tonga, with Special Reference to the Role of ACIAR**

**Kenneth M. Menz \***

## **An Agriculture-oriented Development Strategy**

THE Tongan economy is primarily dependent upon agriculture and fishing. Together the two make up approximately 50% of gross domestic product. While Tonga has been the leader in terms of economic growth in the South Pacific, appropriate policies towards the agriculture and fisheries sector will be essential in maintaining this economic growth.

Two basic strategies of economic development have been formulated, and followed, in developing countries around the world: 1. rapid industrialisation based upon intensive use of capital; 2. agriculture-oriented growth strategy, using less capital but more labour-intensive. While the first strategy might *eventually* lead to increased employment, it will not typically increase employment in the short term. Furthermore, those people who do find employment in industry will want to purchase more food, but if that food is not available, due to neglect of the agricultural sector, the supply of food will become an overall constraint to development.

With an agriculture-oriented development strategy, employment and incomes are increased via food production. The already large size of agriculture in most developing countries (including Tonga) ensures that the consequences of growth in this sector carry through to other sectors of the economy (e.g. the urban sector). Food supplies are increased for urban *and* rural poor, as well as for agricultural producers.

## **Technological Change: Key to Agricultural Development**

Technological change increases agricultural productivity and provides increased profit to land-owners and decreased prices of agricultural goods to consumers. Employment increases as a result of new technology may result from direct absorption

into the agricultural work force, or through increased demand for local goods and services by those whose incomes are directly enhanced by the new technologies. In general, these locally demanded and produced goods and services will be more labour-intensive than large-scale industry.

While the case for and against agriculturally-led economic growth is somewhat more complex than indicated above, the actual evidence on an individual country-by-country basis is quite compelling in favour of this strategy.

The key to agricultural development throughout the world has been new technology, and in most cases the generation of new technology has been a result of agricultural research. Adequate infrastructure and financial incentives are prerequisites to the adoption by farmers of new technology. Many economic studies have assessed the economic rate of return from agricultural research. These have been found to be high in most instances, commonly in excess of 30%.

In recognition of the above factors, there have been sharp increases in the resources devoted to agricultural research over recent years, both by developing countries themselves and by external funding agencies.

## **Setting Agricultural Research Priorities**

There is a tendency for countries to target research on commodities which are imported, rather than on those already grown in-country. As a general rule, a policy targeted at import replacement is misguided: the very fact that these commodities are being imported is a signal that the importing country is not competitive on a cost basis with other countries. While it is possible that research can overcome this cost disadvantage, there would have to be a special reason for choosing an import-replacement item for research over one which is *known* to be produced competitively with other countries (as manifested by current production levels).

Targets for research should be high quantity, high value products or low cost, high payoff projects. The latter can result from either large cost reductions or yield increases achieved with a

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relatively short lag time after the research is completed.

At ACIAR, there has been considerable work done on analysing these various aspects of economic returns to agricultural research. The only individual country in the South Pacific region for which ACIAR has performed an analysis is Papua New Guinea. The most striking feature of the analysis was that few crops appear to justify significant research input. For most commodities even modest research programs do not seem justified on economic grounds. This conclusion would be even more marked for Tonga (i.e. for many commodities the research costs would not achieve sufficient expected benefits to justify the investment).

Thus, small countries such as Tonga face particular difficulties in regard to gaining economic benefits sufficient to cover research costs. Agricultural development, and agricultural research in particular, are still key ingredients in successful economic growth, but the low output levels of most crops means that agricultural research programs must be targeted very carefully at the major products (and at the aspects of those products likely to give the greatest economic return within the product group).

Besides careful targeting of research expenditures, other possible ways around the problem of low value agricultural production preventing an adequate payoff to agricultural research are: 1. regionalisation of research efforts; 2. specialisation in research; 3. borrowing research results. Under the first mode of operation, agricultural research would be done by regional institutions with individual countries and aid donors contributing to the research, and with each country represented in setting priorities. The disparate goals of countries are a potential hindrance (e.g. compare PNG priority set with that of Tonga).

Under the second mode of operation, countries could simply choose to specialise in individual commodities or problems (e.g. vanilla in Tonga) with a view to *sharing* research results on a more or less informal basis with other countries in the region who would also specialise their own research resources.

The third suggested method (similar to no. 2) involves using and adapting research results from research organisations elsewhere — international or regional. This implies using fewer resources for research in Tonga and more in searching for research results from elsewhere.

### **ACIAR's Role in Agricultural Technology Generation**

ACIAR's role is to help developing countries to

identify and solve their important agricultural problems by commissioning research partnerships between Australian and developing-country research institutions, in fields where Australia has special expertise. There is a key emphasis on the word 'partnership'. ACIAR does not wish to impose projects on developing country partners, but seeks to respond to requests and to work alongside scientists from the partner countries. In some South Pacific projects, a lack of skilled local scientists forces ACIAR into a more significant role. We have been lucky in this project, and others in Tonga, to have had able and enthusiastic counterparts who have been able to take a full share of the partnership responsibility.

Even taken as a single entity, the South Pacific is a relatively small producer of agricultural products, with the exception of coconuts and fish (and sugar in Fiji). On the basis of economic assessment it would be difficult for ACIAR to justify putting many of its limited research resources into the South Pacific. However the South Pacific has been granted 'special status' in that South Pacific research projects are not expected to compete on a straight economic basis with projects in larger producing countries.

As a general rule, ACIAR must heed economic signals in allocating its resources. Consequently the same principle outlined above (of looking for regional benefits from research in the South Pacific rather than simply national benefits) applies to ACIAR. Many of our projects have a regional orientation, as indicated by the list of current projects. Major initiatives in banana/plantains, coconuts, sweet potatoes and fisheries are included. Additional projects are commencing on bait fish (Solomon Islands) and banana improvement (regional), kava wilt (Tonga) and biological pest control work (regional, some in Tonga). Overall 16 projects are currently being supported at an annual cost of approximately A\$1.5m.

### **Future ACIAR Projects**

1. The ongoing project on giant clam mariculture is reaching a phase where some pilot attempts at commercial or subsistence rearing should be possible in the South Pacific. Tonga was invited to the workshop in April this year in Australia and a possible Tongan component in a future project is being explored.
2. Some economic work on fisheries in the South Pacific (especially export fisheries) is likely to be initiated — beginning with a workshop in December this year, involving Australian economists and representatives of

South Pacific countries and relevant regional organisations.

3. An AIDAB-funded project on South Pacific food handling and marketing for export, including aspects of transportation, has just commenced. Transportation, rather than production would appear to be limiting export opportunities for many fresh agricultural products from the South Pacific.
4. On some Pacific Island countries, inshore reef fisheries are facing levels of exploitation which are likely to be unsustainable in the long term. Yet most methods of fish stock assessment are impractical on the basis of the costs and skills required. A visual method of stock assessment has been developed in Australia and is expected to be tested in the South Pacific, including a major effort in Tonga.

#### **Work Emanating from the Smallholder Project**

The Workshop focused on the results of the Smallholder Farming Systems Project. The project, however, will not formally end until February 1989, and results should continue to flow from the project even beyond that date.

The one aspect of the work which did not proceed to the level envisaged in the original project proposal was the on-farm testing of new

technologies, although some work is now in progress, and will continue.

Vanilla is a promising crop for Tonga. There has been a strong trend back to natural vanilla by consumers in the USA, where about one half of the world's vanilla is consumed, and this has been reflected in high prices on world markets. The devaluation of the Tongan currency with respect to the \$US has further enhanced prices to Tongan growers. Because vanilla is a high value per unit volume spice, transportation problems which bedevil many South Pacific export commodities are not an issue.

Madagascar dominates the world vanilla supply and developments there will have a potentially major impact on price. Unfortunately it is extremely difficult to obtain information on Madagascan production and stock levels. Nevertheless, on the information available to date, it does appear that vanilla production in Tonga would remain profitable within the range of prices likely in the foreseeable future. Many of the technical problems associated with growing vanilla in Tonga appear to have been overcome. It would be desirable to have better information on the economics of growing this crop as a base for its further development. Perhaps some attention can be paid to this issue during the last few months of the Smallholder Project.

# Agricultural Marketing and Price Policy: Choosing the Correct Incentives

Euan Fleming \*

THE approach adopted in this paper is to suggest an agenda for possible reform of agricultural marketing and price policy in Tonga. To this end, some propositions are put forward for debate. These propositions are not intended to be strict recommendations for reform but, rather, some hypotheses that will stimulate discussion. Three propositions are presented. The first relates to the type of policy intervention that the Tongan government should undertake; the second relates to the need for greater agricultural market planning; and the third concerns the appropriate organisational form for agricultural market participation. There are numerous other propositions that could also be discussed, but only three are likely to be manageable in the time available.

**Proposition 1: The Tongan Government should concentrate on bringing about market demand and supply shifts and improving the dissemination of market information, rather than manipulating prices in agricultural markets.** There are three main ways in which a government can influence the decisions and actions of agricultural producers by offering market incentives. These are: (a) the direct manipulation of market prices; (b) causing shifts in underlying demand and supply conditions which indirectly lead to changes in market prices; (c) helping to improve the spread of market information to producers, consumers and other market participants. The main purpose of this proposition is to assess the usefulness of these different approaches to development policymakers in Tonga.

## Price Manipulation

Various forms of price manipulation have been attempted in South Pacific countries. Among the more common have been price setting, stabilisation, subsidies and grading.

## Price Setting

Governments in developing countries, includ-

ing those in the South Pacific, have been conspicuous in their use of price-setting procedures in agricultural markets. Reasons given for these actions have included the need to keep urban food prices 'reasonable', preventing middlemen from making 'excessive' profits, equalisation of prices between producers in different regions, and encouragement of marketed surplus from producers, especially those in more remote areas.

Tonga has experienced negligible government intervention to set prices in the domestic fresh produce market. There has been extensive intervention in export pricing of cash crops through the operations of the Commodities Board. However, the strictures of operating in export markets has meant that the board has to keep close to market price trends in setting payout prices to producers.

## Stabilisation

A related activity of the Commodities Board has been export price stabilisation. The strongest case for government intervention to stabilise prices is in terms of macroeconomic stabilisation in small developing countries. It would not appear, however, that price stabilisation of copra alone will contribute greatly to macroeconomic stability in Tonga.

The case for improving the efficiency and welfare of individual producers has also often been put forward as a reason for stabilising export commodity prices in Tonga and in other South Pacific countries. Evidence from work undertaken in the South Pacific Smallholder Project failed to prove that the benefits to producers from price stabilisation outweigh the costs associated with stabilisation schemes.

## Subsidies

Subsidies have commonly been employed in South Pacific countries to encourage agricultural production. Many of these initiatives have been provided in the context of agricultural or rural development projects. These subsidies, on either agricultural inputs or outputs, have generally been only short-term measures, and have usually been phased out over a period of years. Because they are

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short-term measures, their impact on agricultural development is likely to be minimal unless they induce permanent shifts to improved farming practices. One example might be the provision of subsidised improved planting material for tree crops. Another recent example in Tonga has been the banana industry revitalisation scheme, aimed at bringing about improved practices among banana exporters.

To justify subsidies, there would need to be evidence that they are correcting some existing market failure and are not creating market distortions by redirecting resources away from other, often more profitable, development activities.

### Grading

The use of grading has tended to be confined to export crops, and has been associated with the price-setting methods adopted by statutory marketing boards in South Pacific countries. The rationale for the magnitude of price differential between grades paid to producers needs to be explained in terms of differences in values between grades in the world market.

### Assessment

The payoffs to the Tongan Government in terms of achieving economic development by manipulating agricultural prices need to be carefully justified. So also do the potential risks of retarding economic growth if the full consequences of such actions are not understood.

### Market Demand and Supply Shifts

There is considerable scope for the Tongan Government to create an agricultural marketing environment wherein marketers will find it easier to identify, promote and exploit desirable shifts in agricultural demand and supply. In contrast to price manipulation, demand and supply shifts in agricultural markets usually have long-term beneficial effects on the Tongan economy.

The two main types of desirable shifts are (a) positive shifts in demand at the consumer level (or the overseas import agent in the case of exports), and (b) downward shifts in the costs of providing marketing services. To varying extents, actions bringing about both of these types of shifts should have the effect of increasing the prices received by agricultural producers. They also should make domestic consumers better off in most cases, and no worse off at worst.

In effect, by facilitating marketers to identify, promote and exploit commodity demand and reduce the costs of supplying marketing services, the government is able to influence prices in the long run with little risk of resource misallocation.

The key is to activate the necessary machinery to find out where the constraints on these shifts occur.

### Dissemination of Market Information

Agricultural market prices play an important part in agricultural development. But their usefulness depends on the accuracy with which they represent the true values of the products and services in question. Where the markets patently fail to reflect such values, there is a case for the government to step in and take corrective action. The appropriate form of this action is most likely to be in the provision of facilities that aid the flow of market information rather than by direct participation in marketing activities. It is usually in the more remote rural areas that market information is worst, and it is also in these areas that market participation by government bodies is least efficient.

**Proposition 2: Agricultural market development in Tonga will be greatly enhanced through more planning, using a marketing systems development approach.** The main feature of this approach is a realisation that there is a wealth of market knowledge already available in the marketing system, but this knowledge lacks scope for expression and is limited or deficient in some respects. The essence of a marketing systems development approach is to harness this market knowledge, provide the capacity to overcome gaps in it, and provide a forum for solving marketing problems perceived by participants. There is an inherent role for government in the implementation of this approach.

### Organisation for Marketing Systems Development

Organisational requirements for marketing systems development in the domestic marketing system should be relatively simple and cheap for government to establish. The three essential ingredients are a small market planning unit autonomous of political influence, a regular series of meetings comprising representatives from all interested parties in the agricultural marketing system, and the capacity of the market planning unit to take action to solve problems that have been identified in the meetings. These actions might lead to market research work or agricultural marketing projects. The forums for the meetings could be, for example, consultative committees or consumer panels.

Remoteness from markets makes the organisational requirements for marketing systems development in the export markets more challenging. Nevertheless, the need for such an approach is no

less compelling, even though it may be much more expensive.

**Proposition 3: Participation in agricultural markets should become mainly the province of private market participants.** Considerable debate is currently taking place in many countries about the relative merits of private versus public corporations operating in markets. Among the arguments in favour of vesting monopoly powers in statutory marketing boards are that they can safeguard producers' interests, serve as an arm of government policymaking, earn profits that are reinvested in the country, take advantage of any economies of size in marketing, and negotiate more effectively with buyers in world markets where most transactions are conducted on a government-to-government basis. While state marketing has earned a bad name in many developing countries, the Tongan Commodities Board could claim with considerable justification that its record in the developing world is well above average.

Arguments against granting monopolistic marketing powers to boards such as the Commodities Board are just as numerous. They include the lack of competition to ensure efficient marketing and highest possible prices to producers, insufficient attention to quality of products and services, lack

of incentives to innovate and seek out new markets, greater potential for corruption, greater exposure to political interference, and an inappropriate use of scarce, skilled human resources in the public sector. Statutory marketing boards in the South Pacific have also been accused of suppressing private enterprise and hindering the emergence of the indigenous commercial class.

Private market participants trying to enter commercial agricultural markets suffer from a number of potential disadvantages other than suppression by boards. Chief among these disadvantages are lack of market contacts, financial and manpower management deficiencies, shortage of capital and lack of improved and appropriate marketing technologies. One way for them to overcome these problems is to establish joint ventures with overseas commercial firms or market development corporations set up by aid agencies or a consortium of agencies. Such corporations should be able to provide those skills and resources that local participants lack. They also should enable an MSD approach, incorporating market research activities, to be implemented more effectively in export markets. The government can assist in the establishment of these joint ventures without necessarily being a partner or shareholder.

# Regional Economic Development: Infrastructure and Institutions

Meleseini Faletau\* and J. Brian Hardaker \*\*

## Part 1: The Current Situation in Tonga

DIFFERENCES in geographical characteristics, resources, population distribution, employment opportunities, social amenities and general level and pattern of development are obvious examples of disparities between the regions in Tonga. Whilst it is not conclusive due to lack of primary data, statistics do provide general indications of regional disparities. Table 1 gives the population distribution in Tonga from 1939 to 1986. It shows

that in terms of relative percentages, only the population in Tongatapu has increased significantly whilst those of the other regions remained stable or have decreased. Besides the natural growth, this is due also to the high migration rate from the outer regions to Tongatapu and overseas.

Table 2 shows that all regions have lower GDP per capita relative to Tongatapu. Although the statistics must be treated with caution, the table gives a clear picture of the relative disparity in regional GDP per capita.

Table 1. Population distribution 1939–1986.

	1939	1956	1966	1976	1986
Tongatapu	15754 (46%)	31264 (55%)	47920 (62%)	57411 (63%)	63614 (67%)
'Eua	480 (2%)	1925 (4%)	3391 (4%)	4486 (5%)	4393 (5%)
Ha'apai	7483 (22%)	9918 (17%)	10591 (14%)	10792 (12%)	8979 (9%)
Vava'u	8199 (24%)	12477 (22%)	13533 (17%)	15068 (17%)	15170 (16%)
Niuaotupulu	836 (2%)	1254 (2%)	1395 (2%)	1650 (2%)	1616 (2%)
Niuafo'ou	1378 (4%)	—	599 (1%)	678 (1%)	763 (1%)
TOTAL	34130	56838	77429	90085	94535

Source: Population Census, 1956, 1966, 1976, 1986.

Table 2. Estimated per capita GDP per region (T\$ at 1985 prices).

Year	Tongatapu	'Eua	Vava'u	Ha'apai	Niua	Total
1979/80	488	269	340	259	318	421
1980/81	582	279	384	316	307	495
1981/82	634	322	411	335	435	540

Source: DPIV Mid-term Review, 1985, p. 7/3.

## Regional Development Objectives

Government observed that the previous development efforts did not produce a spatially balanced pattern of development. This was caused by

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the concentration on macro and sectoral planning at the national level and little was done to incorporate the regional dimension.

Regional development, therefore, was given more emphasis by Government during the early 1980s to bring the outer regions to levels more comparable with Tongatapu. There is a focus on island groupings, these being Tongatapu, 'Eua, Ha'apai, Vava'u and the two Niuas (Niuatoputapu and Niuafu'ou). Two major regional development objectives approved in the Fifth Five-Year National Development Plan (1985-90) are:

- to facilitate a more balanced distribution of economic and social benefits among different parts of the Kingdom, between urban and rural areas and among different geographic sectors;
- to stimulate the economic growth in a region by raising productivity and increasing the total production, and thus promoting self-sufficiency in meeting basic needs and opening opportunities for cash production.

### Regional Development Activities/Policies

In the attempt to achieve the regional development objectives above, the following strategies and activities are under implementation.

#### INTEGRATED REGIONAL DEVELOPMENT PLANS

Integrated Regional Development Plans (IRDPs) constitute the 'pillar' of regional development activities. Work on the formulation of the IRDPs is currently being undertaken for all outer regions. The IRDPs incorporate the results of the regional planning workshops held in Ha'apai (1980), 'Eua (1981), Niuas (1984), and Vava'u (1985). The objectives of the workshops were to: (a) identify the resources and constraints to the development of the regions; (b) identify the different ingredients needed to build an action program. National officers from ministries, statutory boards and the banks, representatives from the nongovernment organisations and the private sector have participated at the workshops. Once IRDPs are completed, projects will be identified for implementation.

#### REGIONAL PLANNING COMMITTEES

Regional planning committees were also established for the regions of Vava'u and Ha'apai. The Vava'u Committee has functioned since 1986 and it primarily coordinates development in Vava'u, particularly the utilisation of the EEC Lome III funds. The members of the Ha'apai Committee are yet to be named.

#### IDENTIFIED FUNDS

Funds to finance projects in each region were approved by Government. The EEC Lome III allocation is used for the Vava'u regional development. An allocation in the Australian Bilateral Aid Program 1988/89 is approved to finance projects in Ha'apai. And likewise, funds from the New Zealand Government are earmarked for 'Eua and the Niuas.

### Benefits from Regional Development

#### LESSONS FROM VAVA'U INPUT-OUTPUT STUDY

The need for integrated regional development planning can be illustrated by a recent study, undertaken to show the economic consequences of an attempt by government to develop the agricultural sector of an outer region while ignoring the other related sectors of the economy.

An economic impact study of the ADB-funded Vanilla Program in Vava'u was conducted in 1984, using the input-output methodology. The funds of approximately T\$800,000, at the time of the study, were an ADB loan to Tonga to finance:

- credit line channelled through the Tonga Development Bank to cover vanilla related costs
- establishment of curing sheds
- establishment of vanilla plots
- construction of administration complex and houses at the Government Farm, and two advisory centres
- provision of technical assistance.

Results show that the multipliers are low, which is typical of developing countries. The most likely reasons are:

- (1) lack of interdependence and linkage between sectors. As there are not many manufacturing industries, most inputs to sectors are imported and outputs of these sectors are either consumed by households or exported. Vanilla is exported for processing abroad.
- (2) that Vava'u is a typical open economy, and therefore the local expenditures on imported goods represent direct leakage, leading to a reduction of the local income and employment multiplier.

Regarding the consumption-induced effects, output of the sectors is largely consumed by the households. The implication is that Vava'u is likely to derive a larger economic impact from local spending by consumers than by industries buying their inputs locally.

A sensitivity analysis in the Vava'u study showed that there is danger with approach of development on a narrow front, as with vanilla. When more people receive cash incomes, villagers tend to neglect local food production.

One also should be aware that specialisation, reflected in narrow but strong interindustry linkages, also makes that region dependent on that industry. Vava'u could run into danger of becoming too dependent on the vanilla industry, particularly if the world market price falls in future and the industry contracts in the long term.

Therefore such results may lead to particular consideration of policies for establishment of industries outside the agriculture sector, e.g. small-scale industries.

### **Confronting Problems and Issues, and Assessing Progress**

Given that regional development has not been practised in Tonga for long, it is too early to say whether the attempts of Government to promote regional development are successful or not. However, more awareness has been created in Government and among the public in general about the importance of regional development. Credit is given to attempts made by nongovernment organisations (NGOs) in implementing projects in the outer regions and rural areas of Tongatapu. However, the approach made by NGOs is basically to upgrade and improve the rural areas.

It can be argued that once the necessary infrastructures are established and development programs are implemented in the regions then people will respond. It may be so for some very active people; however other areas need to be considered. First, in an agriculture-based economy, an efficient and effective agricultural marketing system must be developed in order to increase and regularise production. There may be a well-designed program, but the system does not reach some rural areas, so those people cannot dispose of their agricultural produce. This problem does not only apply to agricultural produce but to others like handicrafts and fish.

Second, if the marketing system is fixed, the market forces alone do not necessarily mean that people will utilise it. Therefore, other incentives such as credit institutions and related infrastructure are needed.

Third, the outer regions are still disadvantaged and they are often not competitive with Tongatapu because of high production costs, freight costs and so on. However, the principle of comparative advantages suggests that these regions must be competitive in something. At the moment, government does not have definite policies for these regions. If one wants to encourage regional development, then policies through direct or indirect means must be used to reduce the existing problems. Usually policies such as differential regional incentives, tax structures, in-

frastructure investments and others are used as tools to achieve these objectives.

Fourth, in Tonga a certain amount of decentralisation of decision-making is still lacking as almost all decisions are made in Tongatapu. This implies that the push to expedite regional projects is delayed.

Lastly, it must be understood that, due to the low population level in some regions, it may not be economically feasible or desirable to attempt to foster major growth in these regions, as the low population does not justify it. Therefore, investments must be made according to social rather than economic criteria. One can foresee that out-migration from disadvantaged regions will continue in Tonga, but it may be minimised if regional development is implemented.

## **Part 2: Prospects for Development**

### **Agricultural Surplus and General Economic Growth**

If agricultural development is to generate overall economic growth in the Kingdom, not only must agricultural incomes be raised but more of the second-round benefits from those incomes must be captured in the country, as much as possible in the rural areas.

In the past, economists and planners have concentrated on the scope for developing local industries to provide inputs to agriculture or to process farm outputs. Both are important, and such opportunities in Tonga are reviewed below. But what has often been neglected in the past is the benefits from the increased consumption expenditure by farm families who move to more intensive production for market. There is evidence, both from overseas (Hazell and Roell 1983) and from the South Pacific Smallholder Project (Delforce et al. 1988), that rural people tend to spend a high proportion of any extra cash income on goods and services that are, or could be, locally produced with relatively low capital and high labour inputs. These are just the kinds of industries needed to capture more benefits within the country.

Also underestimated in the past has been the capacity of rural families to save and invest from additional income (Mellor 1986). Such investments may be in agriculture or in other activities. If the savings capacity of rural people can be mobilised by the financial institutions, those who invest may be able to borrow the funds of those who save. Effective development of rural banking and credit unions is therefore a vital part of an agriculture-based overall development strategy.

## **Capturing the Benefits of Agricultural Expansion**

There may be scope for greater processing of farm output, whether for export or local markets. For example, while there is more local processing of coconut products in Tonga than in many other South Pacific nations, not all possibilities have been exhausted. In particular, Dan Etherington of the Australian National University has suggested that it may be profitable to process fresh coconuts in South Pacific countries into high-grade oil and a range of other high-value products using capital- and energy-economising techniques.

There may also be opportunities for less ambitious processing of a range of other crops. What scope exists for local small-scale processing to replace imports of canned or frozen fruit and vegetables? Is there a market for prepared (perhaps frozen) root crops, either here or overseas? The recent venture into coffee production illustrates what can be done. A comprehensive review of possibilities might reveal many opportunities.

There is less obvious scope, but still some, on the farm input delivery side. One possibility lies in farm mechanisation, probably on a contract basis. At present, this is almost wholly in the hands of the MAFF, presumably with some subsidy (at least in terms of remission of import duties on Government-owned equipment). If this service didn't exist, or was priced at fully commercial rates, private operators might be better able to compete and to offer a range of services more suited to local conditions. For example, it is surprising to see so few two-wheel tractors operating in the Kingdom.

But, as noted, the best opportunities are likely to be in providing consumption goods and services such as house building and repair, furniture making, bakeries and tailoring. Some such small businesses already exist, but more opportunities will occur if the spending power of farm people is raised.

### **An Appropriate Development Strategy**

Many of the developments indicated above can and should occur within the private sector. Attempts by Government to engage in these activities are not only unlikely to succeed but, by their existence, may 'crowd out' small-scale, independent operators. Thus, a development strategy to match the situation must facilitate the right kind of economic growth. This means that Government should concentrate on doing well those things that need to be done and that only Government can reasonably do.

The best example is provision of infrastructure. The transport infrastructure in Tonga is much improved but there is still plenty of scope to do

more. The road network needs upgrading and existing roads should be better maintained. Good and reliable local shipping services are vital if the people of the outer islands are to participate in overall development. Such services may need to be subsidised for a while if the initial levels of custom are too low to attract private investors.

The Government's efforts to date to stimulate industrial development have been of two kinds — direct investment in enterprises such as the coconut oil factory and the airline, and establishment of the Small Industries Centre (SIC). Both have been very expensive. The direct investments have mostly been in capital-intensive operations that have created few jobs. At SIC, investors, almost all foreign, have been heavily subsidised through cheap rents and by large tax and import duty concessions. An industrialisation policy on these lines alone is too expensive for Tonga. The need rather is to encourage more local enterprises, especially businesses located outside Nuku'alofa, that will generally be small-scale, at least initially, and will need no direct injections of Government capital.

There are several bottlenecks to the creation of more local businesses. First is the shortage of relevant skills. For example, Tonga has been very slow in setting up technical training programs for carpenters, plumbers, mechanics and the like. Similarly, more needs to be done to help people acquire basic business skills of bookkeeping and cash management. Moreover, much of this training needs to be on-the-job, rather than formal courses. The possibility of establishing apprenticeship schemes in Tonga should be examined.

Second, a lack of information inhibits establishment of local industries. This may be a shortage of information about production technologies or about markets (especially overseas markets). The present efforts of the Ministry of Labour, Commerce and Industries to help and encourage small-scale businesses could be expanded and more use made of foreign expertise through aid.

Third, land tenure difficulties are a barrier to investment (Kunzel 1988). Unless investors, whether local or foreign, are sure of long-term and secure access to a suitable piece of land, they will not invest. (It seems that the main contribution of the SIC in attracting investment has been through the provision of land with reliable tenure.) Land tenure policy in Tonga is overdue for review and reform.

Fourth, the adequacy of credit provision for indigenous enterprises needs examination. Inadequate cash management is a main cause of failure of many small-scale ventures. Lenders might require their clients to take some training in

elementary financial management. Rural banking operations generally may also need improvement and expansion, not only to facilitate business operations, but also to help mobilise rural savings. This need is emphasised by the indication from the South Pacific Smallholder Project that little of the remittance income received by rural households is saved or profitably invested (Wilson 1987).

Fifth, trade policies need to be reviewed. While a high level of protectionism is to be avoided at all costs, there may be a need to protect local producers against dumping. The recent damage done to the local poultry industry by what appears to have been dumping of chicken meat illustrates the difficulties and risks faced by local investors. The problem is to design a policy to avoid such eventualities that would not be unduly cumbersome to administer and would not give too much protection to possibly inefficient local suppliers.

Finally, Government itself can stimulate local enterprises directly by modifying its procurement policies to use more locally-produced goods and services. It should be established that a competitive local supply does not exist before goods for government use are imported. Because of the multiplier effects and the distortions to local prices produced by taxation and other measures, Government should be prepared to pay a little more to use local rather than imported supplies.

None of the above proposals are very dramatic

or radical. Indeed, radical measures are not needed since the capacity for enterprise and initiative already exists in the Tongan community. What is needed is for Government to avoid actions that inhibit the growth of such initiatives and to concentrate on the few areas where it can be positively helpful. Central to the whole strategy, however, is the need to increase the surplus from agriculture itself as the essential stimulus to more general economic growth.

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## **Closing Address**

### **Her Royal Highness, Princess Pilolevu**

It is a great pleasure to be invited to close this workshop today. I do not say this because I enjoy seeing the end of this particular workshop or saying goodbye to people. Rather, the pleasure will be in treasuring the thought that I participated, and hopefully contributed, in a small way to this very important event. To this, I thank the people responsible.

Undoubtedly, our visitors have been welcomed to Tonga. Moreover, I believe that our overseas guests are regular callers to our shores. Some of the people involved in the Smallholder Project, I have been told, have spent a considerable amount of time in the field during the life of the project collecting data. The project leader has even a longer association with Tonga, which dates back to the late sixties and early seventies when doing field work for his PhD. It highlights the fact that our visitors are no strangers to Tonga and our way of life. This I fervently consider an important basis for this workshop. Without this intimacy with our way of life, our culture and the social milieu, the findings of the study would have been irrelevant and inconsequential.

I consider the workshop a crucial link in the process of developing the Kingdom. You are all fully aware that agriculture is still the principal source of livelihood for the masses. It might not be the main source of income or foreign exchange, but it is the backbone of each household. In many instances, it is the only avenue available for people to attain their aspirations. I therefore await the results of this workshop with great interest. I am certain that the matters discussed here in the last two days are for the benefit of the whole Kingdom.

The workshop, I have been advised, is based on a project which primarily attempted to establish baseline data for the rural sector. The collection of data may seem unimportant, but I am certain that it will assist those that are responsible for planning the future of Tonga. For too long, most of the planning forecasts and predictions were based on questionable information. I hope that the results of this study will provide the necessary and accurate inputs which will facilitate meaningful planning. Personally, some very interesting data have been revealed by the study. Of particular interest to me, for the obvious reason, is women's contribution to development in Tonga. The report clearly showed what I have always suspected: that women make significant contributions to the general development of the Kingdom, let alone agriculture. It is rather melancholic to note that women in general have less leisure time than men, and that they appear to have less time for extra income-enhancing schemes. Perhaps there are still avenues or alternative technologies available to enable us women to make further positive contributions to the development of the Kingdom. I feel that women have other significant parts to play and should not be restricted to the mundane role of domesticity.

For me, the study is very illuminating. It cleared some of the existing misconceptions. The assertion that Tongans do not use their time fully has led to the development of projects based on schemes requiring labour-intensive inputs. These schemes are intended to utilise the large surplus labour force in the rural area. Today, I am gratified to find that the average Tongan is reasonably occupied, with some people even averaging over 60 working hours per week. At the same time, I am concerned with the low level of production. What may be required is to evaluate the types of activities that time is spent on and more importantly, to

investigate labour-saving technologies which can optimise production. I see the collection of data as merely the beginning. The greater and more difficult job is in front of us, which is what to do with the data. To me, we should use it to develop projects which will eventually lead to the improvement of the quality of life in the rural areas.

I would like at this point, however, to thank the people concerned with the workshop and the study leading up to it for their sterling efforts. It would be invidious of me to mention individual names. But I would like to thank the Government of Australia for its financial contribution, which enabled the study to take place. In addition, the role of ACIAR and the University of New England must be acknowledged. They have provided the necessary technical and even the initial supervisory inputs which ensured the successful implementation of the project. His Majesty's Government of Tonga has also been very supportive of the project throughout. It would be remiss of me not to mention the collaboration of the farmers from the individual villages that were involved. Without their willingness to participate, we would not be here today. This project is unquestionably an excellent example of a cooperative effort between governments, the different organisations and the people concerned.

Finally, I would like to believe that this workshop has gone a long way towards explaining the intrinsic factors which control the dynamics of the rural sector. It is worthwhile to note that the analysis of agriculture is purely in monetary terms. This, is a new and foreign concept to us in Tonga because we still value our social system highly. The obligation system, despite the assumption that it is counterproductive, I feel, can become a strong motive for people to work harder. This is because the medium of exchange has gradually changed from 'in kind' to money. To acquire the necessary money to meet our social obligation simply means greater efforts to improve productivity.

But is this what we really want? We must realise that we are now at the crossroads of development. It is therefore pertinent that we reach a consensus on which path we take. It is also vital that whatever path we take must not lead to the destruction of our culture in the name of development.

# South Pacific Smallholder Project Publications

Copies of Project Reports, Occasional Papers and Research Notes may be obtained from the Secretary, Department of Agricultural Economics and Business Management, University of New England, Armidale, NSW 2351, Australia. Prices are in Australian dollars, and include postage and handling. Single copies are free of charge to persons or organisations working in the South Pacific.

Copies or reprints of other items may be available on request from the authors.

## Project Report

Smallholder Agriculture in Tonga: Report of the South Pacific Smallholder Project in Tonga 1984-85, J.B. Hardaker, J.C. Delforce, E.M. Fleming and S. Sefanaia, 1987. \$10.00

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1. Prospects for Smallholder Development in the South Pacific: Background to a Research Project. J.B. Hardaker, E.M. Fleming and J.C. Delforce, 1986. \$5.00
2. The South Pacific Smallholder Project: Outline. J.B. Hardaker and E.M. Fleming, 1986. \$5.00
3. A Study of Agricultural Market Development in the South Pacific Region: Structure, Conduct and Performance. E.M. Fleming, 1986. \$5.00
4. Analysis of the Effects of Staple Food Exports on Domestic Market Operations in Western Samoa. E.M. Fleming, 1986. \$5.00
5. Effects of Price Risk on Agricultural Exporters in the South Pacific: Case Study of Solomon Islands Copra Exports. E.M. Fleming, 1986. \$5.00
6. Analysis of Agricultural Marketing Performance in Five South Pacific Countries. E.M. Fleming and J.B. Hardaker, 1986. \$5.00
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