



Technical Assistance Consultant's Report

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Tonga: Agriculture Sector Review

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I. EXECUTIVE SUMMARY

1. During the country strategy and programming mission in March 2003, the Tonga Ministry of Finance requested urgent assistance for a small-scale technical assistance (TA) to prepare an agricultural sector review. This review was to present recommendations for specific action areas to assist the Government in its budget deliberation and the proposed re-organization of the Ministry of Agriculture, Forestry and Food. The Ministry of Finance expressed concerns that the agricultural sector was not contributing to the overall growth of the economy of Tonga.

2. This report summarises the findings of the Tongan agricultural sector review. It proposes a package of interventions (a development program) for consideration by the Tongan Government and the private sector in Tonga. The objective of the development program is to directly and indirectly raise Tongan national income and employment through an increase in the value added of the agricultural sector.

3. The performance of the agricultural sector in Tonga over the past decade in terms of cash income and employment creation has been poor. Growth in the value added (return to labour and capital) of the sector has lagged behind growth other parts of the economy. The result is that the sector's contribution to GDP fell significantly during the past decade.

4. Tongan households derive both cash (commercial sales) and non-cash income (produce for home consumption) from agricultural activities. The agricultural sector in Tonga is still dominated by subsistence and part time farmers, with only around 250 individuals that consider themselves to be commercial farmers. Most of these commercial farmers operate on a small scale. A commercial agricultural sector has barely emerged from a subsistence base in Tonga. The reasons for this are difficult to understand. The share of marketed production in total production actually fell over the last decade.

5. Tonga would appear to have a comparative advantage in agricultural production, given its favourable climatic and physical conditions and, relative to population size, its relative abundance of suitable land. In many countries, agricultural sector development (private sector) has been constrained by poorly defined property rights, lack of access to suitable land and to capital, poor marketing by government agencies, high taxes, price controls, excessive regulation, poorly developed infrastructure and a host of other factors. Tongan farmers do not appear to face many of these disincentives.

6. Government activities and policies, with the exception of the distorting effects of trade taxes on the sector's competitiveness, would appear to have little impact on costs and returns. In fact, the

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private sector is advantaged by a lack of regulation: there are no constraints on what farmers can do with the land, there is little government intervention in marketing and personal income earned from agricultural activities is free of both income tax and import duties. High barriers to imports of competing products and zero tariffs on imported capital and raw materials would seem to advantage domestic processing of food products. In spite of these advantages, there is little commercial farming and almost no processing (outside of coffee produced for local consumption and processed coconut products for export).

7. Tongans look to the agricultural sector as a potential engine of economic growth. The sector's opportunities lie outside of Tonga, given the small domestic market. While there is some scope for import substitution if competitive local supplies are available, future expansion of the local market will not support significant growth in agricultural production. To increase incomes, Tonga farmers must increasingly produce for export markets.

8. Export performance reflects the weakness of Tongan agriculture. Exports are overwhelmingly in raw material form with almost no processing. The bulk of export earnings, around two thirds in most years, are derived from squash, exports of which are concentrated in a few months of activity and focussed on the Japanese market through New Zealand. Little else is exported in significant quantities. Aside from the emergence of kava exports, there has been no export diversification over the past decade. This follows a long tradition in Tonga where agricultural export earnings have relied on a leading export commodity (previously copra and bananas).

9. This lack of diversification of products and markets and the low degree of processing means that there is a high degree of risk associated with export earnings. Agricultural exports are a source of instability for the Tongan economy, as illustrated by the recent low prices received for squash exports export earnings and widening the trade deficit. Both export demand and export prices are highly volatile. This reflects the niche or opportunistic nature of exports and their low degree of processing. Greater focus of building stable markets through the creation of enduring relationships with overseas customers and exporting more highly processed products (with less price volatility) would substantially reduce the risks facing Tongan exporters.

10. The Ministry of Agriculture Food and Forestry is relatively well resourced compared to similar Ministries in Pacific Island Countries. At over 300 persons, the Ministry has more staff than the Department of Agriculture in Papua New Guinea, a much larger country. Moreover, MAFF has many well-qualified staff. The past performance of the agriculture sector in Tonga suggests that these resources have not been effectively employed. MAFF has tended to focus on research and extension activities, marketing initiatives and the provision of materials and

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services, often in competition with the private sector. From the perspective of economic development, and the available evidence in Tonga, these are often low return activities. Research has shown that high return activities involve establishing a regulatory and policy environment conducive to commercial agriculture and agri-business. MAFF has neglected these activities, which should be core activities in a modern agricultural department.

11. The Review Team was introduced to the stakeholders by senior Bank officials at a workshop that proposed the outcomes expected of this review. The over-riding outcome expected by participants was to increase the long-term surpluses (income) derived from the agricultural sector through:

- ◆ improved market access;
- ◆ developing sustainable use of the natural resource;
- ◆ enhancing productivity; and
- ◆ improving the status of commercial farming to attract the flow of labor and capital to the sector.

12. The primary outcome sought is a sustainable increase in the income generated by the agricultural sector in Tonga. This is to be achieved through the creation of an investment environment that is conducive to attracting Tongan and foreign investment to the sector through removing impediments that lower returns from agricultural activities.

13. It is important that agricultural sector development be sustainable. Sustainability requires the adoption of farming practices that maintain the productivity of the land environment for both agricultural and non-agricultural activities (including conservation).

14. Employment creation must be an important objective in Tonga, given the possibility that immigration policies in New Zealand and the United States might tighten in the future. Growing youth unemployment in Tonga will pose substantial economic and social problems over the next decade unless employment creation can be stimulated. Agriculture can generate both direct and indirect employment opportunities. The direct employment impact of agricultural sector development is likely to be limited: in fact, as the sector develops and becomes more efficient, agricultural sector employment as a whole will tend to fall.

15. There is no sense in biasing agricultural development towards labour intensive technology, as this may not be commercially viable and would be inefficient from an economy wide perspective.

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It is preferable to maximise the income created by the agricultural sector, allowing farmers to adopt the most efficient techniques. This is likely to involve knowledge and capital-intensive farming, freeing labour for employment in other sectors of the economy. Important indirect employment opportunities will emerge from a faster growing agricultural sector. These opportunities would be in industries supplying inputs to the sector and in industries using raw materials from the sector. Increased incomes from farming will also cause growth in consumer goods and services demand, creating significant employment opportunities. A more efficient agricultural sector means cheaper food, allowing Tongans to spend money on other products, again generating income and employment opportunities.

16. The proposed development program would be implemented over a five to ten year period. It is based on a strategy of first removing policy and other distortions in the Tongan economy that have constrained the development of agriculture and the economy more generally. The strategy seeks to establish a neutral investment environment that allows resources (land, labour and capital) to flow to their most productive uses, maximising the GDP produced from Tonga's available resources. Such a strategy avoids the problems of subsidizing the development of one sector of the economy at the expense of other sectors.

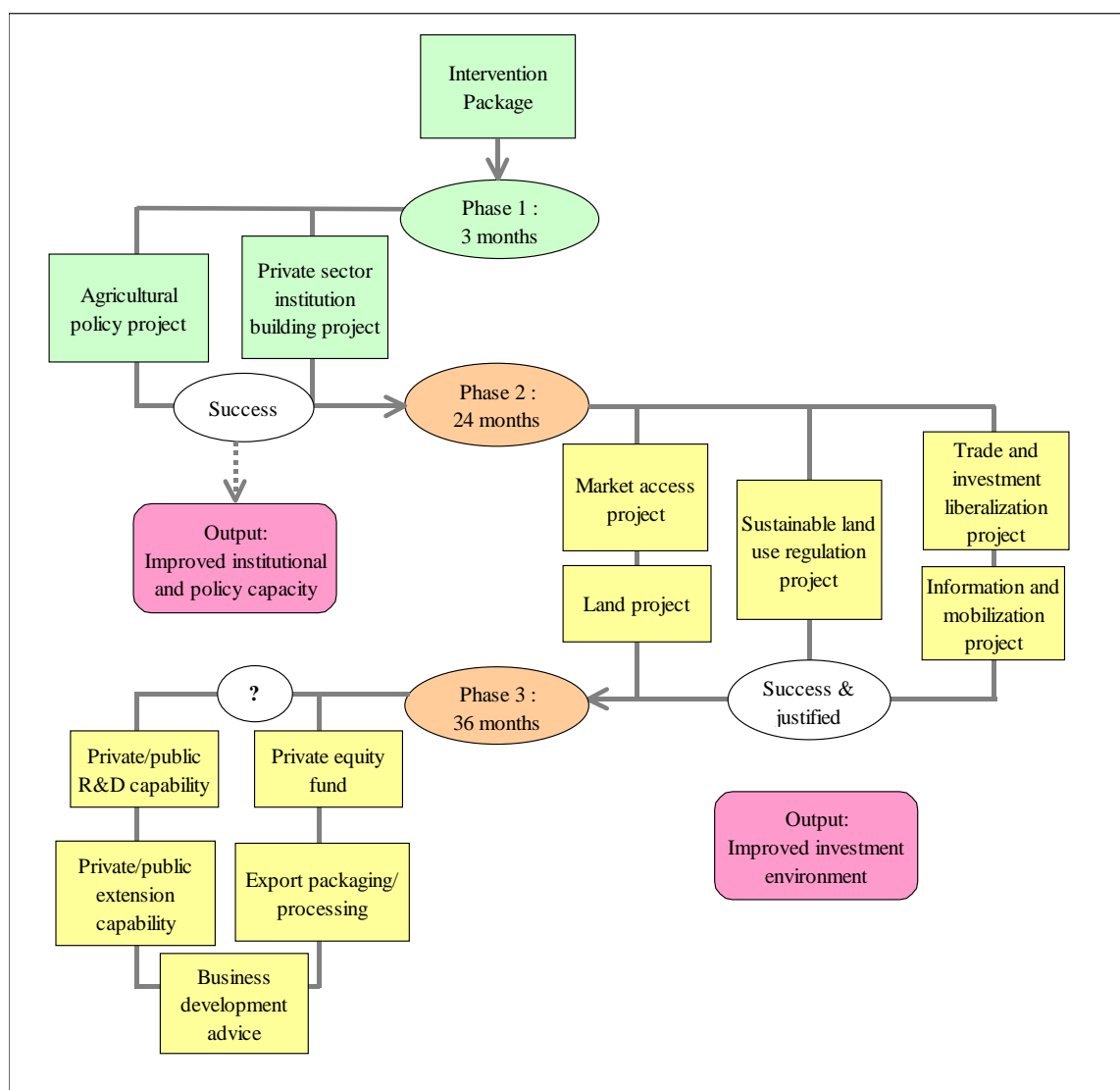
17. The program is to implemented in 3 phases

- Phase 1 Policy and institutional development: the adoption of a sound set of agricultural policy principles and the establishment of appropriate private sector institutions to ensure effective implementation of the development strategy. A policy is necessary to provide guidance to policy makers and to prevent the introduction of policies and regulations that are inconsistent with the efficient and sustainable private sector economic development.
- Phase 2 Policy reform: through this institutional framework, working with the government to remove impediments to investment in the sector. With the successful completion of Phase 2, an appropriate investment environment would be established. The completion of Phase 2 would see a substantial enhancement in the efficiency of the agricultural sector and its ability to generate income and employment.
- Phase 3 Investment: if justified, under Phase 3, a range of public good and infrastructure investments to support the further development elopement of the sector. In the past such investments have largely failed because of poor conception and implementation and because of a distorted investment environment. This phase would also involve

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direct technical assistance to the private sector to allow the efficient identification and development of investment opportunities and to reduce the cost of finance.

18. The development program is illustrated in the diagram below. Included in the diagram are indicative timeframes, sequencing of Phases, program components and anticipated outcomes. The completion of Phases 1 and 2 are critical to maximising the net social benefits derived from activities funded under Phase 3.



II. BACKGROUND TO THE REVIEW

19. Farming and fishing play a central role in the Tongan economy and society. These activities make a substantial and relatively secure contribution to cash and non-cash household incomes. Most activity is directed to meeting household food requirements. Much of the produce that is surplus to household consumption is used to meet cultural and social obligations. The rest, less than half, is sold for cash, mainly in local markets. There are very few commercial farmers, where the prime purpose of the activity is to earn cash income. Of the 6,000 or so Tongan households that engage in agricultural activities, only around 250 consider themselves to be commercial farmers and most of these operations are small scale, sole operators employing a few workers on a casual basis.¹ It is clear that the Tongan agricultural sector is economically under developed.

20. Most stakeholders in Tonga consider that there is to be great potential to increase the contribution that agriculture and fisheries make to the welfare of Tongan households. The Government includes agriculture and fishing among its priority sectors. Over the past fifty years much effort has been made by the Tongan Government and the private sector to develop the potential of the agricultural, forestry and fisheries sector. Tonga has received technical assistance from the Bank and other development agencies. Recent history contains some success stories, but more often failures.

21. During the country strategy and programming mission in March 2003, the Ministry of Finance requested assistance from the Bank for a small-scale technical assistance (TA). This technical assistance was to prepare an agricultural sector review with recommendations for specific action areas to assist the Government in its budget deliberations and the ongoing re-organization of MAFF

22. The Ministry of Finance expressed concerns that the agricultural sector was not contributing to the overall growth of the Tongan economy. In the decade before 2001, actual growth in sector real value added was only five per cent and the sector's contribution to gross domestic product (GDP) fell from 30 per cent to 25 per cent. The fisheries sector was included then in a plan to review the performance of the natural resources sector and to indicate future growth opportunities.

23. The findings of the Tongan agricultural sector review are summarized in this report. The review was undertaken over the period July to September 2003. The team leader undertook some follow up work on a visit to Tonga in May 2004. At that time a number of very positive developments were noted and these are summarized in Box 1, Further work was undertaken in mid 2005, involving

¹ These estimates are from the 2001 Agricultural Census.

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an update of the institutional review in the light of additional information provided in the 2003-04 MAFF annual report and the most recent MAFF corporate plan.

Box 1: Recent Tongan agri-business developments (as at May 2004)

- ◆ An aloe vera factory has recently commenced operations and exports.
- ◆ There are now two nonu plants now operating and both are exporting.
- ◆ The vanilla crop has been revived, but the recent fall in prices has dented enthusiasm somewhat. The National Youth Council is proceeding with a 1,000 square meter shade house for Tahitian vanilla with the plants sourced from a local tissue culture laboratory. This project is being funded by the New Zealand High Commission and is seen as a sustainable life style teaching aid.
- ◆ A project growing fresh vegetables for the American Samoan market is underway with product to start flowing in mid August by air to Pago Pago for the US Government sponsored school lunch program. A Boeing 727 airfreight service is due to commence in late June or early July to carry fish to markets in Honolulu and onwards to Los Angeles, and will also carry produce to American Samoa. This will take up the slack from the liquidation of Royal Tongan Airlines.
- ◆ The coffee crop is about the same as last year but should have been 30 per cent higher. The lower yields are due to dry conditions in the latter half of 2003. New products include coffee bags for the local market and initial trials with vanilla coffee to take up some of the local vanilla production and to introduce Tongan coffee as a specialty coffee in the international market place.
- ◆ A local company has engaged the local tissue culture lab to produce 250,000 taro plantlets by mid April 2005 to set up a controlled taro export project to New Zealand, Australia and onwards. Another local company has engaged the lab to produce 20,000 Williams Cavendish bananas plantlets by November 2004 to rehabilitate the local banana industry and to recommence exports in 2005
- ◆ The acreage for squash this year is down on last year but squash groups are confident the targeted tonnage of 16,000 tonnes will be produced.
- ◆ The Hot Forced Air Treatment plant at the airport is back in operation and this will allow the export of breadfruit, tomatoes, capsicum, egg plant, etc to NZ. There remains a need to have a planting program set up. This especially for the export of pawpaw (papaya) to NZ.
- ◆ The first exports of Japanese taro (sato imo variety) are about to commence. There are two groups involved in this, Afeaki and Tutumu Nakao.

24. The executing agency for the review was the Ministry of Finance. While the review team undertook a review of the MAFF, the review was focused on the agricultural sector as a whole rather than simply on an institutional review of MAFF. MAFF has undergone a number of recent reviews and, at the time of this review, was in a process of implementing a restructuring. Nevertheless, a diagnostic review was undertaken on the role and performance of MAFF and a number of recommendations concerning the activities of MAFF are made in this report.

A. Objective of the Technical Assistance

25. The purpose of the TA was to produce a foundation from which to formulate a sector-wide long-term development assistance strategy for the agriculture sector. The output is a comprehensive sector review encompassing (i) identification of appropriate role and responsibilities of MAFF to assist private sector development and expansion, (ii) identification of market and non-market failures, (iii) assessment of competitiveness and factors affecting competitiveness in different agriculture industries, (iv) identification of necessary policy changes to enable the agriculture sector to contribute to economic growth, and (v) assessment of possible public sector investment projects.

26. This technical assistance project (TA) had the objective of recommending a road map for the development of the sector over the next ten years. This involves the phased implementation of a set of mutually reinforcing interventions (legislation, regulations, technical assistance and infrastructure investment) designed to enhance the contribution that the primary sector makes to the well being of Tongans. An institutional framework, involving the private sector as well as the Government, has been proposed to ensure that the interventions are implemented in a consistent manner.

B. Terms of reference

27. The terms of reference for the TA were as follows:

- (i) A framework for future development assistance required to move MAFF to a more effective role in optimizing the contribution that agriculture makes to the national economy;
- (ii) A situational analysis of the agriculture and forestry sector with particular attention being paid to the respective roles of government, the private sector, research and, if relevant, NGOs;
- (iii) A diagnostic analysis of the quality of services delivered by MAFF with particular emphasis on weaknesses in the system which need to be addressed if the desired quality of service is to be achieved;

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- (iv) An assessment of all barriers to effective change and strategies to overcome those barriers;
- (v) A set of service delivery standards that are presently obtained and an indicative set which should be achieved if MAFF is to be fully effective;
- (vi) A commercial and economic analysis of the agriculture sector and an assessment of its comparative advantage as an engine for economic growth;
- (vii) A strategy to ensure that service delivery performance is reported effectively back to government and that results based performance indicators are embedded in the information systems at each level of MAFF;
- (viii) Recommendations about an organizational mechanism to ensure that recommended strategies are owned by the Government and implemented effectively; and
- (ix) Identification of a program of future technical assistance and public investment presented as a sector-wide roadmap.

C. Approach to the review

28. The approach adopted in the review was to focus on enhancing the international competitiveness of commercial farming rather than on subsistence farming. This does not exclude small holders, but seeks to encourage more small holders to specialize and to evolve into commercial farmers. Subsistence is not an engine for economic growth. By its nature it generates little surplus for re-investment and lacks the specialization of labor required for sustained productivity gains. While the emphasis is on market-oriented development, however, the rights of households to meet their requirements through their own labor need to be protected.

D. Lessons from the past

29. A review of past interventions and the policy and institutional environment in which they were implemented provided some important lessons for this review.

30. First, policies and regulations that reduced returns to primary producers undermined many of these investment projects. For example, government investment in the fishing industry and efforts to encourage the establishment of manufacturing industry. The lesson is that the chances of a successful development intervention are greater in a business environment that is more conducive to work and investment.

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31. Second, most of the interventions required a level of institutional capacity and government resources that simply were not available. The lesson is that interventions should be within the capacity of the government and the private sector to implement and greater focus should be accorded to the provision of technical capacity to implement policies, regulations and other interventions. There is a familiar story of technical assistance reports accumulating dust on shelves and not being implemented. There has been an implementation gap either because implementation has proved to be too difficult or there was a lack of commitment to implementation.

32. Third, the Government, often with the support of foreign development agencies, was extensively engaged in productive activities in place of, and sometimes in competition with, the private sector. In Tonga there is a wide range of Government owned businesses whose performance in terms of profitability and dividends paid has been relatively poor. The MAFF and the Ministry of Fisheries have also long engaged in activities that could have been provided by the private sector. The lesson is that there should be a clear agreement on the respective roles of the private and public sector. The government should focus its limited resources on activities where it will have greatest social impact and these are generally core activities of a public goods or regulatory nature. The government has a role in facilitating private sector development rather than competing in the market place.

33. Fourth, many interventions were aimed at import replacement and the investments made or encouraged were simply not competitive without high levels of tariff protection and government subsidies. The lesson is that the private sector should be encouraged to take the lead on investment projects and investment decisions should be based on commercial realities, free of distorting taxes and subsidies.

34. Fifth, the Asian Development Bank and other international development agencies have tended to work almost exclusively through government agencies to achieve private sector development objectives. Apart from funds channeled to small holders, commercial agriculture has not benefited from development interventions. Indeed, since capital inflows associated with aid projects have caused the exchange rate to be higher, these aid flows have undermined the competitiveness of exporters. This TA will explore a range of policy and regulatory reforms that will enhance the quality of the business environment in Tonga. It will also explore possible technical assistance to allow the private sector to act more effectively, in some case in partnership with government, to address issues of common concern.

35. Sixth, many of the projects were not implemented enthusiastically, probably because they were designed from outside, rather than within Tonga, and failed to take into account circumstances

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unique to the Tongan economy and society. The lesson is that stakeholders within Tonga (growers, exporters, processors, and government) should develop an agreed set of objectives (or outcomes) in relation to the agricultural sector.

E. The broader policy environment

36. Tonga has long had a policy regime that has stifled incentives to invest in the agricultural sector. In particular, and like many developing countries, the Government of Tonga has of necessity been forced to tax the main source of economic growth, trade. Heavy taxes on both imports and exports have severely undermined the international competitiveness of the agricultural and fisheries sectors. Lack of security of title, particularly in the case of foreign investment, has further undermined investment in the sector. The land tenure system, while contributing in many ways to the well being of Tongan households, has complicated access to land for larger commercial ventures.

37. That said, the Tongan Government is making progress on a range of economic and institutional reforms. The policy environment in which farmers will operate over the next ten years may become progressively liberalized. The Government is proposing to embark on a program of extensive economic reforms that will see the dismantling of trade and investment restrictions, a taxation regime that is less distorting of economic incentives and greater security of property rights. The Government is committed to this program of reform as part of its conditions for joining the World Trade Organization.

F. The outcomes sought

- ♦ *The outcome sought is a sustainable increase in the income generated by the primary sector in Tonga. This is to be achieved through increased productivity, improved market access and increased long term commitment of labor and capital to sector development.*

38. The Review Team was introduced to the stakeholders by senior Bank officials at a workshop that proposed the outcomes expected of this review. The over-riding outcome expected was to increase the long-term surpluses (income) derived from the agricultural sector through:

- Improved market access for Tongan exports;
- Ensuring the sustainable use of Tonga's natural resources;
- Enhancing sector productivity; and

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- Improving the attractiveness of the sector for both labor and investment.

39. The outcomes sought may be summarized by a sustainable increase in the income generated by the primary sector in Tonga. This is to be achieved through the creation of an investment environment that is conducive to attracting Tongan and foreign investment to the sector through removing impediments that lower returns from primary activities.

40. It is important that sector development be sustainable. Sustainability requires the adoption of farming practices that maintain the productivity of the land environment for both agricultural and non-agricultural activities (including conservation). It requires that the productivity and quality of the marine environment be maintained. Sustainable also means that the development of the sector creates wealth and frees resources for investment in other parts of the economy, contributing to a self-sustaining economic and social development process.

41. Employment creation is an important objective in Tonga, given the possibility that immigration policies in Australia, New Zealand and the United States might further tighten in the future. Growing youth unemployment poses substantial economic and social problems over the next decade unless employment creation can be stimulated.

42. Agriculture can generate both direct and indirect employment. The direct employment of the sector is likely to remain limited: in fact, as the sector develops and becomes more efficient, agricultural sector employment as a whole will tend to fall. It is not sensible to bias agricultural development towards labor-intensive technology, as this may not be commercially viable and would be inefficient from an economy wide perspective. It is preferable to maximize the income created by the agricultural sector, by allowing farmers to adopt the most efficient techniques. This is likely to involve knowledge and capital-intensive farming, freeing labor for employment in other sectors of the economy.

43. Important indirect employment opportunities will emerge from a faster growing agricultural sector. These opportunities would be in industries supplying inputs to the sector and in industries using primary produce as inputs (for food processing and tourism). Increased incomes from farming will also cause growth in consumer goods and services demand, creating significant employment opportunities.

III. THE PERFORMANCE OF THE AGRICULTURAL SECTOR

Over the past twenty years, real GDP has grown at an average annual rate of 1.7 percent. In real terms, the value added of the agricultural sector was only 5 percent higher in 2001-02 than it was in the early 1980s.

A. Introduction

44. In this Chapter, the performance of the agricultural sector over the past 20 years is assessed. The Chapter starts with section that lists a set of performance indicators that are required to assess the performance of the sector and of any interventions designed to develop the sector. We discuss what would be a reasonable performance target for sector growth and then compare this with the actual performance of the sector in the past according to these performance indicators.

B. Performance indicators

45. To assess how well Tonga is traveling with respect to achieving the outcome, a range of performance indicators is required. These indicators allow a holistic view of the viability and sustainability of the sector. The outcomes sought, possible performance indicators, an initial assessment of current performance and target performance are summarized in Table 1. The indicators include:

- Value added of the agricultural sector (the primary performance indicator);
- The value of agricultural exports (indicates the potential for export led growth);
- Investment in the sector (a leading indicator of value added growth);
- Employment in the agricultural sector;
- Indicators of labor productivity; and
- Indicators of sustainable land use.

46. There is a range of indicators of the performance of the primary sector that can be used to monitor if development programs are having the desired impacts in terms of achieving the outcomes.

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Table 1 : Performance indicators and targets

Outcome	Performance indicator	Performance (10 yr)	Target (ten years)	Comment
Contribution to national income	Value added Share of GDP Employment creation Household income Commercial/non commercial	No real growth Down from 33% to 24% No growth No real growth Fall in marketed portion	10 percent per year growth in agricultural GDP mainly due to increased exports and value adding and improved profitability due to better business environment	Data published but in limited form, concerns with measuring agricultural GDP. No recent employment data. Most families derive income from agriculture.
Export market access	Value of exports Volume of exports Unit value Product diversification Market diversification Processing Standard compliance	Up last two years Fluctuation: some up, some down Improved due to exchange rate Mix change, still narrow Narrow Limited Some issues	10 percent increase per year in real export earnings	Trade data is uncertain. Difficult to value unofficial exports. Repatriation payments include export earnings and investment funds. Highly dependent on squash exports. Over 90% of value of exports unprocessed. Concerns with product quality and consistency of supply.
Farm productivity	Yields per acre Yields per hour	No reliable information		No information for sector as a whole. MAFF Farm Management Handbook

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Outcome	Performance indicator	Performance (10 yr)	Target (ten years)	Comment
	Unit costs (real)			provides framework for measuring. Survey desirable.
Sustainability	Farming method Land utilized Soil erosion Ground water Contamination Forest cover Weed and disease presence	Mainly sustainable Increased broad acre for squash Minor overall Minor Loss of forest cover Minor	Maintain existing position Increase in tree cover	Some issues of erosion, deforestation etc on larger mono culture areas. Low incidence of disease and pests (except for pigs). No information collected, survey needed.
Business development	Investment in training Investment in capital Investment in research Employment Management systems Business structure Profitability Export share of earnings Debt equity ratio	None Increased in borrowings No change Limited Larger businesses adopting better methods Individual operators, few partnerships Export crops fair No change Mostly equity, low debt Unclear		Few commercial farmers and most of these run very basic businesses. Except for the largest farmers, low levels of investment and almost no long-term investment. Some notable entrepreneurs emerging. Profitability fluctuates from year to year depending on harvest and export prices. Gross margin analysis indicates potentially high returns from exporting a range of crops, including vegetables. Survey to collect

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Outcome	Performance indicator	Performance (10 yr)	Target (ten years)	Comment
	Diversification			information and monitor progress.

1. Overall contribution to economic growth

47. In terms of the overall contribution of the sector to national income, indicators such as contribution to GDP and employment are available. The contribution of the sector to GDP is estimated by the Office of Statistics and is considered to be reasonably reliable for the commercial sector. Measuring the contribution to value added of the subsistence and semi-commercial (subsistence with minor cash sales) is more problematic and the contribution to GDP from these farmers may be understated. Employment data is not as readily available as GDP, with the last employment survey published in 1996.

48. At the household level the Agricultural Census provides very useful data on income earned from agriculture and fishing activities and on the employment of persons in these activities. It does not however provide an indication of the amount of labor used in primary production, which is measured by hours employed. Comparison of data across surveys (for example comparison of the 2001 Survey with the previous survey, conducted in 1993, provides an indication of changes in the nature of the activity such as the degree of mechanization, the number of persons farming, the use of chemicals and fertilizers, areas planted in total and to specific crops, livestock holdings, the use of credit etc.

2. Export market access

49. The appropriate performance indicators are derived from trade statistics that are collected and published regularly by the Government. Indicators of enhanced market access include the value and volume of exports, unit exports prices, the diversification of exports according to the range of products exported, the degree of processing of primary exports and diversification of export markets.

50. While exports through official channels are probably reasonably accurately measured, there is a significant amount of informal trade that takes place but is not documented. This involves exports of root crops, fish, kava and handicrafts by persons traveling abroad and mainly to overseas Tongan community. There are not official estimates of the value of this trade. However, some of the value of these exports is captured in official statistics for repatriation payments from abroad. The precise amount is uncertain, but it is most likely to be significant. A better understanding of the nature of repatriation payments is important to the management of the Tongan economy.

3. Sustainable agriculture

51. Indicators of performance with respect to sustainability of agriculture (and fishing) are more difficult to conceptualize and to estimate. While statistics are available from the agricultural census about the amount of land used in agriculture, there are no statistics on the condition of the land from both a productive and an environmental sense.

52. Sustainability of agriculture needs to be carefully defined. One could adopt a narrow definition of sustainability as meaning that the productivity of the land is maintained over time. One indicator of this would be the amount of agricultural production per acre of agricultural land. However, reliable estimates of production are not readily available. Another measure of sustainability of the productivity of land is the use of artificial fertilizers and chemicals to control for diseases in the soil. If land is being over used, larger inputs of fertilizers will be required to maintain yields. The growth in the use of certain farming practices that are considered to be unsustainable in certain areas could also be monitored

53. One approach to monitoring sustainability would be for MAFF to develop a set of indicators of sustainability and to periodically monitor a selection of areas of agricultural production. This could look at such things as the amount of erosion, de-afforestation, and changes in soil structure, organic content etc.

54. Another aspect of sustainability concerns the impact of agriculture on the quality of the environment, on farmed areas and on adjacent land. An example of this might be the impact of farming on the diversity of flora and fauna and the impact on water quality.

4. Enhanced productivity

55. Productivity is measured by the amount of products produced per unit of input. Since there are a range of inputs into agriculture and fishing, there is a range of relevant productivity measures. For example, it is possible to obtain an overall measure of changes in the productivity of agriculture by unit costs of production. A fall in unit costs would indicate, without changes in the costs of the various inputs, an increase in productivity. The source of the productivity gain might be the better application of inputs or an improvement in the quality of inputs.

56. The productivity of labor is normally measured as production or yields per unit of labor employed (in hours). The productivity of capital is measured by yields per unit of capital. The difficulty with these partial measures is that they depend upon what other inputs are used. For

example, a measured increase in labor productivity might be because of the use of better equipment rather than because the worker has become inherently more productive.

The best approach is probably to employ a range of indicators of productivity. These might include:

- Yield per hour of labor
- Yield per acre of land
- Unit production costs adjusted for inflation (real costs).

57. MAFF does not currently collect the information required to estimate these productivity indicators. The information contained in the MAFF Farm Practice Manual can allow calculation of these estimates but that would depend on how accurately gross margin analysis reflects actual practice and changes in these variables over time. Data on these productivity measures could be collected in an annual or biannual survey of a sample of farmers. Most of the larger farmers and the more commercial smaller farmers could provide reasonable estimates of yields per acre, production costs and labor inputs. A group of farmers could also be encouraged to conduct gross margin analysis of their operations. Whether this is feasible and whether the results would be reliable would depend on the willingness of farmers to reveal technical and particularly financial information about their operations. This would be an even more important issue should farm income be made subject to taxation.

5. Enhanced commitment to commercial farming

58. There is little information collected on this issue and an assessment of the degree of commercialization or professionalism of farming depends very much on anecdotal evidence. However, some important indicators could be obtained from a relatively basic survey of a sample of farmers. This could be combined with the survey to collect information about productivity.

59. Indicators about which information could be collected might include:

- Levels of employment;
- Applications of fertilizers and agri-chemicals;
- Investment in training, for the operator and for farm workers, the type of course undertaken and the hours involved;
- Investment in capital: equipment, machinery, plant, vehicles etc.
- The business structure: sole operator, partnership, and company.

60. This is only an indicative list and could be expanded upon. The results would indicate changes in the sophistication of farm or business management over time and changes in the level of investment in both physical and human capital.

6. Overall assessment of performance

61. The performance indicators are quite detailed. In many cases the data is currently of poor quality or not available. There is some uncertainty as to exactly how the sector is performing because of a lack of reliable information. Where it is available, the data is subject to a relatively high degree of uncertainty. For example, there are different estimates of the contribution of agriculture to GDP and the official measures of agricultural exports ignore important levels of informal exports. Agricultural sector employment data are seriously out of date (the last survey published in 1996). No information is collected on labor productivity and the sustainability of farming practices. These deficiencies make it difficult to assess the past performance of the sector and to confidently make policy and both public and private investment decisions.

62. As an overall assessment, the sector's achievement of the outcomes has generally been poor. The exception is the sustainability of agriculture with traditional farming methods proving to be highly sustainable. Even here, there are some issues concerning loss of tree cover. The broadacre activities, such as squash, pose some potential risks from poor farming practices, inappropriate use of chemicals and the growing of squash in unsuitable areas.

63. One intervention that could provide useful information would conduct of an annual survey of farmers to gather this information. Such a survey is not beyond the capacity of MAFF to undertake, although it may require additional resources devoted to the Statistics and Economics Unit within the MAFF Corporate Services Division. The range of data that could be collected in such a survey is summarized in Table 2.

64. The survey questionnaire would be distributed to a sample of farmers including commercial farmers and semi-subsistence farmers. The questionnaire should be kept as simple as possible to minimize the potential for error and to economize on the time required by farmers and MAFF staff to complete the questionnaire. Face to face interviews would be the most effective in ensuring participation and full and accurate completion. The results of the survey would then be collated and a survey report published as soon as possible.

65. Information on the sustainability of land use would need to be gathered in a separate survey conducted by MAFF extension staff with the co-operation of farmers. This could involve the selection of sample areas and monitoring a variety of sustainability indicators.

Table 2: Suggested scope of agricultural survey

<ul style="list-style-type: none"> ▪ Production and yields ▪ Crops grown and acreage planted ▪ Livestock statistics ▪ Gross margin analysis including yield, purchased costs, labor hours and costs, land rental and estimated capital costs ▪ Borrowings, amount and term ▪ Nature of the business (sole operator, partnership, company) ▪ Number of employees 	<ul style="list-style-type: none"> ▪ Expenditure on training ▪ Investment in implements, vehicles, tractors, plant and equipment ▪ Degree of commercialization as indicated by ratio of non-market to market sales ▪ Incidence of insect and animal pests and disease ▪ Use of MAFF services and level of satisfaction
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C. Performance targets

66. A precise performance target for the outcome sought is difficult conceptually in a market economy. The target that the sector should seek to achieve is its maximum economic potential. That potential is difficult to establish in an economy with distorted prices, such as Tonga, and it is a target that is continuously being shifted in response to changing economic circumstances. If Tonga has a strong underlying comparative advantage in natural resource based industries then its economic potential would be high. If it does not, it will have limited potential. Phase 1 of the Development Program involves technical assistance with data collection and economic research that will provide a better basis for determining where Tonga's real comparative advantage lies and how this is likely to evolve over time.

67. The following discusses the minimum levels of performance that the sector needs to achieve if it is to make a reasonable contribution to the development of the Tongan economy (real economic growth).

68. The suggested performance targets for the outcome sought are:

- Annual real GDP growth of 5 percent a year over the next decade; and, required for this
- Annual real growth in sector value added of 9 percent a year.

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69. According to the Bank, if the Tongan Government is successful in its economic reform programs², real economic growth should improve over the next decade to average around 3 percent each year. While this is certainly achievable, the Review Team considers this to be modest by developing country standards and not ambitious. A target rate of growth of 5 percent is achievable if the correct business environment is established. However, this will involve additional reforms to those currently being implemented or contemplated. To achieve this target growth rate, in the absence of strong growth in tourism and the services sector, there would need to be sharply improved growth in the primary sector (agriculture, fisheries and forestry) and growth in manufacturing activities based on primary products.

70. The Review Team assumed that other sectors in the economy would grow at 3 percent a year, according to the Bank projection. Given this, the primary sector (including processing) would need to grow by around 9 percent a year in real terms. The implications are:

- At the end of ten years, the sector would account for 39 percent of GDP, up from the 24 percent share now, but similar to what it was a decade or so ago;
- Sector value added would need to be around \$T100 million higher in ten years time, in today's Pa'anga.³

71. Where is this growth to come from? There are a number of sources of growth in sector value added. These are increased production volumes, higher prices, increased processing and reduced costs. That is, the sector does not need to rely solely on producing more, but can also contribute to GDP by producing more efficiently and producing more valuable produce.

72. The market for agricultural and fisheries products in Tonga is not expected to grow much over the next decade. There is some scope for import substitution, particularly in meat products, although this is often overstated. The Review Team estimate that import substitution and growth in local sales would account for only around \$T20 million at most of the required increase in value added and this estimates rests on the assumption that Tongan farmers can compete against imports of such products.⁴

73. The main source of growth would need to be from export sales and increased processing. The value added derived from exports will need to increase by around \$T80 million. Given the relatively slow pace of world food demand, this will certainly mean Tongans have to capture market

² Public sector reform, privatization and taxation reforms.

³ The value added of the sector is currently around \$T75 million.

⁴ Which they have not been able to do in the past in spite of high import barriers.

share from other suppliers. This will require a sharp jump in and continuous increase in Tonga's international competitiveness.

74. A simple doubling of production volumes using the same technologies would place an unsustainable demand on Tongan land resources. Much of the growth needs to be based therefore on improved farming practices, higher quality and competitively priced inputs, better and more valuable crop varieties, eliminating waste, better product packaging and presentation, streamlining channels of access to markets and adding value through increased processing.⁵

75. The interventions need to be focused on developing export oriented larger scale operations that are much more capital and knowledge intensive than what exists in Tonga today. An internationally competitive processing industry will need to emerge. The strategy must be to swell the ranks of the commercial sector with new recruits from within Tonga (small holders) and from outside of Tonga.

D. Past performance

76. The Kingdom of Tonga consists of 172 coral and volcanic islands of which 36 islands are inhabited. The total land area is 747 km². Most of the islands are very small. The largest island is Tongatapu (265 km²), where around 70 percent of the population resides. Around 150,000 persons either born in Tonga or of Tongan descent live overseas, mainly in New Zealand, Australia and the USA.⁶ As a result of emigration, the population of Tonga has grown only by 10 percent over the past two decades. Around 33 percent of the population lives in urban areas.

77. According to the World Bank, in 2001 Tonga had per capita gross national income (GNI) of around \$US1,530.⁷ This compared with GNI per capita in East Asia and the Pacific of \$US900 and per capita GNI of \$US1,240 in the lower-middle income group of developing countries. Tonga fares reasonably well on a broad range of development indicators such as life expectancy, adult literacy rates, access to water and sanitation, nutrition and education. Personal security is relatively high in Tonga, although there is evidence of increasing crime rates in urban areas. The youth unemployment rate would appear to be fairly high. Environmental problems are not a major concern

⁵ Increase processing is only desirable if it is profitable.

⁶ This estimate is based on the number of Tongans estimated to live overseas in the mid-1980s around 60,000 plus an assumption that Tonga's population growth rate without emigration would have been around 2.5%. This means that Tonga's population is about 50,000 less than it would have been without emigration.

⁷ The World Bank Group: <http://www.worldbank.org/data/>. The estimate is based on the Atlas method.

at present, although there are emerging issues concerning effluent run off and certain broad acre agricultural activities.

1. Defining the sector

78. In designing a development strategy for the agricultural, fisheries and forestry sector (the primary sector), it is important to define what people should be included in the sector. In developing countries it is usual to define the sector as including all those households or individuals that engage in some farming or fishing activities, for subsistence purposes, for minor cash sales or for commercial purposes. In higher income countries, only those who derive cash income principally from primary activities are included in the sector definition and are the subject of government policies and regulations and are serviced by the relevant ministries. While many households may still maintain a vegetable garden, they are not considered to be farmers who are in need of regulation and government services.

79. If we adopt a narrow view of the Tongan primary sector, it is very lightly populated. It includes only the owners and employees of around 250 commercial farms, a few dozen fishing operators, a logging company and a handful of processors. It also includes landowners and others from entering into commercial farming, including households currently growing crops or fishing that wish to increase their cash sales. Many Tongan families, particularly those residing in villages, adequately meet subsistence requirements. The returns to agricultural development programs and research and extension services from enhancing the capacity of Tongan households to feed themselves or to engage in part-time activities for cash are low. The returns from encouraging the development of the commercial sector are potentially very high.

80. There exist several main types of non-subsistence farming activity in Tongan agriculture. The first and largest type is the subsistence-semi commercial part-time farmer. These make up the largest grouping. Farming to this group is often a weekend affair as their main cash income is derived from income earned from other activities. The greater majority of the smallholder allotments are used by this category. The allotment is only partially utilized and only part of the produce is for sale. Many in this category do not actually have title to the land but use the land of relations who are often living overseas. While they are the largest grouping these growers have only limited commercial ambitions in farming and commit limited effort and capital to farming.

81. The gardener commonly uses hand tools after a tractor is hired first do the heavy work of ploughing and discing. The \$ 40.00 per hour fee comes from his wage earning and usually up to three acres will be ploughed and disced at a total cost of around \$ 200.00. Thereafter hand tools are

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used to plant root crops with corn or other vegetables sometimes scattered through the root crops. The tending of the land is usually a Saturday family occasion, with the family taking home something for the Sunday and the following days. Fertilizer and agri-chemicals are seldom used as most of the crops are of local origin and considered to be resistant to disease and pests other than roaming pigs.

82. While these growers grow a diversity of crops and in an inter cropped manner they are not really commercial growers and the value of their produce is only enumerated in the agricultural census by estimates. The actual volume and value of their crops, however, may still exceed that of the other groups described below.

83. The second group of farmers is the small but growing group of dedicated small-scale farmers. They probably number less than 300 but their contribution to the agricultural economy is significant and growing. There has always been a group of serious farmers associated with the succession of mono-crops that have dominated the export economy over the past decades (first coconuts as copra, then bananas, then watermelon, now squash). However, the new generation is better educated, farms larger areas and grows a diversity of crops.

84. When members of this group farm their own land they utilize it fully and practice a rotation of crops from root crops to a leaf crop and then a fruiting crop. They use fertilizers and agri-chemicals, hybrid seed and usually sell their produce in the local market. Some of their produce goes is exported, either to their own overseas contacts or through an exporter. When they lease land it is usually only a single 3.4-hectare block. There is a view that this group of farmers that could be the model for the development of smallholder agriculture that is diverse, sustainable, viable and enjoyable.

85. Many of this group of farmers own simple machinery, such as misters for pest and disease control, chainsaws for removing timber and in some cases rotary tillers. These farmers will hire in work gangs that charge up to \$ 4.00 per hour per employee. Usually they will work a four-hour shift and they may do this for three or more days of the week. Such groups are often made up of members of the casual part-time farmer group but are village based rather than the urban-based regular wage earners.

86. This group grows a variety of crops and most of the produce is sold locally, though many will grow squash for one of the exporting groups and may even grow root crops for export to family overseas. It is this group of farmers who could best benefit from a lively small holder agriculture that produces for one or two large exporting companies that process the produce before export.

87. The third group of farmers is the commercial farmers. This group has grown out of the development of the squash industry. As exporting of squash requires a deposit of \$10,000 only a few large entities can afford to export squash. The growing base of each of these exporters is usually one or two large commercial growers who have secured leases, albeit short term and sometimes only for the life of the crop, of large tracts of land from nobles, from the Government or from Churches. Their farming method is to crop mono-crops on areas up to and over 40 hectares. The most common crop is squash. The exporting group may also have smaller contracted farmers but this practice has been reduced as many exporters funded small holders only to have them sell their crop to another exporter. Onions are now also grown for the Japan market in a trial and sweet corn has been grown for the local market and for an export trial to Fiji.

88. Generally this group owns their own tractors and other machinery, including large boom-sprayers for pest and disease control. In order to utilize the large machinery large areas have been denuded of trees and shelterbelts so that tracts of up to 40 hectares can be tilled with few obstacles. While the capital inputs are large, as the scale is relatively large, the most common practice is to engage in mono cropping of squash. The risks are great but the returns can also be substantial if all goes well.

89. There are a number of large estates held by the Royal family, by Nobles, by Churches, by Government and even by private individuals. Some of these are leased out and utilized, others are not utilized. The existence of some large tracts of land provides scope for some extensive pastoral or tree crop (plantation) farming. Ideally where these are on slopes, as in 'Eua, these should be planted in permanent cover. Tonga could potentially meet a substantial part of its meat requirements by judicious use of some of these large tracts of land. Where schools own large areas (for example, the Wesleyan, Catholic and Mormon schools) these could be developed as learning centers and demonstration farms. This, together with basic farm business techniques such as gross margin analysis, could be the basis of well-developed agricultural courses that provide for the practical application of learning. Such activities would also be revenue earning.

90. With the exception of exporting companies (see Box 2), Tonga does not have nucleus enterprises operating in the agricultural sector. A nucleus enterprise is defined as an estate, a trader or a processor that purchases the produce of small farmers and undertakes responsibility for processing and marketing that produce. Most of the smaller farmers in Tonga market their own produce or sell to an exporter. The nucleus enterprise often provides technical assistance, inputs and working capital to small holders in exchange for the right to purchase the produce grown. Typical examples of nucleus enterprises are the oil palm plantations operating in Papua New

Guinea. These large-scale plantations and mills supplement their own raw material suppliers by purchasing oil palm grown by small holders.

Box 2 : South Seas Coffee

South Seas Coffee Limited is operating a share cropping arrangement, one method adopted by a nucleus estate. Utilizing blocks of a minimum size of one hectare and average size of two hectares, coffee plots are developed by the company on land owned by individual titleholders. The titleholder and the company sign a planting agreement against which the company carries out and funds all the development costs for the coffee plot. The landholder is paid an annual rental of 200 pa'anga per acre, though this is clawed back once harvesting begins.

The full cost of developing a coffee plantation varies between four and five pa'anga per tree from transplanting up to harvesting. In this way a four-acre block of 6,000 trees costs from 24,000 to 30,000 pa'anga to develop. In the third year there is a small harvest, with larger harvests commencing in year four. Then the total annual costs are netted out and the profits are split between the company and the landholder. The portion retained by the company reduces the development cost of the coffee plot.

The landowner remains indebted to the company until all the development costs are clawed back. The company is assured of the production of the plot throughout this period. The oldest of the blocks developed indicates that the claw back period will be of five to six year, after which the landowner retains the entire profit. The net profit from coffee is approximately 40 per cent of the gross returns at 3.5 to 4.0 kilograms of cherry per tree and at 1.00 pa'anga per tree.

A major advantage of this business model is that it assures the venture of a critical mass of product to allow for the processing of the product. In 2000, South Seas Coffee roasted 1,000 kgs of coffee. By 2002 this had increased to 3,600 kgs and the company's own plantings were beginning to come on stream. 2003 resulted in a harvest that will allow 7,000 to be roasted. This is 10 per cent of the Kingdom's demand, though it is percolated coffee and not instant coffee. In 2004 an estimated 12,000 kgs will be roasted and exports of roasted product will commence.

This model may be best utilized when introducing new long-term crops where the landholder does not have expertise and has idle land. For the venture there is an assured period where the company retains the entire production, though sharing the profits. Aloe vera, vanilla, cocoa, fruit and nut crops and essential oil crops could be developed under this model.

2. Contribution to national income

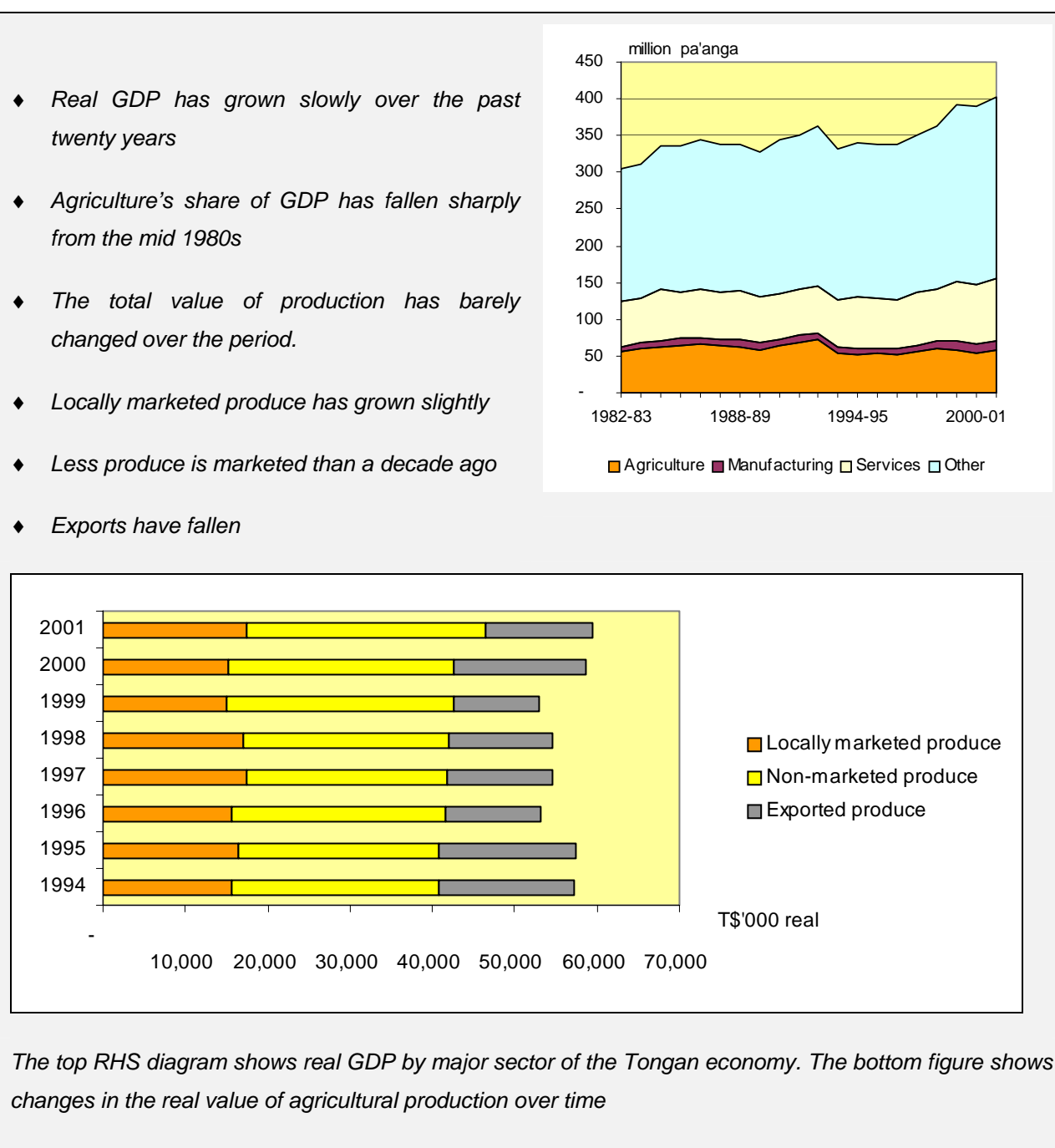
91. Over the past twenty years, real gross domestic product (GDP) of Tonga has grown at an average annual rate of 1.7 percent. While rates of economic growth in Tonga on a per capita basis have been relatively high by Pacific standards, the country has not achieved its economic potential. Growth rates have been very volatile in Tonga and there has been no period of sustained economic growth. Fluctuations in the value of agricultural production have been an important source of this volatility in economic growth rates. For example, primary sector value added fell by 7 percent in 1996 as a result of a poor squash harvest due to drought.

92. In 2001-02, the agriculture, forestry and fisheries sector (the primary sector) accounted for 24 percent of GDP.⁸ Growth in the sector has not matched growth in the rest of the economy with the result that the contribution of agriculture to GDP fell from 33 percent in the early 1990s. In real terms the value added of the sector (its contribution to GDP) was only 5 percent higher in 2001-02 than it was in the early 1980s.

93. Productivity growth and the degree of specialisation of farmers may be used to measure the economic development of a sector. An indicator of development is the degree of commercialization of agriculture. Commercialization allows for the attainment of cost reductions through specialisation and economies of scale. As agriculture becomes more productive, resources are released for productive employment in other parts of the economy. The economic development of the primary sector in Tonga has been modest by these measures.

⁸ Most of the growth in GDP in Tonga has been recorded in the services sector. The averages annual growth rate for the electricity, gas and water sector was 14 percent, a reflection of the success in improving the coverage of electricity supply in the islands. Wholesale and retail trade grew at an average annual rate of 6.4 percent, transport and communications by 7.1 percent and finance and real estate by 7 percent. Although it remains very small, accounting for only 6 percent of GDP, the manufacturing sector grew at an average annual rate of 7.5 percent. Government expenditure was equal to 34 percent of GDP in 2001-02, up from 28 percent in the mid-1990s.

Figure 1: Growth and commercialization of the primary sector



The top RHS diagram shows real GDP by major sector of the Tongan economy. The bottom figure shows changes in the real value of agricultural production over time

Source: Asian Development Bank Development Indicators and Government of Tonga Budget Statement for year ending 30 June 2004.

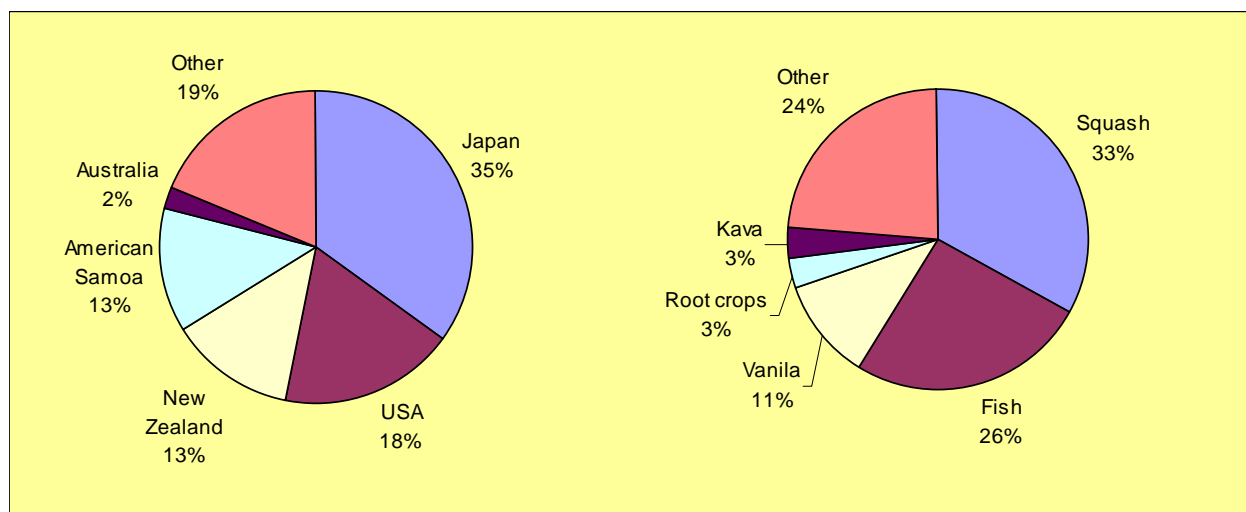
Note: Other includes public administration, mining and indirect taxes and subsidies. The services sector includes electricity and water, transportation and communications, wholesale and retail trade, finance and real estate

3. Agricultural trade

94. It is also difficult to estimate the value of primary exports from Tonga. This is partly because since a large volume of exports of kava and root crops are in the form of personal affects sold to Tongan communities overseas. According to data published by the Statistics Department, Tonga exported 2,392 tonnes of root crops in 2000-01 and 17 tonnes of kava. Quarantine data for the exports of plants and plant products in 2001 indicate that there were 4,066 tonnes of root crops and 98 tonnes of kava exported. If these products were sold at similar unit export values to official exports, the value of root crop exports would be understated by \$T1.4 million in 2001 while the value of kava exports would be understated by \$T1.2 million. Large quantities of fish are also 'exported' in 20-kilo boxes as accompanied luggage on flights from Tonga. According to Ministry of Fisheries estimates, between 200 and 300 tonnes of fish is exported in this way each year. If valued at prices prevailing overseas, these exports are worth between \$T4 million and \$T6 million a year. None of these exports appear in the official trade statistics. There is also a large trade in handicrafts that is also unrecorded (see Box). The remainder of the reparations constitutes gifts of cash to support relatives in Tonga.

95. The composition of repatriation payments is difficult to estimate. The 2000-01 Household Income and Expenditure Survey estimated these cash gifts to be worth a total of around \$T43 million, compared with official estimates of transfer receipts of around \$T100 million. This suggests that more than half of the repatriation payments are payments for goods exported or funds for investment in Tonga.

Figure 2: Tonga's principal exports and destinations: 2001-02



Box 3: Handicraft and Tongan cultural items.

Probably the largest market and one often forgotten because it is not well enumerated is the trade in cultural items for the exchange of gifts. These include mats, huge tapa clothes, waist mats and other items used in life celebrations like births, deaths and marriages. Birthdays and family reunions are another reason for celebration. Church and school gatherings again involve large scale gift giving. The overseas population of Tongans has not ignored these traditional practices; they have made these exchanges even bigger and more important. Storehouses of cultural items for the exchange of gifts are a measure of wealth and this wealth is accumulated rather than diminished as one grows older and takes on more responsibilities in the wider extended family. It is suggested that the export of cultural items for exchange and the taking of foodstuffs (especially seafood) as presents for people are reciprocated by the sending back of remittances. Such remittances have been treated as gifts, but many of them are payments for items sent in informal trading arrangements.

96. There are several official estimates of merchandise exports in Tonga that are not at all closely aligned. The National Reserve Bank of Tonga publishes estimates based on the overseas exchange transactions (OET). The Statistics Department also publishes trade data. In this report, we utilize the NRBT data. Even this is problematic because different export earnings are given in two consecutive tables (see Page S31 and S32 of the June 2002 edition of the Bank's quarterly bulletin).

97. According to the Budget Statement, based on overseas exchange transactions data, export earnings were \$T38.8 million in 2001/02 compared with only \$T15.5 million in the previous year. This increase was mainly due to increased export earnings on squash, fish and vanilla. Squash exports amounted to \$T12.8 million, fish exports \$T9.9 million, vanilla \$T4.2 million, root crops \$T1.4 million and kava \$T1.2 million. The total value of the exports of these products was \$T29.5, leaving almost \$T10 million in other exports. Now it is not at all clear what these exports are.

98. Tonga's exports are based on a very narrow range of products and show substantial volatility from year to year due to both fluctuations in volumes exported and fluctuations in world prices. An additional concern is that Tongan exports are dominated by a handful of countries. In 2001-02, Japan accounted for 36 percent of exports, the USA 18 percent, New Zealand 13 percent and American Samoa 13 percent. Despite its proximity to Australia, Tonga derives only 2 percent of its export earnings from trade with Australia.

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99. Past governments have sought to diversify Tonga's economic base and its exports. For example, the development of a manufacturing sector was encouraged through the provisions of investment incentives. Moreover, local manufacturing was protected from international competition by high trade taxes (customs duty and the port and services tax). Despite high levels of effective assistance, manufacturing in Tonga has not grown significantly and manufactured exports remain limited.

100. Total imports of agricultural, fishing and forestry products in 2001 amounted to \$T51 million, a substantially larger amount than the value of exports from the sector. The major imports included meat products valued at \$T23 million, fisheries products valued at \$T2.4 million, vegetable products at \$T6 million and processed foodstuffs at \$T14 million. The rate of import duty on food products is generally 15 percent. The value of duty actually collected was around 15 percent for most products, indicating that there are few exemptions. One notable exception is that there was no import duty collected on flour and timber.

Table 3 : Tonga's principal imports of agricultural, fishery and forestry products

Product	Value	Average duty	Product	Value	Average duty
Live animals: animal products	18,330,153	14%	Vegetable products	6,013,417	7%
Live animals	32,036		Rice	334,682	
Beef: fresh, chilled, frozen	1,199,997		Flour and cereals	3,356,902	
Lamb: fresh, chilled frozen	7,174,431		Oranges	275,973	
Offal	271,052		Apples, pears	258,061	
Poultry	4,063,019		Squash seeds	269,721	
Pork	269,358		Other vegetables and fruit	1,852,760	
Preserved beef	52,683		Animal & vegetable fats & oils	976,675	15%
Fish and seafood	1,352,872		Prepared foodstuffs	19,770,645	15%
Other	1,162,472		Sausages	1,293,486	
Dairy products	2,309,918		Prepared or preserved meat	3,522,020	
Other	442,315		Prepared or preserved fish	1,035,443	
Wood and articles of wood	6,316,552	3%	Sugar	1,485,988	
			Other	12,433,708	
			Total	51,407,442	12%

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101. Many of the fresh vegetable and fruit products imported into Tonga are varieties that are grown in Tonga. The value of imports of fresh vegetables was relatively low, at \$0.56 million. While many of these vegetables could be grown in Tonga, there is limited scope for growth in the agricultural sector from the replacement of imported vegetables. Imports of fresh fruit and nuts amount to only \$T0.8 million, again offering little potential benefit from import replacement.

102. Imports of processed fruit and vegetable products (excluding cereals) that could be produced from raw materials grown in Tonga amounted to \$T1.5 million. A number of development assistance projects have suggested that the replacement of imported processed foods such as jams, fruit juices, snack food etc could provide a substantial basis for income generation and employment creation. However, the size of the market served by imports of these products in Tonga is very small. Even if all of these imports could be replaced in Tonga (and that is unlikely because of brand preferences etc) only a very small-scale cottage industry could develop. Assuming a profit margin of say 20 percent after input, labor and other costs, such an industry would provide only about 12 Tongan households with income equivalent to current household income (around \$T20,000 per year).

103. The opportunities for Tongan agriculture, assuming domestic per capita food consumption and diets change only slowly are overseas and not in Tonga, with the possible exception of replacing imported meat with locally produced meat.

4. Returns to growers

104. There is little information about the returns that farmers received from the inputs of land and labor into farming in Tonga. However, MAFF undertakes financial analysis for a range of root crops, perennial crops, and vegetables and livestock activities. These are presented in a Farm Management Manual, which also provides useful information about methods of growing these crops. It is understood that the manual has been updated on several occasions and MAFF staff have recently completed the analysis that is discussed in this section. However, while the manual is dated September 2000, it has not been published.

105. The rates of return or gross margins calculated by MAFF appear to be based on fairly realistic assumptions concerning yields, labor, capital and purchased input requirements, costs and prices. d the scope of this review, however it is of interest to consider the value of the information and what it reveals about the potential of small-scale agriculture in Tonga.

Box 4 : Gross margin analysis methodology

Gross margins are used in both partial and whole-farm budgeting to provide a measure of the contribution of each activity to farm profit. The gross margin of an activity is the total income minus the variable costs associated with that particular activity. Gross margins are usually expressed on a per unit basis, such as per acre for crops or per head for livestock, or per hour of labor.

The gross income is the total value obtained from the sale or home consumption of the production of the activity being considered. This is estimated by calculating the amount of the output and multiplying it by the expected price for each unit of that output. In Tonga much of the farm output is consumed by the farm family or given away instead of being sold in the market. The best procedure in these circumstances is to use the price the farmer would have received in the market, net of selling costs.

The variable costs of an activity are the direct input costs, which are specific to that activity and which vary more or less in proportion to the size of the activity. Examples of variable cost items include seed, fertilizer, pesticides, fuel and transport. The variable costs of the activity are the amounts of these variable inputs used, multiplied by their respective prices. Again, some variable inputs, such as planting materials, may not actually be purchased but may be valued at the price that would have been paid had the items been bought.

All other costs are called fixed costs and are not included in the gross margin. Fixed costs are those costs, which do not vary directly with the scale of production. They usually relate to inputs that are attributable to a number of activities on the farm or are 'overheads' for a particular activity that do not vary much with scale of operation. Examples of fixed costs are costs of machinery and buildings, fencing, and wages of permanent labor (or the value of the time of unpaid family workers). In Tonga, costs of labor are often difficult to categorize as fixed or variable. By convention, in gross margin analysis, casual and contract labor are regarded as variable costs, with family and permanent hired labor as fixed costs.

The profitability of the whole-farm system is assessed by adding up the gross margins of all the activities on the farm then deducting the fixed costs, i.e., farm profit is total gross margin minus the fixed costs.

Because gross margins take account of variable costs only, it is necessary, when comparing activity gross margins per unit, to review the demands each activity places on farm fixed resources. For example, crop A might have a much higher gross margin per acre than crop B but, before we can deduce that it would pay to grow more of A and less of B, it would be necessary to consider, for instance, that crop B occupies the land for only four months compared to a full year for crop A, or that it requires much less labor to produce. In addition, any impact on fixed costs must be considered when planning farm reorganization. For example, the fixed costs for commercial pig production are very high and should be included in any budget to work out the profitability of establishing such as activity on a farm.

The data is provided for each crop individually, not for the multitude of intercropping systems found in Tonga. It is assumed that crops are generally intercropped with coconuts, as is the case throughout most of Tonga. The gross margins for crops are calculated on a per acre (about 0.4 ha) basis. For some intensive crops it would be rare for a Tongan farmer to plant as much as 1 acre, while for other crops such as export squash it is usual to have areas greater than 1 acre. Production levels used are in line with current productivity on farms in Tonga with 'reasonable' management. Higher production is possible, as has been shown for many activities in trials by the Research Division of MAFF.

For most crops, the prices used in the calculation of gross margins are the average domestic market prices during 1994-1999. For export crops, averages of prices over 1998 and 1999 have been used.

106. The yields assumed in the analysis are probably higher than those achieved by many Tongan farmers. Most agriculturally active households produce crops for their own consumption or make only limited sales of surplus crops. For these part time or subsistence farmers, the need to maximize yields from the land available to them is quite limited. The analysis assumes the correct application of fertilizers and pesticides and mechanical preparation of the land. As indicated by the Agricultural Census farmers practice organic farming, with relatively few using chemicals and mechanical equipment. The yields and the income derived probably exceed what commercial farmers are currently achieving. Further, the analysis assumes that all of the harvest is sold at prevailing market prices, whereas some produce would be sold at discounted prices or would not be sold at all.

107. The gross margin analysis is more indicative of what commercial farmers can achieve. The manual is of value to persons considering entering into commercial farming. It can therefore provide some indication of the productivity gains that could be realized by commercial farmers adopting better farming practices. The analysis also casts some light on the relative rates of return in Tonga to different commodities and to livestock.

108. The Farm Management Manual focuses on returns from sales to the domestic market. By obtaining average price data for the New Zealand market over a period of time, factoring in processing and shipping costs, an indication of the competitiveness of Tongan produce in New Zealand can be obtained. Tonga currently exports little in the way of fresh or processed fruit and vegetables, with the bulk of its exports being squash and vegetables. Quarantine issues are a major hurdle to the export of fresh vegetables and fruit fly from Tonga to overseas markets. Understanding whether Tonga could profitably develop a fruit and vegetable export trade would assist in determining whether a fruit fly control program, an export processing facility and developing export protocols would be worthwhile investments. Gross margin analysis can also be used to analyze the

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impact of government policies and taxes on returns to farmers. This can also be used to demonstrate the national benefits that would arise from policy reform.

109. Two examples of the growth margin analysis are presented below. In Tables 5 and 6, the gross margins on various root and vegetable crops are presented and compared. The results indicate significant returns on land and labor, with the exception beans. The return per hour is relatively high compared to paid employment in Tonga. The average returns per hour for root crops is around \$T20 and \$T21 for vegetables. The returns need to be adjusted for capital inputs and the value of land. At present land has a relatively low rental rate of around \$T1,000 per year for an 8 acre tax allotment and capital expenditures are minimal. The analysis of the Farm Management Manual allows a calculation of the annual returns to small scale farming in Tonga.

Table 4: Gross margin analysis for vegetable crops (per one-acre plot)

Commodities	Production Period months	Yield (kg/ac)	Price (\$/kg)	Gross Income (\$/ac)	Variable Cost (\$/ac)	Gross Margin (\$/ac)	Return per hour of labor \$/hour
Capsicum	4	3,704	2.70	10,002	1,341	8,661	33.31
Carrot	4	13,854	1.34	18,564	842	17,722	13.36
C_Cabbage	3	7,194	0.94	6,763	714	6,049	13.44
Chilli	6	16,247	0.64	10,425	996	9,429	31.86
D_Bean	3	12,000	2.86	34,320	1,333	32,987	3.28
L Beans	2	7,798	1.50	11,698	1,333	10,365	9.45
Eggplant	6	2,742	1.83	5,017	779	4,239	9.68
H_Cabbage	4	16,231	1.81	29,377	944	28,433	63.19
Lettuce	3	4,265	3.21	13,690	520	13,170	28.02
Dwarf Bean	3	1,175	2.86	3,360	1,163	2,197	3.28
Squash	4	9,033	0.60	5,420	1,391	4,029	17.15
Tomato	4	8,530	1.31	11,174	1,154	10,020	12.88
Watermelon	4	8,017	0.79	6,333	1,041	5,292	30.77
Zucchini	6	9,961	1.61	16,038	1,198	14,839	27.23

Source: MAFF estimates. (a) Percent of gross margin over gross income

Table 5: Gross margin analysis for root crops (per one-acre plot)

	<i>unit</i>	Yield	Price	Gross Income	Variable Cost	Gross Margin	Return per hour of labor
		(kg/acre)	(\$/kg)	\$/acre	\$/acre	\$/acre	\$/hour
Taro tarua	<i>corm</i>	4,861	0.65	3,160			
	<i>leaves</i>	500	1.00	500			
				3,660	698	2,962	49.24
Swamp taro	<i>corm</i>	4,065	0.92	3,751			
	<i>leaves</i>	0	1.00	0			
				3,751	740	3,012	12.68
Manioke	<i>tuber</i>	8,130	0.40	3,252	565	3,252	18.90
Kape	<i>corm</i>	8,334	0.80	6,653	520	6,653	32.97
Kumala	<i>tuber</i>	5,409	0.54	2,941	686	2,376	12.24
Early Yam	<i>tuber</i>	4,537	3.13	14,202	2,766	13,682	29.32
Late Yam	<i>tuber</i>	4,516	1.00	4,516	716	3,830	6.30
Sweet Yam	<i>tuber</i>	3,237	0.60	1,942	557	1,385	6.30
Potato	<i>tuber</i>	1,694	1.38	2,337	1,110	1,621	12.24

110. The ability of Tongan produce to compete overseas depends on whether it is profitable to export at prevailing market prices overseas acceptable quality products. Recent wholesale prices prevailing in the Auckland market produce market are set out in Table 6. Beginning with these prices and deducting the costs of moving produce from Tonga farm, farm gate prices for produce exported to Auckland are derived. These prices can then be compared with estimates of the average growing costs of Tongan farmers to determine if Tongan exports could compete in Auckland. The results of this analysis are presented in Table 8.

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Table 6: Farm gate prices based on wholesale prices in Auckland produce market (winter)

product	comment	sea/air	Bio security protocol	unit	TOP\$	commission	freight	export fees wharfage export license	packaging	preparation processing	total costs	farm gate price	treatment notes
bananas	green	sea	no	kg	1.11	0.11	0.30	0.01	0.20	0.30	0.92	0.19	fumigation
	plantain												
beans	flat	air	yes	kg	7.12	0.71	1.10	0.10	0.30	0.40	2.61	4.51	
	round	air	yes	kg	4.62	0.46	1.10	0.10	0.30	0.40	2.36	2.26	
capsicum	green	air	no	kg	5.31	0.53	1.10	0.10	0.35	0.80	2.88	2.43	hot air
chilles	green	air	no	kg	18.75	1.87	1.10	0.10	0.35	1.00	4.42	14.33	hot air
coconuts	dry	sea	yes	each	1.25	0.12	0.40	0.01	0.05	0.40	0.98	0.27	
	drinking	sea	yes	each	2.50	0.25	0.40	0.01	0.05	0.20	0.91	1.59	
cucumbers		air	no	kg	4.50	0.45	1.10	0.10	0.30	0.40	2.35	2.15	
egg plant		air	yes	kg	6.25	0.62	1.10	0.10	0.30	0.80	2.92	3.33	hot air
ginger		sea	yes	kg	6.25	0.62	0.50	0.01	0.20	0.30	1.63	4.62	fumigation
honey melon		sea	yes	kg	2.11	0.21	0.30	0.01	0.20	0.30	1.02	1.09	fumigation
mangoes		air	yes	10/12 count	17.50	1.75	5.50	0.10	0.30	0.80	8.45	9.05	hot air
okra		air	no	kg	6.25	0.62	1.10	0.10	0.30	0.30	2.42	3.83	
pawpaw	sunrise	air	yes	9/10 count	33.75	3.37	5.50	0.10	0.30	0.80	10.07	23.68	hot air
	waimanal o	air	yes	8/9 count	50.00	5.00	7.50	0.10	0.30	0.80	13.70	36.30	hot air
rock melon		sea	yes	kg	3.20	0.32	0.30	0.01	0.20	0.80	1.63	1.57	fumigation
strawberries		air	no	kg	20.00	2.00	1.10	0.10	0.30	0.80	4.30	15.70	?
sweet corn		sea	no	kg	4.00	0.40	0.30	0.01	0.20	0.80	1.71	2.29	?
taro	pink	sea	yes	kg	2.50	0.25	0.30	0.01	0.20	0.30	1.06	1.44	fumigation
	white	sea	yes	kg	2.08	0.21	0.30	0.01	0.20	0.30	1.02	1.06	fumigation
taro leaf		air	yes	kg	5.50	0.55	1.10	0.20	0.30	0.40	2.55	2.95	
tomatoes		air	yes	kg	3.12	0.31	1.10	0.10	0.30	0.80	2.61	0.51	hot air
watermelon		sea	yes	kg	3.12	0.31	0.30	0.01	0.20	0.30	1.12	2.00	fumigation
zucchini		air	no	kg	5.00	0.50	1.10	0.10	0.30	0.80	2.80	2.20	hot air

Sea freight is by Full Container Load Reefer at TOP 3712 per FCL. Airfreight is by kg at 1.10 per kg. The Tongan pa'anga is used throughout at an exchange rate of 0.80 TOP = 1.00 NZD. Airfreight rates are based on the Specific Commodity Rate 0006 for foodstuffs, this is 0.98 TOP per kg though surcharges bring that up to 1.10 TOP. Airfreight space is limited and competitive due to the volume of fish that is carried. B767 aircraft of Air NZ offer the most space on two flights per week. One flight is a B767-200 that has four less can LD8 positions than the 300 series, this reduces cargo capacity by 5-6 tonnes. This flight may be upgraded to 300 series in October 2003, adding 6 tonnes of cargo space per week. Air NZ also operates 3 B737-300 services per week with little cargo capacity. There are five flights by B757 of Royal Tongan Airlines and two B737-800 flights per week by Polynesian Airlines. These have limited capacity. Total estimated cargo space ex Tonga for Auckland per week is 30 tonnes maximum and 20 tonnes minimum. Sea freight rates are based on a FCL Reefer cargo with surcharges added in. There are at least five services per month from Tonga to Auckland offered by three carriers. Cargo space is never a problem and competitive rates are offered to frequent shippers.

Table 7: Competitiveness of Tongan vegetables in Auckland

Product	Variable cost	Labor cost	Fixed cost	Total cost	Farm gate price: to Auckland	Farm gate price: Tonga
Capsicum	0.29	0.22	0.01	0.53	2.43	2.70
Carrot	0.06	0.38	0.00	0.45		1.34
C_Cabbage	0.10	0.19	0.01	0.30		0.94
Chili	0.25	0.29	0.01	0.54	14.33	0.64
L Beans	0.17	0.56	0.01	0.75	2.26	1.50
Eggplant	0.28	0.48	0.01	0.78	3.33	1.83
H_Cabbage	0.06	0.08	0.00	0.14		1.81
Lettuce	0.12	0.33	0.02	0.47		3.21
Dwarf Bean	0.99	1.71	0.06	2.76		2.86
Squash	0.15	0.13	0.01	0.29		0.60
Tomato	0.14	0.46	0.01	0.60	0.51	1.31
Watermelon	0.13	0.06	0.01	0.20	2.00	0.79
Zucchini	0.12	0.16	0.00	0.29	2.20	1.61
Ginger	0.20	0.30	0.01	0.50	4.62	3.80
Cucumber	0.09	0.13	0.00	0.22	3.33	0.72

111. The estimates indicate that higher farm gate prices could generally be obtained from the export of most produce to New Zealand than selling the produce at the market in Nuku'alofa. That is, for most products, provided that the quality is the same as competing produce in New Zealand, Tongan farmers could compete in New Zealand markets and make a higher level of profit. Moreover, the proportion of produce harvested that would be sold at the Auckland market may be much higher than sold in Nuku'alofa.

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112. The Auckland market was chosen because it is best documented and best illustrates the way in which bio security protocols work. It is also the most developed market for Tonga. While the Auckland market can be easily saturated, it is close and frequently served by both air and sea freight. During the months from June to October Tonga could export considerably more produce to New Zealand. Prices in Wellington and Christchurch may be better but the markets are smaller and the additional returns are reduced by the additional costs. The wholesalers will move produce around New Zealand and bear the internal freight costs.

113. There are several main wholesalers with much the same prices being offered. There are a number of exporters but only one regular exporter to a wholesaler and that is of coconuts. That this is so reflects the poorly developed marketing structure in Tonga. It also reflects, to some extent, the lack of financial strength of an exporter to sustain the bad times while making good in the good times. The most important constraint to developing the market is the inconsistent supply from farmers in Tonga.

114. Fiji and Samoa are other markets for fresh produce, but bilateral agreements need to be renegotiated to make them more practical. There is also a levy of 20 US Cents per pound put on taro from Tonga into the American Samoan market. The same applies to Taro from Samoa but Tonga is acknowledged to have better tasting taro. Currently the prices are as good as those in New Zealand but the demand is smaller and saturation is easily reached. There is room for one or two small players. Again the production of produce has to be co-ordinated to take advantage of the opportunities that do exist.

115. Australia is a very large and difficult market for Tonga, largely because Australia can meet all its own needs of all the produce produced by Tonga. There are some niche markets such as that for coconuts. The quarantine requirements are very stringent and protocols have not been developed for most products.

116. The United States market is large but its distance means that most produce has to be processed, at least frozen. This is done, as for New Zealand and Australia with cassava, but it is badly done. There are a number of church groups who irregularly export and distribute their produce to members on the West Coast. There are also a number of individuals similarly involved. There is yet to be a co-ordinated and sustained attempt to enter this market.

117. The market in Japan for squash is well documented and remains the largest produce market for Tonga. It is now dominated by a number of larger export companies who have paid the \$ 10,000 fee for a license. The squash market is one of high risk in that it is a single market, it is of a bulky

relatively low value crop, it is a one way trade, it involves large inputs of seed, fertilizer and chemicals (all imported) and its is subject to the vagaries of climate, pests and diseases. Furthermore the whole cycle from land preparation to harvest takes up land for up to six or eight months and this cycle must be repeated every year. In the final analysis only the larger more efficient growers stand to survive and profit from squash growing. Thus while it will remain an important crop squash will most probably become a lesser part of the export picture. Squash growing has introduced many farmers to commercial farming and the lessons learned are extremely ones that can be built on for other less risky crops.

5. Household involvement in primary sector activities

118. Labor force participation in Tonga rose significantly over the decade to 1996, the last year that employment data was collected. According to employment survey data, the agricultural sector accounts for around one third of employment, compared to around 45 percent in the mid-1980s. Most of the employment creation has been in the manufacturing sector and in the services sector.

Table 8: Employed population by sector

	1986 Census	1990 Survey	1994 Survey	1996 Census
Population	94.5	96.4	97.1	97.8
Total labor force	23.7	32.0	35.0	33.9
Participation rate	25%	33%	36%	35%
Employed persons	21.6	30.7	34.6	29.4
Unemployed	1.4	2.1	1.3	4.5
Unemployment rate	9.0%	4.1%	1.3%	13.3%
Agriculture, forestry, fisheries	10.6	11.7	13.6	10.0
Manufacturing and mining	0.6	4.7	7.7	6.7
Other	10.4	14.3	13.3	12.7

119. The employment data understates the importance of agriculture to Tongan households. Many persons in paid employment outside of agriculture have some involvement in agricultural activities on a part time basis. Most households derive a major part of their basic requirements from the cultivation of land.

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120. The 2001 agricultural census⁹ categorizes the level of agricultural activity as follows:

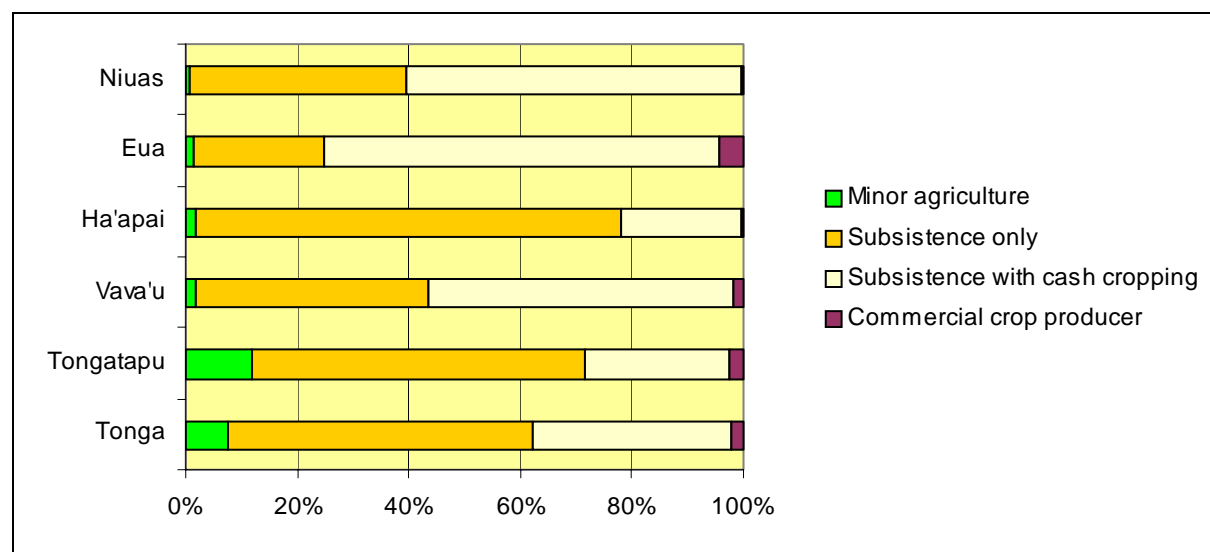
- non-agricultural: the household does not engage in any crop production;
- minor agricultural activity: crops grown on less than 1/8 of an acre or less than ten tree crops;
- subsistence only: the household does not sell significant quantities of crops;
- Subsistence/cash: mainly for household consumption but some sales of surplus crops; and
- Commercial agriculture: the main purpose of production is to sell locally or on export markets.

121. Agriculturally active households had 61,186 members. Of the household members over the age of 15 years, 62 percent were employed or economically active, 13 percent were unemployed and 25 percent were economically inactive. Of the employed household members 62 percent were self-employed, 16 percent worked for government or quasi-government agencies and 17 percent were wage earners in the private sector. Unpaid workers accounted for 4 percent and employers 1 percent. Of the economically active household members, 40 percent or 9,539 members were engaged in agriculture. The following sections describe household agricultural activities.

a. Crops

122. Around 70 percent of Tongan households (almost 11,000 households) were engaged in some form of agricultural activity in 2001 when the agricultural census was conducted. Tongatapu had the largest proportion of non-agricultural households, 39 percent. This reflects the greater availability of employment opportunities outside of agriculture. The smaller islands all had over 80 percent of households that were agriculturally active.

⁹ Ministry of Agriculture and Forestry and Statistics Department August 2002.

Figure 3: Cropping activity by main purpose

123. Most households are engaged in either minor agriculture or subsistence farming. Around 55 percent of agriculturally active Tongan are subsistence only farmers and a further 36 percent were subsistence with sales of surplus crops. Only 2.2 percent of agriculturally active households described themselves as commercial farmers. Less than 40 percent of the households had any cash sales of crops. Cash sales appeared to be more important on the smaller Islands of “Eua and the Niuas than on Tongatapu.

b. Livestock

124. Over 80 percent of Tongan households hold livestock of some form. Most holdings are small, with average holdings of 4.5 cattle, 9.8 pigs, 3.4 goats and 23 chickens. There are relatively few commercial sized holdings. Holdings of over 20 animals account for only 2 percent of cattle holdings, 12 percent of pigs and 44 percent of chickens. Livestock holding is predominantly for consumption with sales accounting for only 8 percent of pigs disposed of, 2 percent of chickens and 9 percent of goats. Sales of cattle are a more important source of income, accounting for 22 percent of disposals. Gifts account for a high percentage of disposals, over 70 percent for cattle and pigs, 54 percent for chickens and 61 percent for goats.

Table 9: Household holdings of livestock

	Cattle		Pigs		Goats		Chicken	
	House-holds keeping	Average Holding	House-holds keeping	Average Holding	House-holds keeping	Average Holding	House-holds keeping	Average Holding
Tonga	2,311	4.5	11,594	9.8	805	3.4	7,729	23.0
Tongatapu	1,225	4.7	7,152	8.3	300	3.3	4,316	24.5
Vava'u	653	4.2	2,204	11.1	137	3.9	1,704	21.3
Ha'apai	151	4.0	1,158	14.0	233	3.1	915	22.3
Eua	259	4.6	751	12.7	103	4.1	497	15.5
Niuas	23	2.7	329	12.4	32	2.5	297	25.5
	less than 5	5 to 9	10 to 19	20 to 49	over 50	Eaten	Given away as gifts	Sold
Cattle	1,630	485	148	41	7	4%	74%	22%
Pigs	4,180	3,025	3,026	1,268	95	14%	79%	8%
Goats	642	115	38	9	1	30%	61%	9%
Chicken	922	1,183	2,186	2,733	705	44%	54%	2%

c. Fishing

125. Fishing is an important household activity in Tonga. About one third of households engage in fishing. Most of this activity is for subsistence purposes, with 77 percent of households that fished doing so for own consumption only and 21 percent mainly for home consumption but with occasional sales. Only 2 percent of households engaged in fishing were commercial fishers. Most of these households selling fish were relatively small scale and only sold a proportion of their catch. Around 50 percent sold at least three-quarters of their catch while the other households sold at most 50 percent of their catch. Hand line fishing accounted for 44 percent of fishing activity, spear fishing 21 percent in and net fishing 16 percent. Others were engaged in the collection of shells and seafood. Households average around 2 fishing trips per week. A total of 7,704 persons were engaged in fishing, with males accounting for around 80 percent of these people. Boats were used by 40 percent of those fishing. Most sales of fish are direct to the consumer (80 percent of sales).

Table 10: Fishing activities of Tongan households

	Number of households engaged in fishing	Home consumption only	Home consumption with occasional selling	Mainly for sale
Tonga	5130	77%	21%	2%
Tongatapu	2393	78%	18%	4%
Vava'u	1337	80%	18%	2%
Ha'apai	937	69%	31%	1%
Eua	211	76%	24%	0%
Niuas	252	80%	20%	0%

d. Handicrafts

126. In 2001, 55 percent of agriculturally active households were engaged in making handicrafts. Almost all of the household members (98 percent) were females. About 75 percent sourced raw materials from their own holding while 25 percent purchased raw materials from others. Of the households making handicrafts, 54 percent sold these to others. The importance of sales was much higher in Ha'apai, 'Eua and the Niuas.

Table 11: Households engaged in handicraft production

	Tonga	Tongatapu	Vava'u	Ha'apai	Eua	Niuas
Households engaged in making handicrafts	5,798	2,601	1,468	946	531	252
Taking raw material from holding	4386	1,631	1,280	824	453	198
Buying raw materials	1894	1,181	355	135	121	102
Selling handicrafts	3,117	1,127	742	752	328	168
	54%	43%	51%	79%	62%	67%

6. Inputs to agricultural production

127. Agricultural production in Tonga is heavily labor intensive with relative limited use of machinery and purchased inputs. Around 80 percent of holdings used no chemicals. Fertilizers were applied on only 13 percent of plots in Tonga. Inorganic chemicals were used on 11 percent of holdings and organic fertilizers were used on 6 percent of holdings. About 20 percent of holdings involved the use of agricultural chemicals such as insecticides and pesticides. The use of chemicals was greatest on Tongatapu, although still very low at 16 percent of holdings.

a. Capital and purchased inputs

128. Around 75 percent of agriculturally active households used equipment of some type. Around one half of these households used equipment that they owned and around one half used borrowed or hired equipment. Most of this equipment used and owned by households was relatively simple such as weed eaters, chainsaws, knapsack sprayers etc. The households owned only 574 tractors, although the use of tractors was more widespread than this, and about 40 percent owned vehicles.

129. Borrowing by agriculturally active households is limited. Only 13 percent of agriculturally active households borrowed money and the Tonga Development Bank provided most of this, 89 percent. Other banks provided 9 percent of loans, exporters 0.6% and other sources 1 percent.

Table 12: The use of agricultural chemicals

	Using fertilizers		Did not use fertilizer	Using agricultural chemicals				Did not use chemicals
	Inorganic	Organic		Insecticide	Herbicide	Others	Unknown	
Tonga	1125	610	8,984	1301	1315	237	6	8331
Tongatapu	938	411	4678	1121	1196	168	6	3941
Vava'u	75	66	2221	63	28	29		2238
Ha'apai	33	62	1015	38	28	13		1053
Eua	77	69	742	76	63	25		770
Niuas	2	2	328	3		2		329

b. Labor

130. There were 13,593 persons over the age of 15 years engaged in some form of agricultural work on the holdings. Almost 97 percent of these persons were males. Household members accounted for most of the labor. Of the household members, agricultural holders/operators accounted for 80 percent of the persons employed, while unpaid family members accounted for most of the rest. Non-household members consisted of paid labor (44 percent) and unpaid labor.

c. Land inputs

131. The Agricultural Census defines an agricultural holding to be an economic unit of agricultural production under single management and comprising all livestock kept and all land used wholly or partially for agricultural production purposes. The holding's land may consist of one or more parcels located in one or more locations. A parcel plot is a part of a parcel on which a specific crop or crop mixture is cultivated. A plot can also be fallow land (land left idle for 5 years or less) or land ready for planting.

132. In Tonga, a tax allotment is an area of land that has been granted to the head of a household by the noble or by the government. There are 6,577 tax allotments in Tonga, with 41 percent of households owning a tax allotment. A small number of households own more than one tax allotment. The total area of tax allotments was 53,725 hectares or an average area of just over 8 hectares per allotment. On Tongatapu, only 32 percent of households own tax allotments because of the use of land for public and commercial purposes.

133. Tax allotments are either farmed by the owners, rented to other households for rent or for no consideration, or are unutilized. In 2001, the owners cultivated 57 percent of allotments and 32 percent of allotments were rented to other households. Only 4 percent of allotments were rented out for pay.

134. The typical agricultural holding is around 6.4 hectares. Most holdings are contiguous, although there are a number of holdings that are split into several parcels. There are around 1.5 parcels per holding and the average parcel size is 4.4 hectares.

135. Most of the area of the holdings was devoted to subsistence and semi-subsistence farming. Subsistence only accounted for 43 percent of the area of agricultural holdings while subsistence with some cash sales accounted for 47 percent of the acreage. Commercial farming was conducted on only 10 percent of the total area of holdings. Holding sizes tended to increase with the degree of commercialization, being smallest for subsistence farming, on average 4.8 acres per holding, and

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largest for commercial farming, on average 25 acres per holding. There are very few commercial farmers in Tonga, only 254 holdings with 6,375 acres of land. Tongan agriculture is therefore very small scale. There were only 27 parcels of land with areas exceeding 50 acres, and of these there were only 16 parcels that had area greater than 100 acres.

Table 13: Number and use of tax allotments

	Number of tax allotments		Area of tax allotments
Total tax allotments	6577		53,725
Cultivated under crops by owner	3734	57%	31,216
Rented out to other households for pay	245	4%	3,769
Rented out to other households for no pay	2124	32%	17,881
Fallow	2317	35%	18,190
Under bush/forest growth	701	11%	7,316
Other status	243	4%	2,424

Table 14: Number and area of holdings and parcels

	Number	Area	Average area of holding	Number of parcels	Average area of parcel
Tonga	10,328	66,596	6.4	15,084	4.4
Tongatapu	5,698	35,419	6.2	7,672	4.6
Vava'u	2,323	14,568	6.3	3,499	4.2
Ha'apai	1,105	6,462	5.8	1,827	3.5
Eua	870	8,030	9.2	1,458	5.5
Niuas	332	2,477	7.5	628	3.9

Table 15: Number of holdings and land area by commercial status

	Subsistence only			Subsistence with cash cropping			Commercial crop production		
	Number	Area	Average area	Number	Area	Average area	Number	Area	Average area
Tonga	6,013	28,813	4.8	4,061	31,768	7.8	254	6375	25.1
Tongatapu	3,884	17,278	4.4	1,662	13,958	8.4	152	4183	27.5
Vava'u	954	4,959	5.2	1,323	8,501	6.4	46	1108	24.1
Ha'apai	846	4,333	5.1	250	2,092	8.4	9	37	4.1
Eua	200	1,355	6.8	625	5,639	9.0	45	1036	23.0
Niuas	129	888	6.9	210	1,577	7.5	2	12	6.0

Table 16: Land uses on agricultural holdings (a)

	Total	Land under annual crops	Land under perennial crops	Land under mixed crops	Land under preparation for planting	Land under fallow	Land under bush (>5 years idle)	Land under livestock	Land under non-agricultural use
Tonga	66,956	34,212	6,482	21,679	384	2,067	879	1,035	219
Tongatapu	35,334	25,369	2,682	5,375	156	791	123	680	159
Vava'u	14,598	1,177	722	11,853	94	369	223	126	34
Ha'apai	6,507	4,857	905	249	10	229	137	117	4
Eua	8,065	1,721	2,042	3,297	124	520	228	112	2
Niuas	2,452	1,088	131	906		159	168		

(a) Annual crops include field crops such as cassava, yam, taro, pineapple and vegetables like squash, cabbage, tomato, eggplant, capsicum etc. Perennial crops are tree crops bearing edible fruits or nuts and include vanilla, kava, mango, coconut, breadfruit, citrus etc. Mixed crops include both annual and perennial crops.

136. The main form of farming is annual crops, accounting for 51 percent of acreage in Tonga as a whole and over 70 percent in Tongatapu. Only 10 percent of land is under perennial crops (tree crops), although tree crops are more important in Ha'apai and 'Eua. Land under mixed crops

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accounted for 32 percent of the areas. Idle land and land under fallow accounts for only a small percentage of land areas of agricultural holdings, indicating a very high level of land utilization. The major crops by area planted in Tonga as a whole are summarized in the following table.

Table 17: Areas planted to major crops (hectares)

	Area planted to single crops	Area planted in mixed crops	Total
Cassava	6,206	512	6,718
Early yam	1,313	4,111	5,424
Kava	2,159	3,115	5,274
American taro	3,247	1,880	5,127
Common taro	2,449	2,434	4,883
Squash	3,487	46	3,533
Giant taro	352	2,198	2,550
Late yam	596	1,532	2,128
Sweet potato	1,229	159	1,388
Vanilla	1,123	92	1,215
Banana-plantain	115	730	845
Paper mulberry	577	199	776
Watermelon	587	64	651
Coconut	311	267	578
Pineapple	346	138	484
Other	354	127	481
Banana	87	329	416
Peanut	114	2	116
Total	24652	17935	42587

7. Cash and non-cash income

137. There are two important surveys that cast light on the contribution of primary activities to household welfare. Cash and non-cash income is used as an indicator of welfare derived from

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agriculture and fishing. These are the 2001 Agricultural Census and the 2001 Household Income and Expenditure Survey.

138. Table 18 is derived from the Agricultural Census and provides an indication of the contribution of crop sales to household income. In addition to meeting subsistence requirements and providing the means to bestow gifts, agriculture was an important source of cash income. For Tonga as a whole, agricultural activities are estimated to have accounted for around 33 percent of household income for families engaged in agriculture. Reliance on agricultural income was lower in Tongatapu, at 27 percent, than in Eua, 57 percent, and Vava'u, 48 percent.

Table 18 : Proportion of household income earned from agricultural activities

	Number of households	less than 25%	Less than 50%	Less than 75%	100%	
Tonga	10088	37%	31%	12%	12%	33%
Tongatapu	5723	42%	28%	8%	8%	27%
Vava'u	2182	18%	38%	21%	21%	48%
Ha'apai	1075	60%	28%	5%	5%	26%
Eua	774	17%	37%	25%	25%	57%
Niuas	334	47%	20%	9%	9%	26%

139. The total value of livestock disposals was \$T10.5 million or \$T831 per household holding livestock. Of this value, with disposals of pigs valued at just over \$9 million. Livestock sales are not an important source of cash income for households holding livestock. In 2001, the value of livestock sales was only T\$1.4 million or \$T109 per household. The value of livestock eaten was T\$1.7 million or \$T135 per household. By far the greatest value of disposals was given away as gifts, T\$7.4 million or T\$587 per household.

Table 19: Cash income from sales of livestock

	Number sold	Value	Unit value	Cash income per household	Value eaten per household	Value gifted per household	Total value produced
Cattle	679	496,210	731	215	43	214	471
Pigs	9582	813030	85	70	123	589	782
Horses	179	56090	313	34	16	13	63
Goats	105	3631	35	5	16	4	24
Chicken	1809	7081	4	1	17	5	23
Total		1,376,042		109	135	587	831

140. The Household Income and Expenditure Survey provides an assessment of the contribution of agriculture to both cash and no-cash income. It also provides considerable detail on the consumption patterns of Tongan households. The quality of the survey data appears to be high, with the exception that a number of income and expenditure items are surprisingly low (for example expenditure on clothing) or quite different from other official estimates of these items (for example the value of remittances). The aggregate income and expenditure data match national accounts information quite closely.

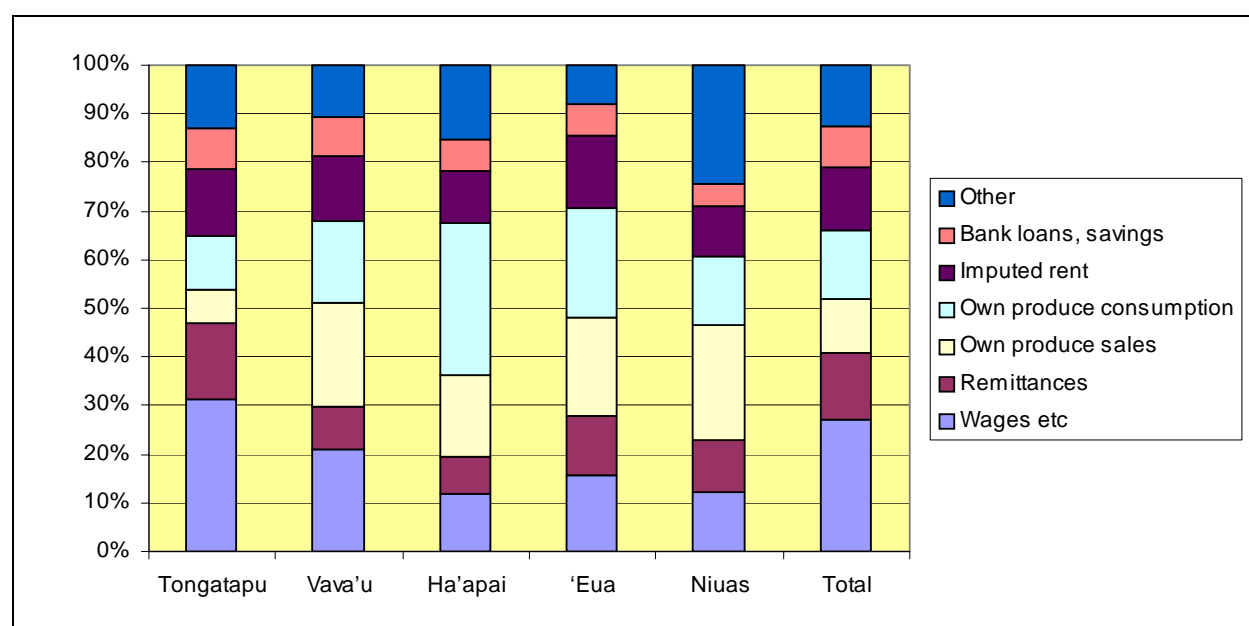
141. According to the results of the survey, the average income of Tongan households in 2000-01 was T\$18,600. This consisted of \$T12,900 received as cash income and \$T5,700 received as non-cash income. For Tonga as a whole the Survey indicates that households in Tonga received cash incomes of \$T215 million and non-cash incomes of \$T95 million. Given an average household size of a little over 6 persons (1996 Population Census), per capita income was T3,065. At the average exchange rate prevailing in 2000-01, per capita income was \$US1,425.

142. Tongan households draw income from a wide range of sources. The main sources of income are described in Figure 4. Wages, salary and payments for labor accounted for 27 percent of total household income in Tonga. This varied significantly across the islands ranging from a high of 31 percent in Tongatapu to only 12 percent in Ha'apai and the Niuas. The variation reflects the relatively greater opportunities for formal employment in both the public and private sector in Tongatapu.

143. On average, overseas remittances accounted for 14 percent of total household income. Aggregated across all Tongan households, this gives a figure for total remittances of only \$T43

million. This is well below balance of payments figures which put total remittances at around \$T100. Part of the explanation may be that not all remittances take the form of payments to households residing in Tonga. In Tongatapu and elsewhere there has been significant residential construction by Tongans currently living abroad. Payments associated with this construction would not be captured by the household income survey. It is also possible that respondents included part the remittances as payments for own goods produced and exported.

Figure 4: Main sources of cash and non-cash income



8. Repatriation payments

144. A large proportion of the Tongan society lives outside of Tonga. Estimates vary but these expatriate communities in New Zealand, Australia and the USA could number up to 80,000 persons. Compared to households residing in Tonga, these people have much higher per capital income. They occupy lower to middle ranking economic positions in high-income economies. These communities maintain strong links among their overseas compatriots and with the home islands Tongans residing in Tonga are a highly traveled people. Overseas Tongans make frequent return visits and many return to Tonga to establish businesses or to retire. There is a strong degree of social and cultural integration among Tongan communities throughout the world.

145. Production of physical commodities accounts for a very low percentage of GDP. The structure of GDP in Tonga would appear to indicate that Tongans consume much more than they

produce. In 2001-02 remittances from abroad amounted to TP142 million, equivalent to 48 percent of GDP.

146. There is a high level of integration between the Tongan economy and these –economies overseas. Emigration has provided Tonga with strong trade and investment linkages with New Zealand, Australia and the USA. Reparation payments dominate trade and investment flows in Tonga's national accounts. More often than not, commentators consider these payments to be a form of welfare payment that keeps the Tonga economy afloat. These payments are thought to be unsustainable in the longer term as second and third generation Tongan migrants adopt western values and lose touch with family and community in Tonga. The extent of the remittances makes Tonga very vulnerable to downturns in economic activity in the US, New Zealand and Australian economies. Another interpretation views these reparation payments as mutually beneficial trade and investment flows between Tongan communities. There is some uncertainty however as to what proportion of these remittances are payments for unofficial exports from Tonga to overseas Tongan communities. These exports include roots crops, fish and handicrafts.

9. Sustainability of resource use

147. The development of the primary sector will make a greater contribution to the economic and social development of Tonga if its is based on sustainable practices that minimize adverse spill over effects (such as land degradation, loss of bio-diversity and pollution). Until now Tonga's natural resources have not been protected by environmental and resource management legislation.

148. Tonga is a small country in terms of both its land area and population. However, the rate of utilization of agricultural land is not a constraint to achieving a substantial increase in agricultural production. The loss of agricultural land to residential and other uses and the difficulty of obtaining access to land owned by Tongans living abroad were often raised as constraints to agricultural development. The latter issue is addressed in the next section.

a. Agricultural land

149. Tonga is relatively rich in agricultural and marine resources. Tonga's soils and climate allow the production of a large range of annual and perennial crops and currently Tonga does produce a wide range of crops for local consumption, although the range of export crops is narrow. Tonga's remote location has meant it is free of a range of insect pests and diseases that afflict growers in neighboring Pacific Island countries, although it does have its own problems, including fruit fly. The

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traditional farming system in Tonga is an agro-forestry system involving the shifting cultivation of mixed crops and bush or grass fallow underneath coconut trees.¹⁰ The traditional system is still widely followed and has proven to be highly sustainable. Long fallow periods protect the soil against degradation in terms of structure and fertility and against soil erosion.

150. Traditional farming was sustainable in that population pressures did not require the cultivation of land that was subject to erosion or the depletion of soil fertility. Fallow periods usually exceeded five years and followed a crop rotation of root crops, then a legume (the Tongan bean), then a leaf crop and so on. The usual farming practice involved several tiers with a low crop of yams or sweet potato, a medium crop of giant taro and a third tier of coconut or fruit or shelter trees. The diversity of crops, the rotation of crops and the use of a fallow period ensured fertility was not depleted to a point where soils were no longer productive. After fallow the slash and burn provided potash to the soil, animal manure and mulch provided nitrogen and the soils had a reasonable level of natural phosphate. Continual use of the soil was recognized as a way of depleting fertility and certain crops (e.g. bananas and paper mulberry, etc) were also recognized as being gross feeders of nutrient from the soil.

151. With the commercialization of agriculture areas of land under cultivation have been increased, in particular the large parcels of land still held as noble's "tofi'a" or inheritance. These are leased out on short-term arrangements. There may be a fallow period but it is often only the length of time between plantings of the same crop. This varies from eight to nine months for squash, but shorter if root crops are planted. There is evidence of disease being harbored in the soil and the incidence of powdery mildew in the squash crop is increased when the same land is used year after year.¹¹

152. There is also reason to believe that soil fertility levels may be reduced with mono cropping, even with a fallow period in between crops. The actual fallow period is not only reduced but it is between seasons of the same crop. This practice may have severe repercussions for yields. When it occurs together with the cutting of shelterbelts the evapotranspiration of plants often exceeds the plant's ability to uptake soil moisture and nutrient. This results in stress and the on-set of plant diseases.

153. Denudation of large areas of land has accompanied commercialization. The boundary shelterbelts have often been removed as well as the coconut trees and other copses of trees. This is

¹⁰ Asian Development Bank (2002), Tonga: Natural Resource Use and Sustainable Socioeconomic Development, Pacific Studies Series, Manila.

¹¹ Dr Viliami Manu in Tonga Chronicle of 28th August 2003

particularly the case on large contiguous blocks that are leased on a short-term basis for the planting of squash. As mentioned above when the same crop is planted year after year in large tracts of land that are now exposed to the winds (particularly the El Nino winds of recent years) there is a real danger of creating a dust bowl effect. Should the vegetation cover be lost or reduced through disease or increasing infertility the long-term effects could be disastrous. There is a Tongan term for land that has had its fertility by over cropping or by monocropping of gross fielding species (bananas, squash, paper mulberry or corn) and that is that the soil is said to be “Kaka”. This condition is very difficult to reverse and large quantities of organic matter are needed to encourage the growth of new crops.

154. Soil erosion only occurred where cropping was carried out on the hillsides of ‘Eua, Vava’u and the Niuas. The absence of population pressure meant that hillsides were often not utilized, though this changed from the 1960s and onwards as commercial agriculture was stepped up, firstly by the export of bananas, then water melon and now squash. A survey of the latest land use practices in all these groups suggests that it is timely to discourage farmers from tilling hill slopes and to grow tree crops instead on such slopes. This is especially the case in that the soils are mostly of volcanic loam and once disturbed can be easily lost to any further cultivation. The export of root crops from ‘Eua, Vava’u and the Niuas to Tongatapu and overseas is further exacerbating this problem.

155. Loss of forest cover, exposure to winds, loss of soil moisture and erratic monoculture have all increased the incidence of pests and diseases. Nutrient and physiological stress also reduces the natural resistance to disease. Increasingly Tongan agriculture has succumbed to insect pests such as fruit fly (to the point where fruits are seldom harvested), caterpillar and butterfly, and aphids. Insecticides are essential to ensure a marketable crop for most agricultural uses in Tonga, Disease is further enhanced by the creation of stress in plants caused by variable availability of water and moisture, by harbored disease during fallow, by insects carrying disease (particularly aphids, etc).

156. Roaming animals such as pigs, goats, cattle and untethered horses are a major problem in some areas. Not only do they damage crops but they can also impact on soil erosion on hill slopes. The destructive effect of roaming animals in Tonga has not been documented. The damage caused is often not only significant it is also very soul destroying for the crop owner. Traditionally villages were fenced to keep the animals (largely pigs) in and goats, cattle and horses were tethered. The law states that a landowner may kill a roaming pig but that the dead pig is left on the road for its owner to retrieve. Civil cases of landowners claiming damages caused by roaming animals are not uncommon.

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157. A further impediment to the use of land for cropping is the “rustling” of animals and crops from bush allotments. Since people moved into villages during the nineteenth century for protection during tribal wars the farm plots are left untended. Theft of animals and crops is a major problem in Tonga and sanctions against such theft need to be increased and enforced. There has been no lessening of this with commercialization, indeed the incidence is probably greater. This is especially so when the harvested crops cannot be identified.

158. Although environmental problems are still relatively minor in Tonga, there are concerns with the impact of mono-crop farming, particularly in relation to squash. While traditional farming systems minimize the use of fertilizers and chemicals, squash growing requires relatively heavy applications of chemicals with potential to pollute ground water resources. Moreover there are soil degradation and erosion concerns with the preparation of land for seeding.

159. Reducing the fallow and denuding the land is the effect of the monocropping of export crops such as squash. It is noted that commercial agriculture tends to be increasingly practiced on the large tracts of land. Where this involves frequent cultivation, loss of soil fertility and soil moisture can be severe. The crumb structure of the soil can also be lost if organic matter is too severely reduced. On hillsides erosion can occur and on this as well as flat land strong winds can remove soil very readily. Repeated plantings of the same crop, even with a fallow in between, can also harbor disease and the control of disease can steadily become more and more difficult. It is thought that the rapid onslaught on powdery mildew in cucurbits (squash and melon) could be caused by disease residing in the soil between crops.

160. A further problem associated with the loss of soil fertility, the soil structure and soil moisture is that the stress caused in plants requires increased use of fertilizers and chemicals. The preferred aim of Tonga’s MAFF and other Ministries is for Tonga to engage in organic farming. While the aim is admirable in the context of the commercial farming of squash on Tongatapu and ‘Eua it will not be feasible given that virtually every district of these two islands have large squash plantings near plantings of other crops. Organic and sustainable farming may be an option for Ha’apai and the Niuas, and possibly Vava’u to some extent, but it is not an easy option for Tongatapu and ‘Eua.

161. Ideally, the regeneration of the coconut industry (interspersed throughout the allotment), the development of agroforestry (particularly by using timber trees for the boundaries between allotments and for subdividing allotments) and the development of long term tree crops on 25 per cent of smallholder land (two acres on every eight and a quarter acre block) will go a long way to ensuring the sustainability of agriculture. For the large tracts of land permanent improved pastures or large scale long term plantation crops would enhance sustainability. On the small allotments the

microclimates created are humid, moisture is retained and growth of sup-tropical and tropical species is much enhanced. To this end the development of economic smallholder agriculture is the preferred option for the 16,000 plus tax allotments in Tonga. A diversity of crops also spreads the economic risk for farmers and also makes farming a more engaging occupation.

162. Slopes should also be put in permanent pasture, tree crops or timber forests to reduce the risk of erosion and to increase the productivity of the land resource. Large tracts of land should be retained but need to be appropriately developed to improve their outputs whether in agriculture or in forestry.

b. Fisheries

163. Tonga's fisheries can be divided into an inshore fishery, a deep slope fishery and an offshore fishery.¹² The deep slope fishery provides resources of snapper and grouper for local sales and for export. Catches from the deep slope fishery have risen significantly since the mid-1990s. The offshore tuna long line fishery is under developed in Tonga, with current production levels well below what are thought to be sustainable catches. The deep slope and offshore fisheries offer significant potential for future development. Tonga also has potential for aquaculture and some pearling activity has commenced in Vavu'a.

164. The inshore fisheries are a major resource for subsistence needs and for local sales and exports. The inshore fisheries can be divided into three categories. Estuarine and shoreline fisheries, including mangrove and sea-grass areas, are sources of prawns, mullet, goatfish, garfish and rabbit fish. The coral and lagoon resources are important sources of crustacean. The third category is the inshore pelagic fishery with Spanish mackerel and barracuda.

165. Tongan households have traditionally placed substantial reliance on inshore fisheries resources to meet subsistence requirements and around one third of Tongan households still engage in fishing for subsistence or cash purposes.¹³ Traditionally both land and sea resources were sustained by both communal sanctions and by farming and fishing practices. Community heads oversaw communal fish harvests, which were important social occasions involving whole communities in the herding and netting of fish in the shallows of tidal reef areas. Fish traps, while owned by individuals, were limited in number and the smaller populations and the absence of refrigeration meant only what could be immediately consumed was fished or harvested, apart from species that could be dried.

¹² Asian Development Bank (2002).

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166. Village or communal fish harvests are no longer practiced as specialization has meant fewer people are involved in fishing. The higher population on Tongatapu has seriously depleted reef species and fewer and fewer women are seen harvesting the reef for shellfish. Shellfish are still harvested from the nearby islands and they find a ready market for urban dwellers. Fish traps are licensed but are no longer as frequently seen in Tongatapu, although the use of fish traps is more common in Ha'apai, Vava'u and the Niuas.

167. Tongans living overseas value very highly the seafood that visiting relations bring with them but the advent of licensing and the introduction of international prohibitions on endangered species has resulted in reduced amounts of shellfish leaving the Kingdom. Increased commercial fishing by larger ocean going vessels has resulted in a large increase in the consumption of fish purchased from the local fish markets. This has also resulted in the reduction of reef fish being sold on strings by fishermen from the nearby islands.

168. There are concerns with increased fishing pressure in recent years. According a recent FAO/AusAid report, improved market access, better prices and population growth has contributed to a significant increase in fishing effort and a marked decline in inshore marine stocks. There are also problems with destructive fishing methods such as the use of explosives in reefs and lagoons.¹⁴ The Ministry of Fisheries is currently working with AusAid assistance to develop a resource management plan for the inshore fisheries. The Ministry has instituted a licensing regime that effectively polices the utilization of the reef fishery, though there is a need for more fish inspectors and for more stringent application of the limits that are set.

169. The deep-sea species are largely exported and for good returns. Most of the catch is exported whole to either the United States or to Japan via the U.S. or New Zealand and there is little processing activity. There is a concern that the deep slope fishery may be in danger of being depleted as the seamounts are now well documented and their location is common knowledge among fishing companies and individual fishermen, including sports fisherman. The long tail red snapper and certain groper species may be over fished at present.

170. The tuna catch is currently well below the maximum sustainable catch. The tuna fishery has considerable potential for development, including the development of onshore processing. The Ministry of Fisheries is issuing licenses to overseas vessels. This is an important potential source of

¹³ Ministry of Agriculture and Forestry and Statistics Department (2002).

¹⁴ The use of explosives to stun fish for easy collection has been largely abandoned as being culturally unacceptable. This was largely practiced on reef area. The use of poisonous chemicals to kill fish in the

revenue for the economy, provided that licensed vessels are appropriately charged for the fish that they take.

c. Forestry

171. Tonga does not possess extensive forestry resources, although there is the potential for the development of local resources to supply a higher proportion of Tongan domestic timber demand. Tonga Timber has been awarded the right to harvest from plantation forests on Eua. There has been some discussion about re-invigorating the coconut industry, combining senile timber harvests with replanting.

172. While there remain a few areas of indigenous forest, these are now mostly in National Reserves or in remote areas. The two major forest resources are the exotic plantations on 'Eua and the coconut resource. In early July 2003 the Ministry of Agriculture and Forestry handed the 'Eua forest and its development over to Tonga Timber Limited, a government owned enterprise. Whereas cutting rights had been previously contracted to two parties, one a privately owned, the delays and protracted uncertainties resulted in the private party withdrawing their interest. It is considered that Tonga Timber does not have the capacity to make good use of the resource, but now that the forest and its harvesting are in its hands this will add significant value to the company when it comes up for privatization.

173. Given careful planning and an earnest and on-going replanting regime the forest can produce over half of the timber requirements of the Kingdom. The dominant species are Caribbean pine and Red Cedar. The pine thinnings are suitable for posts and for framing whilst the cedar can have significant value as furniture. There have been plans to export cedar logs but a preferred option, if economically viable, would be to develop the furniture making industry.

174. The greater part of the coconut resource is of very mature and senile trees. Coconut timber can be used for framing, for internal weatherproof use or for coconut furniture, again a value added activity. The timber resource is not being adequately harvested at present and there is scope for a doubling of output.

175. For the forestry resource there is a performance gap that largely arises from the inadequacies of Tonga Timber and the canvassing of landowners for senile coconut trees. A further consideration is the destruction of the copses of fruit and shelter trees without their replacement. Of

lagoon has been largely stopped. Both practices are outlawed and cases for prosecution are rarely heard of anymore.

significant importance though is the failure to replace the coconut resource, particularly where commercial agriculture is being practiced.

10. Summary and conclusions

176. The performance of the sector over the past decade in terms of cash income and employment creation has been poor. Growth in the value added (return to labor and capital) lagged behind growth in other parts of the economy so that the sector's contribution to GDP fell during the past decade. Agriculture in Tonga is still dominated by subsistence and part time farmers, with only around 250 individuals that consider themselves to be commercial farmers. A commercial agricultural sector has barely emerged from a subsistence base in Tonga. The share of marketed production in total production actually fell over the last decade.

177. Many Tongans are engaged in agricultural and fishing activities in some way, as would be expected of a subsistence sector. However, for those without land and those seeking wage employment, the sector has offered almost no opportunities. There is almost no wage employment provided by the sector, the typical operation being a lone farmer. This lack of specialisation is a fundamental reason for the low level of economic development in Tonga. It takes far too many Tongans to produce what Tongans eat and export.

178. Export performance reflects the weakness of Tongan agriculture. Exports are overwhelmingly raw materials with almost no processing. The bulk of export earnings, around two thirds in most years, are derived from squash, exports of which are concentrated in a few months of activity and focused on the Japanese market through New Zealand. Little else is exported in significant quantities. Aside from the emergence of kava exports, there has been no export diversification over the past decade. This follows a long tradition in Tonga of agricultural export earnings being heavily dependent on a single leading export commodity (previously copra and bananas).

179. This lack of diversification of products and markets and the low degree of processing means that there is a high degree of risk associated with export earnings. Agricultural exports are a source of instability for the Tongan economy. The recent low prices received for squash exports export earnings and widening the trade deficit illustrate the dangers. Both export demand and export prices are highly volatile, a reflection of the niche or opportunistic nature of exports and their low degree of processing. Greater focus of building stable markets through the creation of enduring relationships

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with overseas customers and exporting more highly processed products (with less price volatility) would substantially reduce the risks facing Tongan exporters.

180. The outcomes sought, possible performance indicators, an initial assessment of current performance and target performance are summarized in Table 1. As an overall assessment, the sector's achievement of the outcomes has generally been poor. The exception is the sustainability of agriculture with traditional farming methods proving to be highly sustainable. Even here, there are some issues concerning loss of tree cover. The broad acre activities, such as squash, pose some potential risks from poor farming practices, inappropriate use of chemicals and the growing of squash in unsuitable areas.

181. The performance indicators are quite detailed. In many cases the data is currently of poor quality or not available. This makes it difficult to monitor and evaluate the performance of the sector over time. One intervention that could provide useful information would conduct of an annual survey of farmers to gather this information. Such a survey is not beyond the capacity of MAFF to undertake, although it may require additional resources devoted to the Statistics and Economics Unit within the MAFF Corporate Services Division.

182. The survey would be designed to collect a variety of information about the sector, including:

- Production and yields;
- Crops grown and acreage planted;
- Livestock statistics;
- Gross margin analysis including yield, purchased costs, labor hours and costs, land rental and estimated capital costs;
- Borrowings, amount and term;
- Nature of the business (sole operator, partnership, company);
- Number of employees;
- Expenditure on training;
- Investment in implements, vehicles, tractors, plant and equipment;
- Degree of commercialization as indicated by ratio of non-market to market sales;
- Incidence of insect and animal pests and disease; and

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- Use of MAFF services and level of satisfaction.

183. The survey questionnaire would be distributed to a sample of farmers including commercial farmers and semi-subsistence farmers. The questionnaire should be kept as simple as possible to minimize the potential for error and to economize on the time required by farmers and MAFF staff to complete the questionnaire. Face to face interviews would be the most effective in ensuring participation and full and accurate completion. The results of the survey would then be collated and a survey report published as soon as possible.

184. Information on the sustainability of land use would need to be gathered in a separate survey conducted by MAFF extension staff with the co-operation of farmers. This could involve the selection of sample areas and monitoring a variety of sustainability indicators.

IV. REVIEW OF THE MINISTRY OF AGRICULTURE, FORESTRY AND FOOD

185. The terms of reference for the Review required a diagnostic assessment of the performance of MAFF. This chapter sets out the findings and conclusions from the Review. The Review draws on a range of information sources including numerous meetings with MAFF and other Ministries, meetings with private sector stakeholders, government reports, reports by international agencies and a body of literature of the role and functions of government agriculture departments. In the Attachment 4 there is a summary of past reviews of the MAFF by the ADB, the recommendations of those reviews and the response of the government.

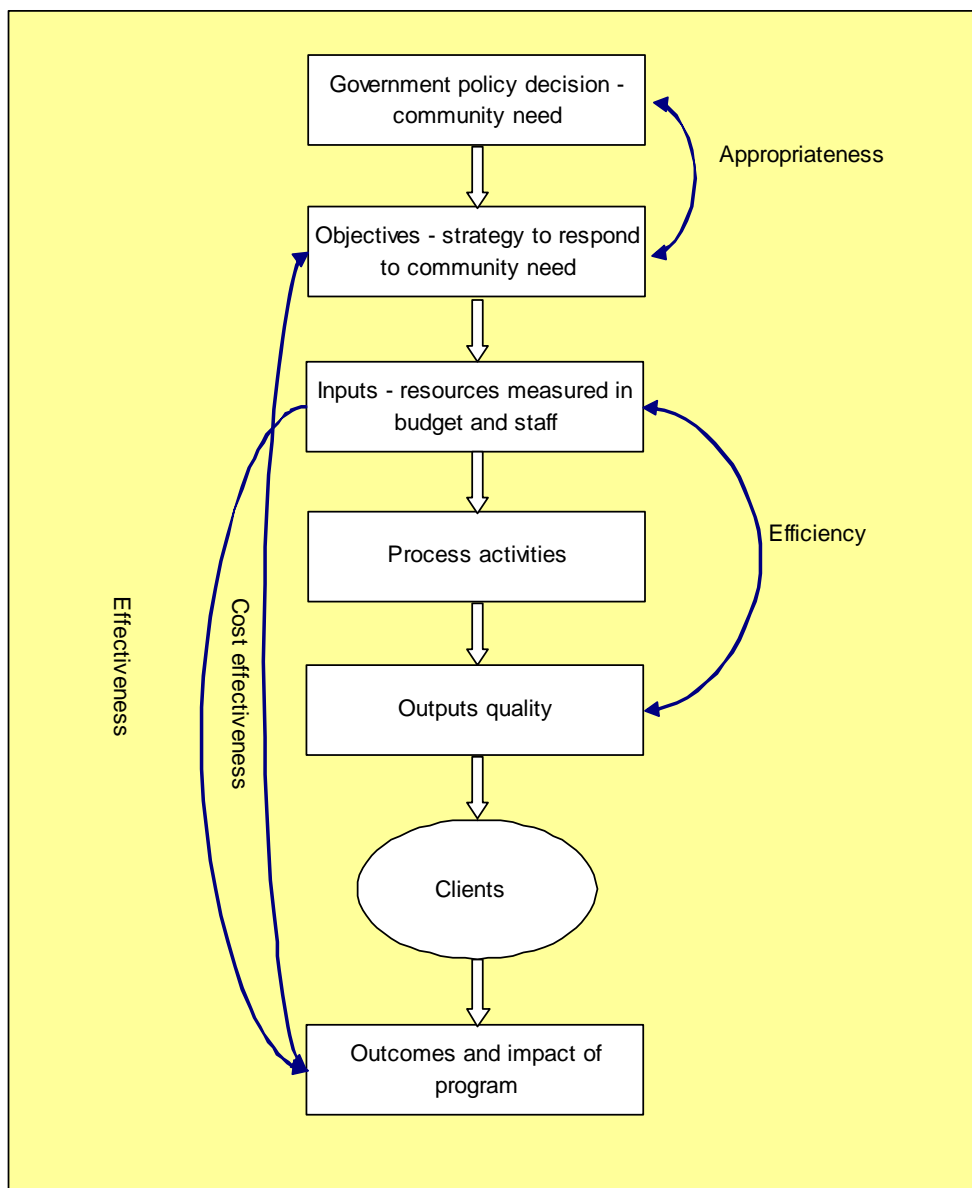
186. The Review began with an examination of the legislative framework which governs MAFF's activities, followed by a similar exercise on its policy framework, how the policies are converted into programs, how programs are evaluated in terms of their contribution to policy objectives and the efficiency with which the programs are implemented. The Review included an assessment of MAFF's management structure and systems, staff, their skills and the appropriateness of those skills for a modern agriculture department, expenditure framework, and equipment and physical assets.

187. This chapter follows the approach outlined in Diagram 1. In evaluating the performance of MAFF it is useful to consider why an agriculture ministry is required in Tonga. What is the justification for government intervention in the sector? MAFF's budget of \$T7 million is equivalent to about 10 percent of the GDP produced by the sector. Moreover, over the past five years government funding of MAFF has grown at a much faster rate than the agricultural sector itself. It is important to establish that the benefits of MAFF activity have a value that is greater than this considerable cost to the Tongan community.

A. Community need

188. This section provides an overview of the justifications for Government intervention in the agricultural sector. It is based on the community needs that should be the focus of the activities of a modern agricultural ministry in a market economy. Basically, Government should do what is not adequately provided for by the private sector, provided there are net community benefits derived from that activity. This market-oriented model of government activity has proven to be more conducive to private sector development than interventionist models based on government supply of market goods and services. It is also the model that the Government of Tonga is pursuing in its broader economic policy reforms.

Diagram 1 Approach to the review



Source: Australian National Audit Office (2002), Performance Information Principles.

189. The activities of MAFF should be based on an assessment of the community need. In a market economy, such as Tonga, governments mostly rely on the market to meet community needs. However, it is recognized that there may be cases where the market or the private sector does not optimally deliver what the community needs. Generally speaking, the Government should provide or supplement what the private sector does not provide to the community. This has proven to be a

successful model for distinguishing between the role of the private sector and the role of government. The activities that involve the role of such goods and services are often referred to as core activities. These core activities normally include the following.

1. The provision of public good research and extension services

190. Research and extension would include not only scientific or agronomic subjects, but also marketing and economic studies and extension. There is an argument that the private sector would not adequately service the needs of the sector in this area because it cannot fully capture the benefits of the services provided. Because of this, the market under provides these services and there is a role for MAFF to fill the gap. Research and extension involves the provision of both private goods (ie those for which private individuals benefit and it is possible to obtain a payment for the service) and public benefits (where there is a wider public benefit and it is not possible or sensible to exclude the wider community sharing in the benefit).

2. The provision of other goods

191. There is a related argument for public provision of goods and services where there are economies of scale in the provision of such services. This ‘natural monopoly’ argument has been traditionally advanced to justify government provision of electricity, water, port and other infrastructure services. In the context of agriculture, it may be more efficient for one body to engage in general marketing and export promotion activities. However, the justification here is quite weak. A stronger argument is that the government is better placed to provide such services, given its official status, its existing presence offshore and its ability to harness collective efforts across the sector. MAFF is engaged in the provision of a range of inputs to agriculture (such as seeds, fertilizers and machinery rentals) that are difficult to justify on a public goods basis.

3. Regulations to correct for market failures

192. The correction of negative externalities or market failures. On a case-by-case basis, this may justify regulation of certain activities so as to mitigate adverse effects on the community or the environment. Examples include:

- regulations governing the safe use of fertilizers and agricultural chemicals in recognition that inappropriate use can result in health and environmental costs.

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- the regulation of export quality since poor quality by one exporter may damage the export prospects of another exporter.
- quarantine, animal health and food standards are a prime example of an activity sponsored by government to protect the interests of the agricultural sector and the broader community.
- Regulations to address the misuse of market power by suppliers of inputs to the sector.

4. Social welfare objectives

193. Government legitimately provide a range of services through agriculture ministries that are directed to achieving public policy objectives such as poverty alleviation, gender equity, food security and employment creation.

5. Policy reform

194. The agricultural sector in Tonga faces a range of impediments that reduce its ability to compete on export markets and on local markets. Important impediments relate to policy adopted by the Tongan government of both an economy wide and sector specific nature. A focus of an agriculture ministry should be to facilitate sector development through the removal of these impediments.

6. Private sector promotion and facilitation

195. Governments can play an important role in the promotion of the interests of the agriculture sector. This might be through promoting opportunities for investment in the sector and assisting in identifying and facilitating access to export markets. In Tonga, Tonga Trade was established to promote exports. MAFF also engages in some activities in this area.

B. Legislative and policy objectives

196. In this section the legislative and policy objectives of the Government and MAFF are presented and discussed. The conclusions to emerge would suggest that objectives are broad and not well focused. A number of community needs identified in the previous section and in the later chapter on constraints to the development of the sector are not mentioned under MAFF's policy objectives

197. The activities of the MAFF are centred on the administration of various pieces of legislation and on the implementation of policies adopted by the Government in relation to the agricultural, forestry and food industries. Few of the policies towards the sector are embodied in legislation. MAFF also engages in the provision of goods and services for the sector such as research and extension, tractor hire and farm inputs.

a. Legislation

198. According to its annual report for 2003-04, MAFF “has the authority to perform its functions within the purview of the following” Acts and directives:

- Public Service Act 2003
- Fruit Export Act 1988
- Forests Act 1988
- Plant Quarantine Act 1988
- Noxious Weeds Act 1988
- Pesticides Act 1988
- Copra Act 1988
- Rhinoceros Beetle Act 1988
- Animal Diseases Act 1988
- Pounds and Animals Act 1988
- Brands Act 1988
- Stallions Act 1988
- Dogs Act 1988
- Cabinet Directives
- Privy Council Directives

199. This body of legislation provides MAFF with various responsibilities and powers to administer the provisions of the legislation. The legislation that MAFF is responsible for is fairly piecemeal and focused on specific issues. A number of pieces of legislation are based on the objectives of

correcting for externalities where the Government has a clear role. For example, legislation relating to animal diseases, noxious weeds, plant quarantine, pesticides and animals. Some legislation is based on 'market failures' relating to the exports of produce, for example the Copra Act and the Fruit Export Act. The justification for Government intervention in these cases is much less clear.

200. Examination of the MAFF work program as set out in the annual report indicates that MAFF does not actively enforce many of the Acts. For example there is little or no activity relating to the safe use of pesticides, noxious weeds and dogs. The Copra Act and the Brands Act seems to be of little current use or relevance. MAFF is involved in a much wider range of activities than the administration of the above legislation. MAFF does not derive the authority to perform these functions from the above legislation. This authority is derived from government policy decisions.

b. Policy

201. Government policy towards the agricultural sector is not clear. There is little documentation of agricultural policy in Tonga. Tonga has no comprehensive, consistent policy towards the sector. There is no Government White Paper that sets out the role and functions of the Government in relation to the sector. There has been virtually no policy research conducted in Tonga. Public discussion as to what policies the Government should pursue in relation to the sector has been limited and poorly informed. The Government or MAFF has generally developed policy in response to perceived issues affecting the sector. While MAFF consults with the sector, it is not clear that farmers and other stakeholders have a significant input into the development of policies or that this input is particularly well informed by policy research conducted by the Government.

202. Two documents set out what might be called the policy stance of the Government:

- The 2001-2004 Strategic Development Plan briefly sets out some policy directives; and
- MAFF incorporates these directives into its 2003-2004 Corporate Plan.

203. In the Strategic Development Plan the Government listed agriculture as a priority sector and set out the following directives (MAFF refers to this list as principles):

- Broaden the base of agricultural exports;
- Diversify export markets for agricultural produce;
- Create opportunities for agricultural exports from outer regions;
- Consider possibilities for establishing export credit schemes;

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- Provide institutional strengthening and support to key institutions in the industry;
- Consider options for establishing an effective mechanism for facilitate linkages between key players in agriculture; and
- Ensure that appropriate supporting infrastructures are in place.

204. These directives are fairly general and there is no justification or elaboration of the objectives in the Strategic Development Plan. There is no guidance on how these directives are to be achieved. In following the directives, MAFF would appear to have considerable latitude as to what activities it could undertake to deliver on the directives.

205. The most recent document, the MAFF Corporate Plan for 2004 to 2007, provides a statement of the objectives of MAFF in relation to the sector and illustrates the policy approach adopted towards the sector. According to MAFF, the corporate plan conforms to Government's agenda stipulated in the 2001-2004 Strategic Development Plan. This new plan updates the 2003 Corporate Plan developed by MAFF senior staff, by consulting "stakeholders from the private sector to provide their perceptions and expectations of the services of the Ministry".

206. According to MAFF:

"This Corporate Plan gives the Ministry's role and the framework for achieving its defined and expected outcomes. With the cooperation of stakeholders from the private sectors, employees, and Government, it will make a positive contribution through the realization of defined outcomes of which one is to broaden the base of agricultural export. The Ministry envisages that realignment of its priorities to effectively contribute towards the achievement of the strategic development national plans will be achieved through better management and organizational reform."

207. The Plan is an update of past plans and therefore incorporates many of the activities that have been pursued in the past. The original justification for many of these activities is buried deep in the past and there has been little, if any, consideration of their current relevance and social benefits.

208. In the corporate plan there is a reasonable statement of the role of MAFF as follows:

"This Corporate Plan is aimed to accelerate agricultural growth for prosperity and food security by providing clients with appropriate and timely agricultural technologies and services. The important part of this effort deals with agricultural export. It is therefore the aim of the Ministry for the next three years that the result of this expended Corporate Plan

will further streamline the delivery of MAFF agricultural services to accelerate agricultural growth for prosperity and food security of the people of Tonga.

209. The above indicates that MAFF is pursuing an export-oriented approach to agricultural sector development, an approach that this Review supports strongly. The statement also emphasizes the importance of food security. This addresses concerns that exclusive focus on commercial development might threaten the opportunities for Tongans to continue to engage in farming activities for subsistence purposes.

210. MAFF's list of objectives, as stated in the corporate plan, is set out in the Box below.

Box 5: MAFF Corporate Plan Objectives

- Provide appropriate agricultural policy advice to government.
- Develop and enforce agricultural legislation and regulations.
- Establish a more effective resource management system.
- Promote investment in agriculture.
- Increase the number of trees and coconuts planted nationally by 10 % by 2006.
- Increase the numbers of farmers adopting agroforestry technology by 10 % by 2006.
- Develop a national food quality control system, capacity to estimate and project the national food supply, and increase value added food products for export and import substitution by 2006.
- Provide sound and timely agricultural advice to clients so as to increase productivity.
- Provide security for primary production in Tonga to allow sustainability of existing markets and provide opportunities for development of future markets
- Provide Tonga with quarantine service with good international reputation in order to remove, as much as possible the quarantine constraints in exporting its primary produce.
- Maintain costs recovery procedures within the quarantine service to achieve sustainability.
- Review, produce, publish and disseminate proven agricultural technologies and

information to clients.

- Provide sound and timely advice on animal husbandry and clinical services to clients so as to increase local production.
- Improve nutritional value added meals and healthy lifestyle of Tongans.
- Increase the involvement of women and youth in agricultural activities as to generate income.
- Strengthen women DAC's program development & management by increase of coverage/reach out to women & youth groups.
- Promote handicraft production by 10 % by 2006.

211. In the corporate plan MAFF's objectives are summarized as follows:

- To generate and transfer sound appropriate agricultural technologies and information to achieving high production yields for food security and increase export for MAFF clients.
- To promote commercial export through strengthening of appropriate agricultural technologies and services tailored to the needs of clients, increase participation of women and youths in agriculture, improve appropriate facilities, better access to markets with quarantine support, increase value added food products for export, and import substitution while maintaining environmental sustainability.
- To review, strengthen and enforce appropriate MAFF policies and legislations that address the focused needs and interests of clients through an efficient monitoring and evaluation system.
- To strengthen management and organizational competencies through an integrated management and monitoring system that delivers the Ministry's plans efficiently, and in a cost effective manner.
- To provide supporting services through provision of appropriate resources, policy advice and skills needed to implement, and deliver effective programs and services of the Ministry to its clients.

212. A number of comments can be made about the list of objectives pursued by MAFF. The list of objectives is long and not very focused. For example, why is it a MAFF objective to increase three activities (agro-forestry, coconut planting and handicrafts) by 10 percent each? Will this make

a greater contribution to Tongan incomes and welfare than other activities? A better statement of the objective would be to increase the incomes of Tongan farmers through engaging in a range of productive activities.

213. The objectives do not relate closely to the community needs identified earlier in this chapter. While objectives relating to efficient provision of services are included, the objectives do not focus on the correction of externalities (environmental and health objectives) or on the removal of impediments to the development of the sector. In our view these objectives are central to the achievement of sustainable increases in the value of the agricultural sector.

C. Inputs: Resources allocated to MAFF

1. Budget

214. MAFF's funding from the Government and its overall funding from all sources, including its commercial activities, are summarized in Table 21 and Table 22. A number of observations can be made:

- MAFF has one of the largest budget's of the Tongan ministries;
- The MAFF budget is large by Pacific country standards. For example, it has a similar staffing level to the Department of Agriculture in New Guinea, a country with a much larger population. Total MAFF funding is equivalent to about 10 percent of the agricultural sector's value added and about 25 percent of export earnings. This is very high by international standards. Tonga has a very large agricultural ministry servicing a very small agriculture sector and an even smaller commercial agriculture sector.
- A relatively high percentage of the budget provided by the Government is spent on salaries (75 percent). The increase in salaries accounted for virtually all of the increase in the MAFF budget allocation.
- Up until 2003, there had been very strong growth in average salaries paid to MAFF staff. In 2003-04 the amount allocated to salaries was 75 percent higher than it was five years earlier.
- Non-salary operating and capital expenditures fell by 20 percent over the same period in nominal terms and by around 40 percent in real terms.
- This suggests that MAFF staff are well paid by Tongan standards but have limited resources to undertake the activities for which they are being paid. This is particularly the case in

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relation to travel expenses, publication expenses, computers and communication equipment, and supplies to support research and extension activities.

Table 20: Funds Allocation for Ministry of Agriculture & Forestry

	1999/00	2000/01	2001/02	2002/03	2003/04	%
Established Staff	1,325,823	1,995,741	2,188,914	2,327,215	2,337,324	66%
Un-established Staff	167,493	168,015	198,369	94,630	100,191	3%
Travel & Communications	195,580	167,480	196,948	179,275	219,458	6%
Maintenance & Operations	187,251	241,352	226,480	239,565	256,062	7%
Good and Services	454,867	359,700	348,563	362,797	458,001	13%
Capital Expenditure	69,100	136,502	39,802	75,600	152,194	4%
Total Expenditure	2,968,790	2,968,790	3,199,076	3,299,082	3,523,230	100%

Source: MAFF Annual Report 2003-04

Table 21: Ministry of Agriculture, Forestry and Food Budget Estimate

	1999/2000	2000/2001	2001/2002	2003/2003	2003/04
Salary	2,842,088	3,852,542	4,304,266	3,032,129	3,133,774
Operation	4,986,207	4,028,540	3,658,046	3,394,888	3,598,537
TOTAL	7,828,295	7,881,082	7,962,312	6,427,017	6,732,311

Source: MAFF Corporate Plan 2003-04

2. Staffing

215. For the 2003-04 financial year there were 326 established posts of which 309 had been filled at the end of the year. The summary of the titles and number of posts is provided below:

▪ Director of Agriculture and Forestry	1
▪ Deputy Director of Agriculture and Forestry	5
▪ Specialist posts at Deputy Director level	3
▪ Posts at Principal Agricultural Officer level	11
▪ Posts at Senior Agricultural Officer level	16
▪ Posts at Agricultural Officer level	21
▪ Posts at Technical Officer level	88
▪ Junior level including clerical posts	181

216. A very high proportion of MAFF staff are employed at the junior level, 56 percent, or as technical officers 27 percent. While the responsibilities and qualifications of staff are not obvious from these classifications, a broader observation is that MAFF has a lot of staff that are not highly qualified or experienced.

217. The availability of MAFF staff is much lower than the staffing levels suggest. An observation from previous reviews of the Ministry, and supported by this review, is that senior MAFF staff spent a lot of time traveling, within Tonga and overseas, to attend meetings, seminars and training activities. A total of 47 overseas trainings and meetings were attended by 55 senior staff members in 2003

218. An additional problem from a management perspective is the relatively large amount of time lost due to leave taken for health and personal reasons. Given the structure of MAFF, with relatively few senior positions and the fact that it is the senior people who mostly travel, this raises significant management issues in terms of staff direction, completion of activities and decision-making. Staff are often not at their desks and this raises problems for stakeholders seeking contact with MAFF staff. A high proportion of the travel costs are borne by supporting agencies and not by the Ministry. Nevertheless the salaries of the staff are still paid by the Government and there is an opportunity cost associated with these absences. The benefits of this work related travel are not all that apparent as there is little dissemination by way of reports of what has been learn from these trips. Reports were prepared on only 6 of these overseas trips.

219. The problem of staff absences is noted in the MAFF corporate plan”

“There are a number of qualified and specialist staff members who are on secondment overseas, long leave, long-term study leave, and staff resigning for better job opportunities. This issue has negative impact on the workforce, and will remain to hinder the implementations of certain programs in the next years. For instance, request for technical assistance overseas is called for in the light of the fact that the Ministry has been without a veterinarian for the past two years.”

220. Included in its staff, MAFF has a smaller group of people who are relatively well trained. According to MAFF there are 4 doctorates, 10 masters, 28 bachelors and 70 diplomas. By the same token, however, the rest of the MAFF staff, almost 200 people, have little or no training even lacking the basic training provided by a diploma. Most of the training is in agricultural sciences. MAFF has little expertise in public sector management, finance and economics. The lack of management skills is acknowledged in the corporate plan

“MAFF human resource is largely technical, and strengthening management capability is given priority as a critical organizational issue to effective implementation of this plan. Addressing the management capability is important, as this is another limiting factor in the efficient and effective implementation of MAFF programs. Management skills are critical and important aspect of improving the agricultural technologies and services provided by the Ministry to its clients.”

221. The Ministry is particularly deficient in economic research and policy analysis skills. While some statistics are collected and published, there are almost no publications concerning economic, financial and policy issues.

222. Discussions with stakeholders indicate that MAFF staff lack commercial expertise and understanding. These skills would seem to be particularly important given that a large amount of MAFF activity is devoted to encouraging increased commercialisation of agriculture through extension, research and market identification. MAFF has few skills in determining the commercial value of information and services that it supplies to the private sector (for example new planting materials, farming methods, market reports, product development proposals, post harvest handling techniques etc). There is often a problem of transplanting what is done on the MAFF farm to the commercial reality of a private farm.

223. The Human Resource Development and Training Section of MAFF is in the process of introducing a number of management systems that may improve staff efficiency and accountability. The achievements in this regard that were noted in the MAFF annual report include the following:

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- A job evaluation exercise done as part of the public sector reform program to benchmark positions across Ministries.
- Descriptions for 110 jobs were updated.
- An induction process for new recruits was undertaken to allow new recruits to gain an understanding of the strategic plans, functions, working conditions, and standards expected by the Ministry.
- Work was done on revising a draft performance appraisal form for the Ministry. Performance appraisal in the past has been limited and unsystematic, to say the least.

3. Facilities and equipment

224. The head office of MAFF is located at Nuku'alofa. The current office space is limited to accommodate the current level of staffing. Provision of funding in the next financial year is being made to build a new building including a conference room to overcome the present limiting space. MAFF has also five outer island offices, located at Vava'u, Ha'apai, Niuatoputapu, Niuafo'ou and 'Eua. MAFF offices in Tongatapu include the Quarantine & Quality Management Division at Queen Salote Wharf, Livestock and Forestry Division at Tokomololo, Food Division at Vaololoa, Women Development Centre at Vaiola Motu'a, and Research and Extension Division at Vaini.

225. MAFF operates a High Temperature Forced Air (HTFA) treatment plant at Fua'amotu to facilitate export of fruit fly host commodities to New Zealand. Equipment, building and computer system are being upgraded with appropriate staff training to ensure the heat treatment operation is efficient and effectively managed to cater to the anticipated demands for agricultural exports. The HTFA facility should enable more accessibility to market opportunities in New Zealand.

226. The Ministry has a total of 55 vehicles including tractors. There are 20 vehicles in the outer islands of which 7 are tractors. Each district in Tongatapu has a vehicle to implement extension work including the Women Development Centre. Having only one vehicle available for extension work in each district is a factor that limits the effective delivery of information and the number of visits to the farmers. About 35 percent of the vehicles are not in good condition.

227. The Ministry has a Local Area Network (LAN) and email facility at Head Office. The respective divisions of the Ministry connect to LAN through dial up including Vava'u, Ha'apai and 'Eua. MAFF Head Office has access to MICRO-PAY and SUN System at the Ministry of Finance and the Prime Minister's Office (PMP). MICRO-PAY is a personnel management system monitored

by PMO. All financial matters will be conducted electronically through the SUN system by 1 July 2004, and to be monitored by the Ministry of Finance. There are a total of 62 computers, 14 photocopiers, 83 monitors, 37 printers, 6 laptops, 19 UPS, and 11 faxes within the Ministry.

228. MAFF is upgrading the infrastructure of the Information Section within the Research & Extension Division at Vaini Farm. This includes a new office building with three air-conditioned offices and a library, upgrade of computer systems and programs, new tape recorders donated and agricultural information materials, as well as training of a number of staff members in information technology.

229. Discussions with MAFF indicate concerns that vehicle and equipment shortages are constraining the ability of MAFF to undertake its activities. This is particularly the case with regard to extension services.

D. MAFF Activities

230. This section provides an overview of the organizational structure of MAFF and the types of activities that it is engaged in. The activities would appear to be directly related to the objectives of MAFF as set out earlier in this chapter. In this section the major programs and activities of MFF are described. The next section examines the performance of MAFF in undertaking these activities. It should be noted that MAFF has introduced a range of activities, such as in the area of food safety and standards. It is difficult to comment on MAFF performance in these new areas.

1. Organisational structure

231. In response to past instructional reviews and MAFF internal decisions there has been a recent re-organization of the structure of MAFF. A number of alternative have been considered by MAFF, although the functions have been similar under these alternative structures. The aim and functions of the respective divisions, according to the MAFF corporate plan, are set out as follows:

- **Corporate Services Division** The office of the Director consists of a Corporate Services Division with four sections, which provide centralized strategic planning, financial, network systems, training and development, human resource planning, administrative, asset management and support services. The Division also assists the Director in the determination of policy and planning, and in providing advice to the Minister. The Corporate Services Division has the following sections: a Finance Section, an Administration Section, a Human Resource Development and Training Section, and Planning Section.

- **Research & Extension Division:** According to the MAFF corporate plan, the role of the Research & Extension Division is “to support the achievement of MAFF’s objectives through participatory approach in the development and transfer of appropriate agricultural technologies, and through the application of effective systems to communicate technical information to clients”. The Ministry has established an Agricultural Advisory Committee to assist it to identify and disseminate “technologies that are suitable to the needs of clients”..
- **Quarantine & Quality Management Division (QMMD):** According to MAFF “QQMD aims to improve productivity, market accessibility and profit margins while sustaining the environment and agricultural security. It involves ensuring the agriculture sector is protected from external pests and diseases including providing a quarantine service and support to achieve an effective quarantine and export inspection service”. The Division is responsible for the management of the HTFA facility.
- **Forestry Division:** The role of the Forestry Division “is to ensure the availability of premium species for the needs of the farmers and women development at all times, and to become self-sufficient in the future”. The Division plays a role in promoting sustainable land use, promoting initiatives on agroforestry, replanting and conservation.
- **Livestock Division:** According to MAFF the “Livestock Division function is to ensure supply of quality and safe food from animal and animal product for national consumption. In particular, the Livestock Division function is to ensure the well-being of animals through handling reported veterinary cases, control and eradicate animal diseases and promoting the animal industry and animal feed to reducing imports. It envisions that the animal industry will become a well-developed commercial sector producing quality animal and animal products to local demand and for export if excess. “
- **Food Division:** Following Cabinet directives for the transfer and integration of relevant areas relating to food to the Ministry, the Food Division was established in 2001. The function of Food Division is to develop a national food quality control system, a capacity to estimate and project the national food supply, and to promote increased value added food products for export and import substitution.
- **Outer Islands:** The five offices of the Ministry in the Outer Islands continue to provide food security, cash income and social security to the people in Tonga. It provides similar agricultural services as in Tongatapu and they play a key role in facilitation and encouraging local farmers in pursuing their farming activities.

2. Main work programs

232. In the MAFF Corporate Plan the following main work programs are identified.

- **The Ministerial Direction, Policy and Administration program** provides centralized strategic planning, financial, network systems, training and development, human resource planning, administrative, asset management and support services to the Ministry to achieve its target objectives. This program provides advice on policy matters conducive to the development of agricultural sector. It has 6 sub-programs namely, Ministerial, Finance and Commercial Services, Administration, Planning, Human Resource Development and Policy and Legislation.
- The function of the **Food Security Program** is to ensure that Tongans have ready access to safe and nutritious food. There are six sub-programs namely, Food Crop Production, Annual Crop Survey, Local Market Development, Agricultural Machinery Service (Outer Island), Agricultural Show and World Food Day, and Disaster Management. The food security policy places an emphasis on self-sufficiency.
- The aim of the **Agricultural Export Expansion Program** is to increase the capacity of the sector to compete on export markets for agricultural commodities and value added products. The Program consists of seven sub-programs namely New Potential Export Crops, Specific Crops Development, Post Harvest Development and Treatment, Appropriate Infrastructure/Facilities, Agro-Processing and Added-Value and Minor Export Crops.
- The **Livestock Production and Import Substitution Program** is focused on the promotion and implementation of livestock development programs. The focus is on assisting households to raise livestock for food supply purposes, It consists of the following sub-programs: Stock Feed and Nutrition, Livestock Production and Extension, Livestock Clinical Health and Disease Surveillance and Livestock Imports and Post Entry Quarantine.
- The **Forestry, Agro-forestry and Conservation Program** seeks to promote and implement forestry development including the concept of agro-forestry and the planting of high value trees. The program is also concerned with conservation of native plants and the maintenance of 'Eua forestry farm replanting programmes. The Program consists of four sub-programs: Agroforestry and potential tree crop development, the formulation of a national forest policy and regulations, forest conservation monitoring of 'Eua forest plantation activities, and coconut replanting.

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- The function of the **Biosecurity and Trade Facilitation Program** is to provide security for primary production in Tonga, to ensure the sustainability of existing markets and provide opportunities for development of future markets. It consists of five sub-programs: Quarantine Operations, Export Inspection and Certification, Quarantine Trade Facilitation, Quarantine Standard Guidelines Development and Treatment Operations.
- The **Food Quality, Processing and Control** program is aimed encouraging between quality diets among Tongans and food safety standards. It consists of five sub-programs namely administration, food supply surveillance and projection, food processing and quality research, policy, standards and regulation, and food inspection, analysis and certification.
- The **Information Service Program** aims to produce and disseminate technical and farm management information to farmers and industry stakeholders through publications and media. It consists of four sub-programs: administration, media, technical publications and a library.
- The role of the **Extension Services Program** is to disseminate agricultural information to clients and to provide support and advisory services. It consists of four sub-programs: administration, extension support, crop and livestock support and youth development.
- The **Research Services Program** is responsible for the development and transfer of appropriate agricultural research and technologies to clients. On-station and on-farm research trials are conducted in response to the identified needs of the farmers. Crops that are assessed to have high export value and potential are granted high priority for research trials. The Research Service program consists of six sub-programs: Administration, Policy and Planning Programming, Crop Diversification, Food Production, Soil Science Support and Crop Protection Support.
- The **Women and Youths Development program** seeks to promote the involvement of women and youth in agriculture. It consists of five sub-programs namely Food and Nutrition, Agriculture Development, Agriculture Shows, Women's District and Village Committees and Youth in Agriculture.

233. At the time of the review MAFF was involved in a range activities that are not covered in the Corporate Plan. These mainly relate to a tractor hire service and the supply of planting materials and other inputs to the sector.

E. Quality of outputs

234. The Government of Tonga through MAFF and other ministries has an important role to play in the development of the primary sector through the provision of core services and through regulating the sector to ensure activities are consistent with the community interest. Currently MAFFs undertake a wide range of activities to support the sector. A rapidly growing sector will place more demands on MAFF. The Government has limited resources to meet these demands. It is therefore appropriate that the Government streamline its activities, improve the efficiency of service performance and delivery and where possible encourage private sector provision of services to the sector.

235. It is difficult to review the performance of MAFF under the headings of its main work programs. These work programs tend to be overlapping in some cases. A better approach is to examine MAFF performance under the following broad headings that are better aligned with the community needs identified earlier in this chapter. In any case, these headings capture the functions of the MAFF Divisions and its work programs:

- Input supply: included under this heading are activities involving the supply of farm inputs to the sector in competition with the private sector
- Extension services;
- Research services;
- Market information provision;
- Marketing;
- Quality standards;
- Food security and import substitution
- Export facilitation and protocols;
- Environmental protection and sustainable development;
- Pest control: and
- Education

1. Input supplies

236. Some issues were raised at the workshop and during consultations concerning the supply of planting materials. In the past MAFF has been engaged in the supply of planting materials to farmers at subsidized prices. However, this activity is very limited today. There are a number of private nurseries in Tonga and a private tissue culture laboratory that have the capacity to supply the agricultural sector. It is important that MAFF not compete with these emerging private sector activities by supplying subsidized seedlings and other inputs to farmers (see Box 7). It is understood that the forestry division of MAFF is still engaged in the growing of trees for sale at subsidized prices. This is in competition with the private sector. MAFF should ensure that sales are recovering full costs and ultimately withdraw from such activity and concentrate its limited resources and budget on forest management issues.

Box 6: Examples of government crowding out private enterprise

The MAFF Machinery Services operate a fleet of tractors and implements. These machines were largely received under various aid schemes on the pretext that the private sector does not have the capacity to operate such a service. The agricultural census shows that while households in the Kingdom owned 574 tractors, many of which are available for hire, the Machinery Pool had less than 20 in an operative state. Not only were the machines received as grant aid the diesel fuel is supplied free of duties as the pool is Government owned. These two items mean the pool has both lower set-up costs and lower operating costs and is unfairly competing with the private sector.

The MAF Livestock Division sells barbed wire free of duty and ports and services tax as it is government owned. Barbed wire normally carries a duty of 20 per cent and the 20 per cent ports and services tax.

The MAF nursery was established under grant aid from New Zealand. While this aid has now ceased, it reduced the price of timber trees and ornamentals to a level that a private nursery could not compete. The reason that the nursery continues to sell very cheaply is because the wages paid to staff are paid as part of the normal wage bill and not as part of a viable business. This may result in subsidized plants being available but it distorts the real value of the trees.

In the early days of the privatization of the coffee industry, the MAFF farm intended to continue to provide subsidized trees to growers. This has not happened, as funding was not available. Norsa Nurseries now grow coffee trees under contract and they sell at 1.15 TOP per tree. This is a realistic price and it also reflects the real value of the plants.

As part of cyclone rehabilitation in Vava'u after cyclone Waka struck on the night of 31st December, 2000, vanilla plants are to be made available under a scheme subsidized by the European Union Stabex Funds. There is probably some validity in this as the rehabilitation is necessary. The real problem is that the Growers Council in Vava'u is talking of each member growing only 50 to 100 plants. The early coffee scheme operated in Tonga from 1978 to 1999 gave farmers in Tongatapu trees in small numbers, often less than 100. Of those given out when South Seas Coffee bought the scheme in October 1999 only 20,000 trees were still in existence. This has since reduced to less than 5,000 producing trees. The reason is that the numbers are too small to make harvesting worthwhile.

SSC Ltd's smallest plot has 4,000 trees. The largest has 13,000 trees and over 100,000 trees have been planted between October 1999 and October 2003. Once all are in production over 40,000 kg of coffee will be roasted per year. This will have a value of one million pa'anga and should be reached in 2005.

It is not only that the Government can crowd out the private sector, it is also that the Government can not apply sound commercial practice to its projects. If the projects are not large enough to be commercially viable then they should not be introduced.

2. Extension

237. There is a common view among private sector stakeholders that MAFF extension and research services are providing little benefit to farmers. This is not a problem confined to Tonga. Agricultural extension services have experienced difficulties in many countries in the Pacific and a range of approaches has been adopted in an effort to make extension more effective. MAFF has a limited budget allocation and, as many development agencies have reduced their commitment to funding agricultural programs, tight budget constraints will continue to limit what MAFF can achieve in terms of providing extension and research services. At the same time, MAFF will need to be focusing increasing attention on developing and enforcing a range of public interest regulations on the sector and in facilitating the access of the sector to overseas markets.

238. The review of MAFF research and extension activities indicated a large number of projects or programs but with no activity on many and inadequate funding on most. This indicates that MAFF resources are very much stretched to the point that the effectiveness of the work is seriously undermined.

239. In consultations with the Director of Agriculture and senior MAFF staff there was agreement on the need to review the current approach to extension to improve its effectiveness and its credibility among farmers, extension staff and other stakeholders. Importantly, there is need to make extension services more accountable to MAFF clientele and for field extension staff be seen to be

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working directly with the farming community it is meant to serve. To ensure that extension service delivery is made cost-effective, farmers need to be organized so that extension program delivery can be properly targeted. This was the view of MAFF staff.

240. There is the initial question of whether MAFF should continue to provide extension services to farmers. If the costs of providing extension services exceed the benefits derived from those services, national income is being reduced and it makes no sense to continue to provide extension services. Similarly with research. The resources devoted to agricultural extension could be more productively employed elsewhere in MAFF, in other departments or in the private sector. The private sector is also a source of extension services. For example, it is normal practice for nucleus estates or enterprises to provide training and other advice to out growers. They have strong financial incentives to provide the right type of advice and to ensure that farmers continue to benefit from that advice. Farm input supply companies are also a source of information to growers that use or are considering utilizing the products of these companies. Again, they have strong financial incentives to ensure that the farmer derives maximum benefit from use of the products and therefore continues to use that product. Farmers also learn from each other.

Box 7: Conclusions of the institutional specialist on agricultural extension

The restructuring strategy for MAFF proposed by the Institutional Strengthening TA Team had made agricultural extension in the field less effective than before. The centralization of field extension staff at only one extension center in each district, as a result of the closing down of the sub district extension centers, meant less farmers are able to visit the extension officers. There is less contact between extension officers and farmers than previously. Under the restructure, in Tongatapu, sub-district extension centers were closed and all staff are centralized at one main extension center. In Ha'apai and surrounding outer islands, extension centers outside Lifuka were closed and all extension staff are centralized in Lifuka. For Tongatapu, MAFF has centralized the location of all district Women in Development Officers instead of having these officers based in each district. This is to optimize the use of the one vehicle available. The introduction of an extension team in each district of between 6-8 specialist staff, would require a much better planned and coordinated extension to be implemented in the district. There is a need for more mobility of staff having access to more than one vehicle in each district to enable the extension team approach to be effective.

A survey conducted by MAFF in 1999 to analysis the effectiveness of the extension service following the restructure of MAF reported:

- About half (54 percent) of farmers in Vava'u said they did not get access to agricultural information

- A third of farmers surveyed in Tongatapu and almost half (44 percent) in Vava'u said MAFF's extension services did not meet their needs
- Half of the farmers surveyed in Tongatapu and two-thirds (65 percent) in Vava'u felt the number of extension officers was not sufficient to service farmers in the districts
- About 40 percent of farmers in Tongatapu and 52 percent in Vava'u, when told of MAFF's restructure strategy, said they did feel there would be improvement on MAFF's extension services as a result. One reason is that the distance for farmers to travel to the extension office is too far.

The same survey sought the views of extension officers on the impact of the restructure. The survey found that 80 percent of the extension officers surveyed said the new structure would not contribute to any significant improvement in MAFF's extension services. The main contributing factors were:

- A longer chain of communication from the field to the head of the Research-Extension Division compared to before (too many 'bosses' that may slow the decision making process);
- The closure of the sub-district offices made it more difficult to service villages remote from the main extension center
- The limited numbers and frequent breakdown of vehicles.

241. There are also many channels for obtaining technical and marketing information that are assessable in varying degrees to Tongan farmers. More commercially oriented farmers have the incentives and the capability to find sources of information. MAFF should design its extension programs to ensure that it is not duplicating or undermining the provision of advice from the private sector to farmers. It should identify areas where the private flows of information are inadequate and attempt to fill the gaps. This will require that MAFF develop a close working relationship with commercial farmers, suppliers of farm inputs, lenders to the sector and other private agents.

242. If the provision of extension services is potentially worthwhile, consideration needs to be given to improving delivery of those services so that the potential benefits are realized. Extension services could continue to be provided by MAFF or it could be out sourced to the private sector with the Government meeting the costs entirely, as it currently does, or perhaps recovering a proportion of the costs from farmers.

243. Several options were discussed with MAF senior officers concerning the supply of extension services and information. One option is for MAFF to consider adopting a "community managed extension approach". A description of this model is contained in Box 8. Under this option part or all of

the salary and other costs of the extension officer would be paid for by MAFF. However the extension officer would work directly for the group of farmers who would be responsible for determining the services provided. This model has been adopted in a number of countries with some degree of success. Farmer groups could also encourage efficient performance by paying the extension officer a bonus for good performance.

Box 8: Community managed extension service

A community managed extension service might involve MAFF working through the district and town officers to encourage villagers to form a growers association. The formation of the growers' associations would be on the initiative of the villages themselves, with no financial support from MAFF in its formation. The growers association would not be commodity-based but rather area-based and there could be more than one growers' association in each district. Where areas have no growers association, farmers will seek extension assistance and advice from the extension centers in the district.

MAFF would assign through a contractual arrangement one extension officer to the growers association. The assignment of the extension officer would be conditional on villages having formed a growers association based on agreed criteria relating to the number of members, subscriptions and other matters. The extension officer would be responsible to the governing body of the growers association, and not to MAFF. The day-to-day work programs of the extension officer become the responsibility of the governing body of the growers association and the growers association would appraise performance. Should the extension officer be judged to be ineffective by the growers association, the officer would be replaced. Subject to the reforms in the public service policy, the particular extension officer would be either re-assigned else or made redundant.

The growers association would plan the extension officers work program and bear the other day-to-day costs, except salary, of the extension officer in managing the agricultural projects of the growers association. The cost of training of the extension officer to upgrade his technical skills will be borne by MAFF.

The MAFF extension centers in the district would provide support to the extension officer who would act as the representative of the growers association in dealings with MAFF. The MAFF would advice the growers' association in the planning of the agricultural projects that the extension officer would manage on its behalf. The association would be encouraged to provide incentives to the extension officer when the association's agricultural projects have been successfully managed and members have benefited financially.

244. There are some difficulties with this approach however. Individuals who tend to work alone on their land dominate Tongan agriculture. There are few growers associations, co-operatives or other collective organizations, and this is probably because such an institutional structure suits Tongan farmers. MAFF may have some difficulty in organizing farmers into associations and the sustainability of these associations over time would be an issue requiring some thought. The benefits of the scheme are in terms of making extension officers more responsive to farmer requirements and economizing on extension resources by providing an opportunity for the officer to meet with more people at the same time. However, the same benefits could be achieved without forming associations.

245. The option may be more feasible in the case of the more commercial growers with a much lower level of co-operation. For example, this option could be discussed with the squash growers association or with vanilla growers. The option may also be attractive for a larger commercial operation that employs a relatively large workforce or to a nucleus estate or enterprise dealing with outgrowers. However, at present such an operation does not exist in Tonga.

246. Privatization of extension services has been piloted in Papua New Guinea under an ADB technical assistance program. Under this model, the Government, preferably after extensive consultations with farmers, calls for tenders to provide extension services to farmers. If the tender is competitive, there is an added advantage that the costs to the Government of providing the services would be minimized. Depending on the level of interest, it might be possible to award contracts to a number of parties, encouraging competition for the custom of farmers. Contracts would specify the range of services to be carried out and performance criteria would need to be met. Extension service providers would be encouraged to provide an efficient service and farmers would be allowed to shop around. The service providers would be rewarded on a fee for service basis, encouraging competition for market share. Through this process the market share of the better service providers would increase at the expense of poorer quality service providers. MAFF's extension division could continue to provide extension services. For example, it could supply extension services along with private service providers. It would be necessary however that MAFF not possess an unfair competitive advantage over private sector suppliers.

247. Given that the Government has limited funds and many competing funding needs, an important issue is whether part of the costs of providing extension services, either by MAFF staff or by private contractors, should be recovered from farmers. In the case of lower income farmers, the Government may consider the provision of extension services as a community service obligation and may therefore wish to charge only those farmers with incomes above a threshold. This suggestion will raise complaints from the farming community, partly because farmers are not used to paying for

extension services and consider this to be their entitlement from government. The problem with the no charge model is that it does not encourage the development of an effective extension service. The consultants see no reason why those who benefit from the use of extension services should not contribute part, if not all, of the costs. In the past farmers were charged levies by various export marketing boards and extension services should be treated similarly. There should not be a uniform levy on all farmers. This would be difficult in any case to collect, except at the point of export. Only those farmers who use extension services should be charged.

248. The Review Team has not formed a view of the appropriate approach to the provision of extension services in Tonga. It is possible that a number of approaches could be adopted in the provision of extension services. Secondment of officers to larger farmers or groups of farmers with cost recovery could be appropriate. For smaller farmers, other methods of providing extension services would be more appropriate.

3. Research

249. There concerns with the quality of planting material used by farmers and with the genetic quality of livestock in Tonga. As noted above, MAFF has undertaken considerable research into improved plant varieties, including testing their suitability to local growing conditions. However, there is a view that a lot of this work is of a very academic rather than pragmatic nature and the research results are poorly disseminated. Moreover, almost all of its experiments have been conducted at its research farm in Vinae rather than where the plants are to be commercially grown. As result MAFF research and extension has had only a minor influence on farming practices and the varieties grown.

250. MAFF research and extension activities must be responsive to the requirements of the agricultural sector if it is to play a valuable role in assisting the development of the sector. At the moment MAFF research priorities appear to be determined by MAFF staff. As such, there is the danger that research undertaken will be more determined by the interests of research staff than by the needs of the sector. Consideration could be given to the establishment of a board to assist MAFF in determining its research priorities. To be effectively responsive to private sector needs, this board should include an appropriate private sector representation.

251. MAFF has funding constraints, as do other ministries that regulate or supply services to the agricultural sector. If MAFF provides valuable services to the agricultural sector, then farmers should pay for the benefit they receive. In the case of MAFF providing planting materials, it is important that it charge the full costs, including capital costs, otherwise it will be competing unfairly with the private sector. There is also a case for MAFF charging for its extension services and other advice that it

provides to the private sector. The user or beneficiary pays principle is important to assisting MAFF to maximize the value that its staff produce. The willingness of farmers to pay for MAFF services will be directly related to the quality of those services (that is the benefit farmers derive from utilizing the services). If farmers are not willing to pay some amount for the services, this provides direct feedback to MAFF staff about the value the sector places on MAFF and an incentive to improve the quality and composition of the services offered.

252. As noted above, MAFF could continue to be involved in the development and distribution of planting materials. However, care needs to be exercised that MAFF programs do not ‘crowd out’ the private sector that is now engaged in the supply of materials to Tongan farmers. MAFF has a role in undertaking research on the basis of providing a public good. The justification to government research is that in the case of certain types of research private investors do not have sufficient incentives to invest the appropriate amounts because while they incur all the costs they do not reap all the benefits. However, there is a fine line between public and private goods. The private sector does undertake a considerable amount of research in agriculture.

253. To ensure that MAFF research is relevant to the needs of the sector and to ensure greater co-ordination of MAFF and private research activities, the Review Team recommends that a research advisory committee be established. This was a recommendation of the technical assistance project, the Institutional Strengthening of MAFF that commenced in 1997.¹⁵ The objective of the Research Committee was to identify and prioritize agricultural research programs of MAFF based on needs of the agricultural sector. The committee should have external representation, consisting of interested agricultural exporters and commercial producers.

254. The Review Team supports the provision of technical assistance to assess the need for extension services and the development of an effective approach to implementation. Options would include modifications to the existing way in which MAFF provides extension services, the community managed extension model and the possibility of outsourcing extension services. Extension services should only be provided by the MAFF if the approach adopted is cost effective (that is it achieves its objectives and the benefits are greater than the costs). The consultants would undertake financial and economic analysis of the alternative options. The technical assistance would develop an implementation plan that could include piloting several options. The costs would include any

¹⁵ The focus of the TA (TA 2467-TON) was to “... develop MAF staff skills to respond to technical and marketing queries raised by commercial growers about new market opportunities, new production and processing techniques, as well as improving MAFF’s internal operations and ensure market and technical information are promptly relayed to farmers especially in the outer islands.”

investment in office facilities, vehicles, communications, training, databases and other things that would be essential to the effectiveness of each option.

255. Prior to this technical assistance, the Review Team recommends that MAFF establish a research and extension committee to guide the work of MAFF's Research and Extension Division. This Committee would include broad stakeholder representation and might include MAFF, commercial farmers, representatives of smaller farmers, exporters and suppliers to the agricultural sector. This committee would have a role in directing the research and extension programs of MAFF and the committee would be responsible reviewing regular performance reports prepared by MAFF staff. The committee would guide and assist the team of consultants undertaking the extension review.

256. The Committee could be chaired by the Director of Agriculture or by a private sector individual. The latter option may be a more effective way of ensuring that the private sector influences the direction of the work program. The Committee would report make recommendations to the Minister for Agriculture.

4. Market information

257. There is no shortage of market information outside of Tonga, so if there is insufficient information about market opportunities and requirements it lies in inadequacies of the channels through which flow information from overseas markets to Tongan farmers. Aside from governments and international development agencies, there is a number of private sources of information. Trading companies, suppliers of seeds and planting materials, equipment suppliers, chemical suppliers and customers all provide information about market conditions and requirements. Information is a valuable resource; it costs money to create and disseminate information. Suppliers of information have very strong incentives to ensure that it reaches those who can act upon the information in a way that benefits the supplier. Various channels are used to supply the information including direct communication, print media, television, radio and the internet.

258. If this information is not reaching Tongan farmers then it must be because the channels through which information flows are not functioning efficiently or because Tongan farmers do not seek access to the channels. In the latter case, this would be because farmers feel that they have sufficient information to carry out the activities that they undertake. To grow crops for home consumption and for local market sales does not require much information. Tongan have been raised in farming households and the knowledge required for these activities is learned from parents and others in the community.

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259. If the farmer is motivated to grow something different or to sell to a different market, perhaps to export, then new information is needed the nature and amount of which depends on the chosen venture. In Tonga the farmer can approach a number of agents for information, including MAFF, grower associations, other farmers and input suppliers. More and more farmers can obtain information from the internet. Internet access is readily available and relatively low cost in the main centers of Tongatapu and Vava'u. While internet usage among the older and less affluent in the community is limited, the younger generation is taught about how to access the internet in schools.

260. As Tongan agriculture becomes more profitable and as the Tongan economy becomes better linked to overseas economies, one would expect increased demand for information, an increased willingness to pay for information and an increase in the supply of information to Tonga. A more receptive environment for direct foreign investment in agriculture in Tonga will also produce an increase in the flow of information to Tonga.

261. MAFF has a role to play in ensuring that farmers are adequately supplied with the information they require. They can do this in two ways; by facilitating the flow of existing information to farmers through improving the functioning of information channels and they can provide information that they have created through their agricultural and market research and run this through the information channels to farmers.

262. There are a number of options that can be pursued. The better-educated farmers with access to the internet can be supplied with information from a MAFF website. This is not an expensive exercise. On this site MAFF could electronically publish its own research results, the Farm Management Manual, market analysis and statistical data. This would be significantly less expensive than producing hardcopy reports. MAFF could also provide links to websites around the world where farmers can access much free technical and market information. The site would benefit from having an internet forum page whereby farmers can interact with other Tongan farmers and with interested parties around the world. The site should also provide necessary background information about investment opportunities and the investment environment and links to other government websites where more detailed information can be obtained.

263. To be effective, the site must be kept up to date and this will require staff time and strict discipline. Decisions based on out of date or inaccurate information can be very costly to farmers. A system would need to be designed where all MAFF staff responsible for producing and gathering information can directly feed this information to the site and which ensures that this actually happens. Government websites through the world, even if they are notorious for being infrequently updated. One option is to contract out the maintenance of the website to a Tongan firm with strict

penalties if the firm does not keep the site up to date and provide the required information. It is also possible to recover some of the costs, if this is desired. This could be done through requiring subscription for access to more detail information or by selling electronic copies of more valuable information.

264. Such a site, along with practical demonstrations, lectures and even short courses conducted at MAFF extension centers would meet the information needs of the larger farmers. For poorer farmers where the internet is not a feasible option, MAFF can adopt a more traditional approach of delivering the information through its extension officers. However, the information would be the same since MAFF staff can use the website to access the information that farmers have requested.

5. Marketing

265. At present the Tongan Government is not involved directly in the marketing of agricultural or fisheries products to overseas markets. In the past the Government has engaged in exporting produce such as bananas and copra through a central marketing agency. MAFF has exported small amounts of product to overseas markets on a trial basis but does not see itself as having a direct role in marketing. The idea would be for the private sector to follow up on successful trials of produce.

266. MAFF and MOF can assist Tongan primary producers to penetrate overseas markets in a number of ways. These include:

- The provision of market information and publishing research on trends in key overseas markets;
- Working with the Ministry of Foreign Affairs to identify and seek remove impediments to trade affecting Tongan exports erected by governments overseas;
- Assist farmers to meet overseas standards or requirements concerning the import of plant and animal products;
- Assisting the private sector in establishing protocols for actual and potential Tongan exports to key markets; and
- Establish and enforce minimum standards for product quality and packaging.

6. Quality standards

267. International experience has shown that imposing standards on agricultural exports can introduce serious inefficiencies and inequities. Nevertheless, there are people in government and the private sector who are attracted to the concept of minimum standards.

268. Licensing of exporters may be justified in order to keep out criminal elements, exporters with insufficient financial resources or others who are not qualified to engage in trade. Licensing is only justified, however, where the criteria for licensing are transparent and relevant, and where the licensing agency and its functionaries has no discretionary authority. Licenses should be issued according to common standards that are uniformly applied to all applicants and there should be no opportunity to provide special treatment to any applicant.

269. Quality control for internationally traded agricultural commodities as well as for domestic food products is becoming increasingly important worldwide, for marketing purposes and to meet domestic and international health and sanitation requirements. While government universally enforces photo-sanitary requirements, quality control standards that are enforced by regulation on an industry are generally counterproductive. While their goals may be laudatory, their usual net effect is to reduce market opportunities through setting inflexible standards that prevent the industry from responding to new market opportunities and by often arbitrarily barring certain producers and agro-processors from profitably marketing their products.

270. This is not to deny the need for quality certification programs for agricultural products. The correct approach to establishing and operating such programs, however, is for the standards and procedures to be established through industry consensus and administered by a commodity association that is representative of the industry as a whole. The quality control program should be completely voluntary, not compulsory. If the program is properly administered, most legitimate buyers will soon reject non-certified products, thus forcing producers and/or processors to upgrade their products and operations to meet certification requirements in order to market their products. Under these circumstances, the imposition of a levy on certified products is perfectly justified, provided that the levy is approved and administered by a commodity association board of directors that is representative of the industry as a whole. Only those producers applying for certification should be required to pay the levy, based on a proportion of their total sales. The proceeds of the levy should be used to defray the costs of the certification program and for market promotion purposes, and not applied to any other association operating costs.

7. Food security and import substitution

271. The MAFF has recently established a food unit. The food unit has a number of objectives. A primary objective is to encourage good nutrition among Tongans by the provision of information about the relative nutritional merits of different types of food. The Food Unit will also focus on securing improved public health through the development of food standards. These are clearly core activities for a modern agricultural ministry and the efforts of MAFF in this area should be supported. The development of food standards and a certification scheme holds the promise of significant health benefits to Tongans and the potential to facilitate exports of food products from Tonga.

272. One concern that MAFF will need to address is the potential for standards to reduce competition in the market. In many countries standards have facilitated competition and market entry. However, there are risks that standards can be used to exclude certain products that do not conform to the technical standards but may nonetheless meet performance standards.

273. The Tongan Government has strong concerns in relation to food security. A number of programs of the MAFF are focused on ensuring continued food security through import replacement and encouraging Tongans to grow their own food crops and raise their own livestock. The latter may raise inconsistencies with the objective of food safety.

274. In the view of the review Team, such a policy approach is flawed. Food security is best achieved through the development of efficient market mechanisms that allow the delivery of a wide range of high quality food products. Self-sufficiency is not a worthwhile objective; particularly Tongan products are more expensive than imports. In such a case, a policy of self-sufficiency would make Tongans poorer. A better approach is to eliminate impediments to the competitiveness of Tongan agriculture and then let consumers purchase their supplies from the cheapest source of supply, whether that be imports or local.

8. Export protocols

275. The World Trade Organisation's Sanitary and Phytosanitary Agreements (SPSs) govern the international trade in primary produce. This is so for both members and non-members. There are three "sisters" under which the SPSs are grouped. They are:

- the International Plant Protection Conventions (IPPCs) which govern trade in fruits and vegetables;

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- the OIEs which is a French named convention which covers animal health and pest and diseases and governs the trade in animals; and
- the Codex Alimentarius, which is a World Health Organization and Food and Agriculture Organization set of rules governing, trade in prepared and processed foods.

276. Under the SPSs Tonga must negotiate bilateral arrangements with each country to which it wishes to export and for each commodity. The bilateral arrangements include a work plan which trials shipments and inspects them for quarantine pests, either animal pests or diseases. Should there be any present a protocol is drawn out which outlines the husbandry which is required to ensure animal pests and diseases will not be present and/or prescribes post harvest treatment for the produce.

277. Tonga has fumigation facilities and also has a hot forced air treatment plant (which is often not operative). While fumigation is necessary for many of the vegetables to be exported the use of methyl bromide is shortly to be banned and so fumigation will no longer be an option for exported produce.

278. Currently Tonga can export fresh root crops (with the exception of sweet potatoes) to Australia, New Zealand and the United States. Commonly root crops require fumigation on arrival, especially when mealy bug is found on taro and yams for example. Taro mite has been found on taro out of Fiji and so all taro into Australia and New Zealand is fumigated. Fumigation shortens the shelf life of the produce and often results in blackening of the produce. Taro leaves require inspection but can also be exported to Australia, New Zealand and United States.

279. Fresh young coconuts for drinking are exportable to Australia, New Zealand and the United States and husked ripe coconuts are also exportable.

280. Tonga has protocols for the export of watermelon, beans, tomatoes, egg plant, papaya, mango and avocado into New Zealand. Each of these has its own set of requirements.

281. No fresh produce other than coconuts and root crops can be exported to Australia as the protocols have not been established. The same is true for the United States.

282. Tonga has a set of protocols for a wide range of fruits and vegetables to be exported to Fiji and Samoa but they are so rigorous that very little is actually exported. In many cases too the treatments are extreme. For example, the fumigation of head cabbage with methyl bromide. The extreme nature of the treatments required result in the protocols being used effectively as non-tariff trade barriers rather than for the facilitation of a trade.

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283. Both New Zealand and Australia have given technical assistance to Tonga in the post harvest treatment of food crops. However, there is room for a lot more work to be done to widen and deepen the export of primary produce to these countries, as well as the United States.

284. Tonga has been successful in getting produce into Japan such as squash and onions. There is scope for a lot of other primary exports to Japan. Fish, of course, are commonly exported to Japan from Tonga.

285. The future of primary exports from Tonga though are very much related to the degree of processing that can be done to add value and to reduce the quarantine risks that make the export of fresh primary produce so precarious. Tonga has a history of its exports being rejected and destroyed on arrival into Australia, New Zealand and the United States through the harboring of insect pests and disease on fruit and vegetables. Part of this is the result of there being too many players and these players not being professional traders. A large amount of produce is exported from family to family or Church group to Church group and the standards of the shipments and their packaging vary widely. This, though, is largely due to the absence of a dedicated processor and exporter of produce. There is scope for such and the efforts being made by the Tupu 'I Tonga group could result in a more organized export of primary produce which has been processed and is branded and marked to identify its origin.

286. Farmers were unanimous in suggesting that a major part of MAFF's work should be dedicated to developing the trade protocols with a wide range of countries and for a wide range of produce.

287. In the future the Codex Alimentarius requirements for food and its presentation means that post harvest treatment will be a major concern and cost for any exporting venture. In this arena there will be no room for small individual farmers to be also exporters and the movements towards a processing and packaging facility is timely.

9. Environmental protection

288. There are indications of pressures emerging on the quality of natural resources and the environment in Tonga. Currently there is minimal management of natural resource exploitation, although management plans have been developed for the fisheries sector. The right for the landowner to do what they decide on their own land is strongly engrained in Tonga. However, this can give rise to a number of problems that could undermine the sustainability of natural resources. The current problems include damage to crops caused by wandering livestock, soil erosion due to

the removal of vegetation and poor road design, and air and ground water contamination from the inappropriate use of chemicals.

289. Sustainability of Tongan agriculture would benefit from the introduction and enforcement of legislation embodying provisions for protecting the rights of growers from adverse impacts of others. While some legislation currently exists, for example relating to the use of agricultural chemicals, there is not evidence of its being enforced and it is in need of updating. A comprehensive land use regulation to protect against externalities is considered to be a core function of MAFF rather than the Ministry of Lands. Consideration could also be given to the development of a basic forest management plan. These regulations should not be overly restrictive, but should allow growers to meet objectives or performance criteria in a way that is least costly. The imposition of penalties on growers whose actions adversely impact others could also be embodied in the legislation or regulations, although disputes will often be settled by direct negotiation between the parties concerned.

10. Pest control

290. A major impediment to the development of horticulture for both local and export markets is the presence of fruit fly. This has the effect of preventing the growth of enterprises involved in the sale of fresh or processed fruit products and certain vegetable products. At present there is no collective fruit fly eradication or containment program. While the technology is available to control for fruit fly on individual allotments, this does not seem to be practiced in Tonga. In any case the efforts of growers in controlling for fruit fly on their own properties may be undermined by lack of control on neighboring properties.

291. Tonga will never have the raw materials for fresh fruit and vegetable export or for the establishment of a viable processing operation unless the fruit fly problem is addressed. There is a range of approaches and technologies for addressing fruit fly ranging from total eradication, eradication on a regional basis to local or farm level control. The cost involved varies substantially, but the control of fruit fly is technically feasible. An important aspect of fruit fly control is that it must be sustained to prevent future outbreaks and this will impose significant resource costs on quarantine officers. Given a history of non-sustainability (due to lack of funds or lack of grower interest, due in part to low returns) there is the question of who will bear the responsibility and costs of maintaining the program.

292. Fruit fly control has aspects of a public good: that is all benefit, and even if they do not pay they cannot be excluded from sharing in the benefits. This 'free rider' problem suggests that the

responsibility for maintenance should be a collective one, either borne by a growers association or collective or by the Government. The unstable nature of collectives suggests that MAFF is the appropriate agency for maintaining a fruit fly control program.

293. The beneficiaries should pay for funding of the ongoing maintenance of the program and perhaps should be required to contribute to a recoupment of part of the initial outlays. This will include the general public who is able to harvest a larger quantity of fruit from their subsistence plots as well as commercial growers. The latter are relatively easy to identify and to levy, while charging the general population will be more complex. Because of this, the government should bear part of the costs of maintaining the program from general revenue.

294. The success of the program will develop strong support for its continuation. At present fruit crops and certain affected vegetables are not of great value because of the damage by fruit fly. Should a control program facilitate the development of a valuable resource and industry, there will be a higher rate of return to its maintenance and a greater willingness to participate in terms of on-farm monitoring and control and in terms of contributing to funding MAFF fruit fly related activities.

295. It is recommended that technical assistance be provided to Tonga to assist MAFF in the evaluation of approaches to the control of fruit fly. For each control option, technical feasibility should be established along with the costs of the initial program and maintenance activity. The economic and financial benefits of each option should be explored in detail, based upon the returns to increased activity in fresh and processed fruit consumption, local sales and exports. If there are net national benefits from such a program, in terms of viable production of fresh and processed fruit products, the TA should address the approach to implementation, ongoing maintenance and possible models for cost recovery.

11. Agricultural education

296. Agricultural science is taught in 23 of the 26 secondary schools. The Tonga Ministry of Education has a prescription that commences at year nine and continues to year eleven when the Tongan School Certificate Examination is offered. The three years of study is very comprehensive and covers all aspects of agriculture, including the business side. While the prescription includes many practical exercises the teaching is often reduced to too much “chalk and talk”. Many schools do not have good facilities for the practical exercises and many teachers are not well equipped for organizing field exercises.

297. The latest year for which complete statistics are available is for the candidates who sat the Tongan School Certificate in 2001. The greater majority of secondary school students (and virtually

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all students reach secondary school level) actually do attempt year eleven, making Tonga one of the best educated of Pacific Island populations. Since agricultural science is an optional subject at all levels the number of candidates who opted for the subject gives some indication of the popularity of the subject. That 21 percent (382 out of a total 1849) sat the subject suggests that the subject is more popular than the other 'vocational' subjects (home economics 9 percent, industrial studies 6 percent), but not as popular as 'professional' subjects (accounting 29 percent, computer studies 32 percent, economic studies 33 percent).

298. A closer look at the prescriptions suggests that the subject is taught at a level above the vocational level and it is treated more as a professional subject, except that 60 per cent of the marks are from internal assessment and most of this is from practical studies. This would augur well for producing a more knowledgeable graduate from the secondary schools, except that many do not get the opportunity to continue on to year twelve as the subject is only offered by 8 schools of the 16 schools that have year twelve.

299. Year twelve in Tongan secondary schools is the final year for most of the secondary schools in Tonga. The Pacific Senior Secondary School Certificate is offered in this year. This is a regional examination with the prescription and examination set by the South Pacific Board of Educational Assessment based in Suva, Fiji. Agricultural science is offered in this year. The subject is treated as an academic one but with a practical portion of 35 per cent that is internally examined. This is where trials are organized for various optional crops, etc. Other content does make use of local examples. The purpose of the examination is to provide a benchmark for entrants into diploma courses from which students may continue on to University Degree studies.

300. In Tonga in 2001 136 (12 percent) of the total of 1,163 candidates opted for agricultural science compared to 30 percent for accounting, 35 percent for computer studies, and 41 percent for economics. This might indicate a falling off of interest among students in the age range from 16 to 18. However, many schools did not offer agricultural science at this level, though they did offer it at Year Eleven. The reason is that most schools could not meet the practical requirements for the subject.

301. There are two post-secondary institutions in Tonga that offer agricultural science. They are Hango Agricultural College in 'Eua. This is operated by the Free Wesleyan Church and offers a diploma in agriculture, credited to Massey University in New Zealand. Of the total enrolment of 50, 26 are in the third year at the end of which they sit the Diploma Examinations. The pre-requisite for the diploma year is a pass in the Pacific Secondary School Certificate (PSSC) and in any subjects.

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There are less than 20 in each of the lower years, such that many of those in year three have entered from other secondary schools.

302. The Community Development and Training Centre of the Tonga Ministry of Education offers a Diploma in Agriculture course. The pre-requisite is a pass in the PSSC in any subjects. This is a three-year course and currently there are 30 in year one, 5 in year two and 35 in year three. The number of students taking the course is growing (a restructuring has meant the year two year has few students). The Diploma is comprehensive and is of six semesters of full time study. The Diploma is set and marked by Swinburne Agricultural College of the University of Melbourne. Fees are \$75 per semester with a heavy government subsidy.

V. CONSTRAINTS TO THE DEVELOPMENT OF THE SECTOR

A. Introduction

303. At present Tonga has a very small commercial farming sector. According to the 2001 Agricultural Census only 254 farmers considered themselves to be commercial farmers and these had an average holding of just 25 acres. There were only a handful of commercial export oriented enterprises that could be considered large scale and these were predominantly engaged in the squash export markets. This small scale of operation may well be appropriate to the produce grown. However, it is more likely to be a reflection of difficulties of obtaining access to larger tracts of land the financial constraints on enterprise development (due to high risks and relatively low returns).

304. There is a continuing role for subsistence and small scale farming in Tonga. However, for the agricultural sector to grow and generate greater income, it must be export led. Subsistence based farming and encouraging subsistence farmers to increase cash sales on local markets can meet food security objectives and provide a basic standard of living. However as an engine for economic growth it is very limited. Local markets are very limited as the household produces a large proportion of food consumed. Given that the amount of food consumed each year in Tonga would only grow at the rate of population growth, total demand for food in Tonga will be relatively unchanged over the next decade. It is unrealistic to expect that many subsistence growers have the capacity to supply export markets themselves without the assistance of a middleman.

305. The creation of economic growth requires increases in the value of production while minimizing the use of productive resources. It requires the generation of surpluses for re-investment in increasing the stock of resources and their productivity. Those surpluses cannot be generated in Tonga unless the agricultural sector fundamentally changes and there is increasing specialization of the workforce. Tonga needs fewer, more efficient farmers that can meet the demands of individuals, allowing people to become available for other employment and business opportunities that will emerge in the growing economy. This is the process of economic development that has generated the high standards of living in the developed economies.

306. Many aid projects in agriculture are focused on encouraging the poor to become small-scale commercial farmers. However, farming is a risky business. Some are prepared to trade that risk against the perceived benefits of farming. Many people do not wish to take that risk and would prefer regular paid employment in agriculture and in other sectors.

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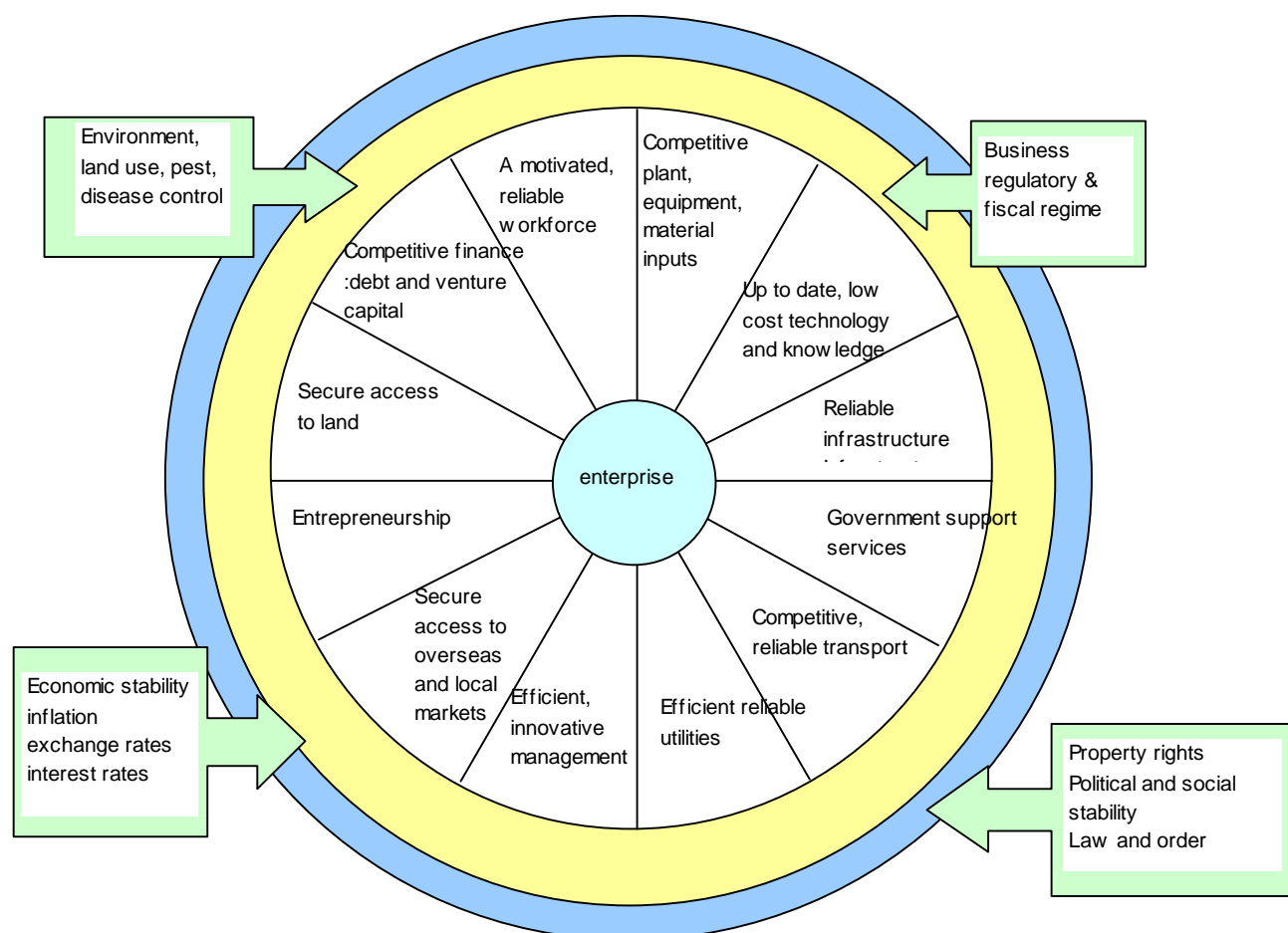
307. Employment creation is urgent in Tonga given the limited opportunities for youth in Tonga and the threat of stricter immigration policies in New Zealand, Australia and the United States. Employment generation in agriculture will require the development of a larger agricultural base and the development of processing operations to absorb surplus labor. The Tongan market cannot support a larger agricultural sector and surplus production will need to be exported.

308. To compete internationally will require minimization of production costs through the application of superior technology and maximization of economies of scale. The sector's contribution to national income and the generation of employment opportunities would be enhanced by the development of a medium to large-scale agribusiness sector producing raw and processed products for export markets around the world. While households should retain the ability to engage in subsistence and semi-commercial farming, past experience has demonstrated that this is a limited source of economic development. Large surpluses needed for investment in the future development of Tonga are more likely to arise from a modern efficient agribusiness sector.

309. Such a sector has not developed in Tonga, although there are a number of promising ventures supplying both local and export markets. The question is how to encourage the development of such a sector. If such ventures were profitable to undertake in Tonga, they would already exist. The key is to make agribusiness both profitable and secure in Tonga by reducing costs and risks. For such a sector to contribute to national income, it is important that it be able to compete on international markets without subsidies from the Government. Tonga would be in no better position if the profits of the sector were only equal to the subsidies provided by the government (including preferential tax treatment and subsidization of land, finance and other key inputs). Only if these enterprises are profitable in their own right will they contribute to Tonga's national income.

310. The preconditions or inputs for a profitable agribusiness sector are set out in the diagram below. This represents a model of a successful, internationally competitive agribusiness sector. Achievement of the outcomes sought will require a number of outputs. In formulating these outputs a system wide approach has been adopted that captures the general environment in which the primary sector operates. This includes the macroeconomic setting, the state of the environment, property rights issues and the business regulatory and taxation regime. For the sector to thrive, the environment in which the sector operates must provide the right incentives for individuals to invest and produce. Poor performance in any of these areas can undermine an otherwise attractive investment environment. It is therefore important to adopt a holistic approach to the development of the sector, simultaneously addressing all of the weaknesses or constraints to investment. This has been a characteristic of successful economic reform programs around the world.

Diagram 2: Outputs to enhance the value of the primary sector



311. The model demonstrates which stakeholders have access to the key inputs. The Government of Tonga is the stakeholder that brings macroeconomic stability and protection of property rights to the enterprise. The government is also responsible for the provision of a regulatory framework that protects the rights of various stakeholders and provides public goods to the sector (infrastructure, education, export promotion, research and extension). Tongans bring land, labor and equity investment to the enterprise. Management brings access to overseas markets, finance, technology and information to the enterprise.

312. The creation of a vibrant agribusiness sector will require the appropriate inputs from all stakeholders, management, labor, landowners, suppliers and government. Where justified,

international development agencies can provide technical assistance and finance for institutional strengthening and investment in the provision of public infrastructure. All stakeholders must play their part and all must benefit according to the value of their contribution.

B. A stable macroeconomic environment

313. A stable macroeconomic environment is critical to reducing project risk. Over much of the past twenty years Tonga has enjoyed a relatively high degree of macroeconomic stability as a result of conservative monetary and fiscal policies. In the past couple of years some concerns have arisen with respect to the rate of credit expansion, increases in government spending and consequent higher inflation and interest rates. There has been a significant depreciation in the exchange rate in response to economic pressures, a factor that has contributed to the competitiveness of export industries and import competing industries. While it is too early to judge its impact, the favorable effect of this real depreciation on grower returns appears to have resulted in a sharp rise in export volumes and earnings over the past year.

314. The macroeconomic situation in Tonga is somewhat uncertain over the next few years, partly reflecting uncertainty in the world economy. An important source of uncertainty is the impact that a downturn in world economic activity would have for Tonga export demand and for repatriation payments from overseas Tongans. These payments, as measured by overseas exchange transactions, are currently equivalent in amount to around 50 percent of GDP. A sharp reduction in payments, occasioned by a reduction in the discretionary income of overseas Tongans would have a strong impact on Tonga's external account. Not only would this reduce the income of Tongan households significantly, it would result in a sharp increase in Tonga's balance of payments deficit, a sharp devaluation of the currency and the introduction of significant inflationary pressures. It is important for Tonga to gain a better understanding of the nature of repatriation payments and their likely sustainability. There is evidence that a large portion of these payments constitute payments for unofficial exports of root crops and handicrafts. Another important component constitutes investment spending in housing and business.

315. The Government of Tonga is pursuing governance and economic reforms on a number of fronts and these reforms will enhance the profitability of the Tongan primary sector. Perhaps of greatest potential benefit are Tonga's efforts to join the World Trade Organization and the reforms required to achieve membership. The liberalization of Tonga's trade and foreign investment regime will make it much more attractive for both local and foreign investment. Worldwide experience has demonstrated the substantial stimulus to economic development that can arise from trade and investment liberalization.

316. Throughout its modern history, the small size of the cash economy has meant that Tongan governments have had to rely upon trade taxes to finance government activities. Tonga has imposed import duties, a ports and services tax as well as taxes on exports. The effect of this has been to seriously undermine the profitability of the traded goods sector both directly, through the higher cost of imported inputs and indirectly through the higher exchange rates that have reduced returns to exporters. Tongan governments have also placed a range of restrictions on foreign investment. One major impediment has been the discretionary nature of the resident status of overseas investors. Proposed reforms to the immigration laws to allow the issue of visas valid for the term of the project would significantly reduce investor risk.

317. The Government is also engaged in a program of public sector reform and is privatizing a range of government owned business. The privatization of the electricity supply business and the introduction of competition into telecommunications have resulted in improved performance and, in the latter case, significant reductions in charges. Tonga has a competitive financial sector and there is competition in both air and ocean freight. Further privatization, the introduction of competition and consumer protection legislation will further enhance the competitiveness of local business. The primary sector will benefit significantly from these broader economic policy and institutional reforms, enhancing the prospects of success of well-designed interventions in the sector. Provided that economic reforms continue and the Government maintains a stable macroeconomic environment, there is likely to be a significant improvement in the performance of the Tongan economy compared to the past decade.

C. A sustainable resource base

318. There are indications of pressures emerging on the quality of natural resources and the environment in Tonga. Currently there is minimal management of natural resource exploitation, although management plans have been developed for the fisheries sector. The right for the landowner to do what they decide on their own land is strongly engrained in Tonga. However, this can give rise to a number of problems that could undermine the sustainability of natural resources. The current problems include damage to crops caused by wandering livestock, soil erosion due to the removal of vegetation and poor road design, and air and ground water contamination from the inappropriate use of chemicals.

319. Sustainability of Tongan agriculture would benefit from the introduction and enforcement of legislation embodying provisions for protecting the rights of growers from adverse impacts of others. While some legislation currently exists, for example relating to the use of agricultural chemicals, there is not evidence of its being enforced and it is in need of updating. A comprehensive land use

regulation to protect against externalities is considered to be a core function of MAFF rather than the Ministry of Lands. Consideration could also be given to the development of a basic forest management plan. These regulations should not be overly restrictive, but should allow growers to meet objectives or performance criteria in a way that is least costly. The imposition of penalties on growers whose actions adversely impact others could also be embodied in the legislation or regulations, although disputes will often be settled by direct negotiation between the parties concerned.

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325. It is recommended that technical assistance be provided to Tonga to assist MAFF in the evaluation of approaches to the control of fruit fly. For each control option, technical feasibility should be established along with the costs of the initial program and maintenance activity. The economic and financial benefits of each option should be explored in detail, based upon the returns to increased activity in fresh and processed fruit consumption, local sales and exports. If there are net national benefits from such a program, in terms of viable production of fresh and processed fruit products, the TA should address the approach to implementation, ongoing maintenance and possible models for cost recovery.

D. Political and social stability

326. Tonga has a history of political and social stability. There is little opposition to the monarchy, with the pro-democracy movement seeking greater representation of commoners with continuation of the monarchy. The most radical proposal is the introduction of a Westminster form of Government. Law and order is not a serious issue in Tonga as yet and there is a high degree of personal security. However, property crime appears to be increasing in Tongapatu, perhaps associated with a high youth unemployment rate. Crime and dissatisfaction among the youth of Tonga can be expected to rise, as it has elsewhere, with growing youth unemployment. The youth unemployment problem would become much more pressing if countries such as New Zealand, Australia and the USA were to tighten their immigration laws. Emigration has provided an important safety valve for Tonga by providing its youth with income earning opportunities. At the same time this has seen a reduction in Tonga's stock of human capital, as many of these emigrants are among the most capable. Continued social and political stability and law and order, critical requirements for attracting business investment, would be well served by the employment creation of a rapidly growing private sector

327. In the medium term, Tonga is expected, relative to many of its neighboring Pacific Island nations, to maintain a relatively high degree of personal and property security. This is a favorable

aspect of Tonga's investment environment that could be exploited in attracting foreign investors seeking to expand their operations to the Pacific or looking to transfer operations from failing states. Law and order has a strong affect on business costs, particularly the costs of security, insurance and the remuneration of expatriate staff. Many location decisions are disproportionately affected by the perception of the personal security of management and staff. The quality of life in Tonga is relatively good and this is an important factor in attracting investment.

E. Secure access to land

328. The system of land holding in Tonga has provided large proportion of Tongan households with access to land for subsistence and semi-commercial agriculture. The main concern is less with the distribution of ownership of land but with constraints to the transferability of the use of land and the agglomeration of larger parcels of land for commercial farming and agribusiness purposes. These constraints have been recognised in Tonga and a number of amendments to the *Land Act of 1882* have been made to address these constraints.

Box 9: Land allocation system in Tonga

Under the constitution of 1875, the crown claimed ownership of all land in Tonga. The King granted nobles hereditary estates and land was also granted for public purposes. The Land Act of 1882 allowed for eligible commoner males over the age of 16 to apply for the grant of a up to 8.25 acres of agricultural land (a tax allotment) from either royal, noble or government estates and land for a house in village or town areas. Once registered with the Ministry of Lands, ownership of the land remained with the holders and their direct male heir as long as rent was paid to the estate holder and taxes to the government. The latter appears to have been abolished. While owners of tax allotments could use the land as they pleased, the land could not be leased or sold. The areas of land in nobles' estates fell over time with increased population and as increasing numbers of eligible males applied for land grants. According to ADB (2002) around 95 percent of the land in nobles estates has been allocated as tax allotments. There are currently around 16,000 tax allotments that have been granted. Lack of land for granting new tax allotments has meant that allotments have not been allocated for some time and a declining proportion of eligible males residing in Tonga own land.

329. Until the late 1970s, tax allotments could not be sold or leased, although informal lease or access arrangements were quite common. This meant that farmers wishing to expand their activities could not buy or lease more land and that those wishing to leave agriculture could not realize the value of their asset (Campbell 2001). The growing number of tax allotment holders emigrating

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overseas compounded this problem. In 1976 it became possible to mortgage tax allotments and to lease land for periods of up to ten years. A lessee could lease up to five allotments. In 1978, the period of the lease was increased to 20 years and it was possible to lease ten allotments.

330. A large proportion of agricultural land held under tax allotments is not utilized for farming activities. The 2001 Agricultural Census identified 15,797 households residing in Tonga. Of these households, 6,447 or 41 percent owned a tax allotment. These households owned 6,577 tax allotments with a total area of around 54,000 acres. Most of the tax allotments owned by resident households appeared to have been utilized either by the owner or by someone else. Owners cultivated 3,734 allotments or 57 percent of the total number of allotments owned. The owners rented 36 percent of the allotments to other households, for pay only in the case of 4 percent of the allotments. According to the Agricultural Census agriculturally active households cultivated land with a total area of 66,000 hectares. Legally owned land comprised 43 percent of the total holding area, while land used for free with the permission of the owner accounted for 48 percent of the holdings. Only 4.7 percent of the land was rented for payment either in cash or kind.

331. These figures suggest that a large percentage of the tax allotments that are owned by resident Tongans are being utilized, either by the owner or made available to others for cultivation. The figures also suggest that many landless Tongans can obtain access to land. Rights to use land are therefore tradable, if not particularly valuable, given the limited incidence of payment for the rights.

332. Given that there are over 16,000 granted tax allotments, the remaining tax allotments have either not been allocated to individuals, are not registered formally or are owned by Tongans residing overseas. It is difficult to determine precisely how many of the allotments of absentee landlords are being utilized in agricultural activities. A large number of the tax allotments, probably a majority, are not being utilized for agricultural purposes. There are a number of possible reasons for this low level of utilization of tax allotments.

333. The rate of utilization of agricultural land in Tonga may well be a reflection of the relatively low level of demand for agricultural land by Tongans due to the high risk and low expected returns from agricultural activities. The large number of formal and informal leases of land from land owners and the high proportion of land claimed to be leased for free indicates very low land values that in turn reflect low returns to agriculture. Even where land is leased, the rental rates on land are very low (around \$T1000 per allotment per year).

334. The land ownership system could become an increasingly important constraint if there were to be a substantial increase in the size of the agricultural sector, particularly in the case of

commercial agriculture based on larger land holdings. Discussions with larger scale commercial growers, including squash growers, indicated that it has been relatively easy to gain access to larger tracts of land. While difficulties were sometimes experienced in this process¹⁶, there was no constraint on the availability of land and the costs of leasing land were relatively low. There are a number of relatively large parcels of arable land in Tongatapu and other islands that are currently not being utilised. These parcels are owned by nobles and churches, and in principle can be leased for relatively long periods, provided the owner is willing to enter into a lease arrangement.

335. There are a number of constraints on access to land and the security of title to the use of the land that need to be addressed. The main issues raised in discussions with stakeholders were as follows.

336. There are sometimes problems identifying the owner of the land. This can result in excessive costs involved in searching for the owner and signing leases with persons who claim, but do not hold, title to the land.

337. Another matter raised was the potential for inconsistency between the terms of the contract and the rights of landowners under the constitution. There was an example of an out grower who had been provided with planting and other inputs who subsequently exercised his rights to the fruits of the land by selling the crop to a third party. The terms of contract were secondary to the constitutional right.

338. Problems also arise in the case of the death of the landowner and the passing of title of leased land to the heir. Particularly if the rental has been paid on advance to the previous owner, the new owner himself might consider himself entitled to compensation as the owner of the land. There have been proposals to limit the maximum amount of the up front payment to five years rental. These problems can be addressed by sensible negotiations between the parties concerned and is not considered a major issue for government regulation.

339. There are no prescriptions under land regulations concerning the terms and conditions of leases. Rightly, leases are negotiated on a commercial basis. While the term of the lease may be 20 years, rentals are normally re-negotiated every five years. This can provide opportunities for landowners to extract excessive land rentals from lessees. In practice however, protection against such opportunistic behaviour can be provided for in contracts (for example through escalation and dispute settlement clauses). The Ministry of Lands also has the ability to arbitrate in such cases.

¹⁶ For example with persons claiming land they did not own, with identifying the true owner and with disputes over ownership.

340. Dealing in land in Tonga is often a very personal issue among relatives. While this allows small-scale producers to obtain access to land at low rentals, it can sometimes result in conflicts and seldom results in a level of security of tenure required by a larger scale more capital-intensive enterprise and its financial backers, including commercial banks.

341. Land owned by overseas Tongans is in many cases not leased and in few cases leased for a fee. This may reflect the currently low value of agricultural land in Tonga. It had been suggested that overseas Tongans who are not currently utilizing land or making it available to others should be either taxed or subject to the more extreme measure of losing title to the land. Such a tax would be relatively easy to evade and hard to enforce and could contribute to inefficient land use practices. In the current market it would also be difficult for many overseas Tongans to find persons willing to lease their land except at very low rentals. The loss of title to the land would be unfair, could potentially alienate a large number of overseas Tongans and consequently result in a reduction in the value of remittance payments from abroad. The problem with these approaches to freeing up use of land for use in agricultural production is that it can encourage inefficient production. It is preferable to rely on market signals, specifically the return to agricultural enterprise, to determine the demand for and supply of land.

342. Land cannot be sold in Tonga, complicating the financing of agricultural activities. While the Tonga Development Bank will lend against land owned by the borrower, land in Tonga has a low co-lateral value for commercial banks. In the event of default, the bank only has the right to use the land for the remaining period of the loan. It cannot sell the land. After the loan period, the land reverts to the original owner. The bank can obtain revenues from leasing the land, but it is difficult to lease land and the rental payments are low. Moreover, complications may arise if the owner dies and the heir disputes the loan default conditions.

343. In the medium to longer term, if the agricultural sector is to expand, there is a need to make land more freely accessible by increasing its tradability. Market forces themselves will contribute to this. Higher returns to agriculture will be reflected in higher returns to land, the bidding up of land rentals and therefore greater interest in trading the right to use land. To support the development of an efficient market in agricultural land, there are a number of measures that the Government could adopt to facilitate the process of developing a market for agricultural land.

344. An initial requirement is to ensure that records of land ownership are up to date and that those seeking to lease land can readily identify the current owner. Computerization of land ownership records and making the files available online would significantly reduce search and transaction costs for those seeking access to land.

345. Currently land can be leased for periods of up to 20 years.¹⁷ In some cases this may be a sufficient period of time, and it is possible, with the permission of the Minister for Lands to enter into leases longer than 20 years. Consideration could be given to increasing the maximum term, although it is recognised that this might undermine the objectives sought by restricting the outright sale of land.

346. Allowing the sale of land would greatly assist access to land and the accumulation of larger tracts of land. A partial measure would be to allow those persons emigrating from Tonga to sell the land to other Tongan citizens. Allowing the sale of land is a very sensitive issue in Tonga and passing the necessary amendments to the legislation would be a long and controversial exercise. A Land Commission was established to review the land tenure system in the early 1980s but its report was too controversial to be made public. Allowing for longer leases of land would have the same effect as allowing the sale of land while at the same time allowing Tonga to maintain its traditional land ownership system. Large-scale enterprise would be facilitated if the restriction on the number of allotments that can be leased, up to ten allotments or 80 acres, were removed.

347. In land markets overseas, a prospective farmer would normally employ the services of a real estate agent or land broker. The role of these middlemen is to facilitate trade in land and to reduce the transaction costs involved (in particular by reducing search costs). The agent matches demand and supply for various types of land and also can agglomerate land into larger parcels. There is little of this type of activity in Tonga at the moment and most prospective farmers conduct their own searches and negotiations.

348. The Ministry of Lands could facilitate access to land through the creation of what would be in effect a 'land bank'. Overseas and resident Tonga landowners could be invited to deposit or entrust their land holding for agreed periods of time with the Ministry of Land. While most of the land held would be dispersed allotments, it is also possible that there would be some grouping of allotments into fairly large contiguous areas. The Ministry would make this stock of land available to parties interested in leasing land. These parties would be able to lease different amount of land up to a full allotment, several scattered allotments, and if possible, an area including adjacent allotments. The land would be leased for periods of up to twenty years, or longer if the agreement of the owners is obtained. The Ministry of Lands could set the rental and other conditions attached to the lease according to current market valuations and taking into account the need to maintain the productivity of the land, or the rental could be negotiated by the parties to the lease.

¹⁷ The Cabinet has the authority to approve commercial leases of up to 50 years while activities involving Government can have leases for up to 99 years (ADB 2002)

349. The Ministry should seek to operate this land bank on a commercial basis, recouping its costs plus a reasonable profit margin through transaction charges. It is important to the future development of a competitive land market that this activity not be subsidized and that the private sector should not be deterred from entering this market. Ultimately the Ministry would seek to privatize the management of the land bank.

F. An efficient fiscal and regulatory regime

350. The regulatory and taxation regime provides no deterrent to agricultural production. Compared to other activities, the absence of regulation and the minimal level of taxation provides a significant subsidy to the production of unprocessed crops. The only exception to this is the high effective tax on agriculture and other traded goods industries due to the high import taxes. This has the effect of raising the exchange rate above what it would otherwise be causing exporting and import competing agricultural activities to be less competitive on overseas and local markets.

351. Tonga's agricultural exports are predominantly in unprocessed form (for example squash and root crops). Tonga exports commodities that are prone to substantial swings in world prices. Moreover, a large part of Tonga's exports are in the form of squash sold into niche markets, exposing Tonga's exports to a high degree of risk. A number of factors would suggest that Tongan agriculture would more naturally undertake a higher degree of processing of agricultural crops. Processed products can be stored for longer periods and are higher in value, making them less prone to the Tongan disadvantage of infrequent and high cost shipping. Moreover, processed products, particularly food, have more stable prices and perhaps have less volatile demand.

352. The structure of agricultural production that has emerged in Tonga (that is low processing and exports limited to a narrow range of crops) has been very much driven by regulatory and taxation regimes that have been adopted by the Government. Why sufficient data and a suitable model of the Tongan economy is not available to quantify the effects, economic theory and the study of similar regulatory and fiscal regimes strongly indicates that the effects are as follows.

1. Regulatory regime

353. The complexity of business regulation in Tonga depends on the type of agricultural, forestry or fishing activity. Small scale farming in Tonga is a relatively straightforward matter in Tonga. Those who have access to land through ownership or through leasing can commence a farming operation. There are no barriers to entry for Tongans growing a range of crops for either the local or for export markets, except for squash. In conducting agricultural activities, farmers are free from any form of

regulation. There are no laws governing the employment of labor, no regulation of farming practices and no regulations to minimize the environmental impact of farming, either on the property itself or on neighboring areas. Life is much more complex for companies engaged in agriculture, who would pay income tax and even more so for processors who would be considered as manufactures.

354. There are five main types of license issued to individuals and businesses in Tonga. There are the Business License, the Industrial Development Incentives License (Development License), the Export License and the Tourist License administered by the Ministry of Labour, Commerce and Industry and the Liquor license administered by the Ministry of Police (but currently being mooted for transferal to the MLCI). These licenses relevant to the sector are discussed in turn below.

i. A. Business Licenses

355. All businesses, except individual farmers and artisan fishermen, in Tonga are required to have business license to operate. This license is commonly referred to as the trading license. Such licensing is regulated under the Licenses Act, CAP 47 and is administered by the Minister of Labour, Commerce and Industry. The Business Licensing Unit of the Ministry of Labour, Commerce and Industry is responsible for overseeing the process of authorizing business licenses. In September 2002, the Legislative Assembly passed the Business Licenses Act that is expected to take effect before the end of 2003 once the specific regulations (currently under negotiation) are appended to it.

356. The current Act has over 250 difficult categories under which a business can be licensed. In some instances the same business requires more than one license to cover different activities. The new regulations are expected to reduce the categories to broad-band categories such as primary, secondary or tertiary activities. Recent meetings between the Government and private sector representatives have suggested that farmers and artisan fishermen be required to hold licenses as well. This would require additional categories to be added to the existing Act and to their inclusion (albeit broad band) under the new Act. While the new Act does not specify an approval process (this will become part of the regulations) there are a number of new requirements as follows.

357. Foreign investors will be required to submit their foreign investment certificate with their application package. This will include foreign investors in farming. The current list of reserved activities for locals includes (as far as farming and fishing is concerned) squash, vanilla and kava production, livestock and egg production and coconut production. Other than for these activities foreigners can obtain business license provided they meet the other requirements. The Foreign Investment Bill has yet to be implemented as it awaits the detailed regulations to be formulated.

358. Foreign investors will no longer be required to report on their business employment status, but obviously foreign investors will not be attracted if they are not able to obtain secure residence. The Immigration Department of the Ministry of Foreign Affairs has yet to formulate its full business visa proposals, so residence remains uncertain for foreigners.

359. Where there is no other approval required the process of granting a business license is very quick and can take from a few hours to a few days. Should there be other requirements the process is longer. Most other requirements concern residency status and police records for foreigners and health certificates for operations involving food.

360. A new Environmental Assessment Bill is in draft form and has yet to go to the Legislative Assembly. This is to be administered by the Ministry of the Environment, although there remains debate on how this Ministry will take on powers currently vested in the Ministry of Lands and Survey (under the Natural Resources Department) but which are no longer operative. The new bill is in draft form but this includes the need for environmental impact reports where land and the sea is utilized. Agricultural and fisheries operations will require such impact reports and approvals and these approvals will be required once farming and fishing require business licenses.

361. Currently the fees for business licenses vary widely but are not onerous and are paid quarterly. Policing of their payment is not rigorous and the collection of the revenue in 2001-2002 cost \$270,000 for the \$ 310,000 collected. License fees will be paid annually and not quarterly as at present.

362. As mentioned elsewhere, individual farmers and artisan fishermen are not subject to licensing but they could become in a new environment of licensing. This environment seeks to regulate the economic activities of Tonga and farmers and fishermen are such a significant part of that environment that they should no longer be “left out”. The leaving out was to recognize that in essence all Tongans are to some extent farmers or fishermen as subsistence was perceived to be “additional” income and to be “essential” such that it was exempted from regulation.

ii. Development Licenses.

363. The Industrial Development Incentives Act of 1978 was introduced to highlight and assist in the development of industry. Initially it was reserved for only two categories of economic activity. These were the processing, manufacturing and assembly (including packaging) industries and prime tourism facilities such as accommodation, cruising vessels and tourist attractions. The thinking of the time was that Tonga had to employ its youthful population in activities that used large amounts of labor and that this labor was relatively cheap. Import substitution and the processing of imported raw

materials for re-export as finished products were important considerations. The Act preceded the large-scale migration that commenced in the early 1980's and has continued until recent times. In 1988 an amendment to the Act included commercial farming and fishing for export and ancillary industries such as engineering services and electrical and electronic repair facilities.

364. The Act essentially sought to relieve investors of the high costs of trade taxes that applied to industrial buildings, plant and machinery. When the Act was initially introduced agricultural imports of seed, fertilizers, chemicals, hand tools and machinery (including tractors) were exempted of all import duties and the PST. The PST was introduced in 1968 to pay for the loan that developed the Queen Salote Wharf and other port facilities (but has since become a revenue earning device with no reference to meeting the development of ports).

365. The IDI Act offers a range of incentives including import duty exemption, ports and services tax relief (50 per cent or 100 per cent exemption), tax holidays, repatriation of profits, etc. It does assist agricultural and fisheries processing industries in their establishment, particularly in reducing the cost of importing capital items. The duration of the licenses is limited to the set-up period only (up to two years but renewable) except tax holidays of up to five years may be granted. The Act remains in place pending a tax reform process which is currently (and has been since the mid-1990s) undergoing further consideration and which will rescind the IDI Act in that it aims to reduce import duties and remove the ports and services tax.

366. While the IDI Act offers significant concessions to investors (both foreign and local) its application is often discretionary and is not seen to be transparent by investors. Local investors tend to receive better and faster treatment than foreign investors. The Ministry can also stall the issuing of development licenses and even business licenses by insisting that there be varying degrees of local equity participation in certain industries (and totally reserving some activities for locals). The committee that considers applications is largely made up of bureaucrats and includes only the CEOs of the Bank of Tonga and the Tonga Development Bank as non-government members. The process is often lengthy and when it is thought the applicant can afford the duties and taxes the application can be denied. There is a right of appeal but that too can be lengthy. An across the board policy which exempts all capital items for primary and industrial developments is now seen by the private sector as a more equitable alternative, though the exemption of duties and taxes on capital imports is yet to be featured in the tax reform process.

367. Foreign investors will be issued with certificates under the new Foreign Investment Act which has been passed by the Legislative Assembly but which awaits the development of the full set of regulations before it is introduced. This will assist the development of primary processors, but not

farmers, as some of the major farming activities (coconuts, vanilla, squash and kava) are reserved for locals only.

iii. Export Licenses.

368. The Ministry of Labor, Commerce and Industries issues both import and export licenses. Import licenses are issued on every consignment that enters the country and on a per consignment basis. The charges are minimal at 10 pa'anga per license but a license can be denied and the import denied entry, though this has not been recorded as happening.

369. It is the export licenses that have caused most controversy. Every export consignment requires a license. This is issued when the export entry is issued so it is not time consuming but it is a cost which is ostensibly only a means to earn revenue. While this may be the case it is also a powerful tool that the Ministry wields if and when it wishes to deny certain interests from exporting. The squash industry offers the most concrete evidence of how export licenses can be used to control or favor certain companies or individuals. A squash export license is only issued to those who pay a 10,000 pa'anga fee. What happens to this money is the subject of debate, but most importantly its application illustrates the degree to which the Ministry can determine who exports and what is exported and to where. Furthermore the Minister has the power to issue exclusive licenses for new start up industries, though these will be for limited periods (five years is the usual term).

370. While there are powers vested in the Minister to control exports the reality is that most local individuals and companies do not consider the issuing of export licenses as an impediment to exporting. For primary exports though (particularly when they become significant) the powers that do exist could be a major obstacle when foreign investors are involved.

The business regulatory regime is much more complex for processing than it is for agricultural production, particularly where foreign investment is involved. Farmers and individual fishermen are not regulated at present, even when there may be a case for regulation of certain activities. The effect of this is to impose a higher regulatory burden on processing compared to farming, distorting incentive to engage in further processing.

2. Taxation

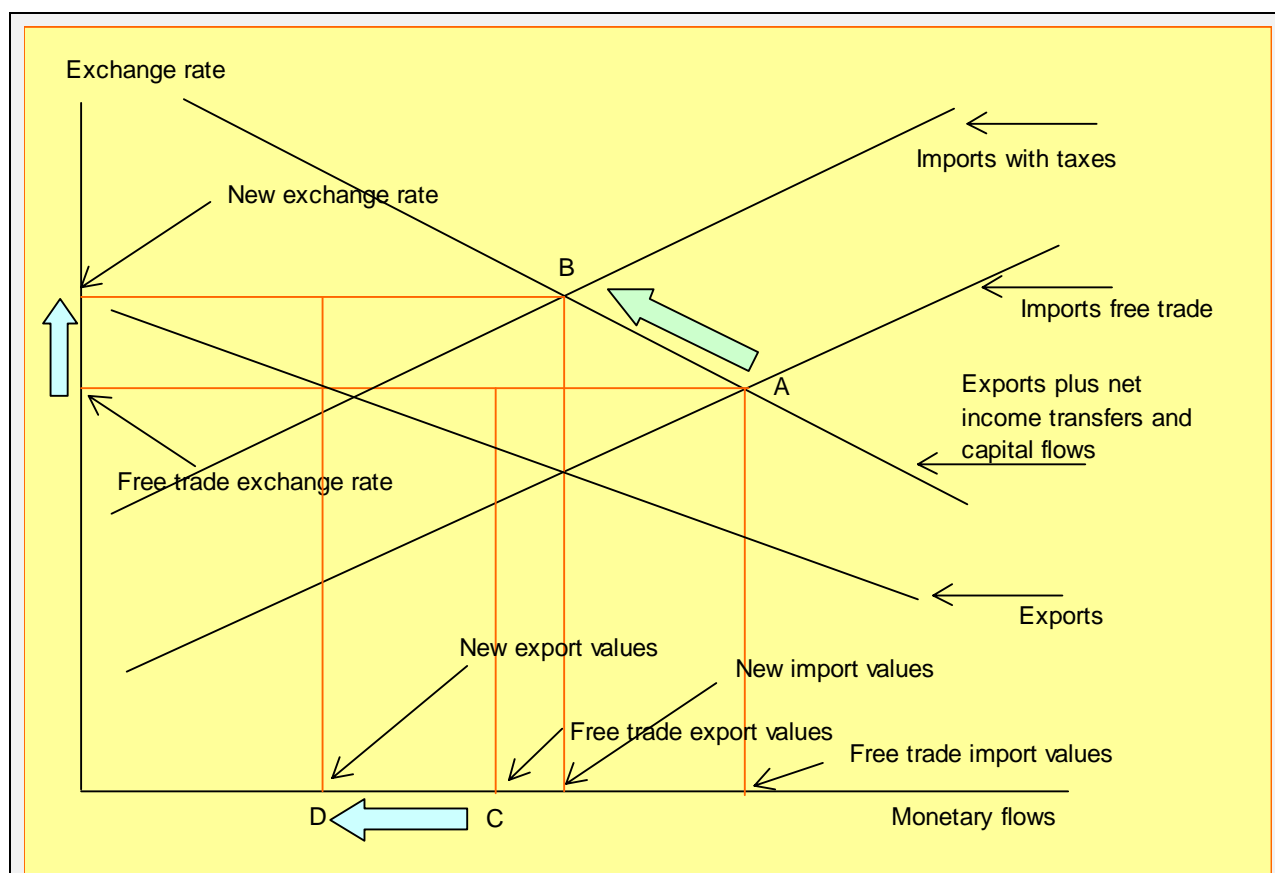
371. The taxation regime also reduces incentives to further process agricultural products. Farm inputs (fertilizers, chemicals, machinery and implements) are exempt from import duty and the port services tax. They only pay sales tax of 5 percent on purchased farm inputs. The personal income tax does not apply to income earned from agricultural sales.

372. The high level of trade taxes affects the primary agricultural production indirectly through the Tonga's flow of payments to the rest of the world (the balance of payments and the exchange rate). The effect of taxes on imports is to make them more expensive and to reduce the demand for imports compared to what it would have been in the absence of the tax. The initial effect would be that Tonga would be running a trade surplus (the value of exports exceeding the value of imports and, for a given amount of capital flows, accumulating foreign exchange reserves). However, this is not sustainable and the Tonga exchange rate would appreciate in value. Balance of payments equilibrium must be restored in the longer term. Unless the rest of the world is prepared to lend to Tonga indefinitely, the value of exports plus net reparation payments must return to approximate balance. The higher exchange rate that is required to achieve this has the effect of restricting agricultural exports. The disincentive to export has been compounded in the past by export taxes. For those interested in a more academic exposition of this effect can consider the geometry contained in Box 10.

373. Repatriation payments from abroad also have the effect of reducing export earnings. Again, this is illustrated in the Box below. An increase in repatriation payments (and in payments from international development agencies for that matter) causes the balance of payments to move into surplus. To restore balance an appreciation of the exchange rate is required and that causes the export sector to lose competitiveness on overseas markets.

374. A second affect that the trade taxes have is to focus Tongan agricultural production on local markets. This is because the import taxes raise the prices of imports, such as food, and therefore make local agricultural products more competitive on local markets. Tonga has a low rate of population growth due to the emigration of large number of Tongans. Since average consumption can be expected to remain about the same, this means that local markets for agricultural produce, upon which most farmers rely for commercial sales are relatively stagnant. This is one reason why the value of agricultural production in Tonga has not risen much over the past decade.

375. A second distortion introduced by the regulatory and taxation regime is that it raises relative rates of return to primary agricultural production compared to processing. That is primary production is more profitable than processing and as a result of this distortion (as well as other factors) there is little processing of agricultural products for export. As noted above, farmers do not pay income tax and are exempt from trade taxes. On the other hand manufactures of processed foods products pay trade taxes on their imported inputs, are subject to taxes on profits and are subject to a range of regulations that adds to their costs. The result is that they are much more heavily taxed than primary producers.

Box 10: The impact of trade taxes and reparation payments on export earnings

The above diagram illustrates the mechanism of restoring external balance through adjustments in the exchange rate. Initially, the sum of the value of exports plus net income transfers plus net capital flows is equal to the value of imports. This is known as balance of payments equilibrium and the economy is at point A. The effect of import taxes is to make imports more expensive and reduce the value of imports. This is demonstrated in the above diagram by the shift in the import line. At each exchange rate, imports are now lower. The economy must eventually return to balance of payments equilibrium. To restore equilibrium, the exchange rate must increase, so that the economy moves to point B. At point B, once again the value of imports is equal to the value of exports plus net transfers and net capital flows from abroad. However, there are a number of difference is the new equilibrium. Not only has the value of imports fallen, but the value of exports has also fallen.

376. At the same time, manufacturers of agricultural goods for the domestic market (or import replacement) are favored by the trade taxes, allowing them to charge higher prices to consumers than they could in imports were not subject to trade taxes. The result has been the establishment of an agri-business sector behind tariff walls that focuses exclusively on the domestic market because it would not be competitive on export markets.

3. Taxation reform

377. Tonga is undergoing reform of its taxation regime, although this has taken some time and it is planned to introduce the new tax system in 2005. The details of the new tax system are not that clear as yet but the central element is the replacement of trade taxes¹⁸ with a broad-based consumption tax and reform of the income tax system. The Government is moving towards a 10 percent flat rate of import duty and to phase out the ports and services tax. The following description draws on information provided in the budget papers.

378. The goods and services tax would be levied at the import stage and with larger businesses, at the point of sale of imported goods or locally produced goods and services.

379. The corporate income tax is to be significantly modified. Non-resident companies currently pay 37.5 percent on the first T\$50,000 and 42.5 percent on the balance. This rate is high by international standards and, coupled with taxes on business inputs, is a major disincentive to foreign investment (unless an application is approved under the Development Incentives Act). For resident companies, the corporate tax rate is 17.5 percent for designated export-oriented companies while other resident companies pay 15 percent on the first T\$100,000 and 30 percent on the balance. Under the proposed changes, a single rate of 20 percent will be applied to both local and foreign companies. The current tax incentives (tax holidays etc) will be replaced by investment allowances and accelerated depreciation. The proposed reform will significantly enhance incentives for direct foreign investment in Tonga.

380. Currently the Government imposes a sales tax of 5 percent with exemptions for goods imported for personal use. It is proposed that a value added tax, initially at 10 percent but to rise to 15 percent, will be imposed on all imported goods and locally produced goods and services. The tax would initially only apply to the goods and services sold by companies with turnover in excess of T\$1

¹⁸ The Government currently derives two thirds of its taxation revenue from customs duty, local excise and the ports and services tax, 20 percent from income tax and 16 percent from sales tax.

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million. Later it would apply to all businesses with turnover in excess of \$T100,000. Exemptions would apply to health, education, financial services, and electricity and public transportation.

381. The replacement of Tonga's trade taxes with a value added tax that applies equally to all goods and services, imported or locally produced, and a more neutral taxation regime would provide a strong stimulus to the agricultural sector. The following effects are predicted:

- The profitability of primary agricultural production would increase;
- The profitability of processing locally grown produce would expand by even more than primary production;
- As a result, agricultural exports would increase and there would be a higher degree of processing of those products; and
- The agricultural sector would gain greater access to a broader range of markets, offering greater growth potential and greater stability of prices.

G. Finance

382. The Tongan financial sector has been substantially liberalized during the 1990s. There are three private banks operating in Tonga along side the Bank of Tonga and the Tonga Development Bank. Indications are that the market for finance is competitive. The commercial banks generally lend little to the agricultural sector, with the exception of larger commercial farms and processing facilities. This reflects the perceived high risks in agricultural activities and the fact that many agricultural loans are small and therefore costly to service.

383. The Tonga Development Bank is the main lender to the agricultural sector. The Bank has moved to a policy of charging commercial rates of interest, although these rates probably do not reflect the risk associated with agricultural lending. Unlike the commercial banks, the Bank does allow for some flexibility in repayments (rather than the regular installments required by the commercial banks) and takes into account sweat equity in assessing applications. According to the Bank, sweat equity provides an indication of the capability and application of the individual.

384. The bulk of the lending is in the range of between \$T2,000 to \$T5,000. The Bank lends to both subsistence/ semi-commercial farmers and to commercial farmers. The amount lent in the case of the former is typically in the range of between \$1,500 and \$T2,000. Lending to commercial farmers has generally been in the range of \$T15,000 to \$T20,000, although larger amounts are lent

to the bigger farmers. For example, loans of over \$T100,000 in the case of squash and \$T200,000 in the case of coffee.

385. The financial performance of the Bank has improved considerably over the past five years. In 1998, the Bank recorded a loss equal to -31 percent return on equity. The loss was due to a worsening in the quality of the loan portfolio, an increased cost of borrowing, higher write-offs, a large increase in the provisions for loan losses and a fall in loan approvals. Last year the Bank recorded a profit of \$T2.4 million, a rate of return on shareholders equity of 17 percent. This followed a similar result in the previous year.

386. According to the Bank, the repayment performance of small borrowers tends to be very good. Most loans are recovered, although repayments can be slow due to cash flow problems. Bank staff appear to have developed significant experience in dealing with small borrowers and some degree of flexibility is applied to repayment schedules. For example, the Bank can depart under special conditions from the normal terms of lending (see table below). For example, the repayment can be lowered to cover just the interest for a period. The major exposure of the Bank has been to default on larger loans, particularly to the fisheries sector where there has been a number of business failures due to poor catches and other factors.

387. In seeking credit, in most cases farmers come directly to the Bank, although some are directed to the Bank after consulting with MAFF staff. Many of the borrowers are repeat borrowers and the Bank takes into account credit history in deciding on loan approvals, amounts and collateral required. Reflecting the individual nature of farming (that is the lack of partnerships and co-operatives in farming), most loans are made to individual farmers.

388. In assessing loan applications, the Bank prefers borrowers to have access to other sources of income that can be used to service the loan until the crop is harvested. In the case of tree crops that take several years to produce, the Bank may encourage growers to also plant shorter-term crops to provide income to service the loan. There is also a tendency to favor wage earners that derive a steady income from employment. Loan officers tend to regard wage earners as more likely to regularly meet their installment timetable than non-wage earners.

389. The Bank requires collateral in most cases (see table for a description). However, in the case of proficient farmers with a guarantor, it can waive collateral requirements. The collateral is normally in terms of the value of the items purchased and a mortgage on land. However other items of value may also be used as collateral.

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390. The Bank used to rely heavily on overseas development banks, such as the Asian Development Bank, the European Investment Bank, IFAD and the French Development Bank. More recently the Bank has been raising funds within Tonga by offering savings deposits and issuing promissory notes and bonds. The Bank has to meet the same Statutory Reserve Deposit (SRD) requirements imposed on the commercial banks and is focusing on longer term funds so as to reduce its exposure to the costs of SRD requirements.

391. The supply of credit does not appear to be, at the moment and relative to other developing countries, a major constraint to the development of the agricultural sector. According to the Bank there is no funding constraint to meeting the loan applications. Growers also receive financial backing from exporters, particularly in the case of squash growers, and from Tongans living abroad. Loans tend to be available at around 12 percent. Taking into account recent rates of inflation, real rates of interest are therefore not high. Moreover, interest rates are quite reasonable taking into account the risk associated with lending to the agricultural sector. Larger commercial ventures and processors also have access to lending from the commercial banks at only slightly higher rates than charged by the Development Bank.

392. During consultations, a number of concerns were raised by farmers, not so much about the availability of funds, but about high rates of interest and about the inflexible repayment and collateral requirements imposed by the Development Bank. However these concerns may have arisen from past practices and experiences. At present finance would not appear to be a significant constraint, particularly to small farmers whose demand for credit is relatively modest. The Tonga Development Bank has a fairly liberal lending regime, based upon commercial rates of interest. The terms and conditions of the various categories of loans to the rural sector are summarized in the table below.

Table 22: Terms and conditions of Development Bank loans

Borrower category	Collateral	Term	Repayment amount	Borrowers contribution
Livestock	Livestock purchased from the loan. BSV is 1.0X with and 1.5X without mortgage	< \$5,000 24 months > \$5,000 36 months	Up to 50 percent of income, 60 % can be considered	Adequate cash deposit or sweat equity towards total project cost
Fishing vessels, motors, gear	Items purchased plus other adequate items of security	8 years for new boats	Up to 50 percent of income, 60 % can be considered	Adequate cash deposit or sweat equity towards total project cost

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Borrower category	Collateral	Term	Repayment amount	Borrowers contribution
	BSV is 1.0X with and 1.5X without mortgage	4 years for used boats 2 years for other items		
Agricultural vehicles	Vehicles purchased plus land mortgage and other items of security	Maximum of 48 months for new and 30 months for used	Up to 50 percent of income, 60 % can be considered	25% deposit for new and 33% for used vehicles. Up to 50 percent if no land mortgage.
Tractors, plant, implements, machinery	Items purchased plus other adequate items of security. All tractor loans must be secured by land mortgage	60 months max for new and 30 months for used tractors, plant, machinery etc	Up to 50 percent of income, 60 % can be considered	25% deposit for new and 33% for used vehicles. Up to 50 percent if no land mortgage.
Manufacturing	Items purchased. BSV 1.5X with and 1.0X without mortgage	15 year max, but depends on project	Depends on project cash flow	25 percent equity

Source: Tonga Development Bank.

393. While credit is generally available, there would not appear to be a formal source of equity funding in Tonga for agricultural projects. Individuals conduct most agricultural projects and there are few if any partnerships or companies. Part of the reason for this is the tax treatment of income from agricultural activities. No income tax is paid on income earned by individuals in agriculture. However, the profits of companies and perhaps partnerships would be subject to income tax. While the tax exemption favors individual farmers, it deters the adoption of modern business structures and prevents farmers sharing risk with others.

394. The problem with debt finance is that the individual farmer bears all the risks. If the business fails, the loan still has to be repaid. Agricultural production is therefore less attractive than if the farmer had the opportunity to share the risk of failure with other farmers or with outside investors. For the future development of the industry, it is important that the tax status of agricultural income be re-assessed. Subjecting agricultural income to taxation would not impose a significant cost on most households because of the small amounts of income earned from farming activities by the average

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agriculturally active household. In any case, income tax would be fairly difficult to enforce because of the difficulty of determining the amount of income earned from crop and livestock sales, much of which is through informal outlets. The income of commercial farmers, particularly those exporting or selling to larger customers within Tonga would be more easily assessed

395. While considerable opposition to taxation of farm incomes would undoubtedly be found, a number of larger commercial farmers would consider this to be reasonable, provided that they were compensated by the removal of taxes on businesses inputs and were only taxed after profits had been made. It would be important to allow for the deduction of all costs incurred in earning income, including economic rates of depreciation of capital items, and to allow for the carry forward of losses over time. The application of such a tax regime, at current tax rates in Tonga, would increase taxes paid by farmers to the Government. However, it would remove a deterrent to adopting more effective, modern business structures.

396. The Tonga Development Bank has taken equity in a number of business ventures in the past. These have included equity in fishing ventures, Tonga Dairy Limited, Export Produce Limited and the Shipping Corporation of Polynesia. This portfolio of investments was not successful from the Bank's perspective. It is still within its charter to take equity in projects, although the Bank is reluctant to do so. To begin with the Bank has a limited amount of funds and sees itself as more effective in lending. The Bank would need to hire additional staff to service an equity operation.

397. Within Tonga, there are source of equity available from Tongan savings and from within the business community. Overseas Tongans are also another source of equity funding. Overseas Tongans invest significant sums in Tonga in residences and in the establishment of small to medium sized businesses. While figures are not available, observation suggests that the investments are mainly in restaurants, small tourist lodges, retail stores and taxi services.

398. There is no facility to allow Tongans to invest smaller amounts and to share the investment risks with a larger number of investors. Such a facility could be provided for by an equity or venture capital fund. The fund would raise investment funds from within Tonga, but in particular could target overseas Tongans willing to invest in Tonga. By keeping the minimum subscriptions sufficiently low, the fund could be subscribed to by a range of investors, from large investors to small, risk adverse investors. The fund would solicit proposals for investment from the agriculture and fisheries sector. To avoid excessive risk exposure, the funds would also need to consider diversification of its portfolio with investments outside of the sector and to seek investment in less volatile enterprises such as the processing of agricultural produce in Tonga.

399. The quality and sustainability of such a fund would depend on the quality of the projects in which it takes equity and the quality of its management and governance. The former will depend on the business environment facing new projects in Tonga. At present, there would be few projects that would be sufficiently attractive and that is one reason why such an equity fund does not already exist. However, if the Tongan Government is successful in pursuing a range of reforms to enhance the competitiveness of the sector, there is a greater prospect of attractive project proposals emerging. The fund could also play an active role in enhancing the quality of its investments by assisting project proponents in the development of business plans, in financial analysis and in risk mitigation strategies.

400. The development of an equity fund should be a private sector initiative. While there is some interest in the concept of an equity fund in the Tongan business community, the expertise and resources required to design and establish the fund would be beyond the resources of the private sector in Tonga. There may well be a case for the Asian Development Bank or other agency to provide assistance to the private sector to establish a private equity fund. Such technical assistance should be demand driven however, rather than imposed from outside Tonga. For example, it would be encouraging if a group of Tongans first made a commitment to the establishment of such a fund. This would provide the group with which the consultants could work along with the appropriate ministry to explore the viability of the fund.

H. Efficient transport and port services

401. For the major islands at least, road transport is not a constraint to agricultural development. On Tongatapu, there is an extensive system of roads that allow for the transport of produce to the point of export and to local markets. The other main islands also have adequate agricultural roads. There were some complaints from growers about problems with shipping capacity. In terms of the outer islands, the complaint was generally about infrequent and unreliable services.

402. Tongapapu is the major port of export. The Queen Salote port would appear to be adequate for export purposes, although there is little land for commercial activities, such as processing and packaging goods in preparation for export. Aside from the ports and services tax, the cost of using the port would appear to be reasonable. However, this is difficult to judge as the port is run as a natural monopoly and is not subject to competition policy legislation.

403. There is a number of shipping companies servicing Tonga. While freight rates are relatively high, this is a reflection of the high costs of servicing Tonga rather than a lack of competition among shippers. High transport costs are a reality facing Tongan producers and are best addressed by

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minimizing the weight of produce shipped and by concentrating on higher valued crops where the freight rate constitutes a smaller proportion of the export price.

404. During the workshop, there was considerable discussion about poor co-ordination between growers, exports and shippers with the result that produce harvested was not collected on time, with adverse implications for product quality and grower returns. It is difficult to see what role government has or can play in this matter since the co-ordination of activities along the supply chain is best left to the private sector. Over time, with better communications available to Tongans and with competition in shipping and among exporters for supplies, one would expect this level of co-ordination along the supply chain to improve.

405. The major constraint voiced by fishing companies and fish exporters has been the lack of cargo capacity on aircraft. There is not a dedicated air cargo service, though there have been intermittent attempts to operate such. The reality is that the value and volume of the fish cargo currently does not support a dedicated air cargo service. The current critical passenger aircraft (Boeing 737 and currently a Boeing 757 operated by Royal Tonga Airlines) do not have much volume available for cargo once passenger baggage and mail are carried. Air New Zealand operates Boeing 767 equipment but this is only twice a week between New Zealand and Tonga and one of these is shared with Samoa. Fish for Japan or Honolulu cannot be carried economically via Auckland, especially the lower valued fish. The option for fishing companies is to make better use of the space that is available by shipping only the top valued fish or by adding value to fish if it is to be shipped fresh. Despite complaints by fish export companies there is still a significant volume of live reef fish for aquariums and even “live rock” being exported to the United States.

406. Discussions with the Ministry of Fisheries indicated that the fishing wharf in Nuku'alofa requires upgrading. The port has insufficient capacity to meet the needs of the fishing fleet, particularly if there is an increase in the number of licensed vessels fishing for tuna. There is significant potential for development of the fishing industry in Tonga, especially the tuna fishery.

407. The tuna catch has risen sharply in recent years, from an estimated 214 tonnes in 1997 to almost 2,000 tonnes in 2001, but fell sharply in 2002. While catch rates were down recently due to the El Nino effect, there are indications of a significant rebound in catch rates over the past year. The catch is expected to recover in 2003 and to climb sharply. The total allowable catch has been set at 4,000 tonnes per year. Should that catch be taken, tuna exports would be worth around \$T30 million a year to the Tongan economy, making tuna Tonga's largest export commodity.

408. At the moment, the Government has issued licenses for 35 vessels and plans to increase this to 50. Currently only around 20 vessels are active. Should 50 licensed vessels be operating, the fishing wharf would not have sufficient berthing and handling space for all these vessels.

409. There may well be a case for the Government investing in upgrading the facilities at the wharf and in increasing the number of berths. There is also a need to allow space for private sector activities at the wharf such as storage, handling and processing. While the costs of such an investment would need to be assessed, the benefit from removing a major bottleneck to the development of the industry would be significant. The ADB (2002) indicated that the need for port infrastructure would become acute in two to three years.

410. The wharf is dedicated to the fishing industry that would enjoy all the benefits of the investment. It would therefore be appropriate that the costs of the investment be recovered by charges on vessels using the port. The wharf could be upgraded by the Government using grant or loan funds provided by the ADB or by another international development agency. To ensure that the investment is appropriate to the needs of the fishery and to reach agreement concerning cost recovery, it would be desirable to establish an association of fishing companies. While the wharf could remain in Government ownership, consideration could be given to having a private company manage the port. Provide appropriate contractual and regulatory arrangements were put in place, this could encourage improvements in the efficiency of the services provided and strong incentives to maintain the facilities.

I. Power, water and communications

411. Tonga is dependent of imported oil products to supply its electricity generator and its road transport needs. The cost of imported fuel is expensive because of the relatively small oil cargos imported into Tonga. The Government also imposes import duties, the ports and services tax and excise on imported fuels, further adding to the costs of fuel for road transport.

412. While the electricity utility is exempt from import duties, the cost of generating and electricity is high in Tonga. This is mainly a reflection of the high diesel fuel costs. Tonga has among the highest electricity tariffs in the Pacific Tonga (see ADB 2002). In 2002, the Tonga Electric Power Board signed an agreement with Shoreline Power Limited to generate and distribute power throughout Tonga. While the consultants are not aware of the nature of the power supply agreement, there normally are concerns with tariffs charged by natural monopoly utilities. At present the Government approves the tariffs set by Shoreline, but it is not clear on what basis charges are determined and what rate of return is allowed. The ADB is about to commence a technical

assistance project to assist the Government in privatizing a number of its business activities. As part of the technical assistance, competition policy legislation will be implemented to regulate against the use of monopoly power and unfair trade practices. It is important that the power utility be subject to this legislation. While the costs of generating power will always be relatively high in Tonga, an effective regulatory regime can replicate the effects of competition and can therefore provide incentives to reduce costs and to improve the quality of services.

413. The Tonga Water Board, a government owned utility, is responsible for the supply of water in Tonga to businesses and utilities. This is supplemented by rainwater storage tanks. A 1997 World Bank review of public expenditure examined the performance of the Water Board. At the time the World Bank concluded that the water reticulation system in Nuku'alofa was in need of rehabilitation and upgrading, with high water losses and low system pressure causing service disruptions. In 2002, Tonga received Japanese assistance to improve the performance of the system. Water costs are also relatively high in Tonga and there is a need to implement measures to minimize costs. The TWC should also be subject to regulation to ensure that its charges are based on efficient costs and that rates of return are reasonable. Tonga's water charges would not appear to be particularly high, although the Tonga Water Board's financial performance has not been strong.

414. Telecommunications in Tonga have improved considerably in the past few years with the entry of a private company competing in the supply of mobile phones against the government owned Tonga Communications Corporation. This has seen a significant reduction in call charges and sharp rise in mobile phone ownership. Internet services are widely available, particularly in the larger urban centers.

415. Tonga's high utility charges will adversely impact on the competitiveness of food processing activities that are intensive in the use of electricity and water. Even if power and water were to be supplied at minimum possible costs, utility charges would still be relatively high. This does not constitute a barrier to food processing in Tonga, but would influence the type of plant and process most suitable to Tonga's cost structure. The Government has an important role to play in ensuring that natural monopolies minimize their supply costs and do not charge monopolistic margins.

J. Input supplies

416. During the workshop and follow up consultations there was considerable discussion of the high costs of imported inputs for farming and fishing. There were two elements of this: the high level of tariffs and the ports and services tax on imported inputs and the high prices associated with purchasing inputs in relatively small amounts.

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417. Imported inputs to agriculture are mostly exempt from import duties and the ports and services tax. The main exceptions are motor vehicles, including trucks and commercial vehicles, and barbed wire. Imported fuel is subject to import duties. The tariff rate is 33 percent for gasoline and 15 percent for diesel while the ports and services tax is 20 percent. There is an anomaly because farmers can purchase barbed wire from MAFF free of import duty and the ports and services tax. The rate of import duty varies significantly with the type of vehicle but is generally around 40 percent. These taxes on inputs substantially raise the costs of transporting farm produce in Tonga. However, transport costs are not particularly high when compared to other farm costs.

418. The situation concerning food processing is unclear. If a producer was granted a development license under the Industrial Development Incentives Act exemptions were available from import duties on imported capital equipment and inputs. Usually a 50 percent reduction in the ports and services tax was also granted. However, if a food processor were not granted an exemption, these inputs would be subject to import duty while others are duty free. In most cases duty of around 15 percent and the ports and services tax would be payable on imported raw materials, with the exception of flour.

419. Over the past few years, the fishing industry has been exempt from import duty on imported inputs. This exemption covered bait, fishing gear and fishing vessels. These companies benefit further from a fuel concession, which amounted to \$T1.4 million in 2002-03 was granted to fishing companies. While this is appropriate, a better tax policy to which

420. Tonga is moving will see a significant reduction in taxes on business inputs in the next few years with the movement to a broad-based goods and services tax. Generally speaking, an efficient tax system taxes income and consumption and does not tax business inputs. Taxes on agricultural and fishing inputs are relatively low at present so the tax reform is not likely to contribute to a significant reduction in production costs. In the case of processing, the impact on business costs is likely to be more significant.

421. The second aspect of high imported input costs can be addressed by farmers themselves by purchasing their inputs through local farm supply outlets who are more able to obtain the benefit of lower prices on bulk purchases or through collective arrangements. There are two farm supply outlets in Tongatapu and there are no barriers to entry to this trade. As the demand for inputs increases with growth of the industry, the emergence of competing outlets is likely. Larger imports volumes and competition should see farm input prices fall significantly in the years ahead. There is only limited co-operative activity in Tonga, although it was indicated that some squash growers jointly purchase fertilizers and chemicals.

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422. Graduates of both institutions are well equipped to enter farming, the civil service or a commercial agricultural organization. Increasingly graduates are self-employed as farmers and the ranks of serious commercial farmers can be expected to grow from such an outcome.

423. As agricultural science is an important part of the secondary school curriculum and as agriculture is such a large sector in the economy, it should be possible for the MAFF to develop model demonstration farms as part of the extension process. These would seek to test the gross margin analysis models as well as conduct research into improved husbandry.

424. Many secondary schools could also develop model demonstration farms based on a MAFF model and these could provide good income for the schools as well. Many of the schools with large tracts of land available are not using these well and the example set is not a good one. Some of nobles who have leased out blocks are considering not renewing the leases as they are not fulfilling their purpose. Good potential excises then for developing high-class educational demonstration farms.

K. Summary and conclusions

425. The reasons for the poor performance of Tonga's agricultural sector are in some ways hard to understand. Tonga would appear to have advantages in primary production, given favorable climatic and physical conditions and, relative to population, a relative abundance of suitable resources. In many countries, primary sector development has been constrained by poorly defined property rights, lack of access to suitable land, capital constraints, poor marketing by government agencies, corruption, high taxes, price controls, excessive regulation, poorly developed infrastructure and a host of other factors.

426. The factors that constrain growth in the Tongan sector are less clear. Tongan farmers are not constrained by excessive and restrictive regulation. In fact the sector is almost regulation free for Tongans. The fiscal regime is very favorable as personal income derived from agriculture is not taxed and farm inputs are mostly exempt from import and other taxes. Aside from squash export licensing, entry into agriculture is open. Access to land is generally not a problem as yet since many Tongan households have tax allotments and those that do not can lease land from relatives and others. For larger scale commercial activities, suitable size blocks of land are available, particularly those owned by churches, the government and nobles. Credit is generally available at reasonable rates, given the risks involved, from the Tongan Development Bank, from the commercial banks to a much lesser extent and from relatives, including overseas Tongans. Establishing a farming business is therefore not all that difficult in Tonga.

427. Perhaps the major impediment to the development of the sector, often over looked in recent studies of the sector and the Tongan economy, is the structure of taxation, emphasizing trade taxes. For revenue the Tongan Government is heavily dependent on import duties and the ports and services tax. These taxes on the traded goods sector have the effect of reducing the price of traded goods relative to non-traded goods (through exchange rate adjustments) making investment of capital and other resources in the primary sector less attractive compared to activities in the non-traded goods sector. Taxing trade makes it shrink and trade is a key driver of economic growth for a small economy. The tax system has therefore undermined economic growth.

428. Another driver of economic growth has also been thwarted. Direct foreign investment in Tongan agriculture is almost non-existent. While business regulation is not a significant deterrent for local investors, high taxes, an uncertain regulatory regime and weak property rights facing foreigners are a major deterrent to investment. To begin with foreign investors and staff are only allowed a two-year working visa. This visa can be, and normally is, renewed.¹⁹ However, there is still an unnecessary level of uncertainty associated with residency. The rate of taxation on foreign companies is also very high, at around 48 percent. In comparison, local companies pay between 10 and 20 percent tax. Finally, a range of farming activities is reserved for Tongan residents.

429. Tonga is seeking to become a member of the World Trade Organization. As part of the conditions for membership, significant fiscal and regulatory reforms are proposed for the next few years. These include the substitution of a broad-based consumption tax and greater income tax collections for trade taxes. This reform will enhance the ability of the sector to compete on international markets and in local markets against imported products. The climate for foreign investment would also improve considerably with changes to the immigration legislation enabling the issue of life of project working visas and the move to a 20 percent company tax rate applied to both local and foreign businesses. The list of reserved activities should also be removed.

430. The competitiveness of the sector (and the attractiveness of the sector to both local and foreign investors) should therefore improve significantly over the next few years if these reforms are implemented. While estimates are not available, studies for other countries would suggest that as a result of Tonga's trade taxes, its real exchange rate might be around 30 percent overvalued. Trade tax reform therefore promises to improve the competitiveness of agriculture by up to 30 percent. On top of recent gains in competitiveness due to a decline in the value of the Tongan dollar, the returns to investment in the sector will improve significantly and, provided other conditions are met, this should see significant growth in sector value added and employment creation. Increase foreign

¹⁹ Care must be taken not to offend though.

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investment will open up markets, and new sources of finance and technology. The problem is there is no guarantee that the proposed reforms will be implemented completely or in a timely manner.

VI. OUTPUTS REQUIRED

431. The outcomes sought by this review were described in Chapter II. To recall, the primary outcome sought was sustainable development of the Tongan agricultural sector.

432. To achieve an outcome, certain key things or drivers are needed. These are referred to outputs. Outputs are necessary to the achievement of the outcome sought.

433. The interventions recommended in this report are designed to contribute to the achievement of these outcomes. Most of the interventions are about creating an environment in which the market works efficiently. Presently, there is a range of policy, regulatory and other constraints that prevent these outputs being achieved. The interventions are designed to solve these problems or constraints to development. Once markets are allowed to work, the prospects for economic growth will improve significantly. Moreover, the chances that investment in infrastructure and private sector projects will actually generate net benefits to the community will be enhanced. Without this conducive investment environment, the Review Team would not recommend donor sponsored or assisted investments in Tongan agriculture.²⁰

434. The outputs required to achieve the outcomes are summarized in Table 25, along with the identified constraints to the achievement of these outputs. The summary information contained in the table is elaborated upon in the remainder of this chapter. For each output, the discussion is structured as follows:

- The impact of the output on the outcome sought;
- Current performance or level of achievement in relation to each output;
- The constraints to achieving the output (which summarizes the material of the previous chapter); and
- Suggested interventions designed to achieve the output.

435. The interventions are elaborated upon in the next chapter.

²⁰ The private sector is of course free to take the risk.

Table 23: Outputs sought, constraints to be addressed and suggested interventions

Key outputs	Constraints/Problems/Threats	Solution
<p>Agricultural policy</p> <p>An orchestrated approach to primary sector development with government activities confined to the provision of public goods and public interest regulation. Private sector (local and foreign) free to pursue economic activities free of unnecessary restraints. Economic incentives should be free of policy distortions and taxes should only imposed on business profits, not business inputs.</p>	<ul style="list-style-type: none"> ◆ Many ministries responsible for policies that affect primary sector competitiveness ◆ Overlapping responsibilities for providing regulatory services to the sector (eg MAFF, Development Bank, MOFA, Tonga Trade, Commerce, Labor and Industry) ◆ Lack of consultation means little private sector input into government decisions ◆ Poor co-ordination/ inconsistency of donor-sponsored assistance and investment projects in the sector. 	<ul style="list-style-type: none"> ◆ A coordinated approach to the development of the sector and the provision of government services that allows for the engagement of all stakeholders.
<p>Macroeconomic stability</p> <ul style="list-style-type: none"> ◆ Stable economic and financial conditions to reduce market risk associated with business investment 	<ul style="list-style-type: none"> ◆ Small economy ◆ High dependence on repatriation payments ◆ Low export volumes and large trade deficit ◆ Limited range of exports ◆ Low degree of export processing ◆ Volatile prices ◆ Narrow tax base/fiscal weakness 	<ul style="list-style-type: none"> ◆ Improved governance ◆ Better economic policies ◆ Less distorting tax regime ◆ Increased competitiveness ◆ Economic diversification
<p>Political and social stability</p>	<ul style="list-style-type: none"> ◆ Changing social and cultural values 	<ul style="list-style-type: none"> ◆ Economic growth

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Key outputs	Constraints/Problems/Threats	Solution
	<ul style="list-style-type: none"> ◆ More educated youth ◆ Limited job opportunities ◆ Threats to emigration opportunities 	<ul style="list-style-type: none"> ◆ Employment opportunities ◆ Poverty alleviation ◆ Greater community influence on government decision making ◆ More responsive government
Law and Order	<ul style="list-style-type: none"> ◆ Increasing crime rates ◆ Youth unemployment/alienation 	<ul style="list-style-type: none"> ◆ Greater employment and income earning opportunities
Access to land	<ul style="list-style-type: none"> ◆ Uncertain ownership ◆ Informal agreements ◆ Insecure leases ◆ Identification of owner ◆ Access to larger tracts difficult ◆ Status of foreign investor uncertain ◆ Limited availability (?) 	<ul style="list-style-type: none"> ◆ More secure leasing arrangements ◆ Increasing the tradability of land
Efficient regulatory regime	<ul style="list-style-type: none"> ◆ No licensing or regulation of farming ◆ Licensing uncertain and wasteful ◆ No environmental assessment ◆ No labor laws ◆ OH&S regulations ? ◆ No consumer protection laws 	<ul style="list-style-type: none"> ◆ The laws and regulations relating to business need to be made more certain, more complete and administratively streamlined. Regulations should apply across the board to all business. To encourage foreign investment, foreign investors should be subject to the same regulations as Tongan investors.

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Key outputs	Constraints/Problems/Threats	Solution
	<ul style="list-style-type: none"> ◆ Food safety/ hygiene? ◆ Development licenses ◆ Consistency of approvals process ◆ Export and import license requirements onerous and could be restrictive/discriminatory ◆ Squash export licenses – barrier to entry ◆ Visa status of foreign investor short term and insecure ◆ Activities restricted to Tongans ◆ Local joint venture partners? 	
Attractive and equitable taxation regime	<ul style="list-style-type: none"> ◆ Trade taxes discriminate against the traded goods sector ◆ Individual income from primary activities not taxed and exempt from import duty/PST ◆ Taxes on business inputs rather than income or taxation 	<ul style="list-style-type: none"> ◆ More efficient and equitable taxation reform. The removal of barriers to trade and investment
Availability of finance	<ul style="list-style-type: none"> ◆ High lending rates ◆ Land cannot be sold. ◆ Lack of equity funding makes primary activity high risk ◆ Supply of credit inadequate – lending criteria too strict? 	<p>Banking sector would appear to be competitive and viable. Lack of demand for credit and short-term focus may reflect the lack of investment opportunities in the sector. This would improve if the profitability of the sector is improved. Debt is a high-risk form of finance. The greater use of equity funding would reduce risks borne by farmers.</p>

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Key outputs	Constraints/Problems/Threats	Solution
	<ul style="list-style-type: none"> ◆ Inadequate demand for credit ◆ Short term investment focus ◆ Lack of re-investment of profits ◆ Inadequate savings (negative real interest rates) 	
Transport and port services	<ul style="list-style-type: none"> ◆ Frequency of shipping ◆ Adequacy of freight capacity ◆ High freight rates ◆ Port infrastructure ◆ Port charges? ◆ Inadequate capacity at Vuna Wharf ◆ Packaging for export ◆ Outer Islands? 	<p>Competition in the provision of ocean and airfreight should encourage better service and reduced charges.</p> <p>Ports and wharves are natural monopoly facilities and need to be regulated. Corporatization or privatization of management can create better incentives</p>
Efficient utilities	<ul style="list-style-type: none"> ◆ High electricity prices ◆ Adequacy of water supplies? ◆ Outer Islands? 	<p>Power prices will always be high in Tonga given small market and fuel choice. Regulation could be designed to encourage supplier to price competitively and to see ways to reduce costs, including adopting innovative cost-effective generating plant.</p>
Input supplies	<ul style="list-style-type: none"> ◆ Poor quality planting materials? ◆ High price of imported farm chemicals, equipment 	<p>The development of a competitive farm supplies industry.</p> <p>As the agricultural sector expands, the market for farm supplies will grow encouraging new entry, increased</p>

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Key outputs	Constraints/Problems/Threats	Solution
	<ul style="list-style-type: none"> ◆ Taxes on vehicles ◆ Difficulties obtaining parts? ◆ MAFF involvement in commercial activities undermining incentives for private supply 	competition and increased scale of importing. Local manufacture may also emerge in some areas.
Government services: MAFF	<ul style="list-style-type: none"> ◆ Limited funding and lack of staff incentives ◆ Research and extension services not tailored to needs of farmers ◆ Perceived lack of effectiveness of research and extension services ◆ Lack of access to market information ◆ Poor export presentation and quality? ◆ Government involvement in marketing? ◆ Squash export licensing 	MAFF is undergoing a re-organization program that could enhance its service delivery performance. MAFF is also focusing on core activities and withdrawing from non-core activities. MAFF could review its research and extension program to become more responsive to farmer needs and explore alternative models for delivering extension services more effectively. Cost recovery options could also be explored.
Government services: education	<ul style="list-style-type: none"> ◆ Lack of status career deters new entry ◆ Business aspects of agriculture not taught: curriculum too technical ◆ Few training opportunities offered to farmers 	The agricultural science curriculum could be re-designed so as to better meet the needs of the sector.
Limited processing	<ul style="list-style-type: none"> ◆ Not a constraint in its own right but emerging from the range of other constraints to the development of the sector 	An internationally competitive food-processing sector would see an increase in the degree of processing of farm produce. However, this would only contribute to the Tongan economy if financially viable. History shows that to be successful this would need to be a private sector initiative.

A. Output 1: A sound agricultural policy

1. Impact on the outcome

436. A market oriented agricultural policy will involve removing many of the constraints to primary sector development by reducing crowding out effects, providing enhanced public services and reducing price distortions. A sound policy will also help to ensure that further policy induced constraints will not be introduced, that the development of the sector will be sustainable and that it will be equitable, with the benefits not confined to privileged vested interests. This will facilitate the flow of resources (capital, natural resources and labor) to the most efficient sectors of the economy, therefore maximizing growth potential.

2. Performance

437. Tonga has no coherent agricultural policy document to guide government in its policy, regulatory and service activities. This is a serious shortcoming as it provides a vacuum beckoning to be filled by well intentioned, though poorly designed policy initiatives. It also increases the danger of the pursuit of inconsistent, ad hoc policies rather than a set of consistent policies designed to achieve the same objectives. The absence of policy also facilitates rent seeking behaviour resulting in the introduction and maintenance of interventions that serve the interests of individuals or groups, rather than the interests of the community as a whole. The absence of a sound policy has meant uncertainty for investors. It has also allowed government to provide a range of goods and services to the sector²¹ that would be more appropriately provided by the private sector. The result is crowding out of private sector development, particularly if the government has advantages not available to private competitors.

3. Constraint

438. The pace of economic reform has been slower in Tonga than in many other parts of the world. The result is that Tonga still employs many policies long ago abandoned by the more

²¹ MAFF is engaged in such as the subsidized rental of farm machinery and equipment and the supply of planting materials and other supplies. In most cases it is competing with the private sector and often on a subsidized basis. Fisheries also engage in private sector activities.

advanced developing economies. In particular, Tonga is a rather closed economy, especially in relation to direct foreign investment. This slow progress stems from a range of economic, social and political factors. Tonga is a conservative society and there is concern that rapid economic progress might undermine the perpetuation of tradition. Conservatism is generally not associated with rapid economic development. One normally associates willingness to drive and accept change, entrepreneurship and risk taking are characteristics associated with economic development. It is interesting that members of overseas Tongan communities often manifest these characteristics. The pressures for reform in Tonga have been muted by the influence of segments of Tongan society who regard change as a threat to their relatively privileged positions. The strong support for Tongan households by overseas Tongans has also reduced the urgency of achieving fundamental economic reform.

4. Intervention

439. The development of the primary sector in Tonga requires the development of an agricultural policy; a policy that largely is focused on ensuring no direct government participation or interference with business activities. Experience has shown that such a policy should encompass the following broad principles;

- Government should not been involved in the production of goods and services that can more efficiently be provided by the private sector because this produces waste and crowds out the development of the private sector (the Government has made a commitment to this);
- Government should only be involved in core activities to provide public goods (such as infrastructure that would not be adequately provided by the private sector), to enforce property rights and to regulate against externalities or market imperfections (such as land use practices that impose costs on the environment and the community);
- Regulations should only be introduced where it can be demonstrated that it is in the community interest and that the regulations chosen minimize the impact on competition;
- Government policies should be neutral, not favoring one producer or sector over another; and
- Wherever possible, the Government should adopt cost recovery principles as a means to improve the efficiency of its service provision.

440. An agricultural policy needs to be accepted by Tongans as serving the greater interest of the community. It needs to be based on an informed consensus and is an initial foundation stone for an

economic development program. This policy must effectively bind what governments can do in relation to the sector. Such a policy could be a key output from Phase 1 of the Development Program set out in the next chapter. It may also be something that Tongans can implement prior to the commencement of the Development Program, providing an indication of their commitment to the process.

B. Output 2: A stable macroeconomic environment

1. Impact on the outcome

441. A stable macroeconomic environment means more stable product and financial markets, reducing the level of uncertainty and transactions costs facing farmers in Tonga. In effect a stable environment will both raise returns from sector investments and reduce the risk adjusted required rate of return by investors.²² A more stable environment will contribute to increased efficiency (cost reduction), increased international competitiveness and therefore increased investment in the sector.

2. Performance

442. Over much of the past twenty years Tonga has enjoyed a relatively high degree of macroeconomic stability as a result of conservative monetary and fiscal policies. In the past couple of years some concerns have arisen with respect to the rate of credit expansion, increases in government spending and consequent higher inflation and interest rates. At the time of the Review, these pressures had tended to ease somewhat. In recent years there has been a significant depreciation in the exchange rate in response to economic pressures, a factor that has contributed to the competitiveness of export industries and import competing industries. While it is too early to judge its impact, the favorable effect of this real depreciation on grower returns appears to have resulted in a sharp rise in export volumes and earning over the past year.

3. Constraint

443. Potential macroeconomic instability in the Tongan economy stems from a range of sources. A primary source of volatility is the external account. A downturn in world economic activity would have important implications for Tongan export demand and for repatriation payments from overseas Tongans. These payments, as measured by overseas exchange transactions, are currently

²² That is, reduce the cost of capital.

equivalent in amount to about one half of GDP. A sharp reduction in payments, occasioned by a reduction in the discretionary income of overseas Tongans would have a strong impact on Tonga's external account. Not only would this reduce the income of Tongan households significantly, it would result in a sharp increase in Tonga's balance of payments deficit, a sharp devaluation of the currency and the introduction of significant inflationary pressures. Another cause of volatility is the nature of Tongan exports. These are dominated by unprocessed agricultural products that are sold in markets subject to wide swings in demand and prices. Finally, Tonga's taxation system must also contribute to some volatility as it forces greater reliance on debt funding of expansionary spending policies.

4. Intervention

444. A number of the proposed interventions will contribute to greater macroeconomic stability. Taxation reform would also place Tongan public finance on a more stable footing. The interventions are designed to assist the development of a more stable export oriented agricultural sector that is more diversified in its markets and products and increasingly relies on the export of processed products that have more stable demand and prices. Interventions are proposed, for example, in relation to the removal of impediments to direct foreign investment and the development of equity finance instruments, that would convert part of the reparation payments into direct foreign investment, increasing the stability of the capital inflows and contributing to capital accumulation in the sector.

C. Output 3: A sustainable resource base

1. Impact on the outcome

445. The adoption of sustainable farming practices and the introduction and enforcement of supporting sustainable farming regulations will ensure that short-term economic growth will not impoverish future generations or result in environmental degradation.

2. Performance

446. There are indications of pressures emerging on the quality of natural resources and the environment in Tonga. Currently there is little or no management of natural resource exploitation, although management plans have been developed for the fisheries sector. The right of the landowner to do what they decide on their own land is strongly engrained in Tonga. This can lead to

a number of problems that could undermine the sustainability of natural resource use. The current problems include damage to crops caused by wandering livestock, soil erosion due to the removal of vegetation and poor road design, and air and ground water contamination from the inappropriate use of chemicals.

3. Constraint

447. Tonga only recently introduced environmental legislation and established an environmental regulatory agency. Constraints to reform in this area include those discussed above. Further, the Government has traditionally been unwilling, or even restricted on constitutional grounds, to interfere with the owner's enjoyment of the land. This has meant that a Tongan farmer can do what he likes, regardless of the impact on the environment and neighboring properties. Further, relatively low returns from and high risks to agriculture have fostered a short-term focus by farmers that does not encourage resource husbandry and investment for the future.

4. Intervention

448. Sustainability of Tongan agriculture would benefit from the introduction and enforcement of legislation embodying provisions for protecting the rights of growers from adverse impacts of others. While some legislation currently exists, for example relating to the use of agricultural chemicals, there is no evidence of its being enforced and it is certainly in need of updating. Consideration could also be given to the development of a basic forest management plan. The regulations should not be overly restrictive of private enterprise and should allow growers to meet objectives or performance criteria in a way that is least costly. The imposition of penalties on growers whose actions adversely impact others could also be embodied in the regulations. In contrast to agriculture and forestry, there has been progress in fisheries with the development of legislation and management plans, in the process of being implemented, for the major fisheries. The pace of implementation of these management plans has been slower than anticipated.

D. Output 4: Political and social stability

1. Impact on the outcome

449. Economic development is largely driven by the reinvestment of surplus funds or savings. Savings require a high degree of certainty. If there is uncertainty about the rights to fully claim the results of investment of effort and capital, current consumption will prevail at the expense of

investment for the future. Sustainable development of the sector requires continuing security of person and property. This is supported by political and social stability.

2. Performance

450. Tonga has a history of political and social stability. There is little opposition to the monarchy, with the pro-democracy movement seeking greater representation of commoners within a monarchical framework. Law and order is not yet a serious issue in Tonga and there is a high degree of personal security.²³²⁴ However, property crime appears to be increasing in Tongapatu, associated in part with a high youth unemployment rate. Crime and dissatisfaction among the youth of Tonga can be expected to rise, as it has elsewhere, with growing youth unemployment. The youth unemployment problem will become much more pressing in the likely event that countries such as New Zealand, Australia and the USA tighten their immigration laws. Emigration has provided an important safety valve for Tonga by providing its youth with income earning opportunities.

3. Constraint

451. In the medium term, Tonga is expected, relative to many of its neighboring Pacific Island nations, to maintain a relatively high degree of personal and property security. This is particularly the case if the economy starts to grow and generate employment. This is a favorable aspect of Tonga's investment environment that could be exploited in attracting foreign investors seeking to expand their operations to the Pacific or looking to transfer operations from failing states. Law and order has a strong affect on business costs, particularly the costs of security, insurance and the remuneration of expatriate staff. Many location decisions are disproportionately affected by the perception of the personal security of management and staff. The quality of life in Tonga is relatively good and this is an important factor in attracting investment. This quality of life needs to be preserved or even enhanced.

4. Intervention

452. Continued social and political stability and law and order, critical requirements for attracting business investment, would be well served by the employment creation of a rapidly growing private

²³ Aside from the dangers from roaming packs of dogs, who seem to have a particular preference (instinctive rather than trained, I am sure) for foreign consultants.

²⁴ The Team is unable to comment on the issues of personal safety within the household.

sector to which the package of interventions is addressed. The agricultural sector itself is unlikely to create a substantial increase in employment opportunities, given the relatively low labor intensity of internationally competitive technologies. However, the sector will indirectly contribute to employment growth through the wealth it creates that can be invested elsewhere in the economy. An increasingly developed agricultural sector will expand its upstream and downstream linkages with other parts of the economy, providing business opportunities outside of the sector. The taxation revenues from a growing sector will also allow the government to increase its investment in social and economic infrastructure and the provision of community services.

E. Output 5: Secure access to land

1. Impact on the outcome

453. Secure property rights are essential for long-term investment and therefore the growth of the sector. Improved access to land will increase the stock of resources available to the sector to generate increased value added.

2. Performance

454. The system of land holding in Tonga has provided large proportion of Tongan households with access to land for subsistence and semi-commercial agriculture. Discussions with larger scale commercial growers, including squash growers, indicated that it has been relatively easy to gain access to larger tracts of land. While difficulties were sometimes experienced in this process²⁵, there was no constraint on the availability of land, at present, and the costs of leasing land were relatively low.²⁶ The land ownership system could become an increasingly important constraint if there were to be a substantial increase in the size of the agricultural sector, particularly in the case of commercial agriculture on larger land holdings.

²⁵ For example with persons claiming land they did not own, with identifying the true owner and with disputes over ownership.

²⁶ There are a number of relatively large parcels of arable land in Tongatapu and other islands that are currently not being utilised. These parcels are owned by nobles and churches, and in principle can be leased for relatively long periods, provided the owner is willing to enter into a lease arrangement.

3. Constraint

455. There are a number of constraints to land access and the security of title to the use of land that need to be addressed.

- There are sometimes problems identifying the owner of the land. This can result in excessive search costs and the risks of signing leases with persons who claim, but do not hold, title to the land.
- The potential for inconsistency between the contract terms and landowners rights under the constitution.²⁷
- Problems may arise in the case of the death of the landowner and the passing of title of leased land to the heir, particularly if the rental has been paid on advance to the previous owner.
- While the term of the lease may be 20 years, rentals are normally re-negotiated every five years. This can provide opportunities for landowners to extract excessive land rentals from lessees.
- Dealing in land in Tonga is often a very personal issue among relatives. While this allows small-scale producers to obtain access to land at low rentals, it can sometimes result in conflicts and seldom results in a level of security of tenure required by a larger scale more capital-intensive enterprise and its financial backers, including banks and equity participants.
- Land owned by overseas Tongans is in many cases not leased and in very few cases leased for a fee. This reflects the low value of agricultural land in Tonga.
- Land cannot be sold in Tonga, complicating the financing of agricultural activities. While the Tonga Development Bank will lend against land owned by the borrower, land in Tonga has a low co-lateral value for commercial banks. In the event of default, the bank only has the right to use the land for the remaining period of the loan. It cannot sell the land. After the loan period, the land reverts to the original owner. The bank can obtain revenues from leasing the land, but it is difficult to lease land and the rental payments are low. Moreover, complications may arise if the owner dies and the heir disputes the loan default conditions.

²⁷ There was an example of an out grower who had been provided with planting and other inputs who subsequently exercised his rights to the fruits of the land by selling the crop to a third party. The terms of contract were secondary to the constitutional right.

4. Intervention

456. In the medium to longer term, if the agricultural sector is to expand, there is a need to make land more freely accessible by increasing its tradability. Market forces themselves will contribute to this. Higher returns to agriculture will be reflected in higher returns to land, the bidding up of land rentals and therefore greater interest in trading the right to use land. To support the development of an efficient market in agricultural land, there are a number of measures that the Government could adopt. These include computerization of land records, relatively simple amendments to regulations governing leases of land and perhaps, allowing the voluntary sale of land by overseas Tongans.²⁸ Another option is the creation of a centralized land bank or trust that would lease land out on behalf of the owners. This would increase the transferability of land and reduce transaction costs.

F. Output 6: An efficient fiscal and regulatory regime

1. Impact on the outcome

457. The replacement of Tonga's trade taxes with a value added tax that applies equally to all goods and services, imported or locally produced, and a more neutral income taxation regime would provide a strong stimulus to the sector. The following effects are predicted:

- The profitability of primary production would increase;
- The profitability of processing locally grown produce would expand by even more than primary production;
- As a result, agricultural exports would increase and there would be a higher degree of processing of those products; and
- The agricultural sector would gain greater access to a broader range of markets, offering greater growth potential and greater stability of prices.

2. Performance

458. The structure of agricultural production that has emerged in Tonga (that is low processing and exports limited to a narrow range of crops) has been very much driven by the regulatory and taxation regimes. High import taxes have resulted in an overvalued exchange rate that has reduced

²⁸ It must be recognised that this is a very sensitive issue in Tonga

the international competitiveness of Tongan exports, particularly of processed products.²⁹ Moreover, the business regulatory regime places a higher regulatory burden on processing compared to farming, distorting incentives to engage in further processing. The taxation regime taxes company income more highly, deterring the adoption of modern, more efficient business structures.

3. Constraint

459. The main constraint to achieving the output has been the resistance to policy reform in Tonga remarked upon above. However, there is also the real problem of finding an alternative source of taxation revenue to replace import taxes. Further, the benefits of free trade and direct foreign investment do not appear to be well appreciated in Tonga. While Tonga has committed to joining the World Trade Organization (WTO), in no public document is there a clear statement of what benefits it expects from this action. There would appear to be some resistance by those not convinced of the potential benefits of membership or by those benefiting behind Tonga tariff walls and foreign investment shields.

4. Intervention

460. Tonga is reforming its taxation regime. This will see a substantial reduction in import taxes, enhancing the competitiveness of the sector. Technical assistance has already been provided to the Government to implement taxation reforms and a number of regulatory reforms that would be consistent with Tonga being accepted as a member of the WTO. However, the pace of reform is slow and there is no guarantee that progress will not suffer some serious setbacks.

461. The proposed interventions seek to enhance the prospect that reform will be achieved by developing the capacity of the private sector to understand and articulate the implications of reform and to motivate them to seek complete and rapid implementation of these reforms. There is a considerable need to strengthen the participatory capacity of the private sector in the policy process.

²⁹ Tonga's agricultural exports are predominantly in unprocessed form (for example squash and root crops). Tonga exports commodities that are prone to substantial swings in world prices. Moreover, a large part of Tonga's exports are in the form of squash sold into niche markets, exposing Tonga's exports to a high degree of risk. A number of factors would suggest that Tongan agriculture would more naturally undertake a higher degree of processing of agricultural crops. Processed products can be stored for longer periods and are higher in value, making them less prone to the Tongan disadvantage of infrequent and high cost shipping. Moreover, processed products, particularly food, have more stable prices and perhaps have less volatile demand.

In most countries, economic reform has been pushed, if not initiated, by the private sector rather than by government.³⁰

G. Output 7: Competitive financial markets to finance sector development

1. Impact on the outcome

462. The achievement of the outcome will require that the sector have access to sufficient capital at competitive rates to finance the necessary development of the sector.

2. Performance

463. The Tongan financial sector was liberalized during the 1990s. There are three private banks operating in Tonga alongside the Tonga Development Bank. Indications are that the market for finance is competitive, given the small number of players. The commercial banks generally lend little to the sector, with the exception of larger commercial farms and processing facilities. This reflects the high risks of agricultural activities and the fact that many agricultural loans are small and therefore costly to service.

464. The Tonga Development Bank is the main lender to the agricultural sector. The Bank has moved to a policy of charging commercial rates of interest, although these rates probably do not fully reflect the risk associated with agricultural lending. Unlike the commercial banks, the Bank does allow for some flexibility in repayments (rather than the regular installments required by the commercial banks) and in the collateral required.³¹

465. The supply of credit does not appear to be, at the moment and relative to other developing countries, a major constraint to the development of the sector. The Tonga Development Bank approves a high proportion of loan applications and meets the relatively limited demands for borrowings by the sector. The financial performance of the Bank has improved considerably over the past five years. Growers also receive financial backing from exporters, particularly in the case of squash growers, and from Tongans living abroad. Moreover, interest rates are quite reasonable

³⁰ Economic reform, particularly where the winners are dispersed and the losers concentrated, complicates the life of a politician or bureaucrat no end.

³¹ The Development Bank takes into account sweat equity in assessing applications. According to the Bank, sweat equity provides an indication of the capability and application of the individual.

taking into account the risk associated with lending to the agricultural sector.³² Larger commercial ventures and processors have access to lending from the commercial banks at only slightly higher rates than charged by the Development Bank.

3. Constraints

466. An important constraint on the development of financial markets in Tonga is land ownership system. Another constraint is a lack of bankable projects, given the low rates of return and high risks of investing in the sector. While the Tonga Development Bank works around this, it must add to the cost of lending and the private banking sector cannot lend to producers without a more commercially acceptable form of collateral. A further constraint is the lack of equity finance in Tonga. This means that Tongan farmers must bear all of the risk of failure, whereas if equity financing were available, this risk could be shared with others and spread across a portfolio of projects (reduced risk).

467. Part of the problem is the taxation treatment of income from agriculture. Personal income derived from agricultural activities is not subject to income tax, whereas income from agricultural partnerships and corporations is taxed. This creates a disincentive to adopt more efficient business structures and impedes the development of an equity finance market.

4. Intervention

468. There would not appear to be any regulatory constraints on banking in Tonga and, given the small market, there is a reasonable degree of competition. However, financial markets development would be assisted by a more neutral taxation system, involving the taxation of all income derived from agricultural activities at the same rate. There is some interest in Tonga in establishing an agribusiness equity fund to allow more appropriate financing of risky ventures. Such a fund would provide an investment outlet for both small and large Tongan investors, at home and overseas. It would also provide a longer-term source of investment funding for the sector.

469. The development of an equity fund is a private sector activity. While there is some interest in the concept of an equity fund in the business community, the expertise and resources required to design and establish the fund are beyond the resources of the private sector in Tonga. There may well be a case for the Bank or other agency to provide technical assistance to a private group to establish an equity fund. Such assistance should be demand driven however, rather than sponsored

³² Loans tend to be available at around 12 percent. Taking into account recent rates of inflation, real rates of interest are therefore not high

by the Government or an outside agency. It would be encouraging if a group of Tongans first made a commitment to the establishment of such a fund. This would provide the group with which the consultants could work to explore the viability of the fund and potential projects for equity investment.

H. Output 8: Efficient and reliable transport infrastructure

1. Impact on the outcome

470. The achievement of the outcome will require efficient and competitively priced land and sea connections to overseas markets. This will contribute to increased value added through reduced costs, more timely deliveries and, in the case of perishables, improved delivered product and higher prices.

2. Performance

471. For the major islands at least, road transport is not a constraint to agricultural development at present. On Tongatapu, there is an extensive system of roads that allow for the year round transport of produce to the point of export and to local markets. The other main islands also have adequate, but less developed agricultural roads. There were some complaints from growers about problems with shipping capacity. In terms of the outer islands, the complaint was generally about infrequent and unreliable services.

472. Tongapapu is the major port of export. The Queen Salote port would appear to be adequate for export purposes, although there is little land for commercial activities, such as processing and packaging goods in preparation for export. The cost of using the port would appear to be reasonable. However, this is difficult to judge as the port is run as a natural monopoly and is not subject to competition policy legislation.

473. There are a number of shipping companies servicing Tonga. While freight rates are relatively high, this is a reflection of the high costs of servicing Tonga rather than a lack of competition among shippers. High transport costs are a reality facing Tongan producers and are best addressed by minimizing the weight of produce shipped and by concentrating on higher valued crops where the freight rate constitutes a smaller proportion of the export price. Gross margin analysis indicates that freight rates are not the major cost impediment. The problems lie more with the reliability and quality of shipping services and delays due to inspection requirements.

474. There was considerable discussion in consultations with farmers about poor co-ordination between growers, exporters and shippers with the result that produce harvested was not collected on time, with adverse implications for product quality and grower returns. It is difficult to see what role government has or can play in this matter since the co-ordination of activities along the supply chain is best left to the private sector. Over time, with better communications available to Tongans and with competition in shipping and among exporters for supplies, one would expect this level of co-ordination along the supply chain to improve.

475. The major constraint voiced by fishing companies and fish exporters has been the lack of cargo capacity on aircraft. There is not a dedicated air cargo service, though there have been intermittent attempts to operate such. The reality is that the value and volume of the fish cargo currently does not support a dedicated air cargo service. Discussions with the Ministry of Fisheries indicated that the fishing wharf in Nuku'alofa requires upgrading. The port has insufficient capacity to meet the needs of the fishing fleet, particularly if there is an increase in the number of licensed vessels fishing for tuna. There is significant potential for development of the fishing industry in Tonga, especially the tuna fishery.

3. Constraints

476. Transport infrastructure in Tonga is mainly provided by the public sector. At present there would not appear to be major infrastructure constraints, apart from fishing in the medium term. However, there is a need to ensure that public infrastructure investment keeps up with growing sector demand, particularly for agricultural roads and port facilities. The Review Team does not consider that the appropriate mechanisms are currently in place to adequately plan for future infrastructure requirements.

477. In terms of the provision of private transport services, there are no artificial constraints on supply. The sector would appear to be reasonably competitive, given the small number of operators involved. Moreover, there are no significant barriers to entry into the sector, allowing for supply to grow to meet rising demand.

4. Intervention

478. The infrastructure needs of the sector need to be planned ahead of its development if bottlenecks to development are not to emerge. The capacity of the Government to undertake this task would appear to be constrained. The Review Team has recommended technical assistance (see next chapter) for the development of a number of analytical tools that could assist in forward

planning of infrastructure investment needs and for determining investment priorities. That is, ensuring that available funds are spent where they will generate the greatest economic benefits.

479. Significant investment in infrastructure will be required over the next decade to support the development of the sector. This raises the need for the Government to explore options for financing investment in roads and port facilities, including private sector financing. If the Government is to continue to provide infrastructure, particularly facilities dedicated to exporters or groups of farmers, the scope for cost recovery through user charges could also be explored.

480. There may well be a case for the Government investing in upgrading the facilities at the wharf and in increasing the number of berths. There is also a need to allow space for private sector activities at the wharf such as storage, handling and processing.³³ While the costs of such an investment would need to be assessed, the benefit from removing a major bottleneck to the development of the industry would be significant.

481. The wharf is dedicated to the fishing industry that would enjoy all the benefits of the investment. It would therefore be appropriate that the costs of the investment be recovered by charges on vessels using the port. The wharf could be upgraded by the Government using grant or loan funds provided by the ADB or by another international development agency. To ensure that the investment is appropriate to the needs of the fishery and to reach agreement concerning cost recovery, it would be desirable to establish an association of fishing companies. While the wharf could remain in Government ownership, consideration could be given to having a private company manage the port. Provided appropriate contractual and regulatory arrangements were put in place, this could encourage improvements in the efficiency of the services provided and strong incentives to maintain the facilities.

I. Output 9: Market and investment promotion

1. Impact on the outcome

482. Tonga is poorly integrated into international markets for primary products in terms of flows of trade, investment and information. This is a legacy of the closed economic policies that have been pursued in the past. Trade and foreign investment liberalization should substantially increase the degree of integration of the Tongan primary sector into world markets. There is the question of

³³ The ADB (2002) indicated that the need for port infrastructure would become acute in two to three years.

whether Tonga should adopt a ‘wait and see’ policy or should proactively seek increased foreign investment and partnerships with foreign private sector entities.

483. Considerable caution needs to be exercised. In the past Tonga has used incentives to attract investment and this did not work. Tonga has also tried market promotion through the Bank funded Tonga Trade project. This also failed. The Government should resist such promotional efforts, as they can be expensive exercises with little or no benefit. Government has little if any expertise in these matters, while the private sector does. It is better to rely on the market to integrate Tonga’s primary sector with the rest of the world. Trade and investment liberalization will allow this to happen.

484. In integrating Tongan farmers into the world supply chain, it is sensible to work from overseas markets back to Tonga. International firms – food processors and distributors – can play a major role in the development of the sector. These firms have established markets and distribution chains. While Tongans can establish their own markets and distribution chains, there are substantial benefits to taking advantage of existing marketing channels. Tongan marketing skills are poorly developed and could benefit from ‘technology’ transfer in this area.

485. International agri-business firms can articulate what they require to service existing or new demands through their supply chains. They have the capacity to provide focused technology, ‘know how’ and capital to Tongan farmers.

486. There is little foreign investment in Tongan agriculture – but quite a lot in the fishing industry. Tonga is difficult to enter and its environment for direct foreign investment is less attractive than competing locations. Trade and investment liberalization will allow foreign investors to assess and undertake business development in Tonga.

487. A typical firm would first study what can be produced in Tonga, how best to produce it and whether it is commercially viable (almost the same thing as whether the project will contribute to Tongan GDP). If viable, the firm will undertake the necessary project design and investment. Project design would not stop at the farm but would encompass all of the links in the supply chain from farm to retail outlet.

488. Regardless of the underlying cost or other advantages of Tonga, there is a need to compete for foreign investment with many other countries. This requires simple and transparent business establishment processes and minimizing the risks to farming and marketing operations. Government can contribute to the latter through relatively stable, but more importantly, predictable business rules.

489. Taxation is an important consideration. The proposed tax reforms will turn Tonga from a high tax country to one that has an attractive company income tax rate. The proposed tax reforms will involve a reduction in taxes paid by foreign investors. A corporate tax rate of 20 percent with a complete range of business cost deductions would be very competitive by international standards.

490. If the doors are opened, will foreign investors come? Tonga is not on the map for direct foreign investment and perceptions can take a long time to change. The Government needs to undertake a pro-active approach to promoting the attractiveness of Tonga as an investment location. This can be achieved through:

- General trade and investment promotion activities which are currently being undertaken, although significantly under resourced; and
- More targeted activities focused on attracting agri-business firms either as importers or investors.

2. Intervention

491. The Development Program has a number of initiatives that would promote a more attractive environment for direct foreign investment in Tonga and for promoting awareness of this outside of Tonga. During Phase 2, after the Tongan economy has become less distorted and more open to trade and investment, it is proposed that Technical Assistance be provided to undertake feasibility studies of possible infrastructure investments. In addition, the consultants could undertake feasibility studies into a number of potential private sector projects. These might include an export processing operation and an export packaging facility. It might also include a few projects solicited from the private sector (for example, cattle, horticulture, etc).

492. These studies would provide a demonstration of the attractiveness of these projects or what needs to be done to make the projects more attractive. The private sector, local or foreign, would be responsible for deciding on the commercial viability of these ventures and for funding. Government could assist in facilitating investment but should resist providing financial incentives. Otherwise there is a risk of supporting non-viable projects that will detract rather than add to GDP.

J. Output 10: Competitive input supplies

1. Impact on the outcome

493. Minimizing production costs is critical to maximizing the returns to labor and capital (the value added) from primary sector activities. Another related issue is the quality or productivity of farm inputs. The Review Team considers that competitive markets are better at delivering both quality and competitive pricing than public sector provision. While subsidized inputs may be cheap to farmers and fishermen, the cost of the subsidy plus the associated inefficiencies are still borne by the Tongan community.

2. Performance

494. MAFF, the Ministry of Fisheries and the Ministry of Forestry are currently involved in the provision of inputs in competition with the private sector. In many instances, overheads are not charged to these operations, giving public sector suppliers a competitive advantage. The Government is committed to a privatization program that includes a number of these supply operations (for example the machinery pool).

3. Constraints

495. A major constraint to reform has been the view that the private sector would not adequately supply the needs of the primary sector or that prices charged would be beyond the means of farmers. This indicates a lack of understanding of how the market economy operates. There would also be vested interests in maintaining the current position as the Ministries concerned derive significant cash flows from these activities.

4. Intervention

496. While the withdrawal of government from private provision is being considered, there is no guarantee that this will proceed at a pace commensurate with the needs of primary sector development. The Development Program addresses this issue through building the capacity of the private sector to lobby for the implementation of the reforms. An important role for government is to ensure that the sector is supplied at competitive prices. Tonga is a small market and this opens the possibility of monopoly pricing by a few firms. Government must stand ready to implement regulations to foster competition, to regulate against anti-competitive practices and to ensure that there are no barriers to entry to these markets.

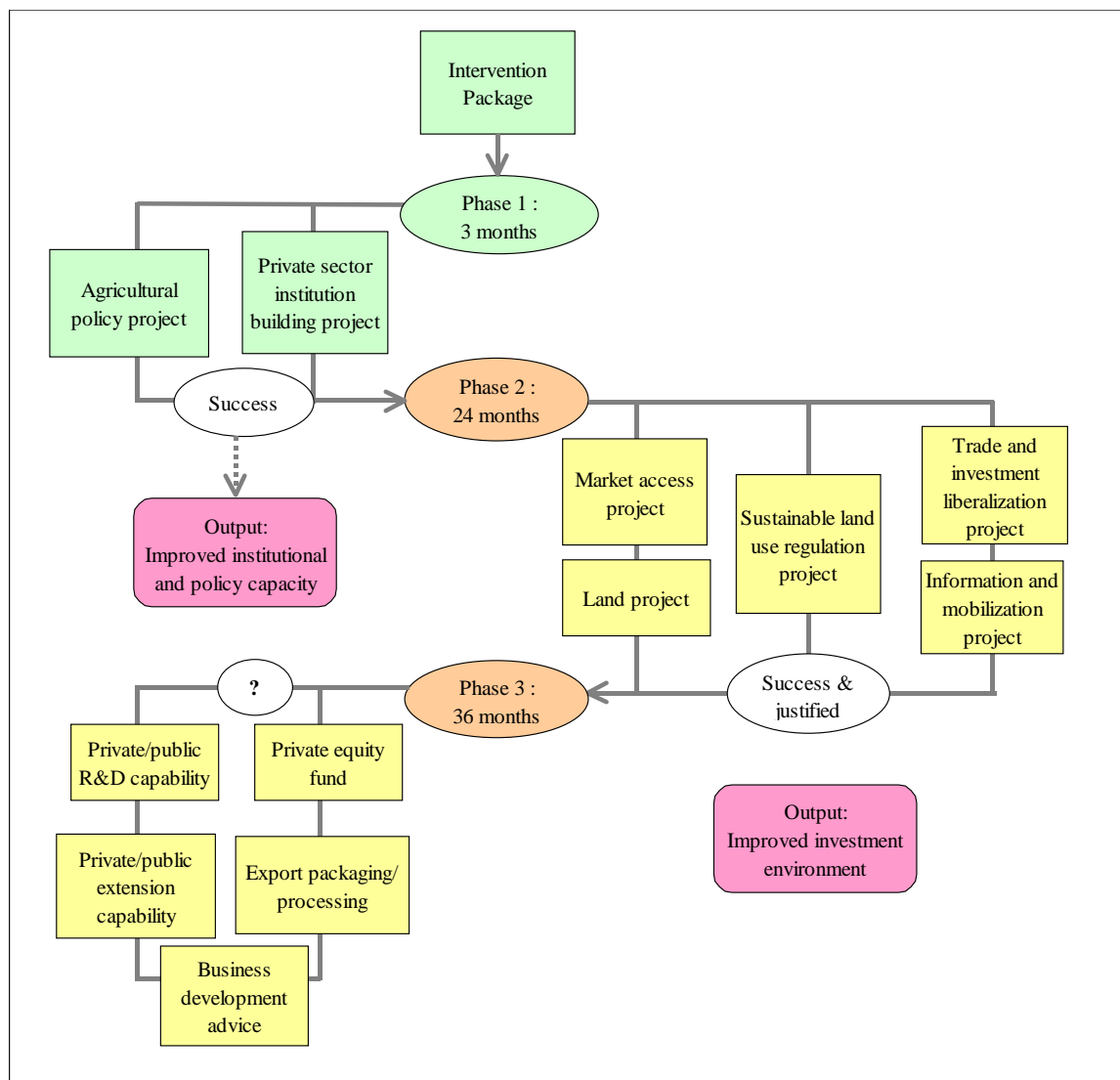
VII. THE PROPOSED ROADMAP FOR SECTOR DEVELOPMENT

497. This chapter draws from the discussion of the previous chapter and presents an integrated package of interventions.

498. The proposed package of interventions (the Development Program) would be implemented over a five to ten year period. It is based on a strategy of removing policy and other distortions in the Tongan economy that have constrained the development of the sector and the economy more generally. The strategy seeks to establish an investment environment that allows resources (land, labor and capital) to flow to their most productive uses, maximizing the GDP produced from Tonga's available resources. Such a strategy avoids, wherever possible, the problems of subsidizing the development of one sector of the economy at the expense of other sectors.

499. The program is to implemented in 3 phases (see Diagram 1):

- Phase 1 Policy and institutional development: the adoption of a sound set of agricultural policy principles and the establishment of appropriate private sector institutions to ensure effective implementation of the Development Program. A policy is necessary to provide guidance to policy makers and to prevent the introduction of policies and regulations that are inconsistent with efficient and sustainable private sector development.
- Phase 2 Policy reform: through this institutional framework, working with the Government to remove impediments to investment in the sector. With the successful completion of Phase 2, an appropriate investment environment would be established. The completion of Phase 2 would see a substantial enhancement in the efficiency of the agricultural sector and its ability to generate income and employment.
- Phase 3 Investment: if justified, under stage 3, a range of public good and infrastructure investments to support the further development of the sector. In the past such investments have largely failed because of poor conception and implementation and because of a distorted investment environment.

Diagram 3 : Outline of the Sector Development Program

A. Design principles

500. The package of interventions is designed to address the full range constraints to commercial agricultural development in Tonga in a systematic and consistent manner. In the past, interventions have tended to focus on one or a few constraints, leaving the rest unaddressed, to the detriment of the initiative. To maximize the impact on the development of the sector, the interventions should assist all individuals wishing to invest (be it money or effort) in the development of commercial

farming and agri-business ventures in Tonga. It should also assist those wishing to supply the sector with inputs or market the products of the sector. This would include both Tongan and foreign investors and, within Tonga, both existing and prospective farmers.

501. The package is not focused on perpetuating subsistence farming or encouraging Tongans to enter subsistence farming. At the same time however it needs to recognize the important food security role that access to land for subsistence purposes plays in Tonga. The package would seek to provide better incentives for farmers to evolve from subsistence to commercial farmers.

502. Tonga has limited land resources and human activities have already made a significant impact on the Tongan environment. At present because the agricultural sector is poorly developed, competition for land between farming and other uses is not a major issue. However, if agriculture is to make a significant contribution to Tongan economic growth over the next decade the input of land to agriculture must increase. While some increased land input can be achieved from more intensive and productive use of land or the use of the most appropriate land, the acreage devoted to agriculture will need to increase substantially. This will raise concerns about the sustainability of agricultural development (in terms of sustaining the productivity of land and in terms of the wider environmental implications). Externalities associated with farming will need to be addressed through appropriate land use regulations if the objective of sustainable agricultural development is to be achieved.

503. Wealth is most efficiently created by private individuals (the private sector) being allowed to pursue profitable opportunities and not by governments. This is accepted in Tonga, with government involvement in agricultural production being limited. For a range of reasons, returns to private sector investment generally exceed returns to public sector investment. International experience demonstrates that the economic returns stemming from policies that remove obstacles to private sector investment (particularly policies that strengthen property rights, reduce trade restrictions and restrictions on foreign investment) also have very high rates of return in terms of private sector development, income and employment creation. Investment in public sector projects, particularly in the provision of private goods and services rather than infrastructure, normally fails commercially and their ongoing support is a drain on national income. Public sector reforms designed to enhance the capacity of public servants can be a mixed bag, particularly if poor policies are in place and there is an inappropriate demarcation of private and public sector responsibilities. All this does is enhance the capacity of public servants to do damage through bad policies.

504. The package of reforms is therefore aimed at policy reform and strengthening the capacity of the private sector rather than at public sector projects and capacity building. Capacity building is addressed only where it removes a specific constraint to private sector development.

505. The Bank and other donor agencies have in the past overwhelmingly worked through and with government to achieve economic development objectives. The results of this approach have proved to be less than satisfactory, causing a rethink of approaches to development towards a focus on policy and governance reforms and private sector development.

506. If Tongan agriculture is to contribute to rising living standards, an investment of several hundred million dollars will be needed over the next decade. Government and donor agency funding will be a minor stake in this investment. The private sector, in Tonga and overseas, will put up almost all of the money and bear the risk. If they are to do this, it is critical that they can confidently expect an attractive rate of return. Market participants know how to create wealth and will do so if they have the incentives. To ensure this, the private sector should be given the major role in economic development, with the government playing a responsive and supporting role to private sector development requirements. The latter involves the provision of infrastructure (paid for where appropriate by user charges and taxes³⁴) but more importantly establishing a fiscal and regulatory environment that is conducive to investment. While community interests need to be protected against externalities, it is the private sector that should inform governments as to what that environment should encompass. It is the responsibility of governments to establish that investment environment.

B. Phase 1: Project institutional structure

507. The objective of Phase 1 is to establish a motivated, professional and competent private sector organization that will have the capacity to work with government, the private sector, foreign investors and donors to effectively implement the program. This will involve the creation of private sector institutional arrangements, including linkages to existing institutions inside and outside of Tonga. To prevent unnecessary delay to the development program, this phase needs to be completed within three or four months. During that time, necessary preparation for Phase 2 should commence.

³⁴ Cost recovery should not be motivated by revenue considerations but by economic efficiency considerations. Charging appropriate fees ensures that resources are used efficiently and that the most useful or valuable infrastructure attracts the funding.

508. The proposed project has a ten-year time horizon with a private sector body, working where appropriate with government ministries, responsible for implementation. This private sector body does not exist in Tonga and therefore needs to be created.

509. Phase 1 would involve the establishment of an agricultural development council serviced by an agricultural development unit.

510. Membership of the Council would be open to all interested parties regardless of nationality, income or occupation. This would be a broad based group of stakeholders including small and large scale farm operators, processors, distributors, input suppliers, retailers, politicians, government officials and other interested stakeholders. From this Council, a board would be elected with membership based upon expertise and standing in the community. The Board would be responsible for overseeing the implementation of the agricultural development program. The Board would also establish a range of expert committees focused on key development constraints and opportunities. Members of the Board would ideally consist of highly motivated individuals with the capacity and incentives to achieve change.

511. Supporting the Council would be an agricultural development unit staffed by individuals with economic policy, business development and, supported by, individuals with appropriate technical expertise. The Unit, under the direction of the Council would be responsible for implementation of the Development Program. International consultants and nationals, supplemented by secondments from MAFF, the private sector and other individuals where appropriate, would staff the Unit. To encourage the appropriate corporate culture, staff should be drawn from the private rather than the public sector. Remuneration incentives should be performance based and designed to retain high performance staff. While a national would have some advantages over international consultants, the relevant expertise, experience and contacts are more likely to rest with an international consultant with extensive policy and business expertise.

512. In implementing components of the Program, the staff of the Unit would be supplemented by international and local consultants recruited for their particular expertise.

513. A team of international and local consultants would be engaged by the Bank to undertake Phase 1 of the project. Pending successful completion of Phase 1, the team leader would be appointed as executive director of the Development Unit.

514. The tasks associated with Phase 1 include:

- Establishment of the structure, charter and operating rules of the development council
- Recruiting members of the council and conducting the election of a board;

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- Working with the Board to operationalise objectives and strategies, prioritize actions, establish operating rules, working committee structures, consultation and reporting requirements, performance measures and other functional and supporting arrangements;
- Creating a policy document for approval by stakeholders and adoption by the Parliament;
- Establishing channels for formal and informal liaison with existing business and farmer associations, relevant government ministries, NGOs and other relevant bodies.
- Identify and establish linkages with overseas agencies including potential foreign investors and financiers (growers, processors, distributors, financial institutions etc), overseas Tongans (individuals and associations) industry associations, bilateral and multi-lateral development agencies, like-agencies in other countries.
- Inform local stakeholders and overseas agencies about the program and about the potential of Tongan agriculture. This will involve development of briefing and promotional materials and dissemination of the information through available channels, including the local news media. The message would be that Tonga is open for business.
- The design of the development unit, the development of a corporate plan, work program, responsibilities, staff requirements and remuneration packages, operating budget, recruitment, office establishment and other things necessary to establish a functional office.

515. Phase 1 could conceptually be funded within Tonga by private and public monies. However, this is likely to prove difficult, as funds are relatively tight. There is expertise in Tonga, although it is in short supply and would need to be diverted from other activities. The Review Team's frank assessment is that the work will not be done. While the consulting team could explore options for accessing some funding during Phase 1, including in kind support, from within Tonga, external funding will ensure that Phase 1 will be undertaken.

516. An important and immediate task in Phase 1 is the development and adoption of an agriculture policy document. This need not be a long document, but must set out a set of key principles to guide stakeholders in their activities. The policy development should be undertaken by the Development Council with the assistance of the Phase 1 consultants and presented to the Government for ratification. It is strongly recommended that this policy document be approved by the Parliament.

517. While Phase 1 is preparatory to subsequent phases of the project, it will produce benefits in its own right that may have enduring effects. This could result from mobilization of private sector interests to focus of reform issues, the establishment of private sector institutions to direct private sector resources and the promotion of Tonga as a potential location for direct foreign investment.

C. Phase 2: Policy reform

518. Phase 2 of the project would be devoted to the implementation of a policy and regulatory environment that enhances the incentives of local and foreign investors to invest in agriculture and other sectors of the economy.

519. The following policy reforms are necessary for the creation of a conducive environment for private sector investment that will contribute to sustainable economic development:

- The development of an agriculture sector policy to guide policy making into the future and to provide certainty to potential investors in the sector: this must be achieved before Phase 2 commences;
- Taxation reform, in particular the removal of trade taxes;
- The removal of impediments to foreign investment (including the introduction of legislation allowing secure life of project resident status for foreign investors and their staff and abolition of a list of activities reserved for Tongan citizens) and to local investment;
- Simplification and clarification wherever possible of business approval processes;
- Enhancing the security of property rights; and
- The introduction of regulations governing sustainable farming practices.

520. Trade and foreign investment liberalization will substantially enhance the attractiveness of agriculture to both local and foreign investors, as has been the case in most countries around the world (see Asian Development Bank (1998), Improving Growth prospects in the Pacific, Pacific Studies Series). Tonga is preparing to join the World Trade Organization and the Government, with technical assistance from the Bank and other donor agencies, is working to this end. The main projects here are taxation reform involving the substitution of a broad based consumption tax and a revised income tax regime for taxes on imports and the development of policies more conducive to foreign investment.

521. However, progress has been slow and there is some resistance to reform from vested interests. This is reinforced by the lack of quantification of the benefits from these reforms and therefore weak support for reforms from segments of the community that stand most to gain from reform. Tonga has little in the way of agricultural sector development policy, and what is being discussed in Tonga is unlikely to achieve its stated aims of economic development. A key problem here is that the Tongan policy debate is not well informed – because farmers are exempt from import duty on farm inputs, there is a view that trade reform has no beneficial implications for farm returns. Clearly this ignores the significant loss of competitiveness that trade taxes engender through their implications for exchange rates.

522. Phase 2 is designed to support and to widen existing policy reform programs. Phase 2 would incorporate a number of activities:

- The development of analytical tools;
- Economy wide and sectoral policy analysis;
- Education of stakeholders on the economic implications of reform;
- The analysis of the financial, economic and social benefits of interventions to be undertaken under Phase 3.
- Profiling business opportunities in Tonga

1. Agriculture Development Indicators Survey Project

523. There is a range of economic, social and environmental performance indicators upon which information is not available. These indicators are required for tracking the impact of the development program and for providing information about emerging issues. Technical assistance would be provided for the design of a survey to collect relevant information from farmers. This would cover the range of indicators relating to the economic contribution of the sector, farm productivity, sustainability and commercialization. The survey would include a representative sample of subsistence, semi-commercial and commercial farmers. Ideally the survey would be conducted on an annual basis. The consultant would work with MAFF and/or Office of Statistics staff and would be responsible for the conduct of the initial survey. The agricultural development unit would be responsible for the conduct of subsequent surveys.

2. Model development

524. Phase 2 would involve the development of analytical tools to provide quantitative estimates of the national economic benefits to be derived from tariff and foreign investment reform and to inform the beneficiaries of the magnitude of the benefits that they stand to gain. This analysis is to re-assure decision makers that there are material benefits and to motivate and equip stakeholders to better pressure decision-makers to implement reform. Around the world, major economic reforms have been initiated and sustained by firm evidence of the magnitude of the benefits from reform. At present, the benefits of reform from making difficult policy decisions necessary for membership of the WTO must be taken on faith, as the policy debate is not well informed. Tonga is considering joining the a Pacific Island free trade arrangement, presumably on the basis that this seems to be a reasonable idea rather than the basis of informed calculus of what is in the Tongan national interest.

525. Tongans believe that they have a comparative advantage in agriculture. This is not a revealed comparative advantage, since the sector has not developed at all over the past decade (on any measure) and agriculture remains mired in realms of subsistence. The risk-return set for Tongan agriculture does not encourage investment, other than in very short-term low capital outlay investments. Economic theory suggests that the export oriented agricultural, fisheries and tourist sectors are the most disadvantaged by the distorted relative prices induced by trade taxes. However, there is a danger in focusing on the wrong sector – the removal of policy distortions may indicate that comparative advantage lies elsewhere and if this is the case, available funds would have been better invested elsewhere.

526. There is almost no quantitative research on the Tongan economy and the available statistics are very unreliable (it is difficult to determine export values, GDP growth and other basic economic performance indicators). Phase 2 would seek to develop the analytical basis available to the private sector and to Government to enable a more informed policy debate.

527. Some rudimentary, but useful financial models of the sector have been developed within MAFF – known as gross margin analysis. The information contained in these models can be incorporated into the development of a general equilibrium model of the Tongan economy and its trade and financial links with the rest of the world. This can be done through the construction of a stand-alone model or building Tonga into existing multi-country, multi-sector economic model with economies linked through trade and investment flows. While this may seem to be remote from practical considerations of how to stimulate investment in Tongan agriculture, such models are an important part of the science of development. This type of analysis has justified the enormous effort that has been devoted to achieving fundamental economic reforms in many parts of the world. The

analysis would provide Tongan policy makers not only with the initial rationale for trade and investment liberalization but with a tool to sensibly analyze ongoing economic issues and to design policies to address these issues.

528. Phase 2 would involve the location of a team of experts within the Development Unit to develop a general equilibrium model of the Tongan economy. This would involve model design, data collection (to obtain an up to date statistical representation of the Tongan economy) and the application of the model to assess the implications of trade and foreign investment reform for the Tongan economy.

3. Policy analysis

57. The model would estimate the implications of trade and capital account liberalization for:

- GDP and its various aggregates including household disposable income, private consumption and private investment spending;
- The implications for the balance of payments or the exchange rate;
- Government revenues;
- Aggregate employment;
- Employment and value added of various sectors of the economy (the results would show contraction in the less efficient sectors of the economy and expansion of the more efficient sectors of the economy. If Tonga is moving to a neutral policy setting, the sectors in which Tonga has a comparative advantage would be those that expand the most following the tariff reforms);
- If sufficient regional detail (ie dividing Tonga into its major economic regions) were to be built into the model, the results would indicate the relative rates of expansion and contraction of different parts of Tonga;
- The model would calculate the increase in demand for infrastructure of various types that would result from the changes in the structure of the economy. For example, tariff reform will stimulate growth in the traded goods sector and this would involve increased demand for ports and other export infrastructure. To the extent that energy intensive industries are stimulated, the rate of growth in demand for energy would also increase.

- The model would also indicate the likely increase in demand for agricultural inputs that would arise from an expansion in the sector, including the demand for land, allowing the Government to identify the development of possible constraints on land supply.

529. The model would incorporate a detailed specification of the agricultural and agri-business sector and its links to the rest of the economy. As such, the various constraints to agricultural sector development can be analyzed and their relative importance quantified. This can provide some guide to government as to the relative effort and priority that should be attached to achieving particular reforms.

530. By including a range of agricultural activities, the analysis can also examine what particular commodities are most viable given the economic circumstances and resource endowments of Tonga. This is important in considering the economic benefits from agricultural projects, for example investments in export processing and export packaging facilities. It would also be helpful for MAFF to prioritize its extension and research activities, as the model would indicate relative rates of return of a given amount of funds across different agricultural products.

531. To summarize, these analytical tools can substantially increase the objectivity and quality of policy decision making in Tonga and focus available resources to areas where the pay-off is greatest. At present the status of knowledge and analysis of the Tongan economy is such that policy decision making is very much a 'hit or miss' affair. Moreover, lack of objectivity and hard facts leaves decision makers vulnerable to capture by vested interests.

4. Empowering stakeholders

532. The results of the policy analysis would be disseminated by the Development Unit to stakeholders in Tonga, including both government and the private sector, to allow a more rational policy debate and to strengthen the case for economic reform. The Development Unit would also work with the Council to plan and conduct campaigns to ensure policies are adopted and implemented as soon as possible. The capacity of the Council to influence change would be enhanced by the engagement of a full time political strategist/government relations expert.

5. Financial and economic analysis of infrastructure projects

533. The modeling expertise engaged and the models developed under Phase 2 technical assistance could be used to undertake detailed financial and economic analysis of a number of infrastructure, public goods and private sector projects. If this analysis were to be undertaken under

current prices, exchange rates and policy settings, a distorted picture of the viability of these projects and their economic benefits would emerge. The advantage of unraveling the distortions is that these projects can be evaluated in an undistorted setting to determine whether they would contribute to the overall development objectives and whether they should be undertaken by the private sector or by the public sector.

534. A number of projects set out below would be considered to be of a private sector rather than a public sector nature. Some projects, such as fruit fly control, have elements of both. The Review Team has reservations about recommending that donor agencies be involved in the establishment of such things as export processing and export packaging facilities, since these would normally be undertaken by the private sector and should not be subsidized by public or donor monies. In the current environment, it is unlikely that there would be much private sector interest in undertaking these projects even if they were in the overall interests of the economy.

535. Our suggested approach is that financial and economic studies (feasibility studies) of a range of private and public sector projects be undertaken under a technical assistance project. It is suggested that the projects include an export packaging facility, an export processing facility and a set of projects solicited from the private sector. The analysis should estimate net private and social benefits under the business as usual scenario (the current policy and regulatory settings) and under an ideal policy environment scenario. Projects that are not commercially viable, but have net overall economic benefits could be considered as quasi-public goods. This does not preclude private provision, since there may be a community interest case for subsidization of these projects to 'top up' the private return.

536. The feasibility studies may be used for investment promotion purposes (somewhat like a prospectus on Tongan agriculture). That is, the results of the studies could demonstrate that, given the correct policy environment, it is possible to earn competitive rates of return on investments in Tonga.

D. Phase 3: Project development and implementation

537. Depending on the successful implementation of reforms and the recommendations of the Phase 2 consultants, this Phase would involve implementing a range of development projects that may include loans for public infrastructure (rural roads, ports etc) and technical assistance to a range of private sector initiatives (such as the development of a private sector equity fund, the provision of investment advisory services etc). Possible initiatives are set out below.

538. The Phase would also focus on removing market access impediments and the promotion of market opportunities for Tongan farmers.

539. The interventions could be implemented separately or implemented in an integrated fashion through the vehicle of a medium to large-scale private sector project. In the next section, the individual interventions are set out. In the following section, a private sector project that incorporates all of these interventions is described.

1. Specific interventions

a. Land Access Project

540. In the medium to longer term, if the agricultural sector is to expand, there is a need to make land more freely accessible by increasing its tradability. Market forces themselves will contribute to this. Higher returns to agriculture will be reflected in higher returns to land, the bidding up of land rentals and therefore greater interest in trading the right to use land. To support the development of an efficient market in agricultural land, there are a number of measures that the Government could adopt.

541. An initial requirement is to ensure that records of land ownership are up to date and that those seeking to lease land can readily identify the current owner. Computerization of land ownership records and making the files available online would significantly reduce search and transaction costs for those seeking access to land.

542. Currently land can be leased for periods of up to 20 years.³⁵ In some cases this may be a sufficient period of time, and it is possible, with the permission of the Minister for Lands to enter into leases longer than 20 years. Consideration could be given to increasing the maximum term, although it is recognised that this might undermine the objectives sought by restricting the outright sale of land.

543. Allowing the sale of land would greatly assist access to land and the accumulation of larger tracts of land. A partial measure would be to allow those persons emigrating from Tonga to sell the land to other Tongan citizens. Allowing the sale of land is a very sensitive issue in Tonga and passing the necessary amendments to the legislation would be a long and controversial exercise. Allowing for longer leases of land would have the same effect as allowing the sale of land while at

³⁵ The Cabinet has the authority to approve commercial leases of up to 50 years while activities involving Government can have leases for up to 99 years (ADB 2002)

the same time allowing Tonga to maintain its traditional land ownership system. Large-scale enterprise would be facilitated if the restriction on the number of allotments that can be leased, up to ten allotments or 80 acres, were removed.

544. In land markets overseas, a prospective farmer would normally employ the services of a real estate agent or land broker. The role of these middlemen is to facilitate trade in land and to reduce the transaction costs involved (in particular by reducing search costs). The agent matches demand and supply for various types of land and also can agglomerate land into larger parcels. There is little of this type of activity in Tonga at the moment and most prospective farmers conduct their own searches and negotiations.

545. The Ministry of Lands could facilitate access to land through the creation of what would be in effect a 'land bank'. Overseas and resident Tonga landowners could be invited to deposit or entrust their land holding for agreed periods of time with the Ministry of Land. While most of the land held would be dispersed allotments, it is also possible that there would be some grouping of allotments into fairly large contiguous areas. The Ministry would make this stock of land available to parties interested in leasing land. These parties would be able to lease different amounts of land up to a full allotment, several scattered allotments, and if possible, an area including adjacent allotments. The land would be leased for periods of up to twenty years, or longer if the agreement of the owners were obtained. The Ministry of Lands could set the rental and other conditions attached to the lease according to current market valuations and taking into account the need to maintain the productivity of the land, or the parties to the lease could negotiate the rental.

546. The Ministry should seek to operate this land bank on a commercial basis, recouping its costs plus a reasonable profit margin through transaction charges. It is important to the future development of a competitive land market that this activity not be subsidized and that the private sector should not be deterred from entering this market. Ultimately the Ministry would seek to privatize the management of the land bank.

b. Agriculture Equity Fund Project

547. Within Tonga, there are sources of equity available from Tongan savings and from within the business community. Overseas Tongans are also another source of equity funding. Overseas Tongans invest significant sums in Tonga in residences and in the establishment of small to medium sized businesses. While figures are not available, observation suggests that the investments are mainly in restaurants, small tourist lodges, retail stores and taxi services.

548. There is no facility to allow Tongans to invest smaller amounts and to share investment risks with a larger number of investors. Such a facility could be provided by an equity or venture capital fund. The fund would raise investment funds from within Tonga, but in particular could target overseas Tongans willing to invest in Tonga. By keeping the minimum subscriptions sufficiently low, the fund could be subscribed to by a range of investors, from large investors to small, risk adverse investors. The fund would solicit proposals for investment from the agriculture and fisheries sector. To avoid excessive risk exposure, the fund would also need to consider diversification of its portfolio with investments outside of the sector and to seek investment in less volatile enterprises such as the processing of agricultural produce.

549. The quality and sustainability of such a fund would depend on the quality of the projects in which it takes equity and the quality of its management and governance. The former will depend on the business environment facing new projects in Tonga. At present, there would be few projects that would be sufficiently attractive and that is one reason why such an equity fund does not already exist. However, if the Tongan Government is successful in pursuing a range of reforms to enhance the competitiveness of the sector, there is a greater prospect of attractive project proposals emerging. The fund could also play an active role in enhancing the quality of its investments by assisting project proponents in the development of business plans, in financial analysis and in risk mitigation strategies.

550. The consultants would be responsible for the design of the fund and for examining a number of potential projects in Tonga in which to invest (the feasibility studies under Phase 2).

c. Market Information Project

551. MAFF has a role to play in ensuring that farmers are adequately supplied with the information they require. They can do this in two ways; by facilitating the flow of existing information to farmers through improving the functioning of information channels and they can provide information that they have created through their agricultural and market research and run this through the information channels to farmers.

552. There are a number of options that can be pursued. Those with Internet access can be supplied with information from a MAFF website. On this site MAFF could electronically publish its own research results, the Farm Management Manual, market analysis and statistical data. This would be significantly less expensive than producing hardcopy reports. MAFF could also provide links to websites around the world where farmers can access much free technical and market information. The site would benefit from having an internet forum page whereby farmers can interact with other Tongan farmers and with interested parties around the world. The site should also provide

necessary background information about investment opportunities and the investment environment and links to other government websites where more detailed information can be obtained.

553. To be effective, the site must be kept up to date and this will require staff time and strict discipline. Decisions based on out of date or inaccurate information can be very costly to farmers. A system would need to be designed where all MAFF staff responsible for producing and gathering information can directly feed this information to the site.

554. Such a site, along with practical demonstrations, lectures and even short courses conducted at MAFF extension centers would meet the information needs of the larger farmers. For farmers where the internet is not a feasible option, MAFF can adopt a more traditional approach of delivering the information through its extension officers. However, the information would be the same since MAFF staff can use the website to access the information that farmers have requested.

d. Research and Extension Enhancement Project

555. The Review Team supports the provision of technical assistance to assess the need for extension services and the development of an effective approach to implementation. Options would include modifications to the existing way in which MAFF provides extension services, a community managed extension model and the possibility of outsourcing extension services. Extension services should only be provided by the MAFF if the approach adopted is cost effective (that is it achieves its objectives and the benefits are greater than the costs). The consultants would undertake financial and economic analysis of the alternative options. The technical assistance would develop an implementation plan that could include piloting several options. The costs would include any investment in office facilities, vehicles, communications, training, databases and other things that would be essential to the effectiveness of each option.

556. Prior to this technical assistance, the Review Team recommends that MAFF establish a research and extension committee to guide the work of MAFF's Research and Extension Division. This Committee would include broad stakeholder representation and might include MAFF, commercial farmers, and representatives of smaller farmers, exporters and suppliers to the agricultural sector. This committee would have a role in directing the research and extension programs of MAFF and the committee would be responsible for reviewing regular performance reports prepared by MAFF staff. The committee would guide and assist the team of consultants undertaking the extension review.

557. The Committee could be chaired by the Director of Agriculture or by a private sector individual. The latter option may be a more effective way of ensuring that the private sector

influences the direction of the work program. The Committee would report make recommendations to the Minister for Agriculture.

e. Fruit Fly Project

558. It is recommended that technical assistance be provided to assist MAFF in the evaluation of approaches to the control of fruit fly. For each control option, technical feasibility should be established along with the costs of the initial program and maintenance activity. The economic and financial benefits of each option should be explored in detail, based upon the returns to increased activity in fresh and processed fruit consumption, local sales and exports. If there are net national benefits from such a program, in terms of viable production of fresh and processed fruit products, the TA should address the approach to implementation, ongoing maintenance and possible models for cost recovery.

f. Youth in Agriculture Project

559. There is a considerable amount of unutilized land owned by schools and churches in Tonga that is little utilized. There is some interest in developing farming activities focused of students and unemployed youth. The Review Team supports the objectives of such an initiative. The Development Unit and MAFF could provide financial and technical assistance respectively. However, care would need to be exercised that this does not involve the creation of a pool of subsidized or even exploited labour. This would undermine incentives to enter agriculture as an occupation. The produce of these farms should be marketed, but not in unfair competition with commercial farms.

2. Private sector development project

560. Phases 1 and 2 in the program are preparatory in nature. The idea is to prepare the ground so that the chances of private development initiatives, but also including investment in infrastructure, will actually create value. This would involve establishing a regulatory environment that maximised investor certainty and confidence, eliminated impediments to investment and strengthened the capacity of MAFF to service private sector developments. It would also involve the development of a necessary information base to assist in both private and public decision making. Phases 1 and 2 could be accelerated as there is really not all that much to do, particularly if the Government, the private sector and the Minister are willing to address the issues with some urgency.

561. The question then becomes whether to stop at getting the business environment right and then let the market take over. There is some lack of confidence that this might happen or that it

might take too long. There is hesitation about recommending a particular project or set of projects because this approach has often failed in the past, partly due to lack of incentives or ability to maintain the projects. More importantly, many of the targeted projects were seen as generating social benefits but insufficient attention was paid to their commercial viability (and hence their sustainability). However, it may be possible to structure a project involving private sector, international agencies, MAFF and the rest of Government in an integrated project. This would embody a range of the specific initiatives we mentioned in our report (for example fruit fly control, extension, export market development, a model farm etc).

562. The concept would be along the lines of a private sector project facilitated by the Government with MAFF providing 'infrastructure' services and working with the private sector to facilitate the participation of small holders. The project could center of the production of fresh and processed fruit and vegetable products for local consumption and for export. It would encompass the development of a full supply chain from farm gate through processing, packaging, transport and marketing. The project would be owned and operated by the private sector, with the opportunity for Tongans to purchase equity. Small holders would also be encouraged to take up equity in the project either through the purchase of shares or through sweat. Where economically efficient, the production technologies adopted would be those that would generate a maximum local employment impact (that is, the project would not subsidise the use of labour relative to other resources as this could undermine project viability). The project could be governed by a State Agreement Act setting out the rights and responsibilities of the project proponents and their suppliers, including out growers. Contracts between small holders and the nucleus enterprise would be designed to ensure competitive outcomes and protect the rights of all parties concerned. In particular, out growers would be responsible for continued supply, with penalties for below specification produce. The nucleus enterprise would be responsible for taking produce offered.

563. The project concept is laid out in more detail as follows:

a. Nature of the project

564. Private sector nucleus enterprise supplied by small holder growers. The nucleus would consist of a processing and packaging plant perhaps with a nucleus estate.

b. Objectives of the project

565. To provide income sustainable earning opportunities for investors, out growers and employees.

c. Project ownership and management

566. The project would be owned and managed by the private sector. Major equity holders could be Tongan business, international agri-business firms etc. Minor equity holders could be out growers and general investors purchasing shares through an equity fund.

d. Project production and markets

567. The general business of the project would be the production and marketing of fresh and processed food products for local and export sale. The product range and the degree of processing would be determined by the feasibility, marketing and financial studies.

e. Finance

568. Preferably the project would be financed by the private financial sector at commercial rates to preclude capital subsidies. The Tonga Development Bank could be a source of finance for out growers. There may be some scope for a loan to finance an out grower lending facility for the project.

f. Decision criteria

569. The project would need to be commercially viable at world prices with an expected rate of return commensurate with the project risk. In particular, the project would be evaluated using import parity prices without import taxes.

g. Government assistance:

570. The project would receive no subsidies in any from the Government other than services that are of a 'public good' nature. Wherever possible services provided by the government to the project should be cost recovered. Cost recover should be based on sound cost recovery principle with the project only charged 'competitive prices' for efficient services. That is, the project should not pay for inefficiencies in the delivery of government services.

h. Benefits of the project:

i. Primary Benefits

571. To create a profitable business enterprise that will increase Tongan value added (profits to investors and income earning opportunities in out growing and direct and indirect employment).

ii. Secondary benefits

572. The secondary objectives of the project might include:

- Reducing Tonga's trade deficit (through increased export earnings and competitive import substitution)
- Facilitation of knowledge transfer (technology, market, business and policy expertise);
- Motivation by example the desire by Tongan's to engage in entrepreneurial activities
- Providing a productive venue for investment of local and overseas Tongan savings
- Convincing the Government of the benefits of regulatory reform, certainty of property rights and the appropriate role of government in the sector
- Demonstrating to both Tongan and foreign investors that profitable investment opportunities exist in Tongan agriculture
- A 'piggy back' stimulus to other agri-business projects through the pioneering of improvements in infrastructure and government service capacity. This includes in the areas of export market development, environmental regulation, financial market development (ie the development of debt and equity financial instruments), export protocols, insect and pest control, food accreditation/certification, research and agricultural extension services).
- Demonstrating to overseas investors that Tonga is a viable venue for direct foreign investment.

i. Project participants and roles:

i. Private business sector

- Project proponents (the nucleus enterprise)
- Project design, feasibility and financial analysis
- Project direction, governance and management
- Market development
- Project finance
- Project operations

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- Out grower contractual arrangements, finance facilitation
- With MAFF, out grower extension

ii. Landowners

- Supply of land to the project or project out growers on contracts reflecting market value of land

iii. Farmers

- The supply of produce to the project on contract basis

iv. Wage workers

- Supply of labour to out growers, nucleus enterprise or project input suppliers and output users

v. Financial sector

- Supply of debt finance to project proponents and out growers
- Development of innovative financial instruments based on project economics

vi. Investors

- Supply of equity finance to project and sharing risk with project participants
- Monitoring performance of project management

vii. Government

- Establishing 'model' business environment through regulatory/policy reform and entering into State Agreement Act with nucleus enterprise
- Collection of taxation revenue from project participants
- Regulation of project to ensure compliance with sustainable farming practices and other public interest regulation (eg labour market regulation, &S etc)
- Enforcement of property rights engendered in land rental and supply contracts
- Provision of agricultural extension services to project participants in partnership with the nucleus enterprise
- Export protocol development

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- Establishment of a public food safety laboratory
- Initiation and maintenance of a fruit fly control program
- Recovering costs where appropriate from project participants
- Development agencies
- Provision of technical assistance to MAFF and to project proponents
- Facilitation of market entry by bilateral donors
- Facilitation of project finance

573. The following table sets out the project stages and the specific sub-components that would be involved.

Table 24: Project phases and components

Phase	Sub-phase	Comment	Components
Project preparation	Project feasibility	This initial phase off the project would explore the technical feasibility of the project. This would include such things as the physical/technical preconditions as well as the appropriate policy environment.	<ul style="list-style-type: none"> ◆ Fruit fly control options ◆ Policy and regulatory environment ◆ Land access ◆ Sustainable agriculture regulation ◆ Export protocols
	Preliminary project design	A number of possible options for the project would be developed. Each of these options would encompass the full supply chain. Options would differ depending on such things as the degree of processing of products. One possibility is to divide the project stages, with a decision to move to additional stages based upon the financial performance of earlier stages. For example, the project could begin with minimal processing	Private sector activities <ul style="list-style-type: none"> ◆ Nucleus farm ◆ Out grower farms ◆ Processing facility ◆ Product range ◆ Export protocols ◆ Land transport logistics ◆ International freight logistics ◆ Target markets and offshore infrastructure ◆ Marketing strategy

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Phase	Sub-phase	Comment	Components
			MAFF Activities <ul style="list-style-type: none"> ◆ Extension (training program) ◆ Research ◆ Model farm ◆ Regulation ◆ Fruit Fly Control ◆ Infrastructure ◆ Export protocol development ◆ Food laboratory
	Financial and economic evaluation	A detailed financial and economic evaluation of a range of project options.	This would cover both private investment and any necessary public infrastructure investment. Technical assistance to the private sector and to MAFF would be counted as part of the capital cost.
Project development	This would cover all of the aspects involves in the development of the project and would be the responsibility of the private sector project proponents.		<ul style="list-style-type: none"> ◆ Funding <ul style="list-style-type: none"> Equity and debt finance for project Debt funding for out growers
			◆ Market development and contracts
			◆ Supply contracts
			◆ Out grower contracts

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Phase	Sub-phase	Comment	Components
			◆ Transport contracts/arrangements
			◆ Land development
			◆ Construction of processing facilities
			◆ Construction of infrastructure

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ATTACHMENT 2: REPORT OF FIRST WORKSHOP

This review of the agricultural sector is somewhat different from past reviews conducted by the Bank. The consultants have been guided by the views of stakeholders developed in a two day workshop held at Nuku'alofa in mid-June. Farmers, processors, fishing operators, exporters and government officials from a range of ministries attended the workshop (see attendance list at attachment 1). The workshop was the starting point for the review, providing the consultants with the term of reference for the review.

At the workshop, stakeholders focussed on key outcomes or objectives sought from the primary sector. These were in no particular order of importance:

- Improved market access for agriculture, fisheries and forestry products. Stakeholders elaborated upon this as obtaining higher prices for primary exports through better quality and presentation, better knowledge of and responsiveness to market opportunities, more consistent supply and higher processing of exports. The diversification of the primary export base was also considered important in terms of reducing the high level of risk associated with a narrow range of export commodities.
- Sustainable land use was the second outcome sought by stakeholders. This encompassed maintaining the quality and diversity of the land and marine environments as well maintaining the productivity of the land and fishing grounds.
- Enhanced productivity of agricultural producers through the adoption of more productive farming systems and techniques, the use of better planting materials and livestock breeds. Both for small semi-commercial and larger commercial ventures, improved processes for accessing land was considered a high priority.
- Improving the status of commercial farming and fishing within the community, particularly among youth, as a rewarding, profitable activity for economic and social advancement. If agriculture were seen as an attractive profession, this would encourage the entry of more talented, better trained, entrepreneurial and motivated people into the sector. It would also encourage greater investment of savings of resident and overseas Tongans into agricultural ventures.

The outcomes sought are a convenient way to address this review of the agricultural and fisheries sector. The outcomes were thrown up in a broad ranging discussion at the Workshop and are not finely tuned. However, the outcomes cover most of the important aspects of the sector.

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The outcomes sought can be summarized as the desire to enhance the contribution that the primary sector makes to living standards in Tonga. That is to increase the surplus generated by the sector. The surplus is simply the value of what is produced (for cash sales or household consumption) less the costs of everything that goes into producing it (capital, land, labor and materials).

In commercial terms, surplus is profit. The outcome of improved market access will operate on the receipt side, increasing grower revenues through high prices and higher sales volumes. The enhanced productivity outcome will increase surplus through reducing the unit costs of production. Together these outcomes will make primary production much more attractive to both labor and capital. The sustainable land use outcome is about maintaining the profitability of the sector over time and minimizing the environmental and social costs associated with a growing primary sector.

In relation to increased exports of agricultural and fisheries products, the main issues raised concerned market access, post harvest handling, quarantine, infrastructure, transport and the consistency of supply.

The discussion of infrastructure centered on the need for storage, cooling, freezing, packaging and labeling facilities at the port. The concept was that of a single storage facility allowing exporters to share costs, to achieve higher quality and to benefit from economies of scale. Such a facility could provide services on a commercial basis to exporters. There was general agreement that such a facility should be established and operated on a commercial basis by the private sector. If such a facility were commercially viable, the prospects of it being established would be considerably enhanced if the Tongan Government established a more attractive environment for business investment. There is also the question of the availability of space at the port upon which to locate this facility.

On the question of why such a facility does not exist, there is the question of the demand for its services by exporters. Exporters currently prepare their products for exporting. In deciding upon packaging, labeling and other matters these exporters would take into account the costs of preparation relative to the rewards. The bulk of Tongan exports are squash, kava and root crops for which preparation for exporting is fairly rudimentary. If Tonga's export composition were to shift to more highly value added or processed products, the need for an export packaging facility may increase. However, such a facility is really part of the agricultural sector that will be established at the right time to serve the requirements of the sector rather than infrastructure that needs to be put in place by the government or by the private sector but with government incentives. Unless there is an economic case (that is, if it is a sound commercial investment) there is the danger of establishing a facility that is not fully utilized and that may incur losses.

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Inadequate and high cost air and sea freight space was considered a barrier to increased exports, although there were different viewpoints on this issue. For products that need to be air freighted, the availability of cargo space is a greater constraint. Tonga is reasonably well served by international sea freight. Inter island shipping between the main islands was considered adequate although the smaller islands are less well served.

Post harvest handling was seen to be primarily the responsibility of farmers, exporters and their customers overseas, rather than the Government. The value of a food processing facility was discussed. Such a facility would be owned and operated by the private sector and would provide processing services to the sector. The facility would be sufficiently large so as to achieve economies of scale, minimizing the costs of processing.

Market access issues for both agricultural and fisheries exports were discussed at some length. The view was put that Growers were inadequately informed about opportunities abroad, about market requirements and about prevailing prices. MAFF staff considers that they have an important role to play in providing market information to the private sector and MAFF has undertaken a range of information gathering activities overseas. However, the private sector was generally of the view that MAFF did not provide sufficient information and that the information provided to farmers was not of a useful form (for example being written mainly in English rather than Tongan). Part of the problem is that MAFF does much more analysis and information gathering than it has the resources to publish and disseminate. There was long discussion of the overlapping responsibilities of various ministries in the collection and supply of market information. For example MAFF, Tonga Trade and the Tonga Development Bank all play a role in informing farmers.

The issues of the supply of consistent qualities and volumes of agricultural and fisheries products for export markets was raised in several sessions. According to stakeholders, problems in this regard have in the past resulted in markets being lost to more reliable suppliers in other countries. Discussion of the cause of this problem focussed on the lack of longer-term commitment and a lack of professionalism among farmers. In particular, an important outcome sought was the encouragement of Tongans to enter agriculture and to invest in the establishment of more permanent businesses with a long-term focus.

The view that attitudes and the culture of Tongans did not encourage a long-term focus and the desire to take risks and invest in business development. Little of the returns from agricultural activities are re-invested and Tongan farmers work from year to year. Farmers tend to work only until they have achieved their cash requirements. The culture of sharing may also be a constraint to the accumulation of wealth.

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An alternative viewpoint was that Tongans do respond to economic incentives. When the returns are good, there has been evidence of a strong supply response. The example of the squash industry and, more recently, vanilla was quoted in support of this view.

Overseas quarantine requirements were discussed at some length. Standards imposed on the exports of agricultural and fishing products have become increasingly stringent and are being adopted on a multi-lateral basis. That is, more and more countries are adopting standards developed under the auspices of the World Trade Organization. Apart from a lack of professionalism, Tongan farmers were said to be constrained in meeting these standards by a lack of information about the requirements and a lack of technical expertise. Stakeholders saw a clear role for government in negotiating export protocols and in assisting farmers to meet the terms of those protocols.

There was a strong emphasis placed on training of farmers both in technical and business aspects of farming. Several aspects of training were discussed. One aspect was the technical expertise of farmers in choosing suitable varieties, producing to agreed quality standards and maintain or enhancing the value of the produce through appropriate post harvest handling. Part of the reason for the inadequate level of technical training was thought to be due to constraints on the ability of MAFF to undertake appropriate research and to provide extension services to farmers. However, another possible cause was the lack of training in agriculture provided by education institutions. While agriculture is offered as a course in high schools, the view was that this course was far too theoretical and did not focus sufficiently on agriculture as a business. People also remarked upon the generally low status accorded to farming as an occupation by students and teachers compared with careers in government, tourism and other areas.

The four outcomes sought constitute a logical approach to the development of the sector. Increasing the productivity of farming through enhancing its information or technology base builds on the capacity of the sector to produce quality produce at low cost. Encouraging Tongans, particularly younger entrepreneurial Tongans, to enter agriculture and to invest in long-term business development will allow the technical capacity to be applied. Improving access to overseas markets will allow the resulting production to be sold at profitably prices. The sustainability outcome will assure that the resultant economic growth will be maintained and that it will be consistent with environment objectives. The ultimate outcome that will be achieved is growth in the income and employment generated by the agricultural and fisheries sectors.

In the following tables, an analysis of the outputs required to achieve each of the outcomes is summarized. This is based on a logical analysis of the sector, taking into account the views of stakeholders at the workshop and in follow-up consultations.

Table 25: Outputs required for increased export earnings

Output	Supporting output
▶ Improved market access	<ul style="list-style-type: none"> ◆ Low bio-security rejection ◆ Reduced trade barriers ◆ Improved product image
▶ Higher export prices	<ul style="list-style-type: none"> ◆ Improved export quality ◆ Increased processing ◆ Increased competitiveness
▶ Reduced export costs	<ul style="list-style-type: none"> ◆ Efficient shipping and port services

Table 26: Outputs required for increased farm productivity

Output	Supporting output
◆ Higher yields	<ul style="list-style-type: none"> ◆ More informed/professional farmers ◆ Better farming methods ◆ Improved planting materials ◆ Increased investment
◆ Lower costs	<ul style="list-style-type: none"> ◆ Competitive input supplies ◆ Reduced transport costs ◆ Competitive utility prices ◆ Reduced cost of funds
◆ Continuity of supply	<ul style="list-style-type: none"> ◆ Efficient and regular transport services ◆ More informed professional farmers ◆ Improved export market access ◆ Increased profitability ◆ Secure access to land
◆ Reduced risk	<ul style="list-style-type: none"> ◆ Secure access to land ◆ Access to equity finance ◆ Increased corporatisation ◆ Reduced exchange rate volatility ◆ Reduced exposure to pests and disease

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Output	Supporting output
♦ Improved quality	<ul style="list-style-type: none"> ♦ Better planting materials ♦ Better farming techniques ♦ Improved post harvest handling
♦ Higher marketable yield	<ul style="list-style-type: none"> ♦ Efficient transport services ♦ Improved communications ♦ Increased processing ♦ Improved post harvest handling

Table 27: Outcomes for sustainable agriculture

Output	Supporting outputs
<ul style="list-style-type: none"> ♦ Insect pest control ♦ Weed control ♦ Disease control ♦ Reduced pollution ♦ Reduced erosion ♦ Maintain soil productivity ♦ Enhanced bio-diversity 	<ul style="list-style-type: none"> ♦ More informed farmers ♦ Improved farming systems ♦ Improved planting materials

ATTACHMENT 3: WORKSHOP ATTENDANCE

Paul Karalus, Consultant, ADB

Francis Foo, Consultant, ADB

Marc Wilson, ATL, AusAid/Fisheries

Peter Crowley, Consultant, ADB

Vilimo Fakalolu, Principal Fisheries Officer, Ministry of Fisheries

Ulunga Faanunu, Principal Fisheries Officer, Ministry of Fisheries

Tevita Taukei Veaila, Pesticides Awareness for Sustainable Agriculture, Tonga Trust

Masao Soakai, Farmer,

Pita Taufatofua, Head Research & Extension, Ministry of Agriculture and Fisheries

Mana Latu, Farmer,

Fred Sevele, Farmer/Exporter,

Sione Foliaki, Agricultural Officer, Ministry of Agriculture and Fisheries

Taniela Hopenou, Agricultural Officer, Ministry of Agriculture and Fisheries

Lamipeti Gavee, Agricultural Officer, Ministry of Agriculture and Fisheries

Viliami Fakava, Head of Corporate Services Division, Ministry of Agriculture and Fisheries

Toifalefehi Moala, Head of Livestock Division, Ministry of Agriculture and Fisheries

A Taata M Finan, Assistant Government Statistician, Statistics Office

Siaosi Fifita, Acting Deputy Director, Ministry of Labour Commerce and Industry

Seini Filiai, Government Statistician, Statistics Office

Masina Tuionetoa, Principal Assistant Secretary , Governors Office Vavu a

Leta Havea Karni, Manager Asset Management, Tonga Development Bank

Meleseini Lomu, Deputy Secretary, Ministry of Finance

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Tupoulaki Fusi, Director, Central Planning

Siosaia Faletan, Economist, Ministry of Finance

Inoke Fakatene, Technical Officer, Tonga Trust

Vale Anitoni, Principal Assistant Secretary, Governor of Haapai

Pau Likiliki, Technical Officer, Ministry of Fisheries

Plia Kami, Entomologist, Ministry of Agriculture and Fisheries

Ana Taholo, Computer Programmer, Ministry of Fisheries

Naitilima Tupou, , Maui Company (fish exports)

ATTACHMENT 4: REVIEW OF MINISTRY OF AGRICULTURE, FORESTRY AND FOOD (MAFF)

This report was prepared by Francis Foo, the Institutional Specialist for the Team.

Note: As of 1st July 2003, the Ministry is called Ministry of Agriculture, Forestry and Food, (MAFF) when the Food Division was established. Prior to this date, the Ministry was referred as Ministry of Agriculture and Forestry. Fisheries is under a separate Ministry (Ministry of Fisheries), but under the same Minister.

Past Reviews of the Ministry

A review of MAFF's institutional capability to service Tonga's agricultural sector was initiated as early as 1993, undertaken by the NZ-based consulting firm, Lincoln International Ltd, and funded by the Asian Development Bank (ADB). The 1993 review made 6 key recommendations: that MAFF should

- Reduce its organization to four Divisional structures
- Adopt effective management practices
- Increase adoption of modern technology by farmers
- Develop a business orientation
- Develop privatization/corporatisation policies
- Strengthen its policy advice capability

In 1995, ADB appraised the Government of Tonga's request for funding to develop the agricultural sector in the outer islands, which led to ADB funding under a Loan agreement, the Outer Islands Agricultural Development Project-OIADP (Loan 1412-TON (SF). The OIADP focused only on the outer islands of Eua and the two Niuas, leaving out Haapai and Vava'u.

The ADB piggy-backed two capacity building Advisory TAs to OIADP:

- Institutional Strengthening of MAF
- Institutional Strengthening of Tonga Trade based in the Ministry of Labour, Commerce and Industry (MLCI).

In July 1997, a team of consultants was fielded under the above TA "Institutional Strengthening of MAFF" – ADB-TA 2467-TON, managed by the NZ-based consulting firm AGRICO(1995) Ltd . TA

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fielded consultants in the fields of Institutional Strengthening , Rural Sociology, Benefit Monitoring and Evaluation, Management Information, and in Media/Mass Communication. The focus of the TA was to:

“... develop MAF staff skills to respond to technical and marketing queries raised by commercial growers about new market opportunities, new production and processing techniques, as well as improving MAF’s internal operations and ensure market and technical information are promptly relayed to farmers especially in the outer islands.”³⁶

In January 1997, under ADB-funding (ADB TA 2468-TON), with the Ministry of Labour, Commerce and Industries (MLCI) as the executing agency, TongaTrade was established. TongaTrade was created to:

“.. identify markets appropriate to Tonga’s productivity capacity and to develop an environment that encourages private sector investment in export industries.”

To assist in its establishment, a team of consultants, managed by the NZ-based consulting firm, AGRIC(1995) Ltd were recruited, consisting of specialists in export market development, marketing information³⁷ and information retrieval

An assumption was made that by 1997, when the institutional strengthening TA was commenced, MAF would have implemented the key recommendations made in 1993. This did not happen. As noted ³⁸ in the Final Report:

“... all of the 1993 recommendations were not implemented (by MAFF) by the start of this TA (ADBTA- 2467-TON). The achievement of this TA’S objectives was dependent upon the successful implementation of these recommendations.”

It was then agreed by the Government of Tonga and the ADB that the scope and direction of this TA be changed to assist MAFF to implement recommendations made in 1993. That is to:

³⁶ Final Report, ADB-TA 2467-ton, “Institutional Strengthening of MAF (Sept.2000)”

³⁷ The same consultant doubled up as the “Management Information Specialist” for the “Institutional Strengthening of MAF (Sept.2000)”

³⁸ Final Report, ADB-TA 2467-ton, “Institutional Strengthening of MAF (Sept.2000)”

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- Assist MAFF implement an organizational structure based upon the recommendations made in the ADB-funded review of 1993
- Upgrade the service delivery and capabilities of extension officers
- Assist MAFF strengthen linkages with farmers and key stakeholders
- Upgrade the quality of MAFF planning, marketing, project monitoring databases and design and assist MAFF implement effective information management systems
- Design an appropriate media communication strategy to deliver information to MAFF's clients

In July 1998, a TA team was fielded under the Capacity Strengthening Component of the OIADP. The team consisted of consultants in post-harvest technology, training and extension, handicraft design, marketing and small business operation, safe-use of agro-chemicals and farmer training in market development

The OIADP's key objective was stated as:

“ The Project (OIADP) will strengthen the agricultural extension services in the outer islands, particularly the Niua and Eua, and provide support research and trials work”³⁹

The OIADP-TA team was fielded based on the premise that MAFF's restructure, in particular, extension services for the outer islands, had been completed and stabilized. As mentioned above, this was not so. When the TA team were in-field, MAFF was still mobilizing staff and re-organising the extension services of the outer islands based on the new structure being put in place by the Institutional Strengthening TA-team. MAFF then requested that the extension and training input for the OIADP-TA be modified instead to assist MAFF in identifying extension needs of the extension service of the outer islands and the training needs of outer islands extension staff to enable MAFF to plan and implement these recommendations after the completion of the TA.

There was expectation that the outputs of the ADB TA Institutional Strengthening of the MAFF would form the foundation and tone for MAFF to be an effective and efficient agricultural institution.

The TA identified several constraints and barriers that the consultant team faced as well as that faced by MAF in efforts to restructure MAF.

³⁹ OIADP Loan Project Document

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- Terms of Reference: The TOR of the TA were not designed to assist MAFF restructure (that included the combination of expertise required). The initial design was to build MAFF's capability to implement the Outer Islands Agricultural Development Project.
- Access to key staff: The continuity of systems development and implementation was affected by staffing factors (long leave, resignation, position changes, overseas conferences). Development for the support systems for the restructure was retarded by recruitment difficulties and job rotations.
- Budget for Restructure: The pace of change was affected by inadequate internal institutional strengthening budget.
- TA Project Management: The MAFF restructure activities proceeded without continuous leadership of the Director (due to a substantive overseas engagement) and with the frequent changes made to counter-part arrangements. These factors did have an effect upon the pace and cohesiveness of implementation.
- Public Service Policy: the Establishment Office of the Prime Minister's Department subject to employment policies and conditions regulates MAFF. The restructure was affected by employment regulations and procedures. Some jobs have no place in the new structure. Job grades and pay scales need to be reviewed. There is need for a public service policy to be in place to deal with redundant position holders.

The 1998-2000 Consultant Team also highlighted the following issues and concerns for the Institutional Strengthening of MAF in its Final Report (Sept 2000) of the project:

- MAFF was understaffed and this had an effect upon MAFFs' effectiveness, particularly in the field.
- There was potential for further efficiency gains in MAFF but this was limited by established practices of the Tongan Public Service. In particular, staff leave provisions, frequency of overseas assignments and the too frequent overseas meetings of senior staff need to be considered for right-sizing structure.
- The number of extension teams was reduced from 11 to 8 in each district/outer island, but there was a change in skill-mix in each team (ie for crops, animal production, agro-forestry, women in development, technician and the OIC). This requires greater mobility for significant improvement to occur in service delivery. Vehicles available are subject to frequent breakdown and more are required to support field operations – the core of MAFF's business (note: as of 2003, each district has only one vehicle to support the activities of the extension team).

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- Access to farmers is an issue continuing to affect service delivery by extension officers.
- A Research Committee with external representation had not been established by MAFF, although there is strong support for the concept. There was an expectation that this committee would be established in 2000. (note: as of 2003, this had not taken place).
- The establishment of an Agricultural Policy Review Committee with external representation was not implemented by MAFF.
- The design of a general benefit monitoring and evaluation (BME) and projects monitoring (PM) databases was developed under the project. There was an expectation for significant improvement in management capability when MAFF completed the entry of data into the BME and PM databases. Progress was retarded due to a shortage of staff and staff changes in MAFF's Policy and Planning Unit, reducing the ability to assemble data for the databases.

The sector review team (2003) was advised that the BME and Project Monitoring systems put in place was not implemented as staff said they had difficulty in utilizing the system ie felt the systems were not appropriate or suited.

The communication strategy proposed by the project Media Specialist was adversely affected by recruitment issues in the Information Section located in Vaini Farm. The consultant had recommended ten posts for the Information Section.

Recommendations from the ADB TA for Institutional Strengthening of MAF

The following lists the main recommendations of the institutional strengthening TA and comments on progress in implementation of these recommendations.

- A review of current authorities and employment policies and procedures applying in the Tonga Public Service

ADB had provided a US 10 million loan for Public Sector Reforms. An ADB TA Team was recruited to help in the public service reform programme. A Public Service Commission (PSC) was established 1st July 2003. An important aspect that requires the attention of the PSC is with regard to policies for staff redundancies, long/extended leave provisions, frequency and extended time of senior staff on overseas assignments and commitments

- Assistance to be given to MAF Training Officer to undertake training needs analysis

MAF has upgraded the Training Unit into a Human Resources Management Section. This section will play a crucial role in assisting with the public sector reforms initiated by the newly established

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Public Service Commission with regard to development and management of staff resources, recruitment and staffing positions, in establishing performance standards for appraisals. Currently, the Section consists of two staff and is under-resourced. It would be responsible for liaising with PSC on personnel matters and in implementing the public sector reforms objectives in MAF

Review Team recommends that assistance be provided to strengthen this Section through provision of technical expertise in human resource management and development and resource support through Technical Assistance

- The need to provide technical and financial resources to assist MAF with Benefit Monitoring and Evaluation development

One of the major management concerns of MAF is the lack of an organization setup to undertake monitoring and evaluation of MAF's programs and activities. Management decisions were taken but lack in monitoring mechanisms to ensure that these decisions are implemented. The BME system in place by the TA Team need to be reviewed as staff had indicated to the review team that they find it inappropriate or unsuitable or unable to use it for their management purposes. M&E is an integral function of management and important tool for MAF's management planning

The Sector Review Team recommends that the MAF establish under its Corporate Services Division a Monitoring and Evaluating Section, with adequate staff trained and skilled in project and programme monitoring and evaluation systems. In addition, a technical adviser be recruited to assist MAF to review and make improvements or re-establish a BME system and train the staff of the M&E Section on M&E.

- MAF should centralize its "various information" functions, specifically the Information Section of Research-Extension Division and the data processing unit in Corporate Services Division. Current business model is for the information function to be a core function of any organization: rather than just being a technical support role. There is every justification to improve MAF's information function through the introduction of a WIDE AREA NETWORK on Tongatapu through electronic links with offices on the outer islands, with the development of an intranet.

MAF has established a local area network within its Hq. Email facilities have been established for Vaini, and other Divisions situated in various locations in Tongatapu. Computer facilities have been provided to the various districts and outer islands. MAF is linked electronically to Treasury on staff payroll management

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The sector review team recommends that MAF be assisted with establishing this WIDE AREA NETWORK. The current server in HQ be retained for administration and financial management purposes. A separate server maintaining a development database be setup in Vaini Farm. All districts and Divisions in Tongatapu will have direct access to the database in the Vaini server linked via microwave radio links. Outer islands will use dialup to access the Vaini server. Staff will be trained. Responsibility for establishing this network will be the Computer Unit, to be located by the Information Section.

Internal Review of MAFF's Organisational Structure and Strategic Plan

In January 2003, MAFF held a conference of senior staff to review its own organization structure and strategic plan. The conference recognized that several recommendations made by the institutional strengthening consultant team were yet to be implemented:

- The establishment of a Regulatory Division by merging Quarantine Division and Animal Health with appropriate staff and infrastructure.
- The need to upgrade Human Resource Management and Training Unit as a separate section of the Corporate Services Division.
- Further restructure of the Corporate Services Division.
- Abolish Crop Utilisation Unit with its functions transferred to the proposed Food Division and Quarantine Division.
- Establishment of a Food Technology Unit under the Corporate Services Division, with sections responsible for Legislations, Food Standard and Safety Codex, Food Processing and Handling, Nutrition, and Food Certification.
- Establishment of a new Unit called Policy and Planning Section and a Development Program Coordination and Implementation Unit.
- The Livestock Production be placed under the Research-Extension Division.
- Establishment of a Commercial Services Division under which is the Eua Forest Plantation, Talamahu Market, Machinery Pools and Tractor Hire Services, Nurseries, Commercial Farms, and High Temperature Forced Air facility.

The current and proposed organizational structures of MAFF are set out in the following diagrams.

Diagram 4: Current Structure of MAFF (at September 2003)

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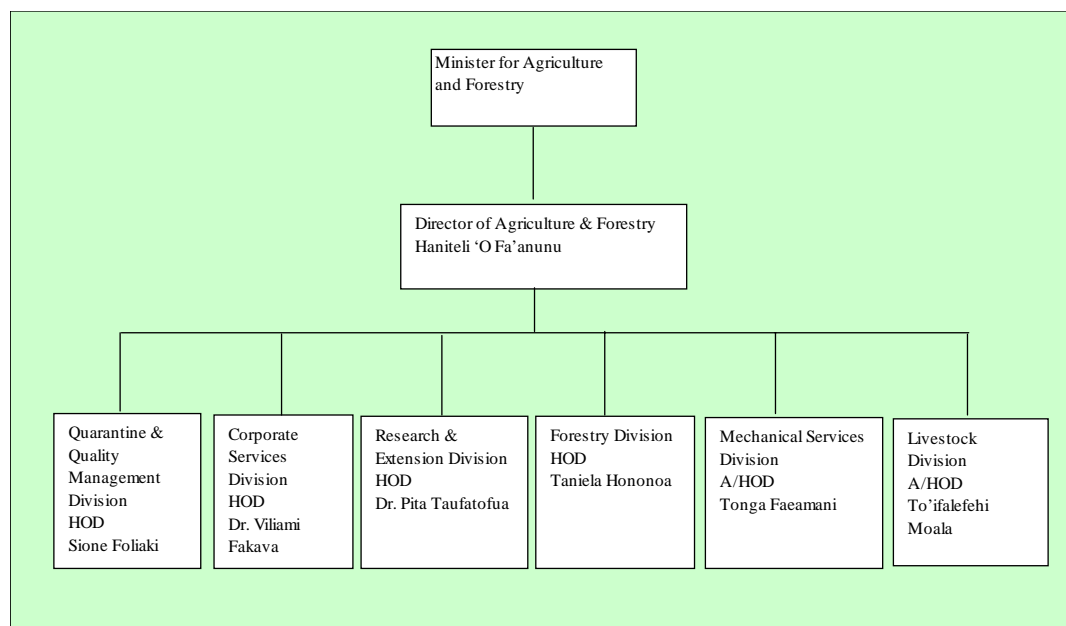
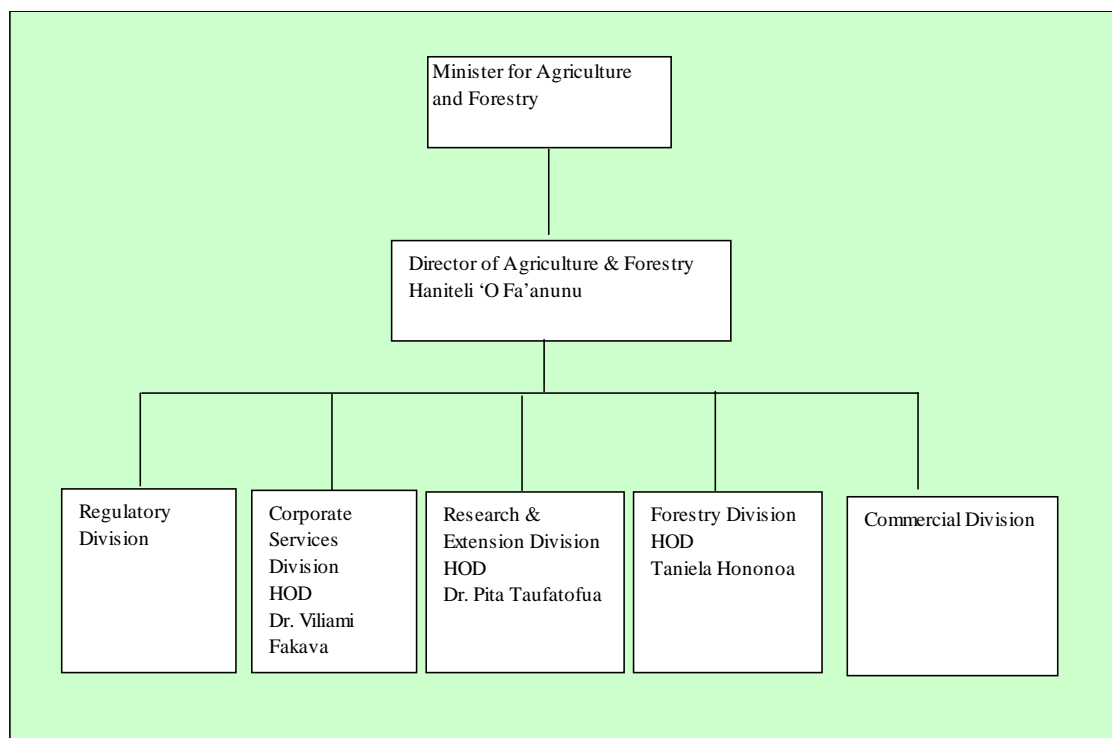


Diagram 5: Proposed Organizational Structure



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The regulatory division would include plant quarantine, animal quarantine and animal health. Note that there is no provision for economic and environmental regulation in the Division. These are normally considered to be core functions of an agriculture department.

The Corporate Services Division currently includes a Policy and Planning section and an Administration and Finance Section. The proposed restructure would involve the addition of a Human resource Management and Training Section. The Policy and Planning Section would include the following units:

- a Policy Development Unit
- a Statistics and Economic Unit
- a development Program Co-ordination Unit
- a Food technology Unit

The Research and Extension Unit currently has an administration section, a Research section, an Extension section and an Information Section. The proposed restructure adds the existing Livestock Production Section.

The proposed Commercial Services Division would include the 'Eua Forest Plantation, the Talamahu Market, the Machinery Pools & Tractor Hire Services, Nurseries, Commercial Farms and the HTFA

The Food Technology Unit would cover legislation, a Food Standard and Safety Codex, food processing and handling, nutrition and food certification.

The conference also recommended the establishment of an Agricultural Advisory Council, which will have representation from the main stakeholders, private sector, exporters, farmers, Tonga Development Bank and TongaTrade. The Council is to advise the Minister on issues affecting the agricultural sector and to provide feedback from key stakeholders.

The conference recommended that a Promotion Board be set up within the MAFF to deal with all staff matters of the Ministry. The Board is to be chaired by the Hon Minister and the members to consist of the Director, Heads of Division and Chief Establishment or his representative.

Priorities set out by the Minister of Agriculture for the agriculture sector for MAFF to work on:

- Food Security: Promote agriculture for the enhancement of food security.
- Export: Promote and encourage potential crops for export to increase foreign earnings.
- Market Diversification: New potential crops for exports and markets are identified.

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- Meat Import: \$14 million value of imported meat to Tonga, need to promote and develop meat industry for import substitution
- Vegetable & Fruit Imports: 444 tons vegetable and fruits imported to Tonga seasonally, need for research to promote all year round production of fruits and vegetables for import substitution.
- Efficiency: More effective and more efficient use of limited resources in priority areas that maximize outputs.
- High Unemployment rate: Encourage youth to participate in agricultural development.
- Tourism: Promote planting of trees for handicraft making

Other initiatives and recommendations by senior MAFF staff at the jan 2003 conference to strengthen MAFF's operations included:

The conference recommended that the budget preparation for 2003/2004 be based on the reviewed strategic plan of MAF, with a view to improving transparency on the total funding allocated to each island group and to give more say to the OICs on how their funding allocations are to be distributed, to facilitate better planning, resource management and ensure the implementation of priority program activities.

That all division of the ministry continue the initiative to reduce proportion of salary bill to operation costs, and to redefine its core roles and functions; in line with the goals of the economic and public sector reform program currently implemented by government.

An internal reporting system was proposed. This involved a monthly report by every MAFF Division and Outer Island. The format would include:

- A summary of work done during the month.
- Major achievements
- A list of problems and constraints
- Suggestions and recommendations
- Main work targets for the next month

There was concern with regard to late submission of MAF annual reports and poor preparation and the need for the Annual Reports to be precise, factual and supported by statistics. The annual report need to be ready by end of March, therefore reports from HODs and Outer Islands be submitted by the end of January every year.

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The conference recommended that a standard format for submission of annual report to be developed by Corporate Services Division (CSD) for Heads of Divisions and Officer-in Charge (OICs) of Outer Islands to follow.

STRENGTHENING OF MAF OPERATIONS IN THE OUTER ISLANDS

General Development Issues

The conference recognized the need to upgrade agriculture roads, tractor services, staffing and exports of agriculture produce. Recommendations included:

- That OICs identify problem roads and draft a project proposal with the assistance of Policy and Planning Section and submit through each Island Group Committee.
- Upgrade the OIC post to SAO level for other island groups except Vava'u, and to allocate some of the returning diploma students to outer-islands. The needs for upgrade of tractors and equipment be considered in the budget for 2003/04
- The new Development Program Co-ordination Unit in collaboration with Tongatrade to continue market arrangement for agriculture export produce.
- Computer Unit at CSD to assist setting up of email system in the Outer Islands to improve communication.

Ha'apai Island

- Ha'apai infrastructures (Offices, Housing), transport and tractor services are considered to be poorest of all the island groups. Vava'u has benefited from EU funding, while 'Eua and the Niuas were covered in the Outer Island Agricultural Development Program.
- There is urgent need to upgrade infrastructures and transport, etc
- Budget to be included to accommodate the renovation of MAF Office and the much needed infrastructures, boat and vehicles."

Niuafo'ou Island

- The current communication by fax is found to be very costly, and that the setting up email and solar system as more efficient.
- The need to assess the damages by minor birds on fruits and crops.
- "That CSD to assist in setting up email system, and to follow up submission to FAO for the assessment of the minor birds problem."

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‘Eua Island

- The charge rate on MAF tractor services in ‘Eua is still at \$25.00/hr. MAFF is unable to recover cost. With the private owned tractors now charging at much higher rate (about \$35/hr), suggestion is to increase the rate for machinery operations at ‘Eua from to \$30.00/hr.
- That Cabinet be requested to increase MAF tractor hire rates in ‘Eua from \$25.00/hr to \$30/hr at least to cover variable costs.”

Vava’u Islands

- There is need for funds for the propagation of kava and vanilla planting materials.
- “That CSD follow up the status of the kava and vanilla development projects funded under STABEX which both address planting materials problems.”

DEVELOPMENT ACTIVITIES

In relation to development activities, the conference recommended:

- Development of existing crops and new potential crops for exports
- That MAF continues work to develop new potential crops for export such as Vegetables (Chinese), papaya, ‘ufilei, aloe vera, Japanese taro, watermelons (Pago), kambyo, nonu
- Research work to improve squash crop yields and quality, extension trainings on farm management, post-harvest handling and packaging of information and technical for major export crops should be a priority.

To encourage youths to consider agriculture as a viable option for employment the conference recommend that MAF extension services programme to cater for development of youth groups in agriculture, support to school agricultural programs.

NEW LEGISLATIONS – COMMODITIES, PESTICIDES AND ANIMAL ACTS.

Export Commodity Act 2002

Fruit Export Act (1932) was reviewed and has now been replaced by the new Export Commodities Act 2002. The review on this act was necessary to accommodate the following:

1. New vegetable crops, which was newly introduced after 1932.

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2. Empowerment of the Ministry to enforce quality standards to be adopted for commodities and to facilitate quality control for export to ensure compliance with requirements of importing countries.

Fees to be charged and penalties to be imposed on those in breach of the Act;

Penalties to be imposed on inspectors for abuse of power and authority vested on them by the Act.

There is a need to develop a regulation under this new Act for each commodity. This will apply to every commodity leaving the country either for private use or for export. There must be a minimum quality standard to be followed.

A Task Force should be established for drafting regulations comprising, Head of Corporate Services Division, Head of QQMD, and Head of Food Technology Unit.

Animal Act

The new draft was completed in 1997.

But there is need to update this draft to the current situation. The new Act facilitates the regulation of import and export of animals and animal products to safeguard Tonga against the exotic pests and diseases.

Pesticides Act

Previous Act was mostly enforcing registration of imported pesticides and was reviewed in 1985 and revised in 1997. The current Pesticide Act is known as Pesticide Act 2002 and was approved last July. The new Act covered imports, maintenance, transport, usage and fees. The Director of MAF is the Registrar.

The Pesticide Act 2002 does not enforce household pesticides. There is a need to review the current act to include household pesticides in line with the Public Health Act.

ESTABLISHMENT OF THE FOOD DIVISION

The Tongan Government via a Cabinet decision approved the establishment of new Food Division, to be operational on 1st July 2003. The objective is to consolidate all activities associated with food under the newly named Ministry of Agriculture, Forestry and Food (MAFF). The decision required that activities, budget, equipment and staff of the Food and Nutrition Unit of the Central Planning Department are transferred to MAFF; the responsibility of inspection of animals after slaughter for public consumption currently undertaken by Ministry of Health is transferred to MAFF.

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When the Food Division is fully operational, the following activities will be transferred to the Division:

- Activities of the Food Control Unit of the Ministry of Health ie inspection of food products in shops and food premises, fishery products either for export or overseas market
- Activities of the Ministry of Fisheries involving inspections of fishery plants for processing of fish for export and inspection of quality of fish for export
- Activities of the Ministry of Labour, Commerce and Industries involving licensing of food businesses, price control of bread, market research and promotion of food products for overseas

In May 2003, FAO funded a consultant to assist MAFF in reviewing food control structures and systems and to recommend the setup for the new Food Division. Recommendations in the FAO consultation include:

- Establishment of a “National Food Authority” under the direct purview of the Minister of Agriculture, to bring together the food regulatory functions of the ministries for agriculture, health, commerce and industries, and fisheries.

The tasks of the National Food Authority include:

- Administer laws and regulations relating to food for domestic consumption and export
- Develop, maintain and enforce food standards and codes of practices for consumer protection, facilitation and promotion of trade in food
- Promote national nutritional objectives
- Undertake food surveillance relating to food product recalls and risks assessment
- Participate in Codex and other international food standards bodies
- Assist in development of new food products and technologies for domestic and overseas market.

The mandate of the Food Authority is to “ protect and promote food security, health and wellbeing of the people; and to develop, facilitate and promote fair trading in food through the application of sound food policies

Establishment of a National Food Council to replace the existing bodies: National Codex Alimentarius Committee and the National Food and Nutrition Committee. The new National Food Council would be charged with providing policy direction, coordination related to all matters on food.

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The organisational structure for the National Food Authority recommended by the FAO consultant consists of four key Divisions: Policy and Administration, Inspection and Certification, Nutrition, and Research and Development.

The recommendations of the FAO consultant was endorsed by the Minister of Agriculture. However, as a startup, it was decided that the Food Division be placed under the Ministry of Agriculture, until such time the Food Division can be full operational on its own and be located directly responsible to the Minister of Agriculture.

FAO commissioned a Tongan food technologist as a consultant to undertake a review⁴⁰ of Tonga's food law and regulations, food control and quality assurance management systems, inspections; food analytical services and public health surveillance. The review study concluded that the main problems affecting food control and assurance in Tonga were:

The main problems affecting food control and assurance in Tonga were absence of (a) a food safety policy, (b) national food and relevant legislations (c) code of practices for food processing, distributing and sales

- Deficiencies in existing legislations to regulate food quality assurance
- Food control activities were dispersed to different ministries with concurrent lack of coordination resulting in duplication of functions
- Lack of skill and trained personal in food control measures
- Limited food analytical facilities and food inspection services

Sector Review Team Comments and Assessment on Food Division

The sector review team is of the view the Food Division be placed directly responsible to the Minister as soon as possible. The recommendations of the FAO consultant will form the basis for establishing the agency for food.

However, it is recommended that An Ad-Hoc Advisory Committee responsible to the Minister be formed comprising of representatives from appropriate Ministries (eg Agriculture, Fisheries, Health, Commerce and Industries, Public Service Commission, Treasury, private sectors involved in food manufacturing, import and export) with relevant expertise to help set out initial priority tasks of the Food Division and the requisite startup resources (personnel, budget and facilities) for the next 3-4 years.

⁴⁰ Mele Amanaki, Food Control, Food Standards and Quality Assurance in Tonga, FAO Draft Report, July 2003

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Considering the immediate need of the sector, the sector review team recommends that the Food Division focus its immediate attention to :

- Firstly, developing and formulating required legislations to govern food safety, food quality controls for consumer protection, food quality standards for imported food products and for export of food products,
- Reviewing existing legislations and regulations on food matters with determine their current relevance, and where appropriate, sought improvements or have them repealed.
- Formulating regulations and surveillance/monitoring mechanisms for ensuring compliance of the newly established food legislations.
- Establishing appropriate food testing laboratory facilities to ensure compliance of established standards for imported and exported food products as required by law
- Undertake surveillance and inspection of food products in shops and markets to ensure compliance
- Develop public awareness information materials and conduct public awareness campaign via a variety of channels and mass media.

There need an initial startup of 5-6 core staff who would either be recruited, seconded or assigned from other Ministries. They would be given the required training to develop their expertise in the various aspects of food technology

The sector review team supports the provision of a TA to help the Food Division in the review of existing and formulate new food legislations and regulations, develop food standards on the most common food products imported and exported; establishment of the monitoring/surveillance system to ensure compliance ;expert advice on facilities/equipment requirements for the food testing laboratory; funding for the establishment of the food testing laboratory and training of staff on food testing methods

SECTOR REVIEW TEAM'S GENERAL COMMENTS AND ASSESSMENT OF MAFF

Despite its reservations on some aspects, MAF had committed to implementing the key thrusts of the restructure plan recommended by the 1998-2000 TA Team. The restructuring process is still on-going. The recommendations made by the senior staff at the MAFF conference on Jan 2003, when effectively implemented, will greatly enhance MAFF's operations and delivery systems.

Agricultural Extension

There is general concern voiced among all MAFF staff that the restructuring strategy for MAFF proposed by the Institutional Strengthening TA Team had made agricultural extension in the field LESS effective than before.

The centralization of field extension staff at only one Extension center in each district, as a result of the closing down of the sub district extension centers, meant less farmers are able to visit the extension officers at the main extension office, resulting in less contact between extension officers and farmers than previously.

As pointed in the consultant's final report, the introduction of one extension team in each district of between 6-8 specialist staff, would require a much more well-planned and coordinated extension to be implemented in the district. There is need for more mobility of staff having access to more than one vehicle in each district to enable the extension team approach to be effective.

Under the restructure, in Tongatapu, subdistrict extension centers were closed and all staff are centralized at one main extension center. In Haapai and surrounding outer islands, extension centers outside Lifuka were closed and all extension staff are centralized in Lifuka. Ha'apai and Vava'u were excluded from the ADB funded Outer Islands Agricultural Development Project.

For Tongatapu, MAFF has decided to centralized the location of all district Women in Development Officers instead of having these officers based in each district. This is to optimize the use of the one vehicle available.

A survey⁴¹ conducted by MAFF in 1999 to analysis effectiveness of the extension service following the restructure of MAF reported:

- About half (54%) of farmers⁴² in Vava'u said they did not get access to agricultural information
- A third of farmers surveyed in Tongatapu and almost half (44%) in Vavau said MAFF's extension activities and services do not meet their needs
- Half of the farmers surveyed in Tongatapu and two-thirds (65%) in Vavau felt the number of extension officers were not sufficient to service farmers in the districts

⁴¹ Lamipeti Havea, Report on the Analysis of Services Delivery by MAF Extension Division, Tonga, February 1999

⁴² A total of 200 farmers were sampled from the three districts in Tongatapu and one district in Vavau

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- About 40 % of farmers in Tongatapu and 52% in Vavau, when told of MAFF's restructure strategy, said they did feel there would be improvement on MAFF's extension services as a result. One reason is that the distance for farmers to travel to the extension office is too far.

The same survey sought out views of extension officers⁴³ on impact of MAFF Extension delivery as a result of the restructure strategy. The survey found

- 80 % of the extension officers surveyed said the new restructuring would not contribute to any significant improvement on MAFF's extension services.

The main contribution factors were

- There is now a longer channel of communication from the field to the Head of the Research-Extension Division compared to before (ie too many 'bosses' that may slow the decision making process)
- The closedown of the offices of the subdistricts made it difficult for extension services to reach out to the villages further away from the main extension center
- A major problem with limited number of transport and frequent breakdown of vehicles since the restructure

It has become obvious to MAFF the need for MAFF to review its current extension approach. A different approach has to be taken in order to bring about its effectiveness and credibility among farmers, extension staff and other stakeholders.

In discussions with the Director of Agriculture and senior MAFF staff, the further weakening of the extension service since the restructure of MAF is recognized and need to be addressed. Importantly, there is need to make extension service more accountable to its clientele, ie the farming community, and field extension staff be seen to be working directly with the farming community it meant to serve. To ensure that extension service delivery is made cost-effective, farmers need to be organized so that extension program delivery can be properly targeted.

Community-Managed Extension Service

Several options were canvassed and discussed with MAF senior officers in extension and information. One of which is for MAFF to consider adopting "community-managed extension

⁴³ A total of 20 extension officers were interviewed representing the three extension district teams in Tongatapu, including staff from the Information Section.

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approach". It involves through the help of District and Town Officers to encourage villagers themselves in adjoining villages to form growers association. Upon meeting agreed criteria in the formation of the growers association, MAFF assigns through a contractual arrangement one extension officer to the growers association. The extension officer, whose salary will still be paid by MAFF, then is responsible to the governing body of the growers association, and not to MAFF.

The day-to-day work programs of the extension officer becomes the responsibility of the governing body of the growers association and his/her performance will be appraised by the growers association. Should the extension officer is deemed ineffective by the growers association, he./she will be replaced. Subject to the reforms in the public service policy, the particular extension officer is either re-assigned else or made redundant.

The growers association will plan the extension officers work program and will bear the other day-to-day costs, except salary, of the extension officer in managing the agricultural projects of the growers association. The cost of training of the extension officer to upgrade his technical skills will be borne by Govt/MAFF.

The MAFF extension centers in the district will provide strong support to the extension officer who now acts as the representative of the growers association in dealings with MAFF. The MAFF will advice growers association in how to plan agricultural projects for which the assigned extension officer will manage on its behalf. The growers association will be encouraged to provide incentives to the extension officer when the association's agricultural projects have been successfully managed and members have benefited financially

The growers association will not be commodity-based but rather area-based. There maybe more than one growers association in each district. Where areas have no growers association, farmers will seek extension assistance and advice from the extension centers in the district. The formation of the growers association will be strictly the initiative of the villages themselves, with no financial support from MAFF in its formation.

The assignment of the extension officer is conditional that villages have formed a growers association based on agreed criteria eg minimum number of members, subscription based etc

The investment for upgrading of extension facilities in the districts especially in those islands that missed out on the Outer Islands Agricultural Development Project especially, Ha'apai, Vavau and Tongatapu will be based on the feasibility of implementing the Community-Managed Extension Service

Access to Agricultural Information in Districts and Outer Islands

A Community-Managed Extension Service generally will generate greater demand for more extension and technical information /advice by growers associations for their projects through the extension officer . The MAFF extension centers need to have access to agricultural information to support this.

It is proposed that each district extension center and in the outer islands will be directly linked through a Wide Area Network to a development database server located in Vaini. This server can be accessed by all Divisions in MAFF and districts/outer islands to input data into the database.

The Sector Review Team supports the provision of a TA to (a) assess the feasibility of institutionalize a Community-Managed Extension Service, (b) develop its detailed strategy and approach and (c) a pilot project for implementation.

Upon a successful implementation of the pilot project, the sector review team recommends a project preparation TA to design a project as a component in an expanded investment project together with the establishment of the wide area network for agricultural information to all districts and outer islands and the upgrading of extension facilities in the outer islands of Ha'apai, Vavau and Tongatapu.

Regionalisation of MAFF Activities

The outer islands are too far spread out from Tongatapu. Currently all outer islands report directly to Tongatapu either to the HQ or to Vaini Farm where the technical divisions are located.

The sector review team recommends that for more cost- efficient planning, monitoring and supervision of MAFF's programs in the outer islands, the outer islands be divided into three regions as follows:

Northern Region comprising of the two Niuas, and Vava'u. With Vavau as the northern regional HQ. A Northern Regional Manager is appointed who shall be responsible for agricultural programs for the Niuas and Vavau. The OICs of the two Niuas and Vavau will report directly to the Northern Region Manager.

Ha'apai Region.

Southern Region comprising of Tongatapu and Eua. The regional HQ is located in Vaini and the South Regional Manager shall be responsible for agricultural programs for Tongatapu and Eua.

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The Regional Managers will be responsible for program and budget planning and management, and reporting.

Agricultural Research Priorities

The sector review team recommends that MAF revisit the recommendation of the Institutional Strengthening consultant team to establish a Research Committee . The objective of the Research Committee is to identify and prioritize agricultural research programs of MAFF so that MAFF's research programs are based on needs of the agricultural sector. The committee should have external representation, consisting of interested agricultural exporters and commercial producers.

The Research Committee should be at least twice a year to identify research priorities for MAFF and to review research findings.

Commodity Development Approach

MAFF's effort to develop commodities are spread across different divisions/sections.

The sector review team recommends that MAFF re-orientates its development work and adopts a commodity development approach in its budgeting and planning of development programs.

The Agricultural Advisory Council will identify the range of commodities that have potential for import substitution and for export.

MAFF will establish for each commodity, Commodity Task Forces , charged with developing a comprehensive action plan from production, processing and marketing, and to implementing the commodity's development. Each Commodity Task Force will consist of selected staff from different divisions, including those from other relevant Ministries and private sector.

Each commodity task force will review current status, potential and barriers, for developing the commodity into a viable economic enterprise, identify resources required, develop an commodity development action plan, and oversee the implementation of the action program. A six-monthly progress status report will be presented to the Agricultural Advisory Council by each commodity task force.

FORESTRY DIVISION OF MAFF

Forestry Division was given the responsibility of managing nurseries, crop planting materials production and coconut replanting.

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Much of the work of the Division went to managing the nurseries from which there is revenue generation from the selling of the planting materials. There is no full cost recovery. Most of the revenue comes mainly from sales of ornamentals and cultural plants.

The mandate of the forestry division is to provide leadership, expertise and assistance in forestry management, maintenance of forestry resources, development of agroforestry (although Eua Forest Plantation is corporatised, there are still forests in other parts of the country). It would appear much of the Division resources were channeled towards the nursery/ planting materials production, and in the field, for coconut replanting schemes.

The sector review team recommends that MAFF should revisit the mandate of the Forestry Division and ensure that a significant part of its program and activities are to assist directly the forestry sector, in particular in the management of forestry resources and development of agroforestry.

The sector review team supports the provision of a TA to assist Tonga in reviewing the current status of the forestry sector and in the development and formulation of a Tonga Forestry Policy.

DEVELOPMENT OPTIONS FOR THE AGRICULTURE SECTOR

1. Development of a coconut-timber furniture industry.

- a. Tonga Timber currently sells cut coconut timber. Fiji has developed a coconut-wood furniture industry. Coconut wood is hard and requires special cutting instruments eg blades. Currently almost all joineries use imported and other timber wood for furniture making. Govt is funding the coconut replanting. Unless specially treated, coconut wood is exclusively suitable for in-door uses.
- b. The sector review team supports the provision of a TA to determine the economic feasibility of having a small-scale coconut-timber furniture industry in Tonga as small-medium enterprises to reduce importation of timber for furniture.
- c. If it is feasible, a project preparation TA can be initiated to design for an investment in nurturing and developing the furniture industry using coconut timber as well as for identifying other opportunities to revitalize the coconut industry

2. Fruit Fly Eradication

- a. The feasibility of isolating a part of the country to be fruit-fly free was canvassed.
- b. Fruitflies attack a range of crops, especially fruits and fruit-vegetables eg tomatoes. Quality of the fruits and vegetable produce are severely affected by the fruit flies and had hindered export opportunities due to quarantine measures and reduced price in the domestic market

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c. The technology and expertise to eradicate fruit fly is available. Experience had been gained in a Pacific regional project funded by FAO/SPC and AusAID with regard to the use of a range of control and preventive measures. A country-wide eradication of fruit-fly in Nauru was achieved through this regional project

d. However, the main concern is the economic viability and cost-benefit of undertaking such an investment. There is also the concern of ability to sustain such an undertaking that require a well coordinate program and involving a wide range of stakeholders. Nonetheless, the benefits are tangible in terms of better produce and prices in the domestic market, and expanding the economic base for export.

e. It is proposed that initially effort on the eradication of fruitflies be only for Tongatapu and Eua, where the economic activity in the sector is greatest.

f. The sector review team supports the provision of a TA to determine the economic and technical feasibility of establishing the islands of Tongatapu and Eua as fruit-fly free zones and to identify sustainability issues in such undertaking.

g. Conditional upon the recommendations of the feasibility TA that such an undertaking is cost-effective, sustainable and economically feasible, a project preparation TA would be initiated to develop a detailed project design for an investment project.

3. Establishment of a Credit Guarantee Institution/Corporation

a. Private sector involvement in the sector is hindered by lack of credit. Commercial banks are hesitant to take the financial risks in providing credit to the sector, especially to small scale enterprises. Tonga Development Bank shies away from micro-finance lending.

b. There had been call for government to provide investment capital to help the private sector. A suitable modality has to be found.

c. An option canvassed by the private sector with the review team was for govt under the auspices of the Ministry of Finance/Reserve Bank, to set up a Credit Guarantee Institution (CGI) to help start -up a support small and medium scale industries (SMIs) with available small loans and lesser collateral cover.

d. Such an institution has been successfully implemented in Japan, Germany and in Malaysia. Lessons can be learnt from experiences from these countries. One lesson learnt for such an undertaking to be successful is that the CGI should be independent and free from political

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pressures etc and professionally managed by competent and well-trained staff in financial management matters.

e. The GCI's guarantee gives SMIs financial access which they would not normally have through commercial bank loans.

o Govt will secure funding for purposes of establishing a Credit Guarantee Corporation. Incoming funds remained preserved at CGI for local re-investment.

o A contractual arrangement will be made by the CGC with local commercial banks in the availability of these funds to the banks to be made available as loans to borrowers.

o The CGC funds are deposited with commercial banks and the banks are expected to disburse these funds as loans to borrowers following normal bank procedures.

o CGI would provide credit risk cover of , say 80% -85% of commercial bank exposure in serving the needs of the targeted borrowers. The commercial banks bear part of the risk of default loans of borrowers.

f. The sector review team supports the provision of a TA to determine the feasibility of establishing a CGI in Tonga and to develop a detailed project design for establishing the CGI, which include , the management of funds to be made to CGI, the modality for cooperation between CGI, Govt financial institutions and commercial banks in the management of the funds and loan procedures for SMIs.

ATTACHMENT 5: PERSONS MET

- Hon Tuita, Minister of Agriculture, Forestry and Fisheries
- Meleseini Lomu, Deputy Secretary, Ministry of Finance
- Siosaia Faletau, Principal Economist, Ministry of Finance
- Haniteli Faanunu, Director, Ministry of Agriculture, Forestry and Food
- Otenifi Afualo Matoto, Managing Director Tonga Development Bank
- Leta Havea-Kami, Manager, Asset Management, Tonga Development bank
- Tevita Malolo, Secretary, Ministry of Land Survey and Natural Resources
- Sione Tangi, Acting Secretary, Ministry of Labour, Commerce and Industries
- Marcienne Fukafuka, Ministry of Labour, Commerce and Industries
- Samantha Newton, Ministry of Labour, Commerce and Industries
- Fekita 'Utoikamanu, Secretary, Ministry of Foreign Affairs
- Meleseini Lomu, Deputy Secretary, Ministry of Finance
- Siosaia Faletau, Principal Economist, Ministry of Finance
- Paul Nessling, British High Commissioner, Tonga
- Collin Hill, Australian High Commissioner, Tonga'
- Rick Nicholls, First Secretary (Development Cooperation), AusAID, Tonga
- Warwick Hawker, New Zealand High Commissioner, Tonga
- Jonathan Kerr, New Zealand High Commission Office, Tonga
- Dr. Pita Taufatofua, Deputy Director, Research-Extension Division, MAFF
- Lampeti Havea, Head, Extension Section, Research-Extension Division, MAFF
- Samisoni Kanongata'a, Principal Agricultural Officer, Information Section, Research-Extension Division, MAFF

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- Kepueli Vaipulu, Officer-in-Charge, Central District, Tongatapu, MAFF
- Metuisela Falesiva, Senior Agricultural Officer, Projects Coordination, Corporate Division, MAFF
- Manaia Halafihi, Head, Information Section, Research-Extension Division, MAFF
- Taniela Hoponoa, Head, Forestry Division, MAFF
- Toifalefehi Moala, Head, Livestock Division, MAFF
- Ofa Vaka'uta, Officer-in-Charge, Western District, Tongatapu, MAFF
- Lolo Fili, Agronomist, Research Section, Research-Extension Division, MAFF
- Moata'ane Vatusei, Senior Agricultural Officer, Research Section, Research-Extension Division, MAFF
- Finau Savelio Pole, Head, Research Section, Research-Extension Division, MAFF
- Pila Kami, Entomologist, Research Section, Research-Extension Division, MAFF
- Viliami Manu, Chief, Soil Nutritionist, Soils Unit, Research Section, Research-Extension Division, MAFF
- Dr Viliami Fakava, Deputy Director, Corporate Services Division, MAFF
- Losaline Ma'asi, Head Administration and Finance, Corporate Services Division, MAFF
- Lucy Fa'anunu, Head, Human Resources Development Section, Corporate Services Division, MAFF
- Sesalina Lavemai, Computer Programmer, MAFF
- Vaha'i Lui, , Manager, Talamahu Market, Corporate Services Division, MAFF
- Leody Vanikolo, Officer-in-Charge, Vava'u
- Hon. Malupo, Governor of Ha'apai
- Sunia Napa'a, Forestry Officer, Ha'apai
- Mele 'Amanaki, Food Technologist, Food Division, MAFF
- Emanuele Mo'ale, Farm Management Officer, Corporate Services Division, MAFF

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- Kamilo Ali, Office-in-Charge, Eastern District, Tongatapu, MAFF
- Va Toafa, Women Development Extension Officer, Tongatapu, Eastern District, MAFF
- Dr. Caroline Fusimalohi, Director, Central Planning Department, Prime Minister's Office, Tonga
- Marc Wilson. Team Leader, AusAID Tonga Fisheries Project
- Jerry Russo, Adviser, AusAID Tonga Fisheries Project
- Hon.Trevor H. Guttenbeil, Member of Parliament for Vava'u, Legislative Assembly, Tonga
- Vaea Anitoni, Governor's Office, Ha'apai
- Hon. Fineasi Funaki, Member of Parliament for Ha'apai, Legislative Assembly, Tonga
- Lennie Niit, President, Tonga Export Fisheries Association
- Uilou F. Samani, Director, Ministry of Environment, Tonga
- Manase Felemi, Secretary, Ministry of Fisheries , Tonga
- Ulunga Faanunu, Principal Fisheries Officer,Ministry of Fisheries, Tonga
- Mick Mimnaugh, Team Leader, ADB TA Public Service Reform Project, Tonga
- Douglas Ruhen, ADB Consultant, Public Service Reform Project, Tonga
- Siaso T. Fifita, Senior Market Development Officer, TongaTrade
- Tevita Vea'ila, Tonga Trust
- Denis Wolff, Executive Officer, Tonga Trust
- Rob Brunt, Programme Coordinator, Just World Partners, UK/Tonga Trust
- John Melville, Consultant, Pesticide Awareness Sustainable Agriculture Project, Tonga Trust
- Sione Vuki, Treasurer, Vava'u Agricultural Farmers Council Inc. Vava'u
- Parmesh Chand, Trade Commissisoner, Pacific Islands Trade and Investment Commission, New Zealand
- Jeremy Burdon, Postharvest Specialist, HortResearch, New Zealand

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- Gavin Edwards, Biosecurity Authority, Ministry of Agriculture and Forestry, New Zealand
- Justin Downs, Quarantine Service, Ministry of Agriculture and Forestry, New Zealand
- Roberto Ferrari, Team Leader, EU Vava'u Development Program III, Vava'u
- Robyn Ekstrom, Pacific Island Trade and Investment Commission, Sydney Office, Australia
- Gordon Hogg, Turners and Growers International Imports Ltd. New Zealand
- H.K. Yeoh, General Manager, MBf Bank, Tonga
- Hon. Peauafi Haukinima, Member of Parliament, Niuas, Legislative Assembly, Tonga
- Hon Dr Fred Seveles, Member of Parliament, Tongatapu, Legislative Assembly, Tonga, Squash Exporter
- Chinese Ambassador to Tonga
- Guy Tingey, General Manager, EM Jones Industries, Tonga
- Pousima Afeaki, Manager, Tinopai Farm, Tonga
- Kelepi Makakaufaki, Secretary, Public Services Commission, Tonga